

2023 Maintenance Manual for GE13-A1 Model

The Manual provides information on GE13-A1 repair

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Model overview

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1.1 Warnings and precautions

1.1.1 Instructions and operations

1.1.1.1 Warnings and Precautions

Definition of “warning”, “notice” and “prompt”

The diagnostic and maintenance procedures in this service manual include both general and specific WARNINGS, NOTICES, and PROMPTS. Geely is committed to providing maintenance information to help after-sales service technicians diagnose and repair systems so that vehicles can run normally. However, if the technician does not follow the recommended method, some procedures may cause danger to the technician.

“Warning”, “notice” and “prompt” are prepared to prevent above risks but not all of risks can be foreseen. Such information is prominently placed in the maintenance manual. Such information is compiled to avoid the following situations:

- Serious injury to persons
- Vehicle damage
- Unnecessary vehicle repairs
- Unnecessary replacement of parts
- Improper maintenance or replacement of vehicle components

Definition of “warning”

When a “warning” occurs, it asks you to take the necessary or prohibited measures. Ignoring the “warnings” may lead to the following consequences:

- Serious injury to persons
- Serious injury to the driver and/or passengers in the vehicle.

Definition of “notice”

“Notice” requires special attention to necessary or prohibited measures. Ignoring the “notices” may lead to the following consequences:

- Vehicle damage
- Unnecessary vehicle repairs
- Unnecessary replacement of parts
- Improper operation or performance of the system or component being repaired
- Damage to related systems or components
- Damage to fasteners, basic tools or special tools
- Leakage of coolant, lubricating oil or other major oil in electric drive system

Definition of “prompt”

A “prompt” emphasizes the need for a diagnostic or maintenance procedure. The purpose of a “prompt” is to:

- Define a maintenance procedure
- Provide supplementary information for completing a maintenance procedure
- Clarify the reasons for following recommended maintenance procedures
- Provide information that helps to complete maintenance procedures in a more efficient manner
- Provide the technician with previous experience so that the repair procedure can be completed more easily

Warning regarding the vehicle lifting

Warning

In order to avoid vehicle damage, serious personal injury or even fatal accidents, when removing a main component from the vehicle and supporting the vehicle with a lifter, use a jack stand to support the vehicle part corresponding to the component to be removed.

Warnings regarding the treatment of anti-lock brake system component

Warning

Certain components in an anti-lock brake system (ABS) cannot be repaired separately. Attempting to remove or disconnect some system components may cause personal injury and / or abnormal system operation. Repair only those parts that are permitted to be removed and mounted.

Warning regarding the collision of repair permissible equipment

Warning

To avoid personal injury caused by exposure to toxic fumes from welding arcs or electroplated (zinc oxide) metal when grinding/cutting any type of metal or sheet molding, it is necessary to work in a well-ventilated area and wear respirators, goggles, earplugs, welder gloves and protective clothing.

Warning regarding driving by another technician**Warning**

The vehicle should be driven by another technician when the technician is checking the fault parts reported for repair. Otherwise, it may result in personal injury.

Warnings regarding battery disconnection**Warning**

Before repairing any electrical components, the power supply mode must be in the OFF position, and all electrical loads must be “OFF” unless otherwise specified in the operating procedures. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

Warning

When repairing the airbags, the negative electrode of the battery must be disconnected for at least 90s before other maintenance operations can be performed.

Warning regarding power batteries**Warning**

1. Wear insulating gloves, high-voltage insulating shoes and protective caps when connecting high-voltage copper bars.
2. Before assembling the high-voltage copper bars, make sure that there is no foreign matters such as heat shrinkable sleeve (tape) on the contact surface between the connector and the pole.
3. When placing the short circuit-proof tooling, be sure to check that the device is placed correctly before installing the harness.
4. Bare copper bars that are not connected to poles should be wrapped with insulating tape to prevent short circuits.
5. Handle the power battery with care.
6. Air tightness testing is required after the installation of the water-cooled plate and the water-cooled connecting pipe.
7. Air tightness testing is required after the power battery pack is assembled.

Warning regarding brake dust**Warning**

Avoid the following operations when repairing wheel brake components:

- Do not clean the wheel brake components with dry brush or compressed air

Warning

Some models or brake components of after-sales installations may contain fibers that can mix with the dust, which will mix up in the dust. Inhaling the dust containing the fiber will cause serious damage to the body. Please clean any dust on the brake components with the wet cloth.

Warning regarding brake fluid**Warning**

Brake fluid is easy to absorb humidity and moisture. Please do not use the brake fluid in the open containers that may be contaminated with water and use improper or contaminated brake fluid, which may cause system fault, loss of control and personal injury.

Warning of brake fluid irritant**Warning**

Brake fluid is irritating to skin and eyes. In case of contact, the following measures should be taken:

- Eye contact - rinse thoroughly with water
- Skin contact - wash with soap and water

Warning regarding the replacement of brake pipe**Warning**

When replacing the brake pipe, please install and fix it carefully and use the correct fasteners. Otherwise, it will cause damage to brake pipe and brake system, causing personal injury.

Warning regarding inhalation of R134a**Warning**

Avoid inhaling air conditioner refrigerant HFC134a (R134a) and lubrication oil vapor or mist, which may irritate the eyes, nose and pharynx. Work in a well-ventilated area. When discharging R134a from the air conditioning system, use a service equipment (R134a recovery equipment) certified to meet the requirements of SAEJ2210. In case of unexpected discharge of fluid from the system, the working area must be ventilated before continuing maintenance. Other health and safety information is available from refrigerant and lubrication oil manufacturers.

Warning regarding collision and cutting**Warning**

Cutting is carried out in the recommended components, otherwise it will destroy the integrity of the vehicle structure. The vehicle collision may lead to personal injury.

Warning regarding cracked windows**Warning**

If a window glass is cracked but still remains a whole, apply the protective tape to the window glass in a crisscross pattern to avoid further damage to the window glass or personal injury.

Warning regarding window lifting function**Warning**

When the driver's door operates the open and close of electric windows, the windows moves fast and the windows without clamping cannot be stopped, which may lead to personal injury.

Warning regarding eyes protection**Warning**

When performing certain procedures (such as welding or cutting, etc.), wear approved goggles and gloves to reduce the risk of personal injury.

Warning regarding foam insulation materials**Warning**

If an open flame is to be used during vehicle body maintenance, the foam sound-insulating material within 152.4mm (6in) from the open fire must be removed. When reinstalling foam sound-insulating materials, do not inhale smoke. Otherwise, it may be harmful to your health.

Warning regarding glass and metal plates treatment**Warning**

When handling any glass or metal plate with sharp edges or burrs, wear goggles and gloves to reduce the risk of personal injury.

Warning regarding halogen bulb**Warning**

Halogen bulbs contain high-pressure gas, which can explode into the broken glass if not handled properly. To avoid personal injury:

- Before replacing the bulb, turn off the light and allow the bulb to cool.
- Keep the light off until the bulb is replaced.
- Wear goggles when replacing the halogen bulb.
- When holding the bulb, only hold the lamp holder to avoid touching the glass.
- The bulb should avoid dust and moisture.
- Scrap the old bulbs correctly.
- Keep halogen bulbs away from children.

Warning regarding moving components and hot surfaces**Warning**

When working around a running electric drive system, avoid contact with moving components and hot surfaces to prevent personal injury.

Warning regarding removal of fluid reservoir cap**Warning**

To avoid burns, do not remove the reservoir cap until the electric drive system has cooled down. If the reservoir cap is removed when the electric drive system and radiator have not cooled, the cooling system will release scalding high-pressure liquid and steam.

Warnings regarding cooling system maintenance**Warning**

As long as there is pressure in the cooling system, even if the solution in the radiator is not boiling, the solution temperature will be much higher than the boiling temperature. If the reservoir cap is opened when the electric drive system has not cooled and the pressure is still very high, when servicing the cooling system, the electric drive system coolant boils immediately and may spray on the operator, causing severe burns.

Warnings regarding road test**Warning**

Vehicles for road tests are carried out following all traffic laws and regulations while ensuring safety. Do not attempt any operation that may endanger vehicle control. Violation of the above safety instructions may result in serious personal injury and damage to the vehicle.

Warning regarding airbag system**Warning**

This vehicle is equipped with an airbag system, failure to follow proper operating procedures may result in the following situations:

- Deployment of Airbag
- Burst of pretensioner
- Personal injury
- Unnecessary airbag system repair

Warning

Observe the following guidelines to avoid the above situation:

- Refer to the airbag system components view to determine whether you are performing maintenance operations on airbag system components and its surroundings or its lines.
- If you are performing maintenance operations on airbag system components and its surroundings or its lines, disengage the airbag system.

Warning regarding high temperature of deployed airbag modules**Warning**

After deployment, the metal surfaces of the airbag system components may be hot. To avoid fire and personal injury:

- There should be sufficient cooling time before touching any metal surface of the airbag system components.
- Do not place inflatable airbag system components next to any combustible material.

Warning regarding clock spring of airbag system**Warning**

Improper installation of the clock spring assembly will damage the spiral coil inside the clock spring, which may cause coil failure and make the airbag module unable to work normally, thus leading to personal injury.

Warning regarding scrap of airbag system modules**Warning**

To prevent accidental deployment of airbags and personal injury, non-deployed airbag modules should not be disposed of as conventional workshop wastes. If the sealed container damages in the process of scrap, some of the substances contained in the non-deployed modules may cause serious illness or personal injury. Safely scrap non-deployed airbag modules with deployment procedures.

Warning regarding taking and long-term storage of airbag system modules**Warning**

When transporting non-deployed airbag modules:

- Do not lift the wires or connectors on the airbag modules for handling.
- Make sure the airbag opening does not face yourself or someone else.

Warning

When non-deployed airbag modules are long-term stored, make sure that the airbag opening does not face the surface on which the airbag modules are placed. The airbag opening cannot be downward. It is forbidden to place any object on the airbag module. There should be enough space around the airbag for accidental deployment of the airbag, otherwise it will cause personal injury.

It is forbidden to immerse the non-deployed airbag module in water or contact other liquids.

It is forbidden to place a non-deployed airbag module near a fire source or in a high temperature area so as to prevent accidental deployment of the airbag and injury to personnel.

Warning regarding the treatment of airbag system collision sensor

Warning

Never hit or shake the airbag system collision sensor, and ensure that the collision sensor is securely secured before charging it. Failure to follow proper installation procedures may cause the airbag system to inadvertently deploy or fail to function when it should be deployed, resulting in personal injury.

Warning regarding power batteries

Warning

A battery electric vehicle contains a set of sealed high-voltage lithium-ion power batteries. If the power battery is improperly exposed, there will be risks of severe combustion and electric shock, which may lead to serious casualties and environmental pollution.

Warning regarding high voltage safety precautions

Warning

Never touch high-voltage components with bare hands when the high-voltage power is not disconnected.

High-voltage components of this vehicle include: drive control unit, high-voltage distribution device, high-voltage and low-voltage charging system, high-voltage main cable, fast-charging plug, fast-charging socket, power battery, electric drive system, slow-charging socket, slow-charging plug, electric compressors, electric heaters, etc.

After the vehicle has been running for a period of time, the surface temperature of the electric drive system, the drive control unit and the electric vacuum pump is high; If the air conditioner is used for refrigeration, the surface temperature of the compressor and the radiator of the electric air conditioner will be higher; during the charging process, the surface temperature of the vehicle-mounted charger will be higher. In the above cases, do not touch the components with bare hands.

It is strictly forbidden to disassemble the high-voltage electrical components in the vehicle, unplug or disconnect the high-voltage connectors and cables of the vehicle without permission; otherwise, it may cause serious electric shock injury and damage to the vehicle. The high-voltage cables in the vehicle are wrapped with orange bellows, so please pay attention to identification.

Warnings in case of vehicle collision accident

Warning

In case of vehicle collision (including front, rear, left and right collision and ground collision):

- Even if the vehicle can still run after a collision, it is necessary to stop it safely, apply the parking brake switch, place the power supply switch in the LOCK position, and do not touch the body metal.
- Under no circumstances shall any person be allowed to repair the vehicle when the power is not completely cut off.
- Check whether the high-voltage components and wiring harness of the vehicle are damaged or exposed (the location of the components can be determined from the layout of the high-voltage components). In order to avoid personal injury, do not touch the high-voltage harness, connectors and other high-voltage components (IPU, power battery, etc.). It is forbidden to touch the damaged or exposed wiring harness to avoid the risk of high-voltage electric shock. In particular, if the vehicle floor scrapes against the ground, it is necessary to carefully check whether the high-voltage wiring harness distributed on the floor is damaged. If you need to contact any high-voltage cables or components, please wear insulating protective clothing (including insulating gloves, insulating shoes, and insulating clothing) with a withstand voltage of more than 1000V.
- If the extent of damage to the vehicle cannot be estimated, do not touch the vehicle. Keep away from the vehicle, immediately contact the professional and technical personnel of the authorized automobile dealer to inspect and repair the vehicle, and be sure to inform the emergency personnel who come to deal with the accident that the vehicle is an electric vehicle at the first time. No one else is allowed to approach, contact or move the vehicle.
- If the driver and passengers are trapped and cannot disconnect the high-voltage DC bus, please try to cut the vehicle after confirmation by professionals. Before cutting, a large amount of fire water is needed to wash the battery parts and the ground to wash away or dilute the leaked electrolyte, so as to prevent sparks from igniting the electrolyte and causing fire during cutting. Do not

touch the high-voltage cables (the skin color of the high-voltage cables is yellow or orange) and the battery pack during cutting.

- It is strictly forbidden to disassemble the high-voltage wiring harness and high-voltage components in the front compartment without permission. The skin color of the high-voltage wiring harness is yellow or orange.
- Leakage of electrolyte from power battery or damage of the battery may cause fire. If this occurs, contact an authorized car dealer immediately. Please do not touch the leaked electrolyte with your hands. If your skin or eyes accidentally come into contact with electrolyte, please wash them with plenty of water immediately and seek medical advice immediately to avoid injury.
- If the vehicle smokes or catches fire, please leave the vehicle immediately, and be sure to use plenty of water to put out the fire. Failure to do so may result in serious injury or death.
- If towing is required, be sure to raise the front wheels off the ground. Because if the front wheels touch the ground when towing, the electric drive system may generate electricity, damage the high-voltage components of the vehicle and even cause a fire.
- If the vehicle needs to be repaired or painted after a collision, it must be handled at an authorized car dealer and cannot be disassembled without permission. Before painting, remove high-voltage components such as power battery, high-voltage wiring harness and integrated power controller. Because long-time exposure of power battery to high-temperature spraying workshop, the service life of the power battery may be affected. In addition, failure to remove the power battery from the vehicle may cause hazards to the maintenance personnel who are not professionally trained with electric vehicle maintenance.
- In case of vehicle failure or accident, please immediately place the reflective tripod about 100m behind the vehicle (and 150m behind the vehicle on the highway) to warn passing vehicles or pedestrians.

Warning regarding charging methods and information

Warning

During charging, the high-voltage system will have high voltage and large current. Please strictly follow the operation instructions; otherwise serious casualties may be caused. Before charging, please read the charging section in the manual carefully.

Warning regarding vehicle starting

Warning

It is forbidden to power on/off the power supply mode continuously.

Warning regarding driving**Warning**

Drunk driving is prohibited.

Unexpected movement of the vehicle may result in serious injury.

Do not operate the power supply mode when the vehicle is running.

It is forbidden to step on the accelerator pedal during the gear shifting process or to shift gears during the process of depressing the accelerator pedal, so as to avoid the loss of control of the vehicle.

When shifting gears or parking in the garage, please observe the gear information displayed on the meter to confirm whether it is the gear you expect.

Do not depress the brake pedal and accelerator pedal at the same time.

Avoid sudden braking while the vehicle is running.

When turning, the vehicle should slow down as much as possible, and it is forbidden to make sharp turns.

For safety reasons, do not climb steep slopes.

When the vehicle is turned on and the gear position is in D or R, be sure to depress the brake pedal or apply the parking brake switch, otherwise the vehicle will creep; if you leave the vehicle, be sure to apply the parking brake switch and set the gear to N.

When parking on a slope, do not step on the accelerator pedal. Please step on the brake pedal or apply the parking brake switch to keep the vehicle stationary.

Avoid driving in deep water. If you have to pass through the waterlogged road, the fording depth shall not exceed the lower edge of the vehicle body, and the vehicle shall run at a low speed.

When the vehicle breaks down or encounters an accident in the rain, please do not open the front engine compartment cover by yourself. If the bottom of the vehicle is severely scratched while the vehicle is running, please contact an authorized car dealer.

Warnings regarding vehicle stopping or parking**Warning**

Improper parking may result in serious injury.

When stopping or parking a vehicle, be sure to set the gear in N position and apply the parking brake switch to avoid the vehicle from moving unexpectedly.

Never leave children or disabled people in the vehicle. They could release the parking brake switch and operate the gear shift lever, causing the vehicle to move and thus causing an accident that could result in serious injury.

Warnings regarding charging

Warning

If you use an electronic medical device, such as a cardiac pacemaker or cardiovascular defibrillator, please confirm the impact of the electric vehicle charging on the device before charging. Charging may affect the function of the electronic medical device.

If you have a cardiac pacemaker or cardiovascular defibrillator implanted, keep the following in mind when charging:

- Do not stay in the vehicle;
- Do not enter the vehicle to pick up things.

Charging may affect the function of the electronic medical device, resulting in personal injury or death.

Before charging, please check whether the skin or jacket of the charging cable is damaged. If so, please contact an authorized car dealer for repair or replacement. It is forbidden to use damaged charging cables.

The charging plug is a high-voltage electrical device, and it is strictly forbidden for children to use it. It is strictly forbidden for children to operate the charging process.

Please make sure that the charging port and charging plug are free from water or other sundries, rust or corrosion. If there is water or corrosion on the charging port or charging plug, please do not charge, so as to avoid short circuit or electric shock, or even cause casualties.

The power supply equipment, vehicles to be charged, charging cables and charging plugs shall be kept away from rain, snow and ponding, and shall not be close to the fire source.

If there is moisture near the charging port during the charging process, please disconnect the power supply first when it is safe to do so, and then disconnect the power supply plug (hands or other parts of your body shall not touch the metal sheet of the charging plug, so as to avoid accidents due to possible failure of the charging system) and then pull out the vehicle charging plug. Please use insulating gloves if necessary, and contact an authorized car dealer for inspection and confirmation as soon as possible.

If the vehicle has been driven in the rain before charging, please wipe the vehicle body near the

charging port dry and then open the charging port for charging. Special attention: there shall be no residual rainwater in the charging socket and its adjacent areas.

There may be sparks inside the charging system when it is working. Please do not use the charging device in an environment where gasoline, paint, or flammable liquids are used or stored.

Please keep the charging port dry and clean during charging, and take corresponding precautions if necessary.

In case of sudden weather changes (strong wind, rain and snow) during charging, check whether the charging plug is firm and dry in time; in case of lightning, do not touch the charging cable or the vehicle.

During the charging process, take appropriate protective measures, and try to keep children and other non-relevant people away from the vehicle being charged and the charging cable.

It is forbidden to insert the slow charging plug and the fast charging plug at the same time.

When charging, do not squeeze the charging cable so as to avoid electric shock or fire.

Do not leave the charging cable in the vehicle while charging.

When charging, keep the charging cable away from fire.

When charging, do not approach or touch the cooling fan of the front engine compartment;

Please pay attention to the following points when charging:

- It is forbidden to touch the metal part of the charging port and charging plug;
- It is forbidden to touch the electric vehicle and any device when there is an electric spark in the electric vehicle or the high and low-voltage charging systems. Otherwise, you will get electric shock and cause personal injury or death.

Do not touch any component. Otherwise, you will get electric shock and cause personal injury or death.

The ambient temperature when charging the vehicle is recommended to be between 0°C and 35°C. Avoid charging in a low temperature or high-temperature environment (recommended at noon in winter and morning and evening in summer).

In summer, try to avoid charging in high temperature environments such as direct sunlight.

During charging, make sure that the charging cable is in a naturally extended state, and do not hang it in the air.

If you notice a special smell or smoke in the car, immediately cut off the power supply in a safe manner. It is forbidden to plug and unplug the charging plug with wet hands or standing in a place with water, liquid and snow, otherwise it will be easy to cause electric shock and cause casualties. Otherwise electric shock may occur, resulting in casualties.

When unplugging the charging plug, hold the insulating part of the plug. Do not drag or pull the charging cable directly.

It is forbidden to disassemble or modify the charging port without permission.

It is forbidden to extend or modify the charging cable or plug without permission, otherwise it will be prone to danger.

Warnings regarding slow charging

Warning

In order to avoid electric shock or fire caused by short circuit, please install and connect a ground fault circuit interrupter in the circuit and use a waterproof grounding receptacle.

Incorrect use of charging equipment may cause fire or serious casualties.

- Do not use aging charging devices.
- Do not use the charging device if the output power socket is damaged or improperly plugged in.
- If the charging socket or power socket feels hot or smells peculiar smell, stop charging immediately.
- Do not use the charging device on the same circuit as other electrical appliances, and ensure that the load of the power supply line can meet the charging needs of the vehicle.
- When the high and low voltage charging system fails, please stop using it and contact an authorized car dealer for repair.
- There are no user-repairable components in the charging device. Please do not try to repair the charging equipment without permission, and the resulting problems are not covered by the warranty.

The vehicle must be charged in a place with stable voltage, and the power socket must meet the specifications required by GB2099. Electrical safety protection measures such as waterproof, moisture-proof, dust-proof, anti-touch, and anti-leakage must be taken for power socket.

It is forbidden to link any power cord in any form without permission, so as to avoid exposing the power cord, otherwise a fire may occur.

When charging, do not squeeze the charging cable.

It is forbidden to use damaged charging cable.

It is forbidden to modify the charging cable. If you need to extend the charging cable, purchase a 10m or 20m dedicated charging cable from an authorized dealer.

Warnings regarding fast charging

Warning

Please use fast charging equipment that meets the GB/T20234 standard, otherwise malfunction or fire may occur, resulting in serious casualties.

Please read the operating instructions on the charging device carefully before fast charging, and ensure that the fast charging plug is connected and locked, otherwise the vehicle or charging device may malfunction.

Children are not allowed to charge the vehicle.

It is forbidden to plug and unplug the fast charging plug at will during charging.

It is necessary to charge or stop charging in strict accordance with the operation procedures of the fast charging pile.

If there is smoke, peculiar smell or abnormal phenomenon inside the vehicle at the charging port, please press the emergency stop button on the fast charging pile in time to stop charging, evacuate the people around the vehicle and dispose of it according to the relevant on-site procedures.

Warnings regarding fast charging procedures

Warning

Before fast charging, please check whether there are sundries, dust, water, etc. in the fast charging socket (including the holes). If so, please do not charge. Please remove the debris and dust inside the fast charging socket (including the holes), and wipe it dry. Keep the charging socket clean and dry before continuing to charge.

Before fast charging, please check the holes of fast charging socket for damage, ablation and color change of jack. If there is any of the above phenomena, please do not charge and contact the authorized car dealer.

Warnings regarding maintenance

Warning

After the vehicle is running, the temperature is high, and when you inspect or maintain the vehicle, you must take protective measures and observe the following:

Park the vehicle on a level road, apply the parking brake switch, and set the gear position to N. It is forbidden to connect or disconnect the 12V lead-acid battery when the power-on switch is turned on.

Turn off the power-on switch and turn off the power supply mode.

The cooling fan of this car may start at any time. Please disconnect the negative electrode of 12V lead-acid battery during maintenance.

During maintenance, please fasten or remove loose clothes and accessories such as rings and watches, and wear protective glasses. Metal accessories that come into contact with live parts may cause electric shock or burns.

It is forbidden to maintain, dismantle, move or replace high-voltage components, wiring harnesses and connectors without permission, otherwise severe burns or electric shock may be caused, resulting in serious casualties.

It is prohibited to enter under a vehicle that is directly supported by a jack. When operating under the vehicle, a safety bracket must be used.

Keep children or pets away from vehicle fluids.

If you want to replace bulbs, fuses or lead-acid batteries, please make sure that the vehicle charging plug has been unplugged and the remote air conditioner has been turned off; turn the power supply mode to the ON position and then turn it off to prevent the power battery from charging the lead-acid battery.

Pay attention to the polarity when connecting the 12V lead-acid battery cable. Do not connect the positive cable to the negative terminal or connect the negative cable to the positive terminal.

Notice of brake fluid filling in the brake system**Caution**

When adding brake fluid to the brake master cylinder reservoir, only use brake fluid from a clean, sealed brake fluid container. The type of the brake fluid is in compliance with DOT4. Failure to use the recommended brake fluid may cause system contamination that can damage the rubber seals and/or rubber pads inside the hydraulic brake system components.

Notices for Electrical Park Brake caliper**Caution**

For component repair of the EPB system, it is necessary to perform brake caliper piston release and reset operations using a diagnostic instrument.

Notices for effect of the brake liquid on paint and electrical components**Caution**

Avoid contact of brake fluid with paintwork, electrical connectors, wires or cables. The brake fluid will damage the paint surface and cause corrosion of electrical components. If the brake fluid contacts the paint surface, immediately flush the contact part with water. If the brake fluid contacts the electrical connector, wire or cable, wipe the brake fluid with a clean cloth.

Notices for removing the electric drive system**Caution**

When removing the electric drive system, it is necessary to remove it together with the subframe. During removing, the jacks should support on the subframe, not on the housing of the electric drive system. Any improper lifting of the electric drive system may result in component damage or personal injury.

Notices for the support of electric drive system**Caution**

If the support of the electric drive system is broken, some components of the transmission system may be misaligned, which may lead to eventual damage of these components.

Caution

If one electric drive system support breaks, the stress applied to the other electric drive system supports will increase, which may cause the other electric drive system supports to break.

Notice of exterior trim logo removal**Caution**

When the badges/nameplates are removed, flat-edged plastic tools are used to prevent damage to the paint.

Notice of fastener**Caution**

The fastener is used in the right position and the replaced number of replaced fastener must be right. The replaced fastener or the fastener that requires thread lock glue or sealant is specified in the maintenance procedure that paint, lubrication oil or corrosion inhibitors should not be used on fastener or the connection surface of fastener unless otherwise specified. These coatings affect the torque and clamp force of the fastener and damage the fastener. When the fastener is installed, make sure that tightening sequence and tightening torque are correct to avoid damage to components and system.

Notice of the treatment of electrostatic discharge sensitive components

Caution

Electro-static discharge (ESD) may damage many solid-state electrical components. Components susceptible to ESD are not always marked with ESD symbols. Handle all electrical components carefully. Please observe the following safety instructions to avoid damage from electro-static discharge (ESD):

- Before servicing any electronic components, touch the metal ground points to discharge static electricity from your body (especially after sliding on the vehicle seat).
- Do not touch exposed terminals, which may be connected to circuits easily damaged by electrostatic discharge.
- The tools are not allowed to touch exposed terminals when connectors are repaired.
- Do not remove components from the protective housing unless otherwise specified.
- Avoid the following operations unless specifically required by the diagnostic procedure:
- Bridging and ground of components or connectors
- The test device probe is connected to the component or connector. When the test probe is used, the ground lead should be connected first.

Before the protective shell of components is opened, it should be grounded. Solid components are prohibited to place on the metal workbench or on the top of the television, radio, and other electrical equipment.

Notice of setting the power supply mode in OFF position when disconnecting the battery

Caution

Whenever connecting or disconnecting the battery cable, battery charger, or jumper cable, be sure to set the power supply mode to OFF position, otherwise, the control module or other electrical components may be damaged.

Notice of not twisting or bending the hose

Caution

The inlet and outlet hoses shall not be twisted during installation, and the hoses shall not be bent or deformed for easy installation, otherwise the components may be damaged.

Notice of machining surface damage

Caution

The sealing surface must not be cut, scratched or damaged. As the sealing surface is a machining surface, its damage will lead to leakage.

Notice of power system control module and electro-static discharge

Caution

Do not touch the connector pins or welding components on the circuit board to prevent electrostatic discharge from damaging the electronic control module on the vehicle.

Notice of sealant

Caution

Do not let the room temperature hardening sealant enter the tapped blind hole. If the room temperature hardening sealant enters the tapped blind hole, the fastener will produce hydraulic locking effect during tightening, which will cause damage to the fastener or other components and will also prevent the fastener from obtaining correct clamping force during tightening. Incorrect clamping forces can prevent components from being properly sealed, resulting in leaks. In this case, the fasteners cannot tighten correctly, which will loosen or separate the components, resulting in serious damage to the electric drive system.

Notice of the use of fault diagnostic apparatus

Caution

Before the vehicle is diagnosed, attention must be paid to the following situations, otherwise it will damage the control modules.

- Software version of the fault diagnostic apparatus and terminals must be up to date.
- The vehicle battery must be fully charged, and the battery voltage should be between 12~14v.
- Cable connection of fault diagnostic apparatus and terminals must be stable.
- When the control modules are programmed, the battery charger must not be connected to the battery.
- The battery must not be disconnected.

Notice of test probe**Caution**

Never insert test equipment probe (digital multimeter, etc.) into harness connectors or fuse box terminals. The diameter of the test probe will deform most terminals, and the deformed terminals will cause poor contact, resulting in system failure. Always use special tools to probe the terminals from the front, never use paper clips or other substitutes to probe the terminals.

Caution

When the special tools are used to test components, make sure that selected terminal test adapter matches the size of the connector terminal. The terminal test adapter cannot be selected by eyes, as some holes of the connector terminal are larger than the actual terminal. The large terminal test adapter will damage the terminal.

Notice of damage to window edges**Caution**

To avoid damage to the window due to the impact of the exposed edge, the window must be 1mm (0.025in) below the sheet metal surface.

Notice of power batteries**Caution**

To avoid damage to the power battery, please observe the following points:

- Do not park the vehicle in a high temperature environment of 45°C for more than 1 day. Place the vehicle in a cool environment in time.
- Do not park the vehicle in a low temperature environment of -20°C for more than 3 day. Place the vehicle in a warm environment in time.
- When the battery level is below 15%, the vehicle shall not be parked for more than 14 days, and the vehicle shall be charged in time.
- Do not use the power battery of the vehicle for other purposes.

Notice of power battery temperature control unit**Caution**

Ways to avoid power battery damage caused by too high or too low external ambient temperature go as follows:

- Do not park the vehicle in an environment with ambient temperature higher than 45°C for more than 1 day;
- The power battery heating device is only turned on when the charging cable is connected. Therefore, when the charging cable is not connected, do not park the vehicle in an environment where the ambient temperature is lower than -20°C for more than 3 days.

Notices for vehicle stopping or parking**Caution**

Park carefully in places with raised objects or fixed stoppers; otherwise the bumper and other parts of the vehicle may be damaged. Please stop the vehicle before the wheels touch these raised objects.

Please take the key with you when you leave the vehicle.

Notice of charging

Caution

Note: to prevent charging system failure, please pay attention to the following points:

- Please close the protective cover of the vehicle charging socket first, and then close the charging port cover;
- Avoid collision of the charging plug;
- Avoid squeezing the charging cable;
- Do not pull or twist the charging cable;
- Do not place the charging cable near the heater or other heat source.

Be sure to close the charging socket protective cover and charging port cover after charging.

Before starting the vehicle, make sure that the charging plug is removed from the charging port.

The vehicle charging cable has the anti-theft function. After the charging cable is connected, please press the locking button on the remote key to turn on the anti-theft function of the charging cable; if you want to unplug the charging plug, be sure to press the unlocking button on the remote control key first.

Notice of slow charging

Caution

It is recommended to use charging equipment that meets national standards, otherwise it may affect the normal charging of the power battery.

Notice of slow charging procedures

Caution

In order to increase the service life and ensure safety of the power battery, it is recommended to:

- Charge immediately after parking, so as to avoid running out of electricity.
- Charge at ambient temperature of 0-40 °C.
- When the ambient temperature is below zero, please stop the vehicle and charge immediately to shorten the charging time.

When the vehicle is to be left unused for a long time (more than 1 month), please ensure that the battery level is 50% - 60%, and disconnect the negative pole of the 12V lead-acid battery at the same time.

Notice of fast charging

Caution

Since the fast charging plug is heavy, please plug it and unplug it vertically as careful as possible to prevent damage to the vehicle or charging equipment.

During fast charging, if the quick charging plug button is mistakenly touched, the charging may stop. You need to remove the charging plug and charge again.

1.1.1.2 Safety Instructions for Electric Vehicle Repair

The electrical equipment on battery electric vehicle is divided into low-voltage electrical components and high-voltage electrical components. The low-voltage electrical components include: instruments, audio system, lamps, horns and blowers, etc.; and the high-voltage components include: electric drive system, integrated power controller, high and low voltage charging system, air conditioning compressor, PTC and so on.

Orange warning labels are attached to high-voltage components. Pay attention to the requirements on the warning labels. To avoid electric shock, do not touch high-voltage components, high-voltage cables (orange) and their connectors.

If the cables on the vehicle are exposed or damaged, do not touch them to prevent electric shock.

It is forbidden for non-professional maintenance personnel to dismantle, disassemble or modify the electrical equipment at will, otherwise the contact with high-voltage electricity will lead to serious consequences such as burns and even death by electric shock.

1.1.1.3 Safety Measures for Electric Vehicle Repair

Insulating protective articles

- Insulating protective clothing
- Insulating rubber shoes
- Safety goggles
- Insulating gloves

Maintenance personnel must wear insulation protective equipment before operation:

- Wear insulating protective clothing.
- Wear insulating rubber shoes.
- Wear safety goggles.

- Wear insulating gloves: choose the corresponding anti-high voltage electrical gloves or anti-battery electrolyte acid and alkaline gloves according to the working conditions.

Caution

Before use, the insulating protective articles must be checked to ensure that they are free of damage, holes and cracks, and that the internal and external surfaces are clean and dry. Operation with water is forbidden, so as to ensure safety.

Insulating tools

- Insulating rubber pad
- Insulating tools
- Power battery workbench

Use of insulating tools:

- Apply insulating rubber pads to the maintenance area.
- Maintenance personnel must use insulating tools when working on live parts.
- A professional workbench with insulating pads must be used when overhauling power batteries and electronic control components.

Caution

Before use, the insulating protective tools must be checked to ensure that they are free of damage, holes and cracks, and that the internal and external surfaces are clean and dry. In order to ensure safety, operation with water is forbidden.

Maintenance site

- High Voltage Warning Sign
- Carbon dioxide or ammonium phosphate extinguisher
- Cordon
- Grounding wire for special maintenance station

Requirements for maintenance site:

- Isolation measures shall be taken before maintenance work: use guardrails to isolate, and set up high-voltage warning signs to warn irrelevant personnel to stay away from the area and avoid accidents.
- Fire hydrants must be provided at designated locations of the maintenance site, and clear water must be used to extinguish the fire.
- Before repairing high-voltage equipment, connect the ground wire of the vehicle body to the grounding wire of the maintenance station special for electric vehicles.
- Install dedicated AC circuits and electrical outlets. If you don't use a dedicated line when charging an electric vehicle, it may affect the normal operation of other equipment on the line.

- Keep the working environment clean and well ventilated, and keep away from liquids and inflammables.

Maintenance safety

Caution

Safety precautions for maintenance operations:

- After disconnecting the DC bus, it is necessary to wait for more than 5 minutes until the components with internal capacitive elements such as the integrated power controller and the high and low voltage charging system are fully discharged.
- When repairing vehicles, a full-time monitoring personnel must be appointed, and the monitoring personnel and maintenance personnel must hold the nationally recognized "Certificates for Special Operations (Electrician)" and "Electrician Certificate at Primary Level or Above" (professional qualification certificate).
- The duty of the monitoring personnel is to supervise the whole process of maintenance:

Supervise whether the maintenance personnel, use of tools, wearing of protective articles, safety protection of spare parts, maintenance safety warning signs, etc. meet the requirements;

Be responsible for checking the safety maintenance operation procedures in the maintenance process. The monitoring personnel shall check according to the safety maintenance operation procedures, and shall instruct the operation according to the safety maintenance operation rules. The maintenance personnel shall inform the monitoring personnel after completing an operation, and the monitoring personnel shall mark the operation flow sheet.

- Untrained personnel are prohibited from overhauling the high-voltage part, and all personnel are prohibited from performing dangerous operations, so as to avoid safety accidents.

1.1.1.4 Safe Operation of Electric Vehicles

Overhaul the high-voltage system

- Before the vehicle is powered on, confirm whether there are still personnel performing high-voltage maintenance operations so as to avoid danger.
- When overhauling the high-voltage system, please disconnect the power supply in the power supply mode, disconnect the negative battery cable and the DC bus which shall be kept by a full-time monitoring personnel, and ensure that no one will install it during the maintenance process.

- When overhauling high-voltage wires, any exposed high-voltage parts that have been removed should be immediately wrapped with insulating tape for insulation.
- When installing high-voltage wires, the harness must be fixed according to the requirements of the body fixing hole.
- Do not touch the live part of the high-voltage wiring harness connector with your fingers to avoid electric shock. In addition, small metal tools or iron bars shall be prevented from touching the live part of the connectors.

Measurement with a multimeter

- Before overhauling the high-voltage system, a multimeter should be used to measure the high-voltage circuit of the whole vehicle to ensure that there is no electricity. The method is as follows: after disconnecting the DC bus for 5 minutes, measure the voltage between the power battery and the body to initially judge whether there is leakage. If the measured voltage is greater than or equal to 36V, stop the operation immediately and check and judge the leakage location.
- When using a multimeter to measure a high voltage, it is necessary to pay attention to selecting the correct range. The accuracy of the multimeter is not lower than 0.5, and the measuring range must be greater than or equal to 500V.
- When using a multimeter to measure high voltage, the principle of "one hand operation" shall be observed.
- The multimeter shall be equipped with an insulating alligator clip on one test lead line (the withstand voltage is required to be 3KV, and the overcurrent capacity is greater than 5A). When measuring, first clamp the alligator clip to one terminal of the circuit, and then connect the other probe to the terminal to be measured. Hold the test lead with only one hand during each measurement.
- When using a multimeter to measure a high voltage, it is strictly forbidden to touch the metal part of the test lead.

Vehicle disposal

- In case of abnormality, accident, fire and water intrusion:
- If the vehicle is involved in an accident, it is not allowed to start the vehicle again.
- If the vehicle catches fire, put out the fire immediately with plenty of clean water.
- When the vehicle is immersed in the water, you must wait until there is no bubbles and sizzling sound on the water surface. After the power is exhausted, wear insulating protective equipment before salvaging to prevent electric shock.

1.1.1.5 Overhaul the power battery

- In order to prevent personal injury caused by electrolyte leakage when overhauling the power battery, the maintenance personnel must wear gloves and protective glasses to prevent the electrolyte from corroding the skin and splashing into the eyes.
- Disconnecting the DC bus only cuts off the power supply from the power battery to the high-voltage electrical equipment. The power battery still has electricity. When the power battery needs to be repaired, the exposed high-

voltage components should be covered with insulating tape to avoid electric shock.

- When carrying the power battery to the workbench special for battery maintenance, the special hanger for the power battery shall be used. It is strictly forbidden to directly lift the power battery by hand.

1.2 Vehicle Inspection

1.2.1 Instructions and operations

1.2.1.1 Items to be checked while operating the vehicle

Horn operation

It is needed to press the horn occasionally to ensure that it operates normally and check the positions of all buttons.

Operation of brake system

When braking, it is needed to keep alert to the signs of the abnormal sound of the brake system, the increase of brake pedal travel or the repetitive brake running deviation. In addition, if the brake warning lamp is on or flashing, some part of the brake system may fail.

Operation of tires, vehicle and orientation

Be alert to steering wheel or seat vibration when driving at normal highway speeds, which indicates that a certain wheel may need to be balanced. In addition, running sideways on straight roads indicates that it may be necessary to adjust tire pressure or wheel alignment.

Operation of steering system

Be alert to the change of steering action. When the steering wheel is difficult to turn or the free travel is too large, or when there is abnormal noise when turning or parking, it needs to be checked.

Operation of lighting system

It is important to observe the beam-focusing of the headlamp light occasionally. If the beam-focusing of the headlamp light is not correct, it is needed to adjust it.

1.2.1.4 Items should be inspected at least twice a year

Brake master cylinder tank level

Check the fluid and keep it at the correct level, a low fluid level may indicate that the disc brake pads are worn and need repair. Check the vent hole on the reservoir cap to make sure there is no dirt and the airway is unobstructed.

Lubrication of doors and windows sealing strip

Use a clean rag to apply the sealing strip with silicone grease film.

Items should be inspected during each replacement

1. Reducer oil

1.2.1.2 Items to be checked during each filling

Check the coolant level and condition of the motor controller

Check the liquid level in the expansion tank assembly and add integrated power controller coolant if necessary. Check the motor controller coolant and replace the dirty integrated power controller coolant.

Check the windshield washer fluid level

Check the washer fluid level in the reservoir tank and add washer fluid if necessary.

1.2.1.3 Check the items at least once a month.

Tire and wheel and air pressure check

Check tires for abnormal wear or damage, check wheels for damage, check tire pressure when it is cold, and also check spare tire, keep the recommended pressure on the tire label.

Operation of the vehicle lamp

Check the operations of license plate lamp, headlights (including high and low beam), parking lamps, fog lamps, tail lights, brake lamps, turn signals, reversing lamps and warning lamps.

Oil and fluid leak check

After the vehicle has been parked for a period of time, regularly check whether there is water or other liquids on the ground under the vehicle. It is normal for air conditioning system to drip water after use. If leakage is found, immediately find the cause and eliminate the fault.

Check the fluid level and add oil if necessary. Refer to

Reducer Oil Level Check Procedure, Reducer Oil Filling and Replacement

2. Brake system inspection

Note: low brake fluid level may indicate that the disc brake pads are worn and need repair. Also, if the brake system warning lamp does not go out or turn on, the brake system may have faults. If the anti-lock brake system warning lamp does not go out or turn on, the anti-lock brake system may have faults. The check should be completed when the wheels are removed for transposition. Check whether the pipeline and hose connection is correct, and whether there is catching, leakage, crack or scratch. Check the disc brake pads for wear.

Check the surface condition of the brake disc and other brake parts, including brake wheel cylinder, parking brake, etc. Check the adjustment of the parking brake, and shorten the interval between brake checks if driving habits or driving conditions require frequent braking.

3. Inspection of suspension and front drive axle shield and seals

Check the front and rear suspension and steering system for damaged, loose or missing parts, and signs of wear or insufficient lubrication. Clean and check the drive axle shield and seals for damage, cracking or leakage. If necessary, replace the seals.

1.2.1.5 Items to be inspected at least once a year

Condition and operation of seat belt

Check the safety belt system, including braided belt, lock actuator, lock plate, retractor, guide ring and fixing device.

Lubricate and maintain body

Lubricate all door hinges, including the front motor compartment cover, fuel filler cap, trunk hinge and latch, glove box and console door, and any mechanical parts of folding seats.

Underbody cleaning

First, loosen the sediment accumulated in the closed area of the vehicle, and then clean the underbody. After winter, clean the underbody at least once a year. Cleaning the underbody can remove corrosive substances used to remove ice, snow and dust.

Warning

Underbody cleaning shall comply with the safety precautions for hybrid vehicle maintenance, so as to avoid electric shock injury.

Electric drive system cooling system

Warning

When working around a running electric drive system, avoid contact with moving components and hot surfaces to prevent personal injury. Inspect the electric drive system coolant. If the electric drive system coolant is too dirty or rusty, the coolant should be drained, and the electric drive system cooling system should be flushed and refilled with new electric drive system coolant. Maintain proper coolant concentration in electric drive system to ensure correct anti-freezing, anti-boiling, anti-corrosion performance as well as appropriate operating temperature of the drive motor. Check hoses and replace cracked, expanded or aged hoses. It is needed to implement pressure test for the cooling system and to ensure the system is in normal operation.

1.3 Lift the vehicle

1.3.1 Instructions and operations

1.3.1.1 Lifting and jacking of vehicle

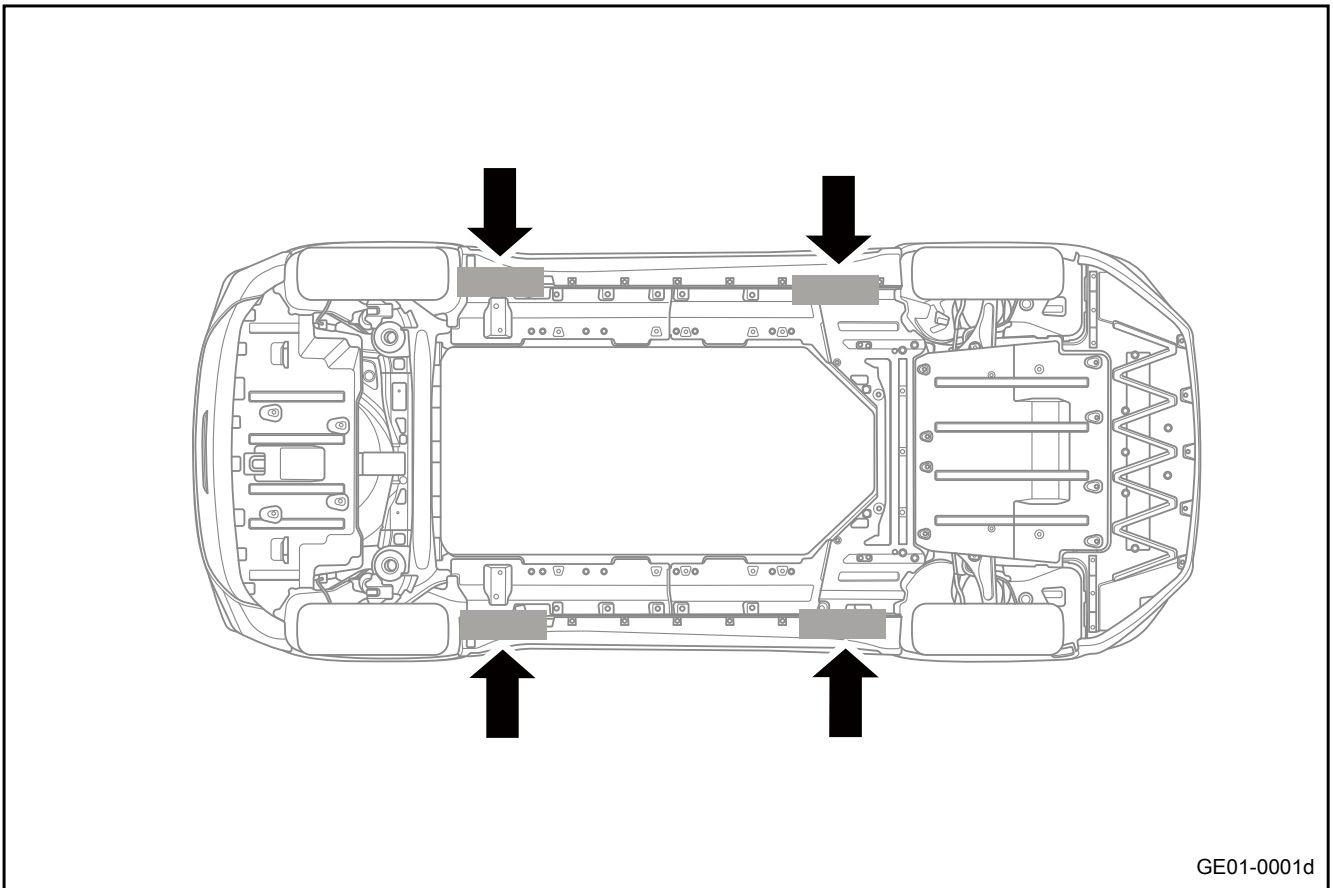
Warning

Refer to “Warnings about vehicle lifting” in “Warnings and notices”. To avoid personal injury, use the jack pad when performing any operation on or under a vehicle supported by a jack only.

Caution

When you lift the vehicle on the frame side rails or other designated lifting points, make sure that the jack pads do not touch the brake hose or high-voltage wires. If the above-mentioned parts are touched, it will cause damage to the vehicle or deterioration of vehicle performance. Before starting any lifting procedures, make sure that the vehicle is on a clean, hard, and level surface. Ensure that all lifting devices meet the weight standard and are in good working status. Ensure that all vehicle loads are evenly distributed and stationary. If the vehicle is supported only from the frame rails, make sure that the lifting device does not exert excessive force on the frame rails or damage the frame rails.

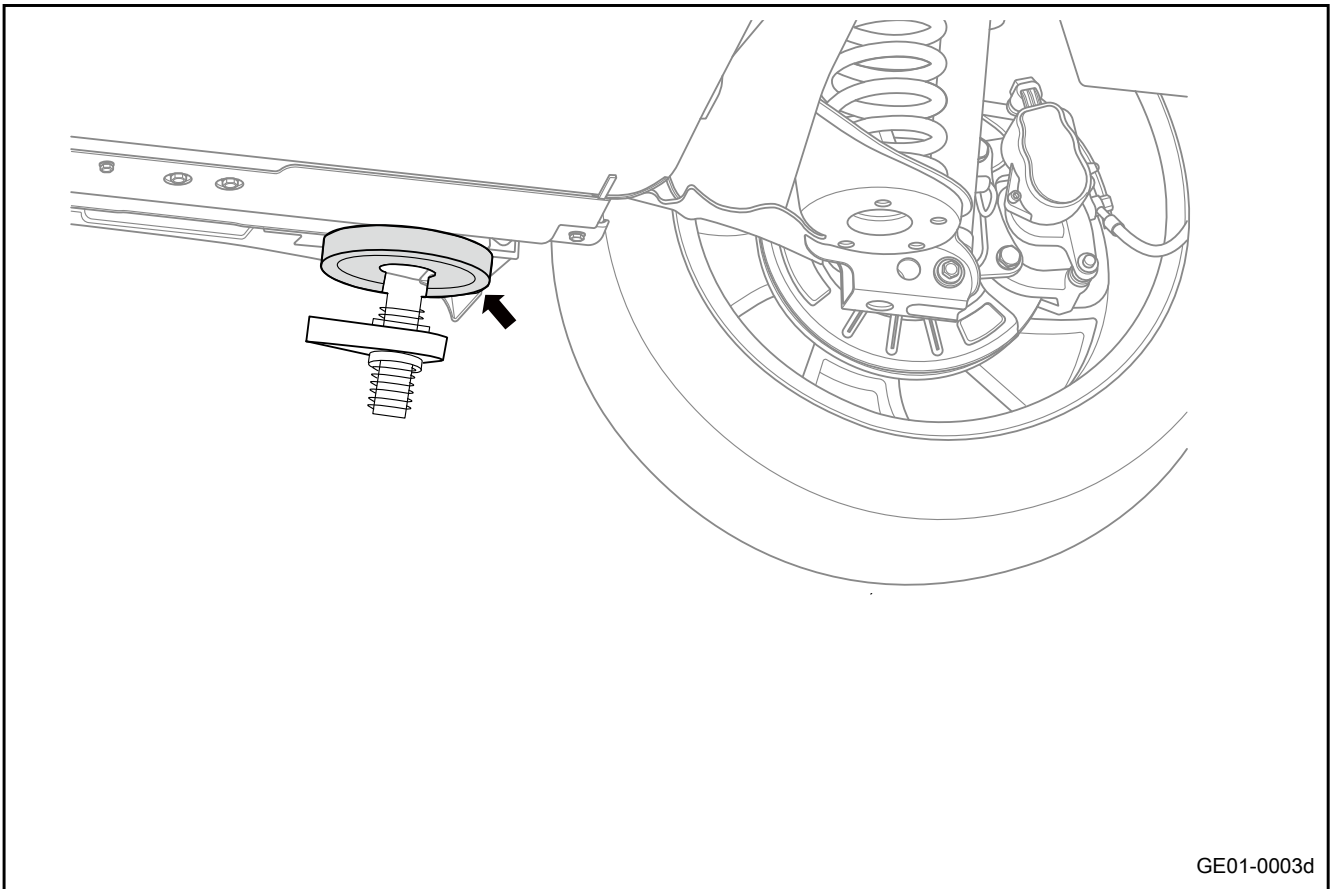
Vehicle lifting point



GE01-0001d

Vehicle Lifting - Frame Contact Lifting Machine

Rear end lifting machine cushion block



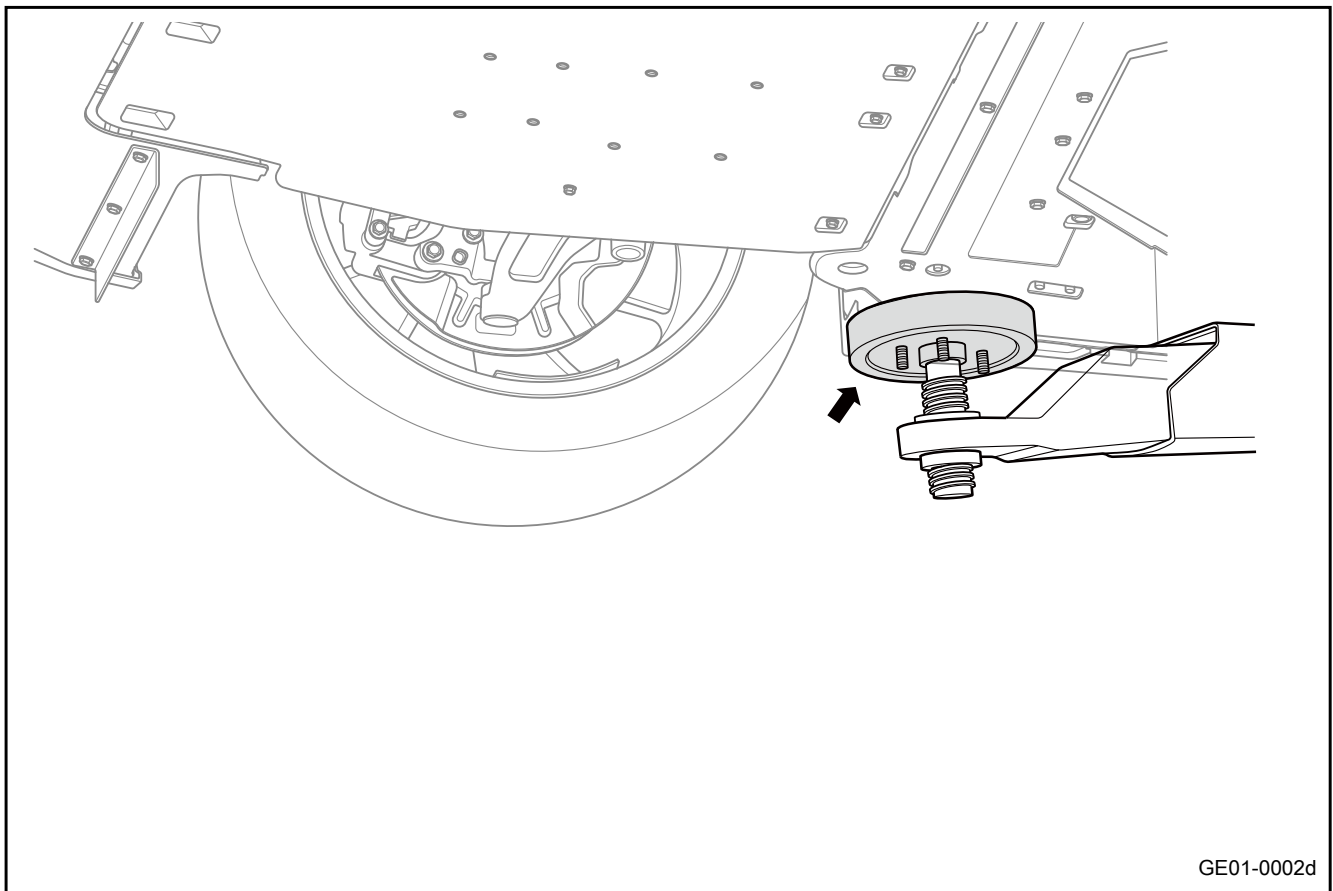
Caution

The rear end lifting machine cushion block should not touch the rocker panel to the outside of the frame rail or the floor.

Place the rear end cushion block for lifting machine in the following position:

- Below the junction between the rear frame rails and the side frame rails.

Front end lifting machine cushion block

**Caution**

The front end lifting machine cushion block should not touch the rocker panel to the outside of the frame rail or the floor.

Place the front end lifting machine cushion block in the following position:

- Below the junction between the front frame rails and the side frame rails.

1.4 Maintenance and service

1.4.1 Specification

1.4.1.1 Oil and fluid capacity and specification (Type I)

Application	Oil and fluid specification	Oil and fluid capacity
Reducer gear oil(by NIDEC CORPORATION)	ATF MOTF TS-1	2.6±0.1L
Reducer gear oil (by GLB Intelligent Power Technologies Company)	PETRO-CANADA	1.2L
Brake Fluid	Comply with DOT4	0.75L
Motor coolant (non-heat pump system)	Geely-approved ethylene glycol-type coolant (antifreeze), with freezing point $\leq -40^{\circ}\text{C}$	3.1L
Coolant for warm air system and power battery system (non-heat pump system)	Geely-approved ethylene glycol-type coolant (antifreeze), with freezing point $\leq -40^{\circ}\text{C}$	6.2L
Coolant for motor and power battery system (indirect heat pump system)	Geely-approved ethylene glycol-type coolant (antifreeze), with freezing point $\leq -40^{\circ}\text{C}$	7.0L
Coolant for warm air system (indirect heat pump system)	Geely-approved ethylene glycol-type coolant (antifreeze), with freezing point $\leq -40^{\circ}\text{C}$	1.9L
Washer fluid	Water of hardness lower than 205g/1000kg or water solution with appropriate additive.	3.8L
A/C refrigerant (non-heat pump system)	R134a	550±20g
A/C refrigerant (heat pump system)	R134a	800±20g

1.4.1.2 Oil and fluid capacity and specification (Type II)

Application	Oil and fluid specification	Oil and fluid capacity
Reducer gear oil(by NIDEC CORPORATION)	ATF MOTF TS-1	2.6±0.1L
Reducer gear oil(by GLB Intelligent Power Technologies Company)	PETRO-CANADA	1.2L
Brake Fluid	Comply with DOT4	0.75L
Coolant for warm air system (heat pump system)	coolant-40°C by LOPAL	2.4L
Coolant for warm air and battery system (non-heat pump system)	coolant-40°C by LOPAL	2.4L
Motor and power battery coolant (heat pump system)	coolant-40°C by LOPAL	7.0L

Application	Oil and fluid specification	Oil and fluid capacity
Motor and power battery coolant (non-heat pump system)	coolant-40°C by LOPAL	7.0L
Washer fluid	Water of hardness lower than 205g/1000kg or water solution with appropriate additive.	3.8L
A/C refrigerant (non-heat pump system)	R134a	550±20g
A/C refrigerant (heat pump system)	R134a	800±20g

1.4.1.3 Tire rotation descriptions

Caution

If there is obvious uneven tire wear, the fault cause of the wear should be eliminated. It is recommended to check the balance of tires and wheel assemblies if the tire is rotated.

1. When performing brake inspections on tires according to the maintenance schedule described in the User’s Manual it is recommended that the tires be cross-rotated; or when the tread depth difference between the front and rear tires reaches 1.5 mm (0.08 in), the tires should also be cross rotated.
2. Lift and support the vehicle. Refer to Lifting and Jacking of Vehicle.

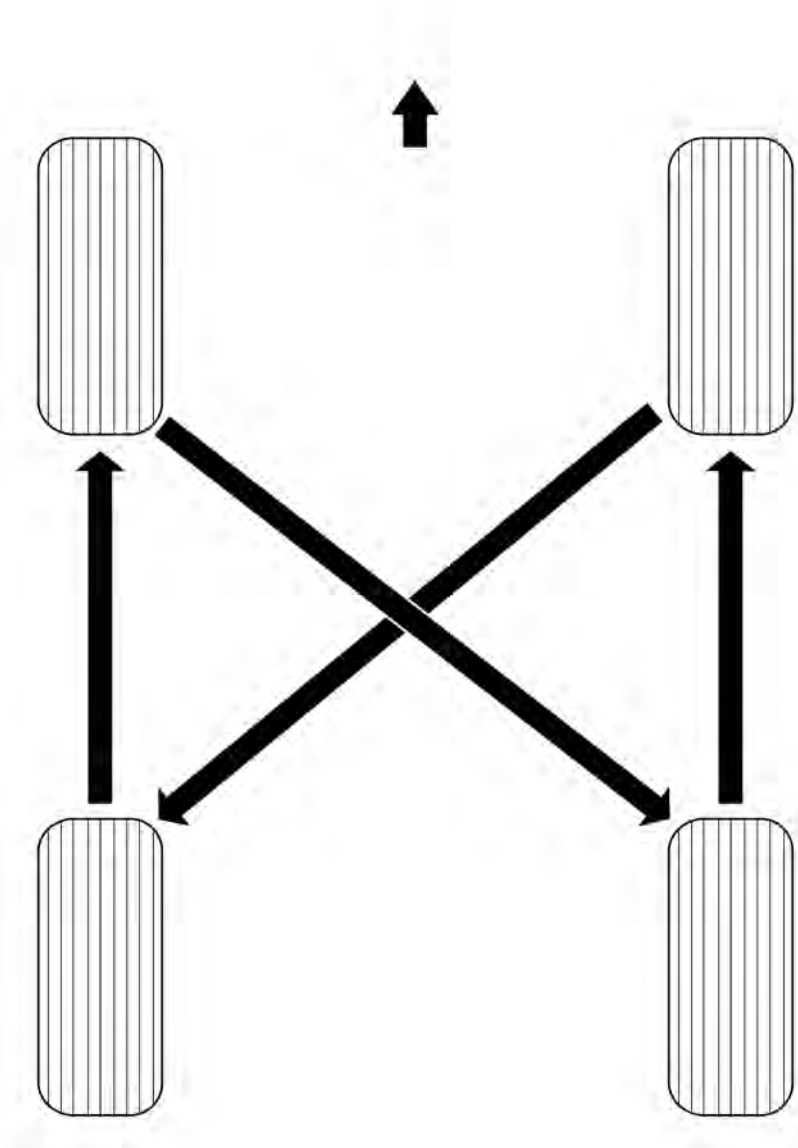
Caution

Record the original position of each tire and wheel assembly relative to the vehicle.

3. Remove the tire and wheel assembly. Refer to [Wheel Replacement](#)
4. As shown in the following figure, carry out the cross rotation of "with rotation direction" for the tires with rotation direction marks; for tires with no rotation direction mark, both the cross rotation of "with rotation direction" can be performed, and the cross rotation of "without rotation direction" can be performed.

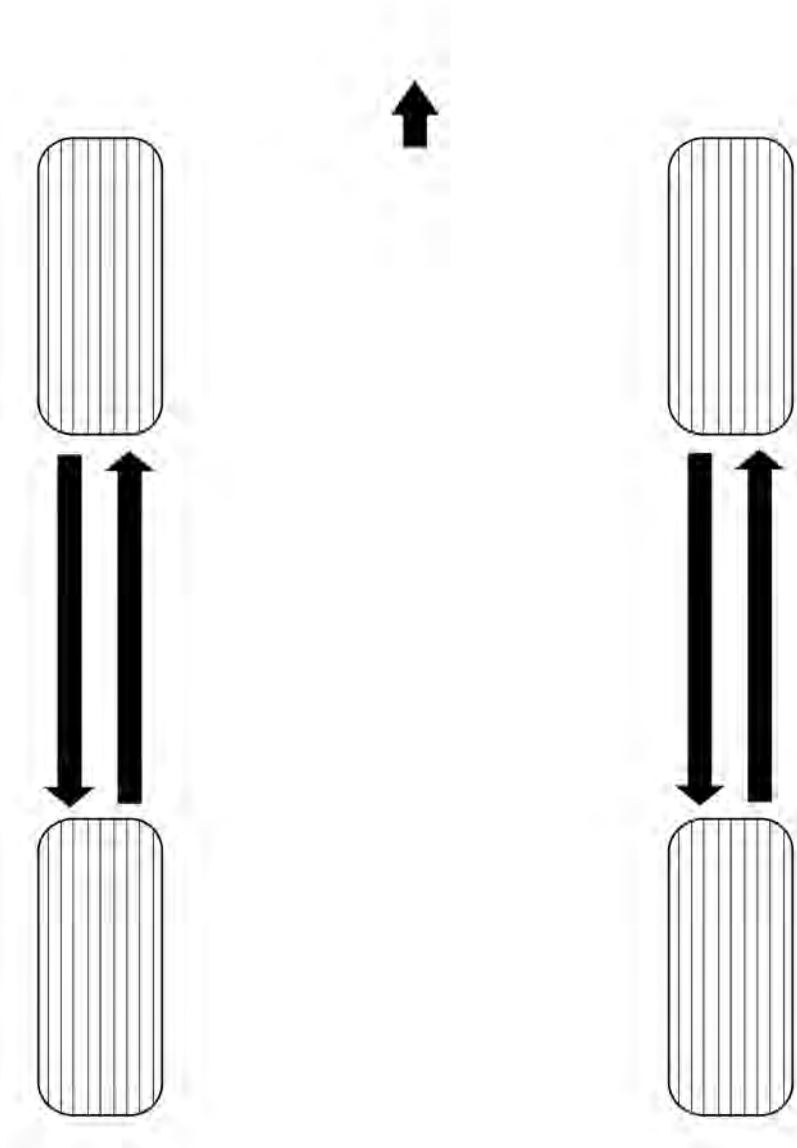
Caution

Perform rotation of “nondirectional” tires as shown below.



Caution

Perform rotation of “directional” tires as shown below.



5. Install the tire and wheel assembly. Refer to [Wheel Replacement](#)
6. Remove safety stands.
7. Lower the vehicle.
8. Check and adjust tire inflation pressure.

1.5 Maintenance information system

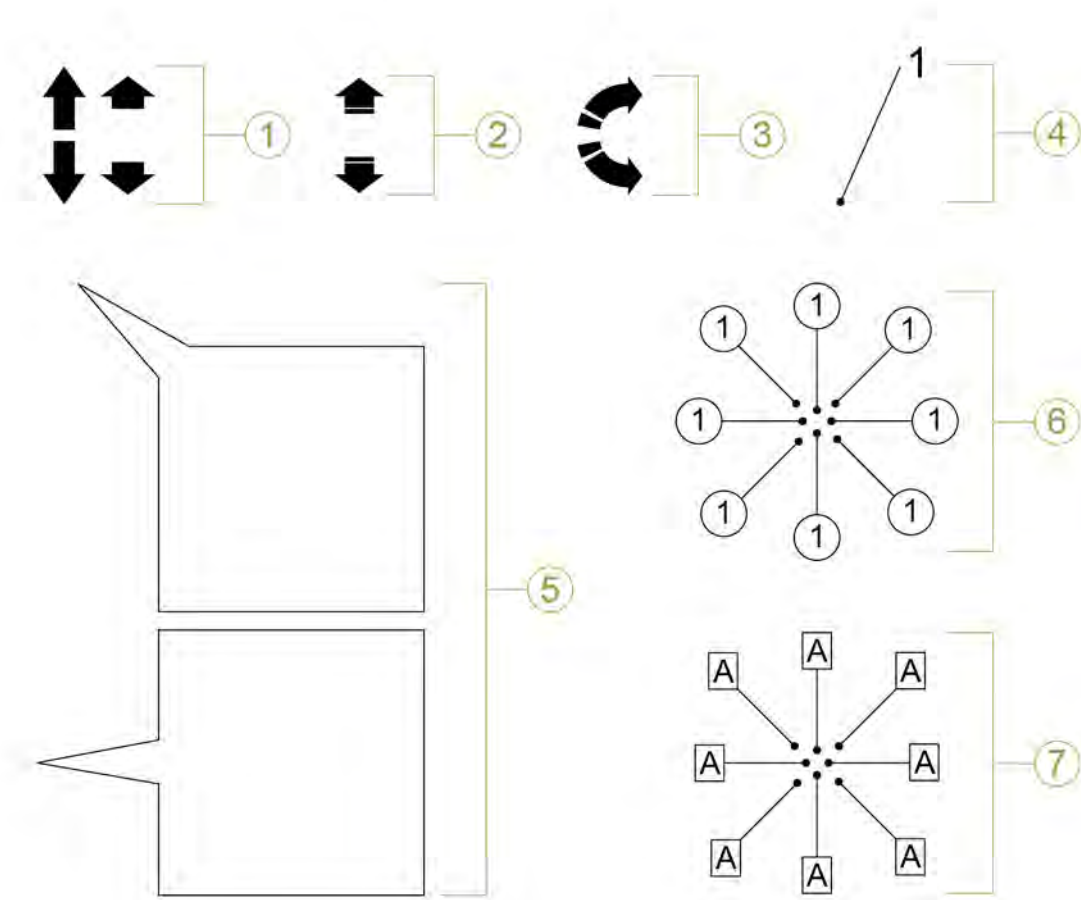
1.5.1 Instructions and operations

1.5.1.1 Abbreviations used in the manual

Abbreviation in English	Chinese description
ABS	Anti-lock brake control system
AC	Air conditioning system
ACU	Airbag control unit
ACM	Auxiliary control module
AV	Audio and video system
AVAS	Acoustic Vehicle Alerting System
BC	Body check
BCS	Body control system
BCM	Body control module
BD	Body structure
BMS	Battery management system
BR	Brake system
BRC	Brake control system
CAN	Controller area network
CCS	Cruise control system
CO	Cooling system
DC-DC	High voltage converter
DI	Driver's information system
DLC	Data link control
EBD	Electronic braking-force distribution
ED	Electric circuit diagram
ESC	Electronic stability control system
EPB	Electrical park brake system
EPS	Electric power steering system
EI	Exterior/interior trim
FFS	Front axle and rear suspension
APCU	Anti-pinch control unit
GI	General information
GSM	Gear shifter module
GW	Glass, window system and rearview mirrors
HVAC	Heating, Ventilation and Air Conditioning
HECU	Hydraulic electronic control unit
IP (Cluster)/ICU	Instrument cluster
IPU	Integrated power unit
IHU	Information&entertainment unit

Abbreviation in English	Chinese description
LIN	Local interconnect network
LH, RH	Left-hand, right-hand
LT	Lighting system
MA	Maintenance
P/S	Power Steering
PAID	Parking distance control
PCU	P-lock control unit
PEPS	Passive entry passive start
PG	Power, grounding, circuit components
PS	Power steering system
PTC	Positive Temperature Coefficient
TCU	Transmission Control Unit
TEM	Telemonitoring
RBS	Regenerative braking system
RL	Front right glass regulator anti-pinch module
RR	Rear right glass regulator anti-pinch module
RRS	Rear axle and rear suspension
SAE	Society of Automotive Engineers
SAS	Steering-angle sensor
SB	Seatbelt
SC	Start and charging system
SE	Seat
SOC	State of charge
SRS	Supplemental restraint system
SSB	Start stop button
STC	Steering torque control
VCU	Vehicle control unit
VSS	Vehicle speed sensor
WP	Water pump controller
WT	Wheels
WW	Wipers, cleaners and horns

1.5.1.2 Description of Arrows and Symbols Used in the Manual



Legend

- | | | | |
|----|--------------------------------------|----|--|
| 1. | Indication arrow | 5. | Enlarged area |
| 2. | Movement direction of the arrow | 6. | Caution of fastener tightening disassembly and assembly sequence |
| 3. | Rotation direction mark of the arrow | 7. | Caution of disassembly and assembly sequence |
| 4. | Part number mark | | |

1.6 Health and safety

1.6.1 Instructions and operations

1.6.1.1 Description

Many operations related to vehicle maintenance and repair will affect personal safety or bring health problems. This section lists some of the relevant hazardous operations and materials and equipment, as well as safety rules to avoid such hazards.

This section does not include all matters related to health and safety, so all operations, procedures and material handling should be conditional on safety and health. Before using any products, consult the product instruction manual provided by the manufacturer or the supplier.

1.6.1.2 Acid and alkali

Refer to [Battery Acid](#)

Such as sodium carbonate and vitriol that are corrosive.

Used for cleaning the battery and other materials.

Irritant or corrosive to eyes, skin, olfactory and throat, which will burn the human body and damage common protective clothing.

Avoid splash on eyes, skins, and clothing. Wear appropriate protection suits, gloves and goggles to avoid the inhalation of spray.

Be sure to have flushing equipment nearby, eye irrigation bottles, lotus seeds and soap, etc., so that in case of splash events, you can get timely assistance at any time.

Place a mark indicating eye danger in a prominent position.

1.6.1.3 Airbag

Refer to [Fire](#)

For highly flammable and explosive materials - observe the smoking ban.

Airbags are installed in steering wheel, front passenger seat, passenger front instrument panel and A-pillar, B-pillar and C-pillar as assist safety system.

The airbag inflator contains a high-energy propellant that produces extremely high temperature gas (2500°C/4532°F) when being ignited.

This propellant is sealed in enclosed unit. When the airbag works, the gas will fill whole airbag. The airbag should not be deployed during maintenance, because it will cause propellant contact and danger. If gas generator is found broken, one should wear protective clothing which can cover whole body when dealing with spilled material.

After the airbags are normally deployed, safety goggles and gloves should be worn during the maintenance process.

Deployed airbag should be disposed in accordance with local relevant laws and regulations.

After direct contact with gas derivatives:

- Flush thoroughly with clean water at the contact point
- Seek medical care depending on the situation

Airbags - Operations that should be performed

For your safety, please try to wear protective articles before performing the following operations; when disassembling the airbag, be sure to turn the start-and-stop switch to the "OFF" state, and disconnect the battery negative cable, and wait for 90s before disassembling.

- Store the airbag unit in vertical position.
- Keep the airbag unit dry in storage.
- Notice not to touch electrode with hands. Keep your body away from airbag as far as possible when carrying airbag unit.
- Place the protecting cover upwards when airbag unit is placed.
- Check carefully whether the airbag unit is damaged.
- Disconnect the battery negative cable first when connecting airbag. Wait for 60s, and stand on the side of airbag unit.
- Accurate correction and maintenance of all equipment.
- After disposing deployed airbag, make sure to wash hands.

Airbags - Operations that should be avoided

- Flammable materials and the unit or gas generator cannot be stored together.
- Airbag assembly should not be immersed in water or contact other fluid.
- Do not store the gas generator at temperatures above 80°C/ 176°F.
- The unit should not be stored upside down.
- Do not try to open the shell of gas generator.
- The gas generator should be away from open flame or sources of heat.
- Do not place other items on the unit cover.
- Damaged unit should not be used.
- Do not touch the airbag assembly or gas generator within 10 minutes after it is deployed.
- Do not use any electric probe on the circuit.

1.6.1.4 A/C refrigerant

Refer to Chemicals

Skin contact can cause frostbite.

It is needed to follow the manufacturer's descriptions, avoid naked lights and wear proper goggles and protective gloves.

If skin or eyes come into contact with refrigerant, it is necessary to wash the exposed area with water immediately. The eyes shall be flushed with appropriate flush solution and shall not be rubbed. Medical assistance shall be sought according to the specific situation.

A/C Refrigerant - Operations that should be avoided

- Do not store refrigerants in the places with sunlight or heat sources.
- When filling, it is improper to keep the refrigerant bottles upright and keep their valves downward.
- It is forbidden to expose the refrigerant bottle to frost and snow.
- Do not drop the refrigerant bottle.
- Do not discharge the refrigerant directly into the atmosphere under any circumstances.
- Do not mix refrigerants such as R12 (dichlorodifluoromethane) and R134a (tetrafluoroethane).

1.6.1.5 Adhesive and sealant

Notice for using adhesive and sealant

Before using the adhesive/sealant, be sure to clean the surface of the glued part and wipe it with a special cleaning agent, so as not to affect the bonding effect. Do not let the room temperature curing sealant enter the tapped blind hole. If the room temperature curing sealant enters the tapped blind hole, the fastener will produce hydraulic locking effect during tightening, which will cause damage to the fastener or other components and will also prevent the fastener from obtaining correct clamping force during tightening. In this case, the fasteners cannot tighten correctly, which will loosen or separate the components, resulting in serious damage to the electric drive system.

It is needed to follow the manufacturer's descriptions, avoid naked lights and wear proper goggles and protective gloves.

If skin or eyes come into contact with refrigerant, it is necessary to wash the exposed area with water immediately. The eyes shall be flushed with appropriate flush solution and shall not be rubbed. Medical assistance shall be sought according to the specific situation.

Health and safety

The materials used in adhesives/sealants contain harmful substances, and long-term exposure to them will cause acute and chronic poisoning, occupational diseases, skin diseases and other diseases. The ventilation device is used to maintain the ventilation of the workshop when applying glues; protective gloves, face mask, protective clothing, etc. should be worn during operation; hands should be washed carefully and the workshop should be clean, tidy and sanitary after working.

- Waste glues and wastes polluted by the solvent should be promptly cleaned up, and not be accumulated for a long time.
- Products should normally be kept in non-smoking areas. When used, they must keep clean and construction is carried out with applicators or containers as far as possible.

Maintenance of adhesive and sealant

- In the event of a fault or accident, the vehicle body will be deformed, the steel plate will crack, the solder joints will fall off, and sometimes the electric drive system, chassis and other assembly parts will be damaged locally, resulting in the falling off and destruction of some adhesive/sealant products. In the process of vehicle maintenance, it is necessary to select adhesives with the same performance according to the material and functional requirements of the components. The following is a list of adhesives/sealants that can be used during vehicle maintenance.

Vehicle body repair

If the body interior trim and steel plates distort or crack and the adhesive on the body get adrift or cracked, the parts with adhesive should be repaired in the process of maintenance.

- First, use tools to remove the adhesive on the surface of the vehicle body, and the remaining adhesive can be wiped clean with alcohol;
- Wipe the adhesive parts with special cleaners to avoid residual impurities such as remaining adhesive on the sizing surface;
- Then apply the repair adhesive to the original sizing parts to achieve the adhesive and sealing effect.

Products	Base materials	Application	Recommended model
Body sealant	Single unit polyurethane	Bonding of vehicle body skin, interior and exterior trim, body structure and other components. The sealant should have strong cohesion and have good adhesion with metals and various paint surfaces.	TONSAN: 1922, 1923
Seam sealant	One-component polyurethane	Room temperature curing adhesive, used for sealing the welding seams in the vehicle body, brushed by hand with a brush; room temperature curing adhesive, used for fine sealing of the trunk and door folds, applied by wire coating with a special glue gun.	China Auto Parts and Accessories Corporation: C8802
Anti-collision primer	Rubber and resin	Room temperature curing anti-collision adhesive for chassis protection, forms a permanent anti-aging elastic corrosion-resistant protective coating on the underbody and wheel arches. Such products can replace PVC coating and have such excellent functions as rust prevention, sound insulation, stone strike prevention, etc.	China Auto Parts and Accessories Corporation: C312DW

Products	Base materials	Application	Recommended model
Windshield glue	Single unit polyurethane	Room temperature curing polyurethane adhesive is used for direct bonding and sealing of vehicle window glass. The adhesive has good bonding performance, reacts with moisture in the air, and has excellent properties such as high strength, aging resistance, vibration fatigue resistance, low temperature resistance and no corrosion after curing.	TONSAN: 1956, 1924
Cleaner	-	Clean all surfaces in contact with primer and adhesive.	-
Pressure-sensitive adhesive tape	Acrylic acid tape	It is used for bonding rubbing strips, nameplates, guard plates, fenders, door edge protection, various decorative strips of the body, etc. The tape has excellent performance of weather resistance and durability.	3M 4229P, 4215, 4221L
Heat-sensitive adhesive tape	Acrylic acid tape	It is mainly used for bonding rubber sealing strip system of automobiles. This kind of tape should have strong adhesion, avoid the gap and corrosion caused by poor bonding, and should have excellent sealing performance.	3M, 4237P
Tape glue	-	According to the material of bonding surface, choose different primer. The bonding surface must be clean. After it is completely dry, use a brush to apply the primer evenly on the surface to be adhered. After drying, paste the tape.	M C-100, K-500\520, N-200

Component maintenance

After some interior parts, reducers and other parts are damaged, they need to be repaired by bonding and sealing.

When sealant is applied, the adhesive surface should be cleaned to avoid burrs and cracks affecting the adhesive effect.

Glue for component maintenance

Name	Application	Recommended model
Silicone rubber flat sealant	It is used for plane sealing of large clearance and flexible connectors, such as reducer box, flange, bottom shell and end cover joint surface. Before applying the sealant, remove adhesive residue on the sealing surface. After cleaning and drying, apply a sealing line with appropriate diameter on the sealing surface (or washer). After applying sealant, immediately align and close the parts to avoid wrong movement, tighten the bolt, wipe out the extruded excess sealant, or remove it with a blade after curing. This sealant contains no solvent and can be cured at room temperature. It does not corrode the parts and can withstand impact, medium and high temperature.	TONSAN: 1596, 1598, 5060b
Anaerobic thread locking sealant	For the fastening and locking of bolts, nuts, screws and other components, the mesh should be cleaned when they are applied. After drying, the glue can be applied to the mesh. After cured at room temperature, it has good impact resistance, vibration resistance, no leakage, corrosion resistance and other properties.	Loctite204, TONSAN: 1510
Anaerobic sealant	It is used for the sealing and bolt locking of flat components with small clearance whose curing needs to be isolated from the air. It has water resistance, oil resistance, corrosion resistance and other properties.	Loctite204, TONSAN: 1510

Other maintenance materials

Name	Application	Material No.
Locking fluid	It is used to lock the fastening thread with the maximum size of M6, such as the handle of door window regulator.	TONSAN: 1596, 1598
Rust inhibitor	It is a rust inhibitor based on the rubber. It is used for sound insulation and rust-proof treatment of automobile chassis, with the effect of anti-corrosion and sound insulation	Loctite204, TONSAN: 1510

Construction cautions

- The purpose of the adhesive/sealant is to prevent water and dust from entering the vehicle, and it also acts as a corrosion inhibitor. The original sealing joints are obvious and should be resealed if they are damaged. When sealing open joints with adhesive/sealant, high consistency filler shall be selected. Follow the descriptions for the selected materials.
- When spraying adhesive/sealant materials, precautions must be taken to avoid spraying into the openings of components (such as door locks, window lifting grooves, window regulators and seat belt retractors) and any moving and rotating components. After applying adhesive/sealant, make sure all bleed holes are open.

- During operations, special protective glasses and gloves should be worn to prevent injury.
- When the vehicle leaves the factory, the body metal plates have been painted. After repair and/or replacement of parts, all exposed metal surfaces must be treated with an anti-rust primer before sealant can be applied.

1.6.1.6 Coolant

Refer to [Fire](#)

Such as isopropanol, ethyleneglycol, glycol and methyl alcohol.

Highly flammable combustibles.

Applicable to vehicle motor coolant circulation system.

Motor coolant (ethylene glycol) may generate vapors when heated to a high temperature, try to avoid breathing these vapors.

After direct contact with motor coolant, the amount of motor coolant absorbed directly through the skin can reach a toxic or harmful dose. If you swallow the motor coolant by mistake, it may be life-threatening. You should be immediately send to the hospital for medical assistance.

These products should never be used with ordinary foods or in connection with drinking water supply systems.

1.6.1.7 Battery acid fluid

Refer to [Acid and Alkali](#).

The gas released during charging is explosive. Never operate with an open flame near a battery being charged or a battery that has recently been charged.

Must keep proper ventilation.

1.6.1.8 Brake fluid

Refer to [Fire](#)

If splashing on the skin and eyes, it will cause slight irritation. Measures should be taken to avoid the brake fluid directly contacting the skin and eyes. The risk of inhaling brake fluid vapor at normal temperature is not high, since its vapor pressure is extremely low.

1.6.1.9 Chemical materials

Chemicals such as solvents, sealants, adhesives, coatings, resin foams, battery acid, electric drive system coolants, brake fluids, oils and greases should be handled, stored and handled with extreme care. They may be toxic, harmful, erosive, irritant, or highly combustible and with high dangerous odor and dust.

Long term overexposure to the chemical environment may bring immediate or chronic, transient or permanent, cumulative, superficial, life-threatening consequences or may affect life.

Chemical materials - Operations that should be performed

- Carefully read and follow the warnings and notices on the raw material container and any accompanying leaflet, poster, and other instructions. The health and safety data form of raw materials can be obtained from the manufacturer.
- After being exposed to chemical materials, remove them from your skin and clothes immediately, and change heavily immersed clothing and wash it thoroughly.

- Strictly follow instructions and wear protective clothing to avoid direct contact of the materials with the skin and eyes.
- In case of dealing with chemical materials, clean before resting, eating, smoking, or using toilet facilities.
- Keep the tidiness and orderliness of the working area, and do not spill the chemical materials.

Chemical materials - Operations that should be avoided

- Unless specified by the manufacturer, chemical materials cannot be mixed. Some chemical substances will form other toxic or harmful chemical substances and release other toxic and harmful gases during the mixture and cause an explosion or other accidents.
- Spraying chemical materials in an enclosed environment is not allowed.
- Unless specified by the Manufacturer, chemical materials cannot be heated, because some chemical materials are highly combustible and others may release toxic and harmful gases.
- Do not keep the chemical material container open. Released gases may accumulate to be toxic, harmful, or explosive. Some gases are heavier than the air and can be accumulated in an enclosed space.
- Putting chemical materials in containers without labeling is not allowable.
- Cleaning hands or clothing with chemical materials is not allowable. Chemical medicines, especially solvents and fuels, will dry out the skin and may cause allergies, scytitis, or the direct absorption of toxic and harmful substances, influencing the health of the body.
- Do not store other chemical materials in an empty container arbitrarily unless the container is cleaned under supervision.
- Do not sniff or smell chemical materials. Brief exposure to gases with high concentrations may still cause poisoning or injuries.

1.6.1.10 Dust

Powder, dust, and dirt may be irritating, harmful, or poisonous. Avoid inhaling powdery chemicals or dust raised by dry friction operation. If ventilation is insufficient, it's required to wear a breathing mask and protective device to prevent inhalation of dust.

Fine dust of combustible material may have the risk of explosion. Avoid explosion and combustion source.

1.6.1.11 Electric shock

The electrical equipment on battery electric vehicle is divided into low-voltage electrical components and high-voltage electrical components. The low-voltage electrical components include: instruments, audio system, lamps, horns and blowers, etc.; and the high-voltage components include: electric drive system, driving motor controller, high-voltage

battery pack, OBC-DCDC-PDU high and low voltage charging system, air conditioning compressor, PTC and so on.

Orange warning labels are attached to high-voltage components. Pay attention to the requirements on the warning labels. To avoid electric shock, do not touch high-voltage components, high-voltage cables (orange) and their connectors.

If the cables on the vehicle are exposed or damaged, do not touch them to prevent electric shock.

It is forbidden for non-professional maintenance personnel to dismantle, disassemble or modify the electrical equipment at will, otherwise the contact with high-voltage electricity will lead to serious consequences such as burns and even death by electric shock.

Incorrect use of electrical equipment without following instructions or abuse of equipment in good condition may cause electric shocks.

Be sure to maintain the electrical equipment within the specified time and test it frequently. Faulty equipment should be marked and it'd better to move it outside the working area.

Do not wear, kink, cut, crack or otherwise damage wires, cables, plugs and sockets, and do not make electrical equipment and wires contact with water.

Ensure that electrical equipment is protected by correct fuses.

Misuse of electrical equipment is prohibited, and equipment with any hidden trouble must not be used, otherwise the result may affect personal safety.

The cables of mobile electrical equipment shall be guaranteed not to be clamped and damaged.

Basic first aid training must be carried out for specialized electrical appliance operators.

In the event of an electric shock:

Turn off the power before contacting the victim.

If the power supply cannot be turned off, the victim's power supply should be removed with dry insulator material.

Those who have received special first aid training should immediately carry out on-site first aid.

Request medical assistance.

1.6.1.12 Fiber isolation

Refer to [Dust](#)

Used to isolate noise and sound.

The fibrous nature of its surface and sharp edges can cause skin allergies.

1.6.1.13 Fire hazard

Many materials related to vehicle maintenance are highly flammable. Many materials will produce poisonous and harmful gases after burning.

Please make certain to follow the fire control safety standards in storing and disposing flammable materials or solvents, especially in places near to electrical equipment and where a welding operation is taking place.

Before using electrical and welding equipment, no potentials of the fire must be confirmed firstly.

When welding or using the heating equipment, a suitable fire extinguisher should be available around the work area.

1.6.1.14 Emergency

It should not only comply with the law, but also have professional first aid coaching personnel in the working place.

If it is splashed into eyes, rinse with water for at least 10 minutes.

If the skin is contaminated, wash the contaminated area with soap and water.

If suffered from frostbite, soak the frostbitten area in ice water or cold water.

The personal inhaling toxic gases should be immediately moved to the area with fresh air, if adverse reactions continue to occur, the injured personal should immediately be sent to a hospital for medical assistance.

In case of accidental ingestion of liquid, inform the physician of the information on the container or coil label, and do not blindly induce vomiting unless instructed to do so by the coil label.

1.6.1.15 Foam - Polyurethane

Refer to [Fire](#)

The cured foam is used as a buffer pad between the seat and decoration.

Manufacturer instructions are followed.

For persons with problems of chronic respiratory diseases, asthma, and bronchus or with hereditary allergy, they should not handle or be close non-cured materials.

Spare parts, vapor, or spray of non-cured materials will cause direct stimulus and anaphylactic reactions that may be toxic and harmful.

Do not inhale vapor or spray. Such materials must be used under the condition of good ventilation and that breathing is protected. It is not allowable to remove the mask immediately after spraying, and it can be removed until the complete dissipation of vapor and spray.

The combustion of non-cured components and cured foam will produce poisonous and harmful gases. During the period of foam operation, unless vapor and spray have been completely cleared out, smoking, open fire, and electric equipment are prohibited. The thermal cutting for any foam materials or special foam materials should be operated in a well-ventilated environment.

1.6.1.16 General workshop tools and equipment

Always keep good working condition of all tools and equipment, and right operations during use, which are all significant.

Never use a tool or device for a purpose contrary to its intended function. Do not make equipment such as crane, jack, axle, chassis bracket and sling bear the load exceeding the maximum limit it can bear. Damage caused by overload does not always appear immediately, and it may cause serious accidents in the next use.

Do not use tools or equipment that have been damaged or in poor working conditions, especially some high-speed equipment, such as grinding wheels. Damaged grinding wheel can shatter without warning and cause serious damage.

At the time of using grinding wheel, chisel or sandblasting equipment, appropriate eye protection equipment should be worn.

When operators use sandblasting equipment, handle materials containing asbestos or use spray equipment to conduct operation, appropriate breathing mask should be worn.

Ventilation equipment that can control the amount of dust, spray, and smoke in the environment must be equipped.

1.6.1.17 Lubricants and lubricating grease

Avoid long time and repeated contact with mineral grease. All lubrication oils and lubricating greases are irritating to eyes and skin.

Used reducer gear oil

Long time and repeated contact with mineral grease will give rise to the loss of natural skin oil, and cause dryness, irritation and dermatitis. In addition, the used gear oil is very likely to

contain harmful substances that can cause skin cancer. Skin protection equipment, as well as flushing equipment, should be used.

Used gear oil should not be used as lubricating oil or for any other purpose that may come into direct contact with skin.

Health protection safety rules

- Avoid long-term and repeated contact with oil, especially used oil.
- Wear protective clothing, including impermeable gloves.
- Do not put the wiping cloth stained with oil into your pocket.
- Avoid oil contamination of clothing, especially intimate clothing.
- Do not wear clothes and shoes contaminated by oil. Working clothing must be cleaned regularly and kept clean.
- First aid treatment of open wound should be given without delay.
- During work, try to apply the cream on the skin to avoid direct contact between the skin and the oil.
- Wash with soap and water to remove the oil. Apply protective agent which contains wool grease. This will help replace natural oil removed from your skin.
- If skin lesion occurs, seek for medical treatment immediately.
- Eliminate the residual grease on components as much as possible before working.
- If direct contact to eyes is possible, please wear protective goggles such as goggles or masks that are protective against chemicals and drugs. Besides, eyes flushing equipment is also needed.

Environment notices:

Used waste oil should be recovered and disposed of by an authorized or licensed waste disposal agent or waste oil recovery agent. If you have any doubt, contact the relevant departments of the local competent authority in a timely manner.

It is illegal to dump used waste oil directly into the ground, sewers or drainage equipment, or into water pipes.

1.6.1.18 Noise

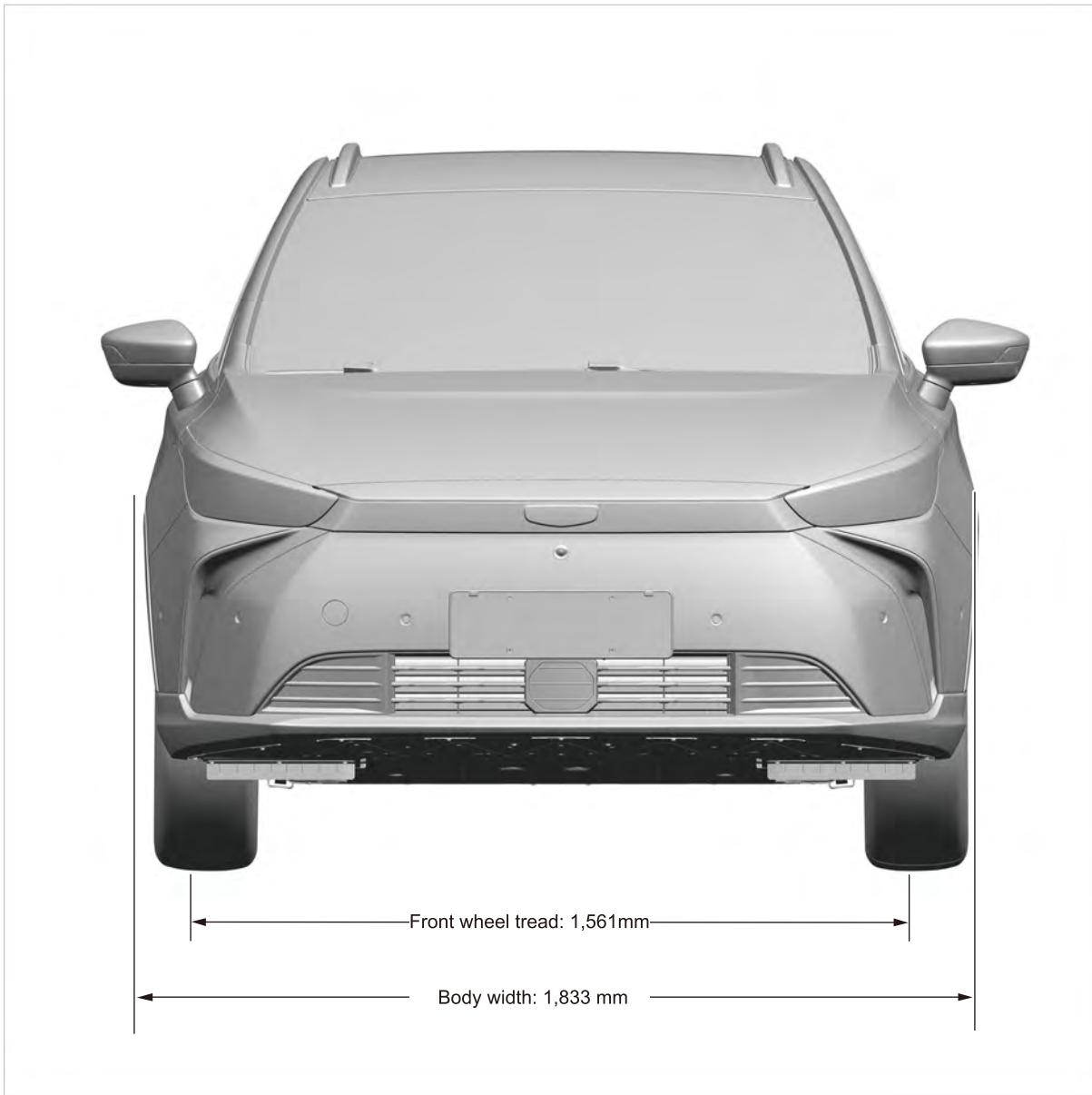
High-decibel noise may be produced during the process of some operations, and it may cause harm to hearing. At this moment, the appropriate hearing protection equipment should be worn.

1.7 Complete vehicle specifications

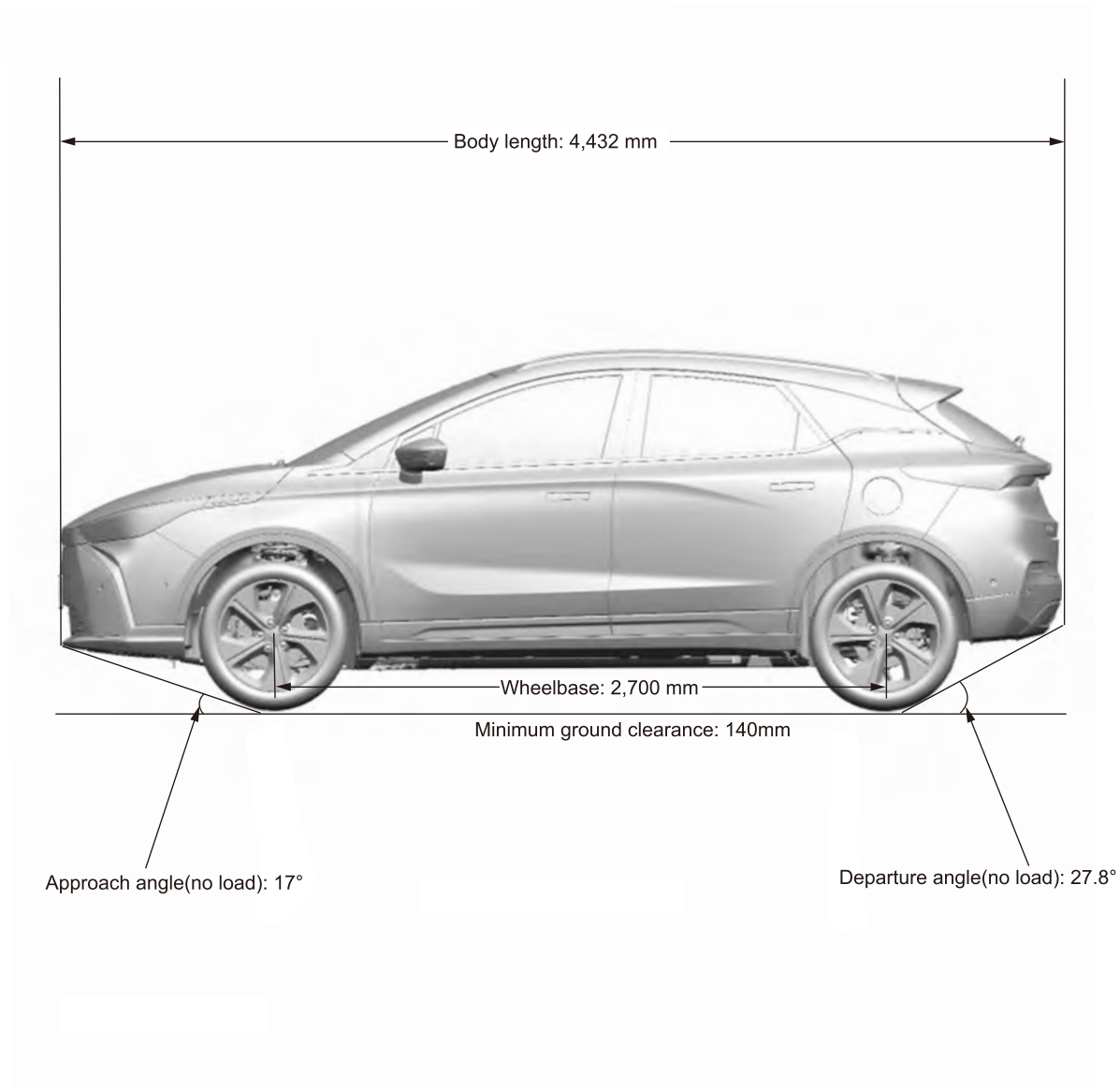
1.7.1 Specification

1.7.1.1 Whole vehicle dimensions

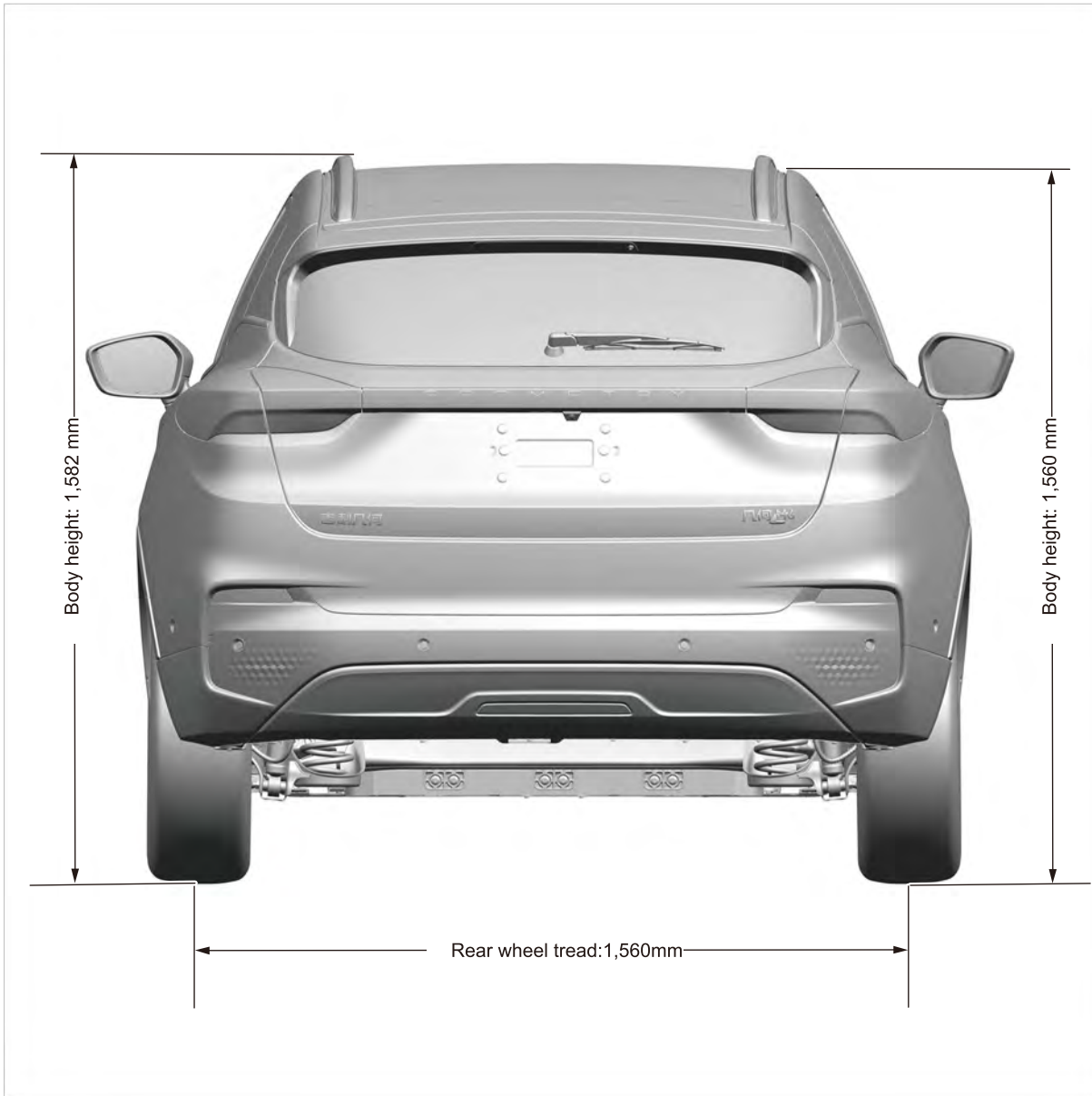
Front view



Side view



Rear view



1.8 Vehicle identification number

1.8.1 Instructions and operations

1.8.1.1 Vehicle identification

Vehicle identification number

The vehicle identification number (VIN) is a legal identifier.

Attachment location of vehicle identification number (VIN)

The vehicle identification number (VIN) is attached to the body bracket on the lower left corner of the windshield and is visible from the outside of the vehicle through the windshield.



Engraving position of vehicle identification number (VIN)

VIN is engraved on the beam under the front passenger seat. Move the seat back to the end and lift the protective cover. Then it can be seen.

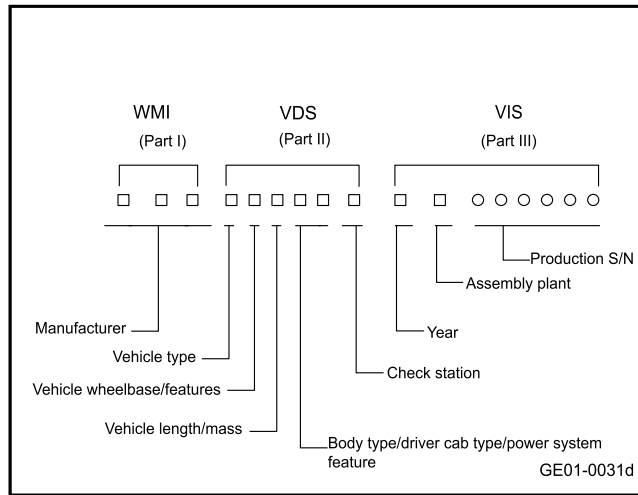


1. Inside of engine compartment (attached);
2. VCU (attached);
3. Upper part of middle channel (attached);
4. Inside of the left/right middle pillar (attached);
5. Right B-pillar lower side (attached);
6. Left side wall wheel pack (attached);
7. Tailgate inner side (attached);

1.8.1.2 Description of vehicle identification number (VIN)

Composition of VIN:

The VIN consists of the world manufacturer identification code (WMI), vehicle description section (VDS) and vehicle indication section (VIS) (a total of 17 digits), as shown in the following figure:



Taking the LB377U2W8NA100261 as an example, the meaning of each digit is shown in the following table:

Position	Definition	Character	Description
1-3	World manufacturers identifier	LB3	Zhejiang Haoqing Automobile Manufacturing Co., Ltd.
4	Vehicle category code	7	Passenger vehicle
5	Vehicle main parameter code	7	Length: 4.4-4.6
6-7	Power system feature and body type	U2	BEV /Hatchback/Five-door
8	Transmission type and gearbox type	W	Front wheel drive, without gearbox
9	Check digits	8	VIN check code
10	Year code	N	2022
11	Assembly factory plant	A	Shanxi Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.
12-17	Serial number of manufacturer	100261	Production serial number

The world manufacturer identification code (WMI) is located in the first part (1-3 digits) of the vehicle identification number. Including:

LJU - Zhejiang Geely Automotive Co., Ltd.(Shanghai LTI Automobile Components Co., Ltd.)

LB3 - Zhejiang Haoqing Automobile Manufacturing Co., Ltd.

L6T - Zhejiang Geely Automotive Co., Ltd.

LJ2——Shanxi New Energy Vehicle Industry Co., Ltd.

L10 ——Chengdu Gaoyuan Automobile Industry Co., Ltd.

The fourth digit code regulation

Serial No.	Vehicle type	Code
1	Chassis (incomplete vehicle)	0
2	Truck	1

Serial No.	Vehicle type	Code
3	Special-purpose vehicle	5
4	Bus	6
5	Passenger vehicle	7

The fifth digit code regulation

Passenger vehicle / bus				Truck / special-purpose vehicle			
Vehicle length, m	Code	Vehicle length, m	Code	Total weight, kg	Code	Total weight, kg	Code
≤3.5	0	>4.0 - 4.2	5	≤1,000	K	>3,000 - 3,500	R
3.5 - 3.6	1	>4.2 - 4.4	6	>1,000 - 1,500	L	>3,500 - 4,000	S
3.6 - 3.7	2	>4.4 - 4.6	7	>1,500 - 2,000	M	>4,000 - 4,500	T
3.7-3.8	3	>4.6 - 4.8	8	>2,000 - 2,500	N	>4,500 - 5,000	U
3.8 - 4.0	4	≥4.8	9	>2,500 - 3,000	P	≥5,000	V

The sixth and seventh digit code regulation

Serial No.	Fuel type		Engine displacement (L)	Body type	Code
1	Single fuel	Gasoline	≤1	Hatchback/Five-door	02
2			> 1-1.3		12
3			> 1.3-1.5		22
4			> 1.5-1.7		32
5			> 1.7-1.9		42
6			> 1.9-2.1		52
7			>2.1		62
8			≤1	Sedan/Four-door	04
9			> 1-1.3		14
10			> 1.3-1.5		24
11			> 1.5-1.7		34
12			> 1.7-1.9		44
13			> 1.9-2.1		54
14			>2.1		64
15			≤1	Long-head van special vehicle	07
16			> 1-1.3		17
17			> 1.3-1.5		27
18			> 1.5-1.7		37
19			> 1.7-1.9		47
20			> 1.9-2.1		57

Serial No.	Fuel type		Engine displacement (L)	Body type	Code
21	Diesel		>2.1	Hatchback/Five-door	67
22			≤1		72
23			> 1-1.3		82
24			>1.3		92
25			≤1	Sedan/Four-door	74
26			> 1-1.3		84
27			>1.3		94
28			≤1	Long-head van special vehicle	77
29			> 1-1.3		87
30			>1.3		97
31			Bi-Fuel	Gasoline/ Compressed natural gas	≤1.3
32	> 1.3-3.0	K2			
33	≤1.3	Sedan/Four-door			J4
34	> 1.3-3.0				K4
35	≤1.3	Long-head van special vehicle			J7
36	> 1.3-3.0				K7
37	Dual fuel	Methanol fuel	≤1.3	Hatchback/Five-door	R2
38			> 1.3-3.0		S2
39			≤1.3	Sedan/Four-door	R4
40			> 1.3-3.0		S4
41			≤1.3	Long-head van special vehicle	R7
42			> 1.3-3.0		S7

Serial No.	Battery electric vehicle type	Sum of peak power of driving motor (kW)	Engine displacement (L)	Body type	Code
1	Battery Electric Vehicle	150	/	Hatchback/Five-door	U2
2		200			P2
3		240			V2
4		350			W2
5		400			T2
6		450			X2
7		120		Sedan/Four-door	Y4
8		350		Sedan/Five-door	W5
9		450			X5
10		550			Z5
11	hybrid electric vehicle	50	1477	Hatchback/Five-door	E2
12		60	1477		F2
13		120	1477		G2
14		60	1477	Sedan/Four-door	F4

Serial No.	Battery electric vehicle type	Sum of peak power of driving motor (kW)	Engine displacement (L)	Body type	Code
15		120	1477	Long-head van special vehicle	G7

The eighth digit code regulation

Serial No.	Cab type	Compartment type	Description
1	Front drive	Manual transmission	S
2		Automatic Transmission	Z
3		Without transmission	W
4	Rear drive	Manual transmission	A
5		Automatic Transmission	B
6		Without transmission	N
7	Four-wheel drive	Manual transmission	C
8		Automatic Transmission	D
9		Without transmission	E

The ninth digit code regulation

This digit is the check digit. The value calculated by the manufacturer according to the remaining 16-bit code value and then through a certain formula, The code may be any number from 0 to 9 or the letter "X", which is used to verify the authenticity of the VIN code, so as to ensure the uniqueness of the VIN code and effectiveness.

The tenth digit code regulation

Year	Code	Year	Code	Year	Code	Year	Code
2001	1	2011	B	2021	M	2031	1
2002	2	2012	C	2022	N	2032	2
2003	3	2013	D	2023	P	2033	3
2004	4	2014	E	2024	R	2034	4
2005	5	2015	F	2025	S	2035	5
2006	6	2016	G	2026	T	2036	6
2007	7	2017	H	2027	V	2037	7
2008	8	2018	J	2028	W	2038	8
2009	9	2019	K	2029	X	2039	9
2010	A	2020	L	2030	Y	2040	A

Note: It is used to distinguish years, and the year code is used according to the regulations (once every 30 years)

The eleventh digit code regulation

Serial No.	Manufacturer	Name of factory	Code
1	Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	H
2		First Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd	L

Serial No.	Manufacturer	Name of factory	Code	
3		Xiangtan Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	X	
4		Jinan Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	J	
5		Chengdu Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	C	
6		Baoji Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	B	
7		Shanxi Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	A	
8		Xian Branch of Zhejiang Haoqing Automobile Manufacturing Co., Ltd.	S	
9		Zhejiang Geely Automobile Co., Ltd.	Zhejiang Geely Automobile Co., Ltd.	N
10			Zhangjiakou Branch of Zhejiang Geely Automobile Co., Ltd.	Z
11	Guiyang Branch of Zhejiang Geely Automobile Co., Ltd.		Y	
12	Ningbo-Hangzhou Bay Factory of Zhejiang Geely Automotive Co., Ltd. ()		W	
13			D	
14	Chunxiao Factory of Zhejiang Geely Automobile Co., Ltd.		U	
15	Yiwu Branch of Zhejiang Geely Automobile Co., Ltd.		T	
16	Hangzhou Branch of Zhejiang Geely Automobile Co., Ltd.		V	
17	Yuyao Factory of Zhejiang Geely Automobile Co., Ltd.		E	
18	Ningbo-Hangzhou Bay Second Branch of Zhejiang Geely Automotive Co., Ltd.		P	
19	Meishan Factory of Zhejiang Geely Automobile Co., Ltd.		M	

Serial No.	Manufacturer	Name of factory	Code
20		Chengdu Branch of Zhejiang Geely Automobile Co., Ltd.	F
21		Wuhan Branch of Zhejiang Geely Automobile Co., Ltd.	K
22		Huzhou Branch of Zhejiang Geely Automobile Co., Ltd.	G
23	Shanxi New Energy Vehicle Industry Co., Ltd.	Passenger vehicle production line of Shanxi New Energy Vehicle Industry Co., Ltd.	A
24	Chengdu Gaoyuan Automobile Industry Co., Ltd.	Chengdu Gaoyuan Automobile Industry Co., Ltd.	C

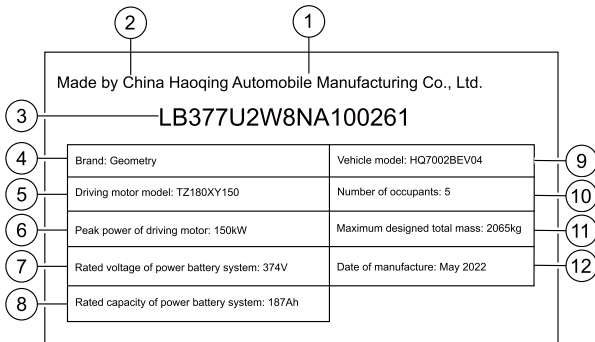
The twelfth to the seventeenth digits code regulations

The twelfth to the seventeenth digits code is production sequence number. It is arranged according to the sequence of vehicles produced by the same vehicle manufacturer in the same year, starting from 000001 every year.

1.8.1.3 Badge - Vehicle qualification certificate (Type I)

The qualification certificate badge is located on the lower part of the B-pillar on the right.

Badge - Vehicle qualification certificate

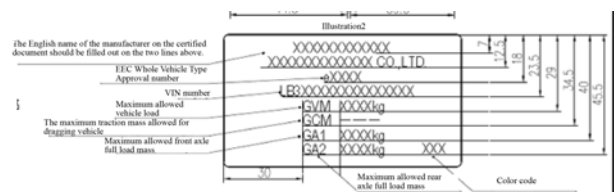


5. Driving motor model
6. Peak power of driving motor
7. Rated voltage of power battery system
8. Rated capacity of power battery system
9. Vehicle model
10. Number of occupants
11. Gross vehicle mass
12. Manufacture year and month

1.8.1.4 Badge - Vehicle qualification certificate (Type II)

The qualification certificate badge is located on the lower part of the B-pillar on the right.

Badge - Vehicle qualification certificate



The qualification certificate badge includes the following information:

1. Manufacturer name
2. Manufacture country
3. Vehicle identification number (VIN)
4. Brand

The qualification certificate badge includes the following information:

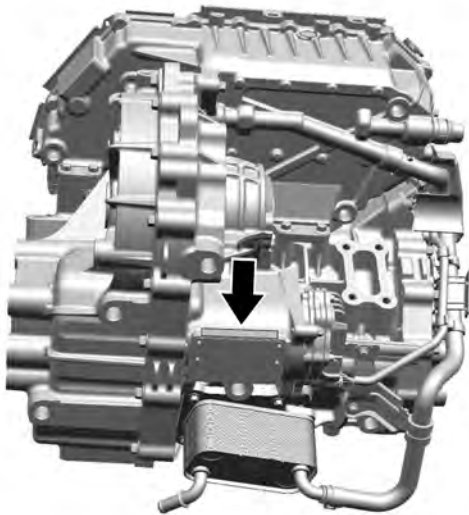
1.8.1.5 Badge - Vehicle qualification certificate (Type III)

The qualification certificate badge is located on the lower part of the B-pillar on the right.



- 8891539884: part number
- 210551: supplier code
- TZ180XY150 : Driving motor model
- K61J01001: electric drive traction code
- 060300: motor null angle

Position on the traceability code label of the electric drive system (NIDEC CORPORATION)

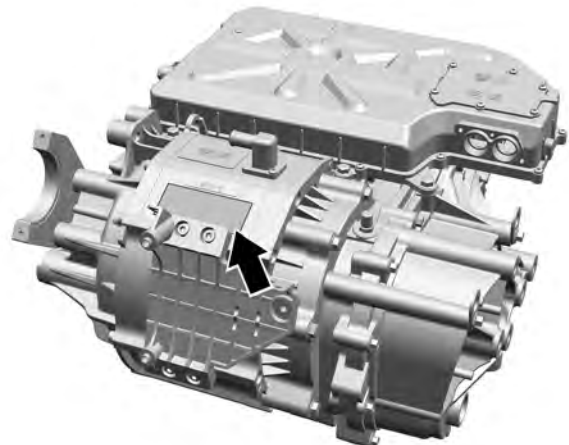


The traceability code label of the electric drive system is engraved on the left middle of the bottom of the motor.

Label of electric drive system traceability code (Glebo)

- TZ220XS503: Driving motor model
- MCXFFM03M: electric drive traction code
- GEELY: brand identity
- 8891882220: part number
- 576383: supplier code
- 150 kw/ 310Nm/ 15,000 rpm: key parameters
- 205150: motor null angle

Positions of electric drive system traceability code label (GLB Intelligent Power Technologies Company)



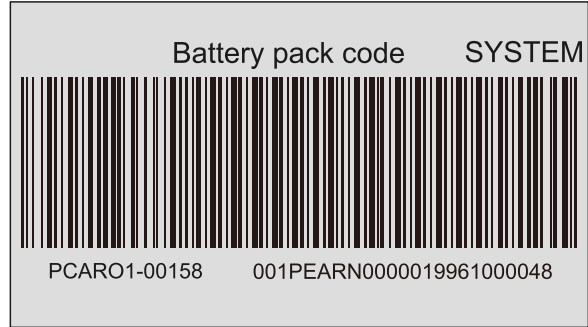
The traces code label of the electric drive system is engraved on the housing in front of the motor.

Power battery nameplate position

The power battery nameplate is fixed at the position on the right side of the battery housing at the rear of the power battery assembly at the bottom of the vehicle.

GEELY Power battery assembly system CATL/593001

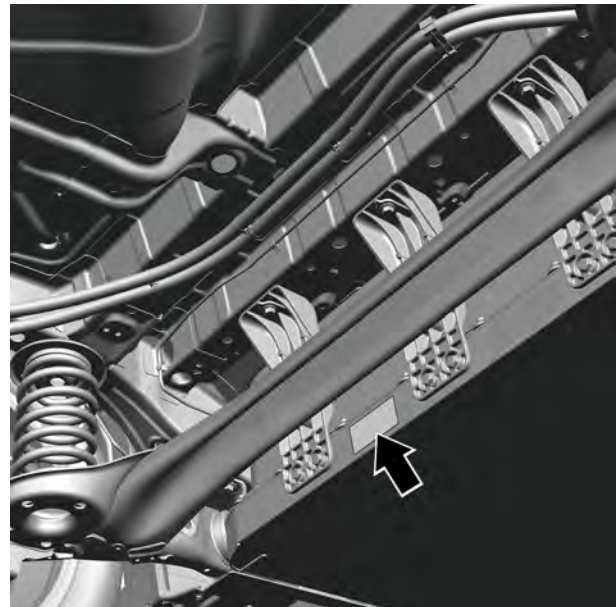
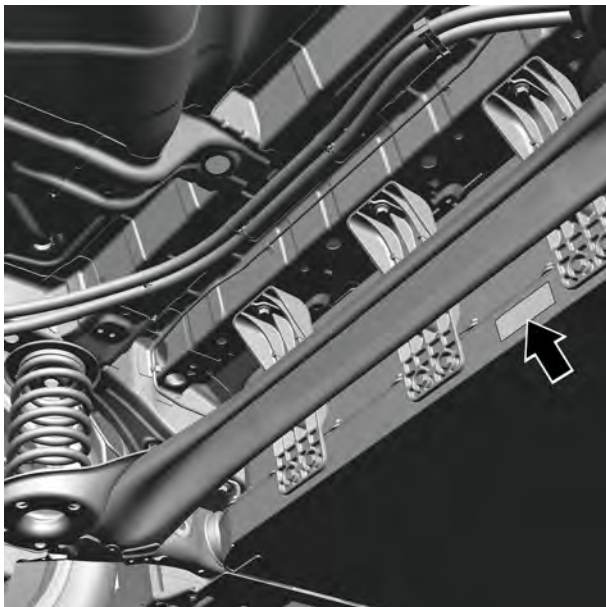
Type of battery	Ternary lithium-ion battery		Material code	8891538777	
Rated voltage	374V	Rated capacity	187Ah	Weight	395 kg
				Device model	BE61



- Ternary lithium-ion battery: battery category
- 8891538777: material number
- 374V: Rated voltage
- 187Ah: Rated capacity
- 395 kg: Weight
- BE61: Device model

24-digit new national standard code label

Positions of Geely's 46-digit 2D label

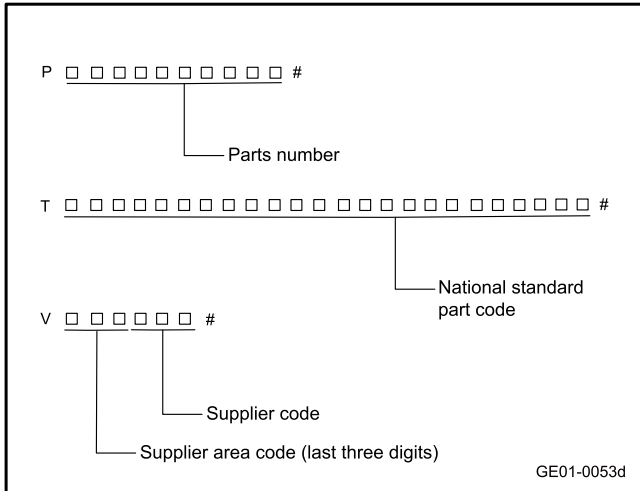


Geely's 46-digit 2D label is attached to the position on the left side of the battery housing at the rear of the power battery assembly at the bottom of the vehicle.

1.8.1.12 Description of Geely’s 46-digit 2D label code

Geely’s 46-digit 2D label code consists of Geely supplier’s parts code, national standard new parts code and supplier code, of which Geely supplier’s parts code consists of 10 digits; national standard new parts code consists of 24 digits; supplier code consists of 6 digits; plus 3-digit separator and 3-digit identifier.

Geely’s 46-digit 2D label code consists of three parts, as shown in the figure below:

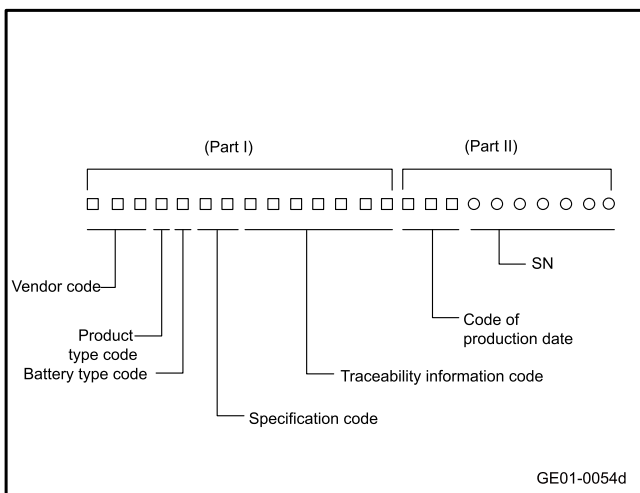


Taking Geely’s 46-digit 2D label code P8890572053#T09LPE1AE000043A2L0000001#V993310 as an example, the meaning of each part is as follows:

- The first part (12 digits) corresponds to: letter identification P, power battery part number (10 digits) 8890572053, separator #;
- The second part (26 digits) corresponds to: the letter identification T, the national standard new parts code (24 digits) 09LPE1AE000043A2L0000001, the separator #;
- The third part (8 digits) corresponds to: letter identification V, supplier area number (3 digits)993, supplier code(3 digits) 310, separator #;

Composition of national standard new parts number (24 digits):

National standard new parts number can be used alone as the power battery number, which consists of two parts, as shown in the following figure:



Taking the power battery identification number 09LPE1AE000043A2L0000001 as an example, the meaning of each digit is shown in the following table:

Position	Definition	Character	Description
1~3	Vendor code	09L	VIRIDI (Ningbo) (the code is uniformly assigned by the industry management department)
4	Product type code	P	Power battery pack
5	Battery type code	E	NMC battery
6~7	Specification code	1A	Corresponding to the announced sequence of power battery pack (PACK), 1A represents the battery announced in Clause 20
8~14	Traceability information code	E0000	E:EV code 0000: set all reserved information to zero
		4	China Lithium Battery Technology Co., Ltd.
		3	Ningbo
15~17	Code of production date	A2L	Feb. 20, 2020
18~24	SN	0000001	The serial number of the date on which the battery was manufactured

Code regulation of production year

Year	Code	Year	Code	Year	Code	Year	Code
2011	1	2021	B	2031	M	2041	1
2012	2	2022	C	2032	N	2042	2
2013	3	2023	D	2033	P	2043	3
2014	4	2024	E	2034	R	2044	4
2015	5	2025	F	2035	S	2045	5
2016	6	2026	G	2036	T	2046	6
2017	7	2027	H	2037	V	2047	7
2018	8	2028	J	2038	W	2048	8
2019	9	2029	K	2039	X	2049	9
2020	A	2030	L	2040	Y	2050	10

Code regulation of production month

Date	1	2	3	4	5	6	7	8	9	10	11	12
Code	1	2	3	4	5	6	7	8	9	A	B	C

Code regulation of production date

Date	Code	Date	Code	Date	Code
1	1	12	C	23	P
2	2	13	D	24	R

Date	Code	Date	Code	Date	Code
3	3	14	E	25	S
4	4	15	F	26	T
5	5	16	G	27	V
6	6	17	H	27	W
7	7	18	J	29	X
8	8	19	K	30	Y
9	9	20	L	31	0
10	A	21	M		
11	B	22	N		

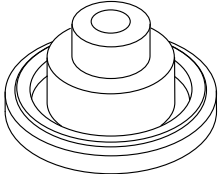
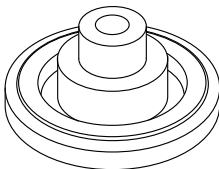
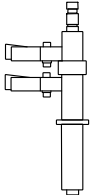
Regulations of serial number

The serial number code is represented by a 7-digit decimal value, and the value range is 0000000-9999999. It refers to the serial number of power battery pack, module and cell on the date of manufacturing.

1.9 List of Special Tools for Complete Vehicle

1.9.1 Special Tools and Equipment

1.9.1.1 Special tools for chassis and body

Serial No.	Illustration	Tool number	Name
1	 <p>GE01-0045d</p>	4114720088	Installation tool for oil seal of reducer housing
2	 <p>GE01-0046d</p>	4114720089	Installation tool for oil seal of reducer housing
3	 <p>GE01-0470d</p>	4114720113	Damper bolt disassembly tool

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2.1 Warnings and precautions

2.1.1 Warnings and precautions

2.1.1.1 Warnings and Precautions

Warning regarding power batteries

Warning

A battery electric vehicle contains a set of sealed high-voltage lithium-ion power batteries. If the power battery is improperly exposed, there will be risks of severe combustion and electric shock, which may lead to serious casualties and environmental pollution.

Warning regarding high voltage safety precautions

Warning

It is forbidden to directly contact any high-voltage components of the vehicle with hands. Special insulating tools must be used during the maintenance of high-voltage components.

High-voltage components of this vehicle include: drive control unit, high-voltage distribution device, high-voltage and low-voltage charging system, high-voltage main cable, fast-charging plug, fast-charging socket, power battery, electric drive system, slow-charging socket, slow-charging plug, electric compressors, electric heaters, etc.

After the vehicle has been running for a period of time, the surface temperature of the driving motor, the drive control unit and the electric vacuum pump is high; If the air conditioner is used for refrigeration, the surface temperature of the electric compressor and the radiator of the automatic air conditioner will be higher; during the charging process, the surface temperature of the vehicle-mounted charger will be higher. In the above cases, do not touch the components with bare hands.

It is strictly forbidden to disassemble the high-voltage electrical components in the vehicle, unplug or disconnect the high-voltage connectors and cables of the vehicle without permission; otherwise, it may cause serious electric shock injury and damage to the vehicle. The high-voltage cables in the vehicle are wrapped with orange bellows, so please pay attention to identification.

Warnings in case of vehicle collision accident

Warning

In case of vehicle collision (including front, rear, left and right collision and ground collision):

- Even if the vehicle can still run after a collision, it is necessary to stop it safely, apply the parking brake switch, place the power supply mode in the OFF position, and do not touch the body metal.
- Under no circumstances shall any person be allowed to repair the vehicle when the power is not completely cut off.
- Check whether the high-voltage components and wiring harness of the vehicle are damaged or exposed (the location of the components can be determined from the layout of the high-voltage components). In order to avoid personal injury, do not touch the high-voltage harness, connectors and other high-voltage components (IPU, power battery, etc.). It is forbidden to touch the damaged or exposed wiring harness to avoid the risk of high-voltage electric shock. In particular, if the vehicle floor scrapes against the ground, it is necessary to carefully check whether the high-voltage wiring harness distributed on the floor is damaged. If you need to contact any high-voltage cables or components, please wear insulating protective clothing (including insulating gloves, insulating shoes, and insulating clothing) with a withstand voltage of more than 1000V.
- If the extent of damage to the vehicle cannot be estimated, do not touch the vehicle. Keep away from the vehicle, immediately contact the professional and technical personnel of the authorized automobile dealer to inspect and repair the vehicle, and be sure to inform the emergency personnel who come to deal with the accident that the vehicle is an electric vehicle at the first time. No one else is allowed to approach, contact or move the vehicle.
- If the driver and passengers are trapped and cannot disconnect the high-voltage DC bus, please try to cut the vehicle after confirmation by professionals. Before cutting, a large amount of fire water is needed to wash the battery parts and the ground to wash away or dilute the leaked electrolyte, so as to prevent sparks from igniting the electrolyte and causing fire during cutting. Do not touch the high-voltage cables (the skin color of the high-voltage cables is yellow or orange) and the battery pack during cutting.
- It is strictly forbidden to disassemble the high-voltage wiring harness and high-voltage components in the front compartment without permission. The skin color of the high-voltage wiring harness is yellow or orange.
- Leakage of electrolyte from power battery or damage of the battery may cause fire. If this occurs, contact an authorized car dealer immediately. Please do not touch the leaked electrolyte with your hands. If your skin or eyes accidentally come into contact with electrolyte, please wash them with plenty of water immediately and seek medical advice immediately to avoid injury.
- If the vehicle smokes or catches fire, please leave the vehicle immediately, and be sure to use plenty of water to put out the fire. Failure to do so may result in serious injury or death.

- If towing is required, be sure to raise the front wheels off the ground. Because if the front wheels touch the ground when towing, the driving motor may generate electricity, damage the high-voltage components of the vehicle and even cause a fire.
- If the vehicle needs to be repaired or painted after a collision, it must be handled at an authorized car dealer and cannot be disassembled without permission. Before painting, remove high-voltage components such as power battery, high-voltage wiring harness and motor controller. Because long-time exposure of power battery to high-temperature spraying workshop, the service life of the power battery may be affected. In addition, failure to remove the power battery from the vehicle may cause hazards to the maintenance personnel who are not professionally trained with electric vehicle maintenance.
- In case of vehicle failure or accident, please immediately place the reflective tripod about 100m behind the vehicle (and 150m behind the vehicle on the highway) to warn passing vehicles or pedestrians.

Notices for storage of power battery

Caution

In the process of storing the power battery, in order to avoid damage to the power battery, please observe the following points:

- Do not place the power battery or battery module upside down or overturn it during transportation and maintenance; otherwise, the power battery may be damaged.
- The power battery pack should be stored in a ventilated, clean and dry room with a temperature of 5°C to 40°C. Avoid direct sunlight, and the distance from the heat source should not be less than 2m.
- During the storage of the power battery pack, the remaining electricity should be kept within the range of 40% - 60%.
- The power battery pack should not be placed upside down or horizontally, and should avoid mechanical impact or heavy pressure.

Notices for lithium-ion battery pack maintenance

Caution

- All operations shall be carried out by wearing insulating gloves and anti-smashing shoes, and shall be performed when the maintenance switch is unplugged
- It is forbidden to store or use it at high temperature, and it must be kept away from heat sources. Environments higher than the safe temperature range will lead to a significant decrease in the performance and service life, and even cause serious consequences such as burning and explosion;
- It is forbidden to store and use it in an environment with high static electricity or high electromagnetic radiation. Otherwise, the electronic devices in this product may be damaged, which may lead to potential hazards;
- It is forbidden to get damp or even immerse in water. Otherwise, it may lead to internal short circuit, functional loss or abnormal chemical reaction of the product, and cause fire, smoke, explosion and other accidents;
- If smoke, heat, discoloration or deformation are found, or any abnormal phenomenon occurs during use, storage, transportation and service, you should immediately contact the professional department to further observe and control the risk;
- Installation, maintenance, repair and disassembly by non-professionals are prohibited, except overhaul operation by professional technicians;
- It is forbidden to throw the discarded product into fire or hot furnace. Waste batteries shall be recovered and recycled by professional institutions or organizations;
- It is forbidden to press heavy objects on this product or stack them with each other. All removed parts should be collected in material boxes to avoid loss. It is strictly forbidden to drop screws, nuts and foreign objects into the high-voltage compartment during the disassembly process; when removing the total positive and total negative wiring harnesses, use insulating tape to wrap the wiring harness terminals.

2.2 Power battery system

2.2.1 Specification

2.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Bottom fixing bolt of power battery	M10×35	68-88
Rear mounting bracket fixing bolt of the power battery pack	M10×20	35-55
Trim strip fixing bolt of upper cover of the power battery pack	M6×25	9-11
Front sealing plate fixing bolts of the power battery pack	M5×12	5-7
PEU wire harness assembly bracket fixing bolt	M6×20	8 -10
Power battery ground wire fixing bolt	M6×20	8.5-11.5
Soft copper bar fixing bolt	M6×12	9-11

2.2.1.2 Power Battery Parameters (Type I)

Item	Specification
Types of electric vehicle energy storage devices	Ternary lithium-ion power battery
Energy storage device cell model	CE0H0
Battery electric vehicle energy storage device type	Energy
Overall shape of energy storage device cell	Square
Overall dimensions of energy storage device cells (mm)	79×148×103
Nominal voltage (V) of the energy storage device cell	3.68
Rated capacity C1 (Ah) per hour of power battery cell	150
Mass of energy storage device cell (kg)	2.58
Number of cells of the energy storage device	96
Energy storage device assembly manufacturer:	Contemporary Amperex Technology Co. Limited
The minimum module model of the energy storage device	1P6S
Nominal voltage (V) of the minimum module of the energy storage device	22.08
Combination method of energy storage device	1 in parallel and 96 in series
Model of the energy storage device after the box has been formed	BE63
Total electric capacity of energy storage device (kWh)	53
Total weight of energy storage device, kg	340
Energy density of power battery system (W·h/kg)	160.28
Nominal voltage of the energy storage device assembly (V)	353
Rated output current of energy storage device assembly (A)	180

2.2.1.3 Power Battery Parameters (Type II)

Item	Specification
Battery electric vehicle energy storage device types	Ternary lithium-ion power battery
energy storage device cell model	SBP-01-1500
Battery electric vehicle energy storage device type	Energy type
Overall shape of energy storage device cell	Square
Overall dimensions (mm) of energy storage device cells	79.2×148.6×99.7
Nominal voltage (V) of the energy storage device cell	3.67
Rated capacity C1 (Ah) per hour of power battery cell	150
Mass (kg) of energy storage cell	2.54
Number of cells of the energy storage device	96
Energy storage device assembly manufacturer:	VIRIDI Electric Vehicle Technology Co., Ltd.
The minimum module model of the energy storage device	1P6S
Nominal voltage (V) of the minimum module of the energy storage device	22.02
Combination method of energy storage device	1 in parallel and 96 in series
Model of boxed energy storage device	BE54
Total electric capacity (kWh) of energy storage device	52.8
Total weight (kg) of the energy storage device	344
Energy density of power battery system (W·h/kg)	160.35
Nominal voltage (V) of the energy storage device assembly	352
Rated output current (A) of energy storage device assembly	159

2.2.1.4 Power Battery Parameters (Type III)

Item	Specification
Battery electric vehicle energy storage device types	Ternary lithium-ion power battery
Energy storage device cell model	CE2MO
Battery electric vehicle energy storage device type	Energy type
Overall shape of energy storage device cell	Square
Overall dimensions (mm) of energy storage device cells	79×148×103
Nominal voltage (V) of the energy storage device cell	3.67
Rated capacity C1 (Ah) per hour of power battery cell	187
Mass (kg) of energy storage device cell	2.8
Number of cells of the energy storage device	102
Energy storage device assembly manufacturer:	Contemporary Amperex Technology Co. Limited
The minimum module model of the energy storage device	1P6S
Nominal voltage (V) of the minimum module of the energy storage device	22.02
Combination method of energy storage device	1in parallel and 102 in series

Model of the boxed energy storage device	BE61
Total electric capacity (kWh) of energy storage device	70
Total weight (kg) of the energy storage device	395
Energy density (W·h/kg) of power battery system	183.23
Nominal voltage (V) of the energy storage device assembly	374
Rated output current (A) of energy storage device assembly	187

2.2.2 Instructions and operations

2.2.2.1 General

The power battery of this vehicle is a ternary lithium battery (Lithium ion Battery): a compound such as lithium cobaltate, lithium manganate or lithium nickelate is used as the positive electrode; a carbon material that can be embedded by lithium ions is used as the negative electrode; and an organic electrolyte is used. The power battery is installed at the lower part of the vehicle body, and the components of the power battery include: various module assemblies, CSC acquisition system, battery management system (BMS), battery high voltage distribution unit (B-BOX) and other components.

The Battery Management System can monitor the total voltage, total current, temperature at each measuring point, and voltage parameters of battery cells in real time, and perform fault diagnosis, SOC (State of Charge) calculation, short circuit protection, leakage monitoring, alarm display, charge and discharge mode selection, etc. The BMS can report the relevant parameters of the power battery to the VCU, and the VCU controls the charging and discharging power of the power battery. The BMS of the vehicle is integrated into the power battery.

2.2.3 System working principles

2.2.3.1 System Working Principles

Cell

A cell is the basic unit device that directly converts chemical energy into electrical energy, and it consists of electrodes, separators, electrolytes, housings, and terminals, and is designed to be rechargeable.

Module

A module is a combination of more than one cells in series, parallel or series-parallel mode, and only has one pair of positive and negative output terminals, and is used as a power source.

CSC acquisition system

Each battery unit has multiple CSC acquisition systems to monitor the voltage and temperature information of each battery cell or battery pack. The CSC acquisition system reports the relevant information to the battery management system (BMS) and performs cell voltage equalization according to the instructions of the BMS.

Battery management system (BMS)

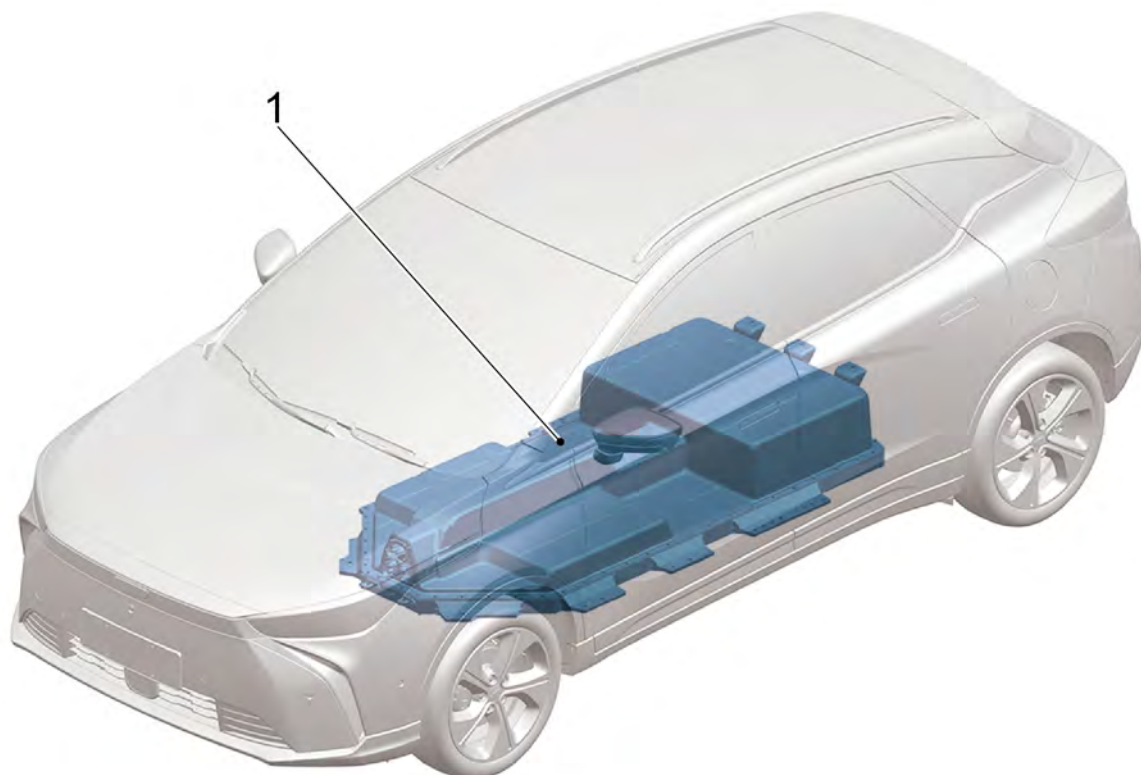
The BMS is integrated in the power battery and is the core component of the battery management system. The BMS reports the cell voltage, current, temperature, and vehicle high-voltage insulation to the vehicle control unit and completes the control of the power battery according to the instructions from the VCU.

Battery high-voltage distribution unit (B-BOX)

The B-BOX is installed at the positive and negative output ends of the power battery assembly, and consists of a main positive relay, a main negative relay, a pre-charge relay, a voltage and current measuring unit, and a pre-charge resistor.

2.2.4 Part position

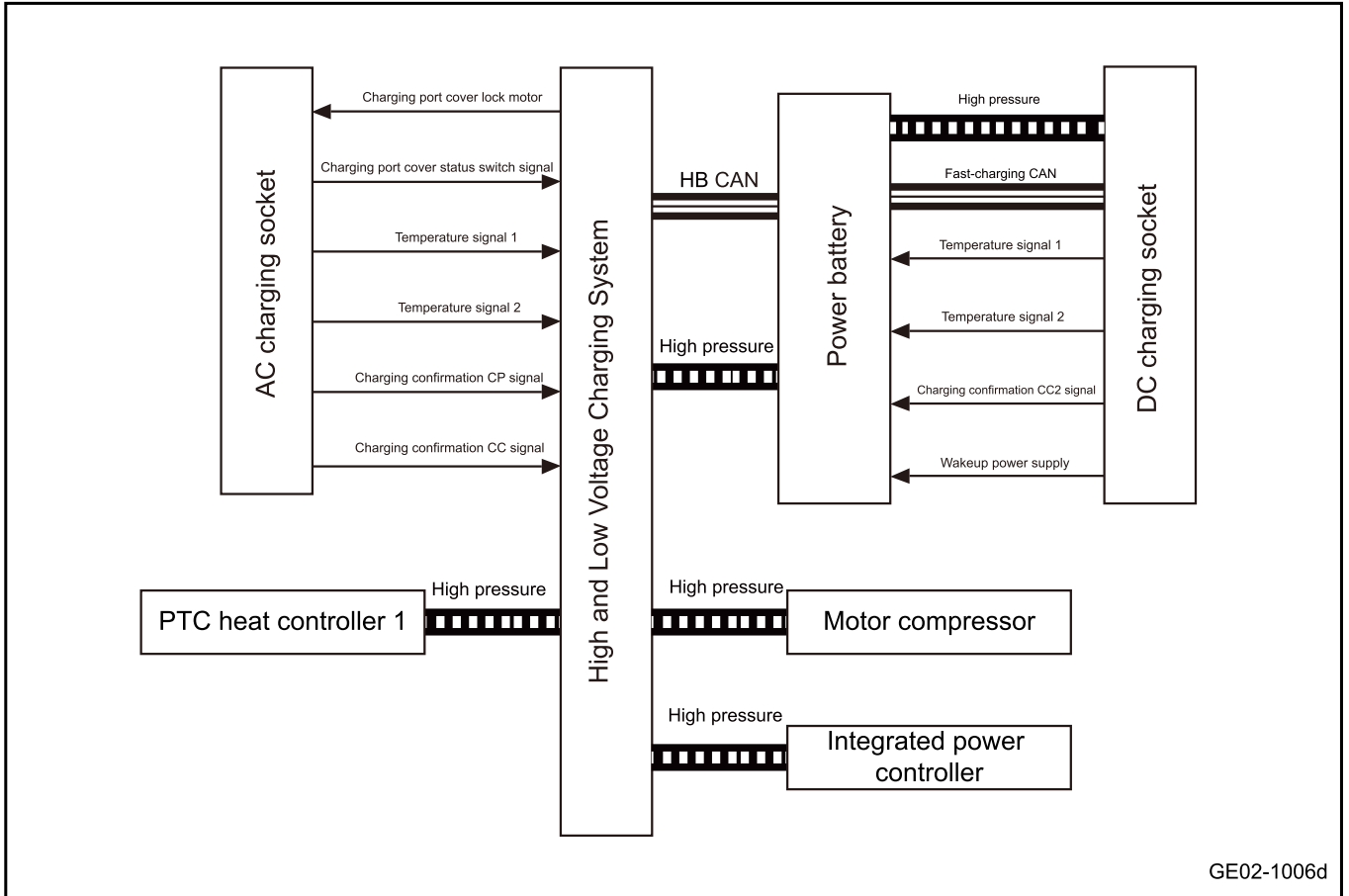
2.2.4.1 Part Position



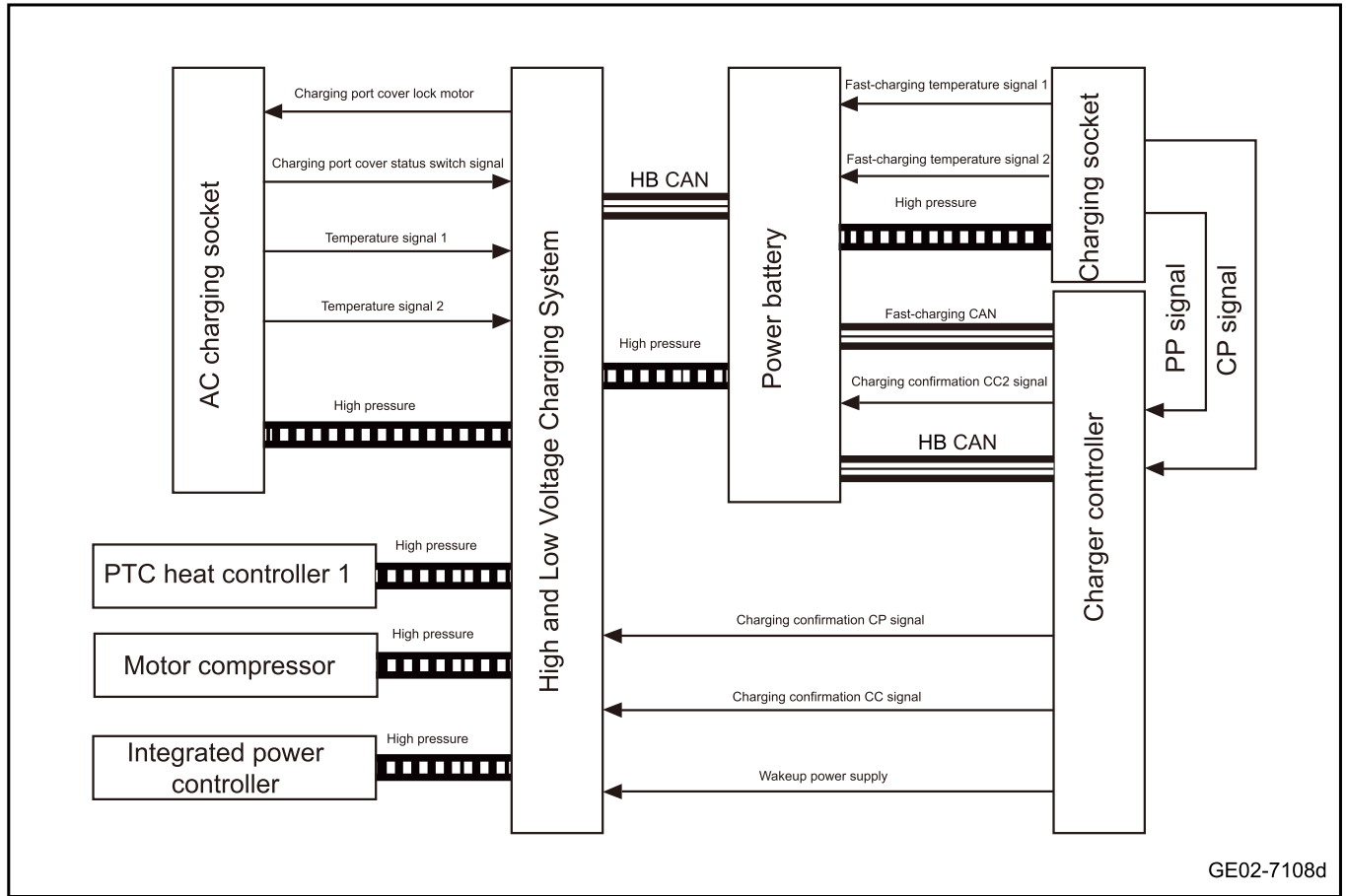
- 1. Power battery

2.2.5 Electrical block diagram

2.2.5.1 Electrical Schematic Diagram of Power Battery System (Type I)



2.2.5.2 Electrical Schematic Diagram of Power Battery System (Type II)



2.2.6 Diagnostic information and procedures

2.2.6.1 Diagnosis Description

Refer to description and operation.

2.2.6.2 Routine inspection

1. Check the after-sales installations that may affect the power battery system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there is water or foreign matter outside the power battery.
4. Check whether the high-voltage harness connector of the power battery is loose and whether there are signs of corrosion inside.

2.2.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
DC Charging Port Cannot Charge	1. DC charging pile is faulty	Replace with normal charging pile.
	2. Low voltage communication circuit fault	Refer to DC Charging Port Fault Refer to Fast-charging Port Fault
	3. High voltage charging circuit failure	Refer to DC Charging Circuit Fault(Type I) Refer to DC Charging Circuit Fault(Type II)
	4. BMS fault	Check the BMS module software version and update it. Replace the BMS if necessary
Battery temperature is too high or too low	1. BMS fault	Check the BMS module software version and update it. Replace the BMS if necessary
	2. Power battery circuit fault	Check the cell detection circuit and replace the harness if necessary (it is allowed to remove the power battery, otherwise the power battery should be replaced)
	3. Power battery fault	Check the internal circuits and contactors of the power battery, and replace if necessary (it is allowed to remove the power battery, otherwise the power battery should be replaced)
	4. Power battery cooling system fault	Check the power battery cooling system, coolant, water pump, fan, etc., and replace if necessary
Do not charge with a charger	1. AC charging pile or AC power supply failure	Replace with the normal charging pile or replace with the normal and stable power supply

Symptom	Possibility and cause	Measures
	2.Charging connection circuit failure	Check and repair the charging connection circuit. Replace it if necessary
	3. Vehicle-mounted charger fault	Replace the vehicle-mounted charger
	4.BMS fault	Check the BMS module software version and update it. Replace the BMS if necessary
Charging status is abnormal	1.Charging connection circuit failure	Check and repair the charging connection circuit. Replace it if necessary
	2.Power supply fault	Replace with a normal and stable power supply
	3. Charger failure	Replace with normal charger.
	4.BMS fault	Check the BMS module software version and update it. Replace the BMS if necessary
The whole system does not work after the system is powered on	1. High-voltage circuit and low-voltage control circuit faults	Check the high-voltage lines and related low-voltage control lines, and replace the harness if necessary.
	2.BMS fault	Check the BMS module software version and update it. Replace the BMS if necessary
	3.VCU fault	Check the VCU module software version and update it, and replace the VCU if necessary
	4.Power battery fault	Check the internal circuits and contactors of the power battery, and replace if necessary (it is allowed to remove the power battery, otherwise the power battery should be replaced)

2.2.6.4 Data stream list

Serial No.	DID description	Normal range	Unit
1	Battery back nominal capacity	0-999.9	Ah
2	Battery pack nominal energy	0-999.9	kWh
3	Nominal Voltage	0-600	V
4	Battery type code	0-15	/
5	Total number of cells	0-254	/
6	Total number of Cell temperature sensors	0-254	/

Serial No.	DID description	Normal range	Unit
7	Single charging capacity of battery pack	0-6553.5	Ah
8	Cumulative discharging capacity of battery pack	0-7400000	Ah
9	Cumulative charging capacity of battery pack	0-7400000	Ah
10	VCU charging permission	0-3	/
11	BMS charging fault level	0-4	/
12	BMS discharging loop pre-charging status	0-7	/
13	BMS charging loop pre-charging status	0-7	/
14	Temperature value of module 1	-40-120	°C
15	Temperature value of module 2	-40-120	°C
16	Temperature value of module 3	-40-120	°C
17	Temperature value of module 4	-40-120	°C
18	Temperature value of module 5	-40-120	°C
19	Temperature value of module 6	-40-120	°C
20	Temperature value of module 7	-40-120	°C
21	Temperature value of module 8	-40-120	°C
22	Temperature value of module 9	-40-120	°C
23	Temperature value of module 10	-40-120	°C
24	Temperature value of module 11	-40-120	°C
25	Temperature value of module 12	-40-120	°C
26	Temperature value of module 13	-40-120	°C
27	Temperature value of module 14	-40-120	°C

Serial No.	DID description	Normal range	Unit
28	Temperature value of module 15	-40-120	°C
29	Temperature value of module 16	-40-120	°C
30	Temperature value of module 17	-40-120	°C
31	Temperature value of module 18	-40-120	°C
32	Maximum cell voltage	0-5	V
33	The cell number with the maximum cell voltage	0-200	/
34	The minimum cell voltage	0-5	V
35	The cell number with minimum cell voltage	0-200	/
36	Total voltage of battery pack	0-600	V
37	Total current of battery pack	-500-500	A-
38	Battery pack maximum temperature	-40-120	°C
39	Temperature sensor number of the battery pack maximum temperature	0-200	/
40	Battery pack minimum temperature	-40-120	°C
41	Temperature sensor number of the battery pack minimum temperature	0-200	/
42	Insulation resistance value	0-60000	KOhm
43	Insulation monitoring status	0-3	/
44	Complete vehicle high voltage interlocking status	0-3	/
45	Relay state	-	/
46	Actual working state of the charger	0-15	/
47	Charger error status	0-3	/
48	Output current of charger	0-50.0	A
49	Output voltage of charger	0-1000	V
50	Battery state of charge	0-100	[%]
51	Remaining battery power	0-100	[%]
52	SOH	0-100	%
53	Remaining energy	0-1000	Kwh

Serial No.	DID description	Normal range	Unit
54	Allowable continuous discharge power	0-165	kW
55	Allowable peak discharge power	0-165	kW
56	Allowable continuous charging power	0-165	kW
57	Allowable peak charge power	0-165	kW
58	Battery capacity	0-999.9	Ah
59	Battery cell minimum capacity	0-999.9	Ah
60	A/C feedback to battery water pump request	0-100	%
61	Charging gun CC status	0-1	/
62	Charger CP connection state	0-7	/
63	charging permission directive	0-15	/
64	BMS requested charging current	0-50.0	A
65	BMS requested charging Voltage	0-1000	V
66	BMS heat management request	0-3	/
67	AC heat management response	0-7	/
68	Temperature at water inlet of battery pack	-40~125	°C
69	Pre-flashing controller number	0-255	/
70	Module 1 software version number	/	/
71	Module 2 software version number	/	/
72	Module 3 software version number	/	/
73	Module 4 software version number	/	/
74	Module 5 software version number	/	/
75	Module 6 software version number	/	/
76	Module 7 software version number	/	/

Serial No.	DID description	Normal range	Unit
77	Module 1 hardware version number	/	/
78	Module 2 hardware version number	/	/
79	Module 3 hardware version number	/	/
80	Module 4 hardware version number	/	/
81	Module 5 hardware version number	/	/
82	Module 6 hardware version number	/	/
83	Module 7 hardware version number	/	/
85	Voltage _ Module _ 1 _ Battery cell _ 1	0-5	V
86	Voltage _ Module _ 1 _ Battery cell _ 2	0-5	V
87	Voltage _ Module _ 1 _ Battery cell _ 3	0-5	V
88	Voltage _ Module _ 1 _ Battery cell _ 4	0-5	V
89	Voltage _ Module _ 1 _ Battery cell _ 5	0-5	V
90	Voltage _ Module _ 1 _ Battery cell _ 6	0-5	V
91	Voltage _ Module _ 1 _ Battery cell _ 7	0-5	V
92	Voltage _ Module _ 1 _ Battery cell _ 8	0-5	V
93	Voltage _ Module _ 1 _ Battery cell _ 9	0-5	V
94	Voltage _ Module _ 1 _ Battery cell _ 10	0-5	V
95	Voltage _ Module _ 1 _ Battery cell _ 11	0-5	V
96	Voltage _ Module _ 1 _ Battery cell _ 12	0-5	V
97	Voltage _ Module _ 2 _ Battery cell _ 1	0-5	V

Serial No.	DID description	Normal range	Unit
98	Voltage _ Module _ 2 _ Battery cell _ 2	0-5	V
99	Voltage _ Module _ 2 _ Battery cell _ 3	0-5	V
100	Voltage _ Module _ 2 _ Battery cell _ 4	0-5	V
101	Voltage _ Module _ 2 _ Battery cell _ 5	0-5	V
102	Voltage _ Module _ 2 _ Battery cell _ 6	0-5	V
103	Voltage _ Module _ 2 _ Battery cell _ 7	0-5	V
104	Voltage _ Module _ 2 _ Battery cell _ 8	0-5	V
105	Voltage _ Module _ 2 _ Battery cell _ 9	0-5	V
106	Voltage _ Module _ 2 _ Battery cell _ 10	0-5	V
107	Voltage _ Module _ 2 _ Battery cell _ 11	0-5	V
108	Voltage _ Module _ 2 _ Battery cell _ 12	0-5	V
109	Voltage _ Module _ 3 _ Battery cell _ 1	0-5	V
110	Voltage _ Module _ 3 _ Battery cell _ 2	0-5	V
111	Voltage _ Module _ 3 _ Battery cell _ 3	0-5	V
112	Voltage _ Module _ 3 _ Battery cell _ 4	0-5	V
113	Voltage _ Module _ 3 _ Battery cell _ 5	0-5	V
114	Voltage _ Module _ 3 _ Battery cell _ 6	0-5	V
115	Voltage _ Module _ 3 _ Battery cell _ 7	0-5	V
116	Voltage _ Module _ 3 _ Battery cell _ 8	0-5	V
117	Voltage _ Module _ 3 _ Battery cell _ 9	0-5	V

Serial No.	DID description	Normal range	Unit
118	Voltage _ Module _ 3 _ Battery cell _ 10	0-5	V
119	Voltage _ Module _ 3 _ Battery cell _ 11	0-5	V
120	Voltage _ Module _ 3 _ Battery cell _ 12	0-5	V
121	Voltage _ Module _ 4 _ Battery cell _ 1	0-5	V
122	Voltage _ Module _ 4 _ Battery cell _ 2	0-5	V
123	Voltage _ Module _ 4 _ Battery cell _ 3	0-5	V
124	Voltage _ Module _ 4 _ Battery cell _ 4	0-5	V
125	Voltage _ Module _ 4 _ Battery cell _ 5	0-5	V
126	Voltage _ Module _ 4 _ Battery cell _ 6	0-5	V
127	Voltage _ Module _ 4 _ Battery cell _ 7	0-5	V
128	Voltage _ Module _ 4 _ Battery cell _ 8	0-5	V
129	Voltage _ Module _ 4 _ Battery cell _ 9	0-5	V
130	Voltage _ Module _ 4 _ Battery cell _ 10	0-5	V
131	Voltage _ Module _ 4 _ Battery cell _ 11	0-5	V
132	Voltage _ Module _ 4 _ Battery cell _ 12	0-5	V
133	Voltage _ Module _ 5 _ Battery cell _ 1	0-5	V
134	Voltage _ Module _ 5 _ Battery cell _ 2	0-5	V
135	Voltage _ Module _ 5 _ Battery cell _ 3	0-5	V
136	Voltage _ Module _ 5 _ Battery cell _ 4	0-5	V
137	Voltage _ Module _ 5 _ Battery cell _ 5	0-5	V

Serial No.	DID description	Normal range	Unit
138	Voltage _ Module _ 5 _ Battery cell _ 6	0-5	V
139	Voltage _ Module _ 5 _ Battery cell _ 7	0-5	V
140	Voltage _ Module _ 5 _ Battery cell _ 8	0-5	V
141	Voltage _ Module _ 5 _ Battery cell _ 9	0-5	V
142	Voltage _ Module _ 5 _ Battery cell _ 10	0-5	V
143	Voltage _ Module _ 5 _ Battery cell _ 11	0-5	V
144	Voltage _ Module _ 5 _ Battery cell _ 12	0-5	V
145	Voltage _ Module _ 6 _ Battery cell _ 1	0-5	V
146	Voltage _ Module _ 6 _ Battery cell _ 2	0-5	V
147	Voltage _ Module _ 6 _ Battery cell _ 3	0-5	V
148	Voltage _ Module _ 6 _ Battery cell _ 4	0-5	V
149	Voltage _ Module _ 6 _ Battery cell _ 5	0-5	V
150	Voltage _ Module _ 6 _ Battery cell _ 6	0-5	V
151	Voltage _ Module _ 6 _ Battery cell _ 7	0-5	V
152	Voltage _ Module _ 6 _ Battery cell _ 8	0-5	V
153	Voltage _ Module _ 6 _ Battery cell _ 9	0-5	V
154	Voltage _ Module _ 6 _ Battery cell _ 10	0-5	V
155	Voltage _ Module _ 6 _ Battery cell _ 11	0-5	V
156	Voltage _ Module _ 6 _ Battery cell _ 12	0-5	V
157	Voltage _ Module _ 7 _ Battery cell _ 1	0-5	V

Serial No.	DID description	Normal range	Unit
158	Voltage _ Module _ 7 _ Battery cell _ 2	0-5	V
159	Voltage _ Module _ 7 _ Battery cell _ 3	0-5	V
160	Voltage _ Module _ 7 _ Battery cell _ 4	0-5	V
161	Voltage _ Module _ 7 _ Battery cell _ 5	0-5	V
162	Voltage _ Module _ 7 _ Battery cell _ 6	0-5	V
163	Voltage _ Module _ 7 _ Battery cell _ 7	0-5	V
164	Voltage _ Module _ 7 _ Battery cell _ 8	0-5	V
165	Voltage _ Module _ 7 _ Battery cell _ 9	0-5	V
166	Voltage _ Module _ 7 _ Battery cell _ 10	0-5	V
167	Voltage _ Module _ 7 _ Battery cell _ 11	0-5	V
168	Voltage _ Module _ 7 _ Battery cell _ 12	0-5	V
169	Voltage _ Module _ 8 _ Battery cell _ 1	0-5	V
170	Voltage _ Module _ 8 _ Battery cell _ 2	0-5	V
171	Voltage _ Module _ 8 _ Battery cell _ 3	0-5	V
172	Voltage _ Module _ 8 _ Battery cell _ 4	0-5	V
173	Voltage _ Module _ 8 _ Battery cell _ 5	0-5	V
174	Voltage _ Module _ 8 _ Battery cell _ 6	0-5	V
175	Voltage _ Module _ 8 _ Battery cell _ 7	0-5	V
176	Voltage _ Module _ 8 _ Battery cell _ 8	0-5	V
177	Voltage _ Module _ 8 _ Battery cell _ 9	0-5	V

Serial No.	DID description	Normal range	Unit
178	Voltage _ Module _ 8 _ Battery cell _ 10	0-5	V
179	Voltage _ Module _ 8 _ Battery cell _ 11	0-5	V
180	Voltage _ Module _ 8 _ Battery cell _ 12	0-5	V
181	Voltage _ Module _ 9 _ Battery cell _ 1	0-5	V
182	Voltage _ Module _ 9 _ Battery cell _ 2	0-5	V
183	Voltage _ Module _ 9 _ Battery cell _ 3	0-5	V
184	Voltage _ Module _ 9 _ Battery cell _ 4	0-5	V
185	Voltage _ Module _ 9 _ Battery cell _ 5	0-5	V
186	Voltage _ Module _ 9 _ Battery cell _ 6	0-5	V
187	Voltage _ Module _ 9 _ Battery cell _ 7	0-5	V
188	Voltage _ Module _ 9 _ Battery cell _ 8	0-5	V
189	Voltage _ Module _ 9 _ Battery cell _ 9	0-5	V
190	Voltage _ Module _ 9 _ Battery cell _ 10	0-5	V
191	Voltage _ Module _ 9 _ Battery cell _ 11	0-5	V
192	Voltage _ Module _ 9 _ Battery cell _ 12	0-5	V
193	Battery pack interlocking status	0-3	/
194	BMS discharging fault level	0-0xFF	/
195	Internal High voltage interlocking source status	0-1	/
196	External high-voltage interlocking source status	0-1	/
197	A/C Mode Control	0-15	/
198	link+ side voltage	0-600	V
199	link-side voltage	0-600	V

Serial No.	DID description	Normal range	Unit
200	Collision output status	0-255	/
201	CVS hardware version number	/	/
202	CVS software version number	/	/
203	ECU power supply voltage	0~24	V
204	Vehicle speed	0- 200	km/h
205	Total mileage	0~1048574	km
206	Outside voltage of charging positive relay	0~600	V
207	Cell voltage accumulation sum	0~600	V
208	Temperature	-40~120	°C
209	Maximum	0~100	%
210	Minimum SOC	0~100	%
211	High voltage interlock status of main circuit	0~3	NA
212	High voltage interlock status of fast-charging circuit	0~3	NA
213	High voltage interlock outside voltage of main circuit	0~5000	mV
214	High voltage interlock inside voltage of main circuit	0~5000	mV
215	High voltage interlock outside voltage of fast-charging circuit	0~5000	mV
216	High voltage interlock inside voltage of fast-charging circuit	0~5000	mV
217	Positive insulation value	0~65534	K
218	Negative insulation value	0~65534	K
219	IGN Wake-up Signal	0~12000	mV
220	Fast-charging wake-up signal source voltage	0~12000	mV
221	CC2 voltage value	0~5000	mV
222	CRM00 timeout flag	0~1	NA
223	CRMAA timeout flag	0~1	NA
224	CTS or CML timeout flag	0~1	NA
225	CRO timeout.	0~1	NA
226	CCS timeout.	0~1	NA

Serial No.	DID description	Normal range	Unit
227	CST received (no manual stop)	0~1	NA
228	Maximum output voltage of charging pile	0~750	V
229	Minimum output voltage of charging pile	0~750	V
230	CCS output current	0~500	A
231	CCS output voltage	0~600	V
232	Charging socket temperature	-40~125	°C
233	Water outlet temperature	-40~125	°C
234	Equalization ON state	0~5	NA
235	Appointment charging ON state	0~3	NA
236	Smart electricity supplementing ON status	0~3	NA
237	PCB maximum temperature	-40~125	°C
238	Number of times of forcing the relay to be cut off	0~255	/

2.2.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the vehicle power supply to ON gear. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

2.2.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

2.2.6.7 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	The lead-acid battery power supply voltage is too low	Refer to BMS Power Failure
U300617	The lead-acid battery power supply voltage is too high	
U300629	Lead-acid voltage is invalid during the process of powering on at a high voltage	
U347287	Power CAN bus data is lost	Refer to BMS Data Communication Failure
U006488	Power CAN bus is off	
U150087	Current sensor CAN bus message loss	
U150187	Current sensor CAN bus fault	
U111487	Communication with VCU is lost	
U111587	Communication with vehicle-mounted charger is lost	
U011087	Communication with motor controller is lost	
U247281	VCU communication message check and error	Refer to Crash Signal Failure
P153E08	Crash signal generation (ACAN signal)	
P153F12	Crash signal generation (hard wire PWM)	Refer to Temperature Sensor Failure at the Fast Charging Port
P159A01	Temperature sensor failure at the fast charging socket	
P159B22	The fast charging socket has overtemperature	Refer to DC Charging Port Fault Refer to Fast Charging Port Fault
P159C00	Fast-charging pre-charging failure	
P159D01	Charging fault: fast-charging equipment fault	
P159E01	Charging failure: vehicle-mounted charger failure	
P15DE67	The reason for not being able to charge is that the CC2 hardware signal is abnormal	

Diagnostic Trouble Code	Description	Fault location/elimination method
P15DF67	The reason why the battery cannot be charged is that the fast charging wake-up signal source is abnormal	
P15E094	Charging fault: fast-charging equipment is abnormal, and the charging is terminated	
P15D294	Unexpected stop of charging of complete vehicle	
P15D383	Power mismatch between fast charger and BMS (unable to charge)	
P152216	Undervoltage level 1 of single cell	Refer to Internal Faults of BMS
P157017	Overvoltage level 2 of single cell	
P157016	Undervoltage level 2 of single cell	
P152409	Current sensor fault	
P152617	Overvoltage of battery pack	
P152616	Undervoltage of battery pack	
P152901	Balanced loop fault	
P152917	The voltage of the cell is unbalanced	
P152B21	Battery low temperature level 1	
P152B98	Battery over-temperature level 1	
P152C98	Battery over-temperature level 2	
P15E300	Battery low temperature level 2	
P152D00	Battery temperature difference is too large	
P152F1D	Current sampling failure	
P153722	Excessive precharge current	
P153729	Precharge current reversal	
P153763	Pre-charging time is too long	
P15371E	Precharge short circuit	
P153901	Electrical adhesion failure of main positive or pre-charged relay	
P153907	The main positive relay cannot be closed	
P153900	Power-off adhesion failure of main positive or main negative relay	
P153A01	Electrical adhesion failure of main negative relay	

Diagnostic Trouble Code	Description	Fault location/elimination method
P154100	On the premise that the high voltage relay is closed, there is insulation failure (serious)	
P154300	On the premise that the high voltage relay is open, there is insulation failure (serious)	
P154C00	The BMU has powered off fault unexpectedly	
P155E16	Battery cell limit undervoltage	
P155E17	Battery cell limit overvoltage	
P156609	Battery temperature sensor failure (serious)	
P156709	Battery temperature sensor failure	
P156722	The water inlet temperature is too high during heating	
P156721	The water inlet temperature is too low during cooling	
P158002	Adhesion failure of DC charging relay	
P158007	The DC charging relay cannot be closed	
P158107	The discharging pre-charge relay cannot be closed	
P158219	Discharging over-current level 1	
P158319	Discharging over-current level 2	
P158419	Discharging over-current level 3	
P158519	Charging over-current level 1	
P158619	Charging over-current level 2	
P158719	Charging over-current level 3	
P158819	Feedback over-current level 1	
P158919	Feedback over-current level 2	
P158A19	Feedback over-current level 3	
P158B19	Undervoltage level 3 of single cell	
P158C19	Overvoltage level 3 of single cell	
P158D01	High voltage interlock fault of main circuit	
P158F01	High voltage interlock fault of fast-charging circuit	
P159013	High-voltage circuit breaks	
P159113	The cell voltage sampling line is disconnected	

Diagnostic Trouble Code	Description	Fault location/elimination method
P15918F	Reason for equalization stop: CMC (acquisition board) temperature of the circuit board is too high	
P159298	Battery over-temperature level 3	
P159321	Battery low temperature level 3	
P159421	Battery aging: battery health status is too low (alarm level)	
P159521	Battery aging: battery health status is too low (fault level)	
P159600	Cell voltage sensor failure	
P159729	The outer voltage of the relay is greater than the inner voltage	
P159801	Excessive null drift of the current transducer	
P159901	Thermal management fault: the water inlet temperature sensor is faulty	
P15D494	VCU (complete vehicle controller) does not send suspension command 90 seconds after BMS fault level 3	
P15D519	Discharge current is greater than 40A when charging	
P15D694	VCU (complete vehicle controller) does not send suspension command 5 s after BMS fault of level 4	
P15D729	Relay outside high voltage sampling failure in the process of high-voltage powering on	
P15D829	Battery pack voltage sampling failure in the process of high-voltage powering on	
P15D967	IPU precharge completion sign is not received after precharge	
P15DA67	The daisy chain not updated	
P15DB94	Unexpected restart failure of BMU	
P15DC28	Low temperature outlier	
P15DD64	SOC is unreasonable	
P15E101	Thermal management fault: the water outlet temperature sensor is faulty	
P15E201	Thermal management fault: excessive temperature difference at the end of thermal management	

Diagnostic Trouble Code	Description	Fault location/elimination method
P15E319	In the process of power-off, the relay disconnection current is greater than 1A.	
P15E404	ROM self-check failure	
P15E500	Unexpected stop of smart charging of complete vehicle	
P152104	Thermal runaway	
P155342	The battery management system board random access memory verification fails	
P15E898	CSU (Current sensor) over-temperature level 1 fault	
P15E798	CSU (Current sensor) over-temperature level 2 fault	
P15E698	CSU (Current sensor) over-temperature level 3 fault	
P159F01	Equilibrium board temperature failure	
P150504	Battery smoke sensor failure	

2.2.6.8 BMS data communication fault

1. DTC description:

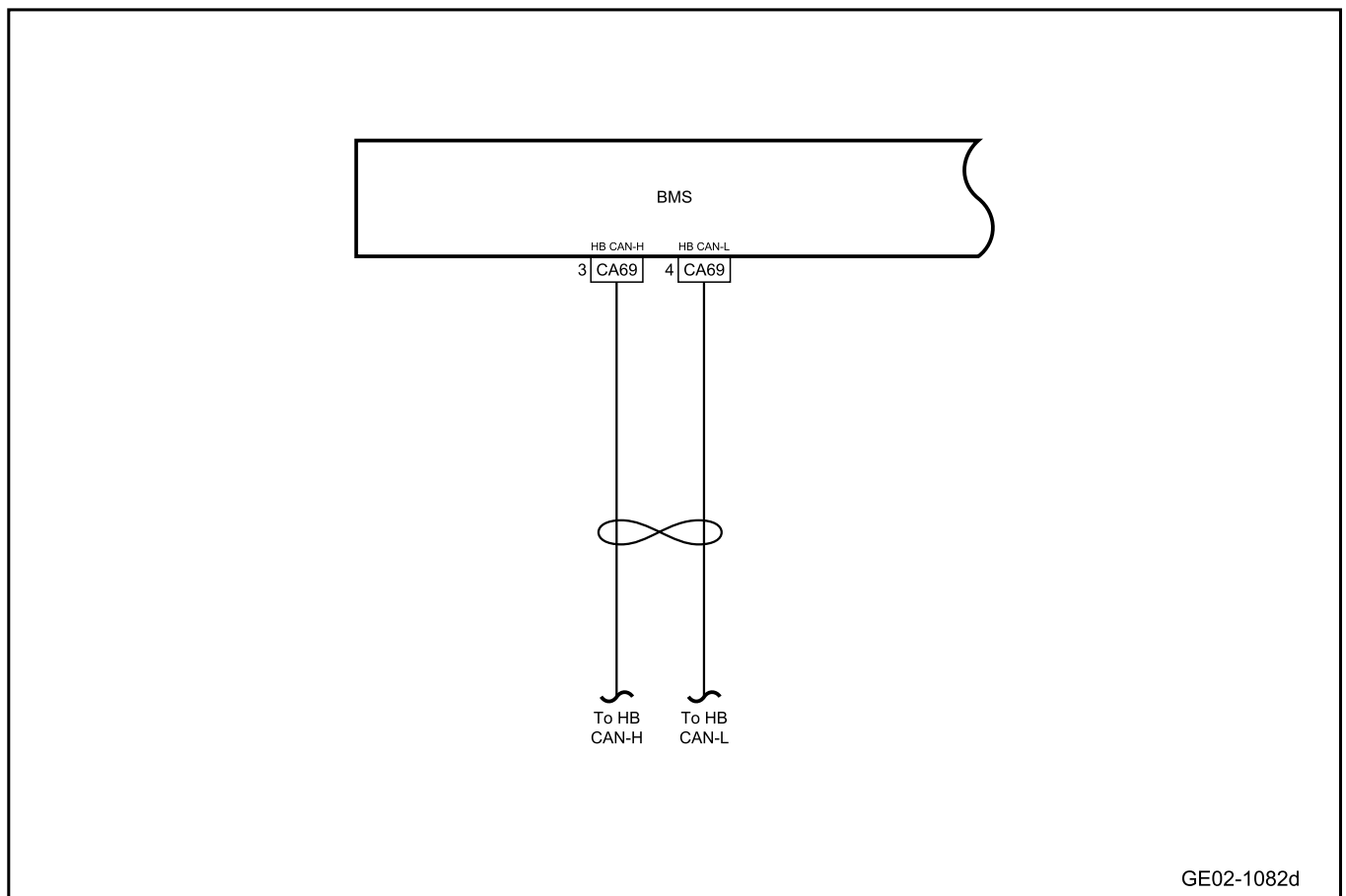
Diagnostic Trouble Code	Description
U347287	Power CAN bus data is lost
U006488	Power CAN bus is off
U150087	Current sensor CAN bus message loss
U150187	Current sensor CAN bus fault
U111487	Communication with VCU is lost
U111587	Communication with vehicle-mounted charger is lost
U011087	Communication with motor controller is lost
U247281	VCU communication message check and error

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U347287	Communication between BMU and ACAN is lost (BMU analysis), ACAN identification information is not received, time > 2000 ms (calibration)	1. BMS is waken up, lasting for 3s 2. The power supply voltage is 9V-16V 3. No bus off occurs 4. Bus disconnection resumes in the last second	1. Circuit 2. BMS 3. Diagnostic interface
U006488	After 10 consecutive fast recoveries, it will be set after entering slow recovery	5. KL15 effective or AC charging or DC charging	
U150087	The scan cannot receive 0x3C2 massege scan analysis The current message of S-CAN is not received for 1s, and the current message of SCAN is reported to be lost.	1. BMS has been powered on 2. BMU relay's diagnostic function works 3. BMU current monitoring function works normally 4. The CSU can normally send the current value to the BMU through the CAN bus	
U150187	BMU scan is lost The BMU lost the SCAN communication with the CSU and did not receive SCAN message for 2 consecutive seconds		
U111487	This frame of VCU_ Command is lost; lasting for 250ms	1. BMS is waken up, lasting for 3s 2. The power supply voltage is 9V-16V	
U111587	1. During the AC charging process; the OBC_Sts frame is lost for 500ms, and the fault is mature 2. OBC_CURR frame message 0x221 is lost; it lasts for 500ms; the discharging fault level is only detected during the OBC discharging process	3. No bus off occurs 4. Bus disconnection resumes in the last second 5. KL15 effective or AC charging or DC charging	
U011087	This frame of IPU_TrqSpd is lost; lasting for 250ms, and the fault is mature		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U247281	Every time a VCU_Command message checksum error occurs; Counter is increased by 1; Every time a VCU_Command message checksum right occurs; Counter is decreased by 1; Counter>10; the fault is mature		

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check BMS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the HB-CAN bus.

- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm that the HB-CAN network is functioning properly.

No

Check or repair HB-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4 Replace the BMS

- A. Check whether BMS power supply and grounding harness are normal. Refer to [2.2.7.11BMS Power Failure](#)
- B. To replace the BMS, please refer to [Replacement of BMS](#)

Next step

Step 5 Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

2.2.6.9 Crash Signal Failure

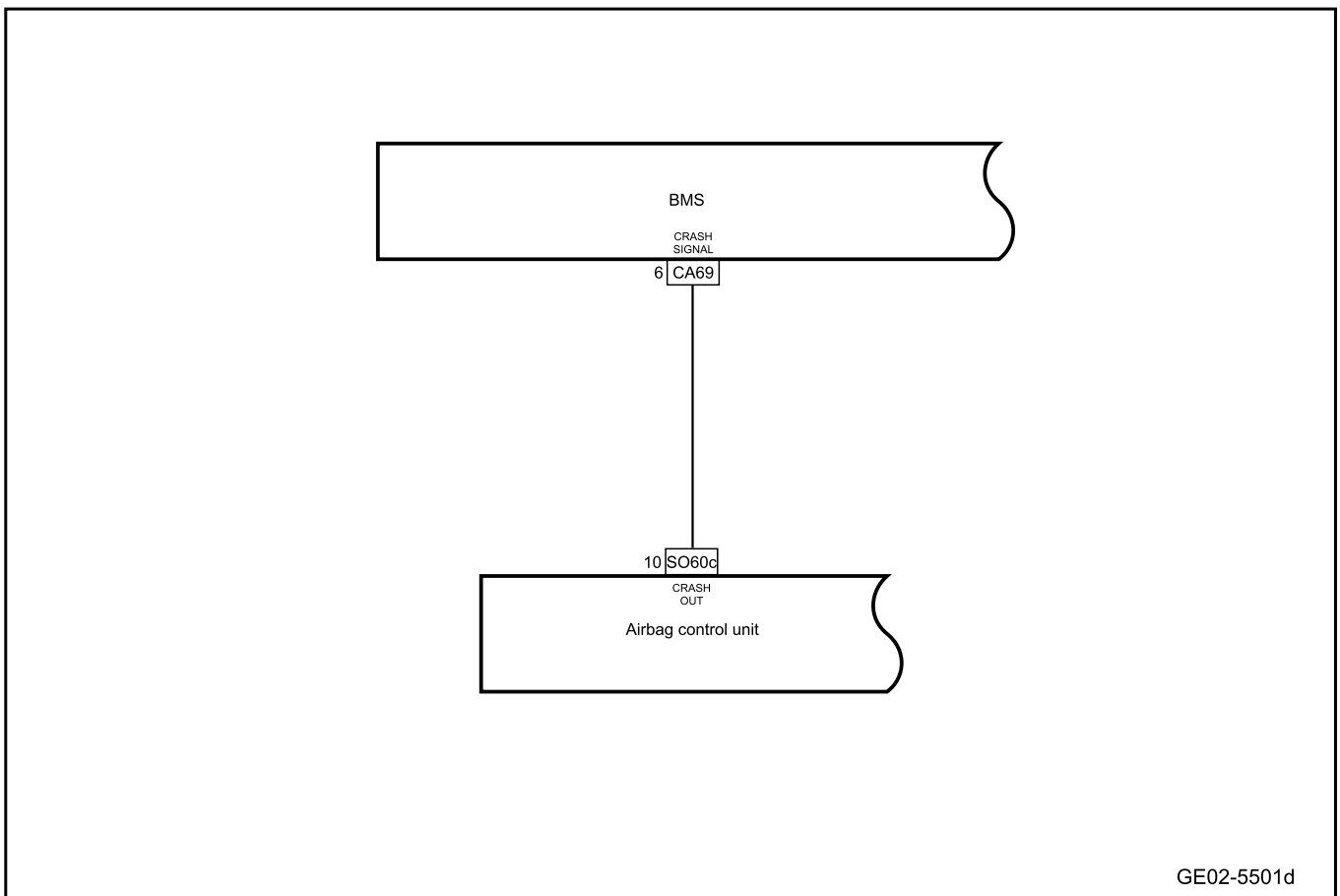
1. DTC description:

Diagnostic Trouble Code	Description
P153E08	Crash signal generation (ACAN signal)
P153F12	Crash signal generation (hard wire PWM)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P153E08	BMS receives crash signal from VCU through ACAN, counter > 0 (calibration)	1. BMS has been powered on 2. BMU can receive "crash signal" from VCU via A-ACAN	1. Airbag control module 2. Circuit 3.BMS
P153F12	BMS receives the blasting signal from the hardware blasting signal, and the counter is > 3 (calibration) to check	1. BMS has been powered on 2. BMU can receive hardware signal from airbag	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

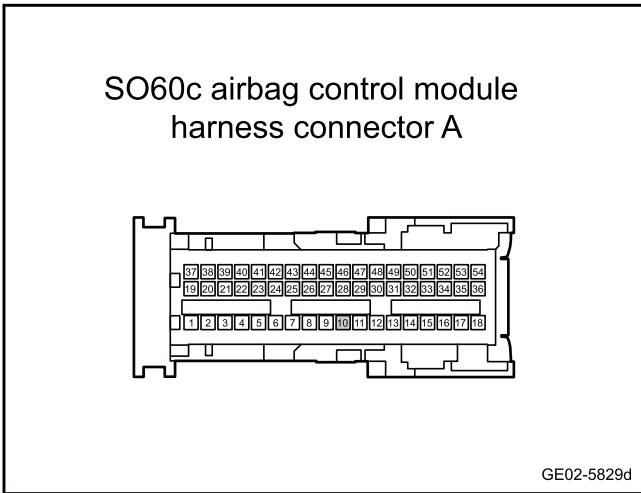
Step 2 Primary check.

- A. Check the airbag control module and BMS for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and BMS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

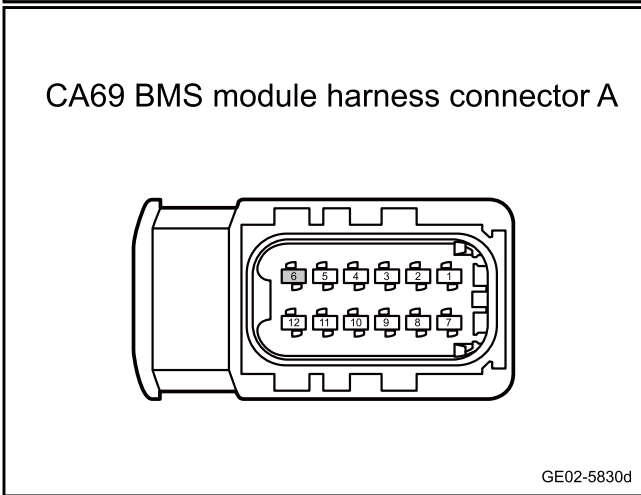
No Repair or replace the faulty part.

Yes

Step 3 Check whether the harness between airbag control module and BMS is open.



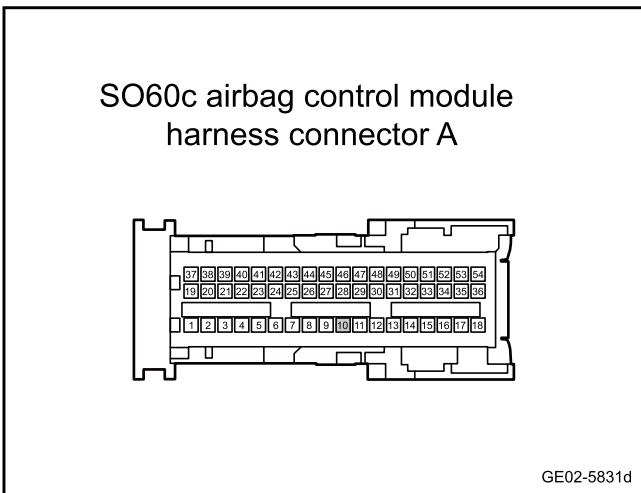
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the harness connector SO60c of airbag control module.
 - C. Disconnect the BMS harness connector CA69.
 - D. Use a multimeter to measure the resistance between the terminal 10 of the harness connector SO60c of airbag control module and the terminal 6 of harness connector CA69 of the BMS.
- Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 4 Check whether the harness between airbag control module and BMS is short to power supply.



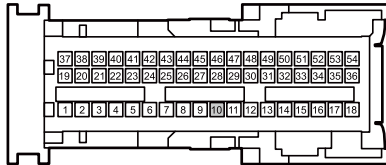
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the harness connector SO60c of airbag control module.
 - C. Disconnect the BMS harness connector CA69.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between the terminal 10 of the harness connector SO60c of airbag control module and the body grounding.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the harness between airbag control module and BMS is short to GND.

SO60c airbag control module
harness connector A



GE02-5832d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the BMS harness connector CA69.
- D. Use a multimeter to measure the resistance between the terminal 10 of the harness connector SO60c of airbag control module and the body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. To replace the airbag control module, please refer to [Replacement of Airbag Control Module](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the BMS

- A. Check the BMS power supply and grounding harness. Refer to [BMS Power Failure](#)
- B. Replace the BMS Refer to [Replacement of BMS](#)

Next step

Step 8 Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.2.6.10 DC charging port fault

1. DTC description:

Diagnostic Trouble Code	Description
P159A01	Temperature sensor failure at the fast charging socket
P159B22	The fast charging socket has overtemperature
P159C00	Fast-charging pre-charging failure
P159D01	Charging fault: fast-charging equipment fault
P159E01	Charging failure: vehicle-mounted charger failure
P15DE67	The reason for not being able to charge is that the CC2 hardware signal is abnormal
P15DF67	The reason why the battery cannot be charged is that the fast charging wake-up signal source is abnormal
P15E094	Charging fault: fast-charging equipment is abnormal, and the charging is terminated
P15D294	Unexpected stop of charging of complete vehicle
P15D383	Power mismatch between fast charger and BMS (unable to charge)

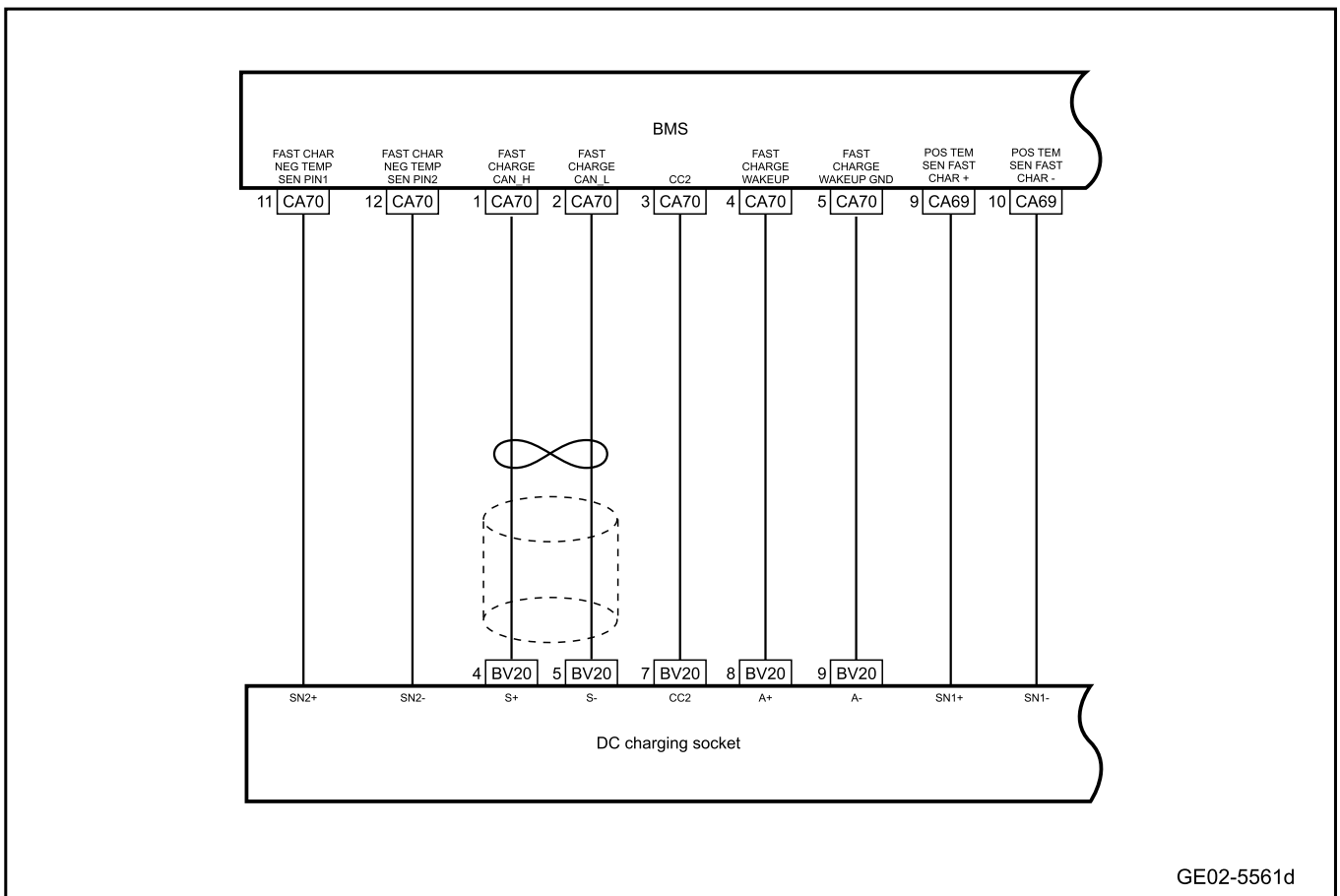
2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159A01	The temperature at the charging port exceeds 40-201°C	1. BMS has been powered on	1. DC charging socket 2. Circuit 3.BMS

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159B22	The temperature at charging port is valid, the temperature is greater than or equal to 120°C	1. BMS has been powered on 2. DC charging	
P159C00	The inner and outer voltage difference is greater than a certain value and lasts for a certain time: 1. Greater than 80% for 120ms; 2. Greater than 50% for 250ms; 3. Greater than 10V for 500ms.	1. BMS has been powered on 2. The DC charging positive and pre-charging relay are closed	
P159D01	Fast-charging timeout includes: 1. CRM00 is not received in 30 s (new) or 60 s (old) 2. CRMAA is not received in 5 s 3. CTS\CML message is not received in 5 s 4. CRO message is not received in 5s 5. CRO= 0xAA message is not received in 60 s 6. CCS message is not received in 5s	1. The BMS has been powered on 2. Fast charging gun inserted 3. BMU and the T-CAN controller module of the high and low voltage charging system work normally	
P159E01	One of the following conditions is met during slow charging: 1. CCU fault level 6 2. Communication with CCU is lost 3. CCU is in charge suspension mode for more than 5 minutes 4. CCU is in Shutdown for 1s		
P15DE67	There is a wake-up source, but no valid CC2 signal is detected for 10s		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15DF67	When the fast charging gun is inserted into the charging process, CC2 is detected but the correct wake-up signal source voltage is not detected, which lasts for 60s		
P15E094	Fast-charging: after receiving CST message, the charging is terminated and the high and low voltage charging system faults or fails to stop charging		
P15D294	During the charging process, the system failure level is less than or equal to level 2, and other conditions for stopping charging are not met, but the VCU disconnection relay command or charging prohibition command is received	<ol style="list-style-type: none"> 1. BMS has been powered on 2. BMS is charging 	
P15D383	The maximum output voltage of the charger is less than the current voltage of the pack or the minimum output voltage of the charger is greater than the current voltage of the pack	<ol style="list-style-type: none"> 1. BMS has been powered on 2. Fast charging gun is plugged in and the communication is normal 	

3. Schematic circuit diagram:



GE02-5561d

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

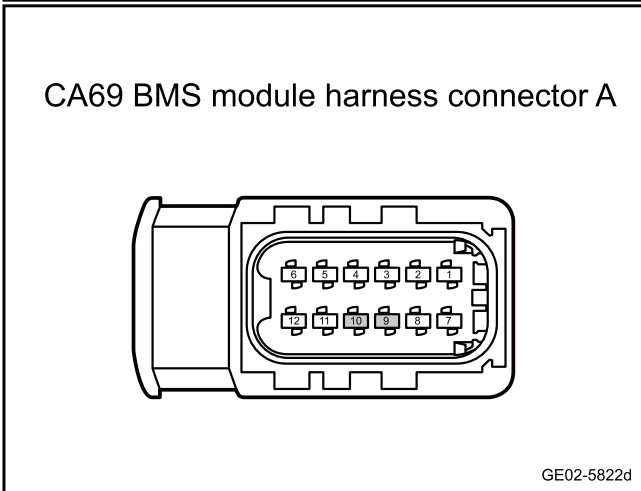
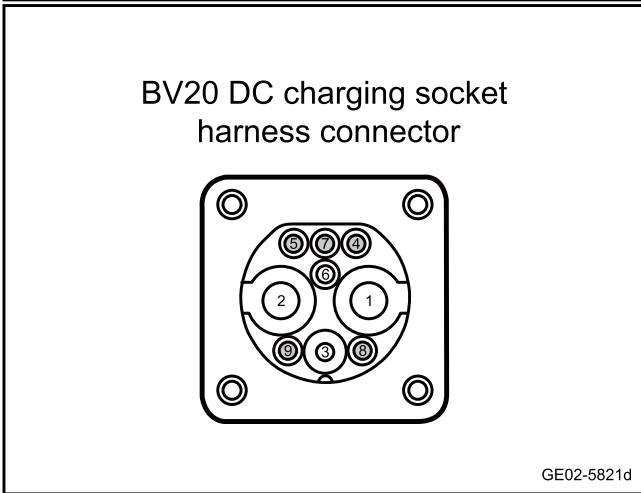
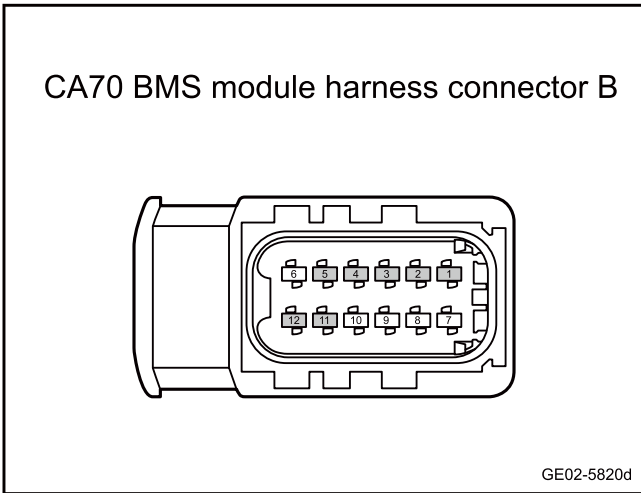
- A. Check the DC charging socket, BMS for signs of damage, deformation, smudges, looseness, etc.
- B. Check the DC charging socket and BMS harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the DC charging socket and BMS for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV20.
- C. Disconnect the BMS harness connectors CA69 and CA70.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(11)	DC charging socket end	Standard resistance: less than 1Ω
CA70(12)	DC charging socket end	
CA70(1)	BV20(4)	
CA70(2)	BV20(5)	
CA70(3)	BV20(7)	
CA70(4)	BV20(8)	
CA70(5)	BV20(9)	
CA69(9)	DC charging socket end	
CA69(10)	DC charging socket end	

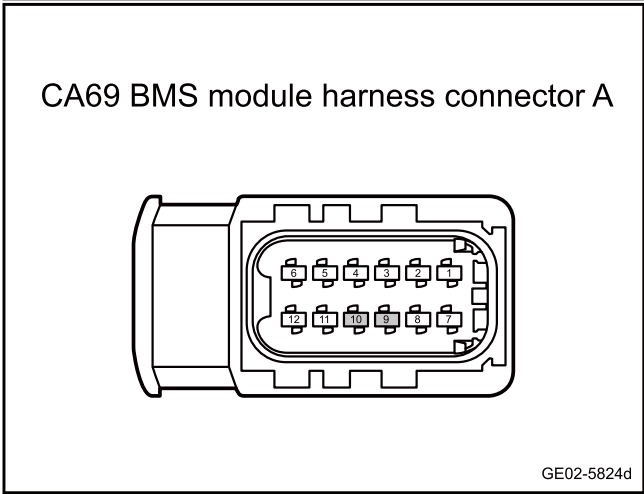
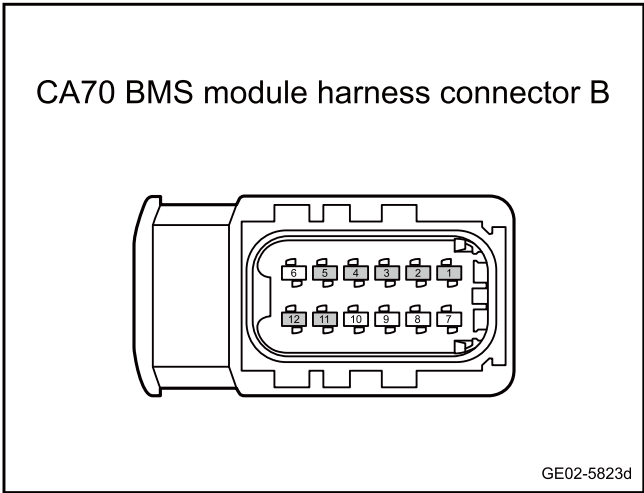
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the DC charging socket and BMS for an open circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV20.
- C. Disconnect the BMS harness connectors CA69 and CA70.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(11)	Vehicle body is grounded.	Standard voltage: 0V
CA70(12)		
CA70(1)		
CA70(2)		
CA70(3)		
CA70(4)		
CA70(5)		
CA69(9)		
CA69(10)		

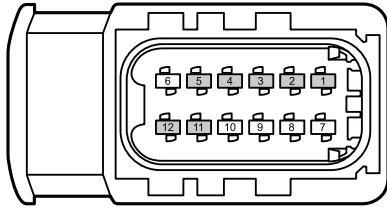
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

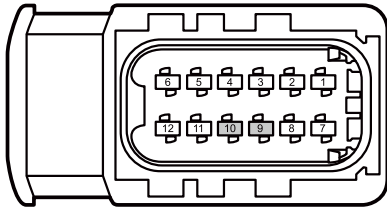
Step 5 | Check the harness between the DC charging socket and BMS for an open circuit to the ground.

CA70 BMS module harness connector B



GE02-5825d

CA69 BMS module harness connector A



GE02-5826d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV20.
- C. Disconnect the BMS harness connectors CA69 and CA70.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA70(12)		
CA70(1)		
CA70(2)		
CA70(3)		
CA70(4)		
CA70(5)		
CA69(9)		
CA69(10)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the DC charging socket.

- A. To replace the DC charging socket, please refer to [Replacement of DC Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 7 | Replace the BMS

- A. Check the BMS power supply and grounding harness. Refer to [BMS Power Failure](#)
- B. Replace the BMS Refer to [Replacement of BMS](#)

Next step

Step 8 | Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.2.6.11 BMS power supply failure

1. DTC description:

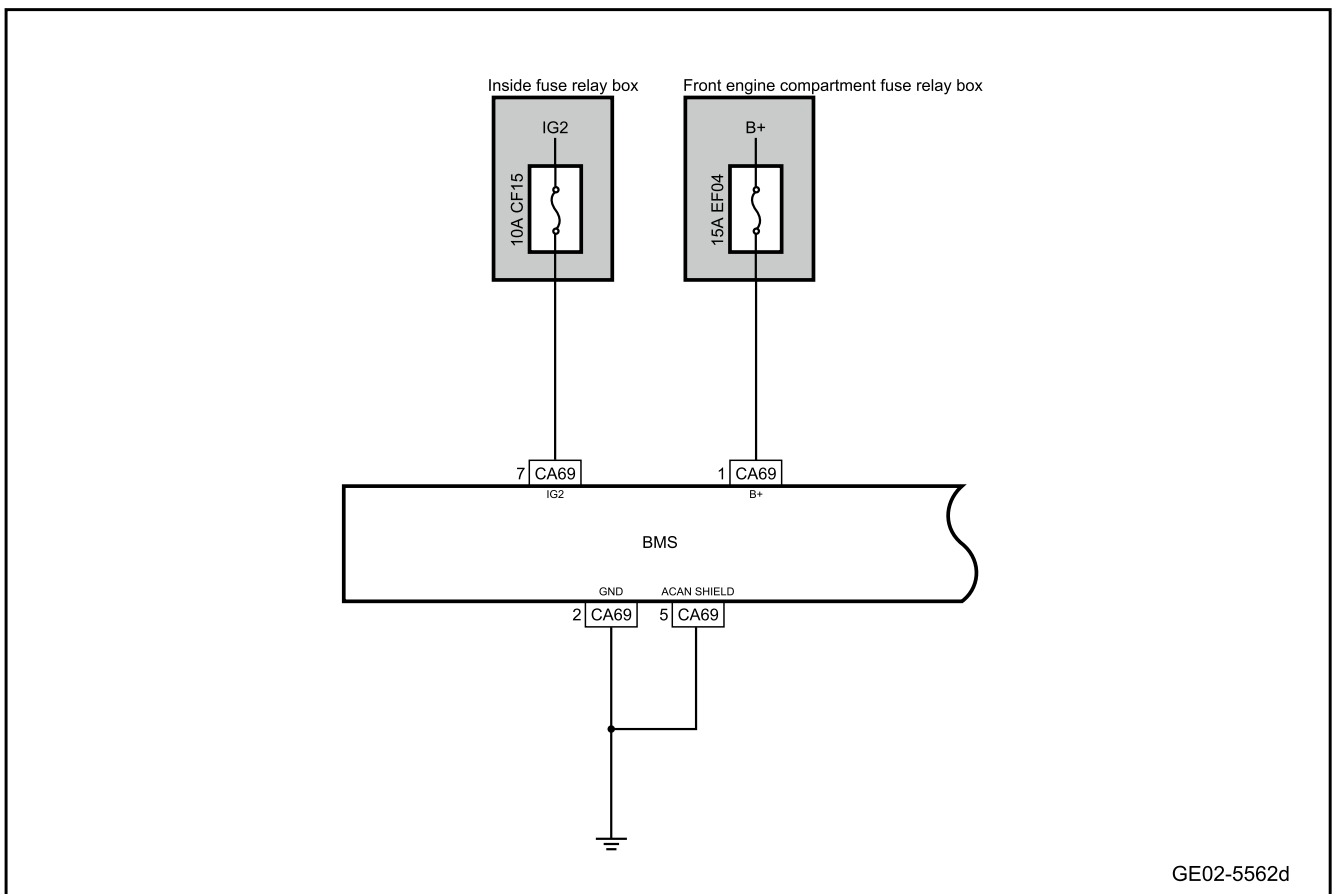
Diagnostic Trouble Code	Description
U300616	The lead-acid battery power supply voltage is too low
U300617	The lead-acid battery power supply voltage is too high
U300629	Lead-acid voltage is invalid during the process of powering on at a high voltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The 12V power supply voltage of BMS is less than or equal to 8.4V, and the duration is greater than or equal to 4s. (can be calibrated)	1. BMS is waken up	1. Battery 2. Circuit 3. Fuse 4.BMS

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	The 12V power supply voltage of BMS is greater than 16.9V, and the duration is greater than or equal to 4s. (can be calibrated)		
U300629	1. Lead-acid voltage sampling is invalid 2. Lead-acid voltage is higher than 16V or lower than 9V	1. BMS has been powered on 2. Attempt to power on the BMS at a high voltage	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power DTC.
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A. Read the DTC. Check whether other modules have power DTC output.

No

To Step 4.

Yes

Step 2	Primary check.
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- A. Check the BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check BMS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the vehicle power supply to the ON gear.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect the fuse.
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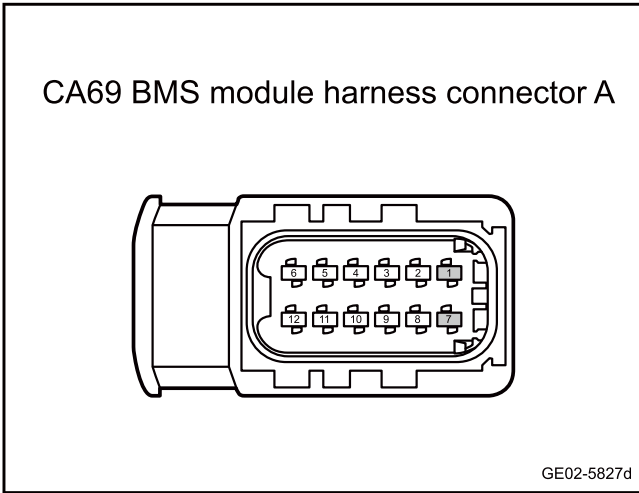
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse CF15 and check whether the fuse is blown.
Rated capacity of fuse: 10A
- C. Pull out the fuse EF04 of the front engine compartment. Check whether the fuse EF04 is blown.
Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5	Check the BMS power supply circuit.
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- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the BMS harness connector CA69.
- C. The key activates the vehicle power supply to the ON gear.
- D. Use a multimeter to measure each terminal according to the table below:

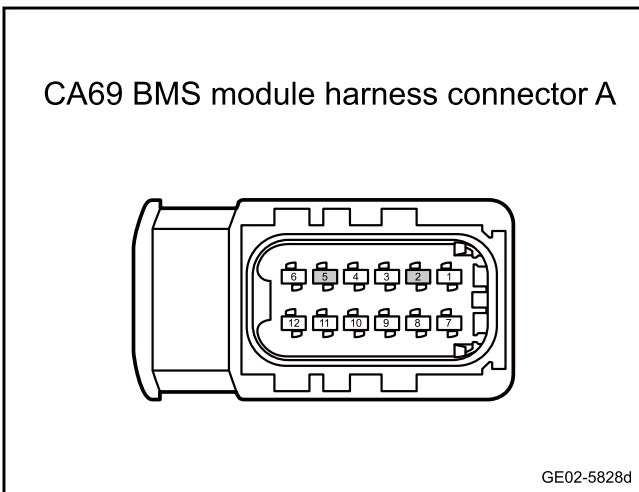
Measure terminal 1	Measure terminal 2	Standard value
CA69(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA69(7)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check the BMS grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the BMS harness connector CA69.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA69(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA69(5)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Replace the BMS

- A. To replace the BMS, please refer to [Replacement of BMS](#)

Next step

Step 8 | Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the vehicle power supply to the ON gear.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.2.6.12 BMS internal fault

1. DTC description:

DTC	Trouble description
P152216	Undervoltage level 1 of single cell
P157017	Overvoltage level 2 of single cell
P157016	Undervoltage level 2 of single cell
P152409	Current sensor fault
P152617	Overvoltage of battery pack
P152616	Undervoltage of battery pack
P152901	Balanced loop fault
P152917	The voltage of the cell is unbalanced
P152B21	Battery low temperature level 1
P152B98	Battery over-temperature level 1
P152C98	Battery over-temperature level 2
P15E300	Battery low temperature level 2
P152D00	Battery temperature difference is too large
P152F1D	Current sampling failure

DTC	Trouble description
P153722	Excessive precharge current
P153729	Precharge current reversal
P153763	Pre-charging time is too long
P15371E	Precharge short circuit
P153901	Electrical adhesion failure of main positive or pre-charged relay
P153907	The main positive relay cannot be closed
P153900	Power-off adhesion failure of main positive or main negative relay
P153A01	Electrical adhesion failure of main positive relay
P154100	On the premise that the high voltage relay is closed, there is insulation failure (serious)
P154300	On the premise that the high voltage relay is open, there is insulation failure (serious)
P154C00	The BMS has powered off fault unexpectedly
P155E16	Battery cell limit undervoltage
P155E17	Battery cell limit overvoltage
P156609	Battery temperature sensor failure (serious)
P156709	Battery temperature sensor failure
P156722	The water inlet temperature is too high in heating mode
P156721	The water inlet temperature is too low in cooling mode
P158002	Adhesion failure of DC charging relay
P158007	The DC charging relay cannot be closed
P158107	The discharging pre-charge relay cannot be closed
P158219	Discharging over-current level 1
P158319	Discharging over-current level 2
P158419	Discharging over-current level 3
P158519	Charging over-current level 1
P158619	Charging over-current level 2
P158719	Charging over-current level 3
P158819	Feedback over-current level 1
P158919	Feedback over-current level 2
P158A19	Feedback over-current level 3
P158B19	Undervoltage level 3 of single cell
P158C19	Overvoltage level 3 of single cell
P158D01	High voltage interlock of main circuit
P158F01	High voltage interlock of fast-charging circuit
P159013	High-voltage circuit breaks
P159113	The cell voltage sampling line is disconnected
P15918F	Reason for equalization stop: CMC (acquisition board) temperature of the circuit board is too high
P159298	Battery over-temperature level 3

DTC	Trouble description
P159321	Battery low temperature level 3
P159421	Battery aging: battery health status is too low (alarm level)
P159521	Battery aging: battery health status is too low (fault level)
P159600	The cell voltage sensor failure
P159729	The outer voltage of the relay is greater than the inner voltage
P159801	Excessive null drift of the current transducer
P159901	Thermal management fault: the water inlet temperature sensor is faulty
P15D494	VCU (Vehicle Control Unit) does not send suspension command 90 seconds after BMS fault level 3
P15D519	Discharge current is greater than 40A when charging
P15D694	VCU (Vehicle Control Unit) does not send suspension command 5 s after BMS fault of level 4
P15D729	Relay outside high voltage sampling failure in the process of high-voltage powering on
P15D829	Battery pack voltage sampling failure in the process of high-voltage powering on
P15D967	IPU precharge completion sign is not received after precharge
P15DA67	The daisy chain not updated
P15DB94	Unexpected restart failure of BMU
P15DC28	Low temperature outlier
P15DD64	SOC unreasonable
P15E101	Thermal management fault: the water outlet temperature sensor is faulty
P15E201	Thermal management fault: excessive temperature difference at the end of thermal management
P15E319	In the process of power-off, the relay disconnection current is greater than 1A.
P15E404	ROM self-check failure
P15E500	Unexpected stop of smart charging of complete vehicle
P152104	Thermal runaway
P155342	The battery management system board random access memory verification fails
P15E898	CSU (Current sensor) over-temperature level 1 fault
P15E798	CSU (Current sensor) over-temperature level 2 fault
P15E698	CSU (Current sensor) over-temperature level 3 fault
P159F01	Equilibrium board temperature failure
P150504	Battery smoke sensor failure

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P152216	$V_{min} \leq 2.85V (T_{min} > 10^{\circ}C)$ $V_{min} \leq 2.55V (0^{\circ}C < T_{min} \leq 10^{\circ}C)$ $V_{min} \leq 2.15V (-20^{\circ}C < T_{min} \leq 0^{\circ}C)$ $V_{min} \leq 2.05V (T_{min} \leq -20^{\circ}C)$	1. BMS has been powered on 2. CSC cell voltage monitoring function works normally 3. The CSC-CAN bus between BMU and CSCs works normally 4. Maximum and minimum cell voltages are valid	1. BMS
P157017	$V_{max} \geq 4.31V$		
P157016	$V_{min} \leq 2.8V (T_{min} > 0^{\circ}C)$ $V_{min} \leq 2.5V (0^{\circ}C < T_{min} \leq 10^{\circ}C)$ $V_{min} \leq 2.1V (-20^{\circ}C < T_{min} \leq 0^{\circ}C)$ $V_{min} \leq 2.0V (T_{min} \leq -20^{\circ}C)$		
P152409	1. Invalid flag bit of current message or out of the detection range [-1500, +1500]A, and the flag bit lasts for 2s 2. Current sensor reports the ErrorIndication fault		
P152617	$U_{sum} \geq 438.6V$		
P152616	$U_{sum} \leq 285.6V (T_{min} \geq 0^{\circ}C)$ $U_{sum} \leq 255V (T_{min} < 0^{\circ}C)$		
P152901	BMU reads CMC equalization circuit fault flag or equalization temperature is invalid		
P152917	$\Delta(SOC_{Max} - SOC_{Min}) \geq 30\%$		
P152B21	The lowest battery temperature is less than $20^{\circ}C$ and the duration is greater than or equal to 4s		
P152B98	The highest battery temperature is greater than $50^{\circ}C$ and the duration is greater than or equal to 4s		
P152C98	The highest battery temperature is greater than $53^{\circ}C$ and the duration is greater than or equal to 4s		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15E300	The lowest battery temperature is less than 30°C and the duration is greater than or equal to 4s		
P152D00	The temperature difference is too large, greater than or equal to 25 °C, and the duration is greater than or equal to 60s		
P152F1D	The current validity flag bit is invalid.		
P153722	The current is greater than 2A, and the duration is greater than or equal to 300ms (can be calibrated)		
P153729	During pre-charging process, the current flow direction is charging, and $I > 5A$, and the duration is greater than 50ms (50 is a calibratable value).		
P153763	The pre-charge time is greater than the maximum time x required for precharge (x is a calibratable value, the initial value of x is 600ms, and the range is 0~600ms).		
P15371E	<p>1. The outer high voltage is less than 0.4 times Unpack (0.4 is a calibratable value) and the current is greater than or equal to 0.6 times HV_ In/precharge resistance value (0.6 can be calibrated);</p> <p>2 Precharge time is greater than the precharge short circuit time of 70 ms (70 is a calibratable value)</p> <p>3. The above two conditions are met at the same time and appear for two consecutive times</p>		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P153901	When the main positive relay is turned on, the BMS requests close, but turns off before the request, the counter > 0 (calibration)		
P153907	BMS requests the main relay to be turned off when it is turned on, but it is still on, the counter > 0 (calibration)		
P153900	BMS requests the main relay to be turned on when it is turned off, but it is still turned off, the counter > 0 (calibration)		
P153A01	When the main negative relay is turned on, the BMS requests the main negative relay from close, but turns off before the request, the counter > 0 (calibration)		
P154100	The insulation resistance value is less than 500Ω/V (the value for fast charging is less than 100Ω/V, (this value can be calibrated) (when the high voltage relay is closed), the duration is greater than or equal to 20s		
P154300	The insulation resistance value is less than 500Ω/V (the value for fast charging is less than 100Ω/V, (this value can be calibrated) (when the high voltage relay is closed), the duration is greater than or equal to 20s		
P154C00	Unexpected power off of the BMU, the number of times is greater than 0		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P155E16	The lowest cell voltage is less than or equal to 1.5V and lasts for 4s		
P155E17	The highest cell voltage is larger than or equal to 4.36V and lasts for 4s		
P156609	At the low-temperature outlier temperature point, or a temperature point exceeding -40-120 °C, a single CMC shows >1 and lasts for 20s		
P156709	At the low-temperature outlier temperature point 20 °C, or a temperature point exceeding 40-120 °C, a single CMC shows =1 and lasts for 20s		
P156722	Water inlet temperature is greater than or equal to 58°C		
P156721	Water inlet temperature is less than or equal to 10°C		
P158002	1. Before the DC charging closes the charging relay, the closed state of the charging relay is detected 2. The charging adhesion fault is detected in the stored discharging mode		
P158007	BMS requests that the DC charging relay is turned off when it is turned on, but it is still on, the counter > 0 (calibration)		
P158107	BMS requests the main relay to be turned off when it is turned on, but it is still on, the counter > 0 (calibration)		
P158219	Main loop current $I \geq 1.1$ *value in table+1A		
P158319	Main loop current $I \geq 1.2$ *value in table+1A		
P158419	Main loop current $I \geq 550A$		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P158519	$I \geq \text{Min}[(\text{request_I} * 1.05) \& (\text{request_I} + 1A)]$ ($T_{\text{min}} \leq 5$ degree) $I \geq \text{Min}[(\text{request_I} * 1.05) \& (\text{request_I} + 1A)] + 1$ ($T_{\text{min}} > 5$ degree)		
P158619	$I \geq \text{Min}[(\text{request_I} * 1.1 + 2A)$ and $(\text{request_I} + 2A)]$		
P158719	Main loop current $I \geq 447.4A$		
P158819	$I \geq \text{Min}[(\text{table_value} * 1.05)$ and $(\text{table_value} + 1A)]$		
P158919	$I \geq \text{Min}[(\text{table_value} * 1.1 + 2A)$ and $(\text{table_value} + 2A)]$		
P158A19	$I \geq \text{Min}(430A, 1.2 * \text{value from the table} + 2A)$, lasting for 2s		
P158B19	$V_{\text{min}} \leq 2.5V$ ($T_{\text{min}} > 10^{\circ}\text{C}$) $V_{\text{min}} \leq 2.3V$ ($0^{\circ}\text{C} < T_{\text{min}} \leq 10^{\circ}\text{C}$) $V_{\text{min}} \leq 2.0V$ ($-20^{\circ}\text{C} < T_{\text{min}} \leq 0^{\circ}\text{C}$) $V_{\text{min}} \leq 1.8V$ ($T_{\text{min}} \leq -20^{\circ}\text{C}$)		
P158C19	$V_{\text{max}} \geq 4.32V$ (calibration)		
P158D01	BMU detects HVIL open circuit, counter > 0 (calibration)		
P158F01	BMU detects HVIL open circuit, counter > 0 (calibration)		
P159013	High-voltage circuit breaker, and BatUin is less than 30V		
P159113	BMU receives that the offline flag bit of the hardware detection sampling line is valid for 5s		
P15918F	PCB on-board temperature is >90 °C for 5S		
P159298	The highest battery temperature is greater than 56°C and the duration is greater than or equal to 4s		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159321	The lowest battery temperature is less than 40°C and the duration is greater than or equal to 4s		
P159421	SOH ≤ 80% (calibration), continuously powered on, count ≥ 40 (calibration)		
P159521	SOH ≤ 70% (calibration), continuously powered on, count ≥ 40 (calibration)		
P159600	The cell voltage value is invalid or exceeds the limit, lasting for 5S		
P159729	The outer voltage of the relay is greater than 1.05 times the inner high voltage (before power on) and lasts for 50ms		
P159801	Without relay adhesion, disconnect the relay and detect that the absolute value of the CSU sampling current is greater than 2A for 1S (can be calibrated)		
P159901	Inlet water temperature ≤40°C for 5s (can be calibrated) or temperature ≥100°C for 5s (can be calibrated)		
P15D494	VCU did not send shutdown 90 seconds after BMS failure level 3		
P15D519	Discharge current is greater than 40A when charging and lasts for 2s		
P15D694	VCU did not send shutdown 100ms after BMS failure level 4		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15D729	During the process of powering on at a high voltage The outer high voltage sampling value of the main positive relay is invalid, lasting for 50ms when powering on at a high voltage: The outer high voltage sampling value of the main positive relay is invalid, lasting for 2s		
P15D829	During the process of powering on at a high voltage The pack high voltage sampling value is invalid, lasting for 50ms when powering on at a high voltage: The pack high voltage sampling value is invalid, lasting for 2s		
P15D967	In the process of powering on at a high voltage, within the pre-charging time of 600ms, the IPU pre-charging success flag is not detected		
P15DA67	Receive the daisy chain uploaded from the bottom layer and do not update the flag bit for 5s		
P15DB94	Unexpected re-start of the BMU, the number of times is greater than 0		
P15DC28	The difference between the low temperature and the average temperature is $\geq 20^{\circ}\text{C}$, lasting for 10s		
P15DD64	Power on and read the SOC value in the EEPROM>100%		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P15E101	Outlet water temperature $\leq 40^{\circ}\text{C}$ for 5s (can be calibrated) or temperature $\geq 100^{\circ}\text{C}$ for 5s (can be calibrated)		
P15E201	At the moment when the cooling is over, the temperature difference of the cell exceeds 10°C , and it is confirmed in 0s; at the moment when the heating is over, the temperature difference of the cell exceeds 15 degrees, and it is confirmed in 0s.		
P15E319	After receiving the shutdown sent by VCU, the current is greater than 1A and lasts for 2s		
P15E404	The RAM self-check of the BMU fails, and the number of times is greater than 0		
P15E500	During the smart charging process, the system failure level is less than or equal to level 5, and other conditions for stopping smart charging are not met, but the command for stopping smart power supply sent by VCU is received		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P152104	<p>When any of the following conditions is met, report the thermal runaway</p> <ol style="list-style-type: none"> 1. $V_{min} < 2.1V (0.5s) \& > 67^{\circ}C$ (2s) 2. $V_{min} < 2.1V(0.5s) \& \& dt/dt > 3^{\circ}C/s(2s)$ 3. $V_{min} < 2.1V(0.5s) \& > 30^{\circ}C$ (2s) 4. Voltage sampling disconnection fault ≥ 1 (5 s) $\& \& T_{max} > 67^{\circ}C$ (2 s) 5. Voltage sampling disconnection fault ≥ 1 (5 s) $\& \& dt/dt > 3^{\circ}C/s$ (2 s) 6. Voltage sampling disconnection fault ≥ 1 (5 s) $\& \& T_{max} T_{min} > 30^{\circ}C$ (2 s) 7. Number of voltage sampling open circuit faults ≥ 1 (5 s) $\& \&$ all NTCs in the same module fail (20 s) 8. (FPC+HVIL) disconnection signal $\& \& T_{max} > 67^{\circ}C$ (2 s) 9. (FPC+HVIL) disconnection signal $\& \& dt/dt > 3^{\circ}C/s$ (2 s) 10. (FPC+HVIL) disconnection signal $\& > 30^{\circ}C$ (2 s) 11. (FPC+HVIL) disconnection signal $\& \& V_{min} < 2.1V(0.5 s)$ 12. (FPC+HVIL) disconnection signal $\& \geq 1$ (5 s) 13. (FPC+HVIL) disconnection signal $\& \&$ all NTCs in the same module fail (20 s) 14. (FPC+HVIL) disconnection signal $\& \&$ CSC communication is lost 		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P155342	The RAM self-check of the BMU fails, and the number of times is greater than 0	The data in RAM is correctly saved before power-off After the BMS is powered on, it is successfully initialized before running application software	
P15E898	AFE acquisition Shunt temperature AFE sampling shunting temperature $\geq [CcAFED_AFETempOverComfirmLimit(1,1) = 130] ^\circ C$	BMS has been powered on	
P15E798	AFE acquisition Shunt temperature AFE sampling shunting temperature $\geq [CcAFED_AFETempOverLvl2Comfirm-Limit(1,1) = 140] ^\circ C$		
P15E698	Current transducer temperature is greater than or equal to $115^\circ C$		
P150504	The BMS detects that the smoke sensor is abnormal		
P159F01	CMC equilibrium temperature is invalid under condition that daisy chain is updating	Daisy chain updates	

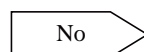
3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No 

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the BMS for signs of damage, deformation, stain, loosening, etc.
- B. Check BMS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the BMS

- A. Check whether BMS power supply and grounding harness are normal. Refer to [2.2.7.11 BMS Power Failure](#)
- B. Replace the BMS Refer to [Replacement of BMS](#)

Next step

Step 5 Reprogram and reset the BMS.

- A. Reprogram and reset the BMS. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the vehicle power supply to the ON gear.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

2.2.6.13 Fast charging port fault

1. DTC description:

DTC	Trouble description
P159C00	Fast-charging pre-charging failure
P159D01	Charging fault: fast-charging equipment fault
P159E01	Charging failure: vehicle-mounted charger failure
P15D294	Unexpected stop of charging of complete vehicle
P15D383	Power mismatch between charger and BMS (unable to charge)
P15DE67	The reason for not being able to charge is that the CC2 hardware signal is abnormal
P15DF67	The reason why the battery cannot be charged is that the fast charging wake-up signal source is abnormal
P15E094	Charging fault: fast-charging equipment is abnormal, and the charging is terminated

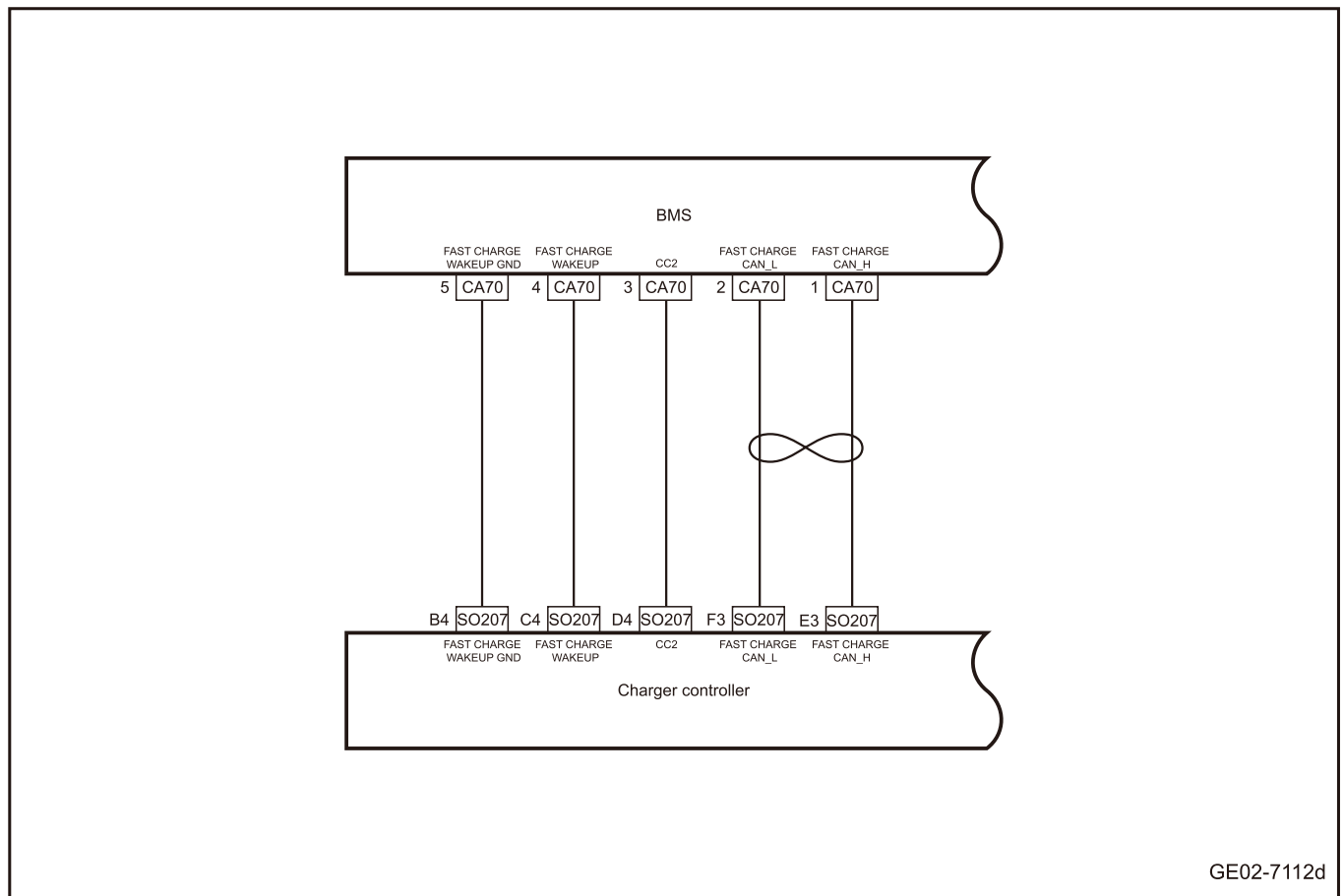
2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159C00	The inner and outer voltage difference is greater than a certain value and lasts for a certain time: 1. Greater than 80% for 120ms; 2. Greater than 50% for 250ms; 3. Greater than 10V for 500ms.	1. BMS has been powered on 2. The DC charging positive and pre-charging relay are closed	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159E01	One of the following conditions is met during slow charging: (1) CCU fault level 6; (2) CCU communication lost; (3) CCU is in charge suspension mode for more than 5 minutes; (4) CCU is in Shutdown state for 1s	1. BMS has been powered on 2. Slow charging gun inserted 3. BMU and T-CAN controller module of charger works normally	
P15D294	During the charging process, the system failure level is less than or equal to level 2, and other conditions for stopping charging are not met, but the VCU disconnection relay command or charging prohibition command is received	1. BMS has been powered on 2. BMS is charging	
P15D383	The maximum output voltage of the charger is less than the current voltage of the pack or the minimum output voltage of the charger is greater than the current voltage of the pack	1. BMS has been powered on 2. Fast charging gun is plugged in and the communication is normal	
P15DE67	There is a wake-up source, but no valid CC2 signal is detected for 10s		
P15DF67	When the fast charging gun is inserted into the charging process, CC2 is detected but the correct wake-up signal source voltage is not detected, which lasts for 60s	1. BMS has been powered on 2. Fast charging gun inserted 3. BMU and T-CAN controller module of charger works normally	
P15E094	Fast-charging: after receiving CST message, the charging is terminated and the charger fails or fails to stop charging		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159D01	Fast-charging timeout includes: (1) CRM00 not received in 30s (new) or 60s (old) ; (2) CRMAA not received in 5s; (3) CTS\CML message not received in 5s; (4) CRO message not received in 5s; (5) CRO=0xAA message not received in 60s; (6) CCS message not received in 5s		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the vehicle power supply to the ON gear.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

- A. Check the charger controller and BMS for signs of damage, deformation, smudges, looseness, etc.
- B. Check the charger controller and BMS harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

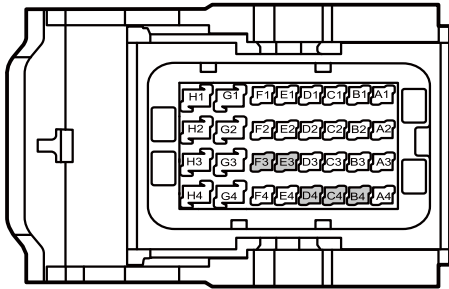
No

Repair or replace the faulty part.

Yes

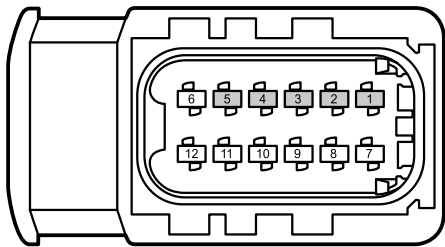
Step 3 Check the harness between charger controller and BMS.

SO207 charger controller harness connector



GE02-7320d

CA70 BMS harness connector



GE02-7321d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charger controller harness connector SO207.
- C. Disconnect the BMS harness connector CA70.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(1)	SO207(E3)	Standard resistance: less than 1Ω
CA70(2)	SO207(F3)	
CA70(3)	SO207(D4)	
CA70(4)	SO207(C4)	
CA70(5)	SO207(B4)	Vehicle body is grounded. Standard resistance: 10KΩ or higher
CA70(1)		
CA70(2)		
CA70(3)		
CA70(4)		
CA70(5)		

- E. Key activates the vehicle power supply to the ON gear
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA70(1)	Vehicle body is grounded.	Standard voltage: 0V
CA70(2)		
CA70(3)		
CA70(4)		
CA70(5)		

- G. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 4	Program and reset the charger controller.
--------	---

- A. Program and reset the charger controller. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replacement of charger controller
--------	-----------------------------------

- A. To replace the charger controller, please refer to [Replacement of Vehicle Communication Control Module](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Program and set the BMS.
--------	--------------------------

- A. Program and set the BMS. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the BMS
--------	-----------------

- A. Replace the BMS Refer to [Replacement of BMS](#)

Next step

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the vehicle power supply to the ON gear.
- C. Clear the trouble code.
- D. Road test for at least 10 min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

2.2.6.14 Temperature Sensor Failure at the Fast Charging Port

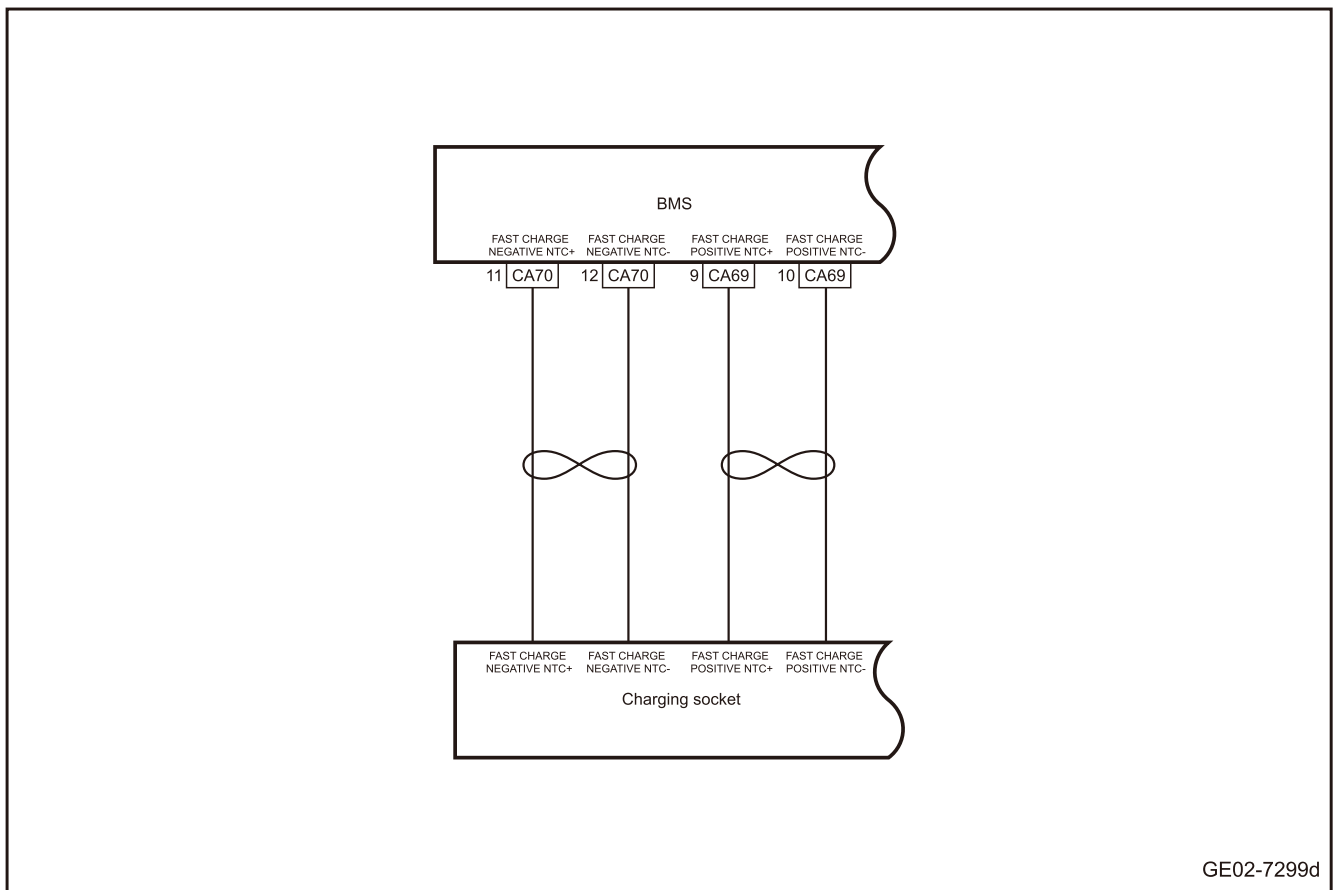
1. DTC description:

DTC	Trouble description
P159A01	Temperature sensor failure at the charging port
P159B22	Over-temperature at charging port

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P159A01	The temperature at the charging port exceeds -40-201°C	1. BMS has been powered on	1. Circuit
P159B22	The temperature at charging port is valid, the temperature is greater than or equal to 120°C	1. BMS has been powered on 2. DC charging	2. Charging socket 3. BMS

3. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10 min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

- A. Check the BMS and charging socket for signs of damage, deformation, stain, loosening, etc.
- B. Check the BMS and charging socket harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

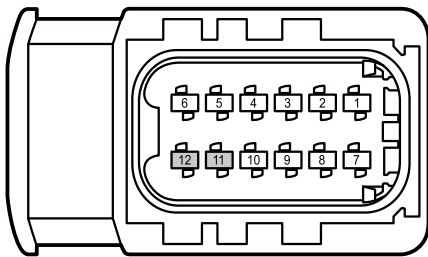
No

Repair or replace the faulty part.

Yes

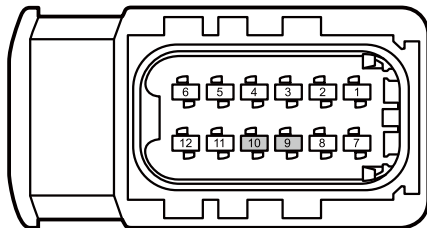
Step 3 Check the circuit between BMS and charging socket(fast-charging temperature sensor).

CA70 BMS harness connector



GE02-7322d

CA69 BMS harness connector



GE02-7323d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the BMS harness connectors CA70 and CA69.
- C. Disconnect the charging socket (fast-charging temperature sensor) harness connector.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(9)	Charging socket (fast-charging temperature sensor end)	Standard resistance: less than 1Ω
CA69(10)		
CA70(11)		
CA70(12)		
CA69(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA69(10)		
CA70(11)		
CA70(12)		

- E. The key activates the vehicle power supply to the ON gear
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA69(9)	Vehicle body is grounded.	Standard voltage: 0V
CA69(10)		
CA70(11)		
CA70(12)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Replace the charging socket.

- A. Replace the charging socket. Refer to [Replacement of Charging Socket](#)
- B. Confirm whether the charging socket is in normal operation.

Yes System is normal.

No

Step 5	Program and set the BMS.
--------	--------------------------

- A. Program and set the BMS. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Replace the BMS
--------	-----------------

- A. Replace the BMS Refer to [Replacement of BMS](#)

Next step

Step 7	System is normal.
--------	-------------------

2.2.6.15 Reset the Power Battery Control Module

1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next step

Step 2	Enter the main interface of the diagnostic instrument for the relevant vehicle model and scan the complete vehicle.
--------	---

Next step

Step 3	Select the controller to diagnose.
--------	------------------------------------

Next step

Step 4	Click on the secondary menu "ECU reset".
--------	--

Next step

Step 5	Select software reset or hardware reset.
--------	--

Next step

Step 6	Start the diagnostic instrument.
--------	----------------------------------

Next step

Step 7 Enter the extended mode.

Next step

Step 8 Perform a software reset.

Next step

Step 9 Perform a hardware reset.

Next step

Step 10 Prompt that the reset is successful.

Next step

Step 11 Exit the extended mode.

2.2.6.16 Check for Intermittent Faults

Descriptions:

1. Clear DTC.
2. Perform a simulation test.
3. Check and shake the harness, joints, and terminals.

When the fault cannot be confirmed through the DTC check, the symptom only appears occasionally in use. All circuits and components that may cause faults should be confirmed. In many cases, by performing the basic check shown in the flowchart below, the fault can be found quickly and effectively. Especially for faults such as poor contact of the harness connector. Fault definition: The fault does not currently occur, but the historical fault diagnosis code record indicates that the fault has occurred. Or the distributor reported the fault for repair, but because the fault is not related to the fault diagnosis code, the fault symptoms cannot be reproduced currently.

1. Diagnosis steps:

Step 1 Check whether the battery voltage is normal.

- a. Multimedia settings from vehicle power supply to OFF.
- b. Measure the battery voltage.
- c. According to the measured value, enter the corresponding diagnosis steps.

Results:	Go to Step
≥11 V	Yes
<11 V	No

No

Check the battery, refer to battery description and operation

Yes

Step 2 Visual physical check.

Performing this step is an important means to initially determine the fault location:

- a. Check whether the harness is damaged, whether there are symptoms such as wear and tear.
- b. Check the harness for improper arrangement. It is strictly forbidden for the harness to approach the high-voltage or high-current devices.
- c. Check whether the positive and negative cables of the battery are connected reliably and whether there is any looseness, oxidation, corrosion, etc.

No

Repair or replace the faulty part.

Yes

Step 3 Check of harnesses and connectors.

- a. Many intermittent faults are caused by vibration, twisting, uneven roads, or movement of harnesses and connectors caused by the component operation.
- b. If the circuit resistance is too large, the part does not operate. Use the fault diagnosis instrument to force the actuator to drive. If it does not operate, check whether the related circuit has circuit faults such as excessive resistance.

No

Repair or replace the harnesses and the connectors.

Yes

Step 4 Reproduce the fault and record the data of the control unit with the instrument.

a. Connect the vehicle fault diagnosis instrument and use the data recording function of the fault diagnosis instrument to record the data when the intermittent fault occurs on the vehicle for a road test. After pressing the button of the vehicle data recorder, the control module data can be recorded when an intermittent fault occurs, which can be used to find out the fault location.

b. Another diagnostic method is to connect the digital multimeter to the suspicious circuit while the vehicle is driving. The abnormal reading value of the digital multimeter may indicate the fault location.

Next step

Step 5	The fault indicator lights up intermittently, but the system has not set the fault code.
--------	--

The following conditions may cause the fault indicator to light up intermittently, but the system will not set the fault diagnosis code:

- a. Electromagnetic interference caused by malfunctioning relays, solenoid valves or switches controlled by control modules.
- b. Non-original or after-sales accessories, for example: car phones, alarms, car lights, or radio equipment, are installed incorrectly.
- c. The fault indicator control circuit is intermittently shorted to GND.
- d. The grounding point of the control module is loose.

Next step

Step 6	Other checks.
--------	---------------

- a. Check the charging system for the following conditions:
 - Check whether the low-voltage power supply output voltage of the high and low voltage charging system is normal. If the DCDC output voltage is lower than 13.7V or higher than 14.5V, repair the charging system.

Next step

Step 7	Enter the fault symptom table.
--------	--------------------------------

2.2.7 Removing and installing

2.2.7.1 Replacement of Power Battery

Removal procedure

Warning

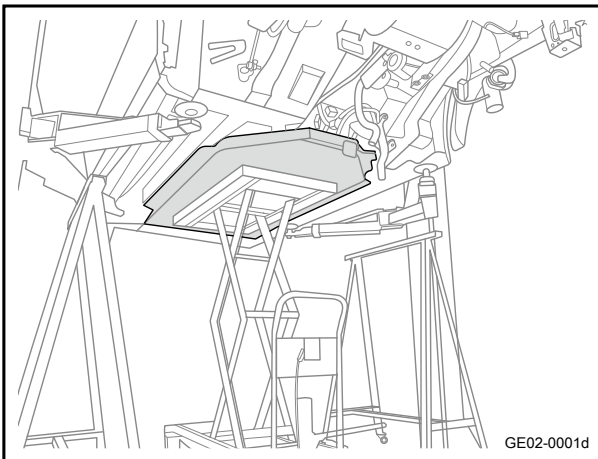
When removing the power battery, please wear insulating gloves as required.

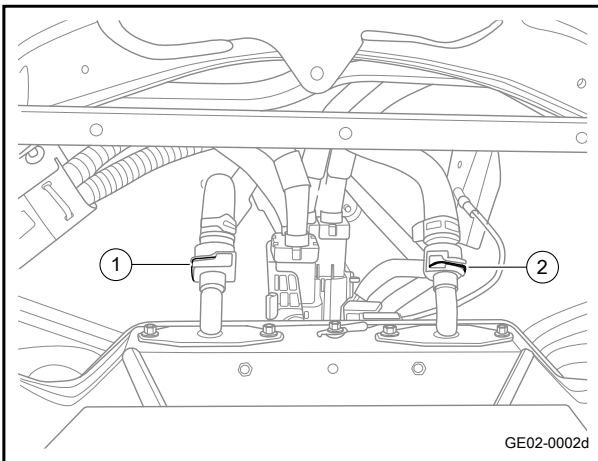
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 5 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 6 Remove the battery bottom shield. Refer to [Replacement of Battery Bottom Shield](#)
- 7 Place the flatbed under the vehicle, and use the flatbed to support the power battery assembly.

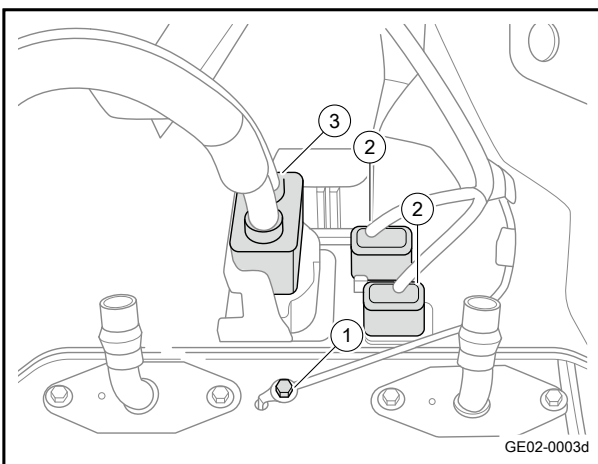




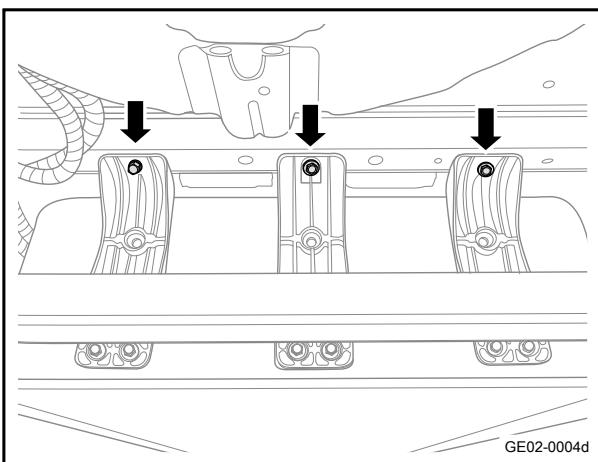
- 8 Pull the snap ring 1 of the power battery water inlet pipe outward.
- 9 Pull the snap ring 2 of the power battery water outlet pipe outward.
- 10 Unplug the water inlet and outlet pipes of the power battery.

Caution

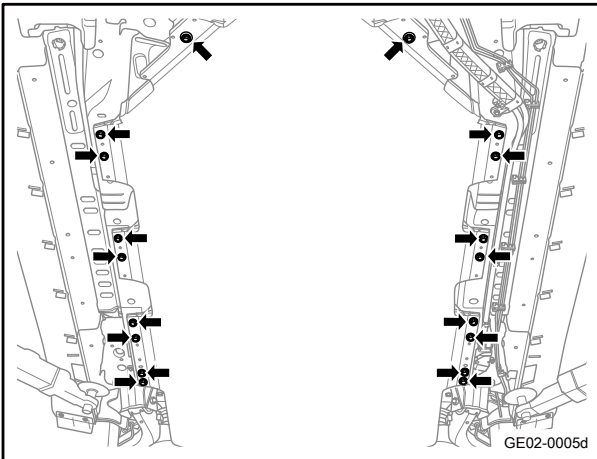
Before pulling out the battery inlet and outlet pipes, prepare a container for waste liquid and place it at the connection between the battery inlet and outlet pipes to prevent the battery coolant from overflowing.



- 11 Remove the 1 fixing bolt 1 of the power battery ground wire.
- 12 Disconnect the front engine compartment harness connector 2.
- 13 Disconnect the power battery high-voltage harness connector 3.



- 14 Remove the 3 rear mounting bracket fixing bolts of the power battery pack.

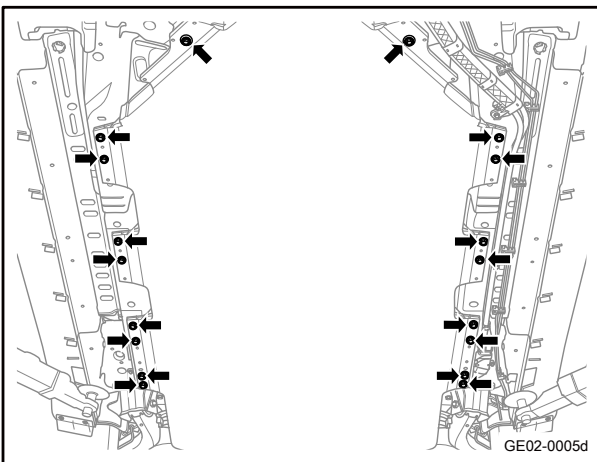


- 15 Remove the 18 fixing bolts at the bottom of the power battery.
- 16 Slowly lower the flatbed and take out the power battery.

Caution

During the descent of the power battery, move the flatbed forward slowly to avoid the interference between the power battery and the rear suspension.

Installation procedure



- 1 Move the power battery onto the flatbed, slowly lift the flatbed, and adjust the flatbed position to align the mounting hole on the power battery to align with the mounting nut on the vehicle body.
- 2 Install the 18 fixing bolts at the bottom of the power battery.

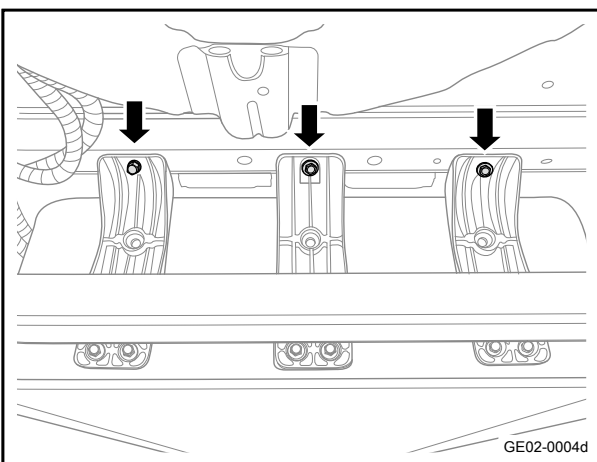
Torque: 78N·m

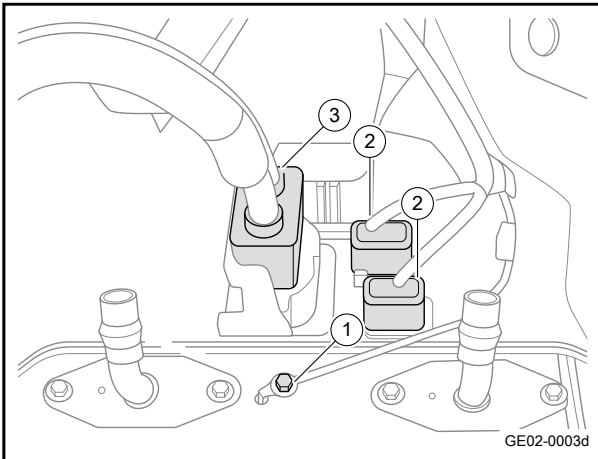
Caution

During the ascent of the power battery, move the lifting platform backward slowly to avoid the interference by the power battery and the vehicle body.

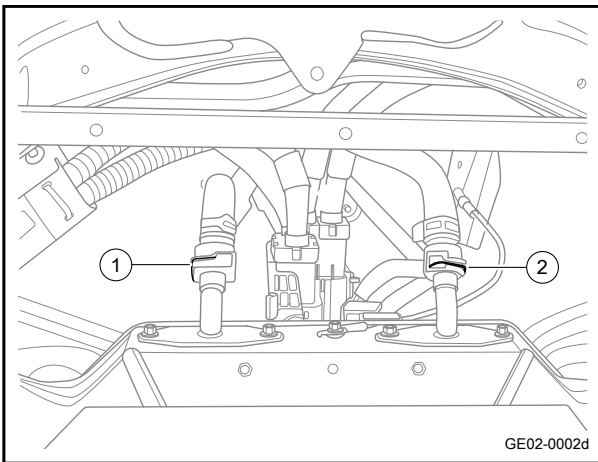
- 3 Install the 3 rear mounting bracket fixing bolts of the power battery pack.

Torque: 78N·m





- 4 Connect the power battery high-voltage harness connector 3.
- 5 Connect the harness connector 2 between the power battery and the front engine compartment harness.
- 6 Install the power battery ground wire fixing bolt 1.
Torque: 10N·m



- 7 Move the battery inlet pipe and battery outlet pipe to the installation positions.
- 8 Install the battery outlet pipe clamp 2.
- 9 Install the power battery inlet pipe clamp 1.

- 10 Install the battery bottom shield.
- 11 Install the power wire harness cover plate assembly.
- 12 Fill the power battery coolant.
- 13 Connect the DC bus assembly.
- 14 Lower the vehicle.
- 15 Connect the negative cable of battery.

2.2.7.2 Replacement of Rear Mounting Bracket of the Power Battery Pack

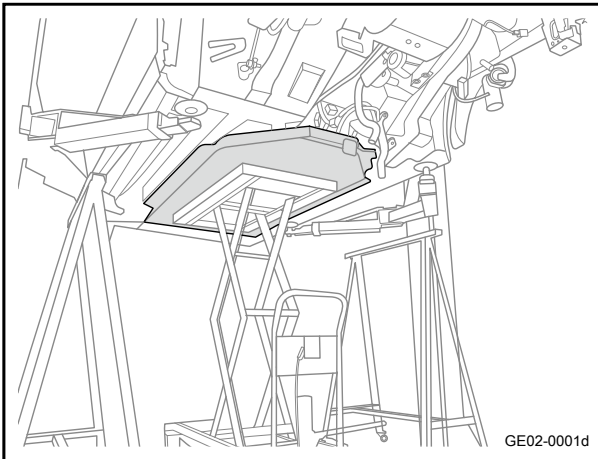
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

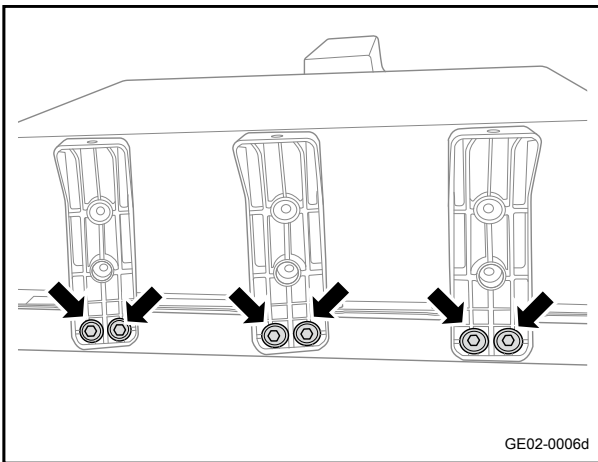
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

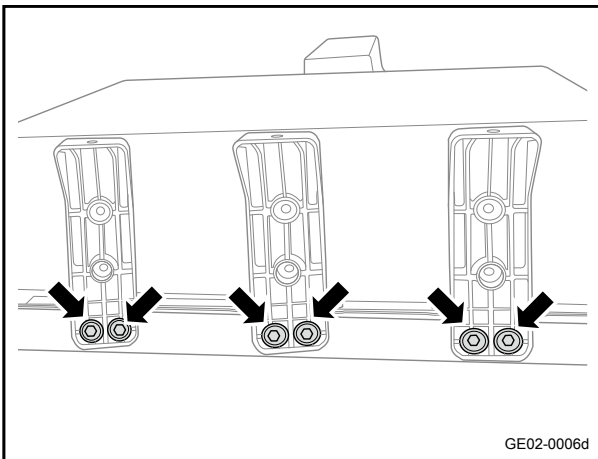
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)



- 3 Place the flatbed under the vehicle, and use the flatbed to support the power battery.



- 4 Remove the 6 rear mounting bracket fixing bolts of the power battery pack.
- 5 Remove the rear mounting bracket of the power battery pack.



Installation procedure

- 1 Move the rear mounting bracket of the power battery pack to the installation position.
- 2 Install the 6 rear mounting bracket fixing bolts of the power battery pack.
Torque: 45N·m

- 3 Slowly move the flatbed away.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

2.2.7.3 Replacement of Power Battery Box Cover

Removal procedure

Caution

Air tightness testing is required after the installation.

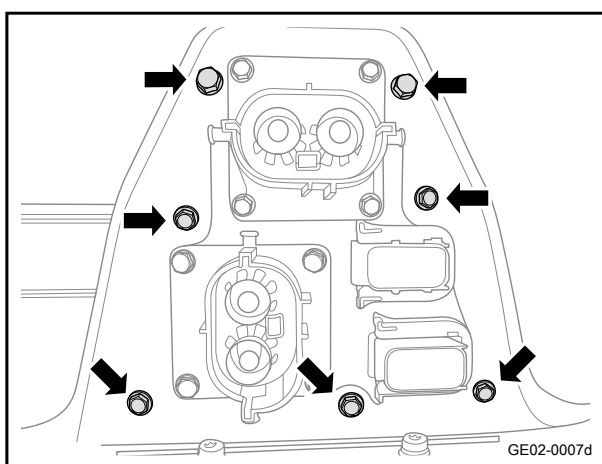
Operation steps: 1. Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled pipe, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350-360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

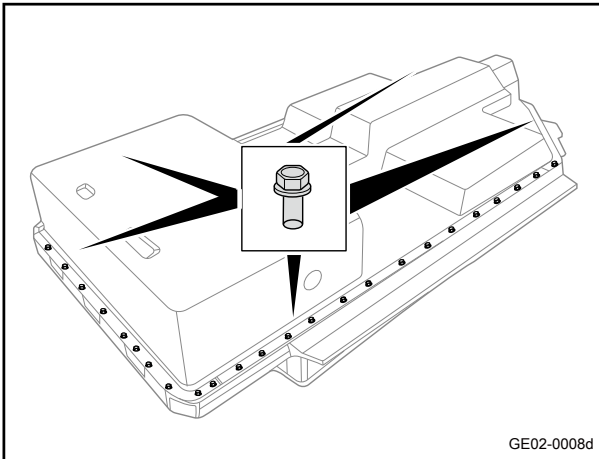
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

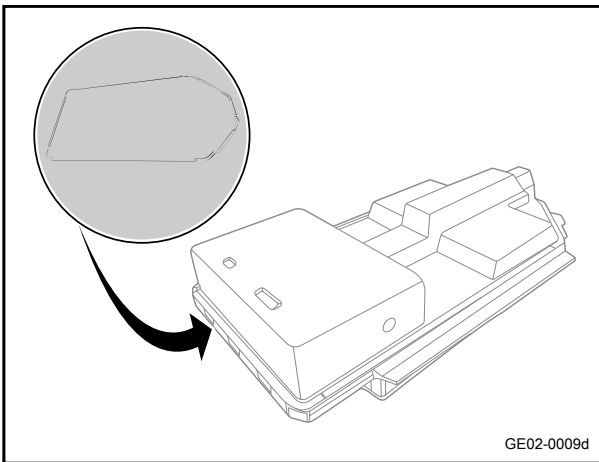
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 5 Remove the power battery. Refer to [Replacement of Power Battery](#)
- 6 Remove the 7 fixing bolts of the front sealing clamping plate.
- 7 Take off the front sealing clamping plate.

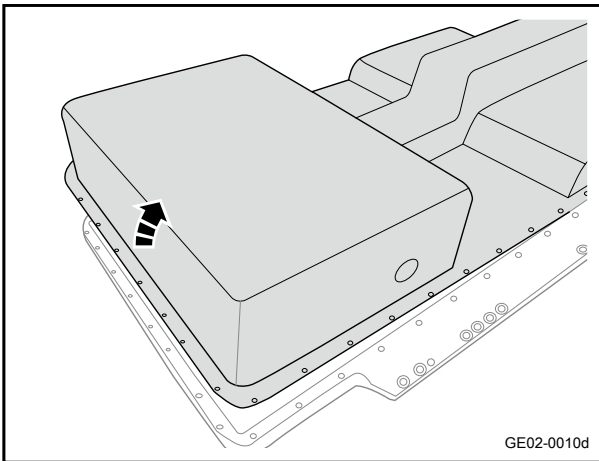




8 Remove the 54 fixing bolts of the upper cover strip.

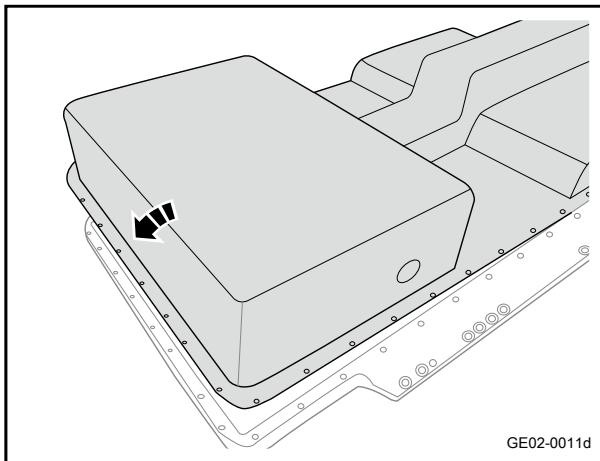


9 Take off the upper cover strip of the battery box.

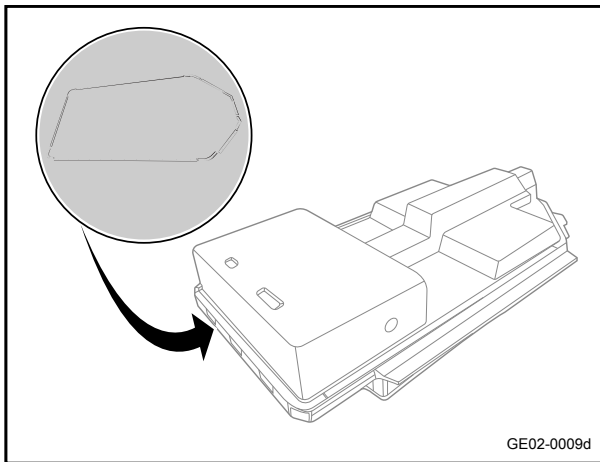


10 Raise the rear end of the power battery box, move the power battery box cover forward and then take off the power battery box cover.

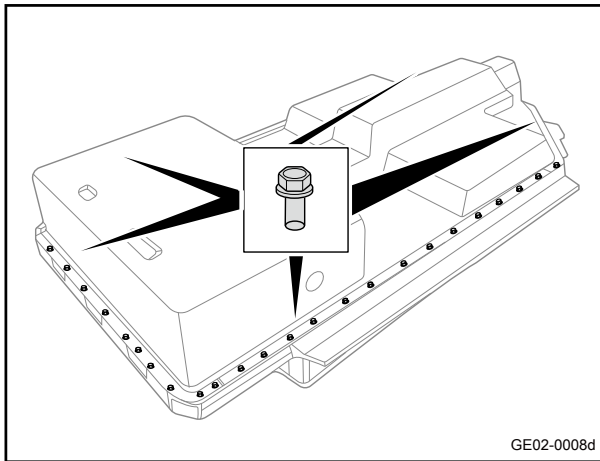
Installation procedure



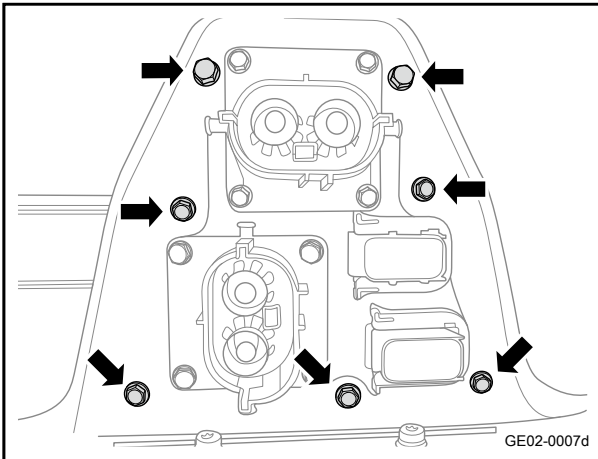
- 1 Move the front end of the power battery box cover to the installation position, put down the rear end of the power battery box cover, and adjust the installation position to align the installation holes.



- 2 Install the upper cover strip of the battery box.



- 3 Install the 54 bolts of the upper cover strip.
Torque: 10N·m



- 4 Install the 7 fixing bolts of the front sealing clamping plate.
Torque: 6N·m

- 5 Install the power battery.
- 6 Fill the power battery coolant.
- 7 Connect the DC bus assembly.
- 8 Lower the vehicle.
- 9 Connect the negative cable of battery.

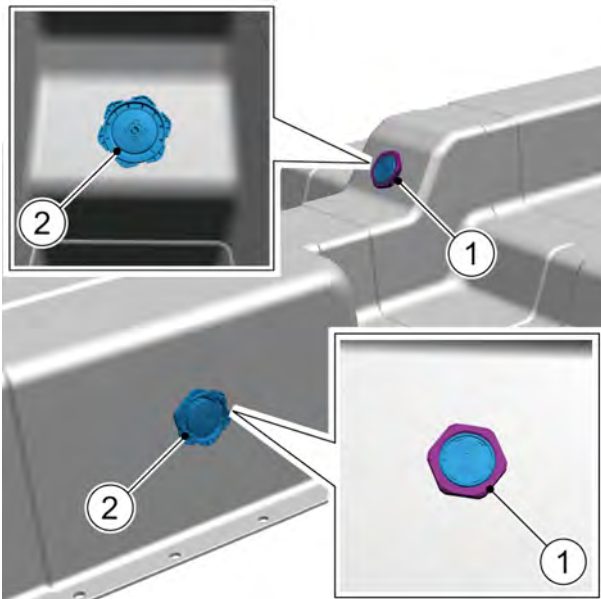
2.2.7.4 Replacement of Explosion-proof Valves

Removal procedure

Caution

When repairing power battery components, it is necessary to take safety protection measures and wear personal protection.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Remove the power battery. Refer to [Replacement of Power Battery](#)
- 4 Remove the power battery box cover. Refer to [Replacement of Power Battery Box Cover](#)

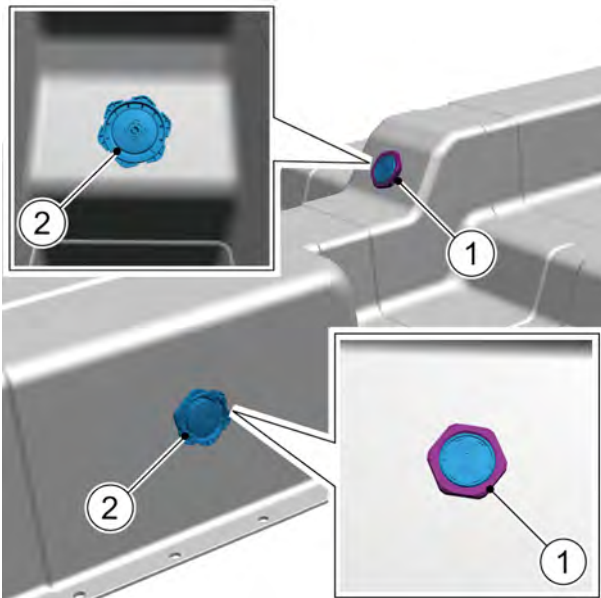


- 5 Use a wrench to fix the nut 1 and remove the explosion-proof valve 2 to separate the explosion-proof valve 2 from the power battery box cover.

Caution

The two explosion-proof valves are removed and installed in the same way.

- 6 Take off the explosion-proof valve.



Installation procedure

- 1 Move the explosion-proof valve to the installation position.
- 2 Install explosion-proof valve 2 into the power battery box cover, use a wrench to fix the nut 1, and tighten the explosion-proof valve 2 at the same time.

Caution

After installation, check whether the connection between the explosion-proof valve 2 and the power battery box cover is firmly fixed.

- 3 Install the power battery box cover.
- 4 Install the power battery.
- 5 Fill the power battery coolant.
- 6 Connect the negative cable of battery.

2.2.7.5 Replacement of Fuses

Removal procedure

Caution

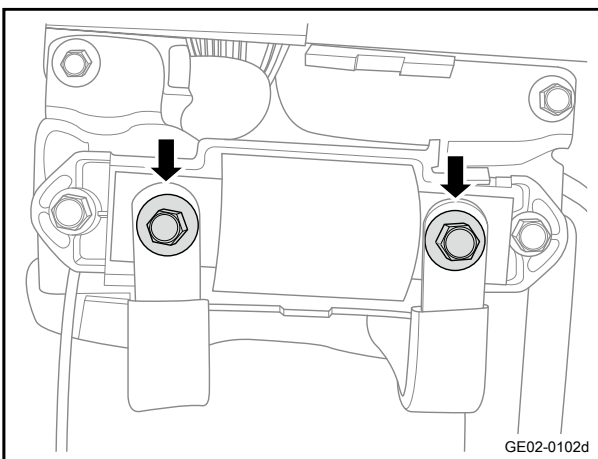
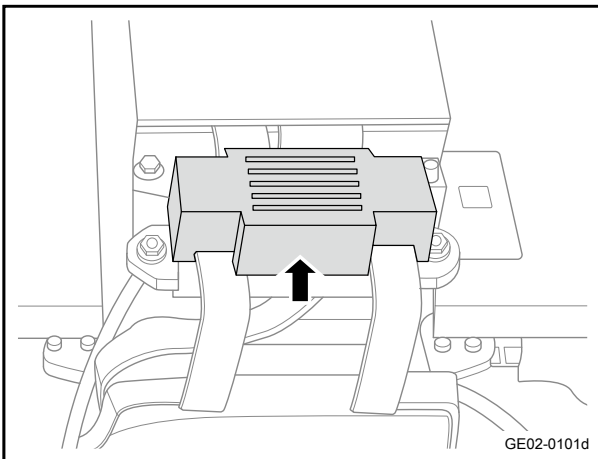
Wrap the harness connectors of the soft copper bar with insulating tape to prevent them from touching each other.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

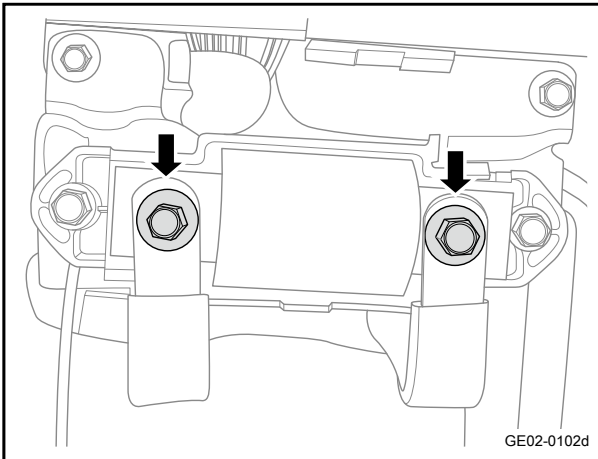
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the power battery box cover. Refer to [Replacement of Power Battery Box Cover](#)
- 5 Take off the fuse cover.

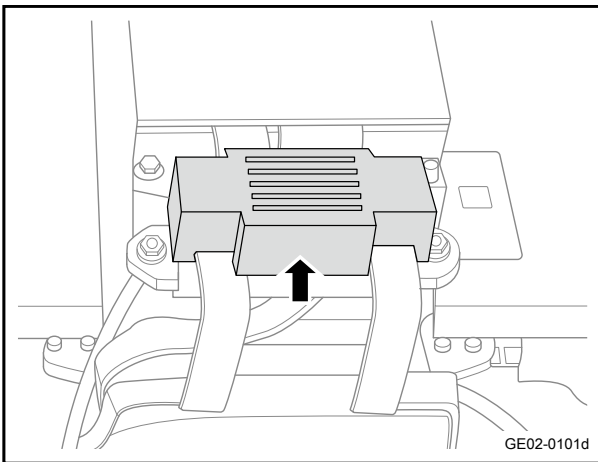


- 6 Remove the 2 fixing nuts of the fuse.
- 7 Take off the fuse.

Installation procedure



- 1 Move the fuse to the installation position.
- 2 Install the 2 fixing nuts of the fuse.
Torque: 15N·m



- 3 Install the fuse cover.

- 4 Install the power battery box cover.
- 5 Fill the power battery coolant.
- 6 Connect the DC bus (at the power battery side).
- 7 Connect the negative cable of battery.

2.2.7.6 Replacement of Fuse Box Bracket

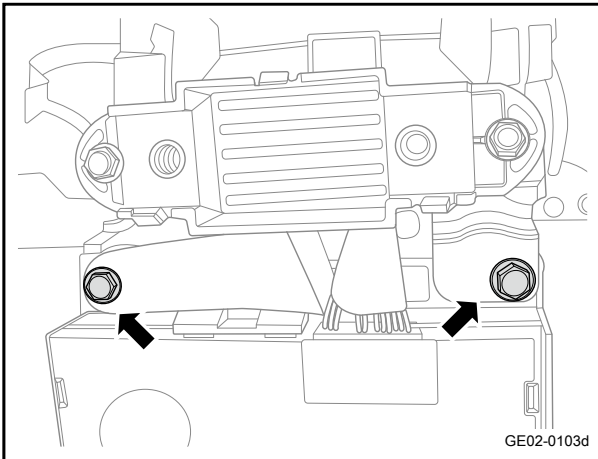
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the fuse. Refer to [Replacement of Fuses](#)



- 5 Remove the 2 fixing nuts of the fuse box bracket.

Caution

In the figure, when the right nut is removed, pay attention to the gasket under the fuse box to prevent it from falling.

- 6 Take off the fuse cover bracket.

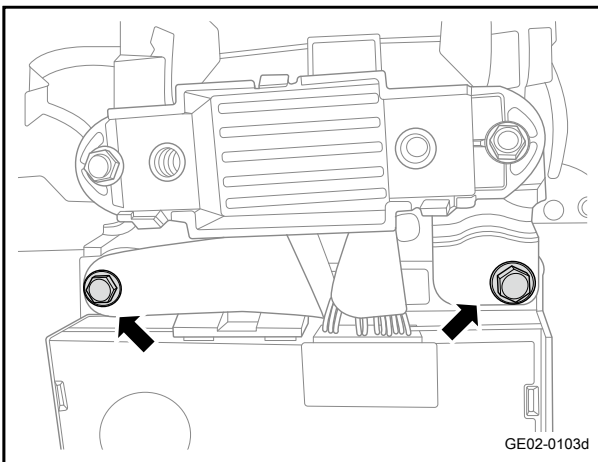
Installation procedure

- 1 Move the fuse box bracket to the installation position.
- 2 Install the 2 fixing nuts of the fuse box bracket.

Caution

When installing, place the gasket on the right nut, and then place the fuse box bracket and install the nuts.

Torque: 10N·m (metric system) 7.4 lb-ft (Imperial system)



- 3 Install the fuse.
- 4 Fill the power battery coolant.
- 5 Connect the DC bus (at the power battery side).
- 6 Connect the negative cable of battery.

2.2.7.7 Replacement of BMS

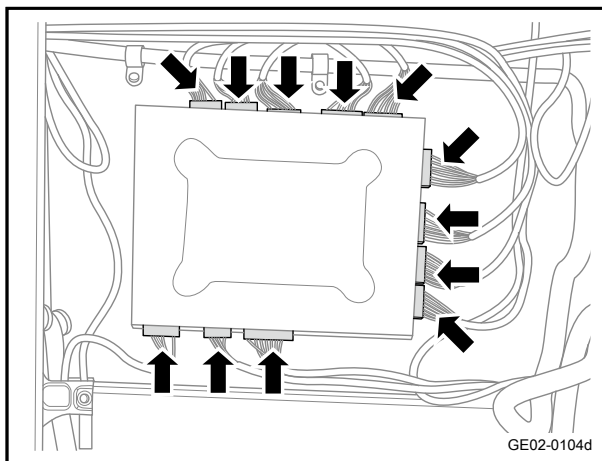
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

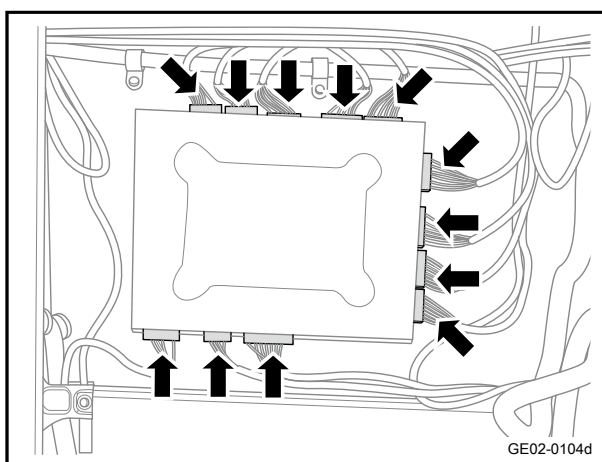
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the fuse. Refer to [Replacement of Fuses](#)



- 5 Disconnect the BMS harness connector 1.
- 6 Remove the 4 fixing bolts 2 of the BMS.
- 7 Take out the BMS.

Installation procedure



- 1 Move the BMS to the installation position.
- 2 Install the 4 fixing bolts 2 of the BMS.
Torque: 10N·m
- 3 Connect the BMS harness connector 1.

- 4 Install the fuse.
- 5 Fill the power battery coolant.
- 6 Connect the DC bus (at the power battery side).
- 7 Connect the negative cable of battery.

2.2.7.8 Replacement of the High-voltage Box

Removal procedure

Caution

When operating inside the high-voltage box, you must wear insulating protective gloves to prevent the risk of electric shock.

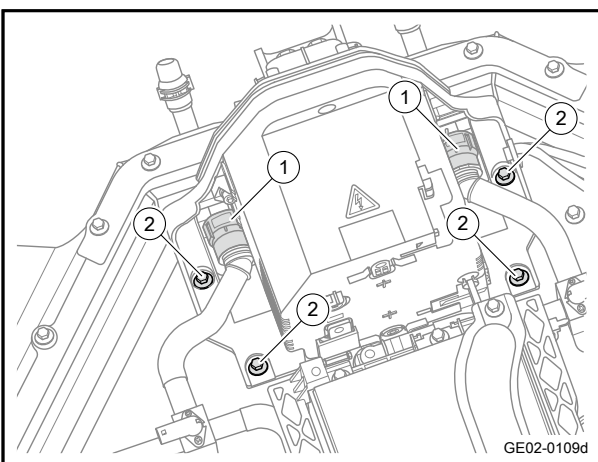
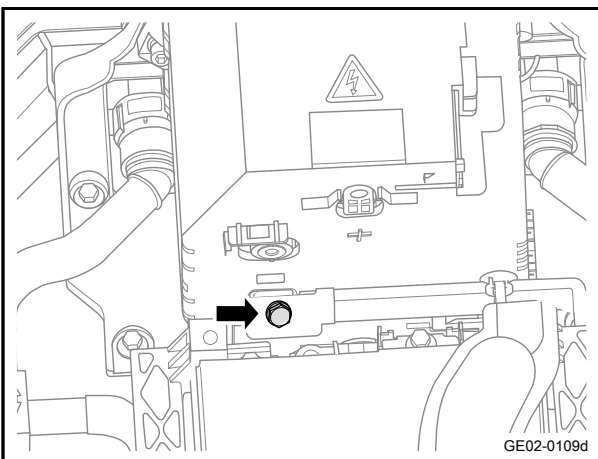
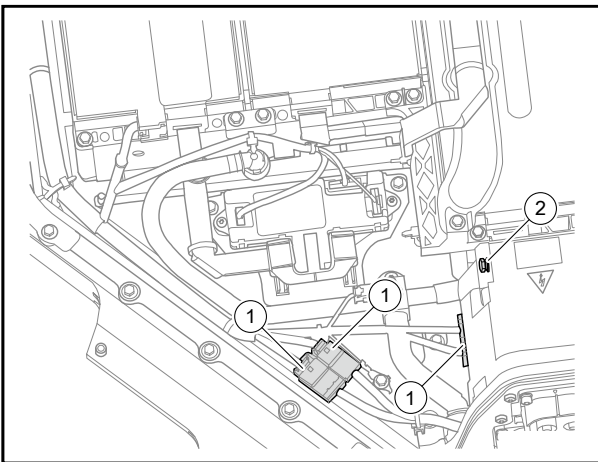
Wrap the harness connector with insulating tape to prevent mutual contact.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

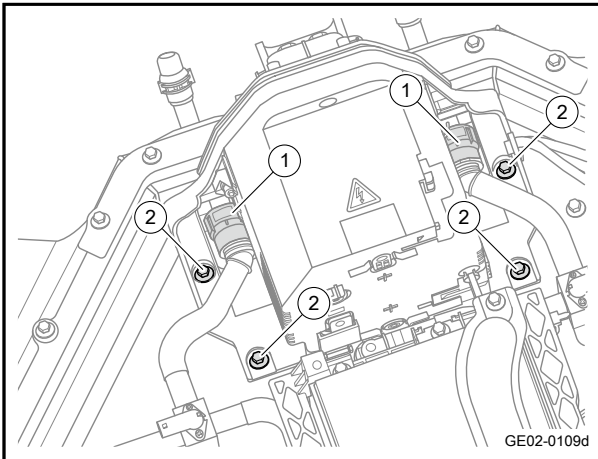
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

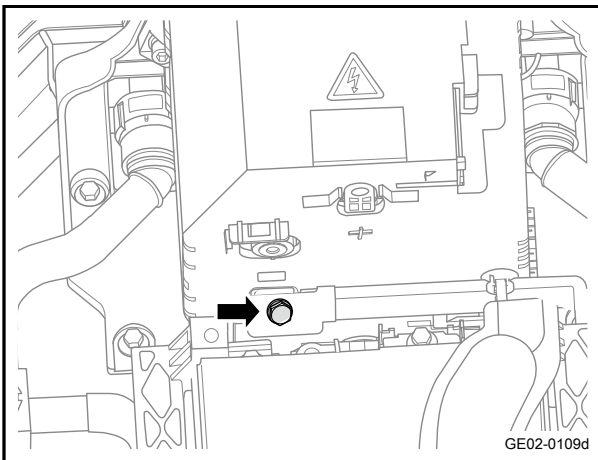
- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the fuse. Refer to [Replacement of Fuses](#)
- 5 Remove the CSU (current shunt). Refer to [Replacement of CSU \(Current Shunt\)](#)
- 6 Disconnect the harness connector 1 of the high-voltage box.
- 7 Open the upper copper bar of the high-voltage box and remove the bolts 2 fixing the upper copper bar of the high-voltage box.
- 8 Open the lower copper bar of the high-voltage box and remove the bolts fixing the copper bar.
- 9 Disconnect the water inlet and outlet pipe 1 of the power battery.
- 10 Remove the 4 fixing bolts 2 of the high-voltage box.
- 11 Take off the high-voltage box.



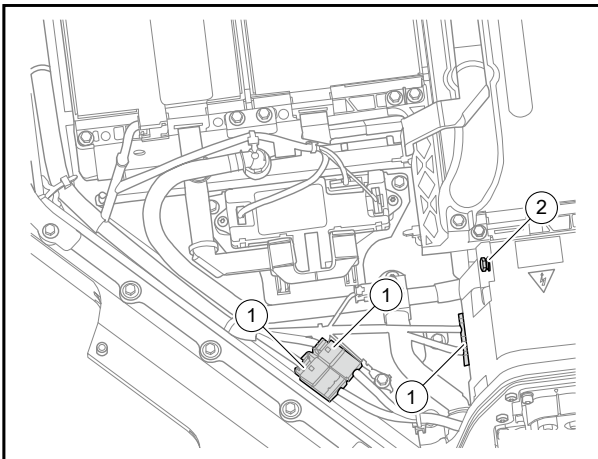
Installation procedure



- 1 Move the high-voltage box to the installation position.
- 2 Install the 4 fixing bolts 2 of the high-voltage box.
- 3 Connect the water inlet and outlet pipe 1 of the power battery.



- 4 Install the fixing bolt 1 of the copper bar under the fuse box, and install the copper bar under the high-voltage box.
Torque: 10N·m



- 5 Install the fixing bolt 2 of the upper copper bar of the high-voltage box, and install the upper copper bar of the high-voltage box.
Torque: 10N·m
- 6 Connect the harness connector 1 of the high-voltage box.

- 7 Install the CSU (current shunt).
- 8 Install the fuse.
- 9 Fill the power battery coolant.
- 10 Connect the DC bus (at the power battery side).
- 11 Connect the negative cable of battery.

2.2.7.9 Replacement of CSU (Current Shunt)

Removal procedure

Caution

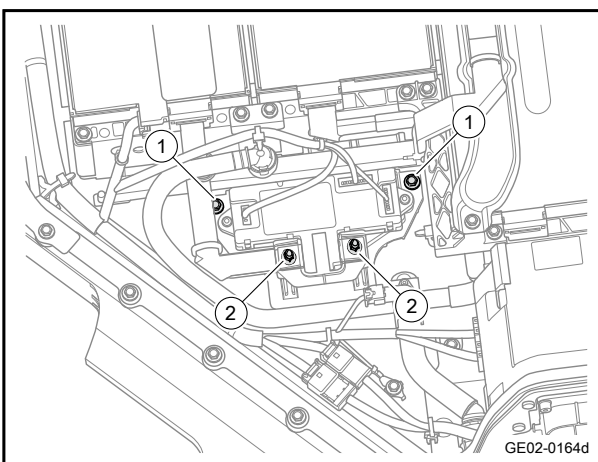
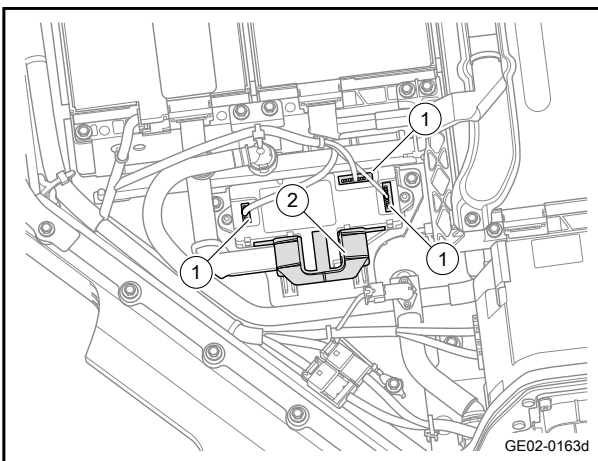
When operating inside the high-voltage box, you must wear insulating protective gloves to prevent the risk of electric shock.

- 1 Open the front engine compartment cover
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 3 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 4 Drain the power battery coolant. [Refer to Coolant Replacement Procedure](#)
- 5 Remove the fuse. [Replacement of Fuses](#)
- 6 Disconnect the 3 harness connectors 1 of the CSU (current shunt).
- 7 Take off the copper bar protection cover 2.

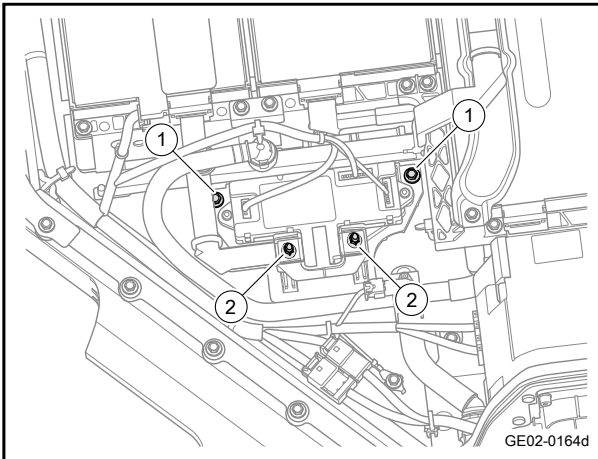


- 8 Remove the 2 fixing bolts 1 of the CSU (current shunt).
- 9 Remove the 2 fixing nuts 2 of the CSU (current shunt).
- 10 Take off the CSU (current shunt).

Caution

Wrap the harness connector with insulating tape to prevent mutual contact.

Installation procedure

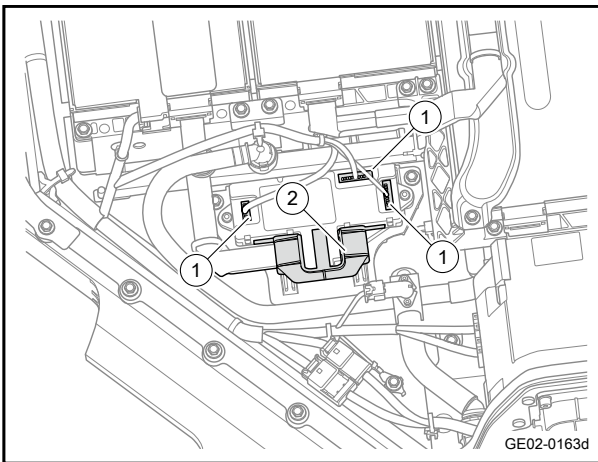


- 1 Move the CSU to the installation position.
- 2 Install the 2 fixing nuts 2 of the CSU (current shunt).
Torque: 10N·m (metric system) 7.4 lb-ft (Imperial system)

Caution

To install the fixing nuts, it is needed to apply threadlocker.

- 3 Install the 2 fixing bolts 1 of the CSU (current shunt).
Torque: 3N·m (metric system) 2.2 lb-ft (Imperial system)



- 4 Install the copper bar protection cover 2.
- 5 Connect the 3 harness connectors 1 of the CSU (current shunt).

- 6 Install the fuse.
- 7 Fill the power battery coolant.
- 8 Connect the DC bus (at the power battery side).
- 9 Connect the negative cable of battery.
- 10 Close the front engine compartment cover.

2.2.7.10 Replacement of Soft Copper Bar

Removal procedure

Caution

The removal and installation process of all soft copper bars is roughly the same. Here is an example of the rear lower soft copper bar.

There are differences in the shape and connection position of the soft copper bars, please pay attention to the installation sequence to avoid installation errors.

1. Wrap the harness connectors with insulating tape to prevent them from touching each other.

2. There are differences in the shape and connection position of the soft copper bars, please pay attention to the removal sequence to avoid installation errors.

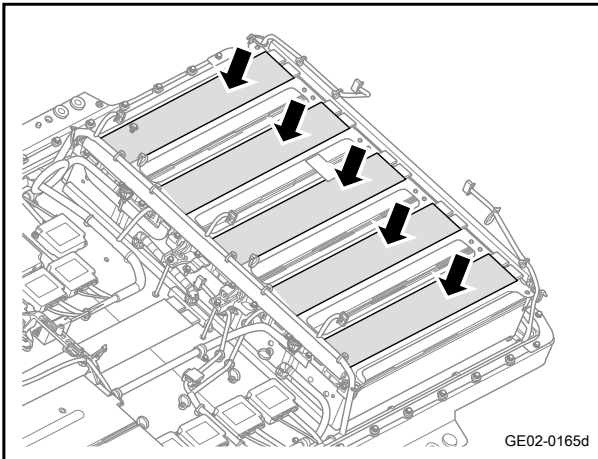
There are differences in the shape and connection position of the soft copper bars, please pay attention to the installation sequence to avoid installation errors.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

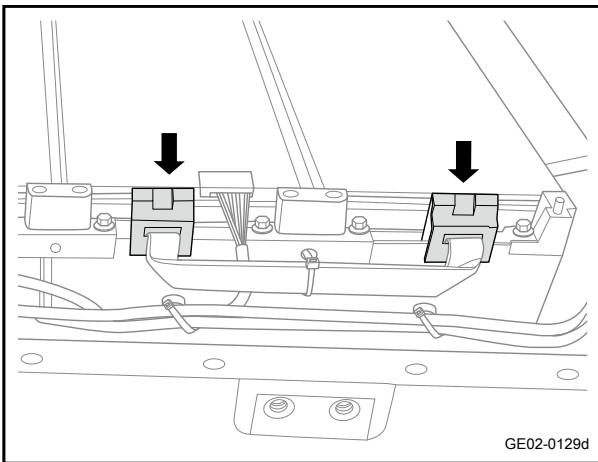
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

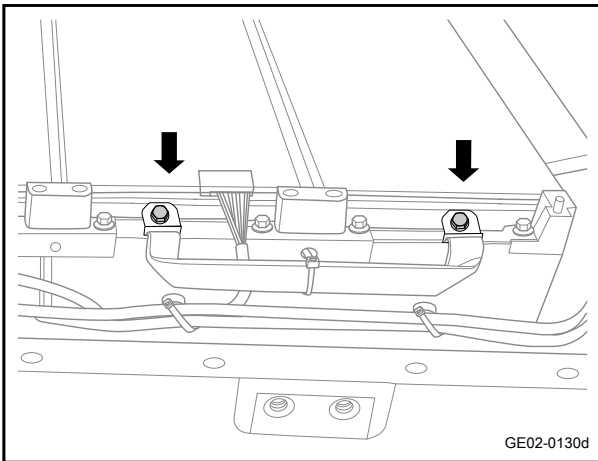
- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the fuse. Refer to [Replacement of Fuses](#)
- 5 Remove the rear upper battery module. Refer to [Replacement of Rear Upper Battery Module](#)
- 6 Remove the rear upper water-cooled plate and bracket. Refer to [Replacement of Rear Upper Water-cooled Plate](#)



7 Remove the rear upper copper bar.



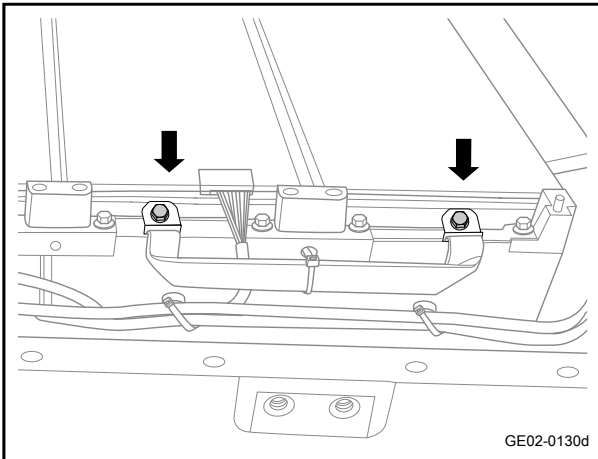
8 Pry the cover at the connection between the soft copper bar and the battery module.



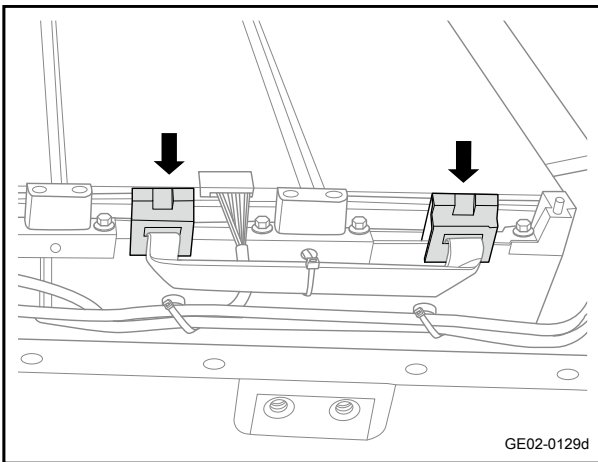
9 Remove the 2 fixing bolts connecting the soft copper bar and the battery module.

10 Take off the soft copper bar.

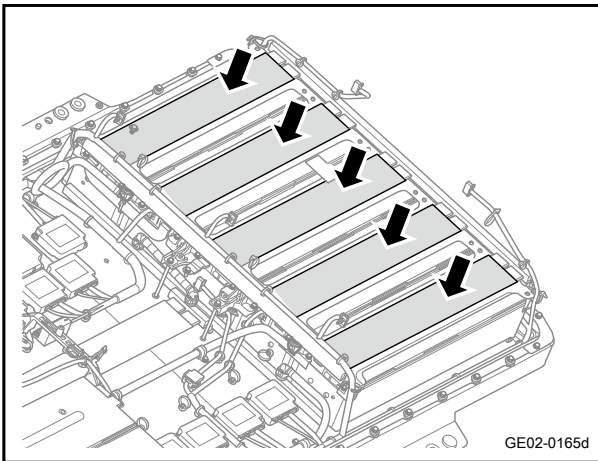
Installation procedure



- 1 Move the soft copper bar to the installation position.
- 2 Install the 2 fixing bolts of the soft copper bar.
Torque: 10N·m



- 3 Install the cover at the connection between the soft copper bar and the battery module.



- 4 Install the rear upper copper bar.

- 5 Install the rear upper water-cooled plate and bracket.
- 6 Install the rear upper battery module.
- 7 Install the fuse.
- 8 Fill the power battery coolant.
- 9 Connect the DC bus (at the power battery side).
- 10 Connect the negative cable of battery.

2.2.7.11 Replacement of Front Battery Module

Removal procedure

Caution

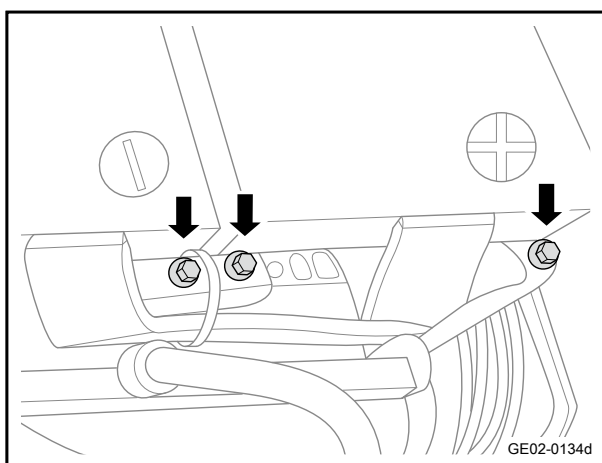
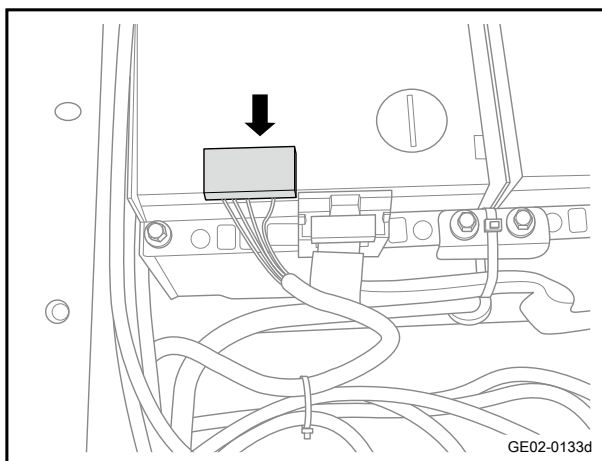
The disassembly and assembly steps of the front battery module are illustrated with an example of M13 battery module.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

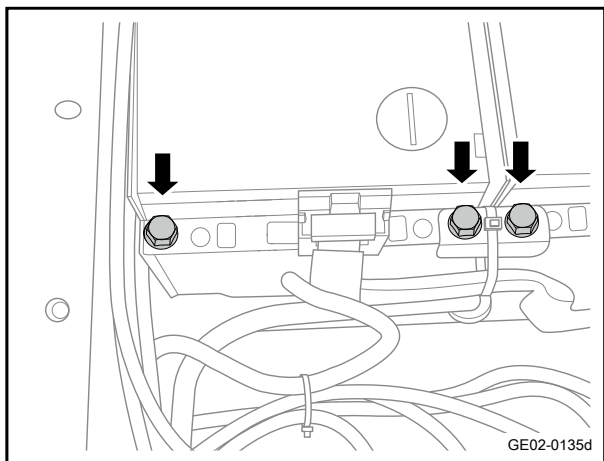
Warning

Refer to [“Warnings regarding Power Battery Pack”](#) in [“Warnings and Precautions”](#)

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disconnect the M13 battery module wire harness connector.

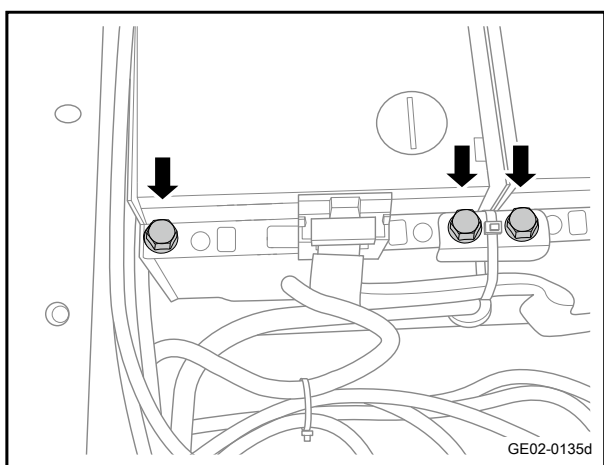


- 5 Remove the 3 fixing bolts at the front of the battery module.
- 6 Take off the fixing bracket.

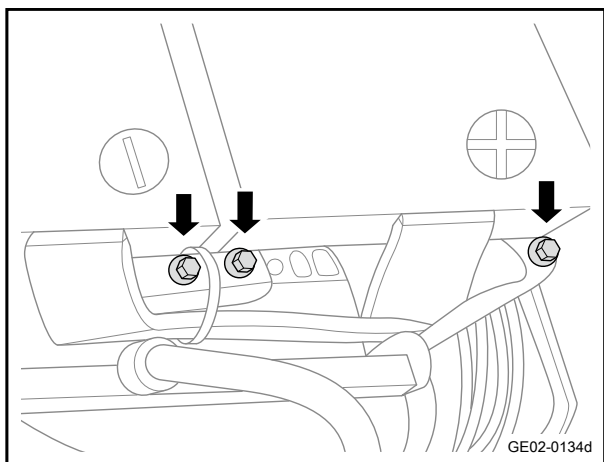


- 7 Remove the 3 fixing bolts at the rear of the battery module.
- 8 Take off M13 battery module at the rear of the fixing bracket.

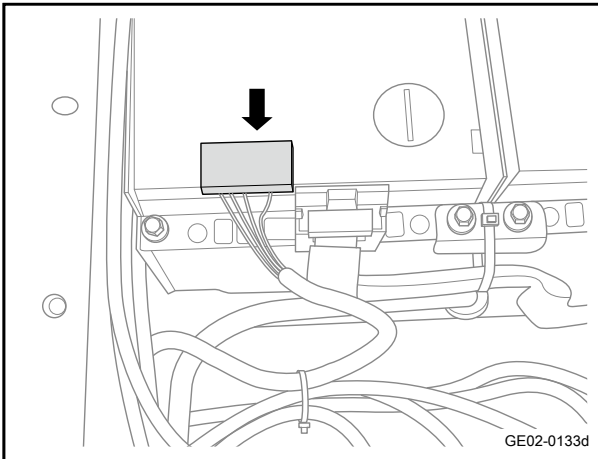
Installation procedure



- 1 Move the battery module to the installation position.
- 2 Install the 3 fixing bolts of the fixing bracket at the rear of the battery module.
Torque: 15N·m



- 3 Install the 3 fixing bolts of the fixing bracket at the front of the battery module.
Torque: 15N·m



- 4 Connect the M13 battery module wire harness connector.

- 5 Fill the power battery coolant.
- 6 Connect the DC bus (at the power battery side).
- 7 Connect the negative cable of battery.

2.2.7.12 Replacement of Rear Upper Battery Module

Removal procedure

Caution

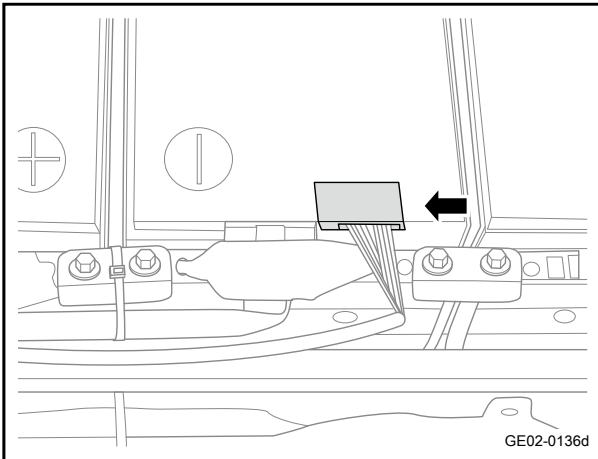
The disassembly and assembly process of the rear upper module is roughly the same, which is illustrated by taking the M8 example here.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

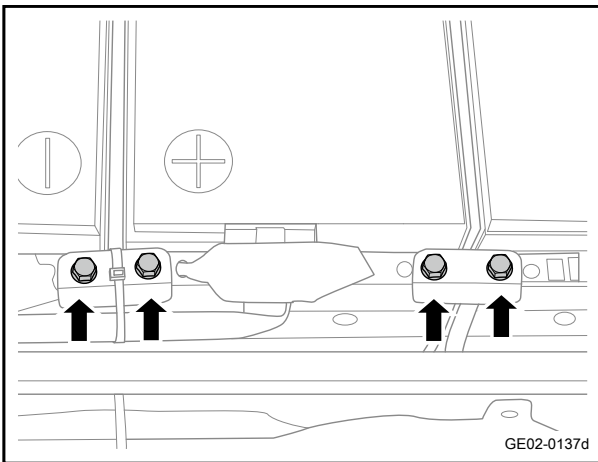
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

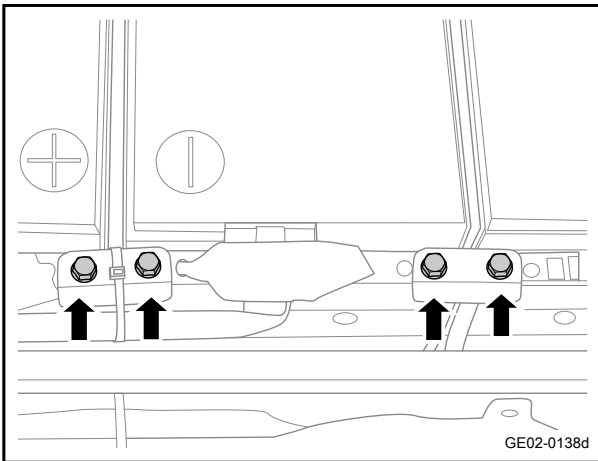
- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the soft copper bar. Refer to [Replacement of Soft Copper Bar](#)



- 5 Disconnect the wire harness connects at both ends of the rear upper battery module.

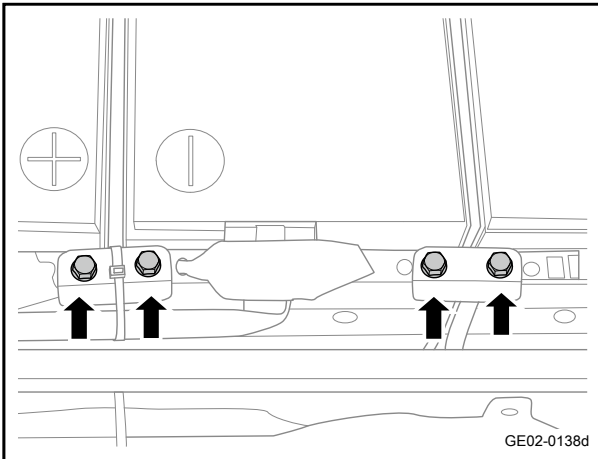


- 6 Remove the 4 fixing bolts of the fixing bracket at the front of the battery module and take off the fixing bracket.

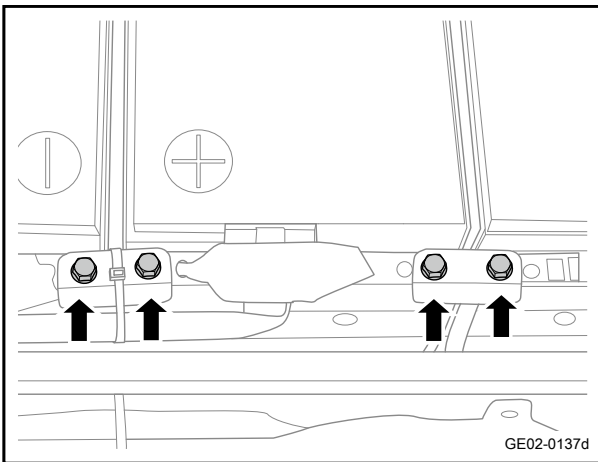


- 7 Remove the 4 fixing bolts of the fixing bracket at the rear of the battery module.
- 8 Take off the rear upper battery module.

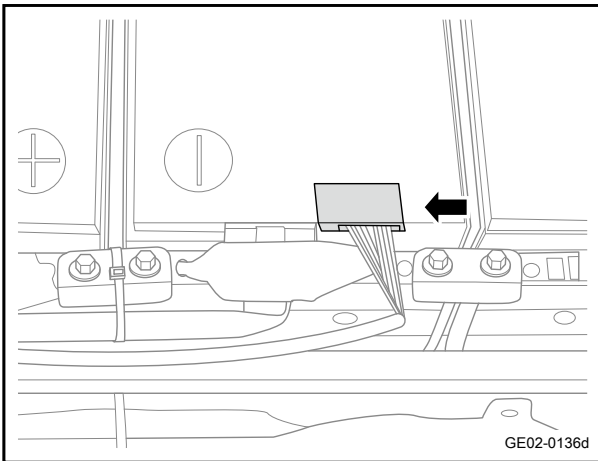
Installation procedure



- 1 Move the rear upper battery module to the installation position.
- 2 Install the 4 fixing bolts of the fixing bracket at the rear of the battery module.
Torque: 15N·m



- 3 Install the 4 fixing bolts of the fixing bracket at the front of the rear upper battery module.
Torque: 15N·m



- 4 Connect the harness connectors at both ends of the rear upper battery module.

- 5 Install the soft copper bar.
- 6 Fill the power battery coolant.
- 7 Connect the DC bus (at the power battery side).
- 8 Connect the negative cable of battery.

2.2.7.13 Replacement of Rear Lower Battery Module

Removal procedure

Caution

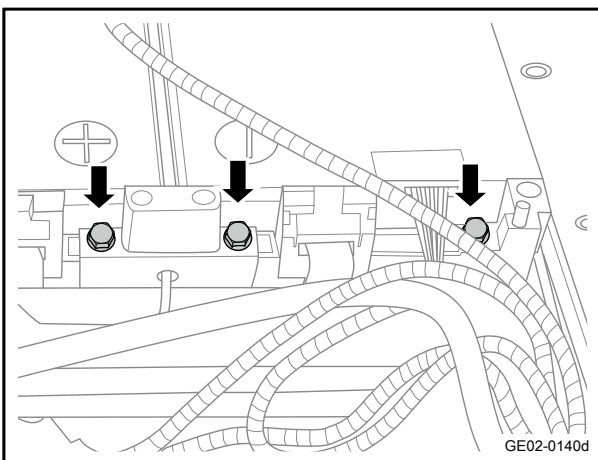
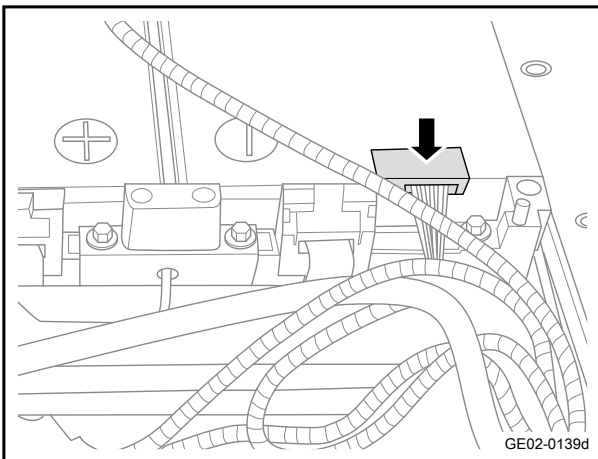
The disassembly and assembly process of the rear lower module is roughly the same, which is illustrated by taking the M5 example here.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

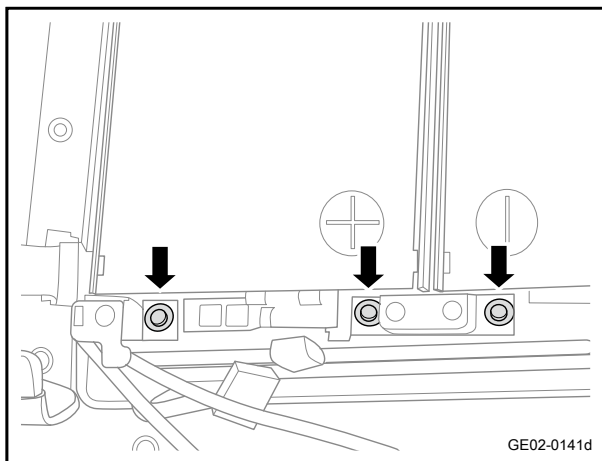
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Remove the fuse. Refer to [Replacement of Fuses](#)
- 4 Remove the rear upper battery module. Refer to [Replacement of Rear Upper Battery Module](#)
- 5 Remove the rear upper water-cooled plate and bracket. Refer to [Replacement of Rear Upper Water-cooled Plate](#)
- 6 Disconnect the harness connectors at both ends of the rear lower battery module.

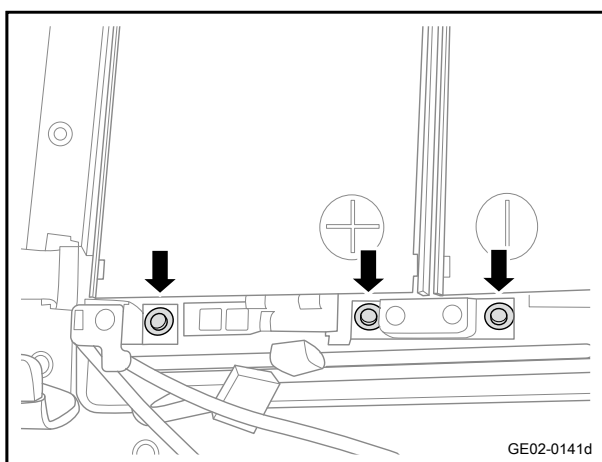


- 7 Remove the 3 fixing bolts at the front of the rear lower battery module.
- 8 Take off the fixing bracket.

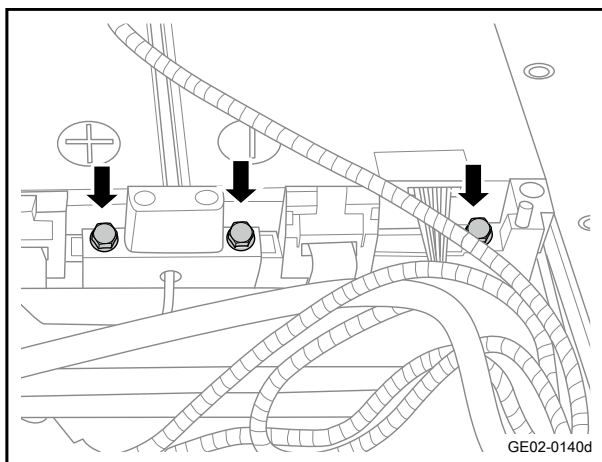


- 9 Remove the 3 fixing bolts at the rear of the rear lower battery module.
- 10 Take off the battery module at the rear of the fixing bracket.

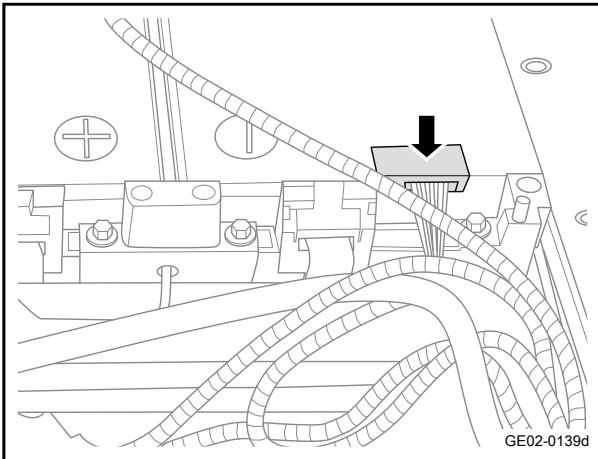
Installation procedure



- 1 Move the rear lower battery module to the installation position.
- 2 Install the 3 fixing bolts of the fixing bracket at the rear of the rear lower battery module.
Torque: 15N·m



- 3 Install the 3 fixing bolts of the fixing bracket at the front of the rear lower battery module.
Torque: 15N·m



- 4 Connect the harness connectors at both ends of the rear lower battery module.

- 5 Install the rear upper water-cooled plate and bracket.
- 6 Install the rear upper battery module.
- 7 Install the fuse.
- 8 Connect the DC bus (at the power battery side).
- 9 Connect the negative cable of battery.

2.2.7.14 Replacement of Rear Upper Water-cooled Plate

Removal procedure

Caution

Air tightness testing is required after the installation.

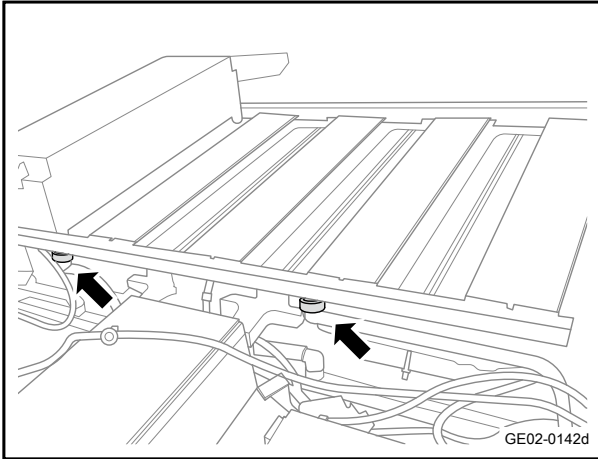
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

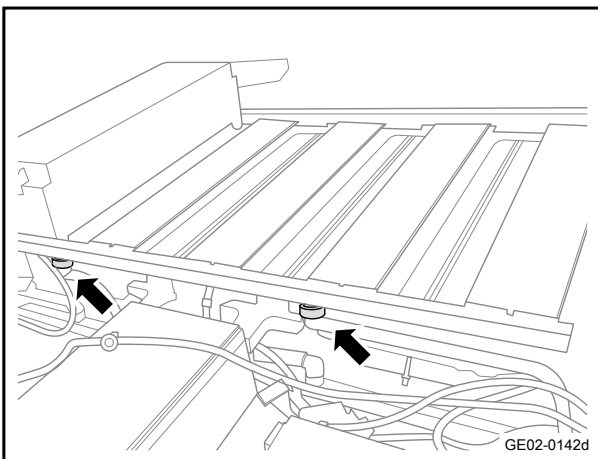
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)



- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the rear upper battery module. Refer to [Replacement of Rear Upper Battery Module](#)
- 5 Disconnect the fastening clips on the upper water-cooled plate.
- 6 Take off the water-cooled plate.



Installation procedure

- 1 Move the upper water-cooled plate to the installed position.
- 2 Install the fastening clip at the connection.

- 3 Install the rear upper resistance module.
- 4 Fill the power battery coolant.
- 5 Connect the DC bus (at the power battery side).
- 6 Connect the negative cable of battery.

2.2.7.15 Replacement of Rear Lower Water-cooled Plate

Removal procedure

Caution

Air tightness testing is required after the installation.

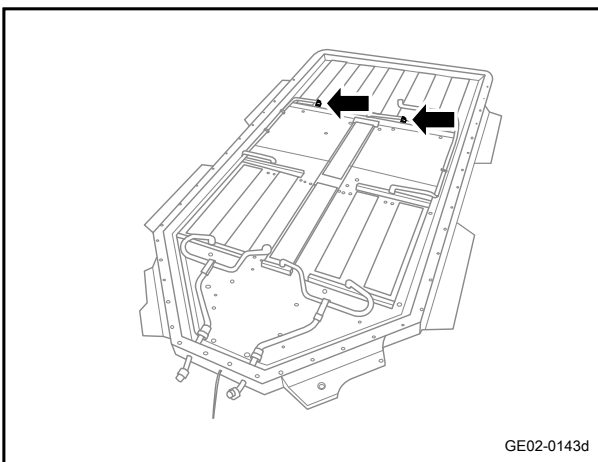
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

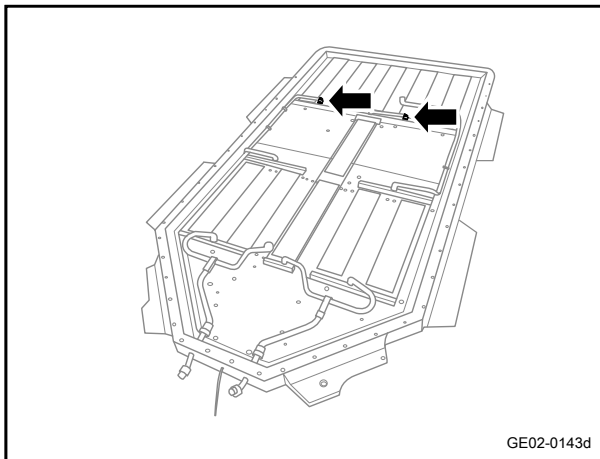
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the rear upper water-cooled plate. Refer to [Replacement of Rear Upper Water-cooled Plate](#)
- 5 Disconnect the clamp connecting the rear lower water-cooled plate and water-cooled pipe.
- 6 Take off the water-cooled plate.



Installation procedure



- 1 Place the upper water-cooled plate in the installed position.
- 2 Connect the clamp connecting the rear lower water-cooled plate and water-cooled pipe.

- 3 Install the rear lower battery module.
- 4 Install the rear upper water-cooled plate.
- 5 Fill the power battery coolant.
- 6 Connect the DC bus (at the power battery side).
- 7 Connect the battery negative cable.

2.2.7.16 Replacement of M15 Water-cooled Plate

Removal procedure

Caution

Air tightness testing is required after the installation.

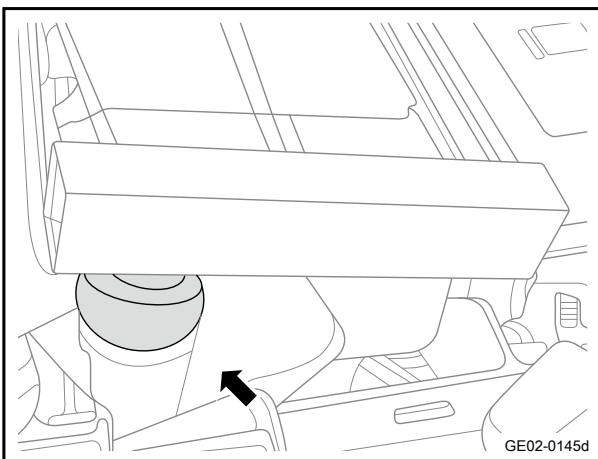
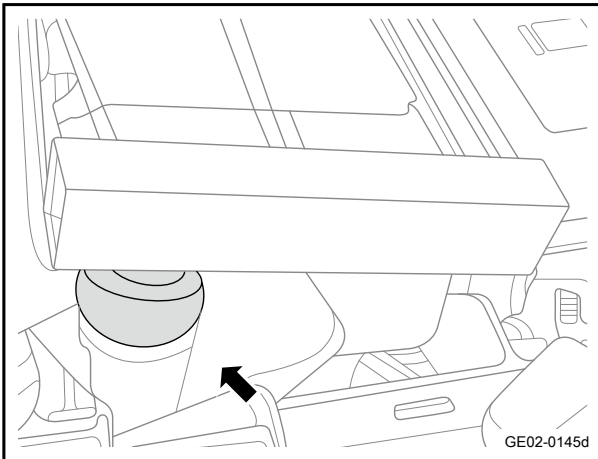
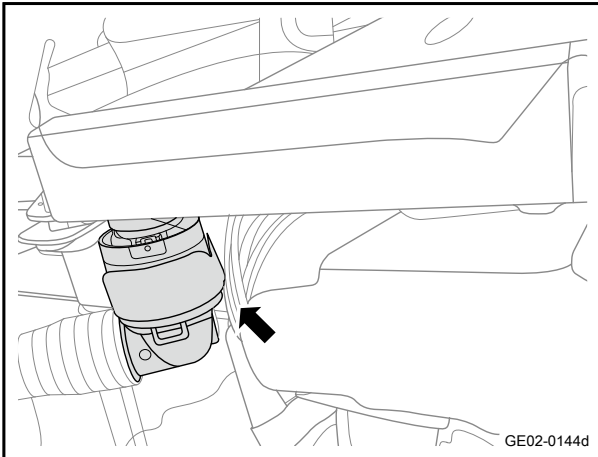
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

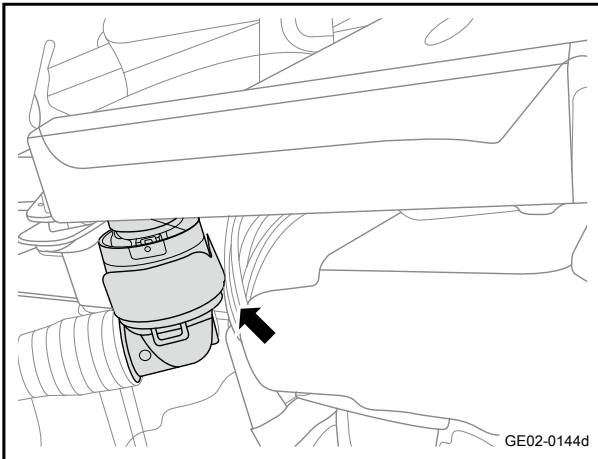
- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)



- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disconnect the clamp connecting the front of water-cooled plate and the water-cooled pipe of the M15 battery module.
- 5 Disconnect the clamp connecting the rear of water-cooled plate and the water pipe of the M15 battery module.
- 6 Take off the water-cooled plate of the M15 battery module.

Installation procedure

- 1 Move the water-cooled plate of the M15 battery module to the installation position.
- 2 Connect the clamp connecting the rear of water-cooled plate and the water pipe of the M15 battery module.



- 3 Connect the clamp connecting the front of water-cooled plate and the water pipe of the M15 battery module.

- 4 Fill the power battery coolant.
- 5 Connect the DC bus (at the power battery side).
- 6 Connect the negative cable of battery.

2.2.7.17 Replacement of M1 and M2 Water-cooled Plates

Removal procedure

Caution

Air tightness testing is required after the installation.

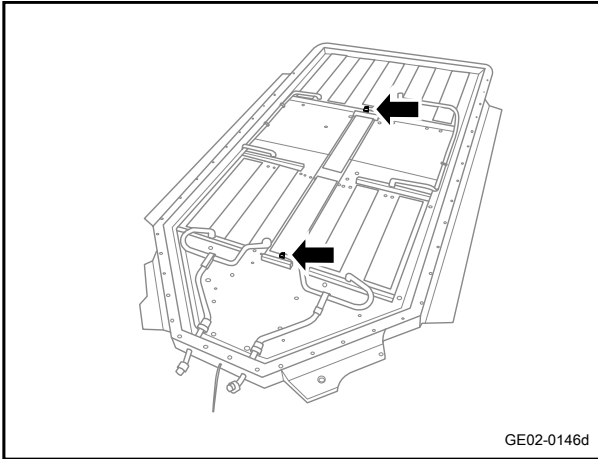
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

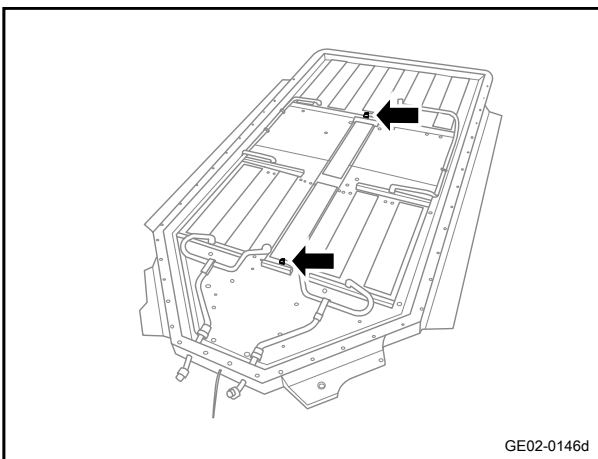
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)



- 4 Remove the front lower battery module. Refer to [Replacement of Front Lower Battery Module](#)
- 5 Remove the rear lower battery module. Refer to [Replacement of Rear Lower Battery Module](#)
- 6 Disconnect the 2 clips connecting the M1 and M2 water-cooled plates and water-cooled pipe.
- 7 Take off the M1 and M2 water-cooled plates.



Installation procedure

- 1 Move the M1 and M2 water-cooled plates to the installation positions.
- 2 Install the 2 clips at the connection.

- 3 Install the rear lower battery module.
- 4 Install the front lower battery module.
- 5 Fill the power battery coolant.
- 6 Connect the DC bus (at the power battery side).
- 7 Connect the negative cable of battery.

2.2.7.18 Replacement of M13 and M14 Water-cooled Plates

Removal procedure

Caution

Air tightness testing is required after the installation.

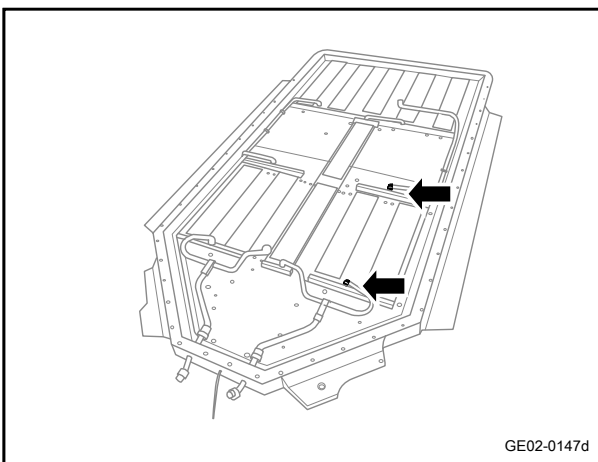
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

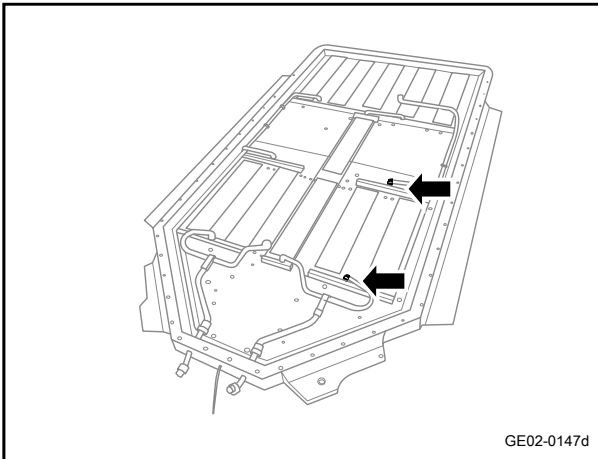
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the front lower battery module. Refer to [Replacement of Front Lower Battery Module](#)
- 5 Disconnect the 2 clamps connecting the M13 and M14 water-cooled plates and water-cooled pipe.
- 6 Take off the M13 and M14 water-cooled plates.



Installation procedure



- 1 Move the M13 and M14 water-cooled plates to the installation positions.
- 2 Install the 2 clamps at the connection.

- 3 Install the front lower battery module.
- 4 Fill the power battery coolant.
- 5 Connect the DC bus (at the power battery side).
- 6 Connect the negative cable of battery.

2.2.7.19 Replacement of M16 and M17 Water-cooled Plates

Removal procedure

Caution

Air tightness testing is required after the installation.

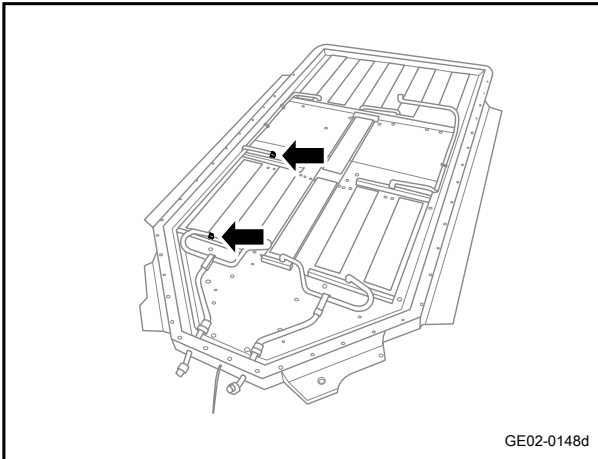
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

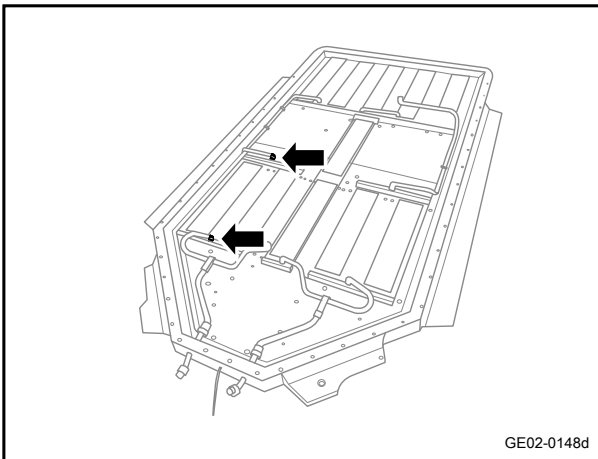
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)



- 4 Remove the front lower battery module. Refer to [Replacement of Front Lower Battery Module](#)
- 5 Disconnect the 2 clamps connecting the M16 and M17 water-cooled plates and water-cooled pipe.
- 6 Take off the M16 and M17 water-cooled plates.

Installation procedure



- 1 Move the M16 and M17 water-cooled plates to the installation positions.
- 2 Install the 2 clamps at the connection.

- 3 Install the front lower battery module.
- 4 Fill the power battery coolant.
- 5 Connect the DC bus (at the power battery side).
- 6 Connect the negative cable of battery.

2.2.7.20 Replacement of Water-cooled Connecting Pipe

Removal procedure

Caution

Air tightness testing is required after the installation.

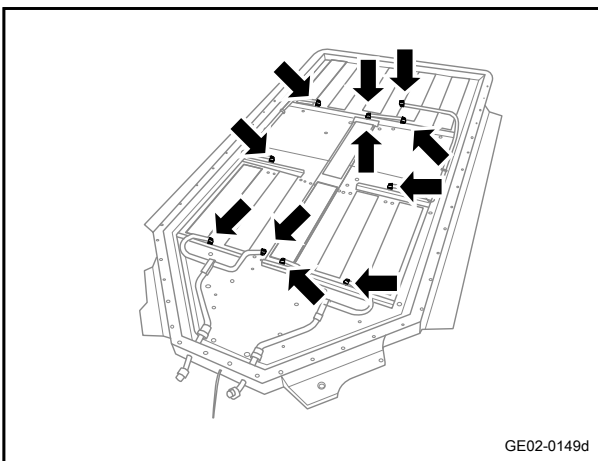
Operation steps: 1 Use the water-cooled pipe tooling, block the water-cooled pipe orifice, and test the air tightness of the water-cooled pipe; 2. Use 350kPa air pressure to inflate the water-cooled tube, the inflation time is 120s, and the air pressure range is 350-360kPa; 3. Keep the pressure stable for 60 seconds, test the air pressure of the water-cooled system, ranging from 350 to 360kPa; 4. The test time is 60s and the range is -75-75Pa; 5. Exhaust for 5s; 6. If the leakage rate of test results is less than 100Pa/min, the air tightness meets the requirements.

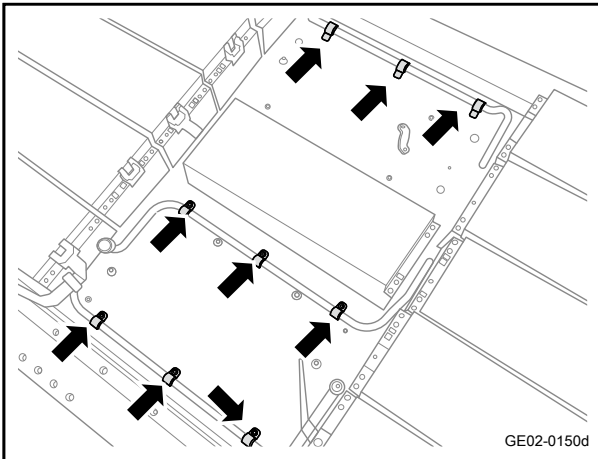
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

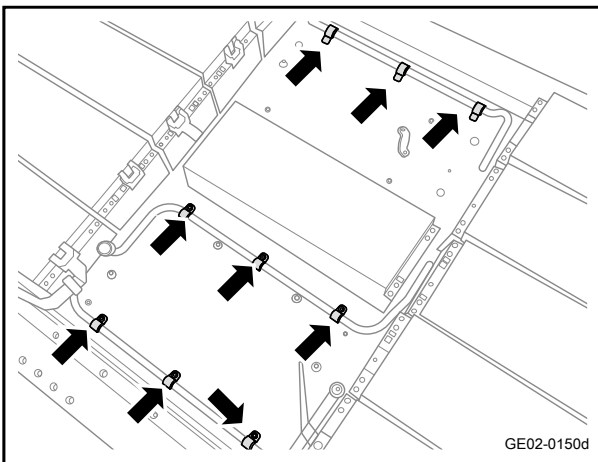
- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the fuse box bracket. Refer to [Replacement of Fuse Box Bracket](#)
- 5 Disconnect the clamps at both ends of the water-cooled connecting pipe.



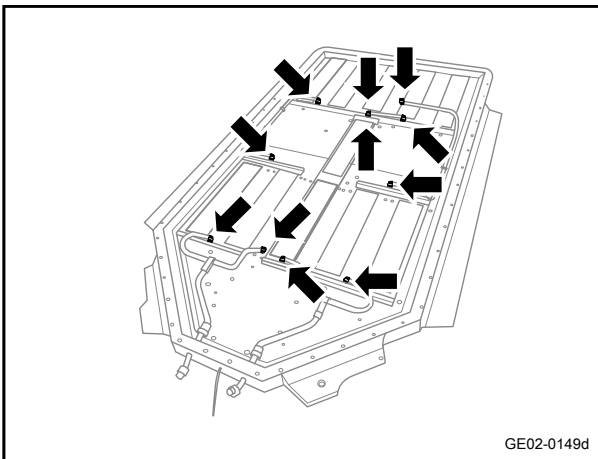


- 6 Disconnect the 9 fixing bolts between the water-cooled plate connecting pipe and the floor (some water-cooled connecting pipes are not secured with bolts).
- 7 Take off the water-cooled plate connecting pipe.

Installation procedure



- 1 Move the water-cooled plate connecting pipe to the installation position.
- 2 Install the 9 fixing bolts.
Torque: 6N·m



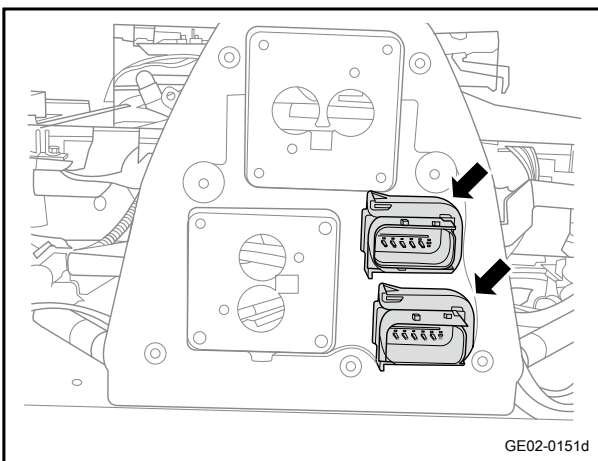
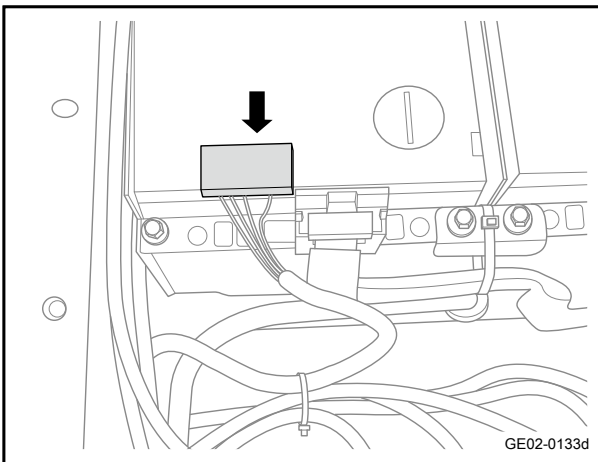
- 3 Install the clamps at both ends of the water-cooled plate connecting pipe.

- 4 Install the fuse box bracket.
- 5 Fill the power battery coolant.
- 6 Connect the DC bus (at the power battery side).
- 7 Connect the negative cable of battery.

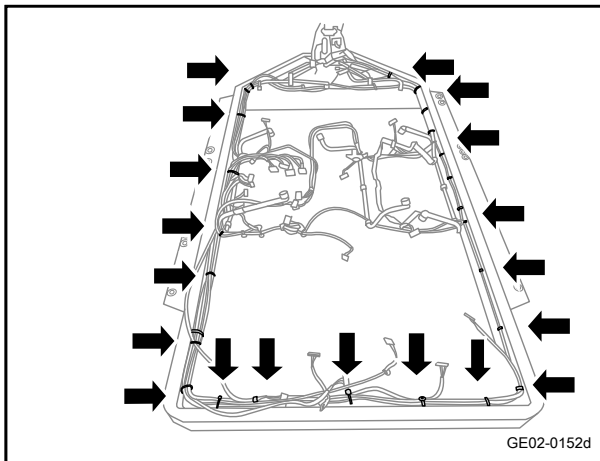
2.2.7.21 Replacement of Wire Harness

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the fuse box bracket. Refer to [Replacement of Fuse Box Bracket](#)
- 5 Remove the BMS. Refer to [Replacement of BMS](#)
- 6 Disconnect the harness connector between the harness and each battery module. Here, take M13 as an example.

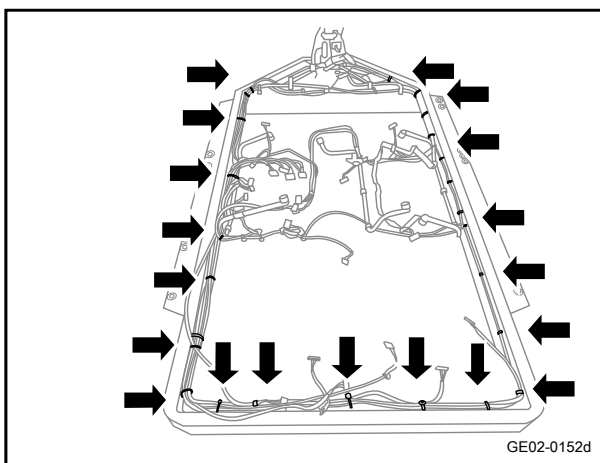


- 7 Remove the harness connector connecting the low-voltage harness and BDU.
- 8 Pull out the harness.

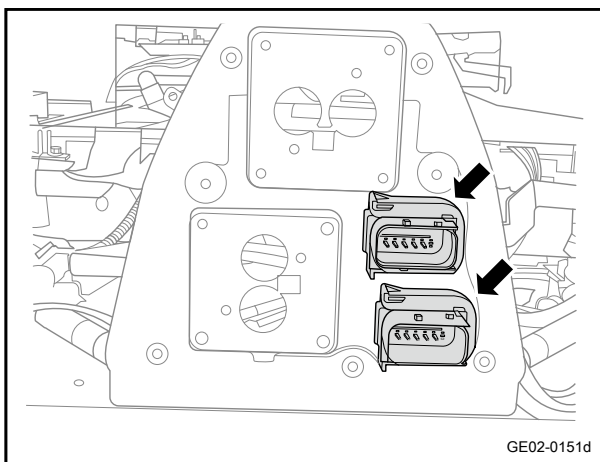


- 9 Disconnect the bundle belt securing the harness and the bottom of the battery pack.
- 10 Take off the low-voltage harness.

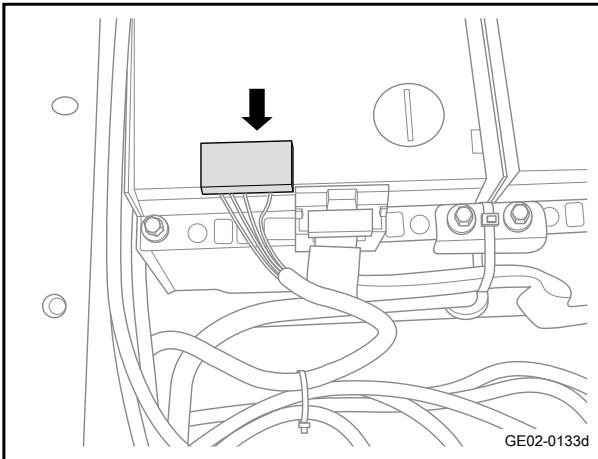
Installation procedure



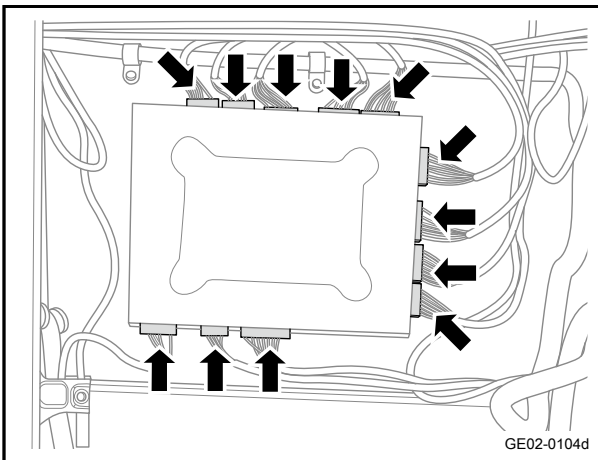
- 1 Move the harness to the installation position.
- 2 Install the bundle belt.



- 3 Connect the harness connector connecting the low-voltage harness and BDU.



- 4 Install the harness connector between the harness and each battery module.



- 5 Install the harness connector between the harness and BMS, and tighten the bundle belt.

- 6 Install the fuse box bracket.
- 7 Fill the power battery coolant.
- 8 Connect the DC bus (at the power battery side).
- 9 Connect the negative cable of battery.

2.2.7.22 Replacement of the Front Sealing Clamping Plate

Removal procedure

Caution

Air tightness testing is required after installation.

When making air tightness test, it is required to plug the high voltage/low voltage wiring harness interface with professional tools (connector protection cover).

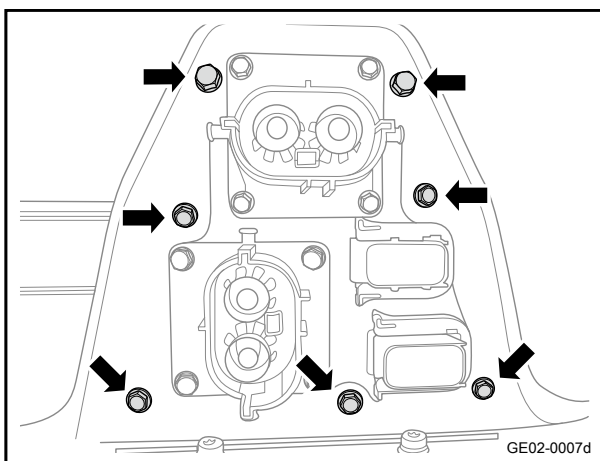
Specific steps: 1. Use the explosion-proof valve tooling to block the hole of the explosion-proof valve, and use professional tools to install the front connector protection cover; 2. Use 3.5kPa air pressure to inflate the electric box, the inflation time is 450s, and the air pressure reaches 2.5 ~ 3.0kPa; 3. Keep the pressure stable for 60s, and test the air pressure inside the electric box, ranging from 2.5 to 3.0kPa; 4. Detect the leakage rate in the box for 60s: flow <20cc/min, pressure <100Pa/min.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

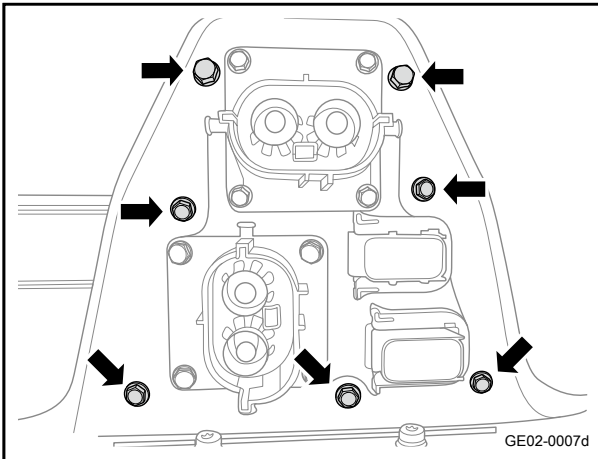
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the DC bus (at the power battery side). Refer to [Replacement of DC Bus Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the power battery Refer to [Replacement of Power Battery](#)
- 5 Remove the 7 fixing bolts of the front sealing clamping plate.
- 6 Take off the front sealing clamping plate.



Installation procedure



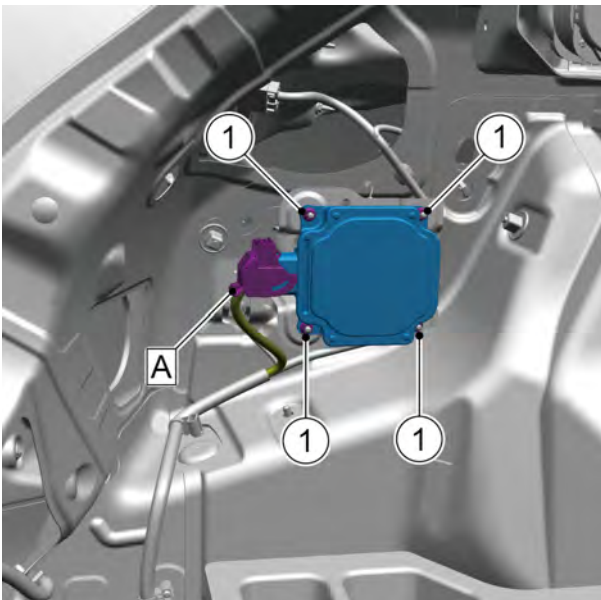
- 1 Move the front sealing clamping plate to the installation position.
- 2 Install the 7 fixing bolts of the front sealing clamping plate.
Torque: 6N·m

- 3 Install the power battery.
- 4 Fill the power battery coolant.
- 5 Connect the DC bus (at the power battery side).
- 6 Connect the negative cable of battery.

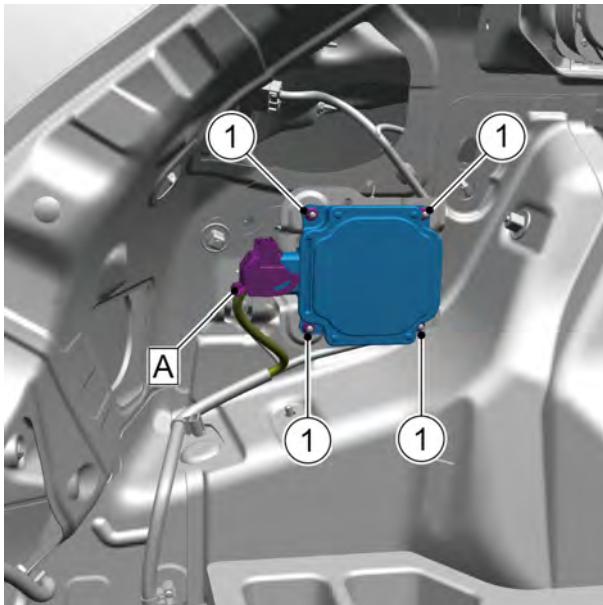
2.2.7.23 Electric vehicle communication control module

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the trunk left trim panel assembly. Refer to [Replacement of left trim panel assembly of trunk](#)
- 3 Disconnect the 1 harness connector A connecting the floor harness with the electric vehicle communication control module.
- 4 Remove the 4 fixing nuts 1 connecting the electric vehicle communication control module and the electric vehicle communication control module mounting bracket.
- 5 Dismantle electric vehicle communication control module.



Installation procedure



- 1 Move the vehicle communication control unit to the installation position.
- 2 Install and tighten the 4 fixing nuts 1 connecting the electric vehicle communication control module and electric vehicle communication control module bracket.
- 3 Connect the 1 harness connectors A connecting the floor harness with the electric vehicle communication control module.

Caution

Firmly plug in harness in the principle of “first to plug, second to sound and third to confirm”.

- 4 Install the trunk left trim panel assembly.
- 5 Connect the negative cable of battery.

2.3 High Voltage Distribution System

2.3.1 Instructions and operations

2.3.1.1 Function Introduction

A battery electric vehicle has a high-voltage power supply system. The high-voltage power supply system uses power batteries to provide energy for high-voltage components such as integrated electric driving system, electric compressors, and PTC heaters. In addition, the power battery also has a DC fast charging system and an AC slow charging system. All these high-voltage components are connected by the high and low voltage distribution system to transmit electric energy.

2.3.1.2 Description of Components

The high-voltage power distribution system mainly includes the following components: high and low voltage charging systems, DC charging port, AC charging port, and DC bus.

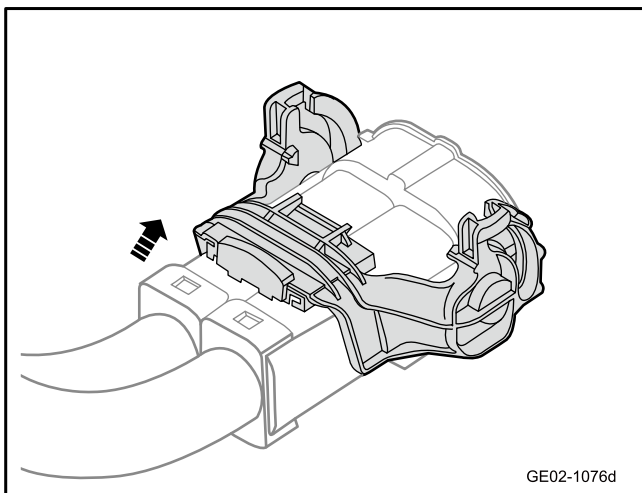
Caution

All high-voltage cables are orange. Do not touch these cables and components when the vehicle is powered on. After the high-voltage cable connector is pulled out, wrap it with insulating tape immediately.

2.3.1.3 Removal of High-voltage Harness Connector

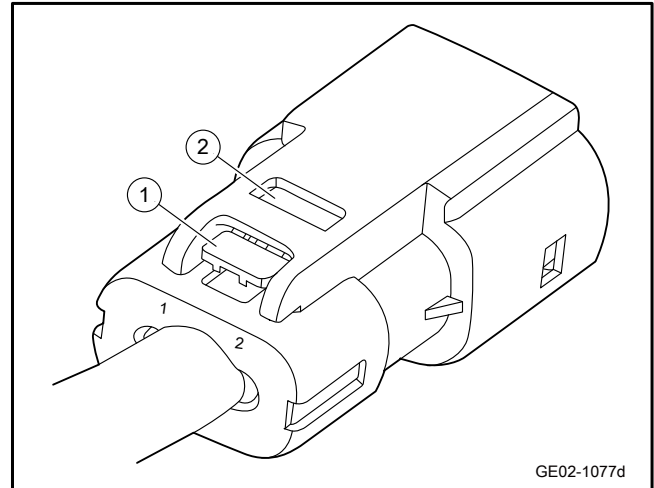
Type I high-voltage connectors: (HVP800 sequence)

1. Gently pry the power-assisted handle latch with hand or screwdriver,
2. Pull the power-assisted handle out of the lock, then slowly lift the power-assisted handle up, and the connector will slowly exit,
3. when the power-assisted handle changes from the horizontal position to the vertical position, all the connectors have been pulled out.



Type II high-voltage connectors: (HVA280 sequence)

After pressing and holding the ring 1, pull the connector outward until it is pulled out from the ring 2.



2.3.2 System working principles

2.3.2.1 System Working Principles

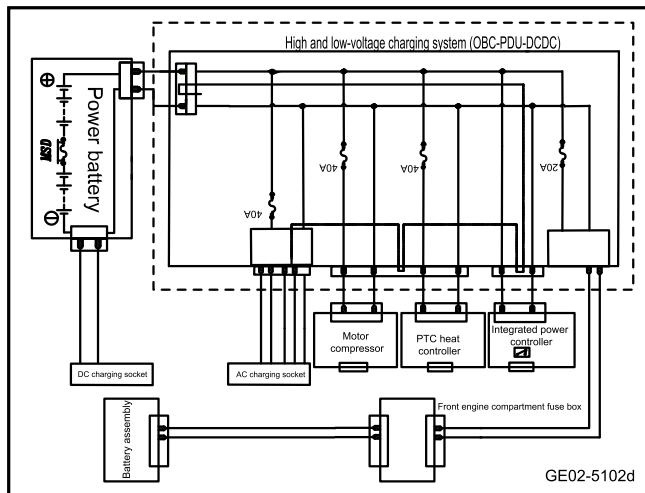
High and Low Voltage Charging System

The high and low voltage charging system of this vehicle integrates the functions of 3 control units: traditional power supply distribution unit (PDU), DC voltage converter (DCDC) and vehicle-mounted charger (OBC). The high-voltage and low-voltage charging system can not only charge the power battery, but also has the function of distributing the DC from the power battery, which is similar to the fuse box in the low-voltage power supply system: it is responsible for the distribution of high-voltage electric energy and the overload and short-circuit protection of the high-voltage circuit.

The high and low voltage charging system distributes the high-voltage electric energy of the power battery to the integrated power controller, electric compressor and PTC heating controller, converts the high voltage of the power battery into low-voltage electricity, and provides electric energy for other electrical components of the complete vehicle to charge the battery assembly at the same time.

In the high and low voltage charging system, each 40A fuse is set for the electric compressor circuit, the PTC heater circuit and the 6.6kW vehicle-mounted charger AC slow charging circuit respectively.

The electrical schematic diagram of high and low voltage charging system is as follows:



DC charging port

The DC charging port can receive the electric energy of the DC charging pile, and transmit the electric energy to the power battery assembly through the high-voltage harness to charge it.

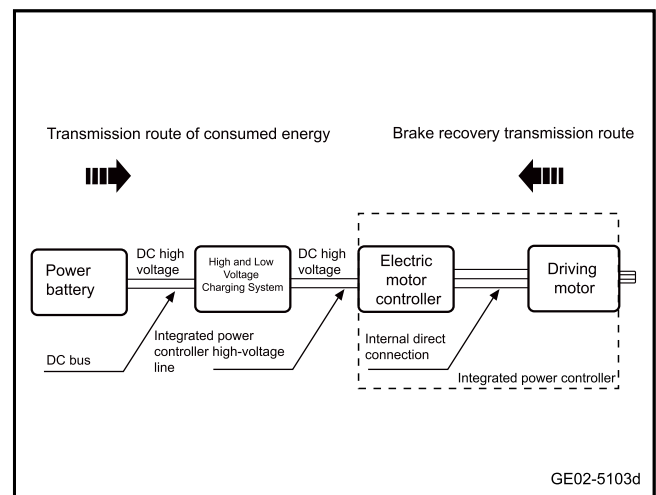
AC charging port and AC bus

The AC charging port can receive the electric energy of the AC charging pile, and transmit it to the high-voltage and low-voltage charging system through high-voltage wiring harness. The high-voltage and low-voltage charging system converts AC into DC and transmits it to the power battery through DC bus to charge it.

Motor control

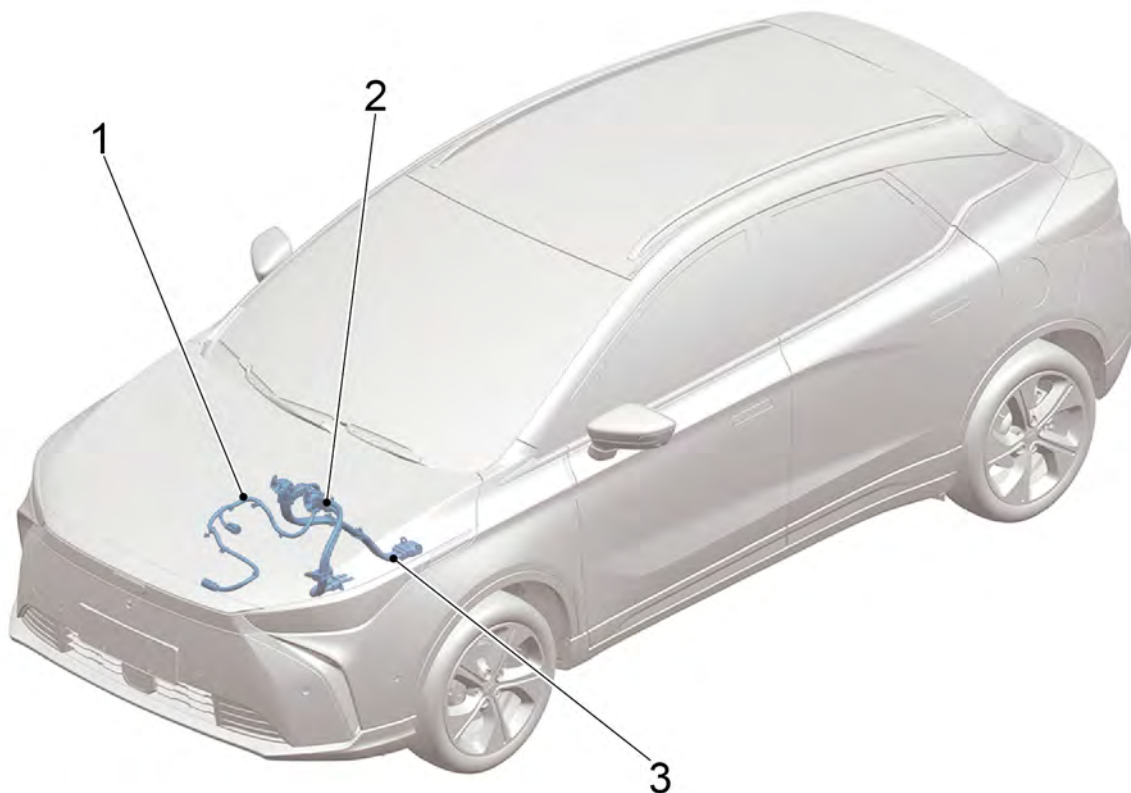
When the vehicle is running, the current is directly connected to the drive motor from the power battery through the DC bus, the high-voltage and low-voltage charging system, the high voltage line of the integrated power controller, and finally the driving motor is powered by connection inside the integrated power controller.

The energy transmission route is shown in the figure below: (the transmission route is reversed during energy recovery)



2.3.3 Part position

2.3.3.1 Part Position



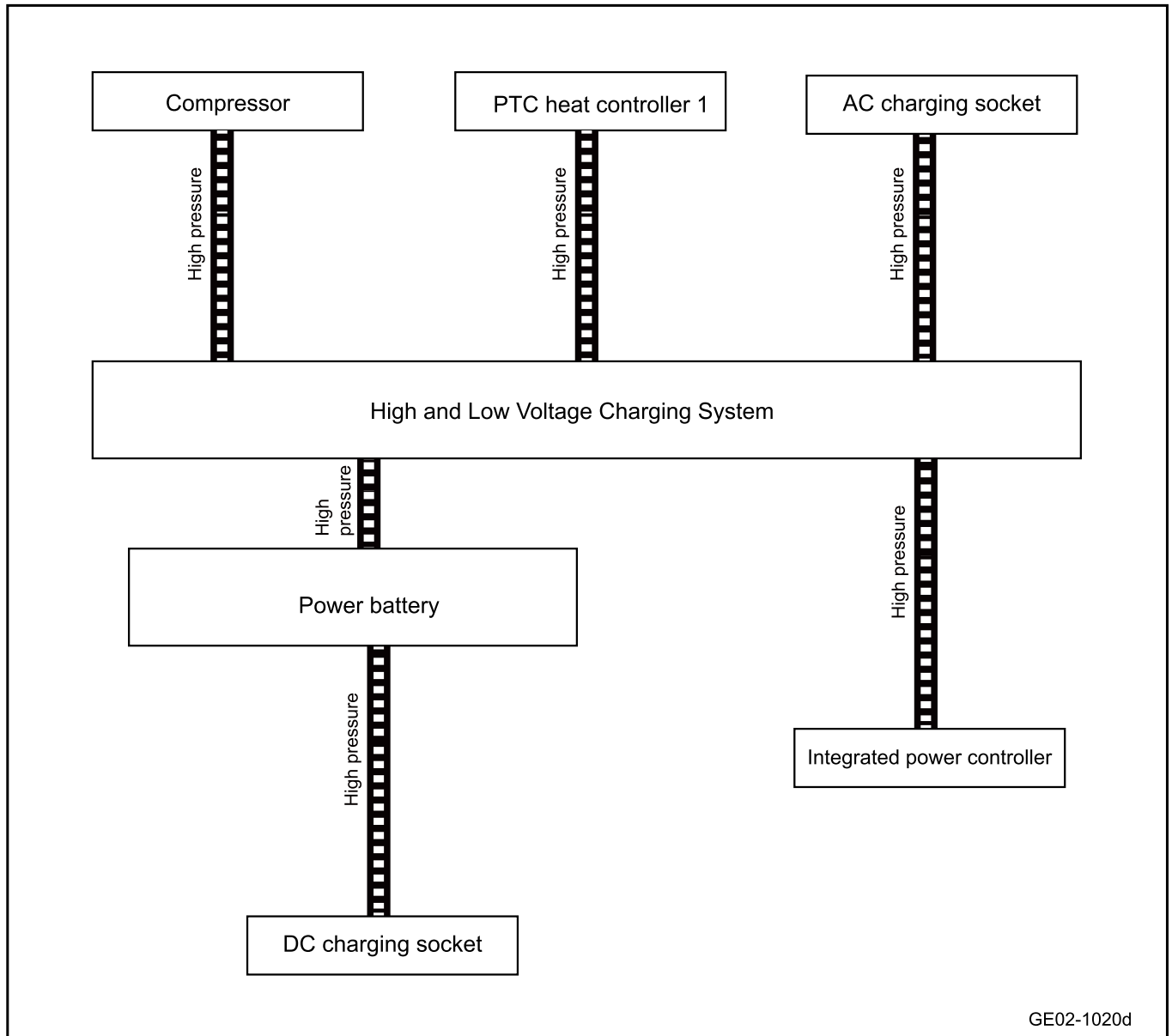
1. Air Conditioner High-voltage wiring harness

3. DC bus assembly

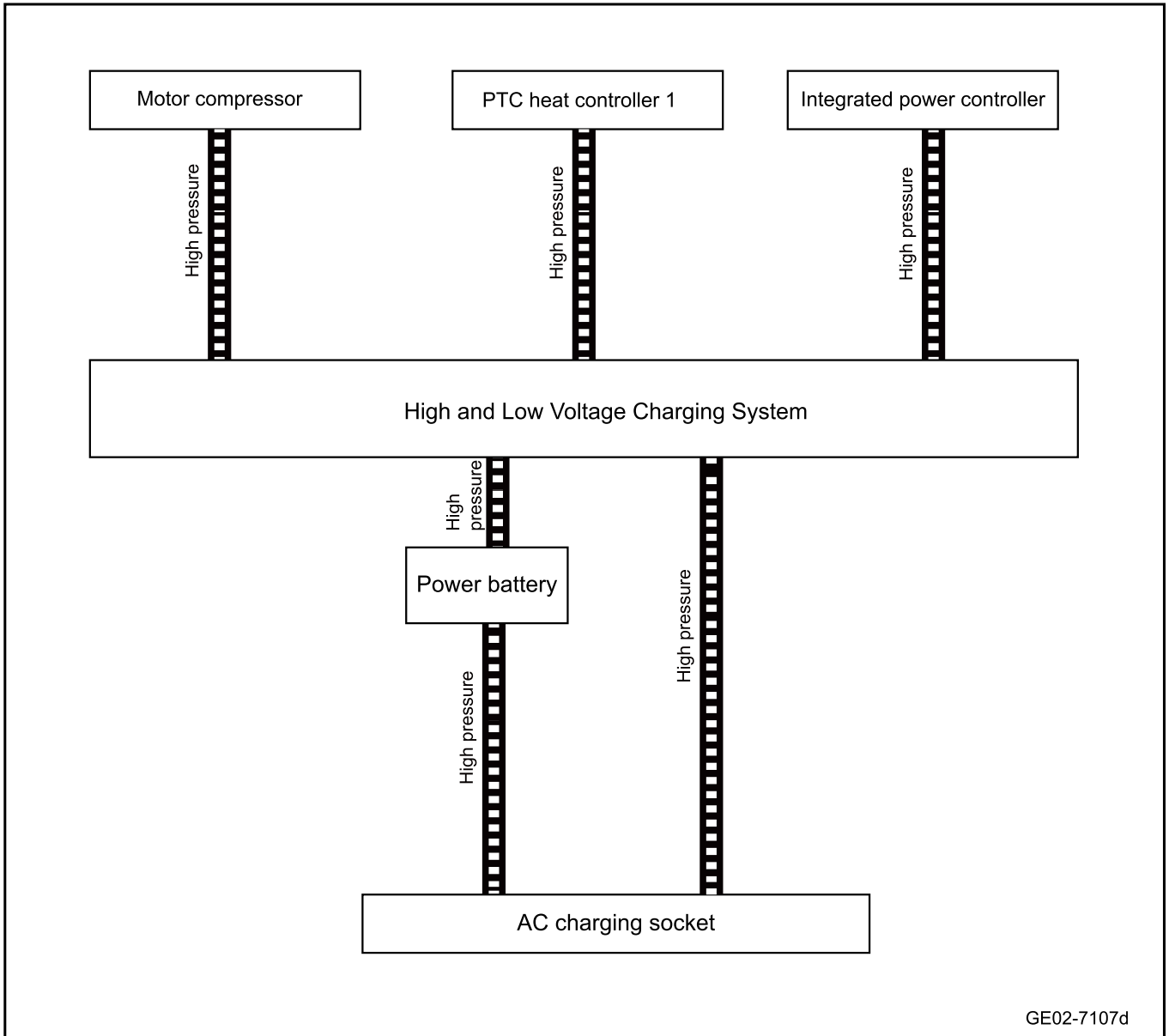
2. PEU harness assembly

2.3.4 Electrical block diagram

2.3.4.1 Electrical Schematic Diagram of High Voltage Distribution System (Type I)



2.3.4.2 Electrical Schematic Diagram of High Voltage Distribution System (Type II)



2.3.5 Diagnostic information and procedures

2.3.5.1 Diagnosis Description

Refer to description and operation.

2.3.5.2 Routine inspection

1. Check the after-sales installations that may affect the operation of the high-voltage distribution system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there is water or foreign matter outside the high-voltage distribution system.
4. Check whether the high-voltage harness connector of the high-voltage distribution is loose and whether there are signs of corrosion inside.

2.3.5.3 Fault symptom table

Symptom	Suspected parts	Measures
High voltage interlocking fault	1.VCU, harness and connector	Check whether the VCU harness and connector are properly connected and repaired, and replace the VCU if necessary.
	2. Repair the isolating switch, harness and connector	Check and repair the disconnecting switch harness and connector for normal connection and repair. Replace the disconnecting switch if necessary.
	3. The high and low voltage charging system, wiring harness and connector	Check whether the high and low-voltage charging system harness and connectors are properly connected and repaired, and replace the high and low-voltage charging system if necessary.
	4. Motor compressor, harness and connector	Check whether the motor compressor harness and connector are properly connected and repaired, and replace the motor compressor if necessary.
	5. PTC Heater, harness and connector	Check whether the PTC heater harness and connector are properly connected and repaired, and replace the PTC heater if necessary.
Motor compressor failure	1. Motor compressor	Replace the motor compressor.
	2. Motor compressor high-voltage circuit	Refer to Motor compressor circuit fault
	3. High and low-voltage charging system	Check the software version of the high and low voltage charging system and update it. Replace the high and low voltage charging system if necessary.
PTC heater positive failure	1. PTC heater	Replace the PTC heater.
	2. PTC heater high voltage circuit	Refer to PTC Heater Circuit Fault

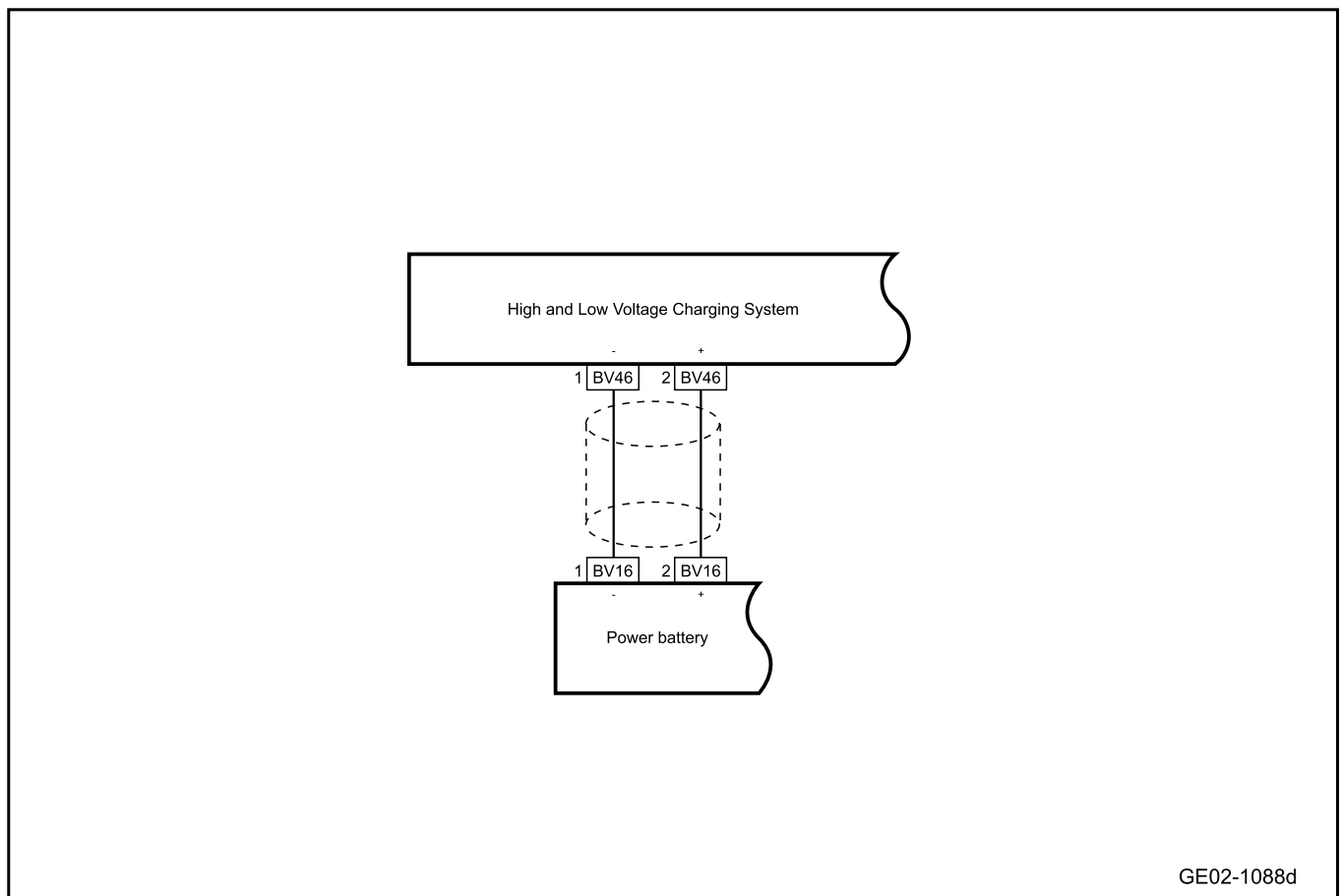
Symptom	Suspected parts	Measures
	3. High and low-voltage charging system	Check the software version of the high and low voltage charging system and update it. Replace the high and low voltage charging system if necessary.

2.3.5.4 AC charging circuit fault(Type I)

Refer to [AC input signal fault \(Type I\)](#)

2.3.5.5 Power battery circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

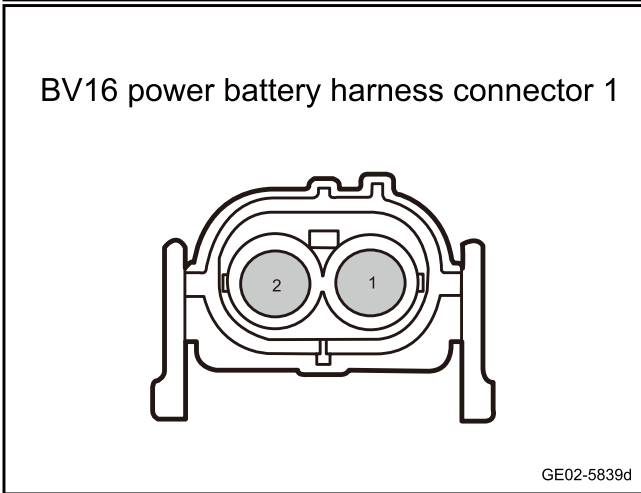
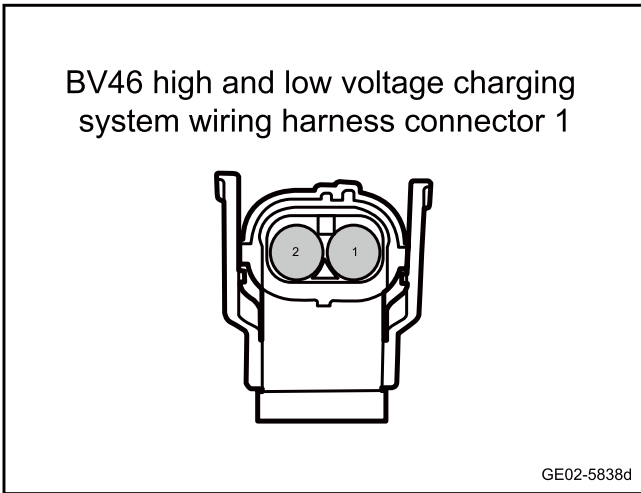
Step 1	Primary check.
--------	----------------

- A. Check the power battery and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the power battery and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2 Check the harness between the power battery and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV16.
- C. Disconnect the high and low voltage charging system wiring harness connector BV46.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV46(1)	BV16(1)	Standard resistance: less than 1Ω
BV46(2)	BV16(2)	

- E. Confirm whether the measured value meets the standard.

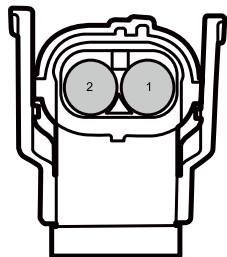
No

Repair or replace the harness.

Yes

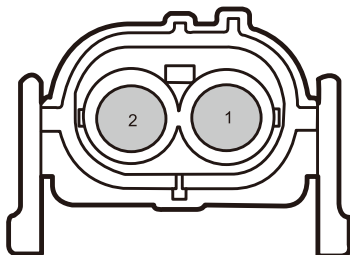
Step 3 Check the harness between the power battery and the high and low voltage charging system for short circuit.

BV46 high and low voltage charging system wiring harness connector 1



GE02-5840d

BV16 power battery harness connector 1



GE02-5841d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV16.
- C. Disconnect the high and low voltage charging system wiring harness connector BV46.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV46(1)	BV16(2)	Standard resistance: greater than 10k Ω
BV46(2)	BV16(1)	

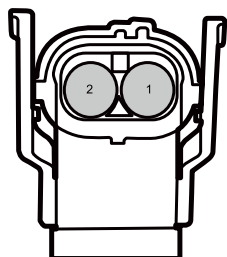
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Check the harness insulation between the power battery and the high and low voltage charging system.

BV46 high and low voltage charging system wiring harness connector 1



GE02-5842d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV16.
- C. Disconnect the high and low voltage charging system wiring harness connector BV46.
- D. Adjust the gear of the high-voltage insulation tester to 1000V.
- E. Use a high voltage insulation detector to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV46(1)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV46(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the power battery.
--------	----------------------------

- A. To replace the power battery, please refer to [Replacement of Power Battery](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Replace the high and low-voltage charging system.
--------	---

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System\(Type I\)](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(Low figuration\)](#)

Next step

Step 7	Reprogram and reset the high and low voltage charging system.
--------	---

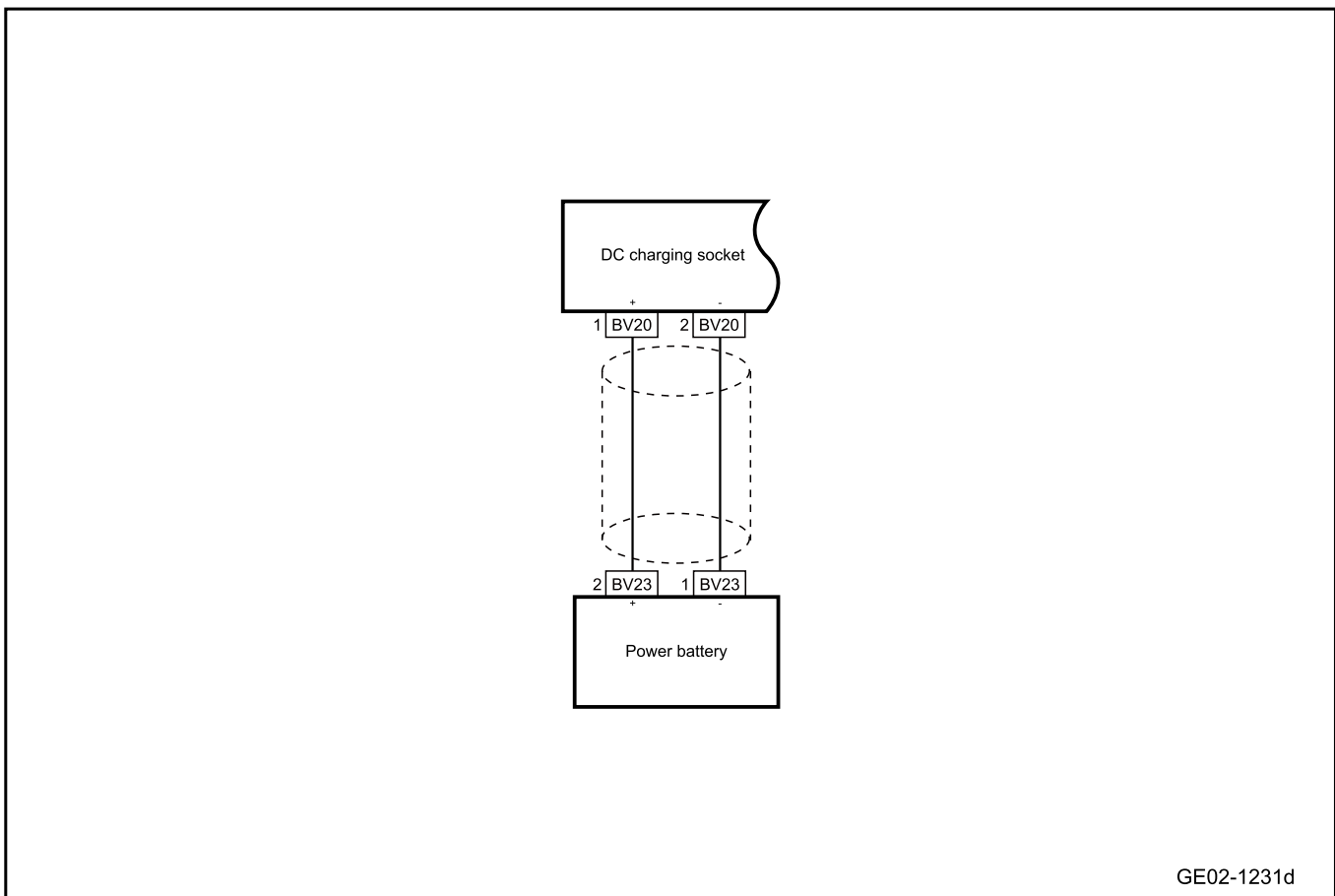
- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8	System is normal.
--------	-------------------

2.3.5.6 DC charging circuit fault(Type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the power battery and DC charging socket for signs of damage, deformation, smudges, looseness, etc.
- B. Check the power battery and DC charging socket harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

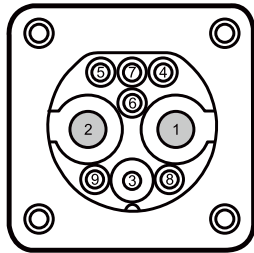
No

Repair or replace the faulty part.

Yes

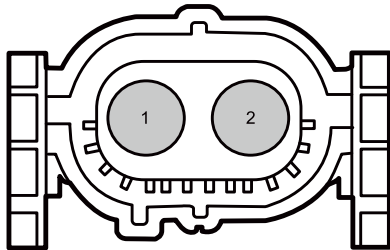
Step 2	Check the harness between the power battery and the DC charging socket for an open circuit.
--------	---

BV20 DC charging socket harness connector



GE02-5843d

BV23 power battery harness connector 2



GE02-5844d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the DC charging socket harness connector BV20.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV20(1)	BV23(2)	Standard resistance: less than 1Ω
BV20(2)	BV23(1)	

- E. Confirm whether the measured value meets the standard.

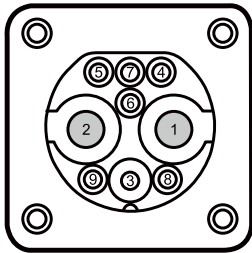
No

Repair or replace the harness.

Yes

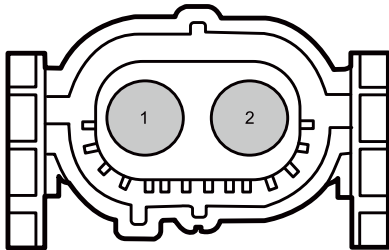
Step 3 | Check the harness between the power battery and the DC charging socket for short circuit for short circuit.

BV20 DC charging socket harness connector



GE02-5845d

BV23 power battery harness connector 2



GE02-5846d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the DC charging socket harness connector BV20.
- D. Use a multimeter to measure the terminals according to the following table:

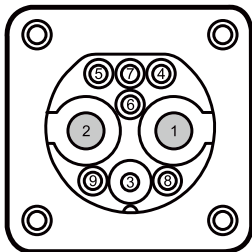
Measure terminal 1	Measure terminal 2	Standard value
BV20(1)	BV23(2)	Standard resistance: greater than 10k Ω
BV20(2)	BV23(1)	

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Step 4 Check the harness insulation between the power battery and the DC charging socket for short circuit.

BV20 DC charging socket harness connector



GE02-5847d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the DC charging socket harness connector BV20.
- D. Adjust the gear of the high-voltage insulation tester to 1000V.
- E. Use a high voltage insulation detector to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV20(1)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV20(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the DC charging socket.
--------	---------------------------------

- A. Replace the DC charging socket. Refer to [Replacement of DC Charging Port Cover Assembly](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Replace the power battery.
--------	----------------------------

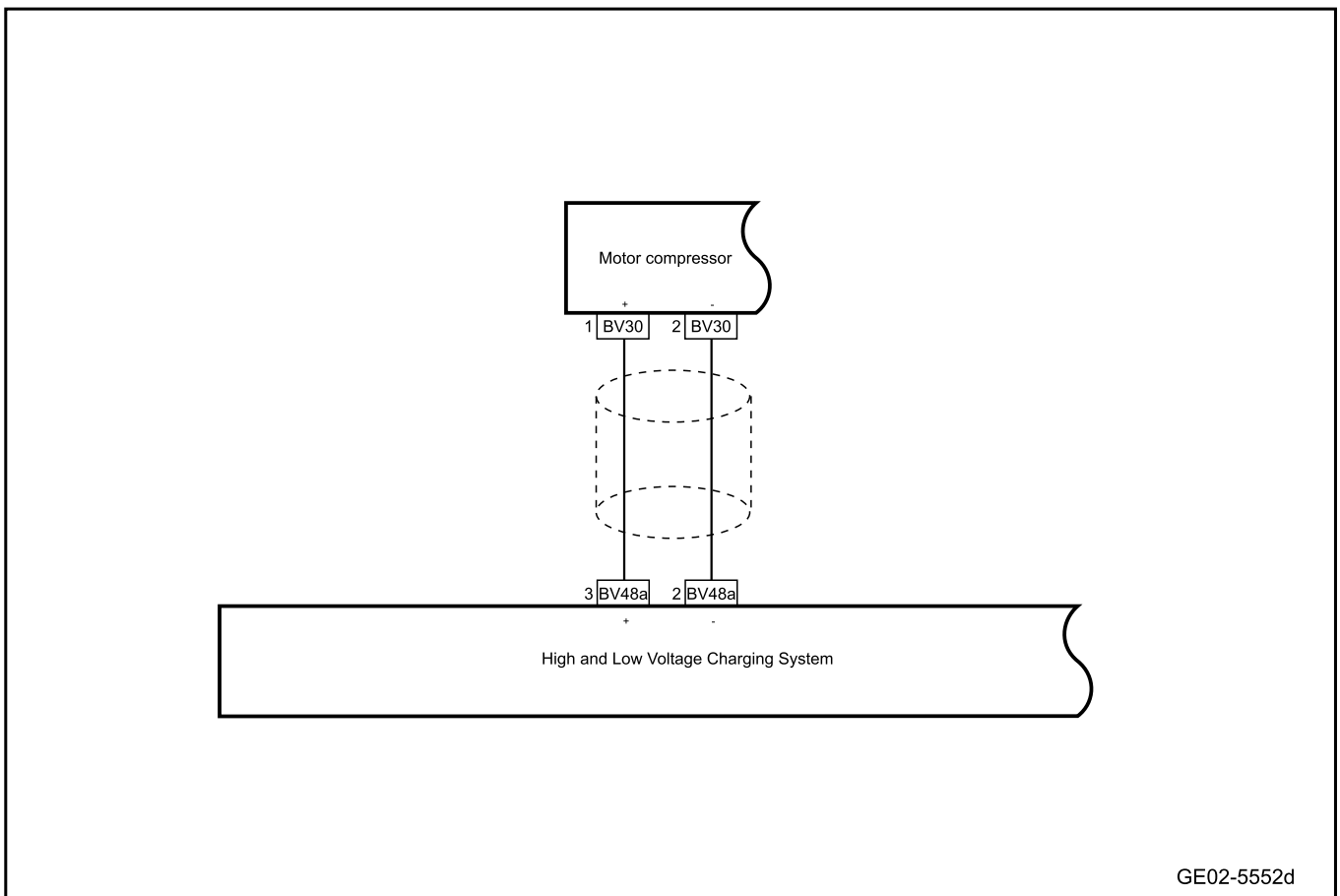
- A. Replace the power battery. Refer to [Replacement of Power Battery](#)

Next step

Step 7	System is normal.
--------	-------------------

2.3.5.7 Motor compressor circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

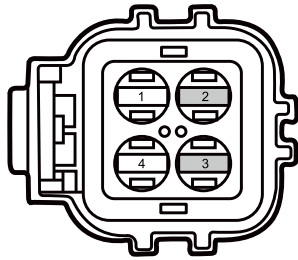
- A. Check the motor compressor and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the motor compressor and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

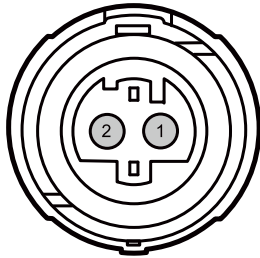
Step 2	Check the harness between the motor compressor and the high and low voltage charging system for an open circuit.
--------	--

BV48a High and low voltage charging system harness connector 5



GE02-5848d

BV30 Connection to power compressor harness connector 1



GE02-5849d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the motor compressor harness connector BV30.
- C. Disconnect the high and low voltage charging system wiring harness connector BV48a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48a(3)	BV30(1)	Standard resistance: less than 1Ω
BV48a(2)	BV30(2)	

- E. Confirm whether the measured value meets the standard.

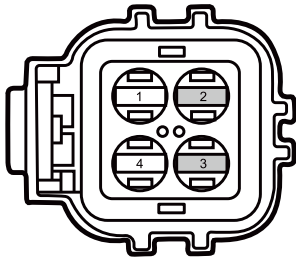
No

Repair or replace the harness.

Yes

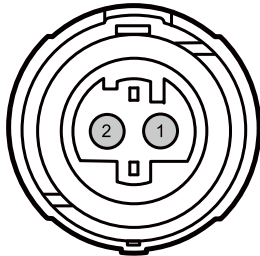
Step 3 | Check the harness between the motor compressor and the high and low voltage charging system for short circuit.

BV48a High and low voltage charging system harness connector 5



GE02-5850d

BV30 Connection to power compressor harness connector 1



GE02-5851d

Yes

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the motor compressor harness connector BV30.
- C. Disconnect the high and low voltage charging system wiring harness connector BV48a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48a(2)	BV30(1)	Standard resistance: greater than 10k Ω
BV48a(3)	BV30(2)	

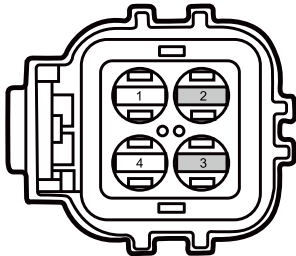
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Check the harness insulation between the motor compressor and the high and low voltage charging system.

BV48a High and low voltage charging system harness connector 5



GE02-5852d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the motor compressor harness connector BV30.
- C. Disconnect the high and low voltage charging system wiring harness connector BV48a.
- D. Adjust the gear of the high-voltage insulation tester to 1000V.
- E. Use a high voltage insulation detector to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV48a(2)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV48a(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the motor compressor.
--------	-------------------------------

- A. To replace the motor compressor, refer to [Replacement of Motor Compressor Assembly](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Replace the high and low-voltage charging system.
--------	---

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System\(type I\)](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(low level configuration\)](#)

Next step

Step 7	Reprogram and reset the high and low voltage charging system.
--------	---

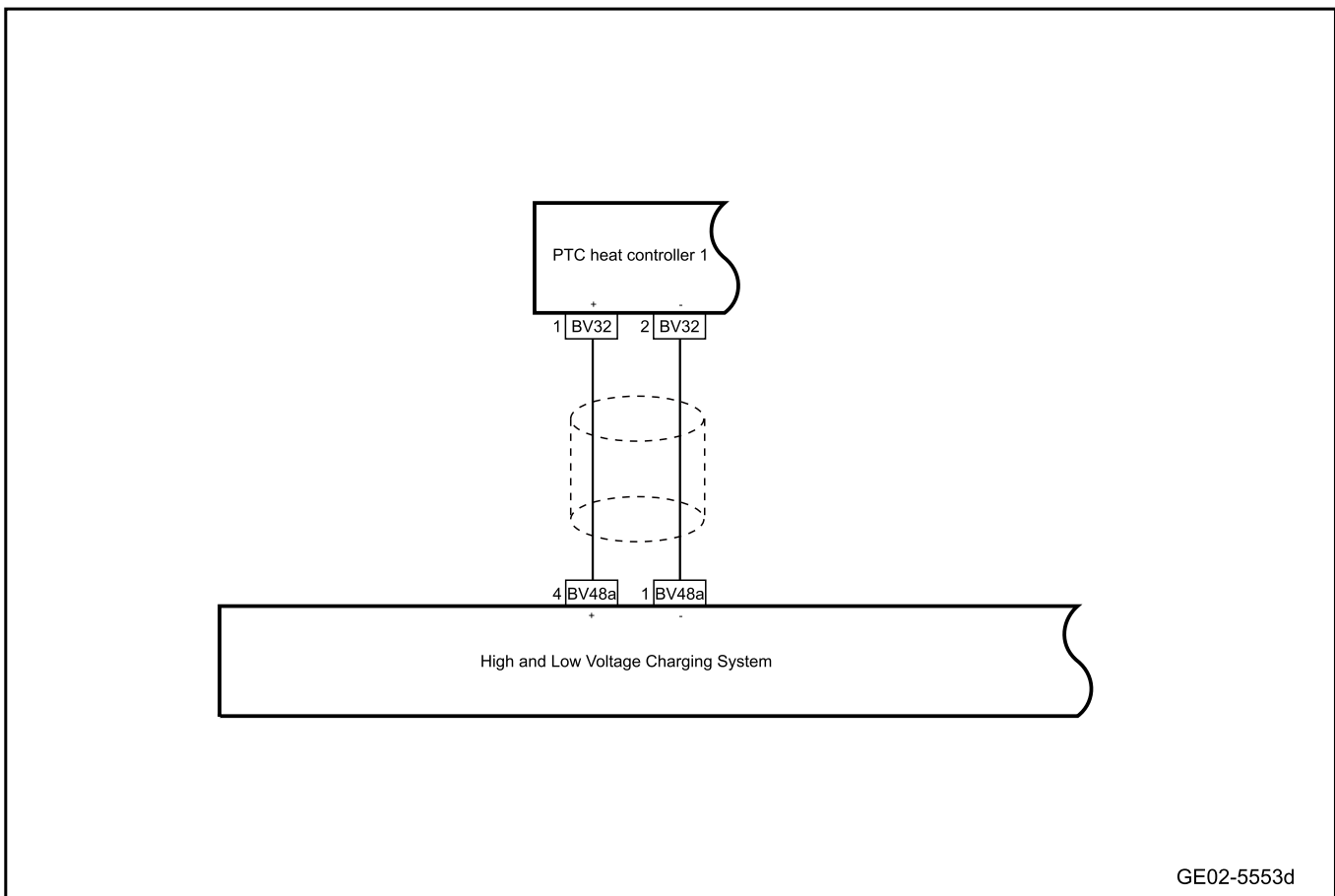
- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8	System is normal.
--------	-------------------

2.3.5.8 PTC heater circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

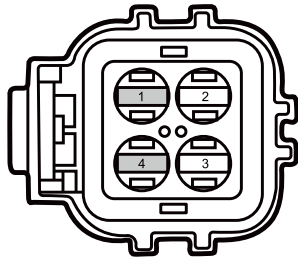
- A. Check the PTC heat controller 1 and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the PTC heat controller 1 and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

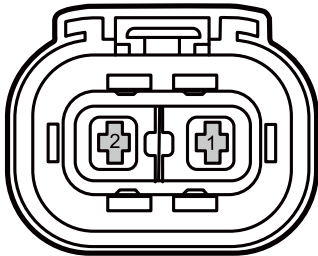
Step 2	Check the harness between the PTC heat controller 1 and the high and low voltage charging system for an open circuit.
--------	---

BV48a High and low voltage charging system harness connector 5



GE02-5853d

BV32 Connection to PTC heating controller harness connector 1



GE02-5854d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PTC heat controller 1 harness connector BV32.
- C. Disconnect the high and low voltage charging system wiring harness connector BV48a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48a(4)	BV32(1)	Standard resistance: less than 1Ω
BV48a(1)	BV32(2)	

- E. Confirm whether the measured value meets the standard.

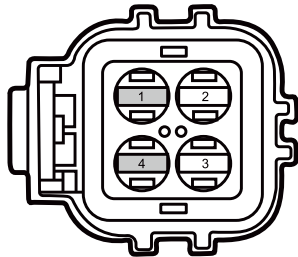
No

Repair or replace the harness.

Yes

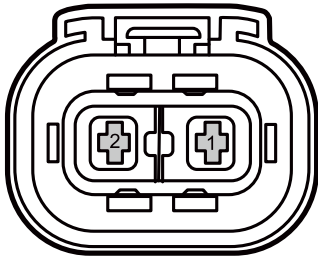
Step 3 Check the harness between the PTC heat controller 1 and the high and low voltage charging system for short circuit.

BV48a High and low voltage charging system harness connector 5



GE02-5855d

BV32 Connection to PTC heating controller harness connector 1



GE02-5856d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PTC heat controller 1 harness connector BV32.
- C. Disconnect the high and low voltage charging system wiring harness connector BV48a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV48a(4)	BV32(2)	Standard resistance: greater than 10k Ω
BV48a(1)	BV32(1)	

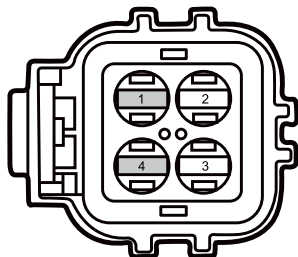
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Check the harness insulation between the PTC heat controller 1 and the high and low voltage charging system.

BV48a High and low voltage charging system harness connector 5



GE02-5857d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PTC heat controller 1 harness connector BV32.
- C. Disconnect the high and low voltage charging system harness connectors BV48 and BV48a.
- D. Adjust the gear of the high-voltage insulation tester to 1000V.
- E. Use a high voltage insulation detector to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV48a(4)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV48a(1)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the PTC heat controller 1 .
--------	-------------------------------------

- A. To replace the PTC heat controller 1, please refer to [Replacement of PTC Heat Controller](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Replace the high and low-voltage charging system.
--------	---

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System \(Type I\)](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly \(low level configuration\)](#)

Next step

Step 7	Reprogram and reset the high and low voltage charging system.
--------	---

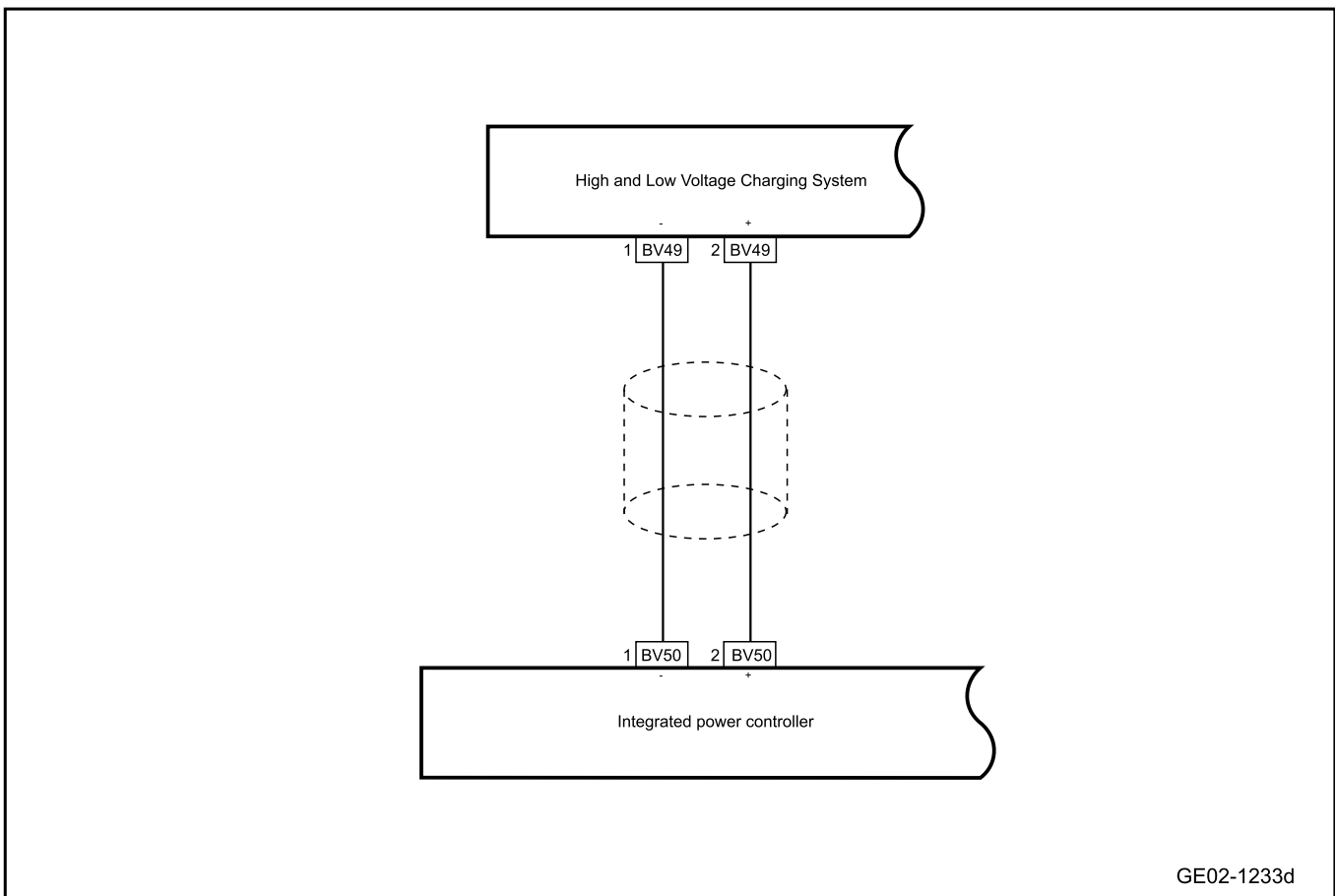
- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8	System is normal.
--------	-------------------

2.3.5.9 Integrated power controller circuit fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

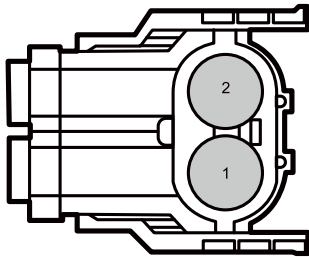
- A. Check the integrated power controller and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the integrated power controller and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

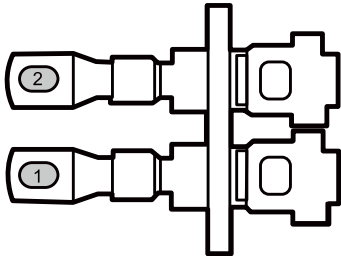
Step 2	Check the harness between the integrated power controller and the high and low voltage charging system for an open circuit.
--------	---

BV49 High and low voltage charging system harness connector 6



GE02-5858d

BV50 Integrated power controller harness connector 2



GE02-5859d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the integrated power controller harness connector BV50.
- C. Disconnect the high and low voltage charging system wiring harness connector BV49.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV49(1)	BV50(1)	Standard resistance: less than 1Ω
BV49(2)	BV50(2)	

- E. Confirm whether the measured value meets the standard.

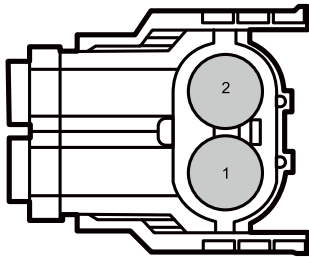
No

Repair or replace the harness.

Yes

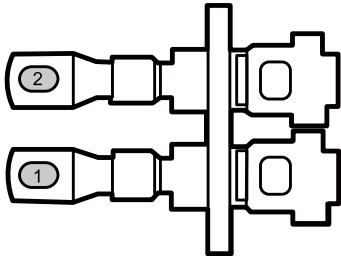
Step 3 | Check the harness between the integrated power controller and the high and low voltage charging system for short circuit.

BV49 High and low voltage charging system harness connector 6



GE02-5860d

BV50 Integrated power controller harness connector 2

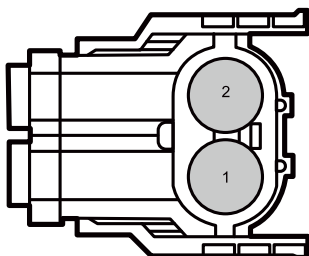


GE02-5861d

Yes

Step 4 Check the harness insulation between the integrated power controller and the high and low voltage charging system.

BV49 High and low voltage charging system harness connector 6



GE02-5862d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the integrated power controller harness connector BV50.
- C. Disconnect the high and low voltage charging system wiring harness connector BV49.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV49(1)	BV50(2)	Standard resistance: greater than 10k Ω
BV49(2)	BV50(1)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the integrated power controller harness connector BV50.
- C. Disconnect the high and low voltage charging system wiring harness connector BV49.
- D. Adjust the gear of the high-voltage insulation tester to 1000V.
- E. Use a high voltage insulation detector to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV49(1)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher
BV49(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the integrated power controller.
--------	--

- A. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller \(NIDEC CORPORATION\)](#)
- B. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller \(GLB Intelligent Power Technologies\)](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6	Replace the high and low-voltage charging system.
--------	---

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly \(low level configuration\)](#)

Next step

Step 7	Reprogram and reset the high and low voltage charging system.
--------	---

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

Next step

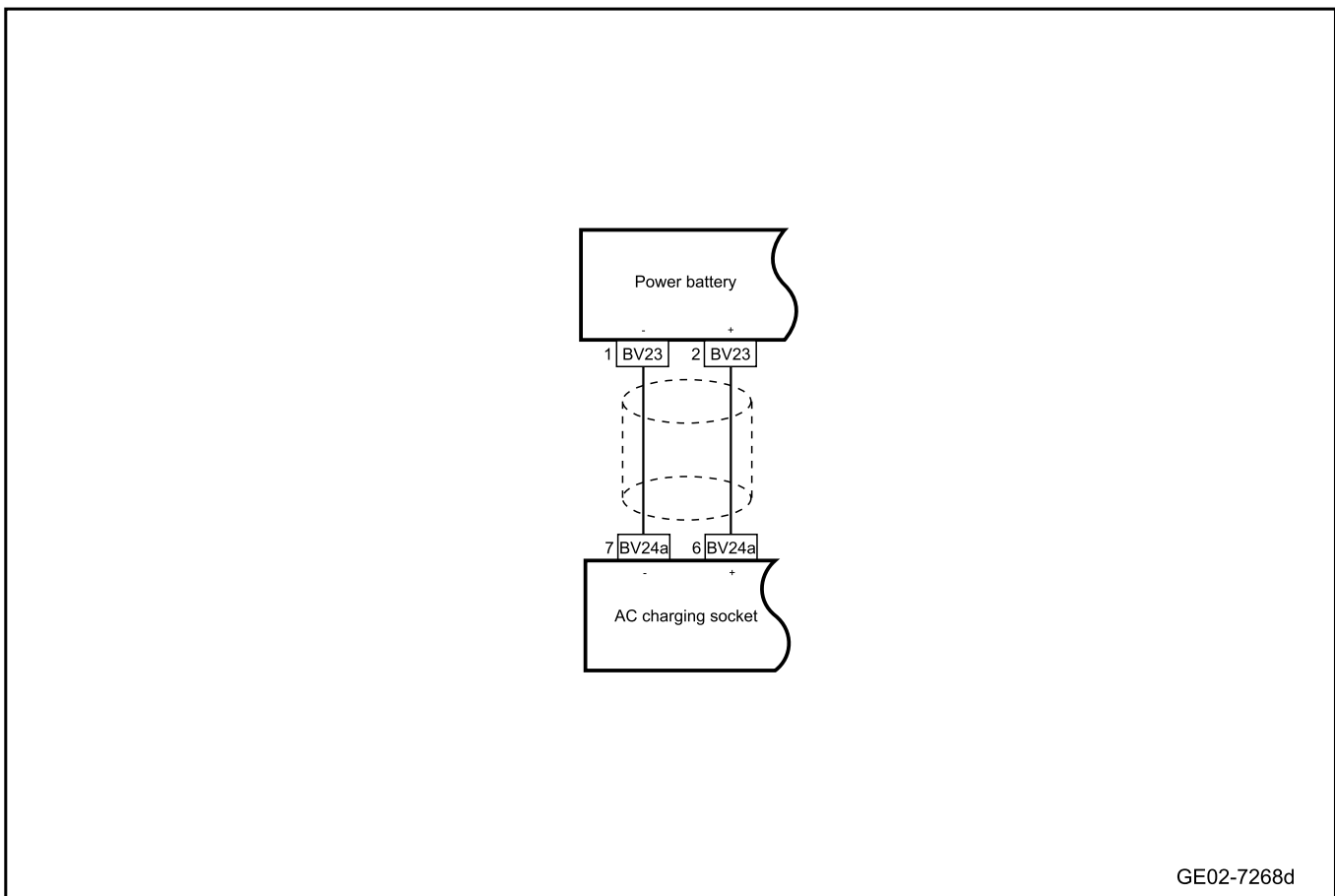
Step 8	System is normal.
--------	-------------------

2.3.5.10 AC charging circuit fault (Type II)

Refer to [AC Input Signal Failure \(Type II\)](#)

2.3.5.11 DC charging circuit fault (Type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

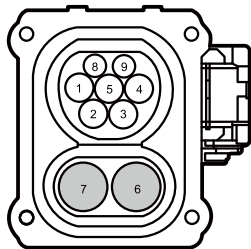
- A. Check the power battery and charging socket for signs of damage, deformation, smudges, looseness, etc.
- B. Check the power battery and charging socket harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

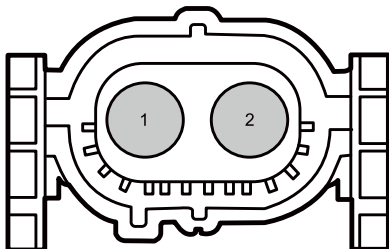
Step 2	Check the harness insulation between the power battery and the charging socket for short circuit.
--------	---

BV24a charging socket harness connector



GE02-7917d

BV23 power battery harness connector 2



GE02-5844d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the charging socket harness connector BV24a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV24a(7)	BV23(1)	Standard resistance: less than 1Ω
BV24a(6)	BV23(2)	
BV24a(7)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
BV24a(6)		

- E. The key activates the power supply of the vehicle to ON
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV24a(7)	Vehicle body is grounded.	Standard voltage: 0V
BV24a(6)		

- G. Confirm whether the measured value meets the standard.

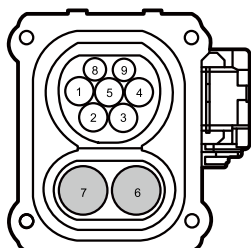
No

Repair or replace the harness.

Yes

Step 3 Check the harness insulation between the power battery and the charging socket.

BV24a charging socket harness connector



GE02-7917d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power battery harness connector BV23.
- C. Disconnect the charging socket harness connector BV24a.
- D. Adjust the gear of the high-voltage insulation tester to 1000V.
- E. Use a high voltage insulation detector to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV24a(6)	Vehicle body is grounded.	Standard resistance: 20MΩ or higher

Measure terminal 1	Measure terminal 2	Standard value
BV24a(7)		

F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Replace the charging socket.

- A. Replace the charging socket. Refer to [Replacement of Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 5 | Replace the power battery.

- A. To replace the power battery, please refer to [Replacement of Power Battery Box Cover](#)

Next step

Step 6 | System is normal.

2.3.6 Removing and installing

2.3.6.1 Insulation resistance measurement

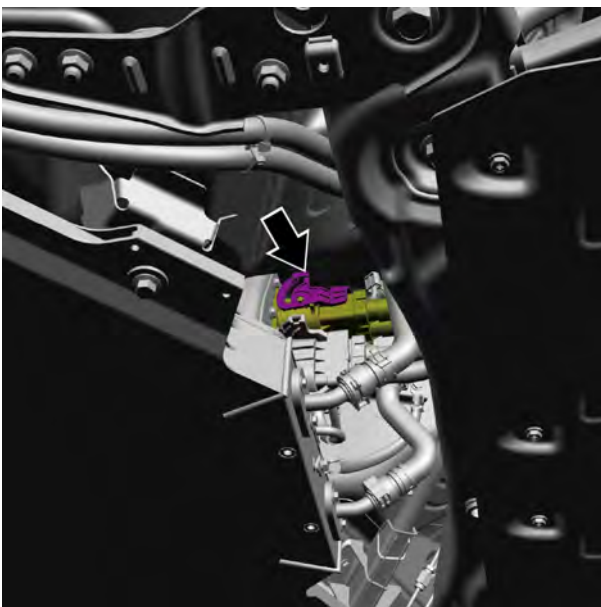
Calibration procedure

- 1 Disconnect the DC bus (high and low voltage charging system side). Refer to [Replacement of DC Bus Assembly](#)
- 2 Check the insulation resistances of AC charging ports L and N to PE respectively, and the values are required to be greater than 20m Ω .
- 3 Check the insulation resistances of fast charging ports DC- and DC+ to PE respectively, and the values are required to be greater than 20m Ω .
- 4 Check the insulation resistances of the input terminal and output terminal of the high-and-low-voltage charging system to the housing of the high-and-low-voltage charging system, and the values are required to be greater than 20M Ω .

2.3.6.2 High voltage maintenance power-on and power-off process

power-off process

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 4 Disconnect the 1 harness connector of the DC bus assembly connecting power battery.
- 5 Use a multimeter to test the voltages between positive to ground, negative to ground, and positive and negative at both ends of the high-voltage connector plug socket, and confirm that the voltage value is $\leq 60V$.



Power-on process



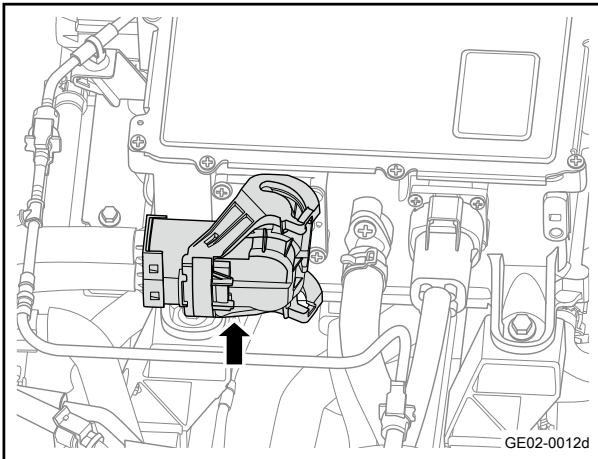
- 1 Connect the 1 harness connector of the DC bus assembly connecting power battery.

- 2 Install the power wire harness cover plate assembly.
- 3 Connect the negative cable of battery.
- 4 Lower the vehicle.

2.3.6.3 Replacement of DC Bus Assembly

Removal procedure

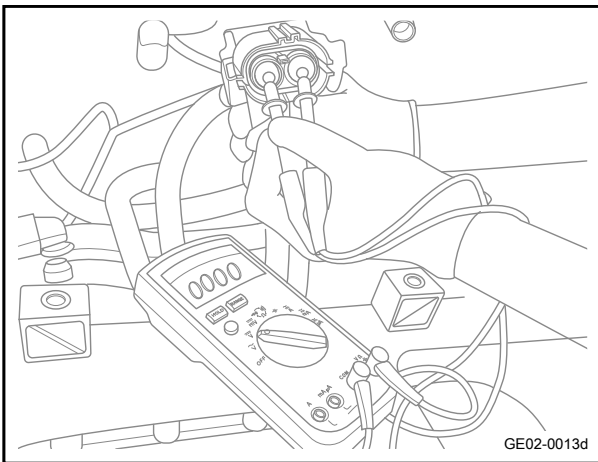
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the front engine compartment cover assembly.
Refer to [Replacement of Front Engine Compartment Trim Cover Assembly](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the power wire harness cover plate assembly.
Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)



- 5 Disconnect the DC bus assembly harness connector (HV/LV charging system side).

Caution

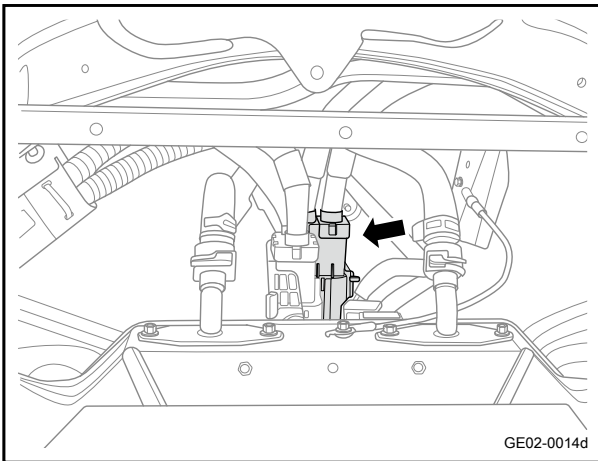
Require insulation treatment; avoid coolant splashing on the plug.



- 6 Use a multimeter to measure the bus voltage after standing still for 5 minutes.

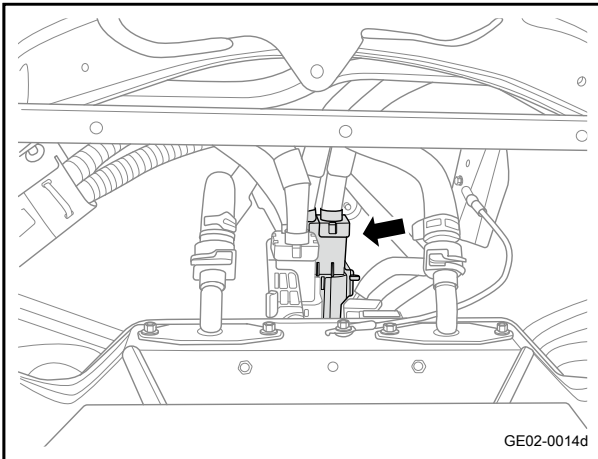
Caution

The following steps can be carried out only when the bus voltage is lower than 36V.



- 7 Disconnect the DC bus assembly harness connector (the side of power battery).
- 8 Disconnect the DC bus assembly fixing clips, and take off DC bus assembly.

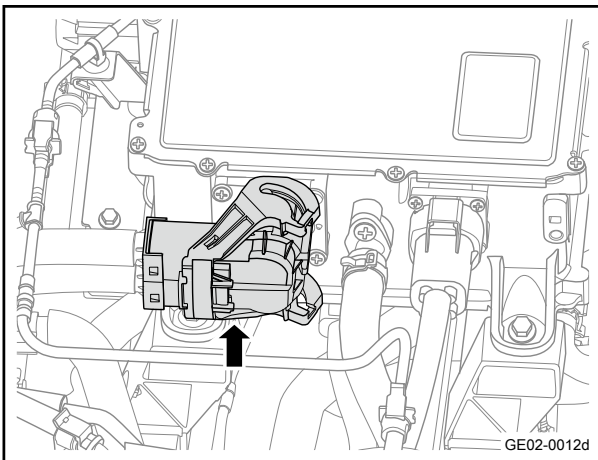
Installation procedure



- 1 Move the DC bus assembly to the mounting position and assembly wire harness clips.
- 2 Connect the DC bus assembly harness connector (at the power battery side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.



- 3 Connect the DC bus assembly harness connector (at the high and low-voltage charging system side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 4 Install the power wire harness cover plate assembly.
- 5 Lower the vehicle.
- 6 Install the front engine compartment cover assembly.
- 7 Connect the negative cable of battery.

2.3.6.4 Replacement of DC Bus Assembly (Low-configuration)

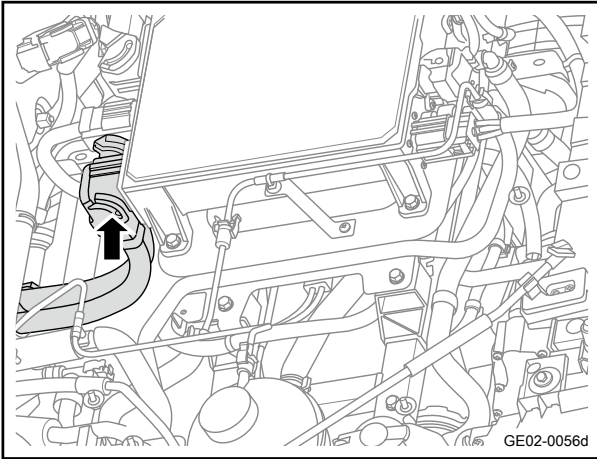
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

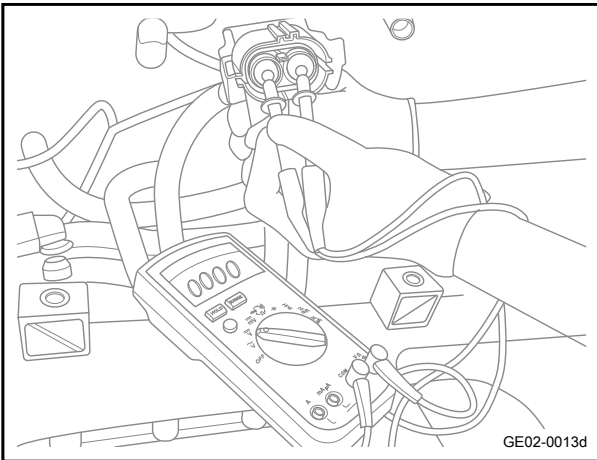
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)



- 4 Disconnect the DC bus assembly harness connector (HV/LV charging system side).

Caution

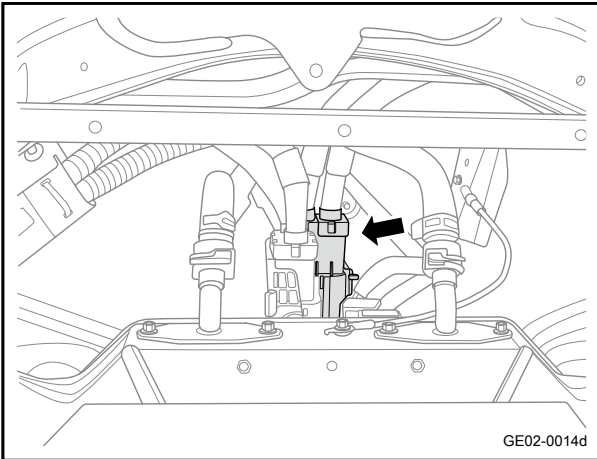
Require insulation treatment; avoid coolant splashing on the plug.



- 5 Use a multimeter to measure the bus voltage after standing still for 5 minutes.

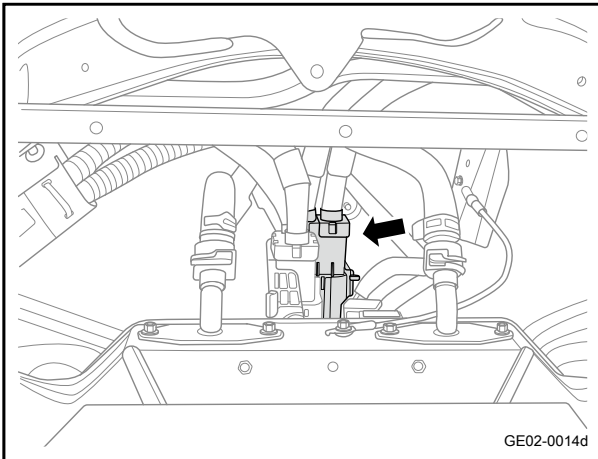
Caution

The following steps can be carried out only when the bus voltage is lower than 36V.



- 6 Disconnect the DC bus assembly harness connector (the side of power battery).
- 7 Disconnect the DC bus assembly fixing clips and take off DC bus assembly.

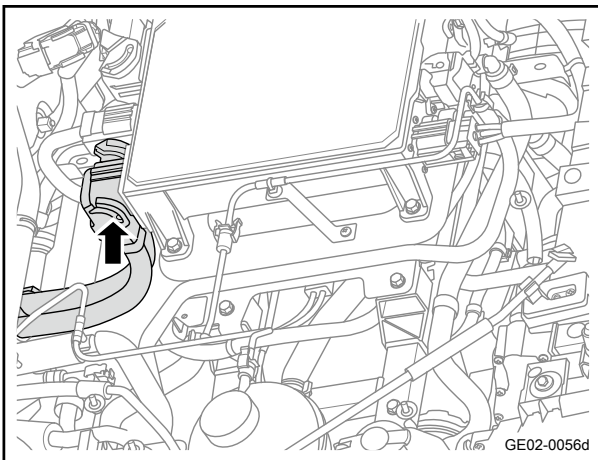
Installation procedure



- 1 Move the DC bus assembly to the mounting position, and install wire harness clips.
- 2 Connect the DC bus assembly harness connector (at the power battery side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.



- 3 Connect the DC bus assembly harness connector (at the high and low-voltage charging system side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 4 Install the power wire harness cover plate assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

2.3.6.5 Replacement of Motor Compressor Harness Assembly (Low-configuration)

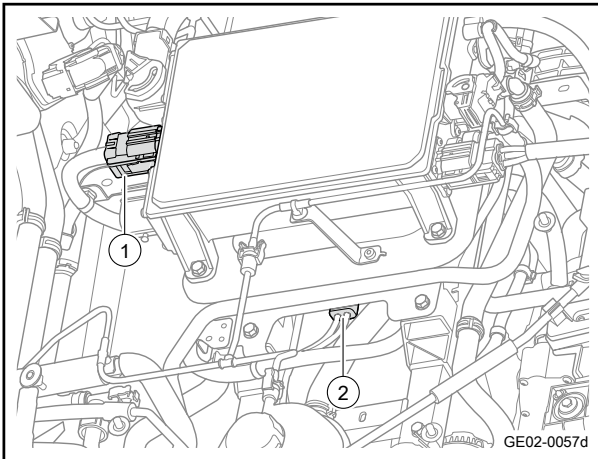
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

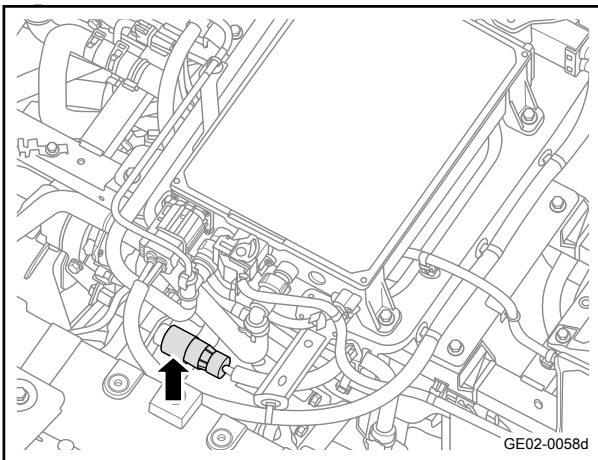
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

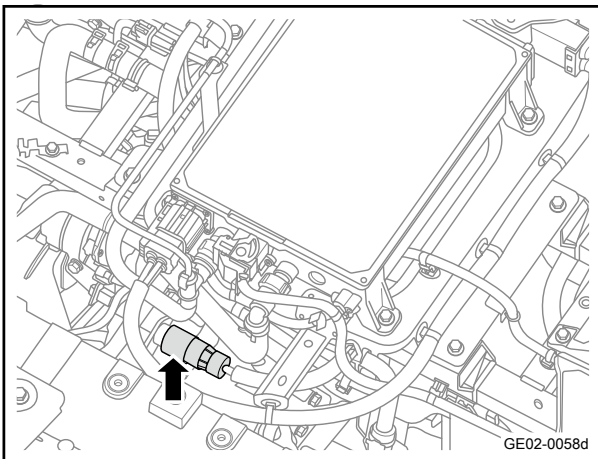
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)



- 4 Disconnect the motor compressor harness assembly harness connector 1 (at the high and low-voltage charging system side).
- 5 Disconnect the motor compressor harness assembly harness connector 2 (at the heater side).



- 6 Disconnect the motor compressor harness assembly harness connector (at the motor compressor side).
- 7 Disconnect the motor compressor harness assembly fixing clips.
- 8 Take off the motor compressor harness assembly.

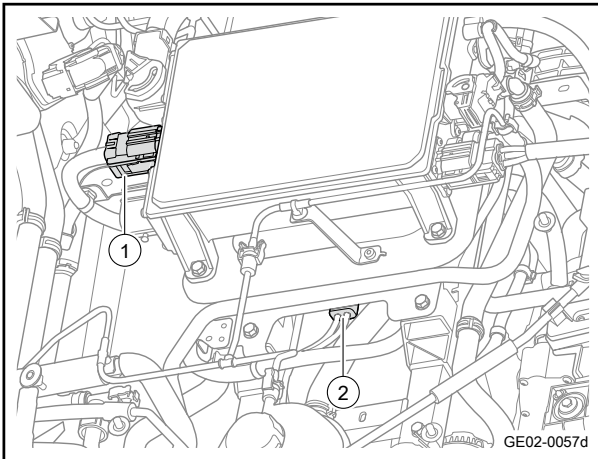


Installation procedure

- 1 Move the motor compressor harness assembly to the installation position, and install wire harness clips.
- 2 Connect the motor compressor harness assembly harness connector (at the motor compressor side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.



- 3 Connect the motor compressor harness assembly harness connector 2 (at the heater side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 4 Connect the motor compressor harness assembly harness connector 1 (at the high and low-voltage charging system side).

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 5 Connect the DC bus assembly.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.3.6.6 Replacement of PEU Harness Assembly (Low-configuration)

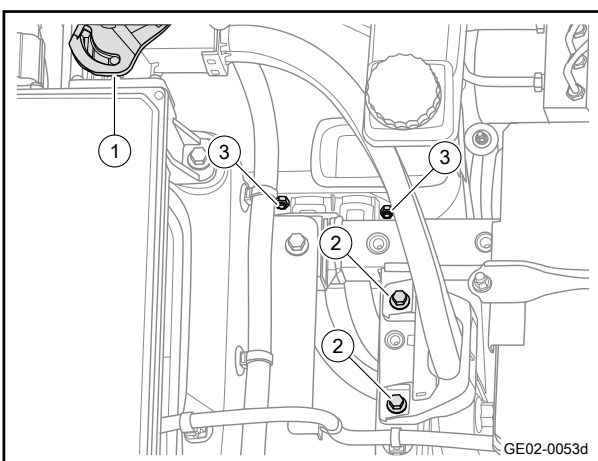
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

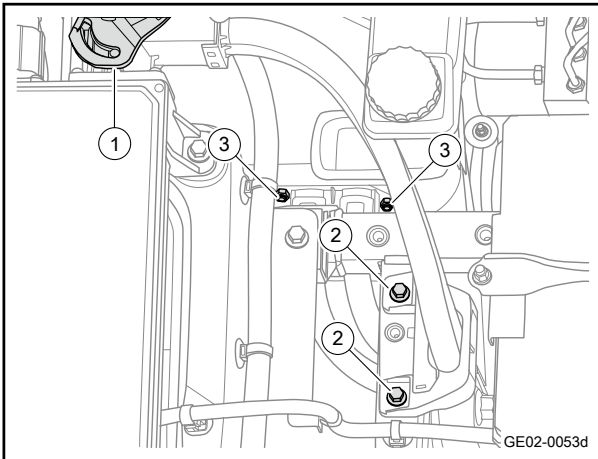
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 4 Disconnect the PEU harness assembly harness connector 1 (at the high and low-voltage charging system side).
- 5 Remove the 2 fixing bolts 2 of PEU wire harness assembly bracket.
- 6 Remove the 2 fixing bolts 3 of PEU wire harness assembly.
- 7 Disconnect the PEU harness assembly fixing pipe clip, and take off PEU harness assembly.



Installation procedure



- 1 Move the PEU harness assembly to the installation position, and install fixing clip.
- 2 Install the 2 fixing bolts 3 of PEU wire harness assembly.
- 3 Install the 2 fixing bolts 2 of PEU wire harness assembly bracket.
- 4 Connect the PEU harness assembly harness connector 1 (at the high and low-voltage charging system side).

Caution

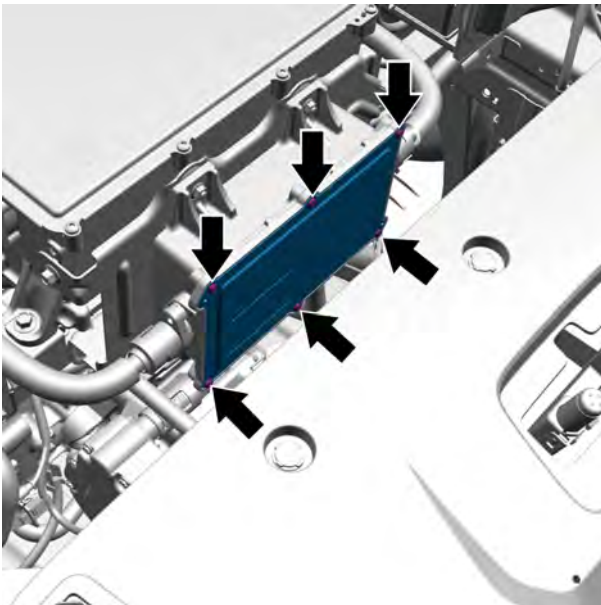
Pay attention to "one plug, two ring, three confirmation" when plugging.

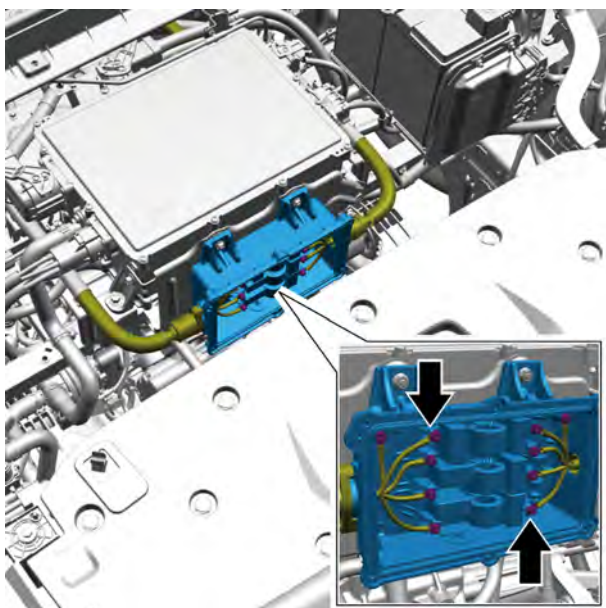
- 5 Install the DC bus assembly.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.3.6.7 Replacement of Filter

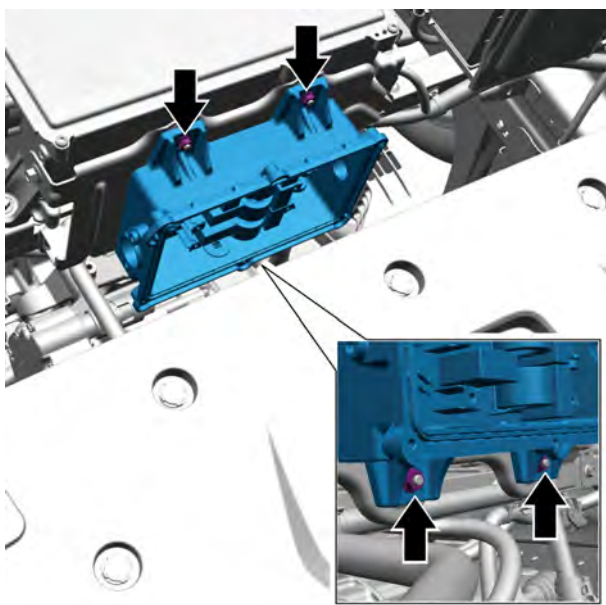
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 3 Remove 6 fixing screws connecting the filter cover and the filter.



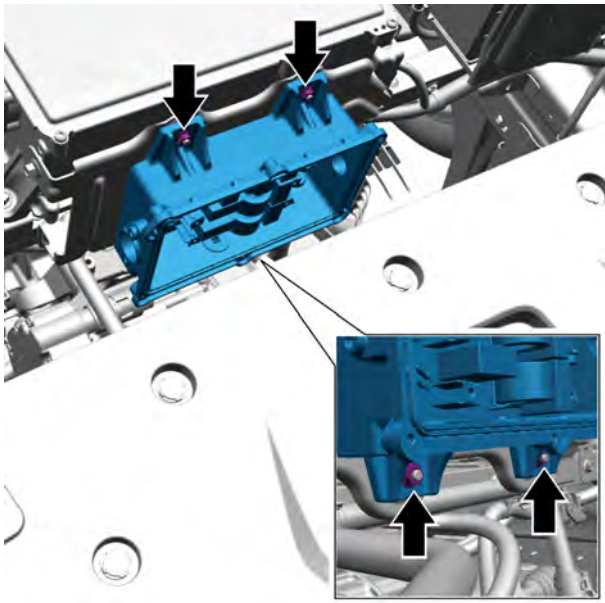


- 4 Disconnect the 10 fixing bolts connecting the combination charging socket harness and the filter.

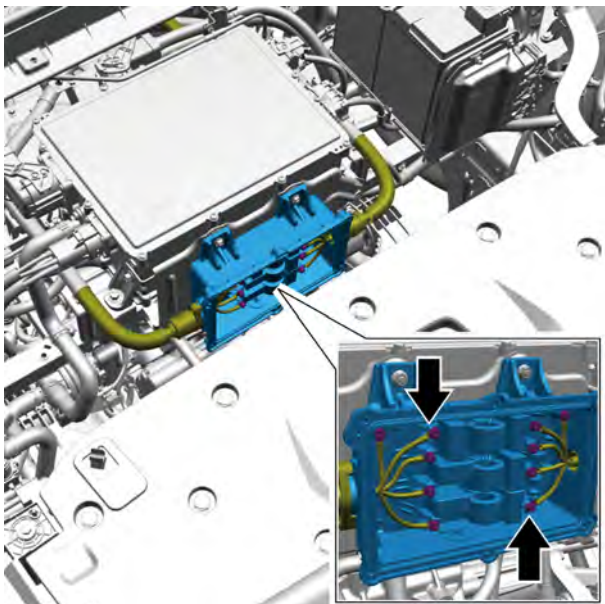


- 5 Remove the 4 retaining nuts connecting filter to filter bracket.
- 6 Take off the filter.

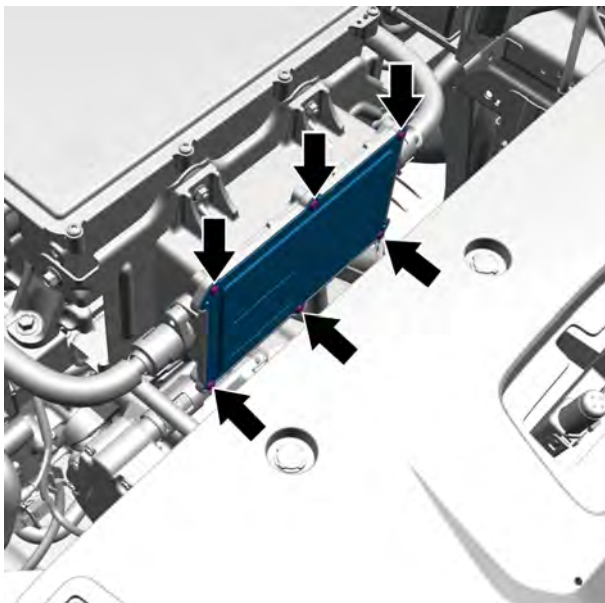
Installation procedure



- 1 Move the filter to the installation position.
- 2 Install the 4 retaining nut connecting filter to filter bracket.



- 3 Install and tighten the 10 fixing bolts connecting the combination charging socket wire harness assembly and the filter.



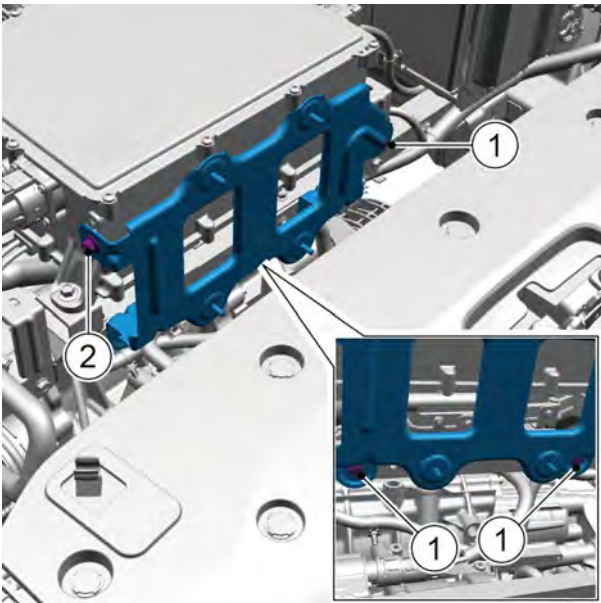
- 4 Install and fasten 6 fixing bolts connecting the filter cover and filter.

- 5 Connect the DC bus assembly.
- 6 Connect the negative cable of battery.

2.3.6.8 Replacement of Filter Bracket

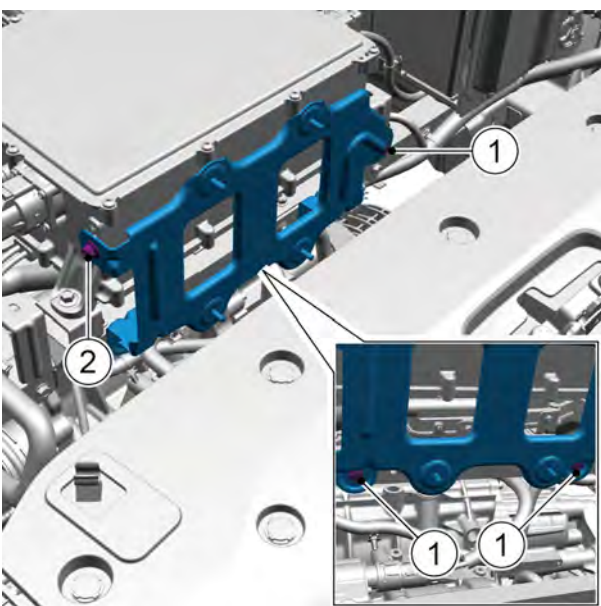
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 3 Dismount the filter. Refer to [Replacement of filter](#)
- 4 Remove 3 fixing bolts 1 connecting the filter bracket and integrated power bracket.
- 5 Remove the 1 fixing bolt 2 connecting the filter bracket and the high and low-voltage charging system assembly.
- 6 Take off the filter bracket.



Installation procedure

- 1 Move the filter bracket to the installation position.
- 2 Install and tighten the 1 fixing bolt 2 connecting the filter bracket and the high and low-voltage charging system assembly.
- 3 Install and tighten 3 fixing bolts 1 connecting the filter bracket and the integrated power bracket.



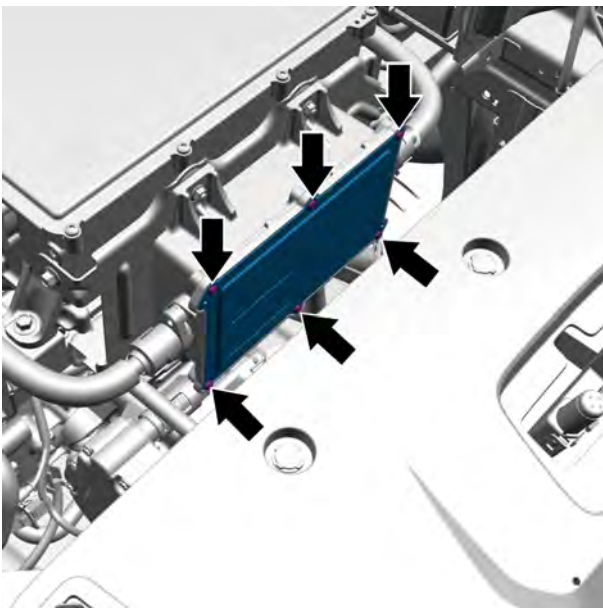
- 4 Install the filter.

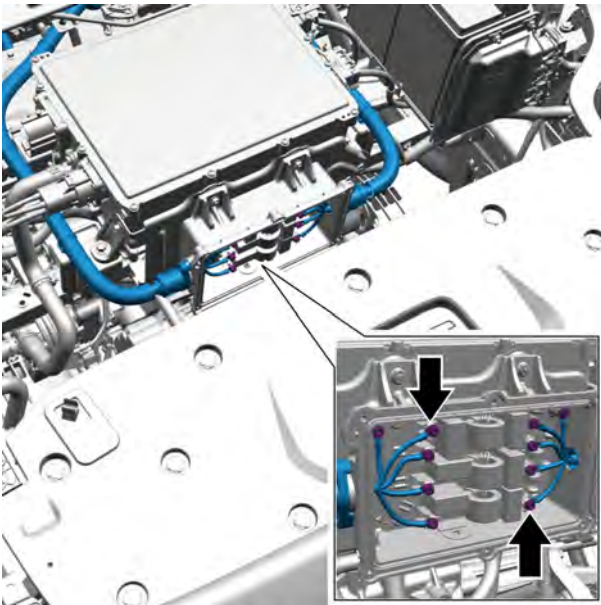
- 5 Connect the DC bus assembly.
- 6 Connect the negative cable of battery.

2.3.6.9 Replacement of Combined charging socket wire harness assembly

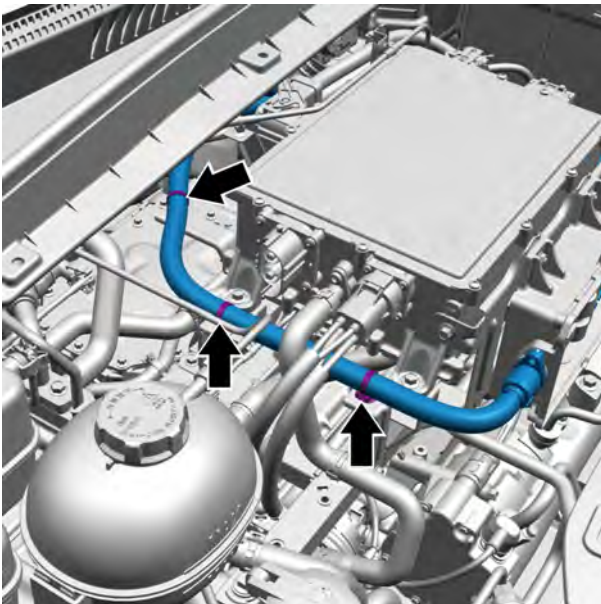
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 3 Remove the charging port cover assembly. Refer to [Replacement of Charging Port Cover Assembly](#)
- 4 Remove the trunk left trim panel assembly. Refer to [Replacement of left trim panel assembly of trunk](#)
- 5 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 6 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 7 Remove the trunk bottom shield. Refer to [Replacement of Trunk Bottom Shield](#)
- 8 Remove the battery bottom shield. Refer to [Replacement of Battery Bottom Shield](#)
- 9 Remove the left and rear fender liner plates. Refer to [Replacement of Left and Rear Fender Liner](#)
- 10 Remove 6 fixing screws connecting the filter cover and the filter.

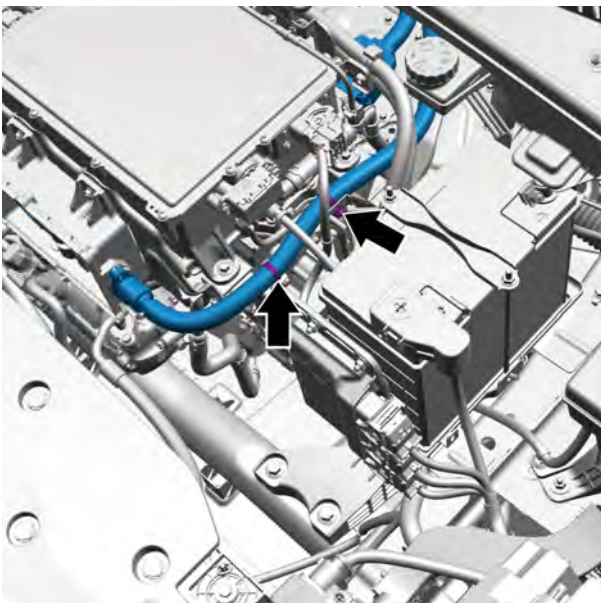




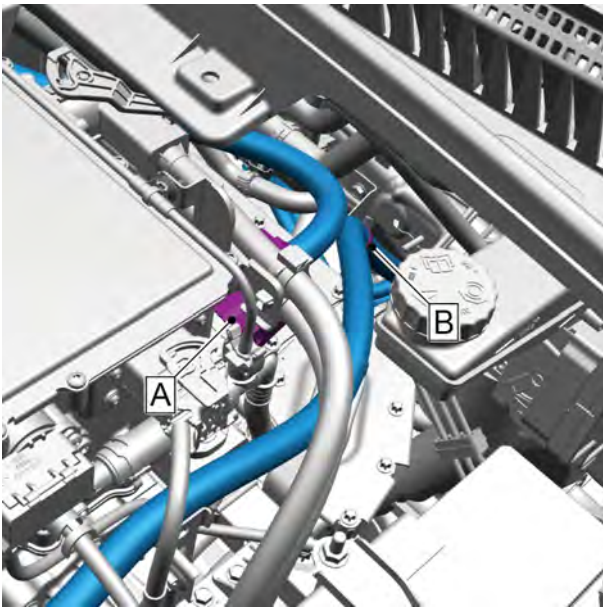
- 11 Remove the 10 fixing bolts connecting the combined charging socket wire harness assembly and the filter.



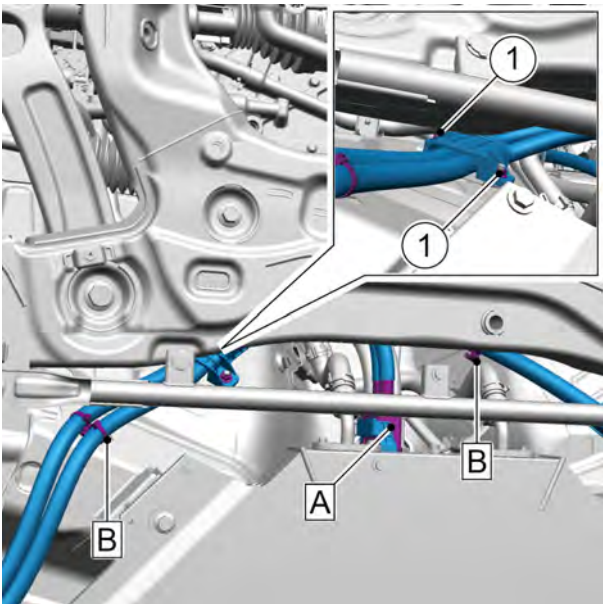
- 12 Disconnect the 3 fixing clips connecting the combined charging socket wire harness assembly and high voltage protective bracket.



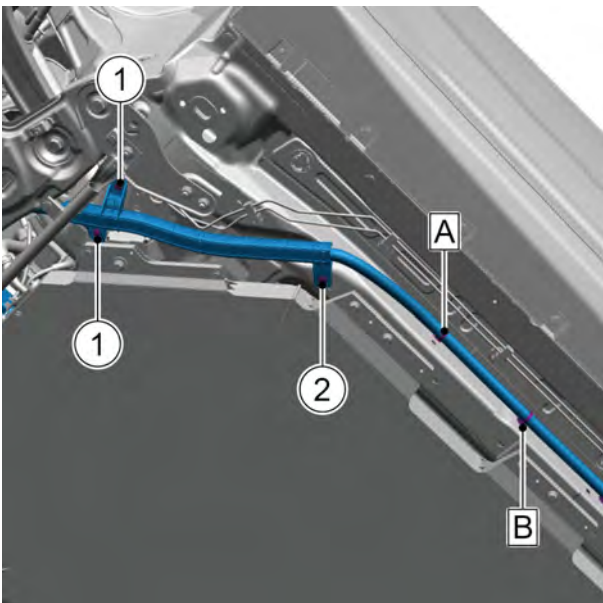
- 13 Install the 2 fixing clips of the combined charging socket wire harness assembly and high voltage protective bracket.



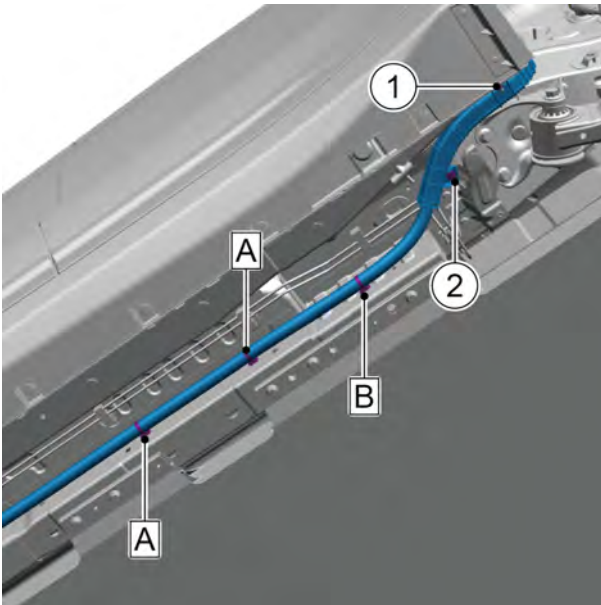
- 14 Disconnect the 1 harness connector A of the combined charging socket harness assembly and high and low voltage charging system bracket.
- 15 Disconnect the 1 fixing clip B connecting the combined charging socket harness assembly and the warm air pipe bracket.



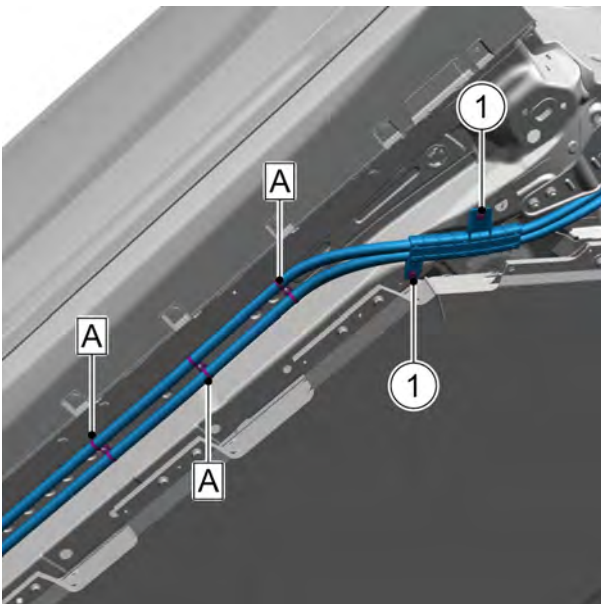
- 16 Disconnect the 1 harness connector A connecting the combined charging socket harness assembly and power battery assembly.
- 17 Disconnect the 2 fixing clips B connecting the combined charging socket harness assembly and the front wall panel middle channel connecting plate.
- 18 Remove the 2 fixing nuts 1 of the combined charging socket wire harness assembly and high voltage wire harness mounting bracket.



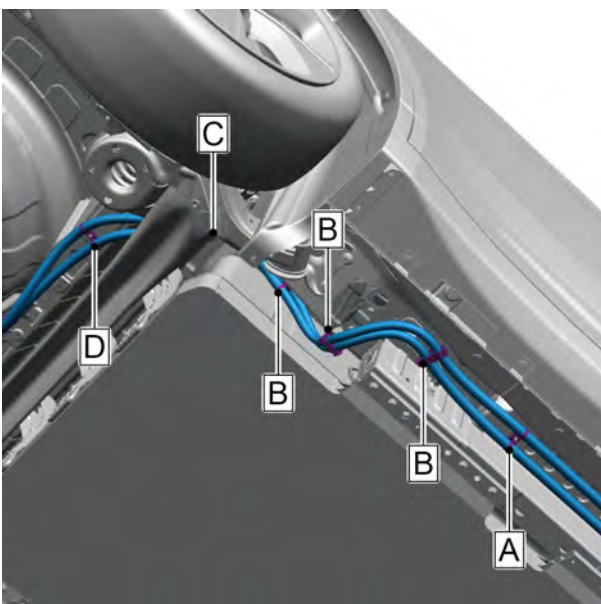
- 19 Disconnect the 1 fixing clip A connecting the combined charging socket wire harness assembly with the rear body of the left front side member.
- 20 Disconnect the 1 fixing clip B connecting the combined charging socket wire harness assembly with the front floor side member extension plate.
- 21 Remove the 2 fixing bolts 1 connecting the combined charging socket wire harness assembly with the rear internal connecting plate of the left front side member.
- 22 Remove the 1 fixing bolts 2 connecting the combined charging socket wire harness assembly with the rear body of the left front side member.



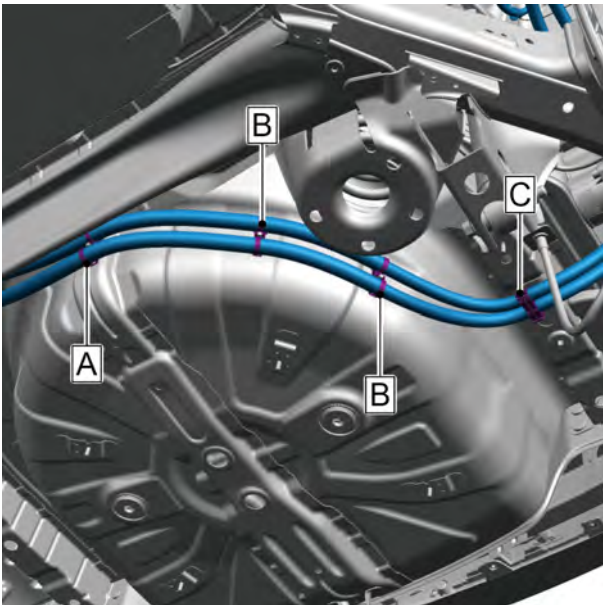
- 23 Disconnect the 2 fixing clips A connecting the combined charging socket wire harness assembly and the front floor side member extension plate.
- 24 Install the 1 fixing clips of the combined charging socket wire harness assembly with the left rear side member.
- 25 Remove the 1 fixing nuts 1 of the combined charging socket wire harness assembly and rear section of left threshold.
- 26 Remove the 1 fixing bolts 2 of the combined charging socket wire harness assembly and bottom shield left mounting bracket.



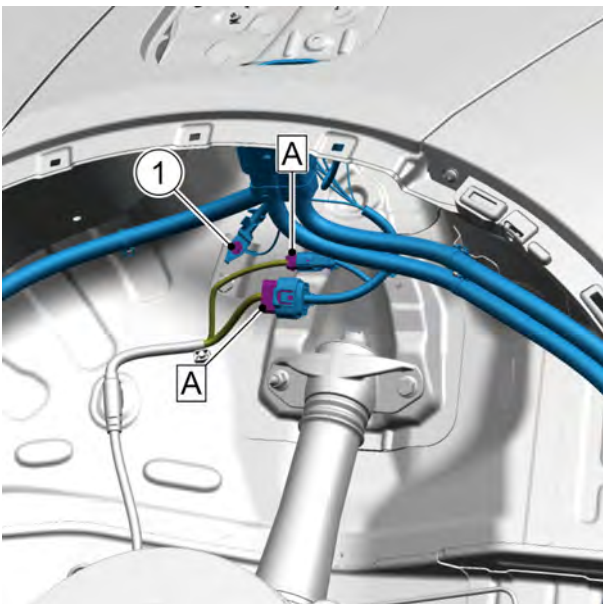
- 27 Disconnect the 3 fixing clips A connecting the combined charging socket harness assembly with the right front floor.
- 28 Remove the 2 fixing bolts 1 of the combined charging socket wire harness assembly with the rear body of the right front side member.



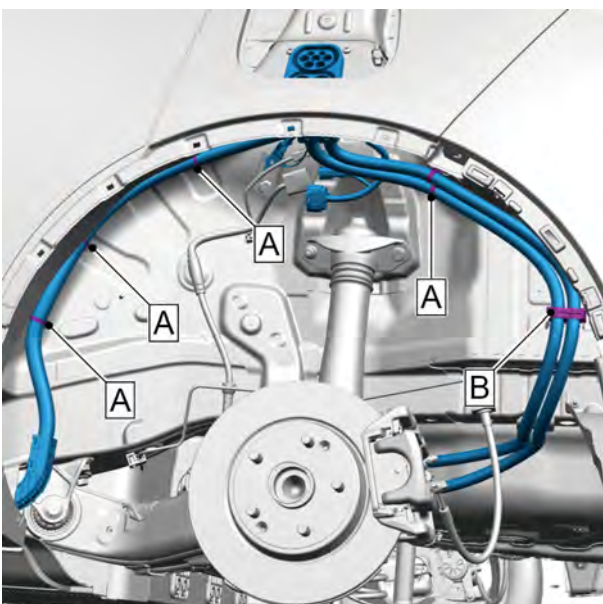
- 29 Disconnect the 1 fixing clips A connecting the combined charging socket harness assembly with the right front floor.
- 30 Disconnect the 3 fixing clips B connecting the combination charging socket wire harness assembly with the right rear side member.
- 31 Disconnect the 1 fixing clip C connecting the combined charging socket wire harness assembly with the right extension beam of the rear floor No.1 cross member.
- 32 Disconnect the 1 fixing clip D connecting the combined charging socket wire harness assembly with the middle floor cross member assembly.



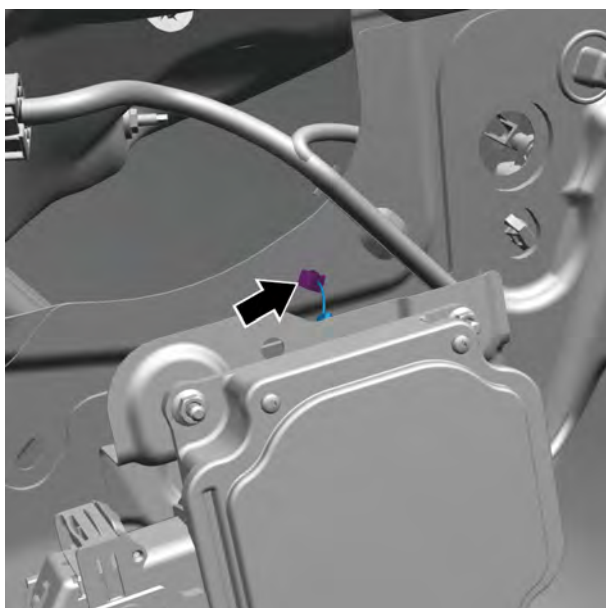
- 33 Disconnect the 1 fixing clip A connecting the combined charging socket wire harness assembly with the middle floor cross member assembly.
- 34 Disconnect the 2 fixing clips B connecting the combined charging socket wire harness assembly with the rear floor body assembly.
- 35 Disconnect the 1 fixing clip C connecting the combined charging socket wire harness assembly with the left rear side member body assembly.



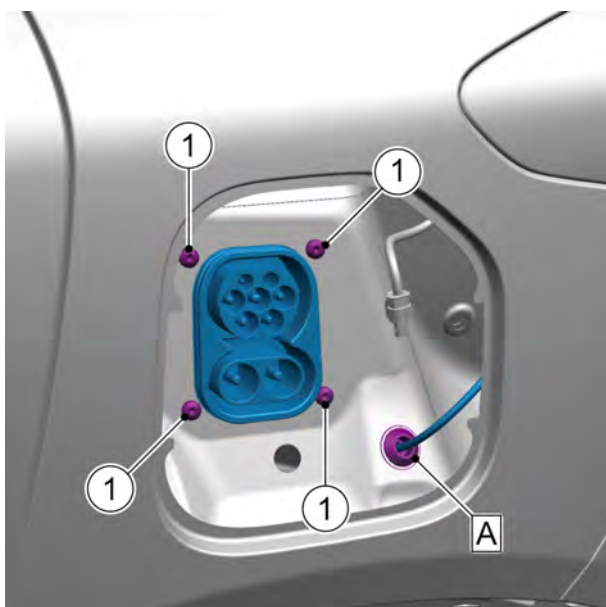
- 36 Disconnect the 2 harness connectors A connecting the combined charging socket harness assembly and caliper motor left wire harness.
- 37 Fixing 1 bolt 1 connecting the combined charging socket wire harness assembly with AC charging harness assembly bracket.



- 38 Disconnect the 4 fixing clips A connecting the combined charging socket wire harness assembly with the front section of the left rear wheel arch inner panel.
- 39 Disconnect the 1 fixing clip B connecting the combined charging socket wire harness assembly with the rear section of the left rear wheel arch inner panel.
- 40 Take off the combined charging socket wire harness assembly.



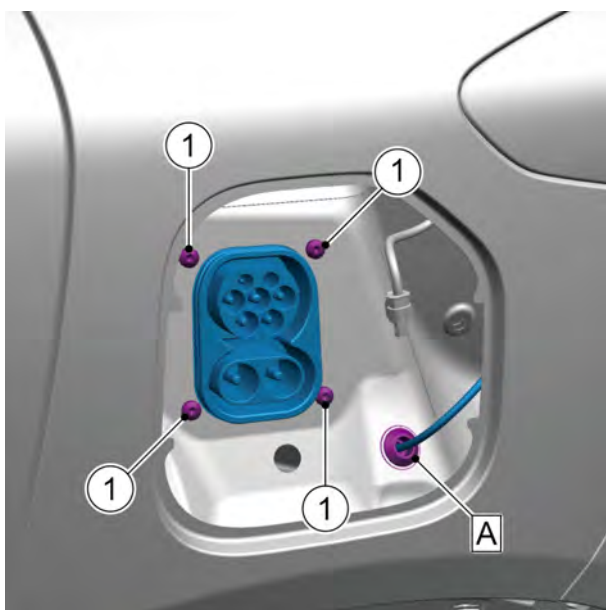
41 Disconnect the 1 fixing clip connecting the combined charging socket wire harness assembly with the left rear wheel arch outer panel.



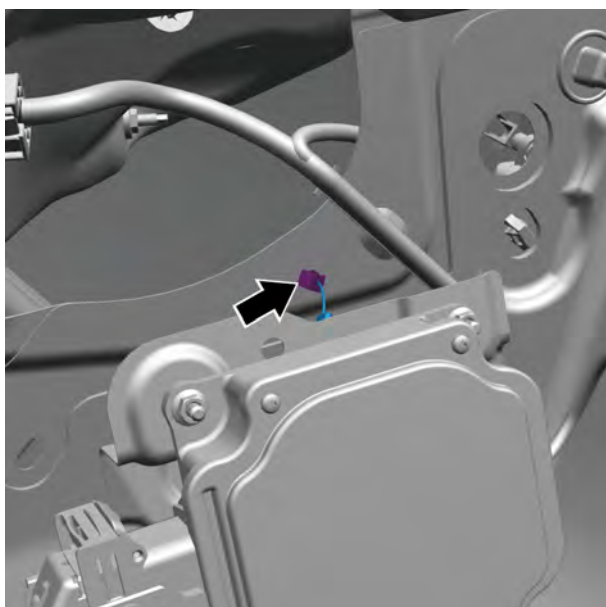
42 Remove the 4 fixing nuts 1 of the combined charging socket wire harness assembly with the left rear wheel arch outer panel.

43 Disconnect the 1 waterproof plug A connecting the combined charging socket wire harness assembly with the left rear wheel arch outer panel.

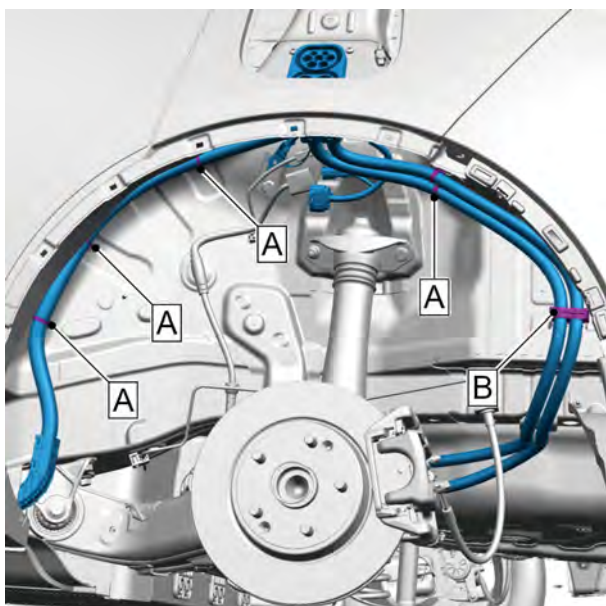
Installation procedure



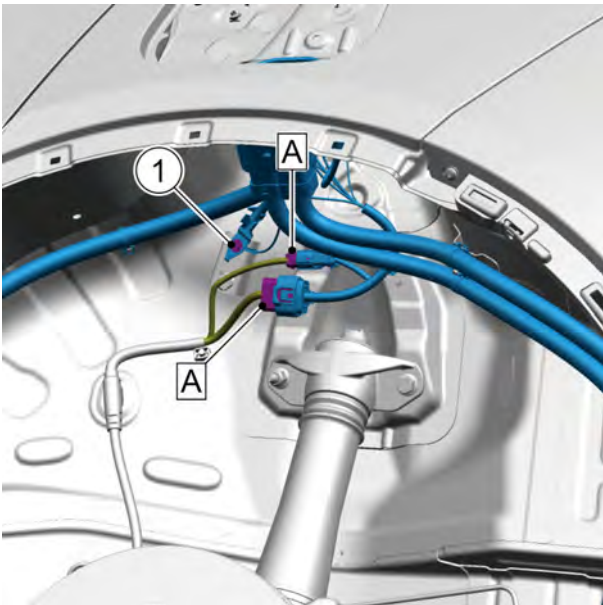
- 1 Move the combined charging socket harness assembly to the installation position.
- 2 Install the 1 waterproof plug A connecting the combined charging socket wire harness assembly with the left rear wheel arch outer panel.
- 3 Install and tighten the 4 fixing bolts 1 of the combined charging socket wire harness assembly with the left rear wheel arch outer panel.



- 4 Install the 1 fixing clips of the combined charging socket wire harness assembly with the left rear wheel arch outer panel.



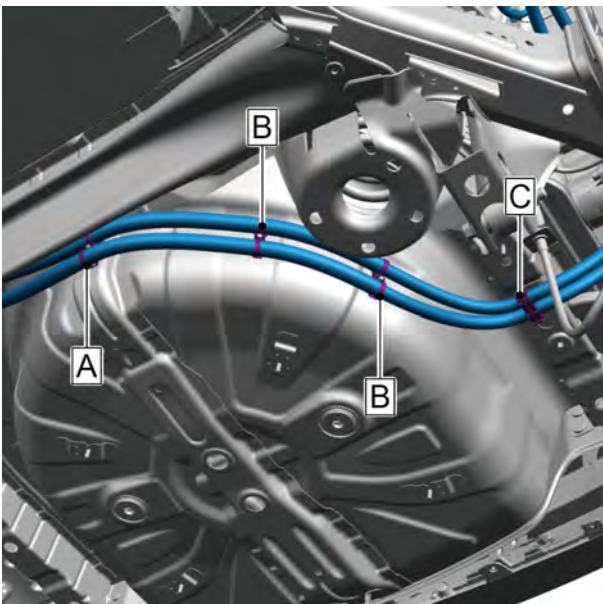
- 5 Install the 1 fixing clips of the combined charging socket wire harness assembly with the left rear wheel arch inner panel.
- 6 Install the 4 fixing clips of the combined charging socket wire harness assembly with the left rear wheel arch inner panel.



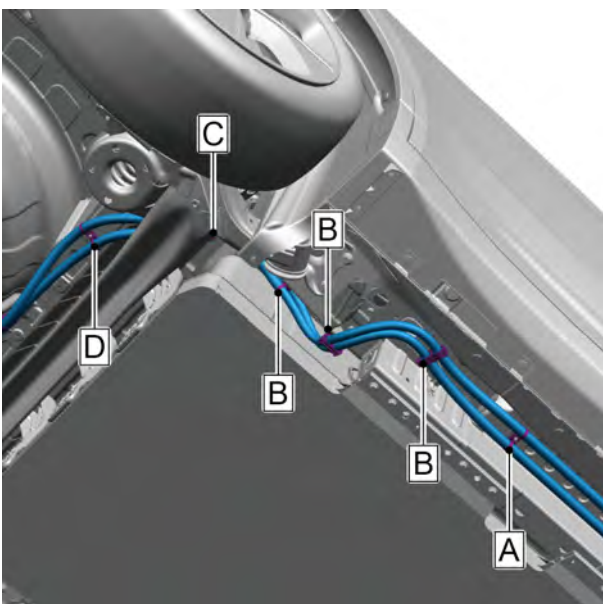
- 7 Fixing and tighten 1 ground bolt 1 connecting the combined charging socket and harness assembly with AC charging harness assembly bracket.
- 8 Connect the 2 harness connectors A of the combined charging socket harness assembly.

Caution

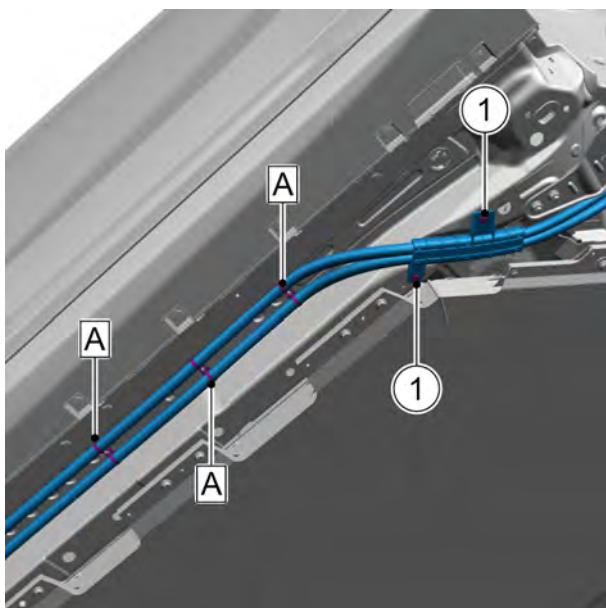
Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



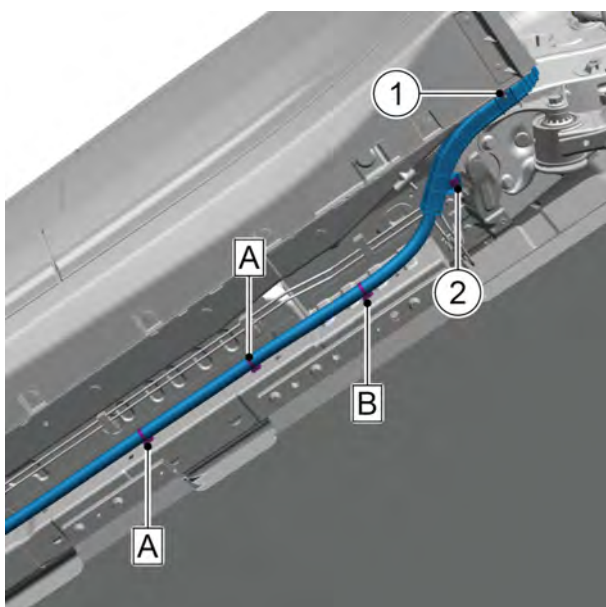
- 9 Install the 1 fixing clip C connecting the combined charging socket wire harness assembly and left rear side member body assembly.
- 10 Install the 2 fixing clips B connecting the instrument panel harness assembly and the instrument panel lower body assembly with the rear floor body assembly.
- 11 Install the 1 fixing clips A connecting the instrument harness assembly and the instrument panel cross member with the middle floor cross member assembly.



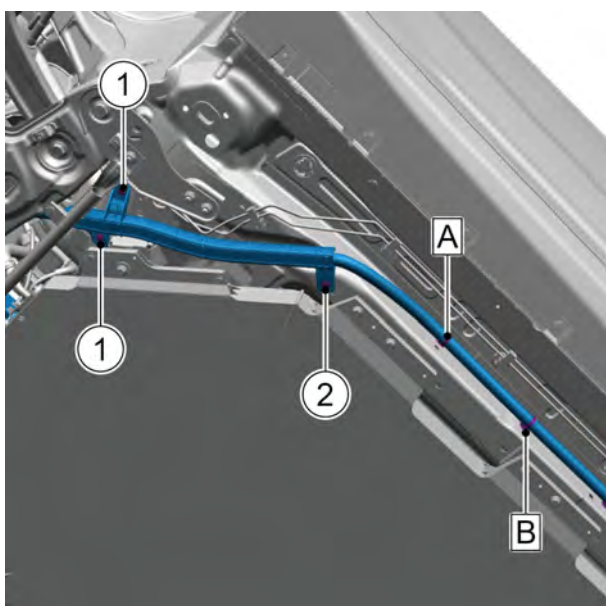
- 12 Install the 1 fixing clips of the combined charging socket wire harness assembly with the middle floor cross member assembly.
- 13 Install the 1 fixing clip C connecting the combined charging socket wire harness assembly with the right extension beam of the rear floor No.1 cross member.
- 14 Install the 3 fixing clips B of the combined charging socket wire harness assembly with the right rear side member.
- 15 Install the 1 fixing clips A of the combined charging socket wire harness assembly with the right front floor.



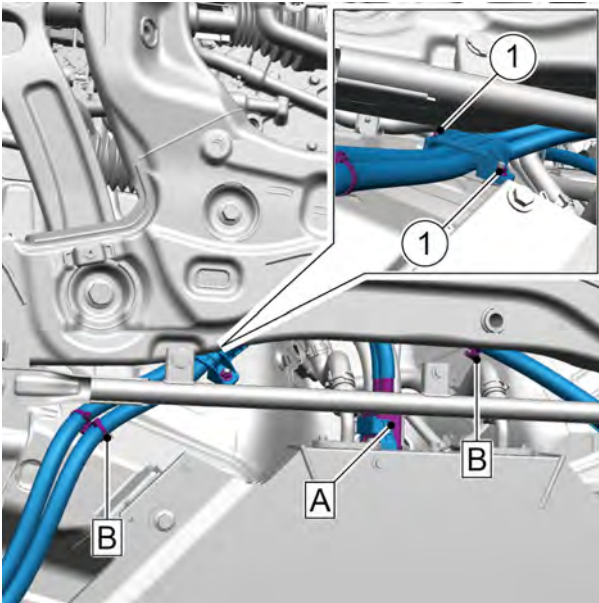
- 16 Install the 2 fixing bolts 1 of the combined charging socket wire harness assembly with the vehicle body.
- 17 Install the 3 fixing clips A of the combined charging socket wire harness assembly with the vehicle body.



- 18 Install the 1 fixing bolts 2 of the combined charging socket wire harness assembly with the vehicle body.
- 19 Install the 1 fixing nuts 1 of the combined charging socket wire harness assembly with the vehicle body.
- 20 Install the 1 fixing clips B of the combined charging socket wire harness assembly with the left rear side member.
- 21 Install the 2 fixing clips A of the combined charging socket wire harness assembly with the extension plate of the front floor side member.



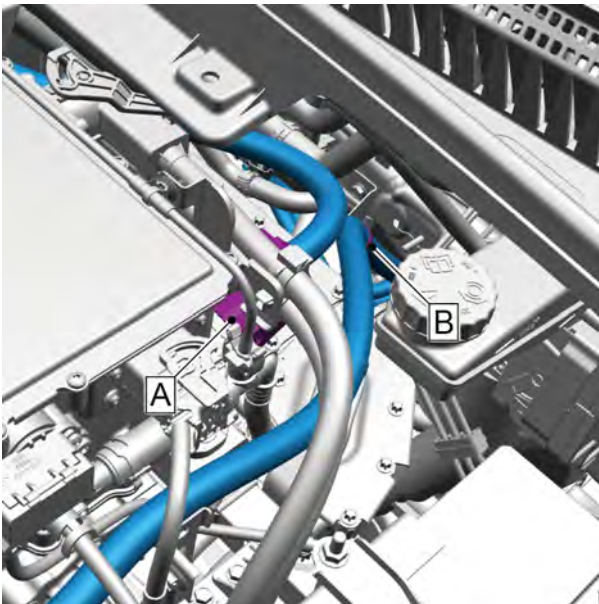
- 22 Install the 1 fixing bolts 2 of the combined charging socket wire harness assembly and rear body of left front side member.
- 23 Install and tighten the 2 fixing bolts 1 connecting the combined charging socket wire harness assembly with the rear inner connecting plate of the left front side member.
- 24 Install the 1 fixing clips of the combined charging socket wire harness assembly with the extension plate of the front floor side member.
- 25 Install the 1 fixing clips of the combined charging socket wire harness assembly and rear body of left front side member.



- 26 Install the 2 fixing nuts 1 of the combined charging socket wire harness assembly and high-voltage wire harness mounting bracket.
- 27 Install the 2 fixing clips B of the combined charging socket wire harness assembly and the front wall panel middle channel connecting plate.
- 28 Connect the 1 harness connector A of the combined charging socket harness assembly and power battery assembly.

Caution

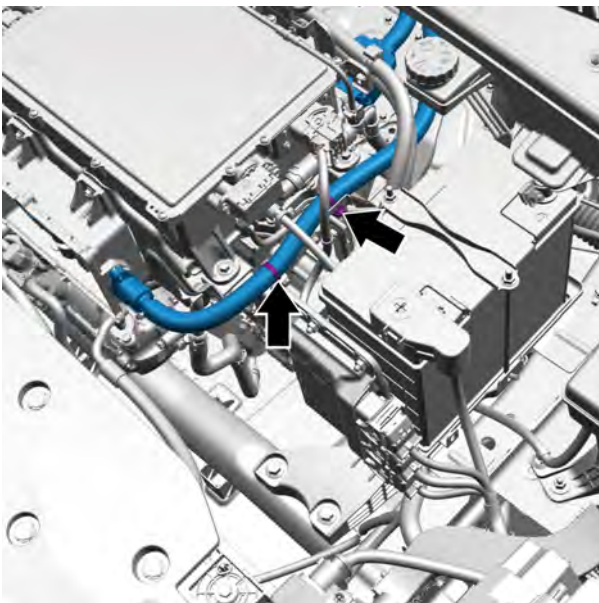
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



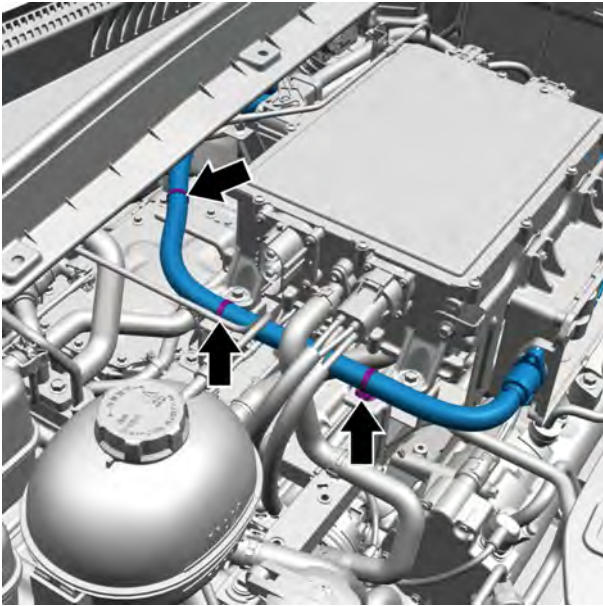
- 29 Install the 1 fixing clip B of the combined charging socket wire harness assembly and warm air pipe bracket.
- 30 Connect the 1 harness connector A of the combined charging socket harness assembly and high and low voltage charging system.

Caution

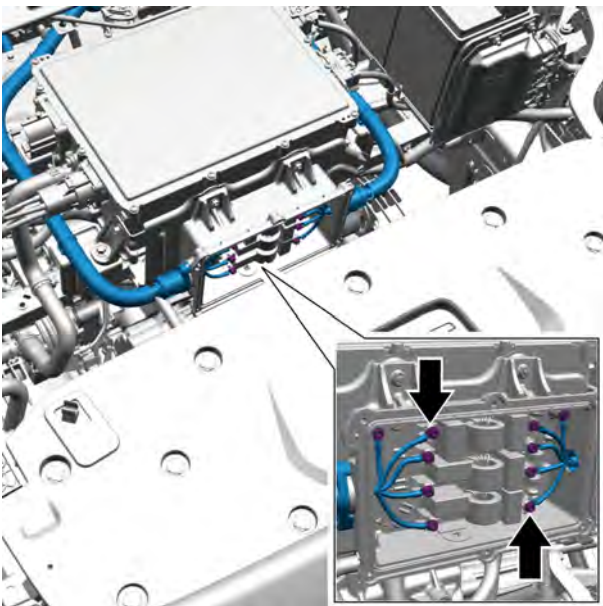
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



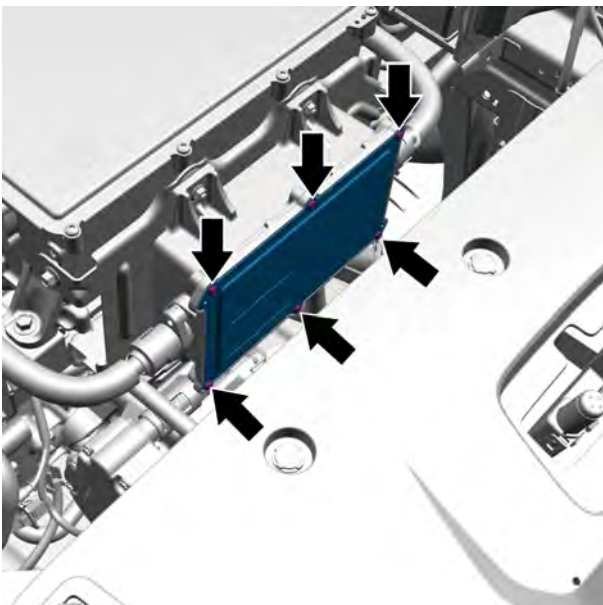
- 31 Install the 2 fixing clips connecting the combined charging socket wire harness assembly and high voltage protective bracket.



- 32 Install the 3 fixing clips connecting the combined charging socket wire harness assembly and high voltage protective bracket.



- 33 Install the 10 fixing bolts connecting the combined charging socket wire harness assembly and the filter.



- 34 Install and fasten 6 fixing bolts connecting filter cover and filter.

- 35 Install the left and right rear fender liner plates.
- 36 Install the battery bottom shield.
- 37 Install the trunk bottom shield assembly.
- 38 Install the front engine compartment bottom shield.
- 39 Lower the vehicle.
- 40 Install the trunk left trim panel assembly.
- 41 Install the charging port cover assembly.
- 42 Connect the DC bus assembly.
- 43 Connect the negative cable of battery.

2.4 Electric drive system

2.4.1 Specification

2.4.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Electronic accelerator pedal fixing bolt	M6×20	8.5-11.5
Fixing bolt connecting the rear suspension bracket and the electric drive system	M12×50	First time 70
		Second time: 60°
Fixing bolt between right vibration isolating pad assembly and the electric driving system	M14×120	210
Fixing bolt connecting the left suspension bracket and the electric drive system	M12×50	First time 70
		Second time: 60°
Fixing bolt connecting left suspension vibration isolating pad assembly and the left suspension bracket	M14×120	210
Fixed bolt and nut assembly connecting rear suspension bracket and rear vibration isolator assembly	M14	First time 90
	M14×130	Second time: 90°
Fixing bolt between right suspension vibration isolating pad assembly and the front subframe assembly	M12×50	130
Fixing bolt between left suspension vibration isolating pad assembly and the front subframe assembly	M12×50	130
Fixing bolt between front subframe assembly and vehicle body	M14×90	First time 120
		Second time: 90°
Fixing bolt between front subframe reinforcing plate and vehicle body	M10	67 ~ 83
Fixing nuts for connecting the battery bottom shield mounting bracket with the right rear reinforcing plate of the front subframe	M10	67 ~ 83
Fixing nut of the right steering gear outer pull rod and the right front steering knuckle	M12	50 ~ 60
Fixing nut connecting the front stabilizer bar linkage and front stabilizer bar assembly	M10	67 ~ 83

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing nut of the steering gear outer pull rod and the left front steering knuckle	M12	50 ~ 60
Fixing bolt connecting the evaporator high and low-pressure pipe and the sub-frame assembly	M6	8.5 ~ 11.5
Fixing bolt between motor ground harness assembly and the electric driving system	M8	20 ~ 28
Fixing bolt between electric power steering column and intermediate shaft assembly	M8	36 ~ 42
Drive motor controller fixing bolt	M8×35	16.2-19.8
Electronic fuel pump fixing bolt	M6×25	7.2-8.8
Oil cooler fixing bolt	M6×25	9-10
Fixing bolt between inverter to oil cooler	M6×14	7.2-8.8
Fixing bolt between the harness bracket and the driving motor assembly	M10×20	35-45

2.4.1.2 Parameters of Electric Drive System(NIDEC CORPORATION)

Item	Specification
Model	TZ180XY150
Manufacturer	NIDEC
Rated rotating speed (rpm)	3537
Rated power (KW)	60
Rated torque (N·m)	1700
Protection grade	IP67
Motor controller cooling method	Water cooling
Motor cooling method	Oil cooling
Maximum rotating speed (rpm)	>1400
Maximum power (KW)	150
Maximum torque of the motor (N·m)	≥3100
Reduction ratio	10.294:1
Rated voltage	340V
Rated current	250Arms
Weight (dry weight)	≤91kg

2.4.1.3 Parameters of Electric Drive System(GLB Intelligent Power Technologies)

Item	Specification
Rated / peak power(KW)	60/150
Rated / peak torque (N·m)	135/310
Rated/ Maximum rotating speed (r/min)	4250/15000
Rated voltage of the battery pack (V)	340
Output rated current(A)	300
Maximum working current (Arms)	500
Cooling method	Water cooling
Cooling water inlet temperature(°C)	-40-65
DC bus(V)	340
Voltage working range(V)	240-470
Reducer category	Single-gear second deceleration
Reducer speed ratio	10.43
Reducer Maximum input rotating speed (r/min)	15000
Reducer Maximum input torque (N·m)	310
Reducer lubrication types	Splash lubrication
Protection grade	> IP67
Total weight(kg)	≤93

2.4.2 Instructions and operations

2.4.2.1 General

Function Introduction

The electric drive system assembly adopts an integrated three-in-one system, which is composed of motor, reducer and integrated power controller. The integrated power controller is arranged above the motor and reducer. The motor and the reducer share the housing. Therefore, the system is highly integrated from design to assembly.

The electric drive system assembly has the advantages of small size, light weight and low cost.

The electric drive system assembly mainly includes integrated power controller, drive motor, reducer, oil cooler, water pipe, low-voltage harness, support and other accessories.

2.4.3 System working principles

2.4.3.1 System Working Principles

Electric drive system

The 150KW electric drive system is a high-power and high-density integrated three-in-one electric drive system. The system integrates an integrated power controller, a drive motor and a reducer, and the integrated power controller is the management and control component of the system, realizing various functions such as electric energy transmission, rectification, signal receiving and treating, fault analysis and report, communication, etc.

When the vehicle is moving. The integrated power controller rectifies the electric energy transmitted by the high and low voltage charging system and transmits it to the driving motor to drive the vehicle. When the energy recovery conditions are met, the electric energy generated by the driving motor in the opposite direction is rectified and transmitted to the high and low voltage charging system to charge the power battery. Input and output signals of the integrated power controller

1. Driving motor temperature 1
2. Driving motor temperature 2
3. Cooling oil pump driving, power supply grounding and status
4. Terminal KL15
5. HB_CAN
6. Control unit power supply, grounding
7. HV+ (DC high voltage positive)
8. HV-(DC high voltage negative)

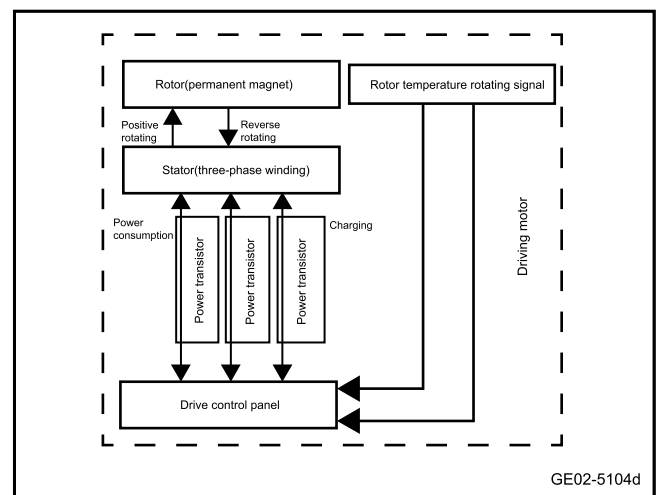
Structure and working principle of driving motor

The main components of the drive motor include: rotor (permanent magnet), stator (three-phase winding coil), drive control panel, power transistors, built-in temperature and speed sensors, etc. The driving motor is rotating forward and consumes high-voltage electric energy to generate driving force, and the driving motor is turned over to realize energy recovery and high-voltage battery charging. The drive motor type of this vehicle is permanent magnet synchronous motor. Permanent magnet synchronous motor is a synchronous motor that generates a synchronous rotating magnetic field through the excitation of permanent magnets. The permanent magnet acts as a rotor to generate a rotating magnetic field, and the stator winding of three-phase winding senses a three-phase symmetrical current through the armature reaction under the action of the rotating magnetic field. At this time, the

kinetic energy of the rotor is converted into electric energy, and the permanent magnet synchronous motor is used as an alternator. In addition, when a three-phase symmetrical current is introduced at the stator side, because the position difference between the three-phase winding stators is 120° , the three-phase winding stator current generates a rotating magnetic field between the cores, and the rotating magnetic field of the rotor moves by the electromagnetic force. At this time, the electric energy is converted into kinetic energy, and the permanent magnet synchronous motor is used as a motor.

The permanent magnet synchronous motor has the characteristics of high power efficiency and high power parameter; small heating, so the motor cooling system has a simple structure, small size, and low noise; the system adopts a fully closed structure, no transmission gear wear and noise, and no lubrication and maintenance is required; the allowed overload current is large, and the reliability is significantly improved; the entire transmission system is light, the weight under the spring is lighter than that of traditional shaft transmission, and the unit weight power is larger.

The structure diagram of the driving motor is as follows:



2.4.4 Part position

2.4.4.1 Part Position

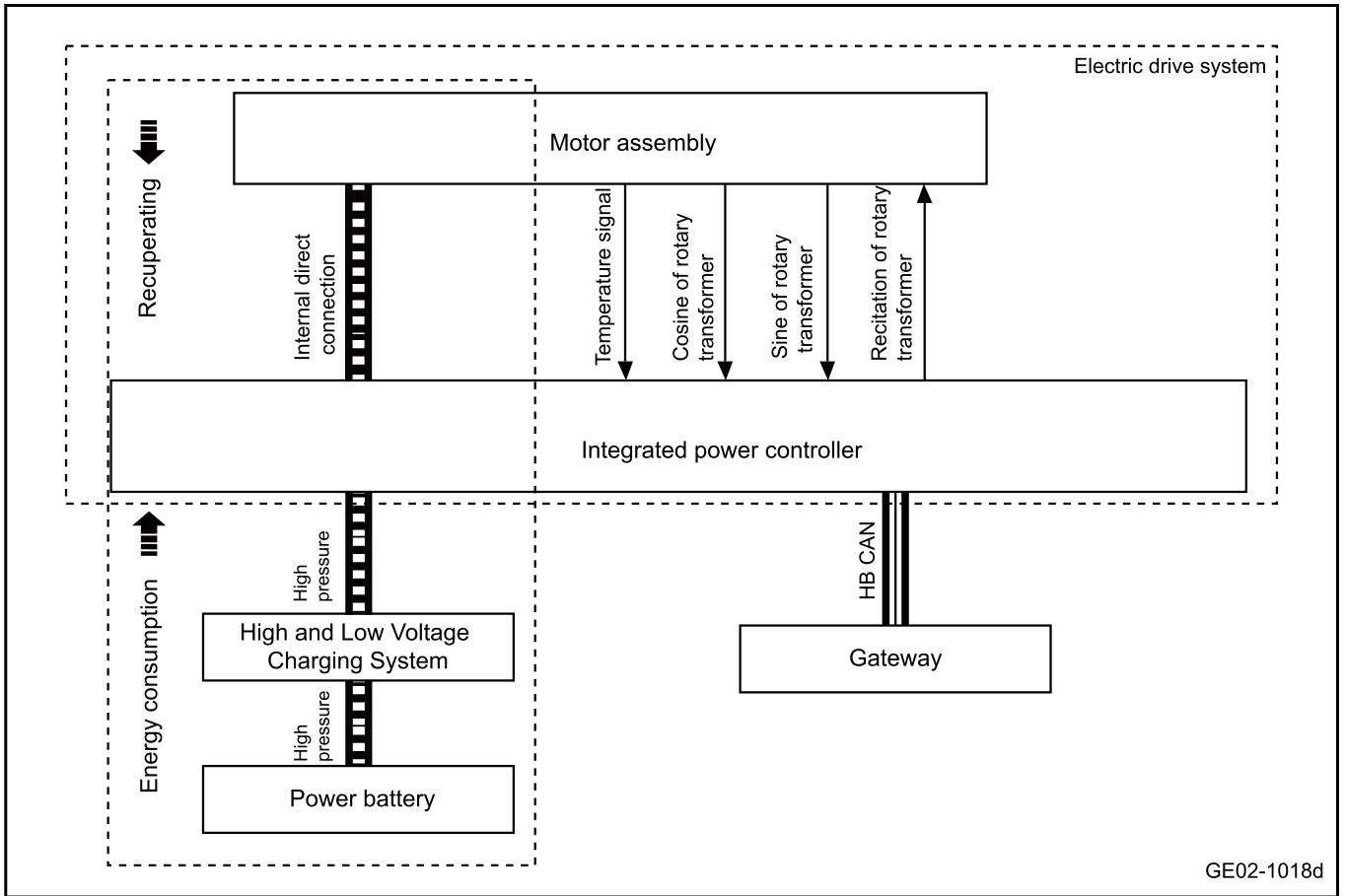
GLB Intelligent Power Technologies



1. Electric drive system

2.4.5 Electrical block diagram

2.4.5.1 Electrical Schematic Diagram of Motor Controller System



2.4.6 Diagnostic information and procedures

2.4.6.1 Diagnosis Description

Refer to description and operation.

2.4.6.2 Routine inspection

1. Check the after-sales installations that may affect the integrated power controller.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there is water or foreign matter outside the integrated power controller.
4. Check whether the high-voltage harness connector of the integrated power controller is loose and whether there are signs of corrosion inside.

2.4.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
Integrated power controller failure	1. Power supply circuit failure of integrated power controller	Refer to Power Supply Failure of Integrated Power Controller
	2. Communication circuit failure of the integrated power controller	Refer to Communication Failure of Integrated Power Controller
	3. Integrated power controller failure	Refer to Internal Faults of the Integrated Power Controller
	4. Integrated power controller high voltage circuit fault	Refer to Integrated Power Controller Circuit Fault

2.4.6.4 Data stream list

Serial No.	DID description	Normal range	Unit
1	Battery voltage	0-25.4	V
2	Speed signal	0-460.6875	Km/h
3	ESK is written	0- 1	/
4	CIDD coolant flow	0-51.5	L/Min
5	CIDD Coolant temperature	-40-214	°C
6	Phase A instantaneous current	-753-753	A
7	Phase B instantaneous current	-753-753	A
8	Phase C instantaneous current	-753-753	A
9	IGBT switch status	0-3	/
10	Real Time	0-60	Seconds
		0-60	points
		0-24	Hour
		0-30	day
		0-12	Month
		/	Year

Serial No.	DID description	Normal range	Unit
11	Motor initial angle _ Electric	0-360	degree
12	voltage of high-voltage battery pack	0-600	V
13	Motor body temperature	-40-210	°C
14	Motor rotating speed	-20000-20000	rpm
15	Motor temperature acquisition circuit 1	-40-210	°C
16	Motor temperature acquisition circuit 2	-40-210	°C
17	Actual indicated torque	-1200-1200	NM
18	Motor working state mode	/	/
19	IPU controller temperature	-40-210	°C
20	Three-phase current effective value	0-800	A
21	request torque	-1200-1200	NM
22	DC bus current value	-1024-1022	A
23	Maximum limit of motor power	0- 511	KW
24	Minimum limit of motor power	-511~0	KW
25	High voltage bus voltage from BMS	0- 600	V
26	High voltage bus voltage detected by IPU	0- 511	V
27	vehicle manufacturer ECU hardware version number	/	/
28	ODX file DID	/	/
29	Part number of application diagnosis data base	/	/
30	FBL Diagnostic Data Base Part Number	/	/
31	Part number of SBL diagnostic data base	/	/
32	Part number of FBL software	/	/
33	Part number of ECU core component	/	/
34	ECU delivered assembly part number	/	/
35	Part number of ECU software	/	/
36	VCU requests motor mode	0- 7	/

2.4.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

2.4.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

2.4.6.7 List of Diagnostic Trouble Codes (DTC)

The following DTCs are saved in IPU

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B1103	Core or peripheral faults of IPU (Integrated power controller) MCU	Refer to Internal Faults of the Integrated Power Controller
P1B102E	Data zone faults of IPU (Integrated power controller) MCU	
P1B102F	Data zone faults of IPU (Integrated power controller) MCU	
P1B108D	IPU (Integrated Power Controller) anti-theft verification result error	
P1B1053	Drive motor overspeed	
P1B1105	IPU (Integrated Power Controller) IGBT drive circuit failure	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B1000	IPU (Integrated Power Controller) active discharge timeout	
P1B1127	Internal power supply faults of the IPU (Integrated Power Controller)	
P1B112D	IPU (Integrated Power Controller) IGBT fault	
P1B1136	IPU (Integrated power controller) MCU onboard control unit circuit fault	
P1B1049	Unexpected torque of drive motor	
P1B1050	Excessive deviation of output torque of drive motor	
P1B106B	IPU (Integrated Power Controller) cooling water level1 or level2 overtemperature	
P1B1077	IPU (Integrated Power Controller) IGBT module level1 or level2 overtemperature	
P1B6085	Crash signal vehicle collision system protection	
P1B7700	IPU (Integrated power controller) two or more-phase current sensor fault	
P1B7898	IPU (Integrated Power Controller) bus capacitance level1 or level2 overtemperature	
P1B794B	IPU (Integrated Power Controller) control board ambient overtemperature	
P1B7A29	FLT (IGBT fault signal) error when IPU (Integrated power controller) IGBT drive power supply is ON	
P1B7B29	FLT (IGBT fault signal) error when IPU (integrated power controller) IGBT drive power supply is OFF	
P1B7C00	IPU (Integrated power controller) FLT (IGBT error) control signal cannot turn off IGBT	
P1B7D00	IPU (Integrated power controller) PWM control signal cannot turn off IGBT	
P1B8012	IPU (Integrated power controller) low voltage sensor is short-circuited to VCC (positive power supply)	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B8011	IPU (Integrated power controller) low voltage sensor is short-circuited to GND (power supply ground)	
P1B8115	IPU (integrated power controller) control plate ambient temperature sensor is short-circuited to VCC (positive power supply) or the sensor is open circuited	
P1B8111	IPU (Integrated power controller) control board ambient temperature sensor is short-circuited to GND (power supply ground)	
P1B8215	IPU (Integrated power controller) bus capacitance temperature sensor is short-circuited to VCC (positive pole of power supply) or the sensor is open circuited	
P1B8211	IPU (Integrated power controller) bus capacitance temperature sensor is short-circuited to GND (power supply ground)	
P1B8300	IPU (Integrated Power Controller) active discharge failure	
P1B8493	Drive motor oil pump starting failure	
P1B8492	Drive motor oil pump running failure	
U130055	F101 not configured	
P1B7200	F101 configuration value is out of range	
P1BFD00	KL15 status does not match VCU torque control request	
P1B108E	IPU (Integrated Power Controller) key not configured	
P1B108F	IPU (Integrated Power Controller) did not receive an response frame	
P1B103C	IPU (Integrated power controller) U-phase current sensor null shift fault	
P1B1107	IPU (Integrated power controller) U-phase current sensor is open circuited	
P1B106E	IPU (Integrated power controller) U-phase IGBT temperature sensor is short-circuited to VCC (positive power supply)	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B106F	IPU (Integrated power controller) U-phase IGBT temperature sensor is short-circuited to GND (power supply ground)	
P1B103A	IPU (Integrated power controller) U-phase current overcurrent	
P1B7400	IPU (Integrated Power Controller) U-phase current sensor is short-circuited to VCC (power supply positive) or GND (power supply ground)	
P1B1041	IPU (Integrated power controller) V-phase current sensor null shift fault	
P1B1108	IPU (Integrated power controller) V-phase current sensor is open circuited	
P1B1071	IPU (Integrated power controller) V-phase IGBT temperature sensor is short-circuited to VCC (positive power supply)	
P1B1072	IPU (Integrated power controller) V-phase IGBT temperature sensor is short-circuited to GND (power supply ground)	
P1B103F	IPU (Integrated power controller) V-phase current overcurrent	
P1B7500	IPU (Integrated Power Controller) V-phase current sensor is short-circuited to VCC (power supply positive) or GND (power supply ground)	
P1B1045	IPU (Integrated power controller) W-phase current sensor null shift fault	
P1B1109	IPU (Integrated power controller) W-phase current sensor is open circuited	
P1B1074	IPU (Integrated power controller) W-phase IGBT temperature sensor is short-circuited to VCC (positive power supply)	
P1B1075	IPU (Integrated power controller) W-phase IGBT temperature sensor is short-circuited to GND (power supply ground)	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B1043	IPU (Integrated power controller) W-phase current overcurrent	
P1B7600	IPU (Integrated Power Controller) W-phase current sensor is short-circuited to VCC (power supply positive) or GND (power supply ground)	
P1B1038	IPU (Integrated power controller) U/V/W-phase hardware overcurrent	
P1B103D	The sum of three-phase currents of IPU (Integrated power controller) is too large	
P1B107F	IPU (Integrated Power Controller) DC bus overvoltage	
P1B107E	IPU (Integrated Power Controller) DC bus overvoltage (hardware detection)	
P1B7F12	IPU (Integrated power controller) DC bus voltage sensor is short-circuited to VCC (positive power supply)	
P1B7F11	IPU (Integrated power controller) DC bus voltage sensor is short-circuited to GND (power supply ground)	
P1B1152	IPU (Integrated Power Controller) rotary transformer signal failure	
P1B1078	Drive motor temperature sensor 1 is short-circuited to VCC (positive pole of power supply) or the sensor is open circuited	
P1B1079	Drive motor temperature sensor 1 is short circuited to GND (power supply ground)	
P1B117A	Drive motor temperature sensor 2 is short-circuited to VCC (positive pole of power supply) or the sensor is open circuited	
P1B117B	Drive motor temperature sensor 2 is short circuited to GND (power supply ground)	
P1B107A	Drive motor level1 or level2 overtemperature	
P1B102A	Severe overvoltage detected at high voltage end	
P1B1416	Bus voltage software undervoltage	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1B0401	High voltage sampling circuit power loss	
P1B4000	Coolant temperature sensor short circuited to power supply	
P1B3F00	Coolant temperature sensor short circuited to the ground	
P1B8504	Inverter Case over temperature	
U300617	IPU (integrated power controller) detects that the battery voltage is too high	Refer to Power Supply Failure of Integrated Power Controller
U300616	IPU (integrated power controller) detects that the battery voltage is too low	
P1B1080	IPU (Integrated Power Controller) IGBT drive circuit power supply failure	
P1B1082	Power supply failure of IPU (Integrated Power Controller) IGBT logic and current sensor	
P1B1176	CAN power supply faults of the IPU (Integrated Power Controller)	
P1B7016	IGBT drive undervoltage	
P1B1058	VCU (id0x0a0, id0x160, id0x161) message data error	
U24A883	VCU(ID0x162) message data error	
U241283	ESC(ID0x062,ID0x125) message data error	
U247283	BMS(ID 0x0B0,ID 0x178) message data error	
U007300	IPU (Integrated Power Controller) CAN bus off	
U140481	VCU (ID0x0A0,ID0x161) communication error (checksum, alivecounter error)	
U111487	VCU(ID0x0A0,ID0x160,0x161) communication lost	
U029300	VCU(0x162) communication lost	
U011287	BMS(ID0x0B0,0x178) communication lost	
U041681	ESC(ID0x062,ID0x125) communication error	
U012287	ESC(ID0x062,ID0x125) communication lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U015587	IPK(ID0x3F0,ID0x3F1) communication lost	
U045281	ACU (ID0x380) communication error (checksum, alivecounter error)	
U015187	ACU(ID0x380) communication lost	

2.4.6.8 Power supply failure of integrated power controller

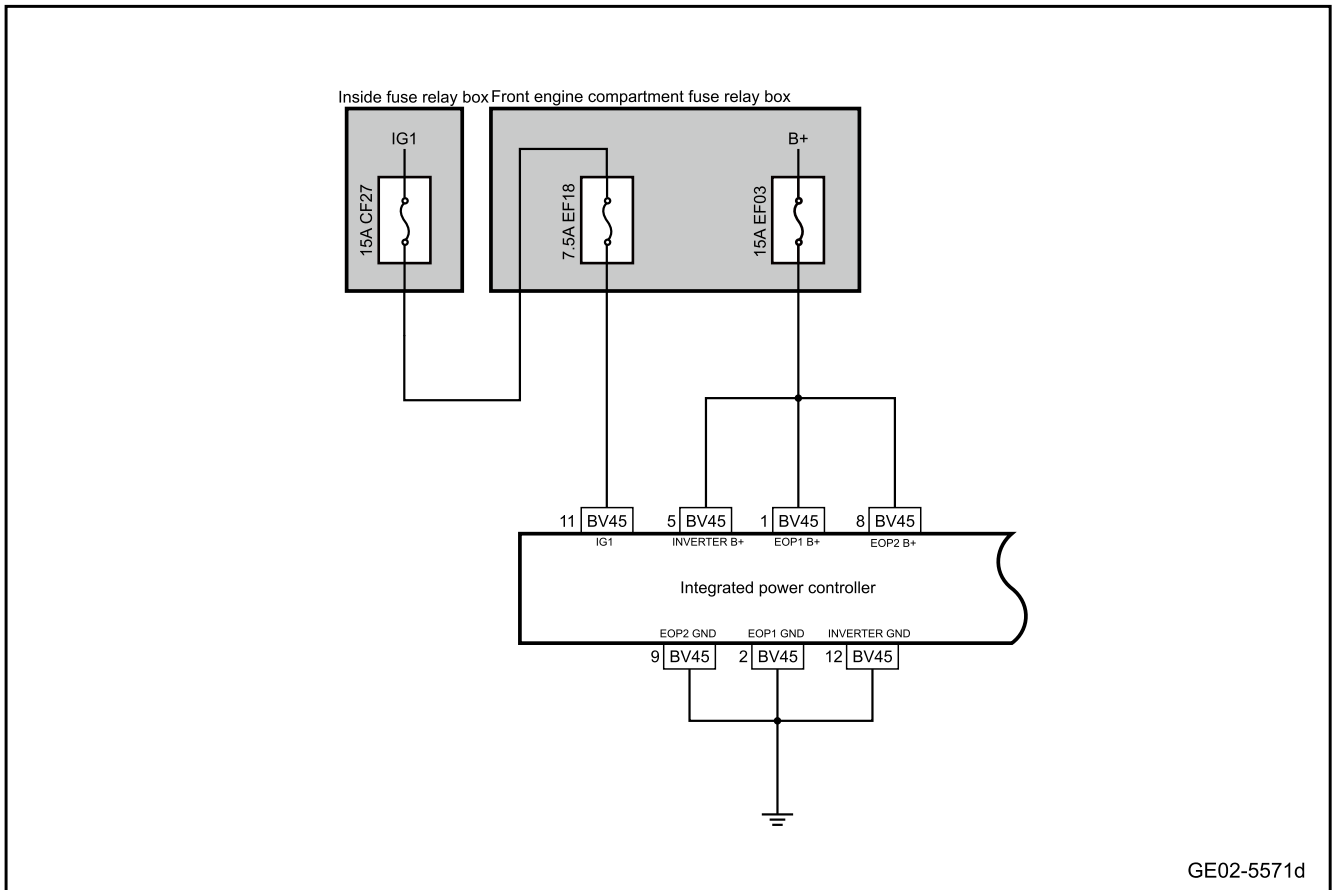
1. DTC description:

Diagnostic Trouble Code	Description
U300617	IPU (integrated power controller) detects that the battery voltage is too high
U300616	IPU (integrated power controller) detects that the battery voltage is too low
P1B1080	IPU (Integrated Power Controller) IGBT drive circuit power supply failure
P1B1082	Power supply failure of IPU (Integrated Power Controller) IGBT logic and current sensor
P1B1176	CAN power supply faults of the IPU (Integrated Power Controller)
P1B7016	IGBT drive undervoltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	$KL30 \geq 17.1V$	No low voltage sensor fault detected	1. Battery 2. Circuit 3. Fuse 4. Integrated power controller
U300616	$KL30 \leq 7.8V$		
P1B1080	Flyback voltage $< 17.53V$ or $> 24.12V$	-	
P1B1082	Sensor power supply voltage $\leq 4.74V$ or $\geq 5.26V$		
P1B1176	CAN power supply voltage $\leq 4.72V$ or $\geq 5.29V$		
P1B7016	Driving voltage $< 13V$		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No
To Step 4.

Yes

Step 2	Primary check.
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- A. Check the integrated power controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the integrated power controller harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes
Repair or replace the faulty part.

No

Step 3 Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 Inspect the fuse.

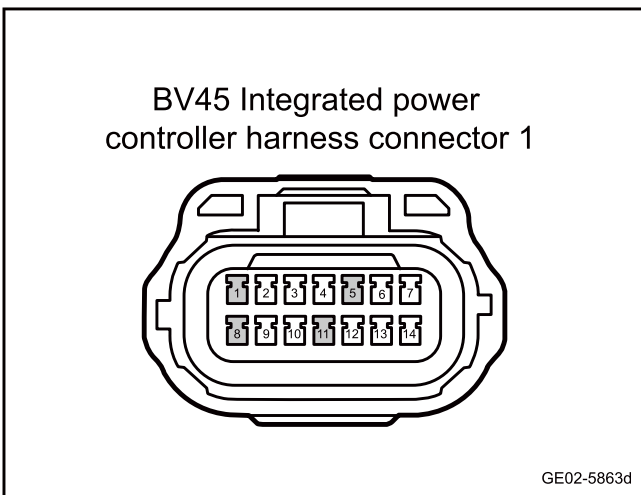
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF03 of the front engine compartment. Check whether the fuse EF03 is blown.
Rated capacity of fuse: 15A
- C. Pull out the fuse EF18 of the front engine compartment. Check whether the fuse EF18 is blown.
Rated capacity of fuse: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check whether the integrated power controller power supply circuit is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the integrated power controller harness connector BV45.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV45(1)	Vehicle body is grounded.	Standard voltage: 11-14V
BV45(5)		
BV45(8)		

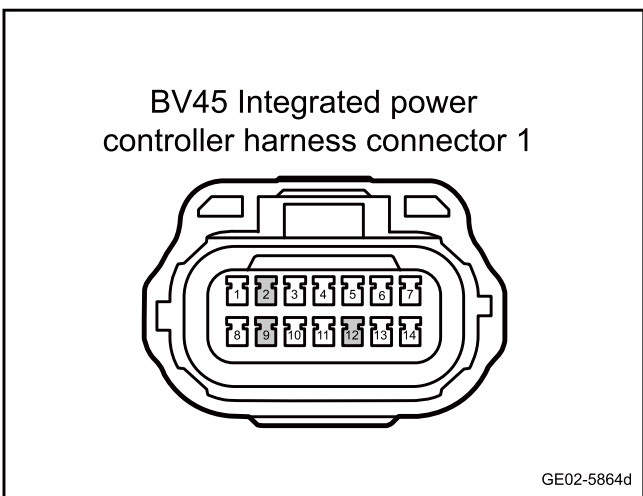
Measure terminal 1	Measure terminal 2	Standard value
BV45(11)		

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check the integrated power controller grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the integrated power controller harness connector BV45.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV45(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
BV45(9)		
BV45(12)		

D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the integrated power controller.

- A. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller](#)
- B. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller](#)

Next step

Step 8 Reprogram and reset the integrated power controller.

- A. Reprogram and reset the integrated power controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
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- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 10	System is normal.
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2.4.6.9 Internal faults of the integrated power controller

1. DTC description:

DTC	Trouble description
P1B1103	Core or peripheral faults of IPU (Integrated power controller) MCU
P1B102E	Data zone faults of IPU (Integrated power controller) MCU
P1B102F	Data zone faults of IPU (Integrated power controller) MCU
P1B108D	IPU (Integrated Power Controller) anti-theft verification result error
P1B1053	Drive motor overspeed
P1B1105	IPU (Integrated Power Controller) IGBT drive circuit failure
P1B1000	IPU (Integrated Power Controller) active discharge timeout
P1B1127	Internal power supply faults of the IPU (Integrated Power Controller)
P1B112D	IPU (Integrated Power Controller) IGBT fault
P1B1136	IPU (Integrated power controller) MCU onboard control unit circuit fault
P1B1049	Unexpected torque of drive motor
P1B1050	Excessive deviation of output torque of drive motor
P1B106B	IPU (Integrated Power Controller) cooling water level1 or level2 overtemperature
P1B1077	IPU (Integrated Power Controller) IGBT module level1 or level2 overtemperature
P1B6085	Crash signal Vehicle collision system protection
P1B7700	IPU (Integrated power controller) two or more-phase current sensor fault
P1B7898	IPU (Integrated Power Controller) bus capacitance level1 or level2 overtemperature
P1B794B	IPU (Integrated Power Controller) control board ambient overtemperature

DTC	Trouble description
P1B7A29	FLT (IGBT fault signal) error when IPU (Integrated power controller) IGBT drive power supply is ON
P1B7B29	FLT (IGBT fault signal) error when IPU (integrated power controller) IGBT drive power supply is OFF
P1B7C00	IPU (Integrated power controller) FLT (IGBT error) control signal cannot turn off IGBT
P1B7D00	IPU (Integrated power controller) PWM control signal cannot turn off IGBT
P1B8012	IPU (Integrated power controller) low voltage sensor is short-circuited to VCC (positive power supply)
P1B8011	IPU (Integrated power controller) low voltage sensor is short-circuited to GND (power supply ground)
P1B8115	IPU (integrated power controller) control plate ambient temperature sensor is short-circuited to VCC (positive power supply) or the sensor is open circuited
P1B8111	IPU (Integrated power controller) control board ambient temperature sensor is short-circuited to GND (power supply ground)
P1B8215	IPU (Integrated power controller) bus capacitance temperature sensor is short-circuited to VCC (positive pole of power supply) or the sensor is open circuited
P1B8211	IPU (Integrated power controller) bus capacitance temperature sensor is short-circuited to GND (power supply ground)
P1B8300	IPU (Integrated Power Controller) active discharge failure
P1B8493	Drive motor oil pump starting failure
P1B8492	Drive motor oil pump running failure
U130055	F101 not configured
P1B7200	F101 configuration value is out of range
P1BFD00	KI15 status does not match VCU torque control request
P1B108E	IPU (Integrated Power Controller) key not configured
P1B108F	IPU (Integrated Power Controller) did not receive a response frame
P1B103C	IPU (Integrated power controller) U-phase current sensor null shift fault
P1B1107	IPU (Integrated power controller) U-phase current sensor is open circuited
P1B106E	IPU (Integrated power controller) U-phase IGBT temperature sensor is short-circuited to VCC (positive power supply)
P1B106F	IPU (Integrated power controller) U-phase IGBT temperature sensor is short-circuited to GND (power supply ground)
P1B103A	IPU (Integrated power controller) U-phase current overcurrent
P1B7400	IPU (Integrated Power Controller) U-phase current sensor is short-circuited to VCC (power supply positive) or GND (power supply ground)
P1B1041	IPU (Integrated power controller) V-phase current sensor null shift fault
P1B1108	IPU (Integrated power controller) V-phase current sensor is open circuited
P1B1071	IPU (Integrated power controller) V-phase IGBT temperature sensor is short-circuited to VCC (positive power supply)

DTC	Trouble description
P1B1072	IPU (Integrated power controller) V-phase IGBT temperature sensor is short-circuited to GND (power supply ground)
P1B103F	IPU (Integrated power controller) V-phase current overcurrent
P1B7500	IPU (Integrated Power Controller) V-phase current sensor is short-circuited to VCC (power supply positive) or GND (power supply ground)
P1B1045	IPU (Integrated power controller) W-phase current sensor null shift fault
P1B1109	IPU (Integrated power controller) W-phase current sensor is open circuited
P1B1074	IPU (Integrated power controller) W-phase IGBT temperature sensor is short-circuited to VCC (positive power supply)
P1B1075	IPU (Integrated power controller) W-phase IGBT temperature sensor is short-circuited to GND (power supply ground)
P1B1043	IPU (Integrated power controller) W-phase current overcurrent
P1B7600	IPU (Integrated Power Controller) W-phase current sensor is short-circuited to VCC (power supply positive) or GND (power supply ground)
P1B1038	IPU (Integrated power controller) U/V/W-phase hardware overcurrent
P1B103D	The sum of three-phase currents of IPU (Integrated power controller) is too large
P1B107F	IPU (Integrated Power Controller) DC bus overvoltage
P1B107E	IPU (Integrated Power Controller) DC bus overvoltage (hardware detection)
P1B7F12	IPU (Integrated power controller) DC bus voltage sensor is short-circuited to VCC (positive power supply)
P1B7F11	IPU (Integrated power controller) DC bus voltage sensor is short-circuited to GND (power supply ground)
P1B1152	IPU (Integrated Power Controller) rotary transformer signal failure
P1B1078	Drive motor temperature sensor 1 is short-circuited to VCC (positive pole of power supply) or the sensor is open circuited
P1B1079	Drive motor temperature sensor 1 is short circuited to GND (power supply ground)
P1B117A	Drive motor temperature sensor 2 is short-circuited to VCC (positive pole of power supply) or the sensor is open circuited
P1B117B	Drive motor temperature sensor 2 is short circuited to GND (power supply ground)
P1B107A	Drive motor level1 or level2 overtemperature
P1B102A	Severe overvoltage detected at high voltage end
P1B1416	Bus voltage software undervoltage
P1B0401	High voltage sampling circuit power loss
P1B4000	Coolant temperature sensor short circuited to power supply
P1B3F00	Coolant temperature sensor short circuited to the ground
P1B8504	Inverter Case over temperature

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1103	MCU core or peripheral failure	/	1. Integrated power controller
P1B102E	Data flash and read failure (control area)		
P1B102F	Data flash write failure; data flash read failure (diagnostic area)		
P1B108D	The result of anti-theft authentication is incorrect for two consecutive times		
P1B1053	Motor speed >15500rpm (power reduction interval [15000rpm, 15500rpm])		
P1B1105	Id_ref=-20A No.&& Id U act-Id U ref >No.10A	Alternate diagnostic phase, i.e. the state in which the PWM output interlock function is deactivated	
P1B1000	HV > 60V	Other faults include undetected IGBT drive faults. The high voltage is between 60[V] and 500[V]. IPUúU moderate=release	
P1B1127	Internal boost voltage >18.702V or <9.792V	8.44V≤KL30≤16.9V	
P1B112D	Set IGBT fault signal	/	
P1B1136	Vehicle-mounted controller error		
P1B1049	Torque requirement-actual torque ≥30Nm	When phase current fault and angle fault do not occur, and torque requirement =0 Nm	
P1B1050	Torque requirement-actual torque ≥60Nm	When phase current fault and angle fault do not occur,	
P1B106B	Level1: When the motor temperature is within [69.5°C, 83°C], Level2: When the motor temperature is within [83°C, 95°C] (power reduction range [65°C, 95°C])	/	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1077	Level1: When the module temperature is within [146.5°C, 151°C], Level2: When the module temperature is within [151°C, 155°C] (power reduction range[145°C, 155°C])		
P1B6085	A collision occurred, that is, any bit of ACU_CrashOutputSts(ID0x380) bit1-bit4 is not 0.		
P1B7700	When any 2-phase or 3-phase current sensor fails (short to VCC, short to GND, null drift fault)		
P1B7898	Level1: When the capacitor temperature is within [110.75°C, 113°C], Level2: When the capacitor temperature is within [113°C, 115°C] (power reduction range[110°C, 115°C])		
P1B794B	PCB ambient temperature > 120°C		
P1B7A29	IGBT drive power supply ON & FLT fault is true	At the initial diagnosis stage, the IGBT driver circuit is in the power supply state	
P1B7B29	IGBT drive power supply OFF & FLT fault is true	At the initial diagnosis stage, the IGBT drive circuit is in a state of no power supply	
P1B7C00	PWN control signal == ON && FLT control signal == OFF && Id_ref == -43A && Id_act ≥ 33A	At the standby diagnosis phase, the IGBT fault signal interlocks the PWM output	
P1B7D00	PWN control signal == OFF && FLT control signal == ON && Id_ref == -43A && Id_act ≥ 33A	At the standby diagnosis phase, pwm output is interlocked by MCU interlocking signal	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B8012	or B · Condition A and KL30 \geq 18.202V Internal power supply boost voltage \leq 16.0V · Condition B Internal boost voltage \geq 20.990V KL30 \leq 16.0V	/	
P1B8011	Condition A or B · Condition A and KL30 \leq 1.208V Internal power supply boost voltage \geq 9.0V · Condition B Internal boost voltage \leq 3.983V KL30 \geq 9.0V		
P1B8115	Control PCB temperature \geq 4.95V	The IGBT temperature exceeds 25°C, the required torque exceeds 0Nm, and maintains 5000ms	
P1B8111	Control PCB temperature \leq 0.05V	The IGBT temperature is lower than 65°C, the required torque is 0Nm, lasting for 5000ms	
P1B8215	Thin-film capacitor temperature \geq 4.95V	/	
P1B8211	Thin-film capacitor temperature \leq 0.05V		
P1B8300	d-axis command-d-axis current > 10a	Other faults include undetected IGBT drive faults. The high voltage is between 60[V] and 500[V]. IPUúU moderate=release	
P1B8493	The working state of the oil pump is less than 5% and more than 95%	The required speed of the DCU for the oil pump is greater than 500rpm	
P1B8492	Oil pump request speed - oil pump speed \geq 619[rpm]	The requested speed of oil pump from DCU exceeds 500[rpm]. The pulse width modulation frequency of the oil pump is normal	
U130055	The value of F101 is the factory default value	/	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B7200	The value of F101 is not any of GE12A, GE12B, GE11AB		
P1BFD00	KL15=OFF & Mode Request = TqCtrl		
P1B108E	1.No ESK has been written 2. ESK has been written, but not written again after erasing		
P1B108F	IMMOCode of PEPS has not been received for 3 consecutive times		
P1B103C	U-phase actual current null drift > 47.24A	At initial diagnostic phase, offset learning flag = ON	
P1B1107	umax ≤ 47.24A	Smart target ≥ 100A & motor speed ≥ 1000rpm	
P1B106E	IGBT temperature sensor U _{ad} ≥ 4.95V	IGBT temperature sensors V, W have been normal for 1000ms	
P1B106F	IGBT temperature sensor U _{ad} ≤ 0.05V	IGBT temperature sensors V and W are over 65°C and hold for 1000 ms	
P1B103A	u > 770.69A		
P1B7400	U-phase current AD value > 4.9V or U-phase current AD value < 0.1V	/	
P1B1041	V-phase actual current null drift > 47.24A	At initial diagnostic phase, offset learning flag = ON	
P1B1108	vmax ≤ 47.24A	Smart target ≥ 100A & motor speed ≥ 1000rpm	
P1B1071	IGBT temperature sensor V _{ad} ≥ 4.95V	IGBT temperature sensors U, W have been normal for 1000ms	
P1B1072	IGBT temperature sensor V _{ad} ≤ 0.05V	IGBT temperature sensors U and W are over 65°C and hold for 1000 ms	
P1B103F	v > 770.69A		
P1B7500	V-phase current AD value > 4.9V or V-phase current AD value < 0.1V	/	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1045	W-phase actual current null drift > 47.24A	At initial diagnostic phase, offset learning flag = ON	
P1B1109	wmax ≤47.24A	Smart target≥100A&& motor speed≥1000rpm	
P1B1074	IGBT temperature sensor Wôad≥4.95V	IGBT temperature sensors U, V have been normal for 1000ms	
P1B1075	IGBT temperature sensor Wúad≤0.05V	IGBT temperature sensors U and V are over 65°C and hold for 1000 ms	
P1B1043	w > 770.69A	/	
P1B7600	W-phase current AD value>4.9V or W-phase current AD value <0.1V		
P1B1038	Detect U (or V, W)-phase hardware overcurrent diagnostic flag bit (800A) (T. B.D.)		
P1B103D	u+lv+lw ≥80A	No fault occurs when the phase current sensor fails	
P1B107F	Udc > 480V (power reduction range [470V,480V])	No high voltage sensor fault detected	
P1B107E	Detect hardware overvoltage diagnostic flag bit (540V)	No high voltage sensor fault detected	
P1B7F12	High voltage ad value>4.76V (DC>537.38V)	Integrated power controller U battery voltage≤450[V], the main relay is closed	
P1B7F11	High voltage ad value<1.39V (VDC<116.71V)	Integrated power controller U battery voltage≤450[V], the main relay is closed	
P1B1152	Because, SIN signal open or COS, SIN signal imbalance or (sum of squares) or R/D conversion failure	The angle sensor fault signal is set and held for 2ms	
P1B1078	Electric motor temperature sensor 1_ ad≥4.95V	Motor temperature sensor 2 exceeds 65°C and keeps for 1000ms	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1079	Motor temperature sensor 1_ad \leq 0.05V	The motor temperature sensor 2 is between -40 °C and 200 °C, and keeps for 1000 milliseconds	
P1B117A	Electric motor temperature sensor 2_ad \geq 4.95V	Motor temperature sensor 1 exceeds 65°C and keeps for 1000ms	
P1B117B	Motor temperature sensor 2_ad \leq 0.05V	The motor temperature sensor 1 is between -40 °C and 200 °C, and keeps for 1000 milliseconds	
P1B107A	Level1: When the motor temperature is within [183°C, 192°C], Level2: When the motor temperature is within [192°C, 200°C] (power reduction range [180°C, 200°C])	/	
P1B102A	Bus voltage > 500V	No high voltage sampling circuit power loss	
P1B1416	Bus voltage < 250V	/	
P1B0401	HVBus>782V		
P1B4000	Coolant test temperature < -60 °C		
P1B3F00	Coolant test temperature > 140°C		
P1B8504	The temperature of any of the three phases of the inverter exceeds 95°C	No three-phase temperature sensor failure	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the integrated power controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the integrated power controller harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the integrated power controller.

- A. Reprogram and reset the integrated power controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the integrated power controller.

- A. Check whether the integrated power controller power supply and grounding harness are normal. Refer to [Power Supply Failure of Integrated Power Controller](#)
- B. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller](#)
- C. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller](#)

Next step

Step 5 Reprogram and reset the integrated power controller.

- A. Reprogram and reset the integrated power controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

2.4.6.10 Communication failure of the integrated power controller

1. DTC description:

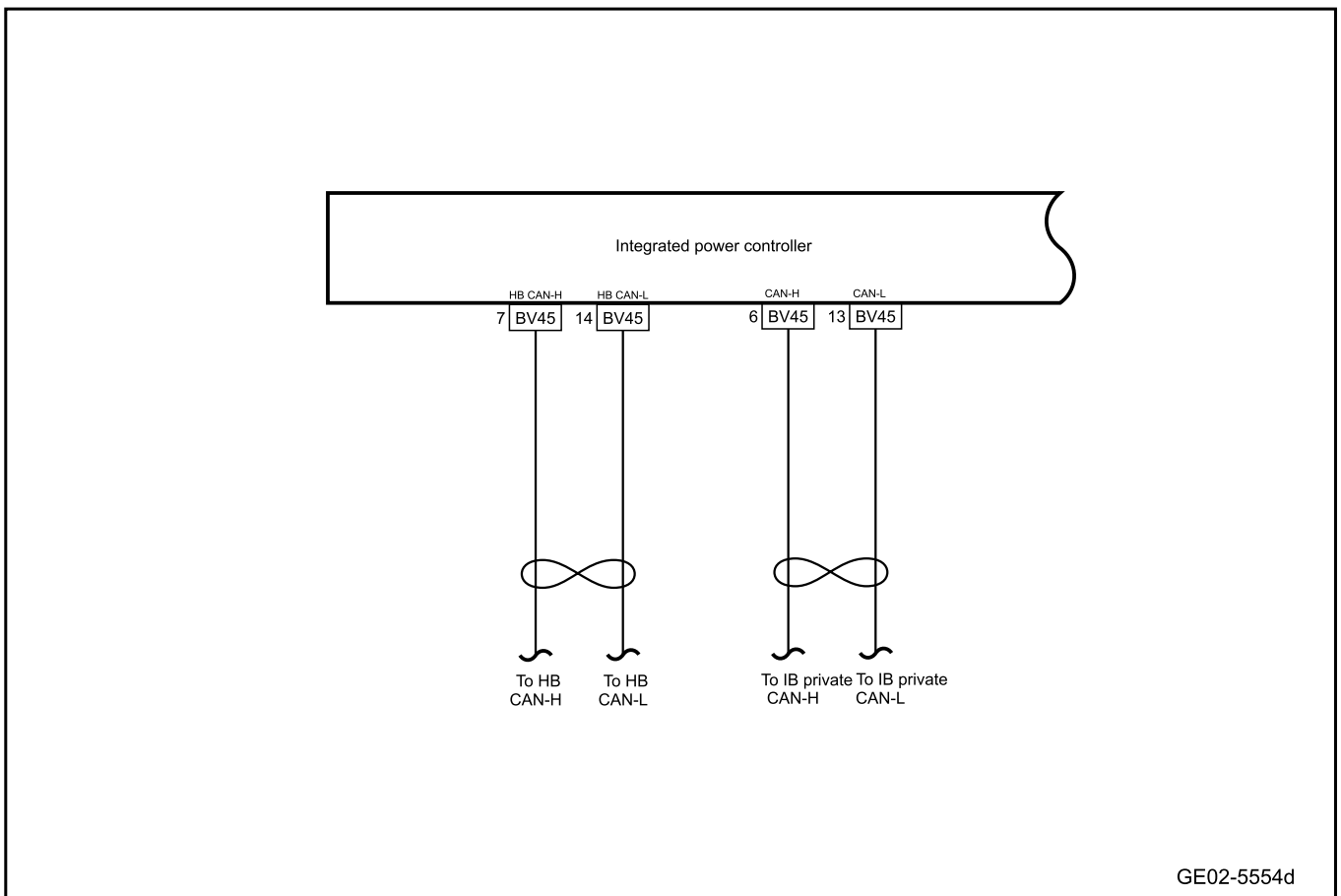
Diagnostic Trouble Code	Description
P1B1058	VCU (id0x0a0, id0x160, id0x161) message data error
U24A883	VCU(ID0x162) message data error
U241283	ESC(ID0x062,ID0x125) message data error
U247283	BMS(ID 0x0B0,ID 0x178) message data error
U007300	IPU (Integrated Power Controller) CAN bus off
U140481	VCU (ID0x0A0,ID0x161) communication error (checksum,alivecounter error)
U111487	VCU(ID0x0A0,ID0x160,0x161) communication lost
U029300	VCU(0x162) communication lost
U011287	BMS(ID0x0B0,0x178) communication lost
U041681	ESC (ID0x062, ID0x125) communication error (checksum, alivecounter error)
U012287	ESC(ID0x062,ID0x125) communication lost
U015587	IPK(ID0x3F0,ID0x3F1) communication lost
U045281	ACU (ID0x380) communication error (checksum, alivecounter error)
U015187	ACU(ID0x380) communication lost

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1B1058	Signal value out of range	-	1. Circuit
U24A883	Signal value out of range		2. Integrated power controller 3. Diagnostic interface

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U241283	Signal value out of range		
U247283	Signal value out of range		
U007300	A busoff occurs and is still busoff after attempt to recover		
U140481	1. Alivecounter error: Alivecounter error occurs 2. Data link connector length error 3. Checksum error: Checksum error occurs		
U111487	VCU CAN message (ID0x0A0, ID0x160, 0x161) timeout		
U029300	VCU CAN message (0x162) timeout or invalid frame		
U011287	BMS CAN message (ID 0x0B0, 0x178) timeout or invalid frame		
U041681	1. Alivecounter error: Alivecounter error occurs 2. DLC size error 3. Checksum error: Checksum error occurs		
U012287	ESC CAN message (ID 0x062, ID0x125) timeout		
U015587	IPK CAN message (ID 0x3F0, 0x3F1) timeout or invalid frame		
U045281	1. Alivecounter error: Alivecounter error occurs 2. Data link connector length error 3. Checksum error: Checksum error occurs		
U015187	ACU CAN message (ID 0x380) timeout		

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the integrated power controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the integrated power controller harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3	Check the integrity of the HB-CAN bus.
--------	--

- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm that the HB-CAN network is functioning properly.

No

Check or repair HB-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4	Check the integrity of the IB private-CAN bus.
--------	--

- A. To check the integrity of the IB private-CAN bus, please refer to [IB Private-CAN Bus Network Integrity Check](#)
- B. Confirm that the IB private-CAN network is functioning properly.

No

Check or repair IB private-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 5	Replace the integrated power controller.
--------	--

- A. Check whether the integrated power controller power supply and grounding harness are normal. Refer to [Power Supply Failure of Integrated Power Controller](#)
- B. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller](#)
- C. To replace the integrated power controller, please refer to [Replacement of Integrated Power Controller](#)

Next step

Step 6	Reprogram and reset the integrated controller.
--------	--

- A. Reprogram and reset the integrated controller. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

2.4.6.11 IPU angle self-learning

1. Diagnosis steps

Step 1 Brand selection, vehicle identification.

Next step

Step 2 Enter the first-level menu "special mileage" and select the second-level menu "angle self-learning".

Next step

Step 3 Click "OK" to enter the first prompt interface.

Next step

Step 4 Click "Next" to control the VCU to enter maintenance mode.

Next step

Step 5 The device prompts "Failed to enter maintenance mode".

Next step

Step 6 Click OK.

Next step

Step 7	The device prompts "Service mode has been entered, please step on the brake".
--------	---

Next step

Step 8	After seeing the prompt of "Service mode has been entered, please step on the brake", the operator shall step on the brake.
--------	---

Next step

Step 9	The equipment personnel click "Next".
--------	---------------------------------------

Next step

Step 10	After 1s, the device will perform subsequent commands.
---------	--

Next step

Step 11	Click Next, and the VCU exits maintenance mode.
---------	---

Next step

Step 12	Click OK.
---------	-----------

2.4.7 Removing and installing

2.4.7.1 Replacement of left vibration isolator assembly

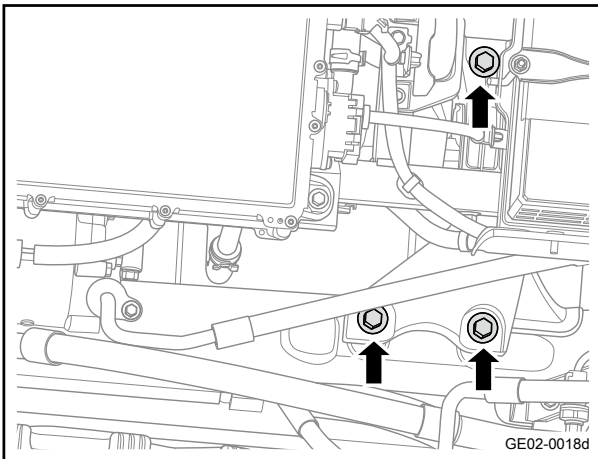
Removal procedure

- 1 Remove the front engine compartment cover assembly.
Refer to [Replacement of Front Engine Compartment Cover Assembly](#)
- 2 Remove the front fender liner. Refer to [Replacement of Front Fender Liner](#)
- 3 Remove the front engine compartment bottom shield.
Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Use jacks to support the electric drive system.

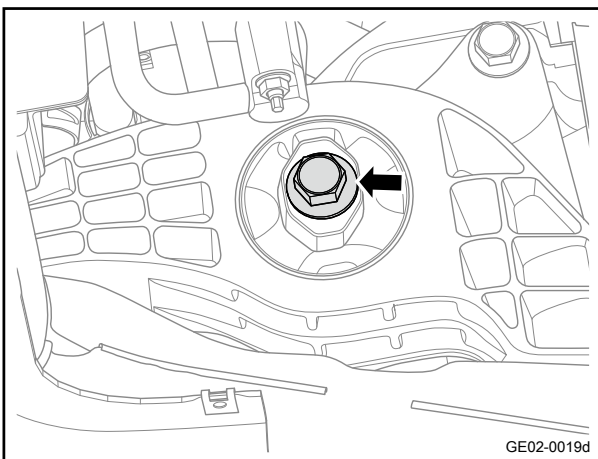
Caution

Before supporting, place wooden blocks between the jack and the reducer to avoid sliding.

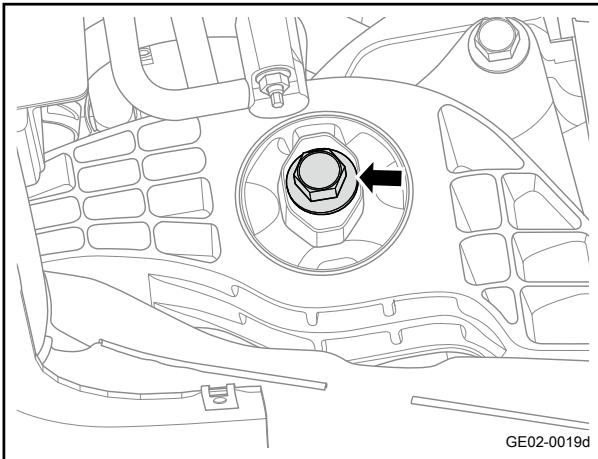
- 5 Remove the 3 fixing bolts of upper left vibration insulator assembly.



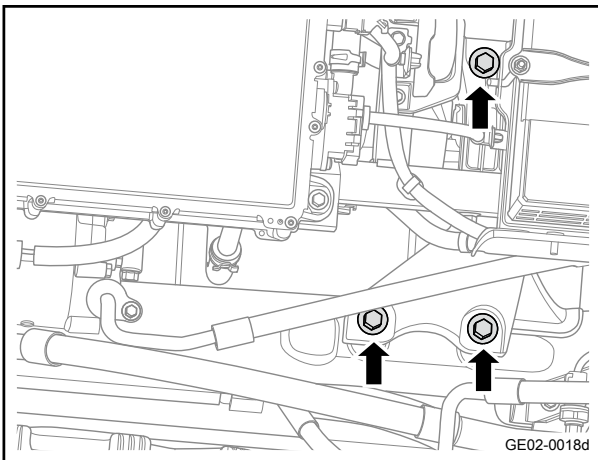
- 6 Remove the 1 fixing bolt of left side of left vibration insulator assembly.
- 7 Take off the left vibration insulator assembly.



Installation procedure



- 1 Move the left vibration insulator assembly to the mounting position.
- 2 Install the 1 left fixing bolt of left vibration insulator assembly.
Torque: 210N·m



- 3 Install the 3 upper fixing bolts of left vibration insulator assembly.
Torque: 130N·m

- 4 Release the jacks.
- 5 Install the front engine compartment bottom shield.
- 6 Install the front fender liner.
- 7 Install the front engine compartment cover assembly.

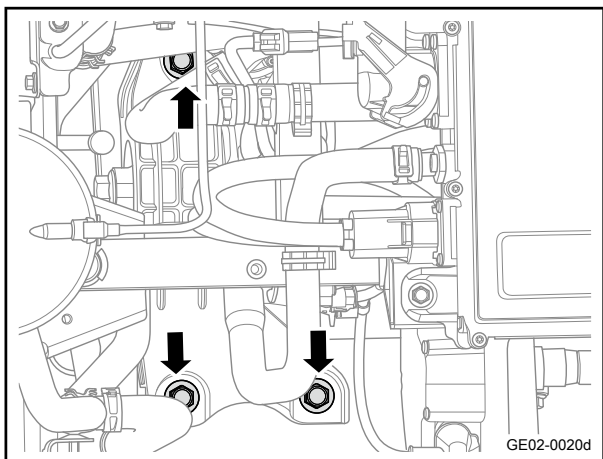
2.4.7.2 Replacement of Right Vibration Insulator Assembly

Removal procedure

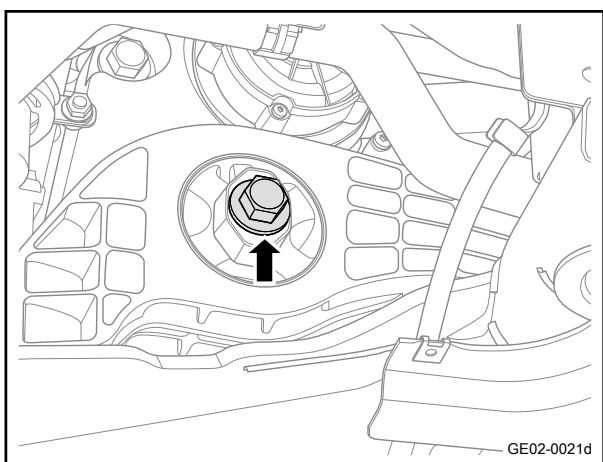
- 1 Remove the front engine compartment cover assembly.
Refer to [Replacement of Front Engine Compartment Cover Assembly](#)
- 2 Remove the front fender liner. Refer to [Replacement of Front Fender Liner](#)
- 3 Remove the front engine compartment bottom shield.
Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Use jacks to support the electric drive system.

Caution

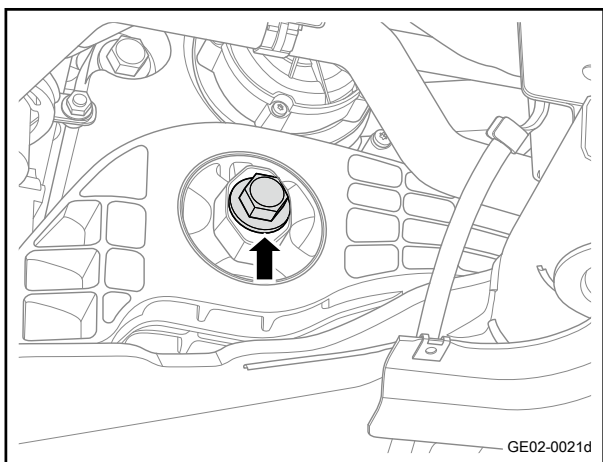
Before supporting, place wooden blocks between the jack and the reducer to avoid sliding.



- 5 Remove the 3 upper fixing bolts of right vibration insulator assembly.



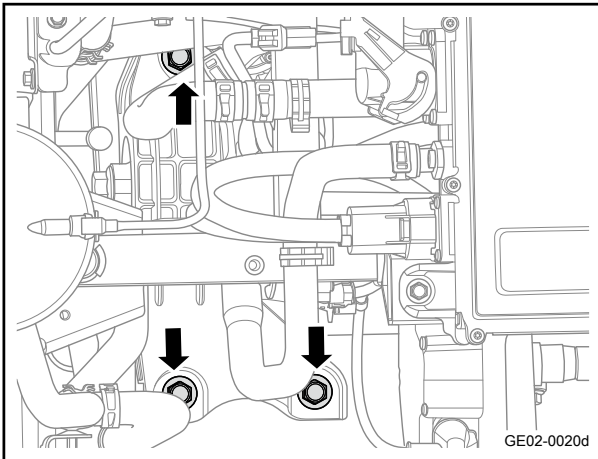
- 6 Remove the 1 right fixing bolt of right vibration insulator assembly.
- 7 Take down right vibration insulator assembly.



Installation procedure

- 1 Move the right vibration insulator assembly to the mounting position.
- 2 Install the 1 right fixing bolt of right vibration insulator assembly.

Torque: 210N·m



- 3 Install the 3 upper fixing bolts of the right vibration insulator assembly.
Torque: 130N·m

- 4 Release the jacks.
- 5 Install the front engine compartment bottom shield.
- 6 Install the front fender liner.
- 7 Install the front engine compartment cover assembly.

2.4.7.3 Replacement of Left Suspension Bracket

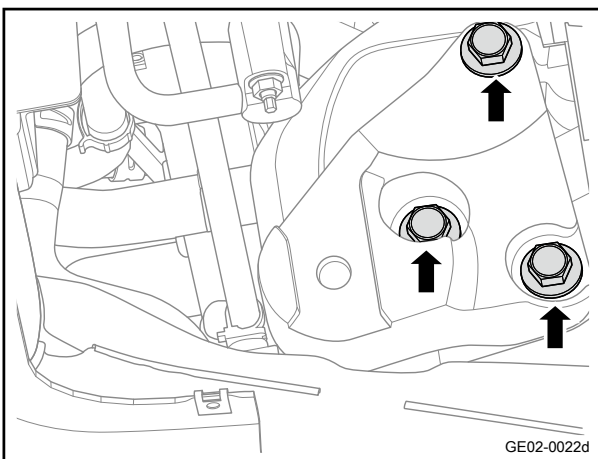
Removal procedure

- 1 Remove the left vibration insulator assembly. Refer to [Replacement of Left Vibration Insulator Assembly](#)
- 2 Use jacks to support the electric drive system.

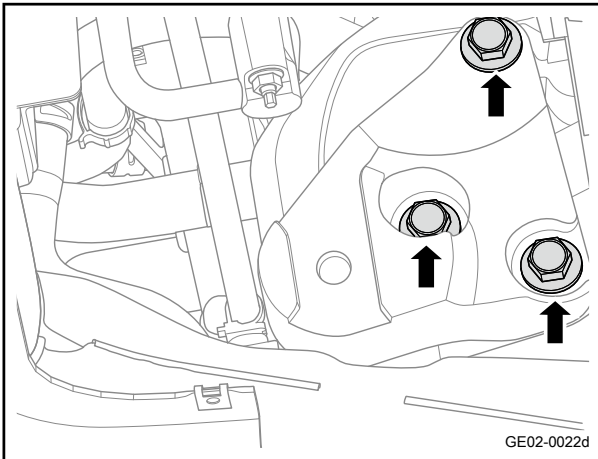
Caution

Before supporting, place wooden blocks between the jack and the reducer to avoid sliding.

- 3 Remove the 3 fixing bolts of the left suspension bracket.
- 4 Remove the left suspension bracket.



Installation procedure



- 1 Move the left suspension bracket to the installation position.
- 2 Install the 3 fixing bolts of the left suspension bracket.
Torque: 130N·m

- 3 Release the jacks.
- 4 Install the left vibration insulator assembly.

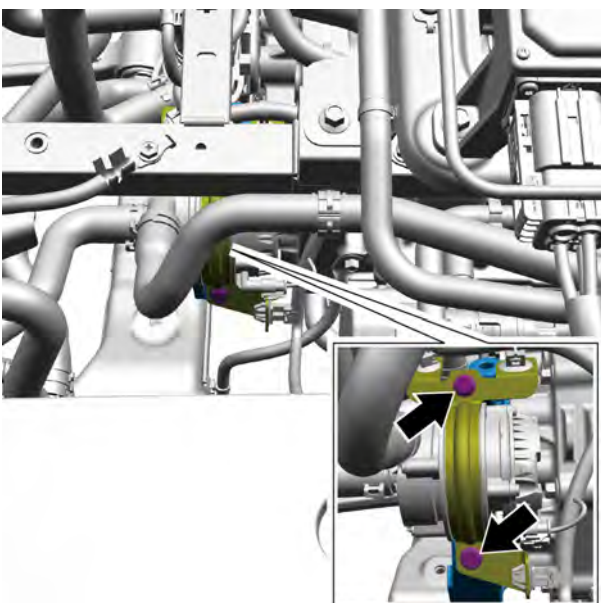
2.4.7.4 Replacement of Right Suspension Bracket

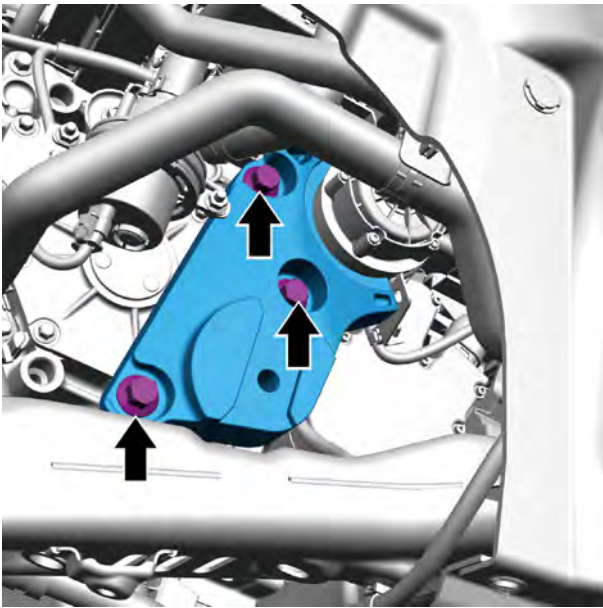
Removal procedure

Caution

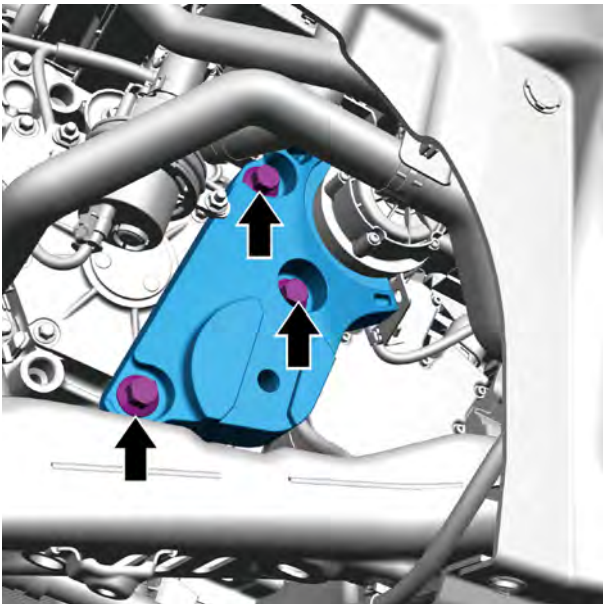
When using a jack to support the electric drive system, place wooden blocks in front of the jack and reducer to increase the friction between them to avoid sliding.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the right vibration insulator assembly. Refer to [Replacement of Right Vibration Insulator Assembly](#)
- 3 Remove the 2 fixing bolts connecting the motor water pump bracket and the right suspension bracket.
- 4 Remove the motor water pump and bracket.





- 5 Remove the 3 fixing bolts between right suspension bracket and the electric driving system assembly
- 6 Take off the right suspension bracket.



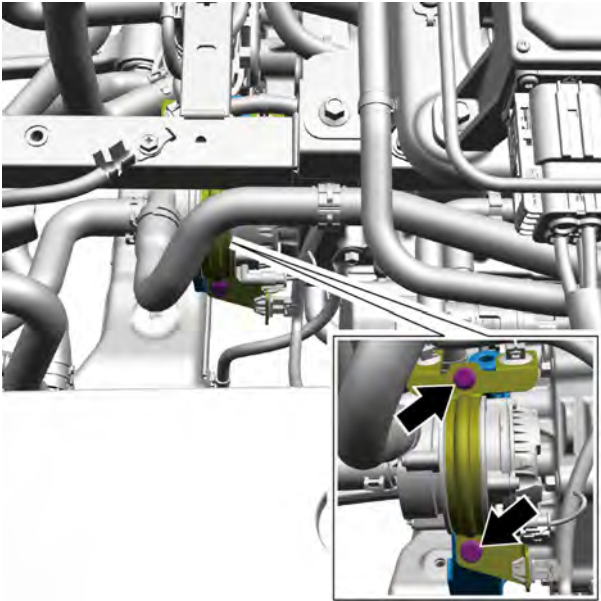
Installation procedure

- 1 Move the right suspension bracket to the installation position.
- 2 Install and tighten the 3 fixing bolts connecting right suspension bracket and the electric driving system assembly

Torque:

First time: 70N·m

Second time: 60°



- 3 Move the motor water pump and bracket to the installation position.
- 4 Install and tighten 2 fixing bolts connecting the motor water pump bracket and right suspension bracket.
Torque: 10N·m

- 5 Install the right vibration isolator assembly.
- 6 Connect the negative cable of battery.

2.4.7.5 Replacement of rear suspension bracket

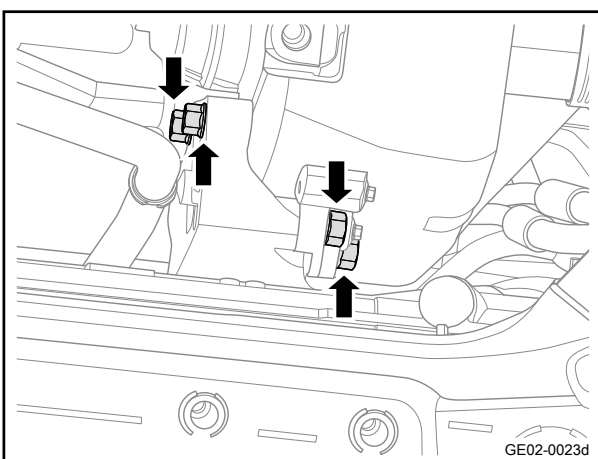
Removal procedure

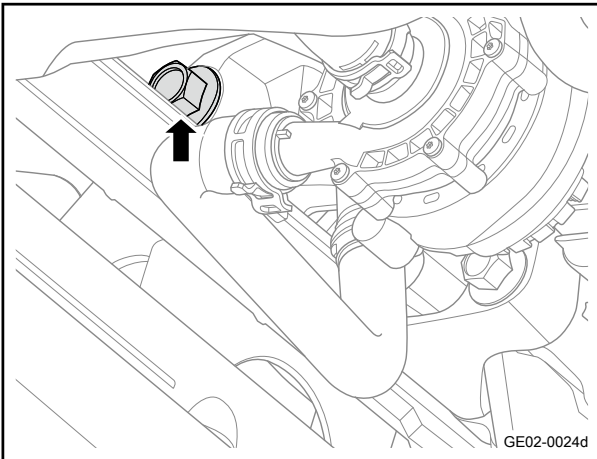
- 1 Remove the front engine compartment bottom shield.
Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 2 Use jacks to support the electric drive system.

Caution

Before supporting, place wooden blocks between the jack and the reducer to avoid sliding.

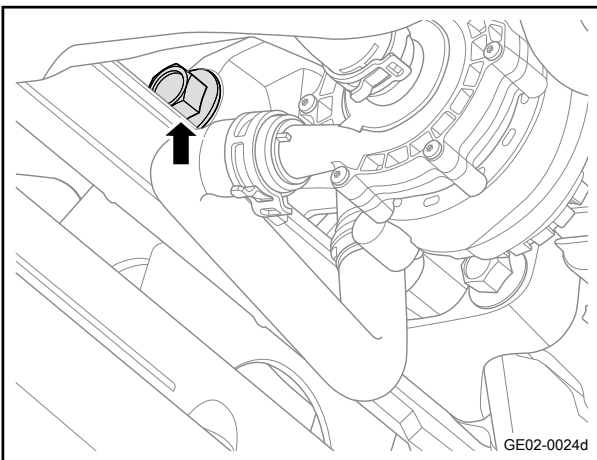
- 3 Remove the 4 fixing bolts at the front of the rear suspension bracket.



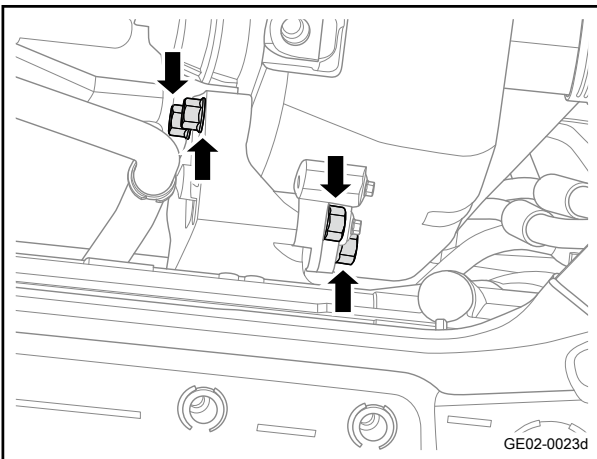


- 4 Remove the 1 fixing bolt at the rear of the rear suspension bracket.
- 5 Take off the rear suspension bracket.

Installation procedure



- 1 Move the rear suspension bracket to the installation position.
- 2 Install the 1 fixing bolt at the rear of the rear suspension bracket.
Torque: 240N·m



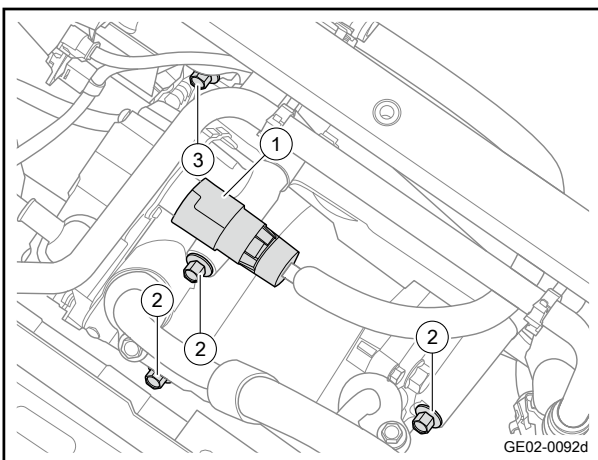
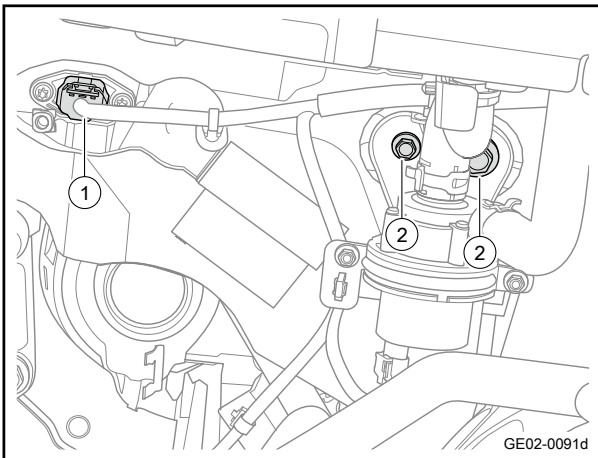
- 3 Install the 4 fixing bolts at the front of the rear suspension bracket.
Torque: 130N·m

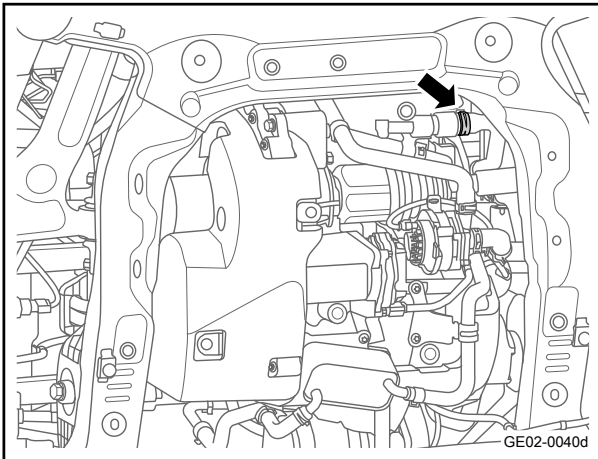
- 4 Release the jacks.
- 5 Install the front engine compartment bottom shield.

2.4.7.6 Replacement of Electric Drive System (NIDEC CORPORATION)

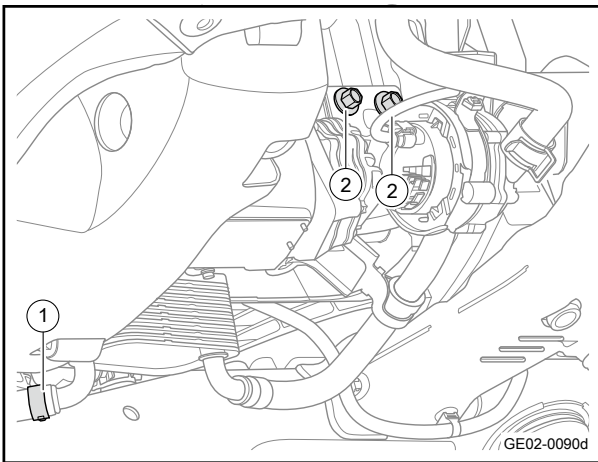
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
 - 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
 - 4 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling](#)
 - 5 Remove the left front constant velocity drive shaft. Refer to [Replacement of Left Front Constant Velocity Drive Shaft](#)
 - 6 Remove the right front constant velocity drive shaft. Refer to [Replacement of Right Front Constant Velocity Drive Shaft](#)
 - 7 Disconnect the electric drive system harness connector 1.
 - 8 Remove the 2 fixing bolts 2 of the water heating pump (20W).
-
- 9 Disconnect the motor compressor harness 1.
 - 10 Remove the 3 fixing bolts 2 of the motor compressor.
 - 11 Remove the 1 ground wire bolt 3 of the electric drive system.



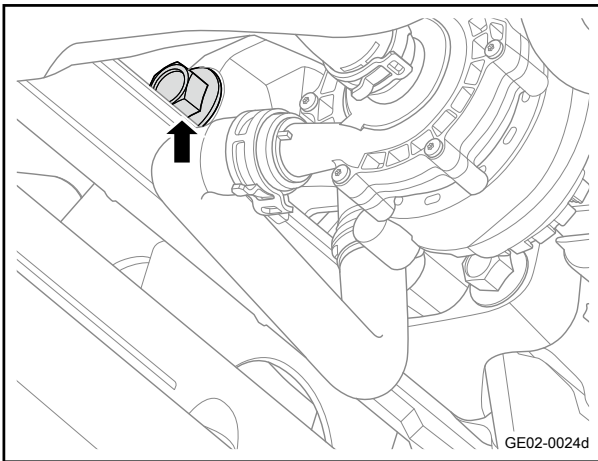


12 Disconnect the water inlet pipe of the motor controller.

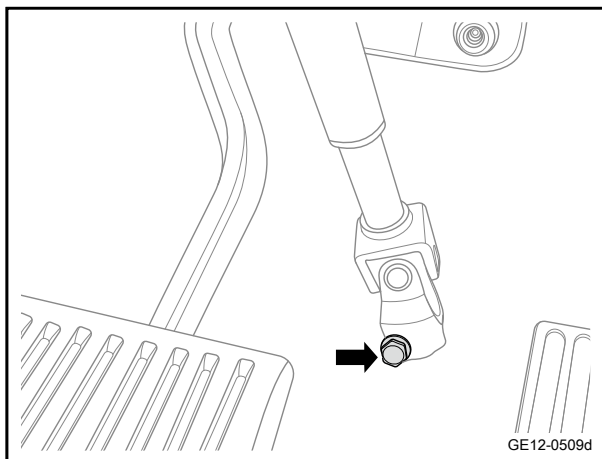


13 Disconnect the water outlet pipe 1 of the motor controller.

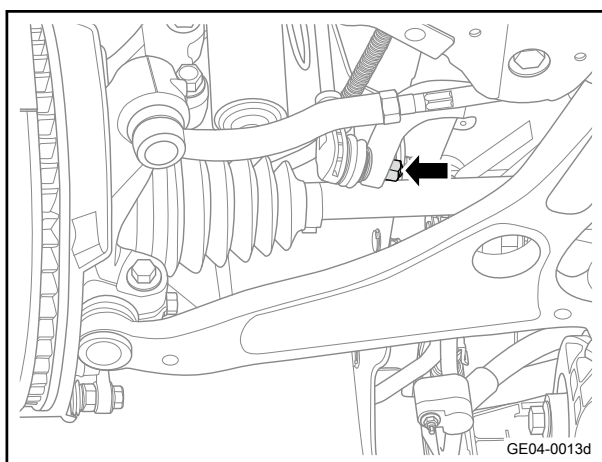
14 Remove the 2 fixing bolts 2 of battery cooling pump.



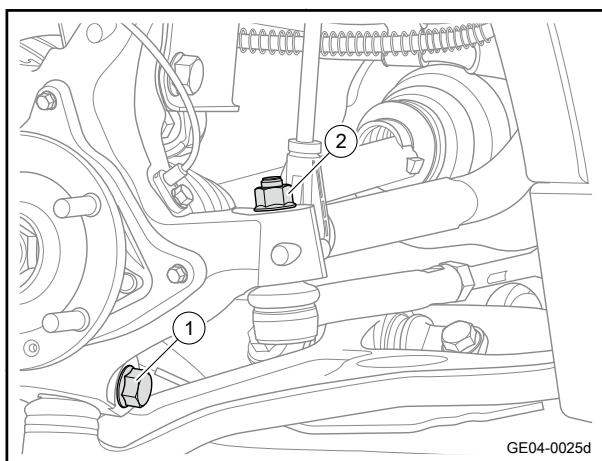
15 Remove the 1 fixing bolt between the rear vibration isolator and the sub-frame.



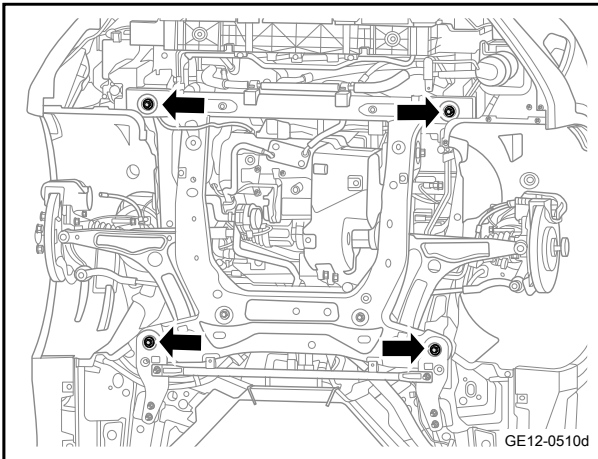
- 16 Remove the 1 fixing bolt connecting intermediate shaft universal joint and mechanical steering gear, and disconnect the intermediate shaft universal joint from the mechanical steering gear.



- 17 Remove the 1 fixing nut connecting the left and right front antiroll connecting bars and the antiroll rod, and take off the connecting bars.



- 18 Remove 1 fixing bolt 1 on each side of the left and right lower swing arm ball joints.
- 19 Remove the 1 fixing nut 2 on each side of the left and right steering gear tie rod ball joints, and take off the tie rod.



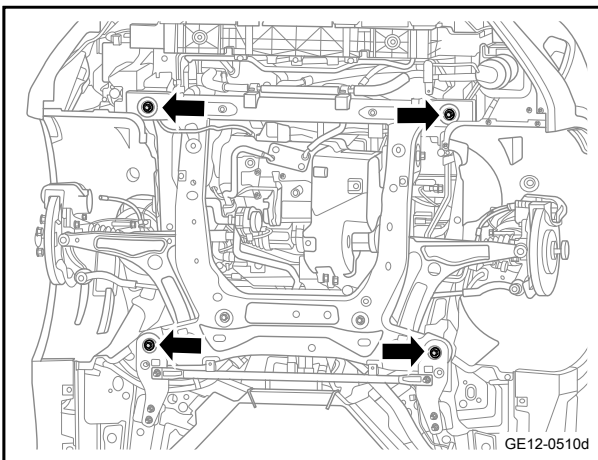
- 20 Use the jack to support the subframe.
- 21 Remove the 4 fixing bolts retaining the sub-frame.

Warning

New fixing bolts need to be replaced every time they are removed.

- 22 Take off the electric drive system c/w subframe assembly.

Installation procedure

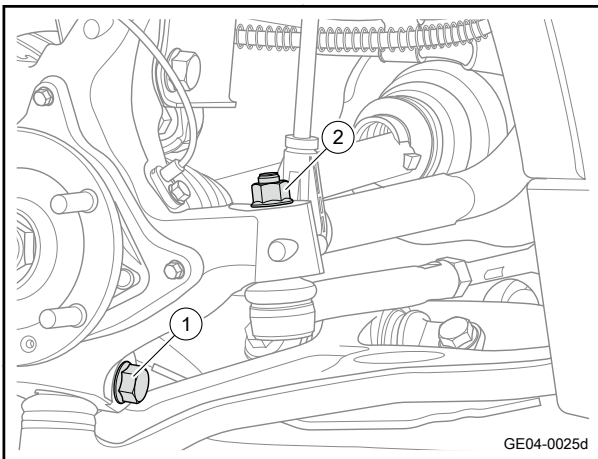


- 1 Move the electric drive system c/w subframe assembly to the installation position.
- 2 Use the jack to support the subframe.
- 3 Install the 4 fixing bolts of the subframe.

Torque:

First time 120N·m

Second time 90°



- 4 Install the 1 fixing nut 2 on each side of the left and right steering gear tie rod ball joints.

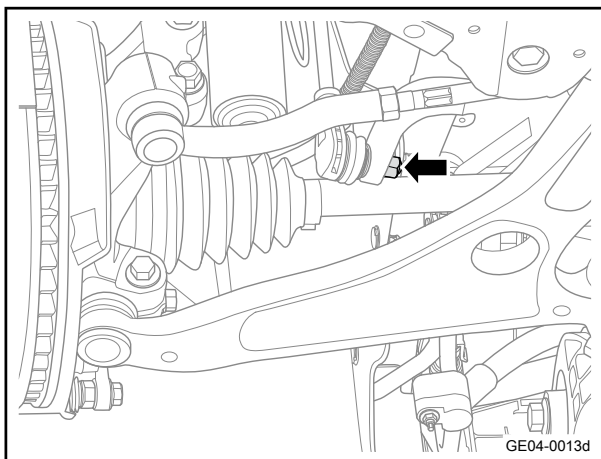
Torque: 55N·m

- 5 Install 1 fixing bolt 1 on each side of the left and right lower swing arm ball joints.

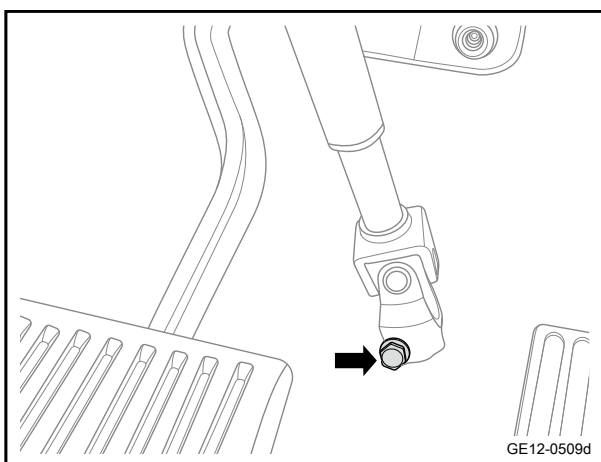
Torque:

First time 90N·m

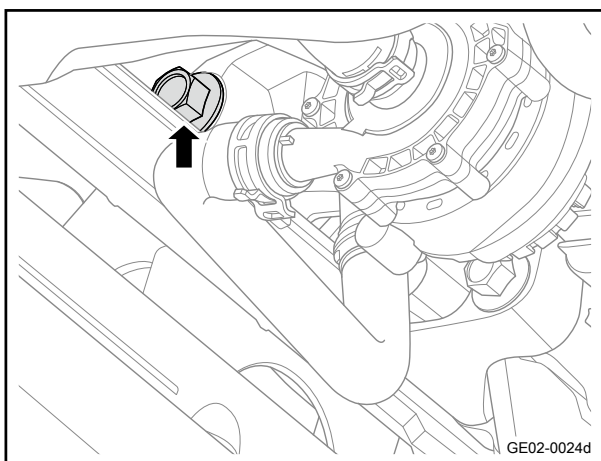
Second time 90°



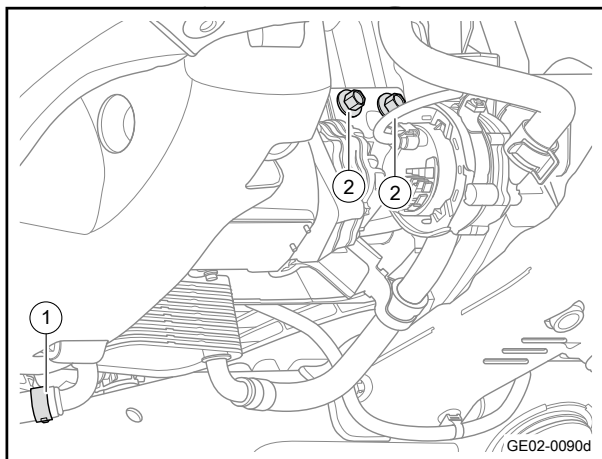
- 6 Install the 1 fixing nut connecting the left and right front antiroll connecting bars and the antiroll rod.
Torque: 75N·m



- 7 Install the 1 fixing bolt connecting intermediate shaft universal joint and mechanical steering gear.
Torque: 39N·m



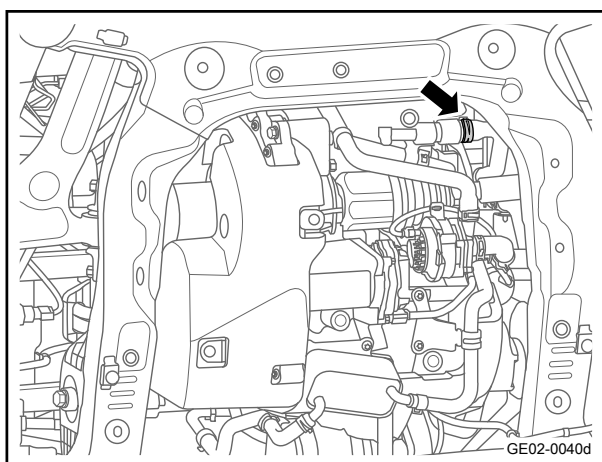
- 8 Install the 1 fixing bolt between the rear vibration isolator and the sub-frame.
Torque: 130N·m



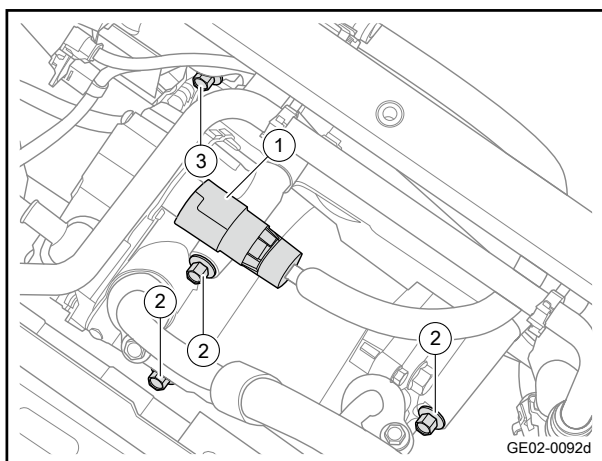
9 Install the 2 fixing bolts 2 of the battery electric water pump.

Torque: 45N·m

10 Install the water outlet pipe 1 of the motor controller.



11 Install the water inlet pipe of the motor controller.



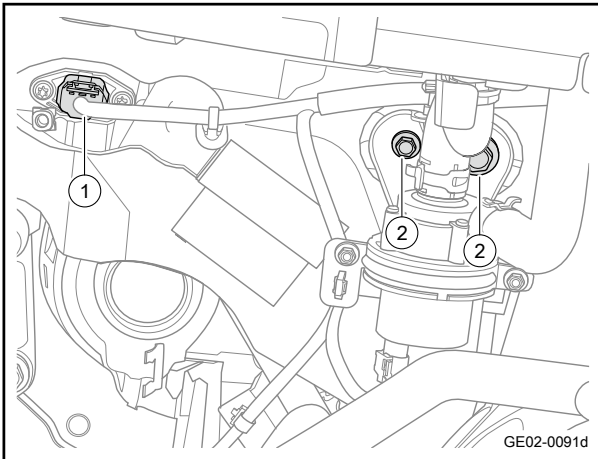
12 Install the 1 ground wire bolts 3 of the electric drive system.

Torque: 23N·m

13 Install the 3 fixing bolts 2 of the motor compressor.

Torque: 23N·m

14 Connect the motor compressor harness 1.



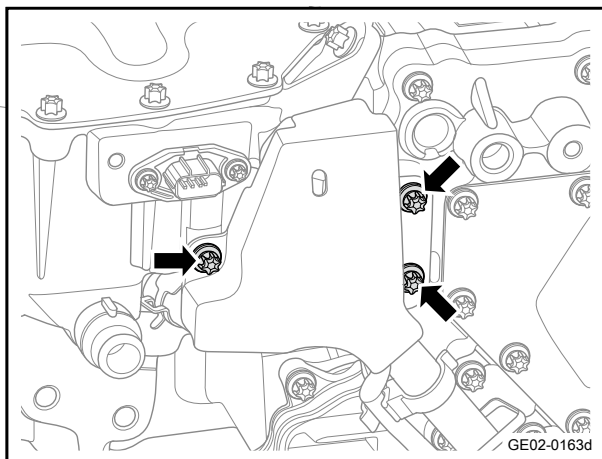
- 15 Install the 2 fixing bolts 2 of the electric water pump (20W).
Torque: 23N·m
- 16 Connect the electric drive system harness connector 1.

- 17 Install the right front constant velocity drive shaft.
- 18 Install the left front constant velocity drive shaft.
- 19 Add reducer oil.
- 20 Lower the vehicle.
- 21 Connect the DC bus assembly.
- 22 Connect the negative cable of battery.
- 23 Carry out the air tightness test of the controller cavity and the motor cavity, and the insulation and withstand voltage test of the controller.
- 24 Use the diagnostic instrument to update the controller software, and write the model configuration word, anti-theft code, and motor resolver angle.

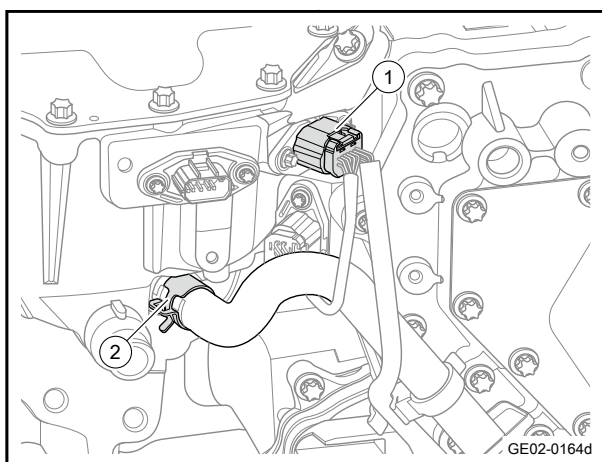
2.4.7.7 Replacement of Drive Motor Controller (NIDEC CORPORATION)

Removal procedure

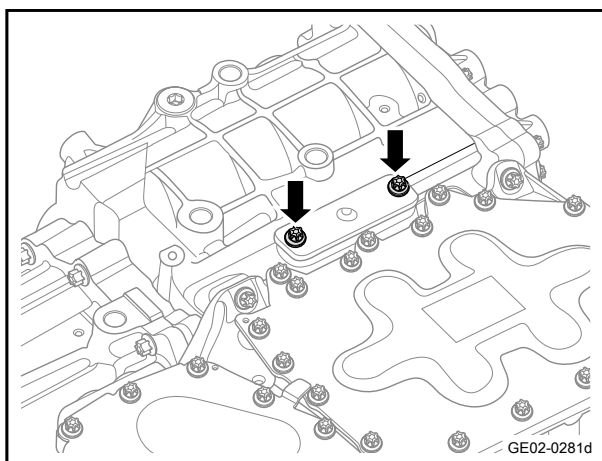
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(NIDEC CORPORATION\)](#)
- 5 Remove the electric drive system. Refer to [Replacement of Electric Drive System](#)



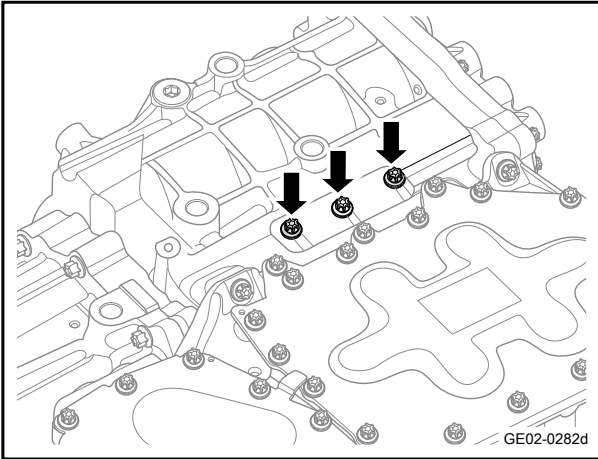
- 6 Remove the 3 fixing bolts of the power wire harness cover plate.
- 7 Take off the power wire harness cover plate.



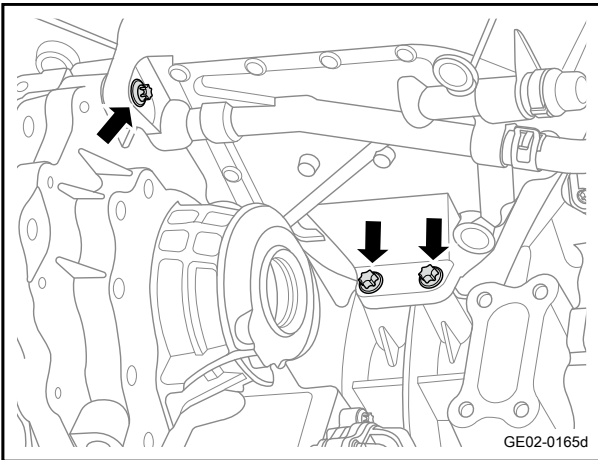
- 8 Disconnect the 1 harness connector 1 of the drive motor controller.
- 9 Remove the water pipe clamp 2 between the inverter and the oil cooler, and disconnect the inverter-to- oil cooler pipe from the drive motor controller.



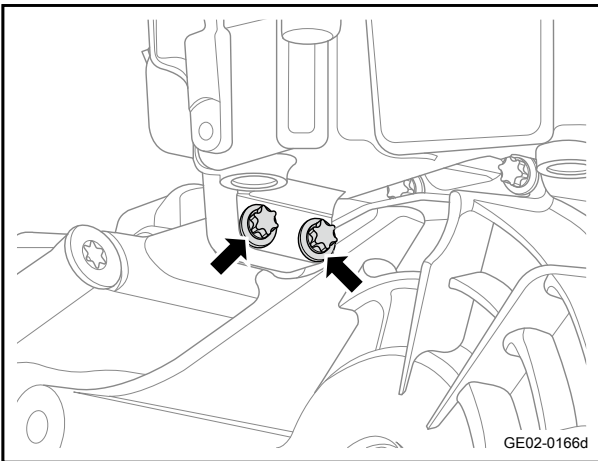
- 10 Remove the 2 fixing bolts of the ventilation cover plate and take off the ventilation cover plate.



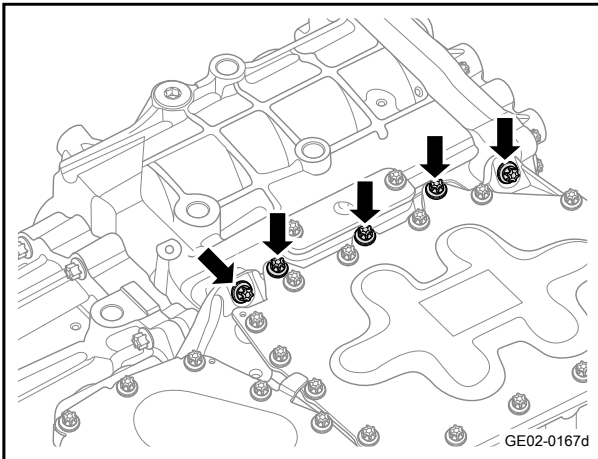
- 11 Remove the 3 fixing bolts of the three-phase copper bar in the ventilation cover plate.



- 12 Remove the 3 fixing bolts under the drive motor controller.

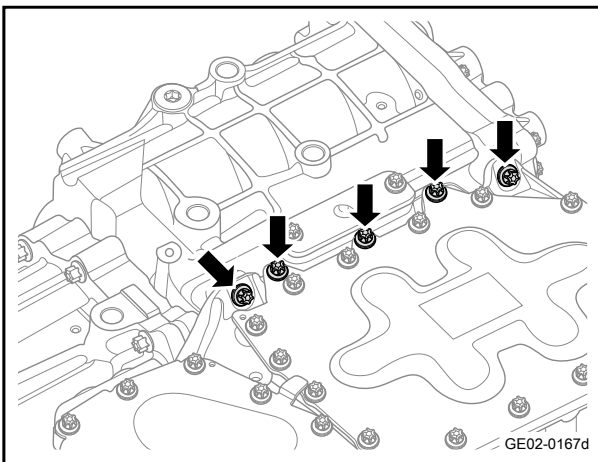


- 13 Remove the 2 fixing bolts under the drive motor controller.

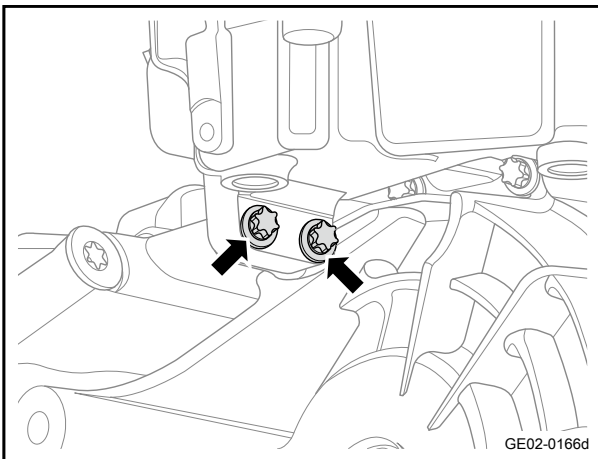


- 14 Remove the 5 fixing bolts above the drive motor controller.
- 15 Take off the drive motor controller.

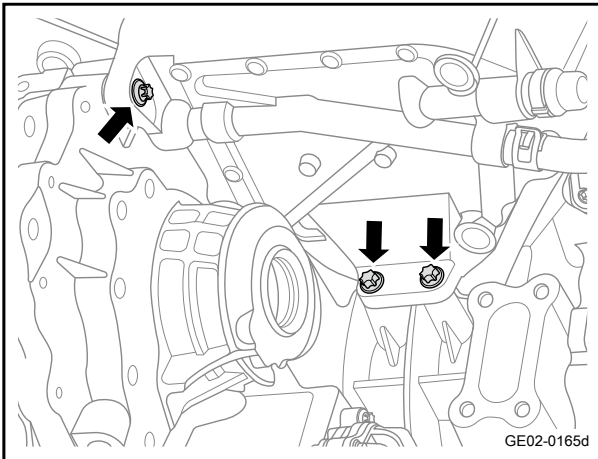
Installation procedure



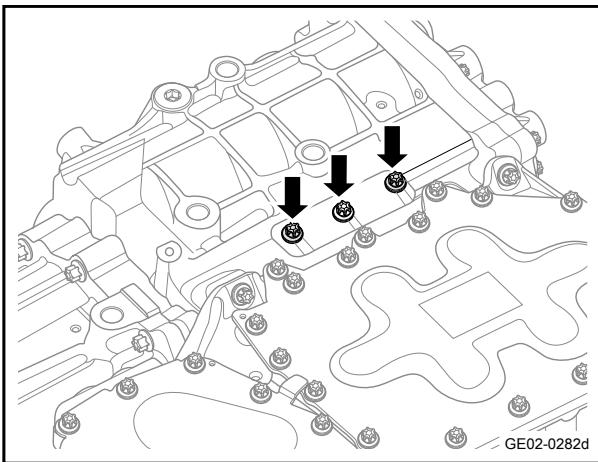
- 1 Move the drive motor controller to the installation position.
- 2 Install the 5 fixing bolts above the drive motor controller.
Torque: 18N·m



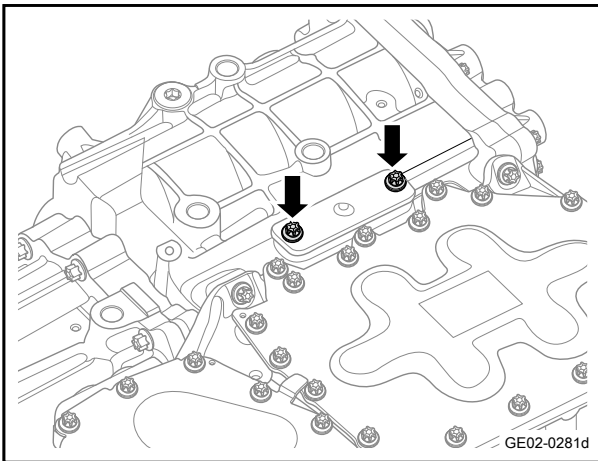
- 3 Install the 2 fixing bolts under the drive motor controller.
Torque: 18N·m



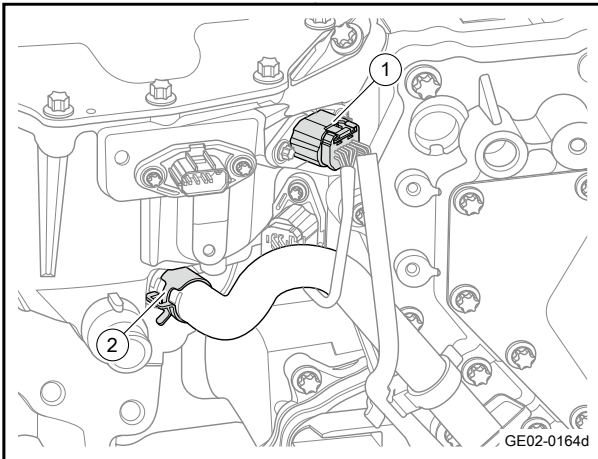
- 4 Install the 3 fixing bolts under the drive motor controller.
Torque: 18N·m



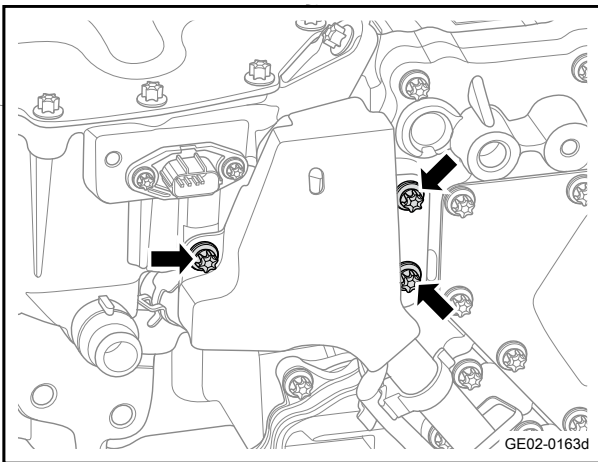
- 5 Install the 3 fixing bolts of the three-phase copper bar in the ventilation cover plate.
Torque: 8N·m



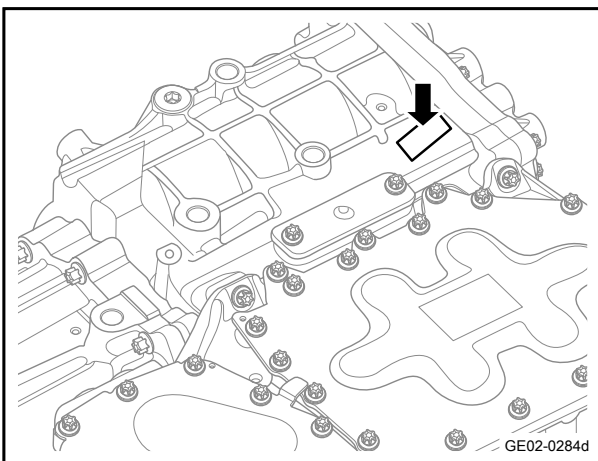
- 6 Clean the mounting surface, and evenly apply sealant on the mounting surface of the ventilation cover plate. Move the ventilation cover plate to the installation position, and install the 2 fixing bolts of the ventilation cover plate.
Torque: 8N·m



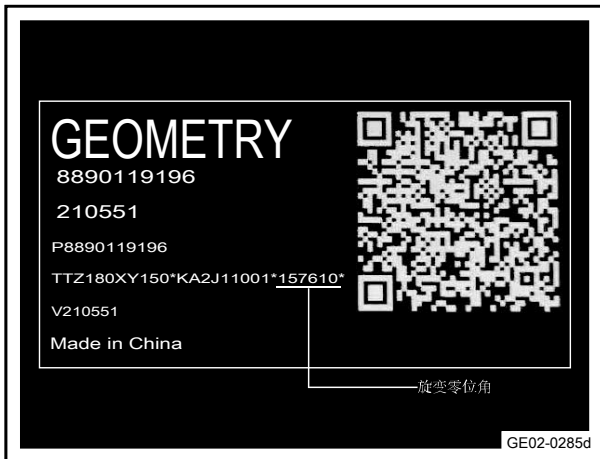
- 7 Connect the water pipe between the inverter and the oil cooler, and install the water pipe clamp 2 between the inverter and the oil cooler.
- 8 Connect the 1 harness connector 1 of the drive motor controller.



- 9 Move the power wire harness cover plate to the installation position.
- 10 Install the 3 fixing bolts of the power wire harness cover plate.
Torque: 8N·m



- 11 Carry out the air tightness test of the controller cavity and the motor cavity, and the insulation and withstand voltage test of the controller.
- 12 Install the electric drive system.
- 13 Add reducer oil.
- 14 Lower the vehicle.
- 15 Connect the DC bus assembly.
- 16 Connect the negative cable of battery.
- 17 Use the diagnostic instrument to update the controller software, and write the model configuration word, anti-theft code, and motor resolver null angle (the nameplate position is shown in the figure).



- 18 Enter the IPU with the diagnostic instrument, then select the motor angle and write 157.610.

- 19 After writing successfully, power off for more than 30s and power up again.

2.4.7.8 Replacement of Drive Motor (NIDEC CORPORATION)

Caution

The drive motor and reducer are integrated power systems and cannot be simply removed.

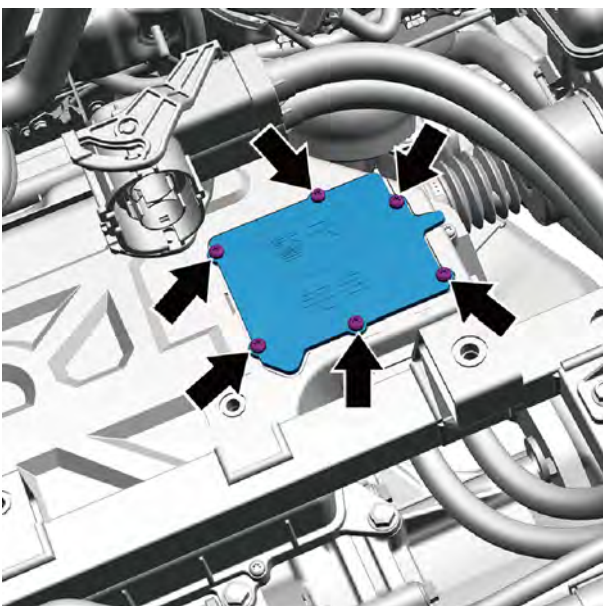
Refer to [Replacement of Electric Drive System\(NIDEC CORPORATION\)](#)

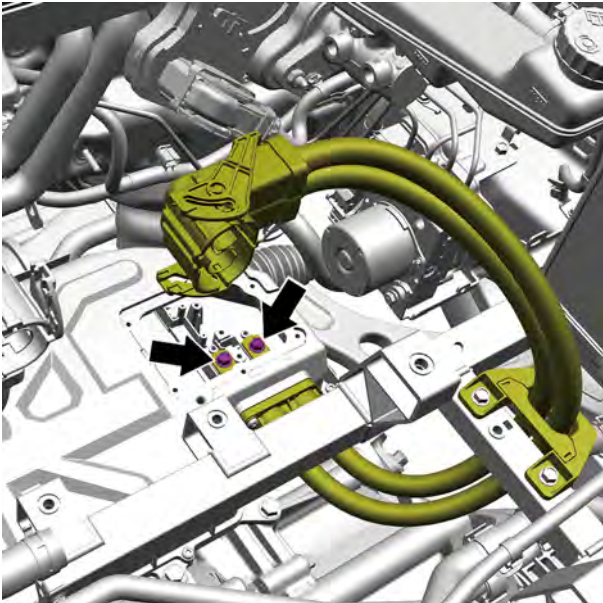
2.4.7.9 Replacement of Electric Drive System (GLB Intelligent Power Technologies)

Removal procedure

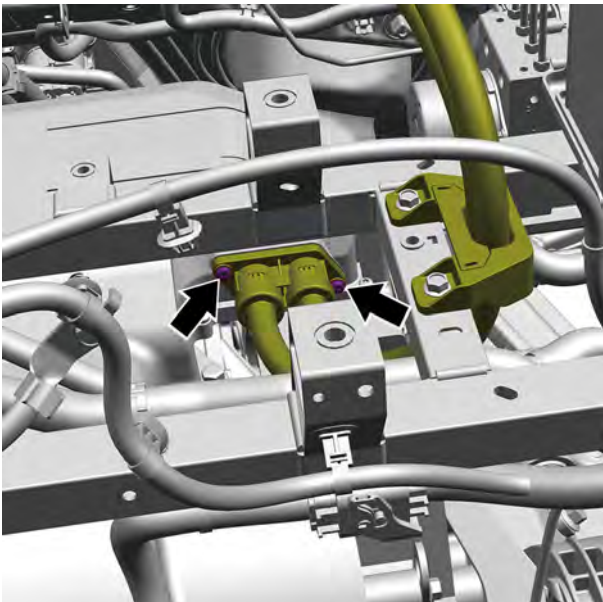
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the motor compressor assembly and replace
Refer to [Replacement of Motor Compressor assembly](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the left and right front wheels. Refer to [Wheel Replacement \(Type I\)](#)
- 5 Remove the front engine compartment bottom shield.
Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 6 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 7 Remove the A/C high-voltage harness assembly. Refer to [Replacement of Motor Compressor Harness Assembly \(Low-configuration\)](#)
- 8 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)

- 9 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)
- 10 Remove cooling and ventilation hose of the drive motor
Refer to [Replacement of Cooling Ventilation Hose of the Drive Motor](#)
- 11 Remove electric heating ventilation hose Refer to
[Replacement of Cooling Ventilation Hose of the Drive Motor](#)
- 12 Remove water outlet pipe of the charger Refer to
[Replacement of Water Outlet Pipe of the Charger\(Low-configuration\)](#)
- 13 Remove outlet hose of the heat exchanger Refer to
[Replacement of water outlet hose of heat exchanger](#)
- 14 Replacement of Motor Water Pump Refer to [Replacement of Motor Water Pump](#)
- 15 Replacement of heating water pump Refer to
[Replacement of Heating Water Pump](#)
- 16 Remove the high and low-voltage charging system assembly. Refer to [Replacement of High and Low Voltage Charging System Assembly\(Low-configuration\)](#)
- 17 Remove PTC heating controller Refer to [Replacement of PTC Heating Controller](#)
- 18 Remove the left front constant velocity drive shaft. Refer to [Replacement of Left Front Constant Velocity Drive Shaft](#)
- 19 Remove the right front constant velocity drive shaft. Refer to [Replacement of Right Front Constant Velocity Drive Shaft](#)
- 20 Remove the 6 fixing bolts connecting the controller cover plate and the drive motor controller.
- 21 Take off the controller cover plate.

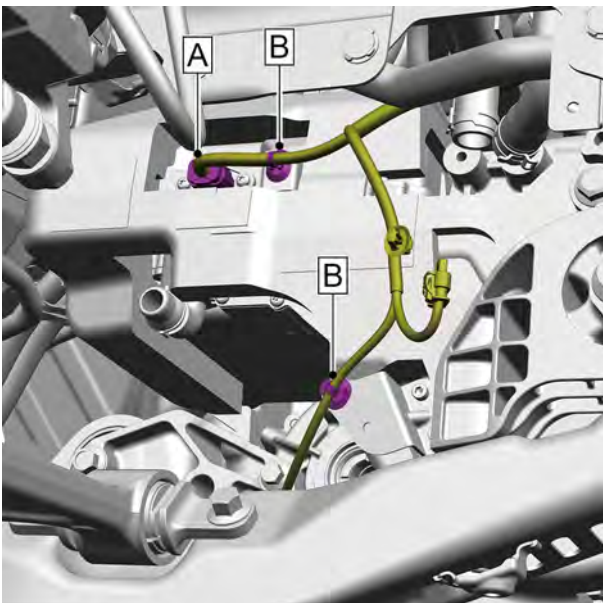




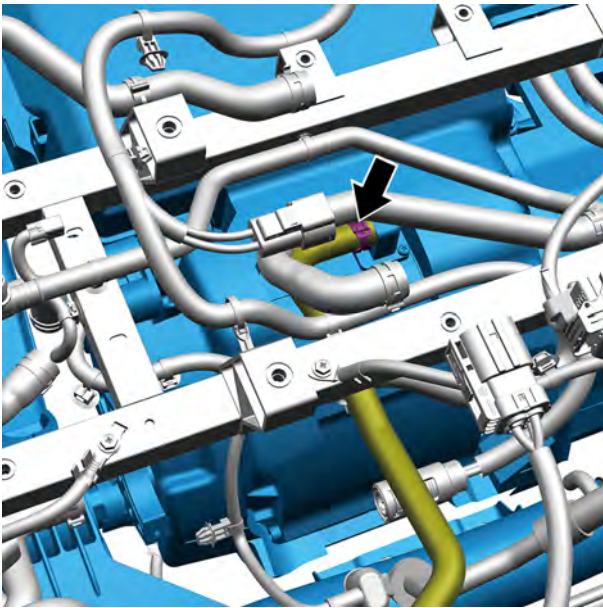
- 22 Remove the 2 fixing bolts connecting PEU harness assembly and the drive motor controller.



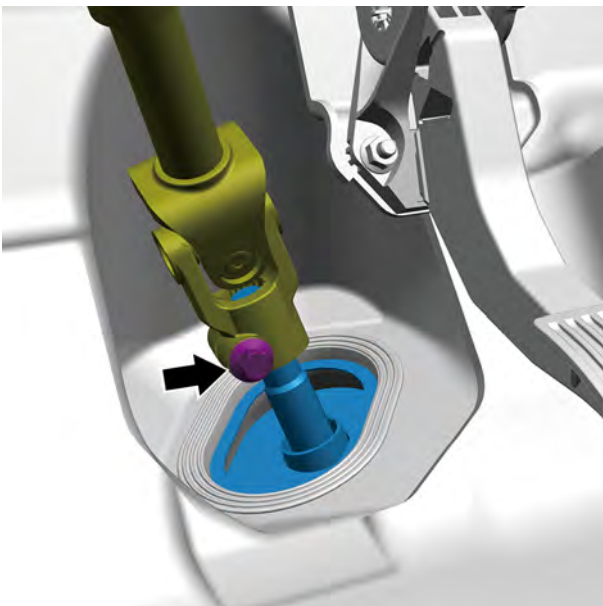
- 23 Remove the 2 fixing bolts connecting the high-voltage safety cover plate with the drive motor controller assembly, and move the PEU harness assembly to one side.



- 24 Disconnect the 1 harness connector A connecting the power harness assembly and the drive motor controller assembly.
- 25 Disengage the two fixing clips B connecting the power harness assembly with the electric drive system.



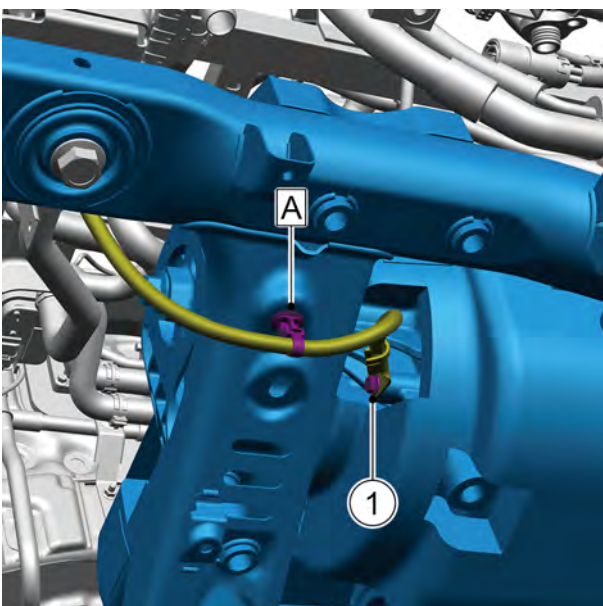
- 26 Remove the 1 fixing clamp connecting the water inlet pipe of the electric heating three-way solenoid valve and the electric drive system, and disconnect the connection between the inlet pipe of the electric heating three-way solenoid valve and the electric drive system and move it aside.



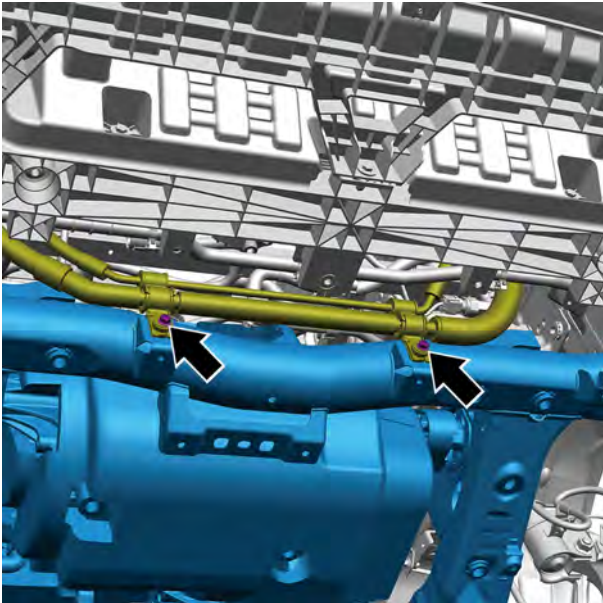
- 27 Remove the 1 fixing bolt connecting the mechanical steering box c/w track rod and dust cover assembly with the electric power steering column c/w intermediate shaft assembly, and disconnect the mechanical steering box c/w track rod and dust cover assembly from the electric power steering column c/w intermediate shaft assembly.

Caution

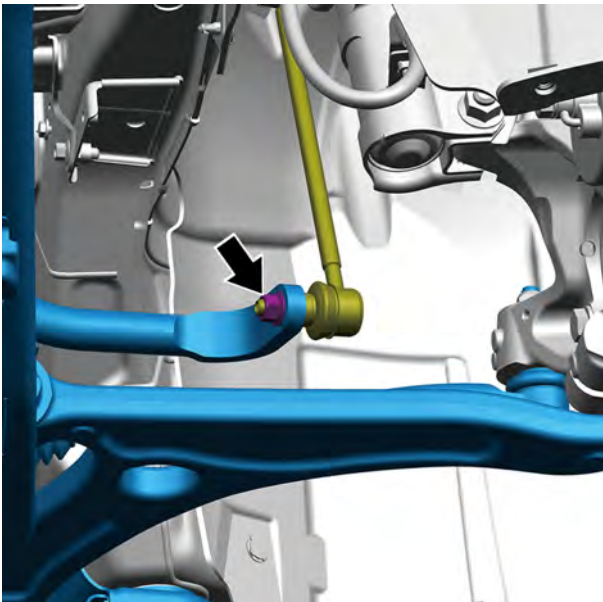
Before removal, please align the steering wheel and lock it for fixing.



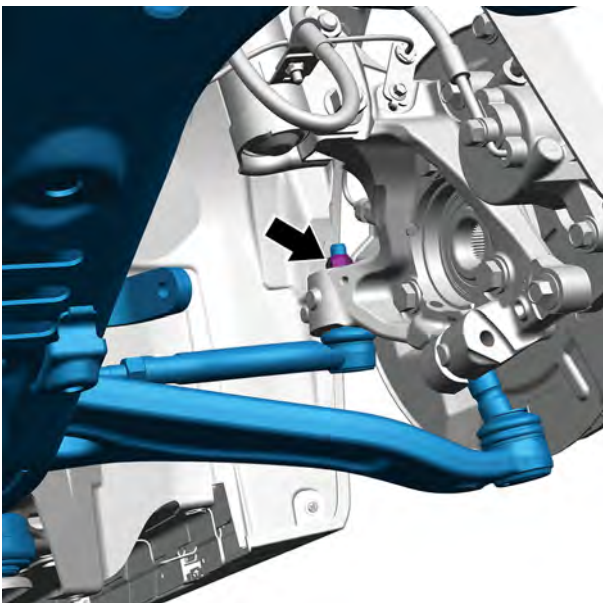
- 28 Remove the 1 fixing bolt 1 connecting the motor ground harness assembly and the electric driving system.
- 29 Disconnect the 1 fixing clip A connecting the motor ground wire harness assembly with the front subframe assembly, and move the motor ground wire harness assembly to one side.



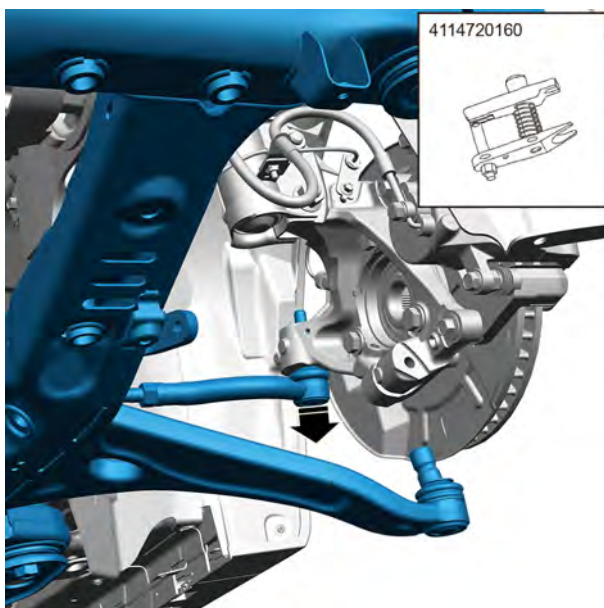
- 30 Remove the 2 fixing bolts connecting the evaporator high and low-pressure pipe and the front sub-frame assembly, and move the evaporator high and low pressure pipes to one side.



- 31 Remove the 1 fixing nut connecting the left front antiroll rod connecting bar assembly and the front antiroll rod assembly, and take off the front antiroll rod connecting bar assembly aside.

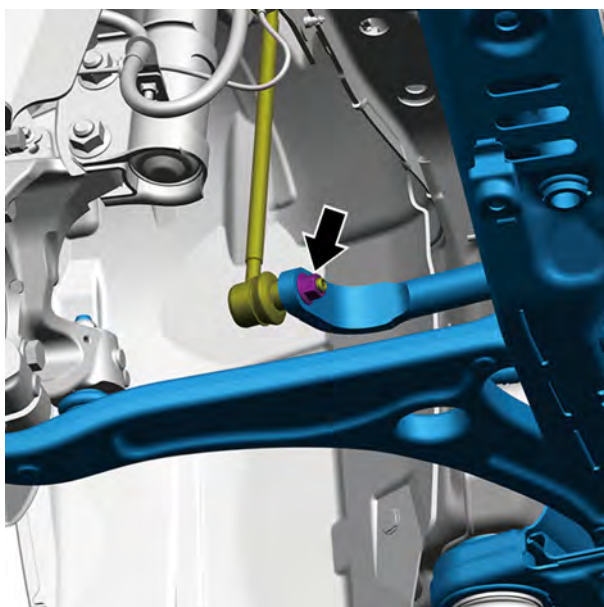


- 32 Remove the 1 fixing nut connecting the left steering tie rod ball joint with the left steering knuckle.

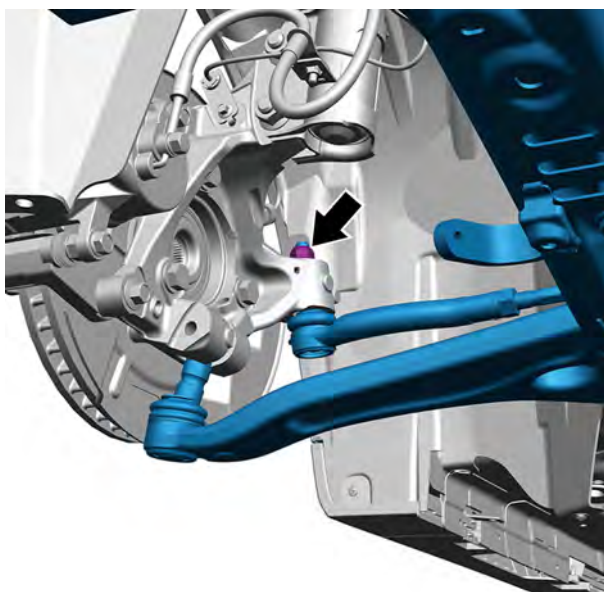


- 33 Remove the left steering tie rod ball joint with a special tool.

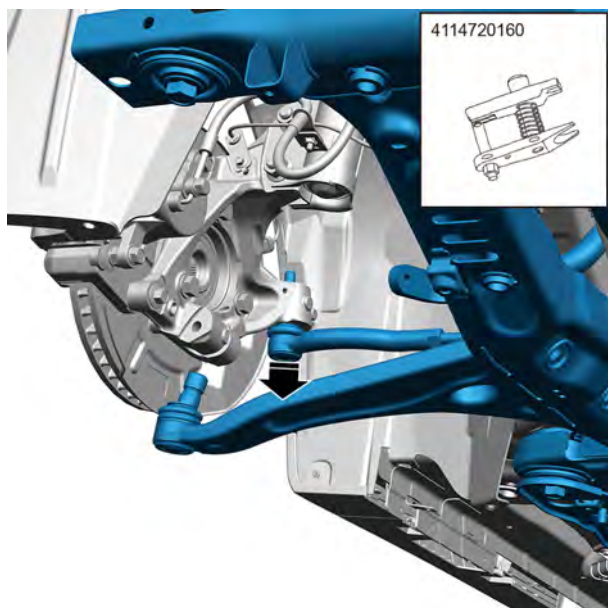
Special tool: 4114720160



- 34 Remove the 1 fixing nut connecting the right front antiroll rod connecting bar assembly and the front antiroll rod assembly, and take off the front antiroll rod connecting bar assembly aside.

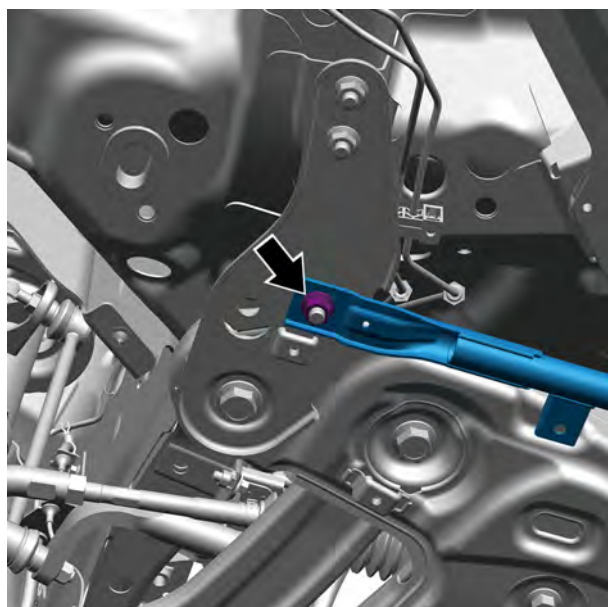


- 35 Remove the 1 fixing nut connecting the right steering tie rod ball joint with the right steering knuckle.

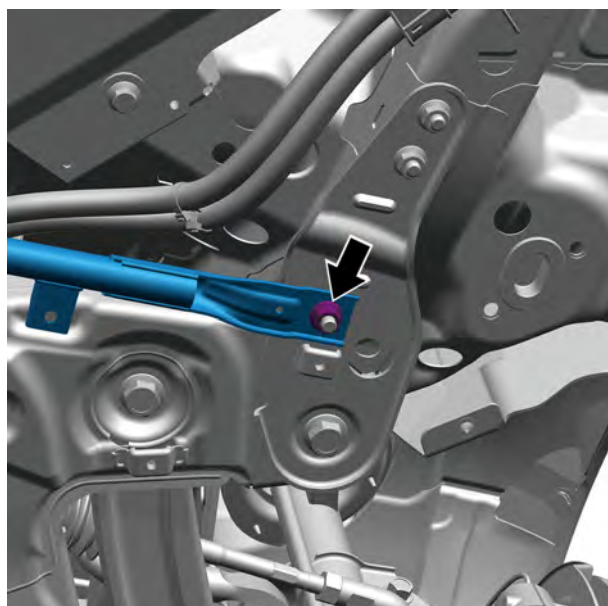


- 36 Remove the right steering tie rod ball joint with a special tool.

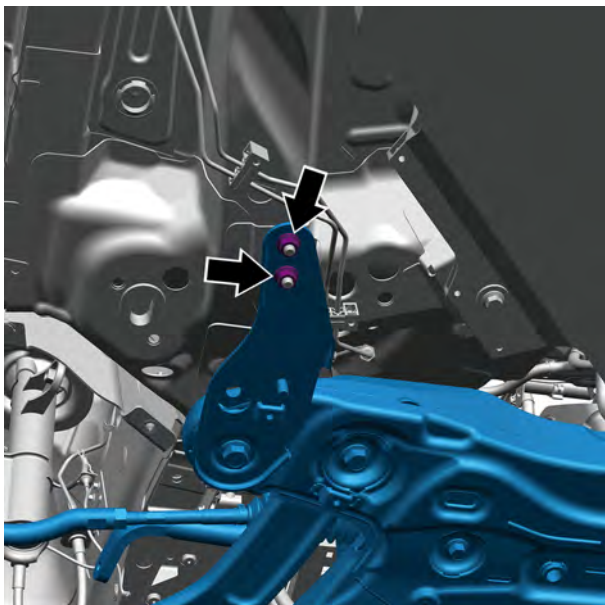
Special tool: 4114720160



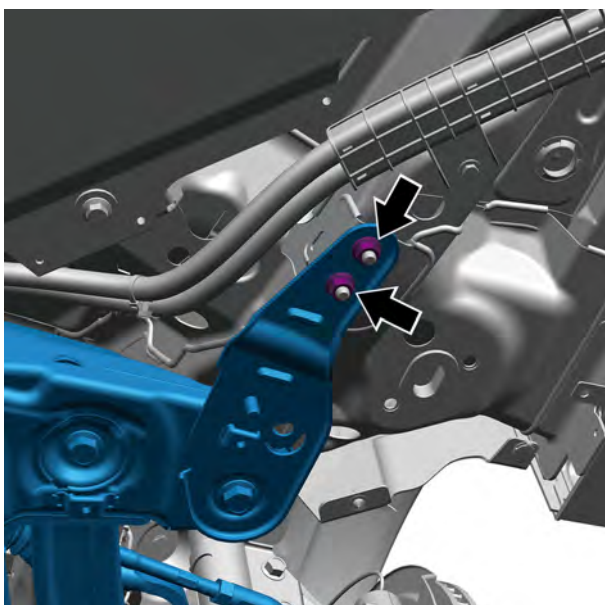
- 37 Remove the 1 fixing nut connecting the battery bottom shield mounting bracket with the left rear reinforcing plate of the front subframe.



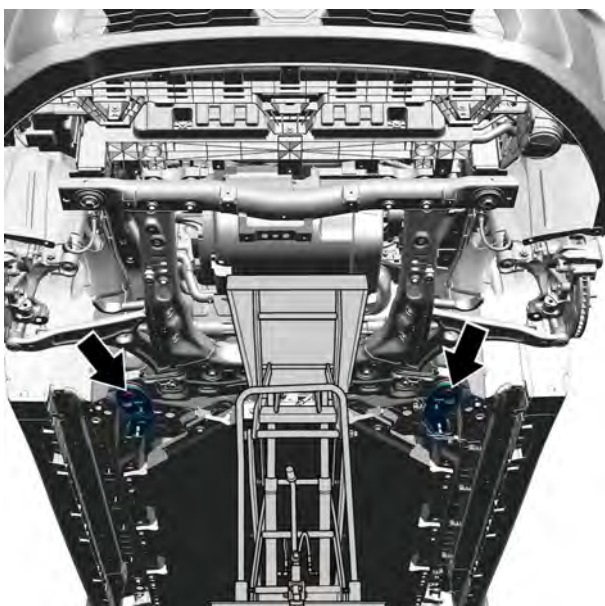
- 38 Remove the 1 fixing nut connecting the battery bottom shield mounting bracket with the right rear reinforcing plate of the front subframe.
- 39 Remove battery bottom shield mounting bracket



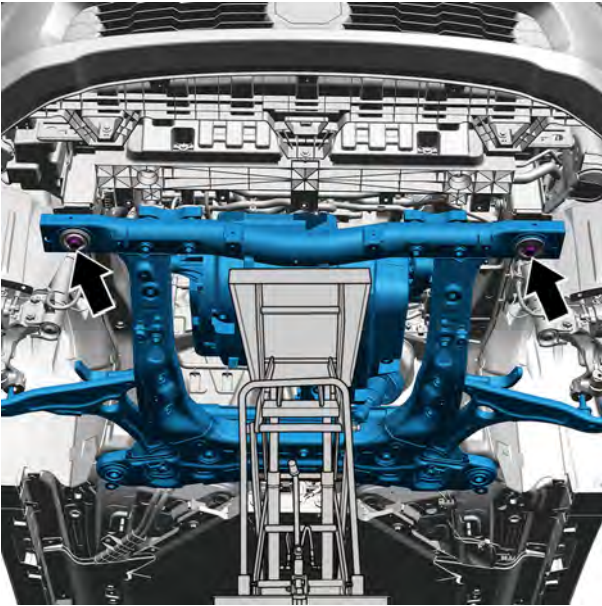
- 40 Remove the 2 fixing bolts connecting the left rear reinforcement plate of the front subframe and vehicle body.



- 41 Remove the 2 fixing bolts connecting the right rear reinforcement plate of front subframe assembly and vehicle body.



- 42 Use the lifting trolley to lift. Remove the 2 fixing bolts connecting the rear end of front subframe assembly and vehicle body.
- 43 Remove the left and right rear reinforcing plates of the front subframe.

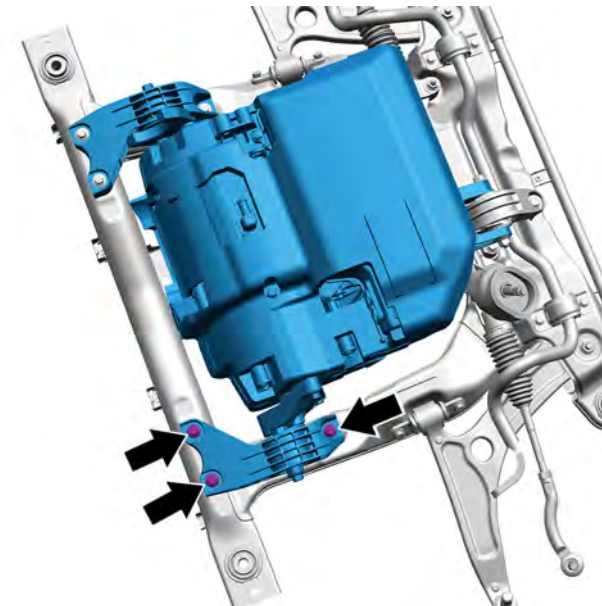


- 44 Remove the 2 fixing bolts connecting the front end of front subframe assembly and vehicle body.

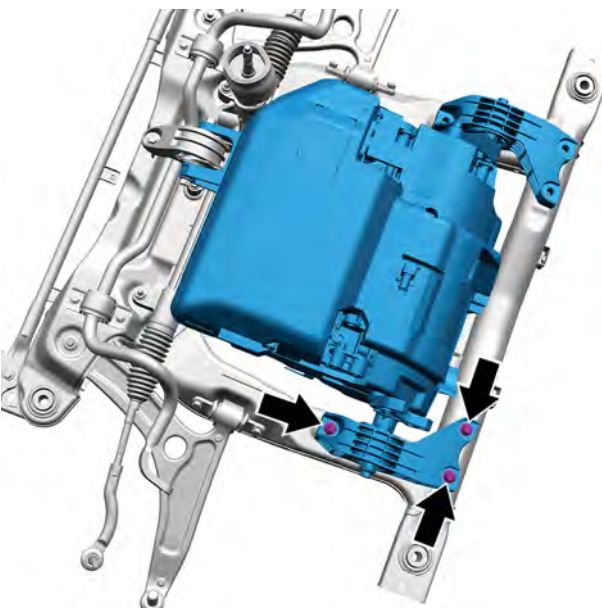
Caution

Multi-person assistance is required to remove the front subframe assembly.

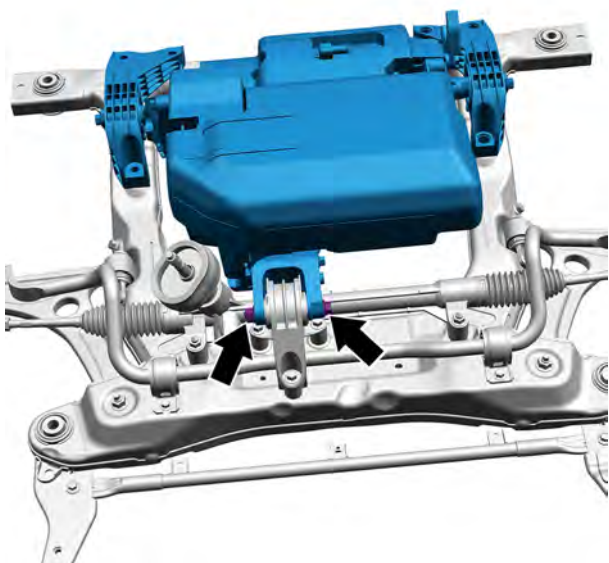
- 45 Take off the front subframe assembly.



- 46 Remove the 3 fixing bolts connecting left suspension vibration isolating pad assembly and the front subframe assembly.



- 47 Remove the 3 fixing bolts connecting right suspension vibration isolating pad assembly and the front subframe assembly.

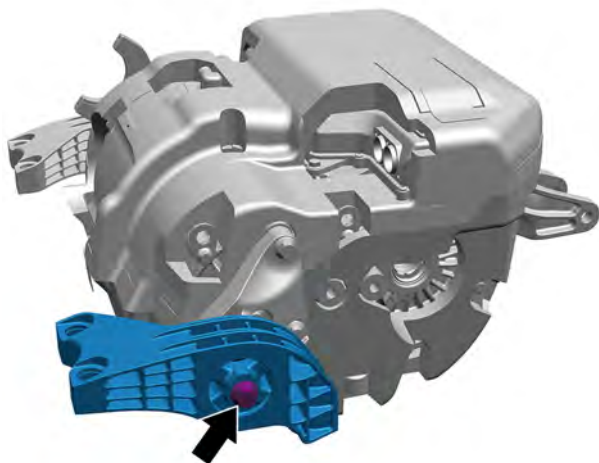


48 Remove one fixing bolt and nut assembly connecting the rear suspension bracket and vibration isolator rear assembly.

49 Remove the electric drive system.

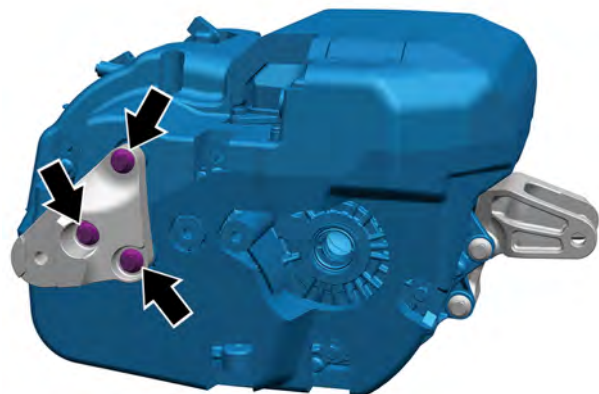
Caution

Use a hanger to support the electric drive system.



50 Remove the 1 fixing bolt between left side of the left vibration isolator assembly and the left suspension bracket.

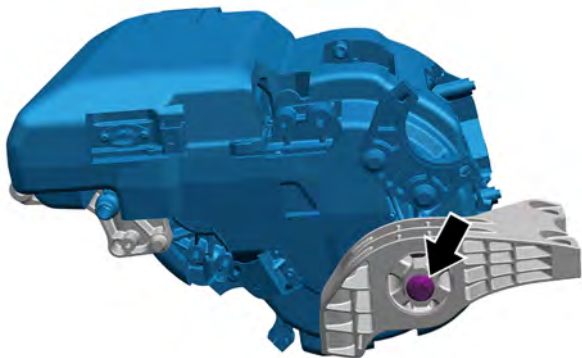
51 Take off the left vibration insulator assembly.



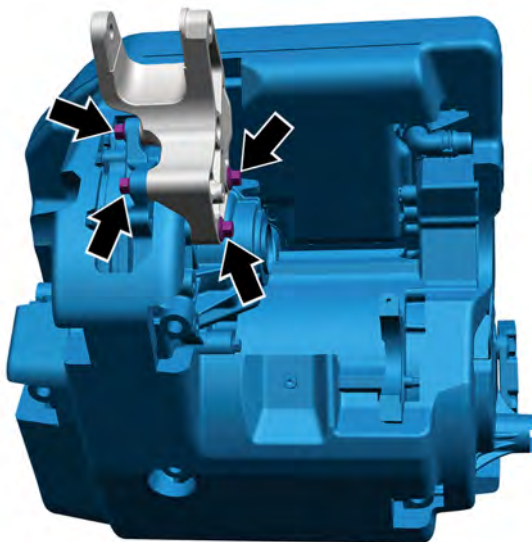
52 Remove the 3 fixing bolts connecting left suspension bracket and the electric driving system assembly

53 Remove the left suspension bracket.

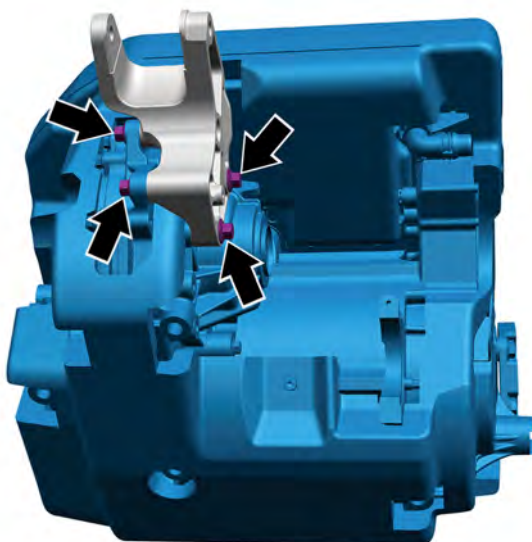
- 54 Remove 1 bolts connecting the right vibration isolation pad assembly to the electric driving system.
- 55 Take down right vibration isolator assembly.



- 56 Remove the 4 fixing bolts between rear suspension bracket and the electric driving system assembly
- 57 Take off the rear suspension bracket.



Installation procedure

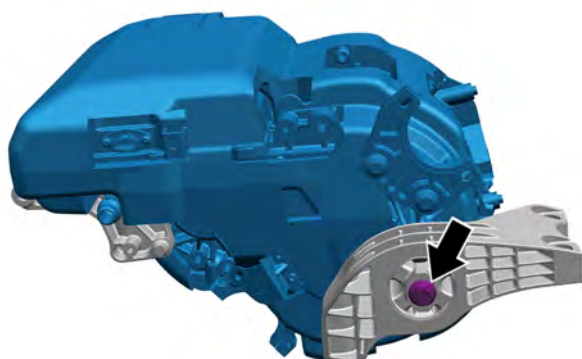


- 1 Move the rear suspension bracket to the installation position.
- 2 Install the 4 fixing bolts between rear suspension bracket and the integrated \ assembly.

Torque:

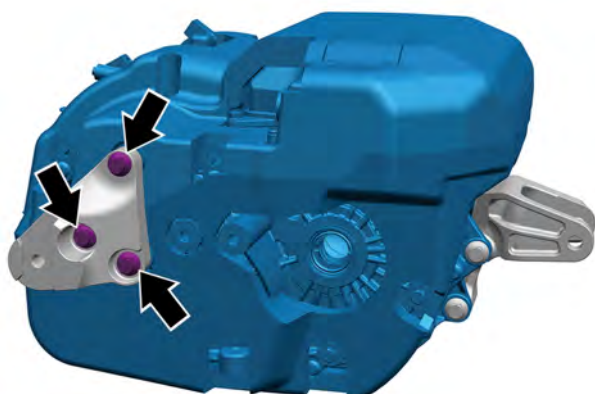
First time 70N·m

Second time 60°



- 3 Move the right vibration insulator assembly to the mounting position.
- 4 Install and tighten the 1 fixing bolt connecting the right vibration insulator assembly and the electric driving system.

Torque: 210N·m

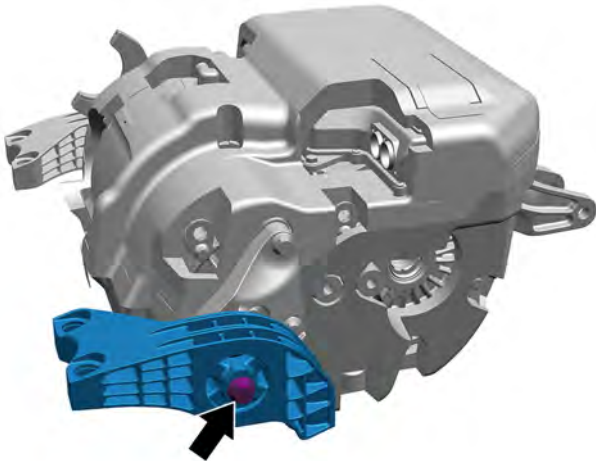


- 5 Move the left suspension bracket to the installation position.
- 6 Install the 3 fixing bolts between left suspension bracket and the integrated electric driving system assembly

Torque:

First time 70N·m

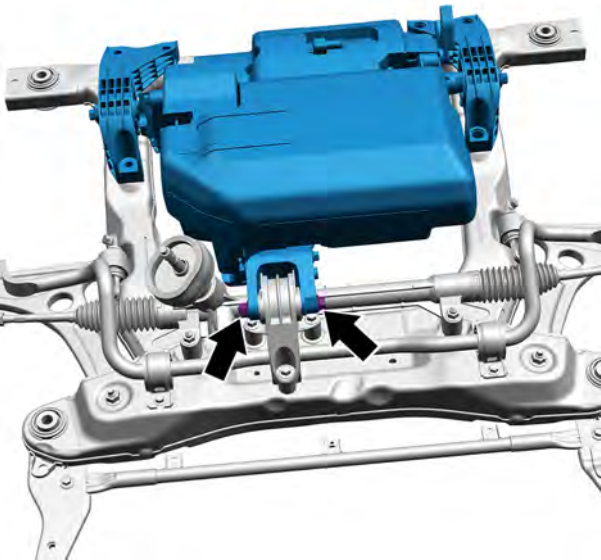
Second time 60°



7 Move the left vibration insulator assembly to the mounting position.

8 Install and tighten the 1 fixing bolt connecting the left vibration insulator assembly and the left suspension bracket.

Torque: 210N·m



9 After supporting the electric drive system with a hanger, connect the electric drive system with the front subframe assembly.

Caution

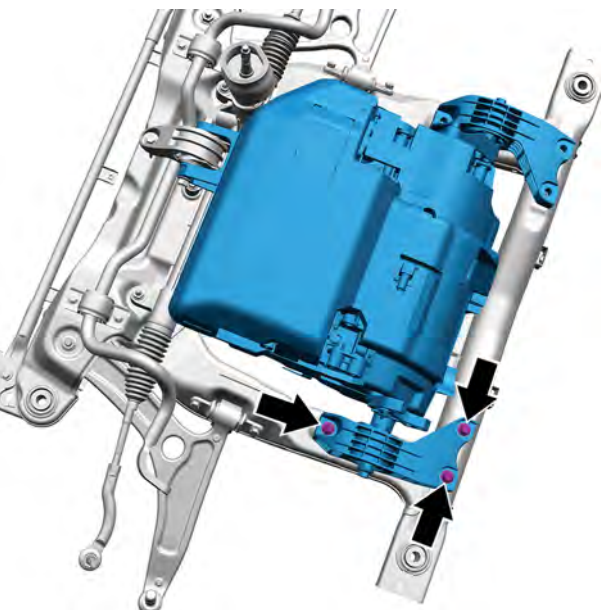
The electric drive system needs the assistance of multiple people when it is connected with the front subframe assembly.

10 Install and tighten the 1 fixing bolts connecting the rear vibration insulator assembly and the rear suspension bracket.

Torque:

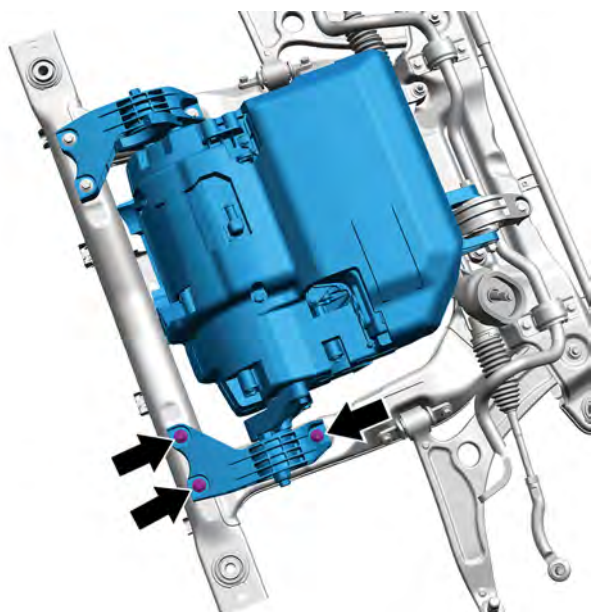
First time 90N·m

Second time 90°

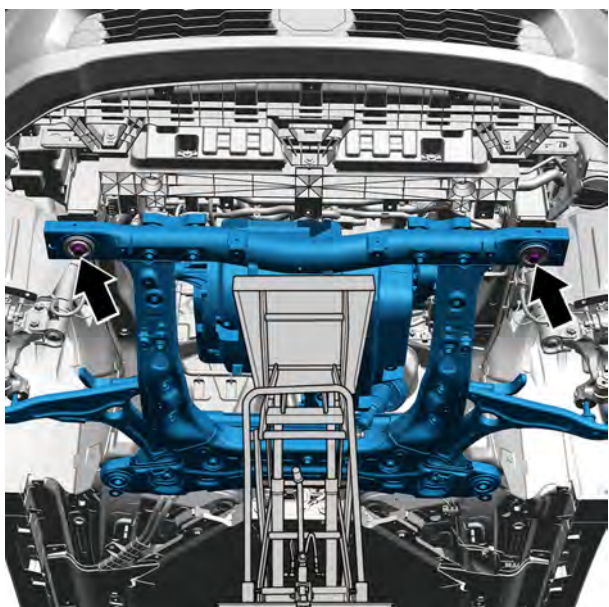


11 Install and tighten the 3 fixing bolts between right suspension vibration isolating pad assembly and the front subframe assembly.

Torque: 130N·m



- 12 Install the 3 fixing bolts between left suspension vibration isolating pad assembly and the front subframe assembly.
Torque: 130N·m



- 13 Use the lifting trolley to lift. Install the 4 fixing bolts connecting the front end of front subframe assembly and vehicle body.

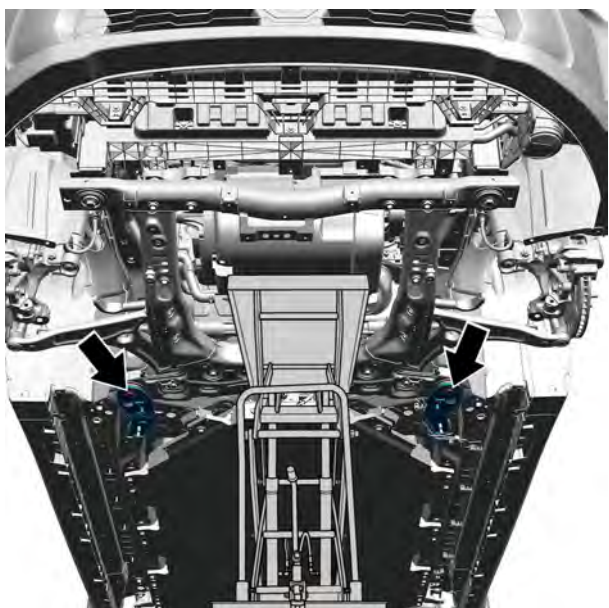
Torque:

First time 120N·m

Second time 90°

Caution

Install the front subframe assembly with the assistance of multiple people .



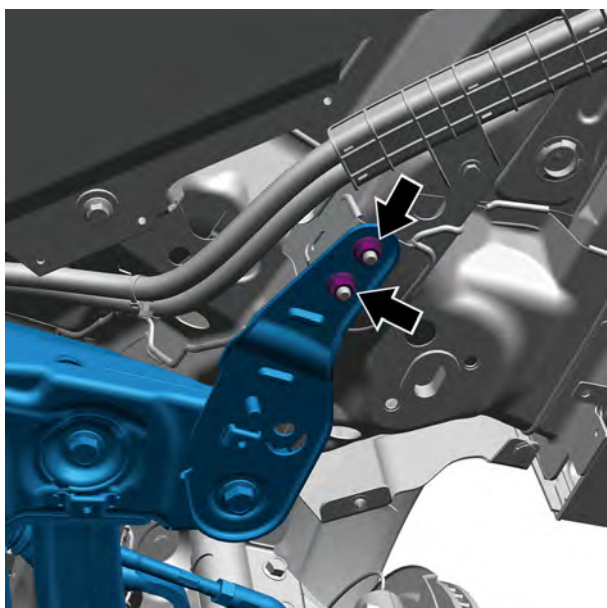
- 14 Move the left and right rear reinforcement plate of the front subframe to the installation position.

- 15 Install the 2 fixing bolts connecting the rear of front subframe assembly and vehicle body.

Torque:

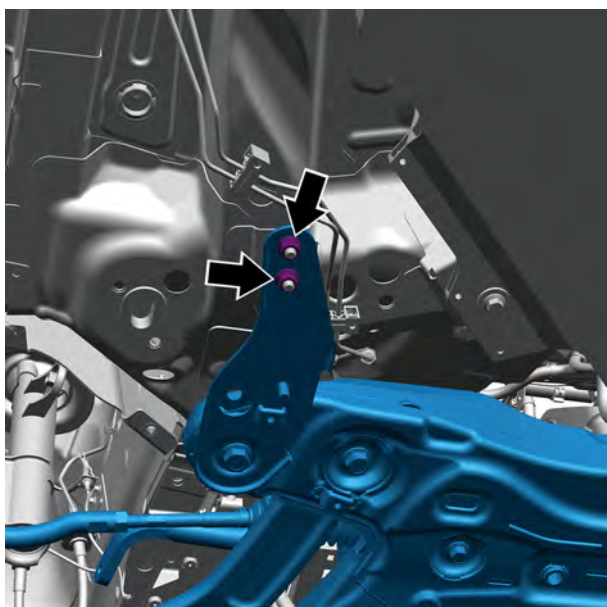
First time 120N·m

Second time 90°



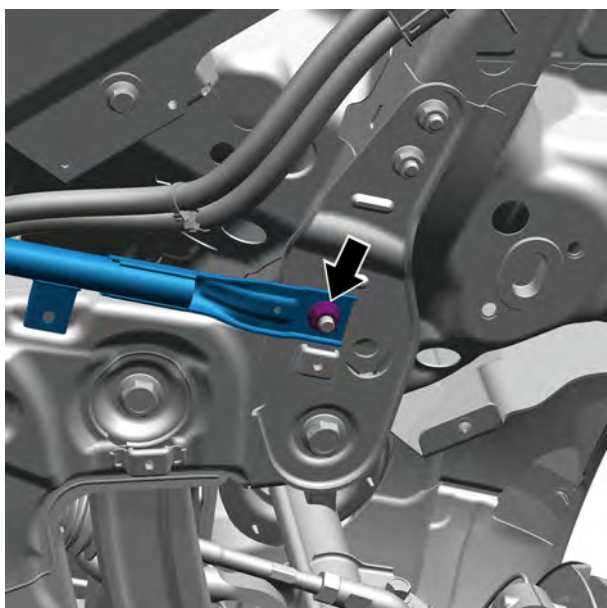
- 16 Install and tighten the 2 fixing nuts connecting the right rear reinforcement plate of the front subframe assembly and vehicle body.

Torque: 75N·m



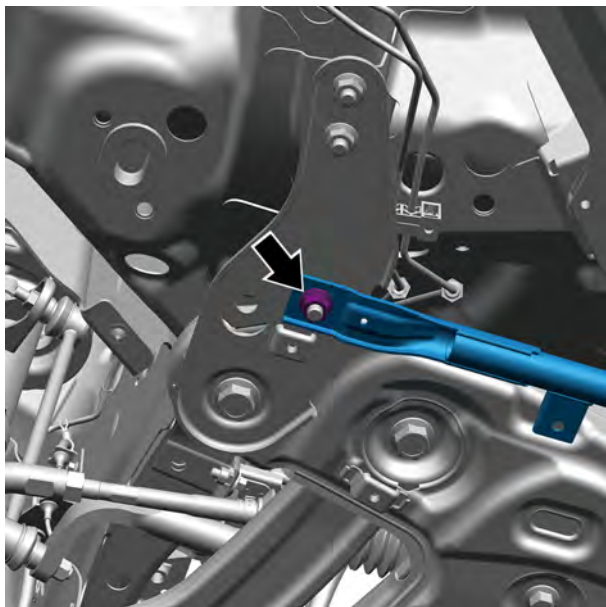
- 17 Install and tighten the 2 fixing nuts connecting the left rear reinforcement plate of the front subframe assembly and vehicle body.

Torque: 75N·m

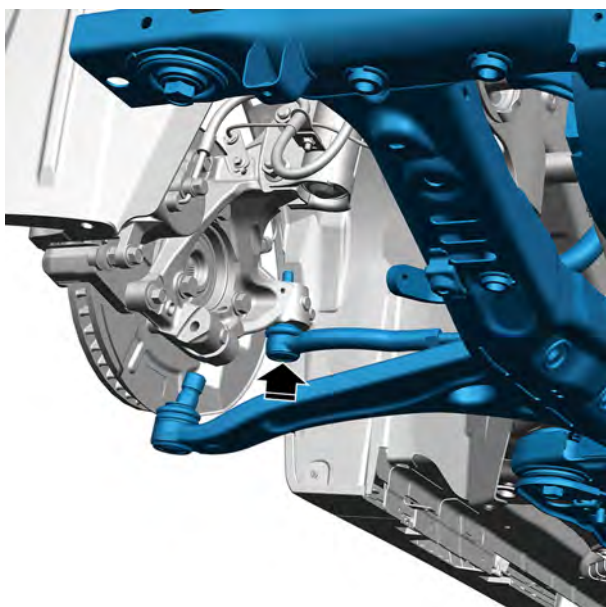


- 18 Move the battery bottom shield mounting bracket to the installation position.
- 19 Install and tighten the 1 fixing nut connecting the replacement of the battery bottom shield mounting bracket with the right rear reinforcing plate of the front subframe.

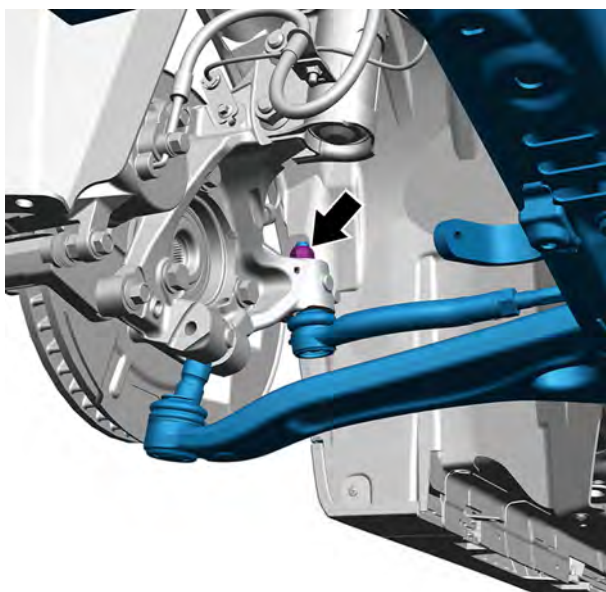
Torque: 75N·m



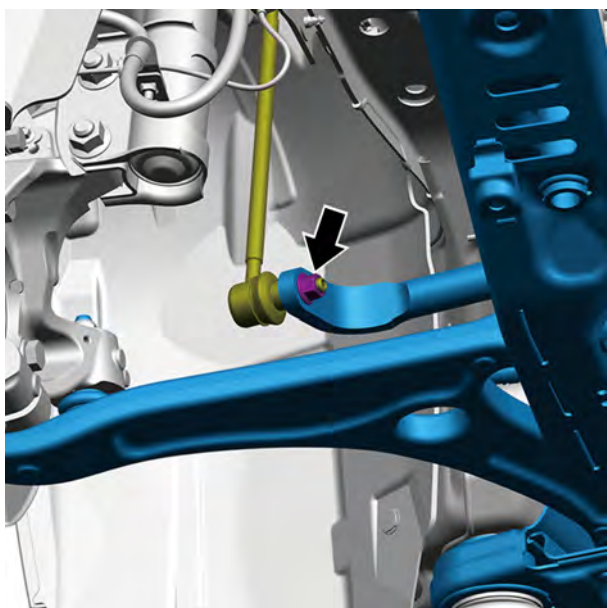
- 20 Install and tighten the 1 fixing nut connecting the replacement of the battery bottom shield mounting bracket with the left rear reinforcing plate of the front subframe.
Torque: 75N·m



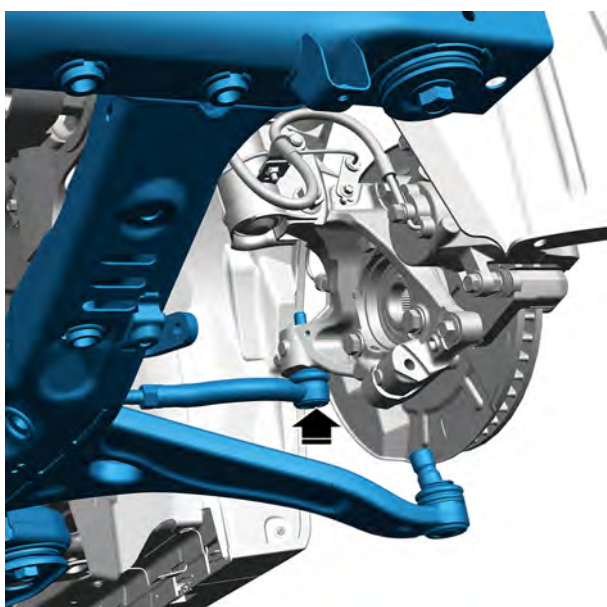
- 21 Install the ball joint of the right steering tie rod into the bolt hole at the rear end of the right steering knuckle.



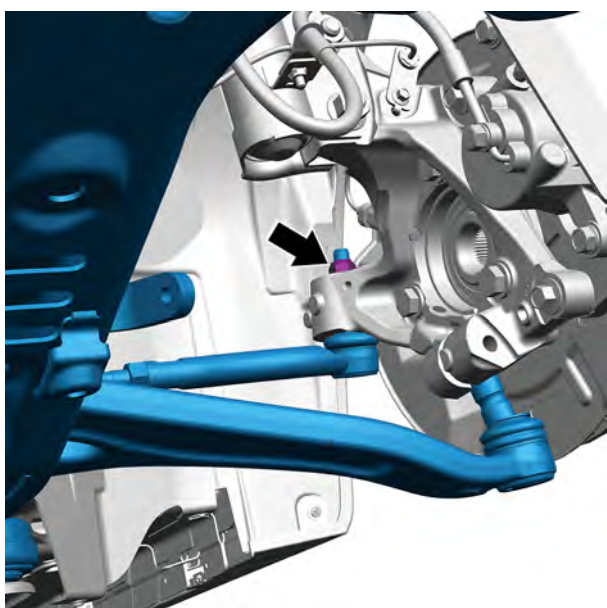
- 22 Install and tighten one fixing nut connecting the right steering tie rod ball joint and the right steering knuckle.
Torque: 55N·m



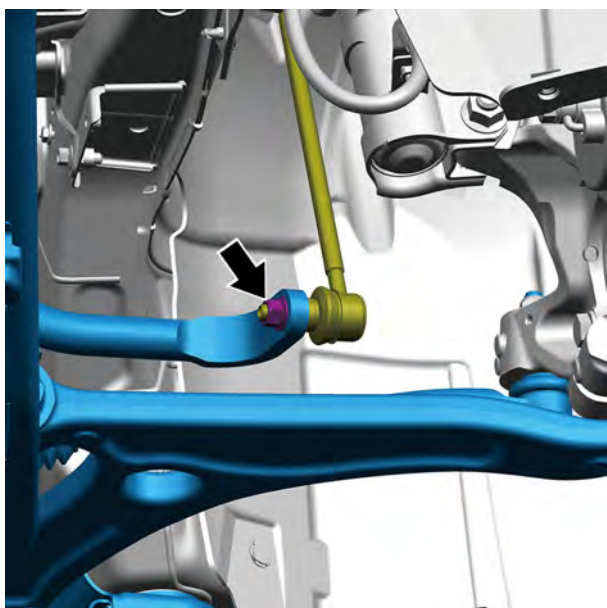
- 23 Install and tighten the 1 nut connecting the right front stabilizer bar linkage rod assembly and the front stabilizer bar assembly .
Torque: 75N·m



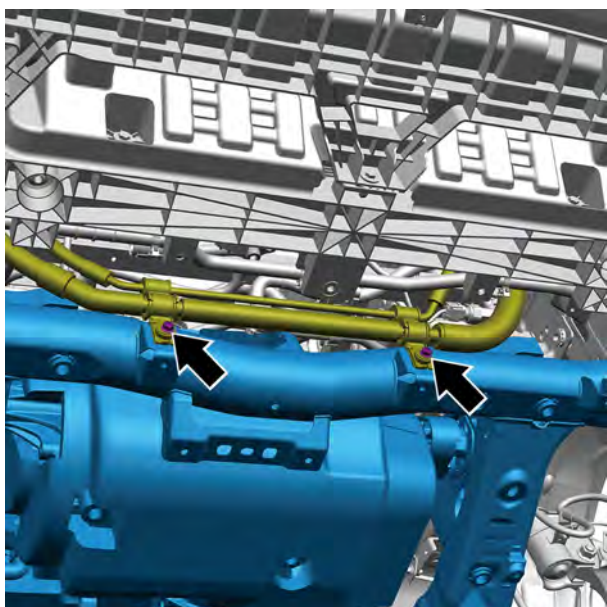
- 24 Install the ball joint of the left steering tie rod ball joint into the bolt hole at the rear end of the left steering knuckle.



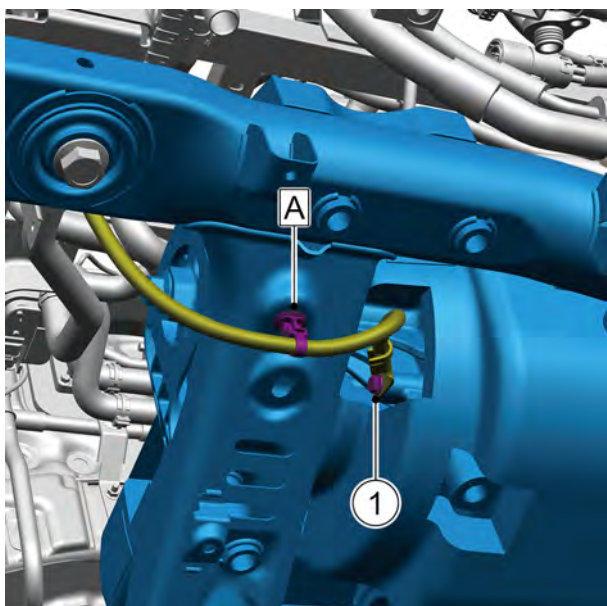
- 25 Install and tighten the 1 fixing nut connecting the left steering tie rod ball joint and the left steering knuckle.
Torque: 55N·m



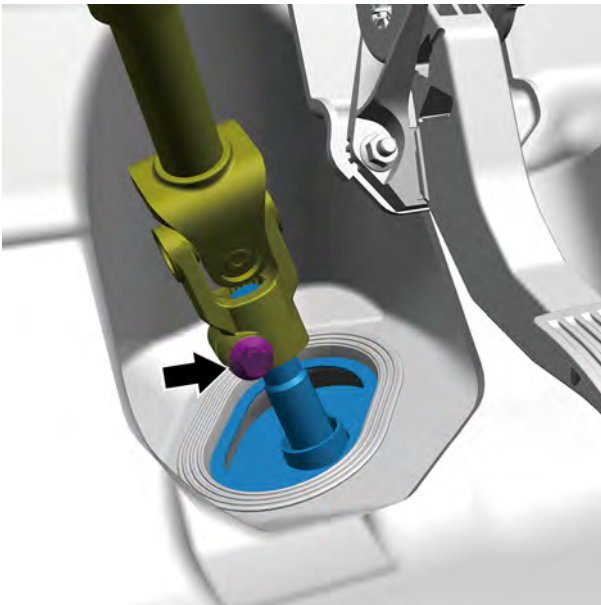
- 26 Install and tighten the 1 fixing nut connecting the front stabilizer bar linkage assembly and the front stabilizer bar assembly.
Torque: 75N·m



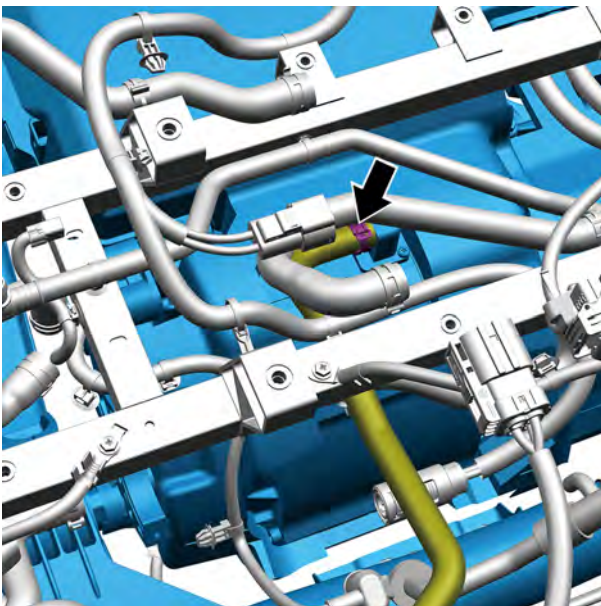
- 27 Install and tighten the 2 fixing bolts connecting the evaporator high and low-pressure pipe and the front subframe assembly.
Torque: 10N·m



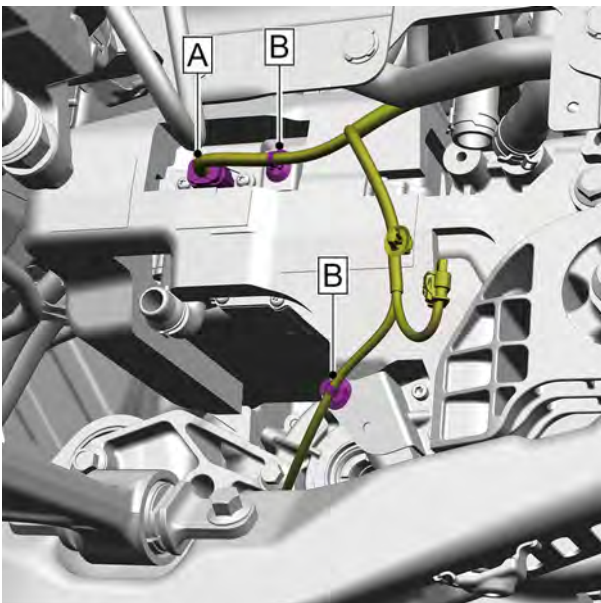
- 28 Install the 1 fixing clip A connecting the motor ground harness assembly and the front subframe assembly.
- 29 Install the 1 fixing bolt 1 connecting the motor ground harness assembly and the electric driving system assembly.
Torque: 24N·m



- 30 Connect the mechanical steering gear c/w tie rod and dust cover assembly with the electric power steering column c/w intermediate shaft assembly, install and tighten the 1 fixing bolt connecting the mechanical steering gear c/w tie rod and dust cover assembly with the electric power steering column c/w intermediate shaft assembly.
Torque: 39N·m



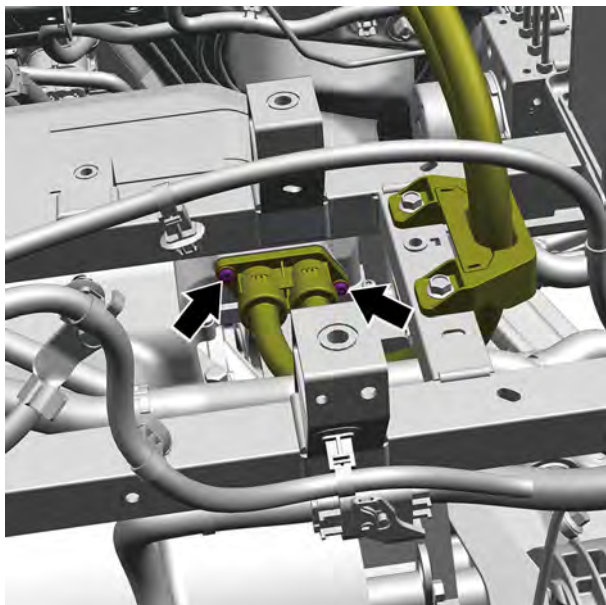
- 31 Connect the water inlet pipe of the electric heating three-way solenoid valve with the electric drive system, and install the 1 fixing clamp connecting the water inlet pipe of the electric heating three-way solenoid valve and the electric drive system.



- 32 Install the 2 fixing clips B connecting power wire harness assembly and the integrated electric driving system assembly.
- 33 Connect the 1 harness connector A connecting the power harness assembly and the driving motor controller assembly.

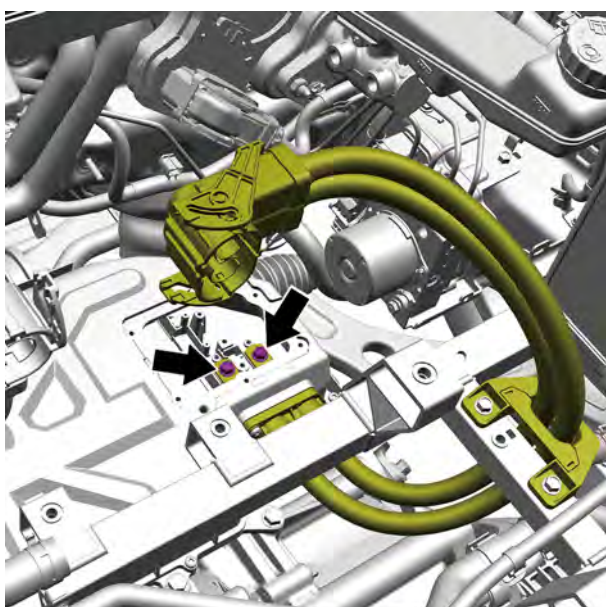
Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



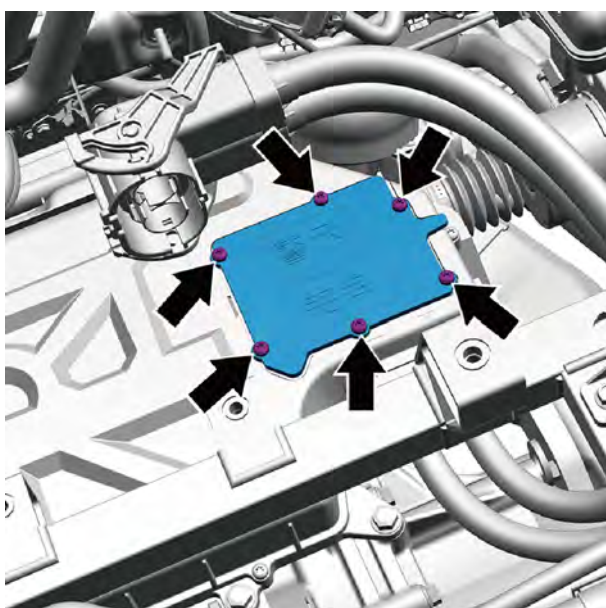
- 34 Move the PEU harness assembly to the installation position, install and tighten the 2 fixing bolts connecting the PEU harness assembly with the drive motor controller assembly.

Torque: 10N·m



- 35 Install and tighten the 2 fixing screws connecting the high-voltage safety cover plate with the drive motor controller assembly.

Torque: 19N·m



- 36 Move the controller cover plate to the installation position.

- 37 Install and tighten the 6 fixing bolts connecting the controller cover plate and the drive motor controller assembly.

Torque: 45N·m

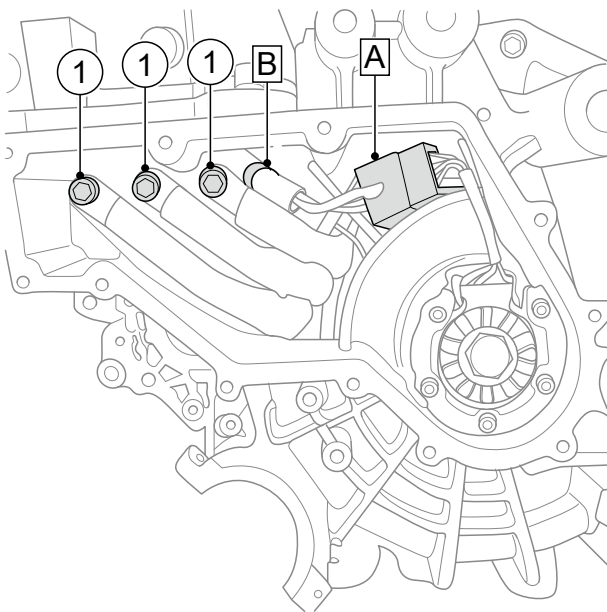
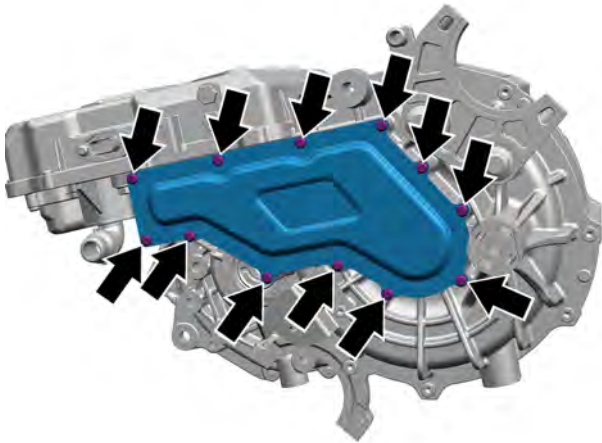
- 38 Install the right front constant velocity drive shaft.
- 39 Install the left front constant velocity drive shaft.
- 40 Install PTC heat controller
- 41 Install the high and low-voltage charging system assembly.
- 42 Install the battery electronic water pump.
- 43 Install the motor water heating pump.
- 44 Install Outlet hose of the heat exchanger
- 45 Install Water outlet pipe of the charger
- 46 Install Electric heating ventilation hose
- 47 Install Cooling and ventilation hose of the drive motor
- 48 Install the A/C high-voltage harness assembly.
- 49 Connect the DC bus assembly.
- 50 Add reducer oil.
- 51 Install the front bottom shield.
- 52 Install the front engine compartment bottom shield.
- 53 Install the left and right front wheels.
- 54 Lower the vehicle.
- 55 Install the motor compressor assembly
- 56 Connect the negative cable of battery.
- 57 Fill the power battery coolant.

2.4.7.10 Replacement of Drive Motor Controller(GLB Intelligent Power Technologies)

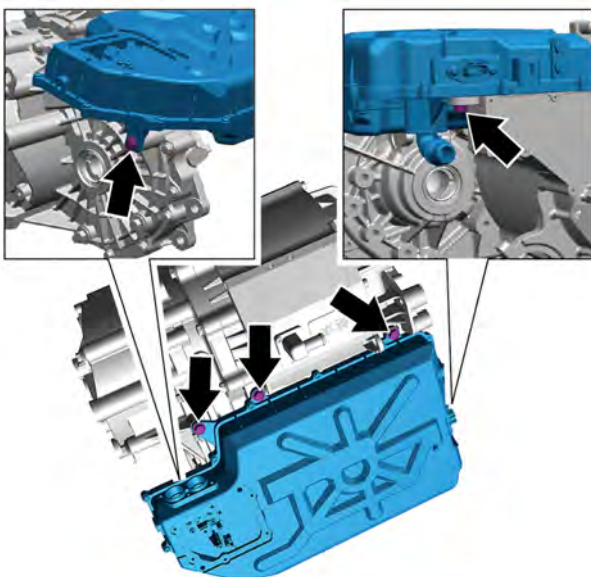
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 5 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 6 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)
- 7 Remove the electric drive system. Refer to [Replacement of Electric Drive System](#)

- 8 Remove the 12 fixing bolts connecting the small motor cover plate and the drive motor.
- 9 Take off the small motor cover plate.



- 10 Disconnect the 1 harness connector A connecting resolver harness and the drive motor controller.
- 11 Disconnect the 1 fixing clip B connecting the motor three-phase line and the drive motor assembly.
- 12 Remove the 3 fixing bolts 1 connecting the motor three-phase wire and the drive motor controller, and move the motor three-phase wire to one side.

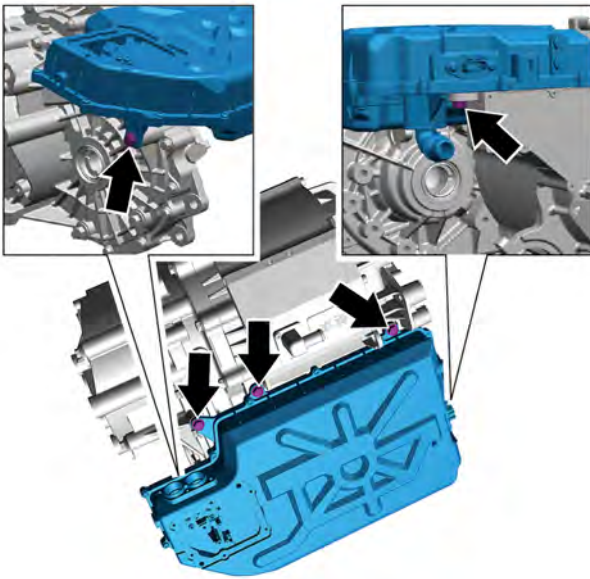


- 13 Remove the 5 fixing bolts above the drive motor controller.
- 14 Take off the drive motor controller.

Caution

Unplug the low-voltage connector first, and then pull out the controller vertically up. Do not damage the resolver harness.

Installation procedure



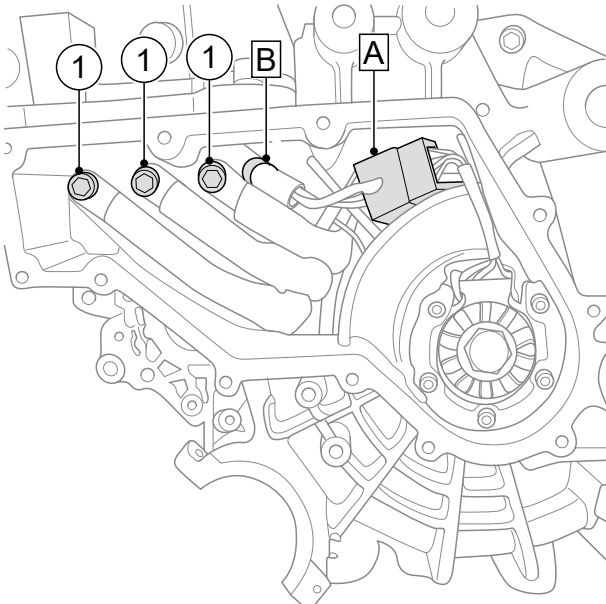
- 1 Move the drive motor controller to the installation position.

Caution

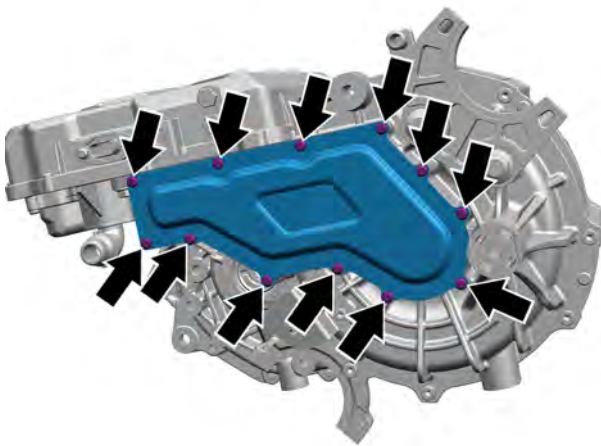
Before installation, check 2 water nozzle sealing rings, 1 motor sealing ring and 2 hollow pins. If the installation is not good, apply some grease.

- 2 Install and tighten the 5 fixing bolts between drive motor controller and the integrated electric driving system assembly.

Torque: 25N·



- 3 Move the motor three-phase wire to the installation position, install and tighten the 3 fixing bolts 1 connecting the motor three-phase wire and the drive motor controller.
Torque: 25N·m
- 4 Install the 1 fixing clip B connecting the motor three-phase wire and the drive motor.
- 5 Connect the 1 harness connector A connecting the resolver harness and the drive motor controller.



- 6 Move the small motor cover plate to the installation position.
- 7 Install and tighten the 12 fixing bolts connecting the small motor cover plate and the drive motor.
Torque: 6N·m

Caution

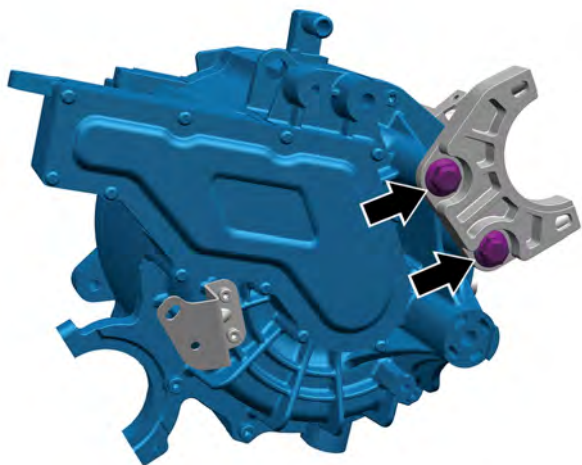
Use Loctite 263 thread glue dot 3-4 teeth, and lock diagonally in accordance with the order with a fixed torque wrench.

- 8 Install the electric drive system.
- 9 Connect the DC bus assembly.
- 10 Add reducer oil.
- 11 Install the front engine compartment bottom shield.
- 12 Lower the vehicle.
- 13 Connect the negative cable of battery.
- 14 Fill the power battery coolant.
- 15 Check the cooling system seal.
- 16 Perform the drive motor controller programming and setup. Refer to [IPU angle self-learning](#)

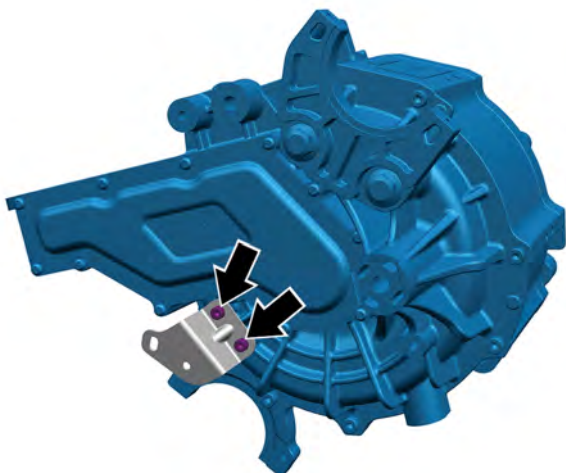
2.4.7.11 Replacement of Drive Motor(GLB Intelligent Power Technologies)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 5 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 6 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)

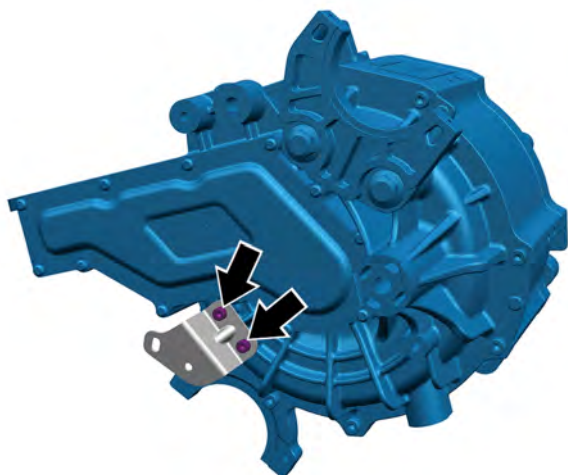


- 7 Remove the reducer assembly. Refer to [Replacement of Reducer Assembly](#)
- 8 Remove the 2 fixing bolts between the battery water pump bracket and the drive motor.
- 9 Take off the battery water pump bracket.



- 10 Remove the 2 fixing bolts connecting the harness bracket and the drive motor.
- 11 Take off Harness bracket.

Installation procedure

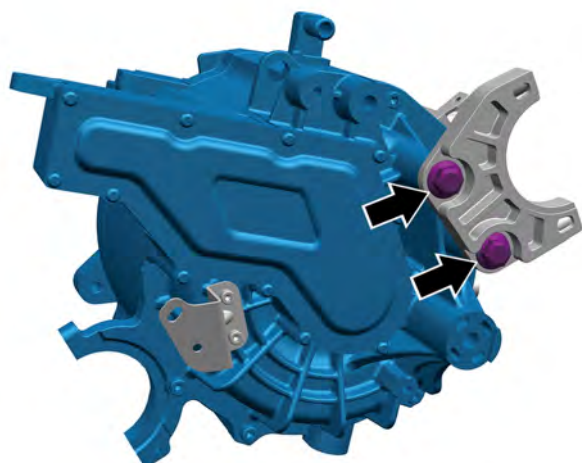


- 1 Move the harness bracket to the installation position.
- 2 Install and tighten the 2 fixing bolts connecting harness bracket and the drive motor.

Torque: 12N·m

Caution

NYLOK bolt is the signal-use goods, and the new goods must be replaced with if disassembly.



- 3 Move the battery pump bracket to the installation position.
- 4 Install the 2 fixing bolts between the battery water pump bracket and the drive motor.

Torque: 40N·m

- 5 Install the reducer assembly.
- 6 Connect the DC bus assembly.
- 7 Add reducer oil.
- 8 Install the front engine compartment bottom shield.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.
- 11 Fill the power battery coolant.
- 12 Perform the drive motor controller programming and setup. Refer to [IPU angle self-learning](#)

2.4.7.12 Replacement of electric oil pump

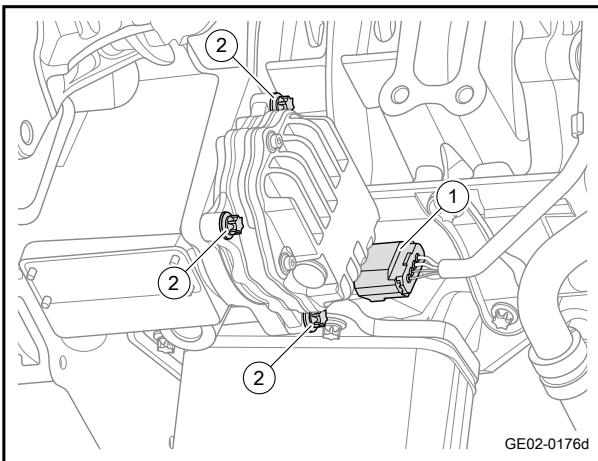
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

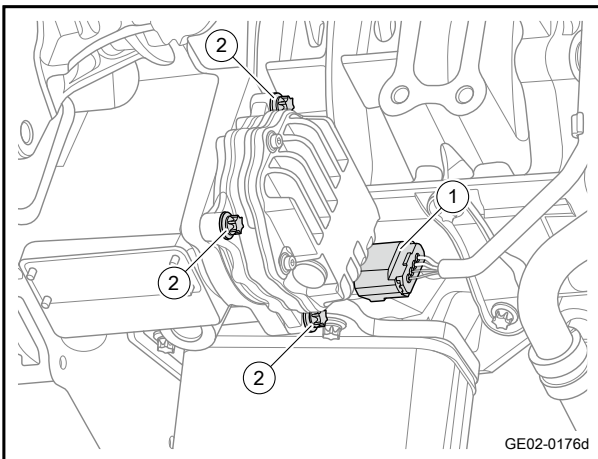
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(NIDEC CORPORATION\)](#)
- 4 Disconnect the electric oil pump harness connector 1.
- 5 Remove the 3 fixing bolts 2 of the electric oil pump.
- 6 Take off the electric oil pump.



Installation procedure

- 1 Move the electric oil pump to the installation position.
- 2 Install the 3 fixing bolts 2 of the electric oil pump.
Torque: 8N·m
- 3 Connect the electric oil pump harness connector 1.

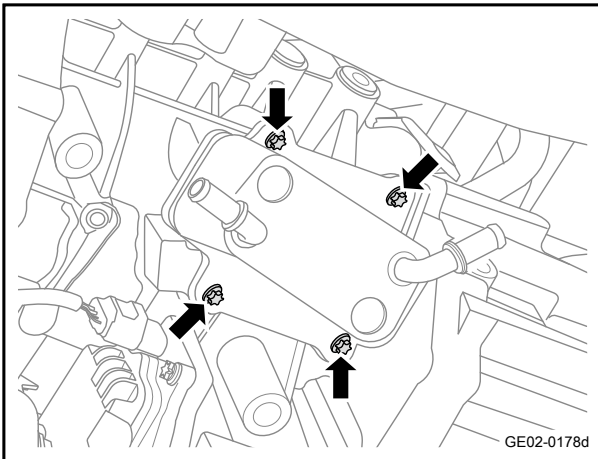
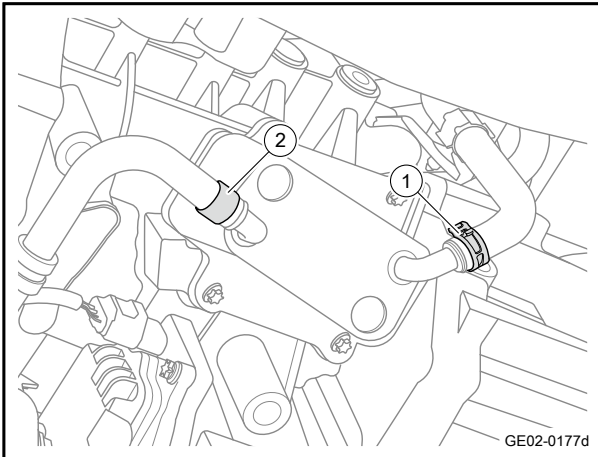


- 4 Add reducer oil.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

2.4.7.13 Replacement of Oil Cooler Assembly

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)

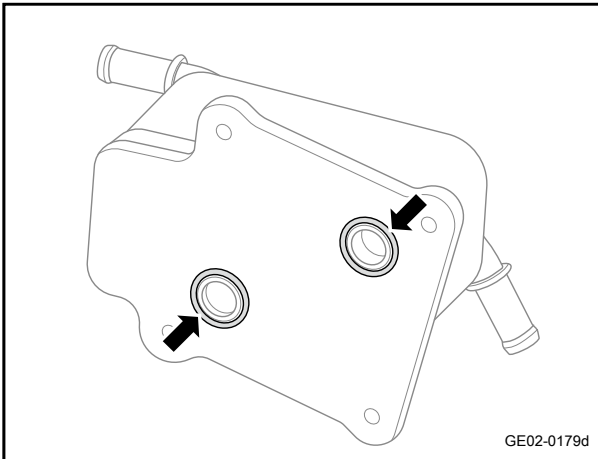


- 3 Discharge coolant. Refer to [Coolant Filling and Discharging](#)
- 4 Remove the water outlet pipe clamp 1 of the motor controller, and disconnect the water outlet pipe of the motor controller from the oil cooler.
- 5 Remove the water pipe clamp 2 between the inverter and the oil cooler, and disconnect the water pipe from the inverter to the oil cooler from the oil cooler.
- 6 Remove the 4 fixing bolts of the oil cooler assembly.
- 7 Take off the oil cooler assembly.

Caution

In order to ensure that the coolant and lubricating oil in the oil cooler do not mix, the oil cooler should be kept parallel to the ground.

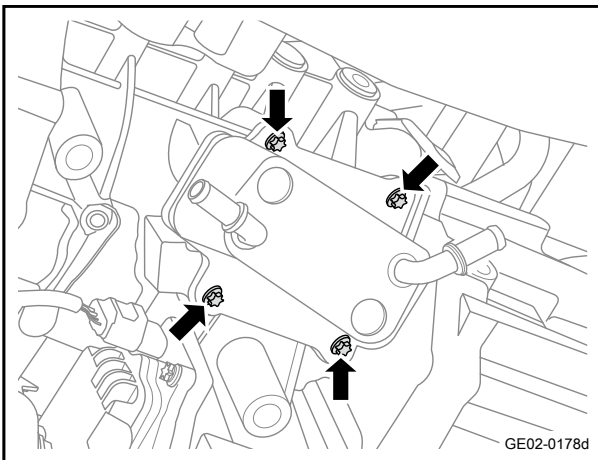
Installation procedure



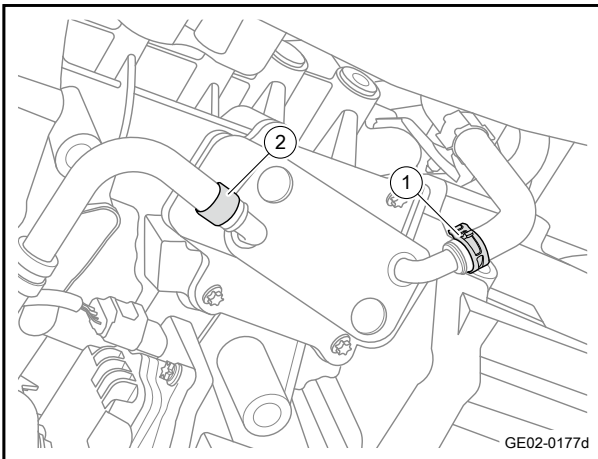
- 1 Replace with a new O-shape ring of the oil cooler.

Caution

Before that, clean the oil stains and dirt on the oil cooler and the mounting surface of the drive motor housing oil cooler.



- 2 Move the oil cooler assembly to the installation positions.
- 3 Install the 4 fixing bolts of the oil cooler assembly.
Torque: 9.5N·m



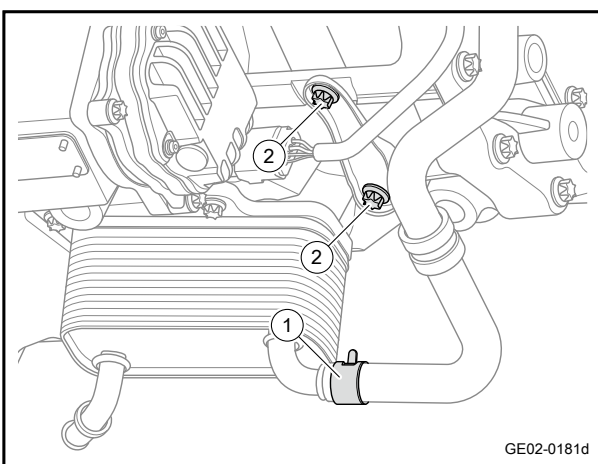
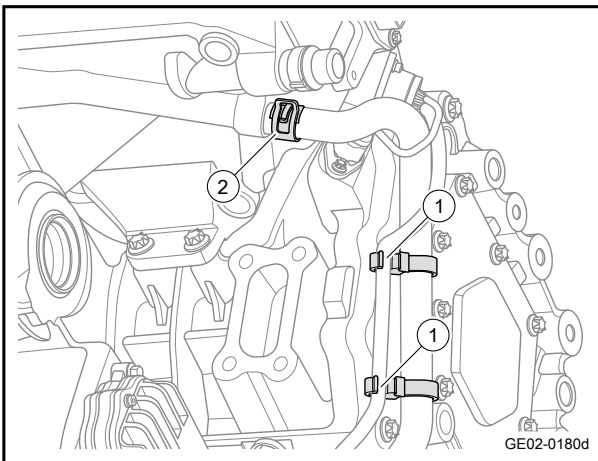
- 4 Connect the water outlet pipe of the motor controller and install the water outlet pipe clamp 1 of the motor controller.
- 5 Connect the water pipe between the inverter and the oil cooler, and install the water pipe clamp 2 between the inverter and the oil cooler.

- 6 Fill the coolant.
- 7 Add reducer oil.
- 8 Lower the vehicle.

2.4.7.14 Replacement of Water Pipe between the Inverter and the Oil Cooler

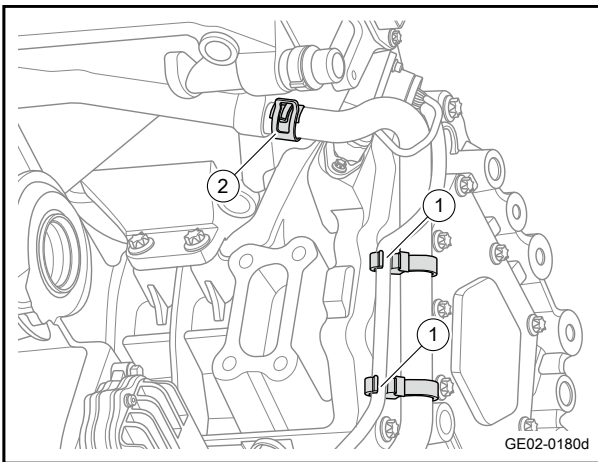
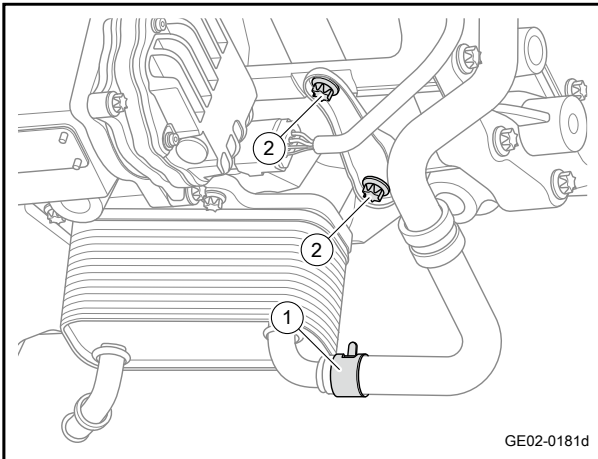
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 4 Remove the front fender liner. Refer to [Replacement of Front Fender Liner](#)
- 5 Remove the power wire harness cover plate. Refer to [Replacement of Drive Motor Controller](#)
- 6 Disconnect the harness clip 1 on the water pipe.
- 7 Remove the water pipe clamp 2 between the inverter and the oil cooler, and disconnect the inverter-to- oil cooler pipe from the drive motor controller.



- 8 Remove the water pipe clamp 1 between the inverter and the oil cooler, and disconnect the water pipe from the inverter to the oil cooler from the oil cooler.
- 9 Remove the 2 bracket fixing bolts 2 of the water pipe between the inverter to oil cooler.
- 10 Take off the water pipe between the inverter to oil cooler.

Installation procedure

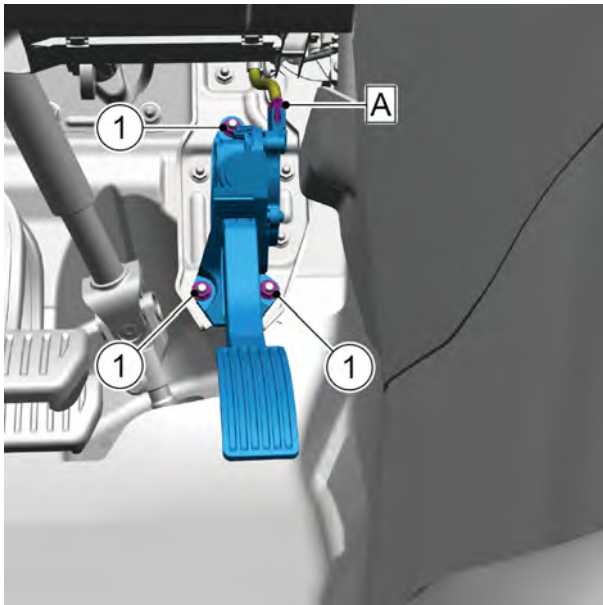


- 1 Move the water pipe between the inverter to oil cooler to the installation position.
- 2 Install the 2 bracket fixing bolts 2 of the water pipe between the inverter to oil cooler.
Torque: 8N·m
- 3 Connect the inverter-to- oil cooler pipe with the oil cooler, and install the water pipe clamp 1 between the inverter and the oil cooler.
- 4 Connect the water pipe between the inverter and the oil cooler, and install the water pipe clamp 2 between the inverter and the oil cooler.
- 5 Install the harness clip 1 on the water pipe.
- 6 Install the power wire harness cover plate.
- 7 Install the front fender liner.
- 8 Connect the DC bus assembly.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

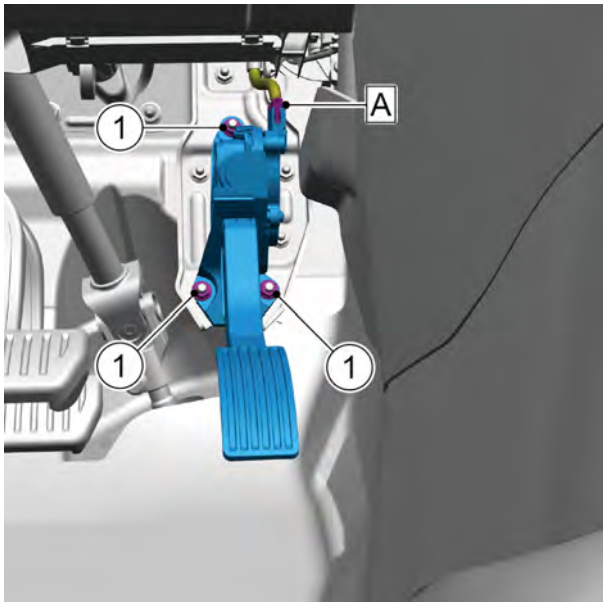
2.4.7.15 Replacement of electronic accelerator pedal

Removal procedure

- 1 Adjust left front seat assembly to the back.
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)



- 3 Disconnect 1 harness connector A connecting instrument panel harness and the electronic accelerator pedal.
- 4 Remove the 3 fixing nuts 1 connecting the electronic accelerator pedal and the electronic accelerator pedal assembly.
- 5 Take off electronic accelerator pedal



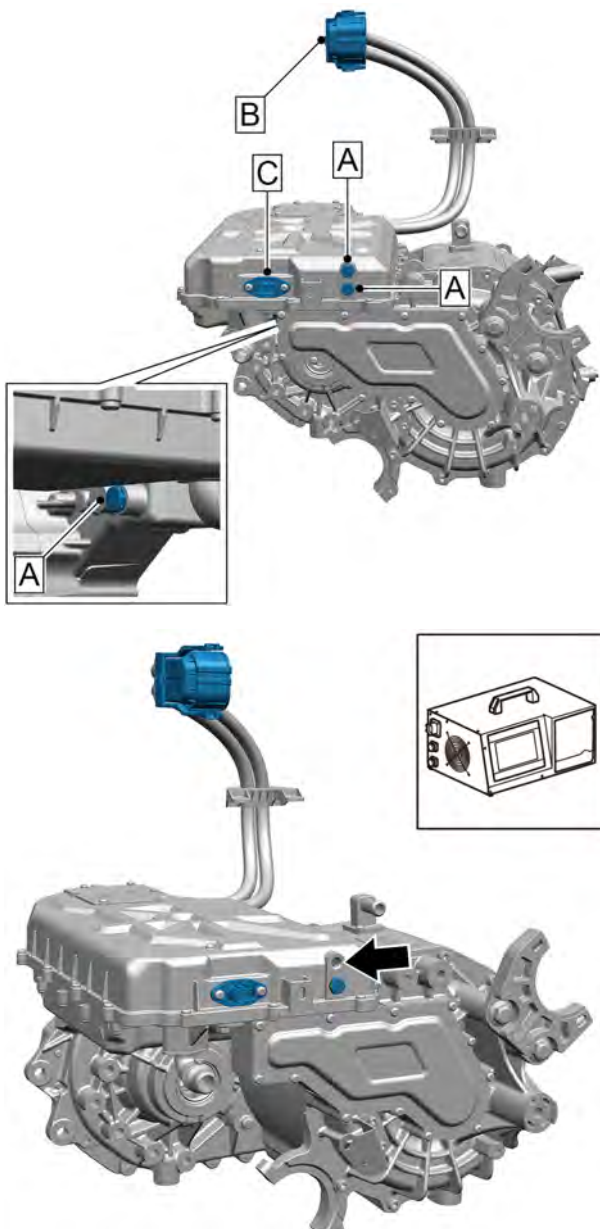
Installation procedure

- 1 Move the electric accelerator pedal to the installation position.
- 2 Install and tighten the 3 fixing nuts 1 of electronic accelerator pedal and the electronic accelerator pedal assembly.
Torque: 10N·m
- 3 Connect the 1 harness connector A connecting the instrument panel harness and the electronic accelerator pedal.

- 4 Connect the negative cable of battery.
- 5 Adjust the left front seat assembly to the initial position.

2.4.7.16 Electric drive system air tightness inspection

Inspection procedure



Caution

After the electric drive system is disassembled and repaired, the air tightness inspection is required to ensure the working safety of the electric drive system.

- 1 Remove 3 exhaust valves A of the electric drive system controller and the motor.
- 2 Use the airtight tooling to block the motor exhaust valve, the high-voltage harness B of the controller and the low-voltage connector C.
- 3 Block one of the controller exhaust valves and keep one of the valve holes.
- 4 Connect the air leak sensor detection pipeline to one of the valve holes reserved by the controller.
- 5 Set the inflation pressure of the air leakage tester to 20KPa and the inflation time is 20S, and the detection starts.
- 6 After the inflation is completed, wait for 30S. It is required that the test leakage amount is less than or equal to 40Pa within the waiting time.
- 7 After the end of inspection, remove the airtight tooling.
- 8 Install the 3 exhaust valves of the electric drive system controller and the motor.

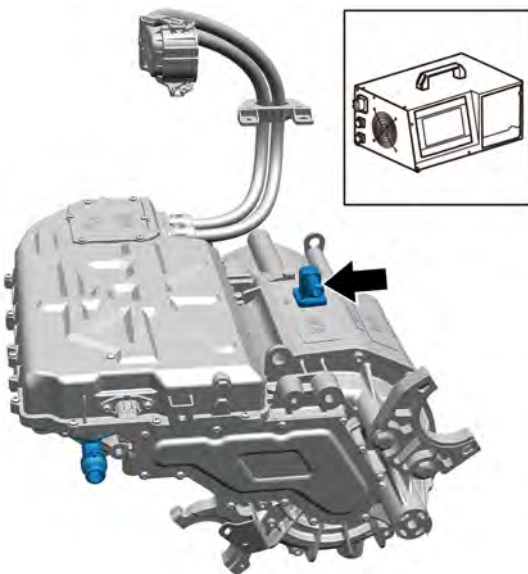
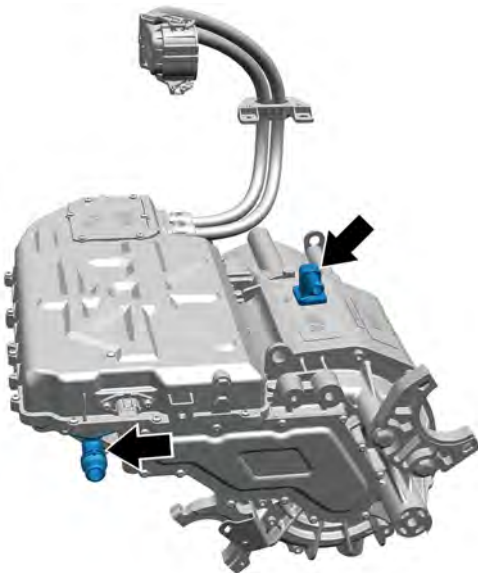
2.4.7.17 Inspection of Air Tightness of Electric Drive System Water Channel

Inspection procedure

Caution

After the electric drive system is disassembled and repaired, the air tightness inspection is required to ensure the working safety of the electric drive system.

- 1 Block the water inlet of the controller water pipe with a special airtight connection plug.
- 2 Block the water outlet of the motor with a dedicated airtight connection plug.



- 3 Connect the special airtight connection plug between the air leakage sensor detection pipeline and the water outlet of the motor.
- 4 Set the inflation pressure of the air leakage tester to 200KPa and the inflation time is 15S, and the detection starts.
- 5 After the inflation is completed, wait for 60 s for the test. The test time is required to be 10S, and the test leakage amount is $\leq 40\text{Pa}$.

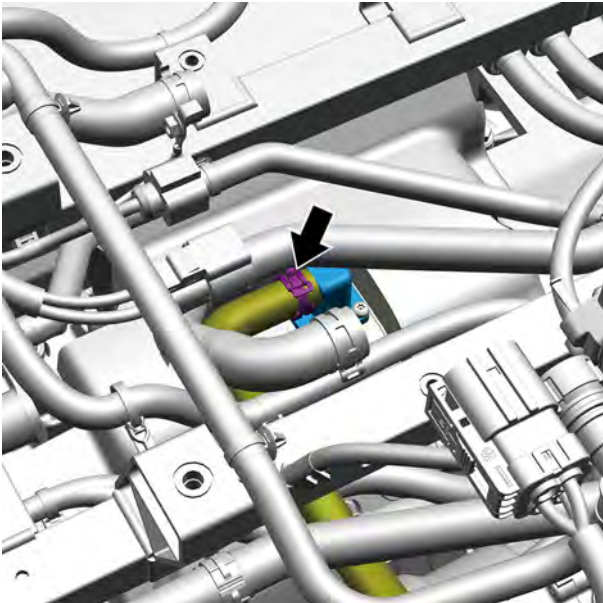
- 6 After the inspection, remove the airtight joints and plugs at the end of the test.

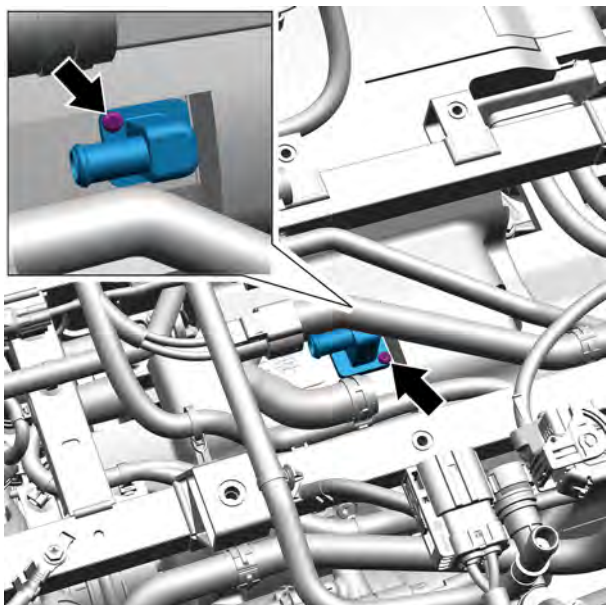
2.4.7.18 Replacement of water outlet pipe of the motor

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 5 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 6 Remove cooling and ventilation hose of the drive motor. Refer to [Placement of Cooling and Ventilation Hose of the Drive Motor](#)
- 7 Remove the high and low-voltage charging system assembly. Refer to [Replacement of High and Low Voltage Charging System Assembly\(low figuration\)](#)
- 8 Remove PTC heat controller. Refer to [Replacement of PTC Heating Controller](#)
- 9 Remove one fixing clip connecting the inlet pipe of the electric heating three-way solenoid valve with the outlet pipe of the motor, disconnect the connection between the inlet pipe of the electric heating three-way solenoid valve and the outlet pipe of the motor, and move the inlet pipe of the electric heating three-way solenoid valve to one side.

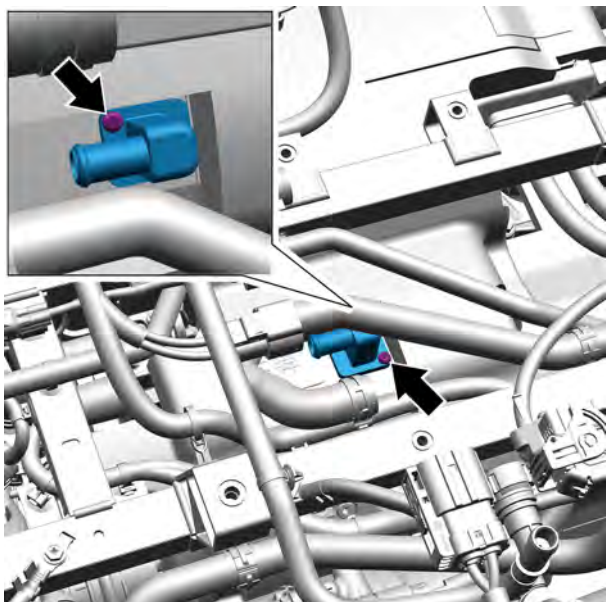




- 10 Remove the 2 fixing screws connecting water inlet pipe of the driving motor and driving motor assembly.
- 11 Take off the water inlet pipe of the motor.

Caution

The water pipe O ring is disposable and requires replacement after removal.



Installation procedure

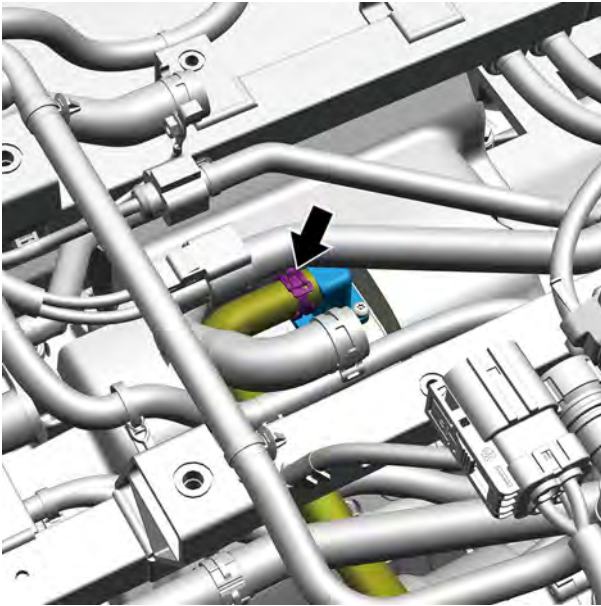
- 1 Move the water outlet pipe of the motor to the installation position.

Caution

Replace a new water pipe O ring and apply some lubricating oil.

- 2 Install and tighten the 2 fixing screws connecting the water outlet pipe of the motor with the drive motor assembly.

Torque: 6N·m



- 3 Connect the inlet pipe of the electrical heating three-way solenoid valve with the water outlet pipe of the motor, and install the 1 fixing clamp connecting the inlet pipe of the electrical heating three-way solenoid valve with the water outlet pipe of the motor.

Caution

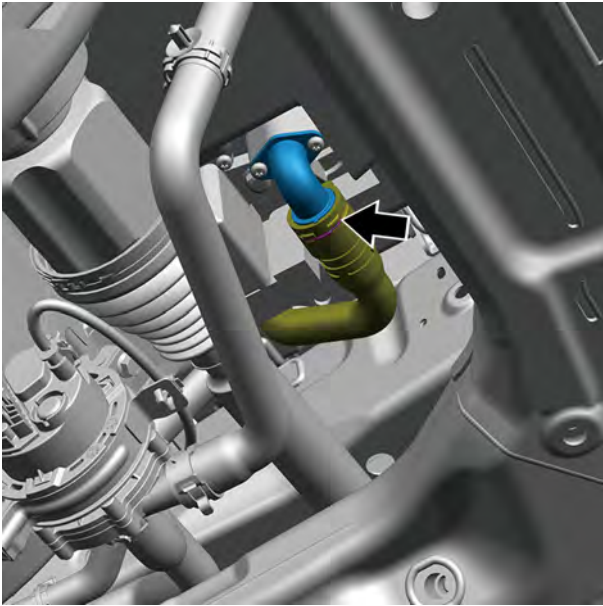
After replacing the cooling system components of the drive motor, a water channel sealing test is required before adding coolant. The steps are as follows: block the water inlet of the controller water pipe with an airtight plug, block the water outlet of the motor with a special airtight connection plug, and connect the airtight plug with the air pipe; 2. The requirements for airtight testing of the water passage: use an air leak detector to measure the air tightness of the cooling circuit. The inflation pressure is set at 200 kPa, the inflation time is 15 s, the stability time is 60 s, the test time is 10 s, and the test leakage amount is $\leq 40\text{Pa}$. 3. After the test is completed, remove the airtight joint and the plug.

- 4 Install PTC heating controller assembly.
- 5 Install the high and low-voltage charging system assembly.
- 6 Install cooling and ventilation hose of the drive motor.
- 7 Connect the DC bus assembly.
- 8 Install the front engine compartment bottom shield.
- 9 Fill the power battery coolant.
- 10 Connect the negative cable of battery.
- 11 Lower the vehicle.

2.4.7.19 Replacement of water inlet pipe of the driving motor controller

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)



- 4 Remove the 1 fixing clamp connecting the water outlet pipe of the charger and the water inlet pipe of the drive motor controller, disconnect the water outlet pipe of the charger and the water inlet pipe of the drive motor controller, and move the water outlet pipe of the charger to one side.



- 5 Remove the 2 fixing screws between the water inlet pipe of the drive motor controller and the drive motor controller.
- 6 Take off the water inlet pipe of the driving motor controller.

Caution

The water pipe O ring is disposable and requires replacement after removal.

Installation procedure



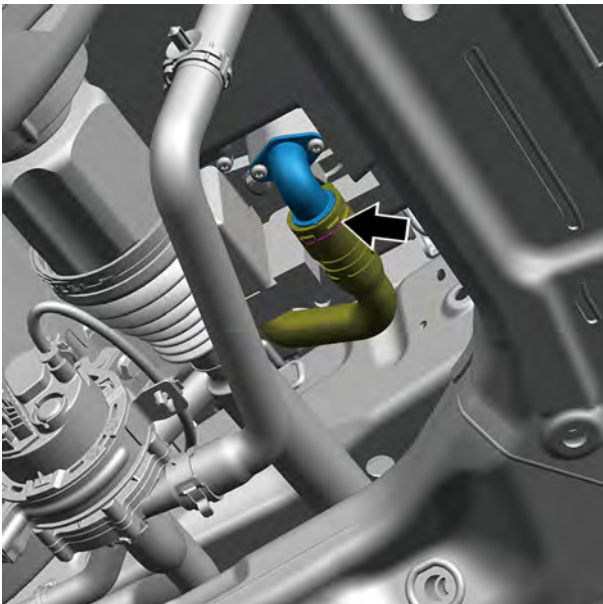
- 1 Move the drive motor controller water inlet pipe to the installation position.

Caution

Replace with a new water pipe O ring and apply some lubricating oil.

- 2 Install and tighten the 2 fixing screws connecting the water inlet pipe of the drive motor controller and the drive motor controller.

Torque: 3N·m



- 3 Connect the water outlet pipe of the charger with the water inlet pipe of the drive motor controller, and install the 1 fixing clamp connecting the water outlet pipe of the charger with the water inlet pipe of the drive motor controller.

Caution

After replacing the cooling system components of the drive motor, a water channel sealing test is required before adding coolant. The steps are as follows: 1. Block the water inlet of the controller water pipe with an airtight plug, block the water outlet of the motor with a dedicated airtight connection plug, and the airtight plug is connected with the air pipe; 2. The requirements for airtight testing of the water passage: use an air leak detector to measure the air tightness of the cooling circuit. The inflation pressure is set at 200 kPa, the inflation time is 15 s, the stability time is 60 s, the test time is 10 s, and the test leakage amount is $\leq 40\text{Pa}$. 3. After the test is completed, remove the airtight joint and the plug.

- 4 Install the front engine compartment bottom shield.
- 5 Lower the vehicle.
- 6 Fill the power battery coolant.

2.5 Cooling system

2.5.1 Specification

2.5.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Motor heating water pump fixing bolt	M6×16	8 -10
Battery heating water pump fixing bolt	M10×20	35-45
fixing bolt of intake grille assembly	M6×25	5-7
Condenser inlet pipe fixing bolt	M6×25	8 -10
Condenser outlet pipe fixing bolt	M6×25	8 -10
Cooling module fixing bolt	M6×16	8 -10
Condenser fixing bolt	M6×16	8 -10
Radiator assembly fixing bolt	M6×16	8 -10
Three-way solenoid valve assembly fixing bolt	M6×20	8 -10
Expansion tank assembly(side) retaining bolts	M6×20	5-7
Drive motor ground wire bolt	M8×18	20-26
Motor compressor fixing bolt	M8×95	20-28

2.5.1.2 Specifications of Cooling Water Pump

Item	Parameter (70W)	Parameter (20W)	Unit
Rated voltage	13	13	V
Rated current	2.3	1.61	A
Peak voltage	16	16	V
Peak current	4.5	2	A
Speed adjustment mode	PWM signal	PWM signal	-

2.5.2 Instructions and operations

2.5.2.1 General

1. System composition

The cooling system of this vehicle includes power battery cooling and electric drive system cooling, which consists of the following components:

- Power battery
- Electric drive system
- High and Low Voltage Charging System
- Heat exchange integration module
- Cooling water pump
- Expansion tank
- Radiator
- Radiator fan
- Smart Variable Inlet Grille Motor

2. Function Introduction

The high speed rotation of the motor rotor in the electric drive system will generate high temperature, and the heat is transmitted through the motor body. If it is not cooled, the electric drive system can not work normally, so the electric drive system is provided with a coolant channel to exchange heat with the outside world through the circulation of coolant. In this way, the working temperature of the electric drive system can be kept within a certain range, and the electric drive system can be prevented from overheating.

When the high and low voltage charging system works, it converts high voltage alternating current into high voltage direct current, and a lot of heat will be generated during the conversion process. Therefore, there is also a coolant channel inside the high and low voltage charging system, which reduces the working temperature of the high and low voltage charging system through the circulation of coolant.

The motor controller controls the high-voltage three-phase power supply of the electric drive system. Heat is generated during this process, which needs to be dissipated by circulating the coolant.

During the charging and discharging process of power battery, heat will be generated, and too high temperature will affect the charging and discharging capacity of battery. At this time, coolant circulation is required to dissipate heat to ensure the working temperature of battery.

2.5.3 System working principles

2.5.3.1 System Working Principles

1. Overview

The cooling system of this vehicle includes power battery cooling and electric drive system cooling. The components include power battery cooling system, electric drive system, high and low voltage charging system, heat exchange integrated module, electric water pump, expansion tank, radiator and radiator fan.

2. Power battery cooling system

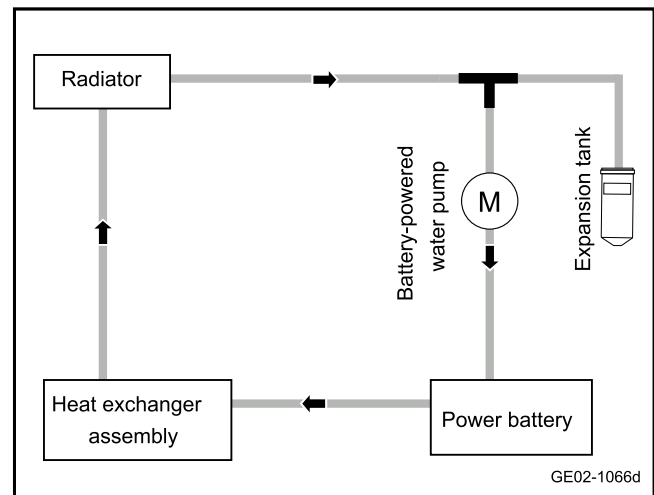
The power battery in the vehicle is constantly being charged and discharged continuously, and heat is released in this thermodynamic process, which causes the heat it produces to accumulate. When the temperature of the power battery is too high, besides aging, the most important impact is to increase the resistance on the related conductors, which will lead to the loss of electric energy in the form of heat instead of being converted into work.

According to the characteristic requirements of the battery, a water cooling method is adopted for the inside of the battery pack to realize the heat exchange inside and outside the pack. The cooling and heating of the battery is realized through the battery radiator and the heat exchange management module to ensure that the battery can work normally and efficiently.

The function of the cooling system is to dissipate heat for the power battery through the coolant circulation, and heat the power battery at an appropriate time through the heat exchange management module and the complete vehicle pipeline.

The battery water pump is controlled by PWM sent by the VCU, and different PWMs correspond to different speed controls.

Driven by the battery water pump, the flow direction of coolant in the pipeline is shown in the following figure:

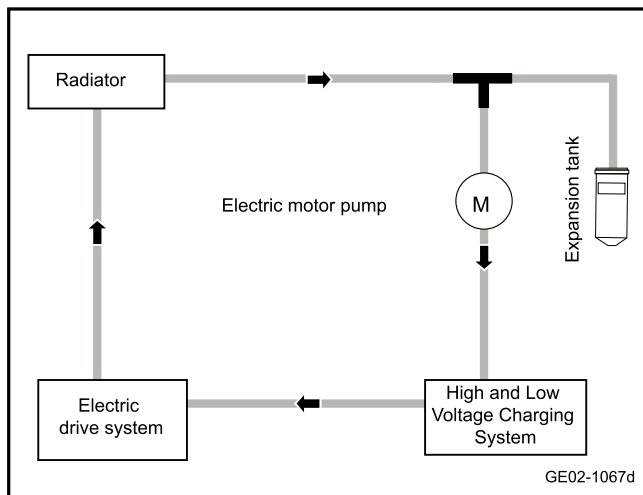


The high speed rotation of the motor rotor in the electric drive system will generate high temperature, and the heat is transmitted through the motor body. If it is not cooled, the electric drive system can not work normally, so the electric drive system is provided with a coolant channel to exchange heat with the outside world through the circulation of coolant. In this way, the working temperature of the electric drive system can be kept within a certain range, and the electric drive system can be prevented from overheating.

When the high and low voltage charging system works, it converts high voltage alternating current into high voltage direct current, and a lot of heat will be generated during the conversion process. Therefore, there is also a coolant channel inside the high and low voltage charging system, which reduces the working temperature of the high and low voltage charging system through the circulation of coolant.

The high and low voltage charging system also converts the high-voltage DC of the power battery into low-voltage DC to charge the lead-acid battery. Heat is generated during this process, which needs to be dissipated by circulating the coolant.

The cooling process of electric drive system is to dissipate heat for high and low voltage charging system, electric drive system, and radiator components through coolant circulation. Driven by the motor water pump, the flow direction of coolant in the pipeline is shown in the following figure:



3. Electric water pump

The cooling system of this vehicle contains three electric water pumps, namely the battery water pump and the motor water pump cooling, and one warm air auxiliary water pump. It is driven by low-voltage circuits to circulate coolant in each cooling circuit.

4. Expansion tank

The expansion tank is also called coolant compensation tank. As the coolant temperature changes, the volume of coolant in the cooling circuit will change significantly. When the temperature rises, the expansion tank stores excess coolant. When the temperature falls, the expansion tank compensates an appropriate amount of coolant to the cooling circuit.

The vehicle is equipped with two expansion tanks in the driving motor cooling circuit neutralization power battery cooling circuit to improve the working efficiency of the cooling system.

When the cooling system is cold, the coolant level shall be maintained between the MIN(lowest) and MAX(highest) marks on the expansion tank assembly.

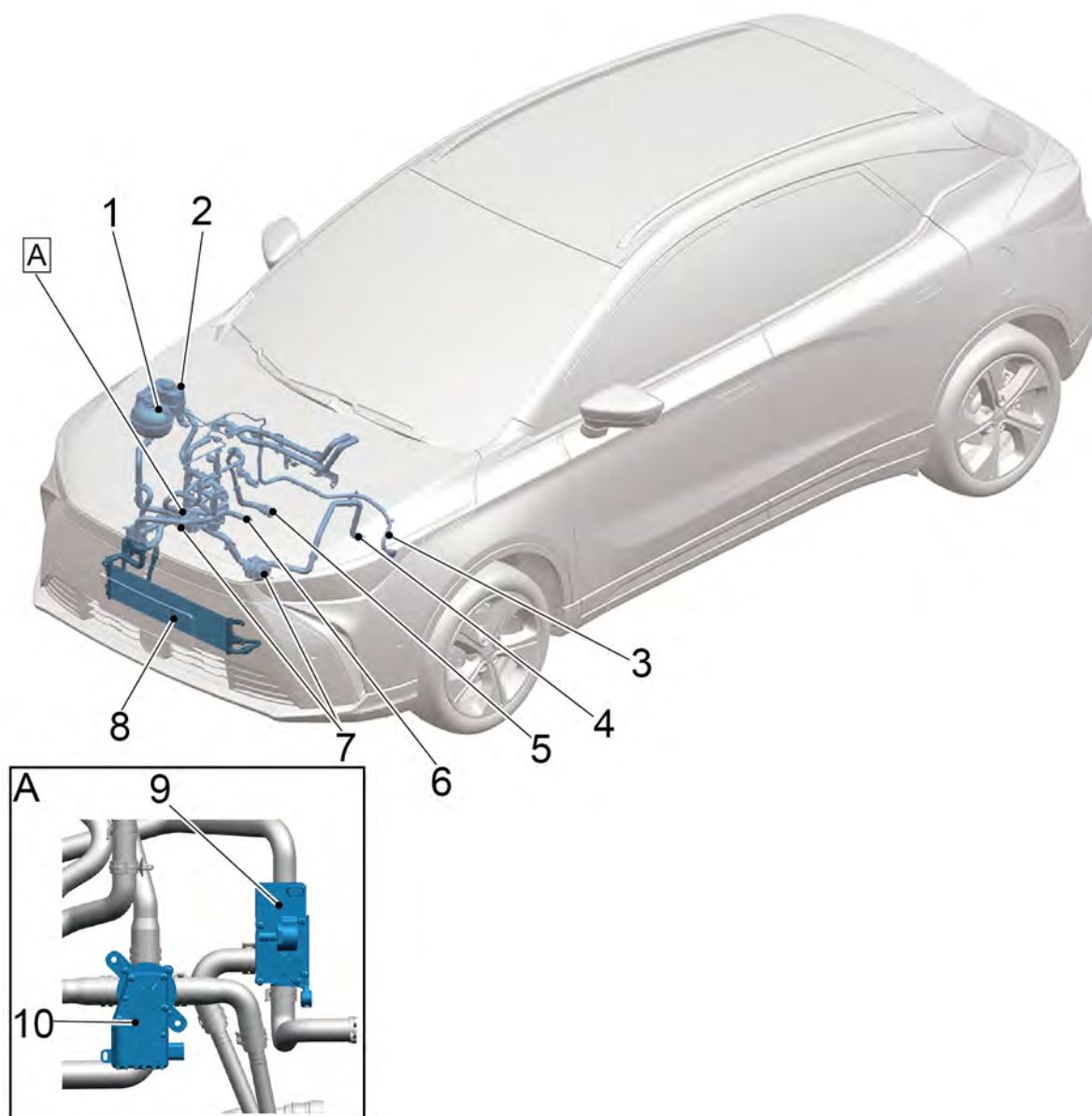
5. Cooling fan

The cooling fan assembly is mounted on the rear of the condenser in the engine compartment, and it increases ventilation quantity to the radiator and A/C condenser, helping to speed up cooling when the vehicle is moving at low speeds.

The cooling function of the electric drive circuit cooling system is realized through the control of the cooling fan by the VCU.

2.5.4 Part position

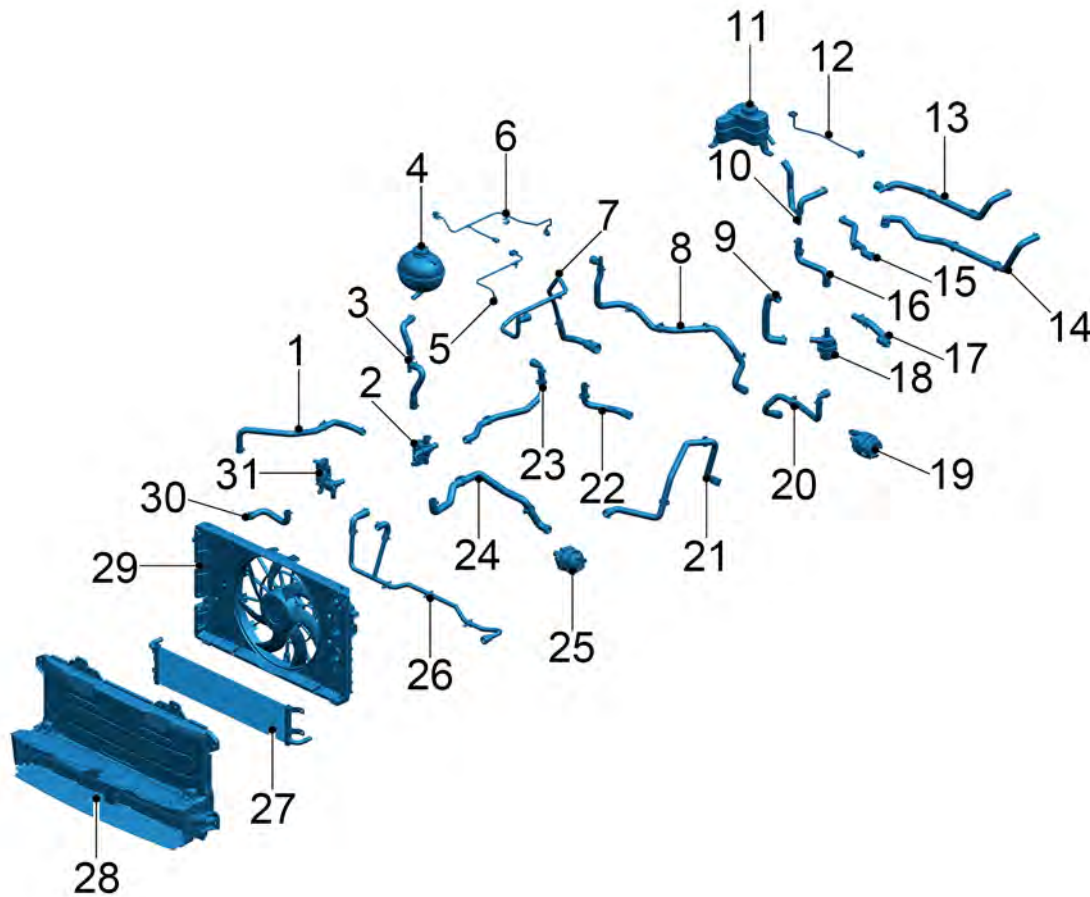
2.5.4.1 Part Position



- | | | | |
|----|--|-----|--|
| 1. | Expansion tank assembly (side mounted) | 6. | Inlet pipe of the electrical heating three-way solenoid valve. |
| 2. | Coolant expansion tank assembly | 7. | Battery cooling water pump |
| 3. | Battery outlet pipe | 8. | Radiator |
| 4. | Battery inlet pipe | 9. | Three-way solenoid valve assembly |
| 5. | Water outlet pipe of the charger | 10. | Four-way valve |

2.5.5 Breakdown drawing

2.5.5.1 Breakdown Drawing

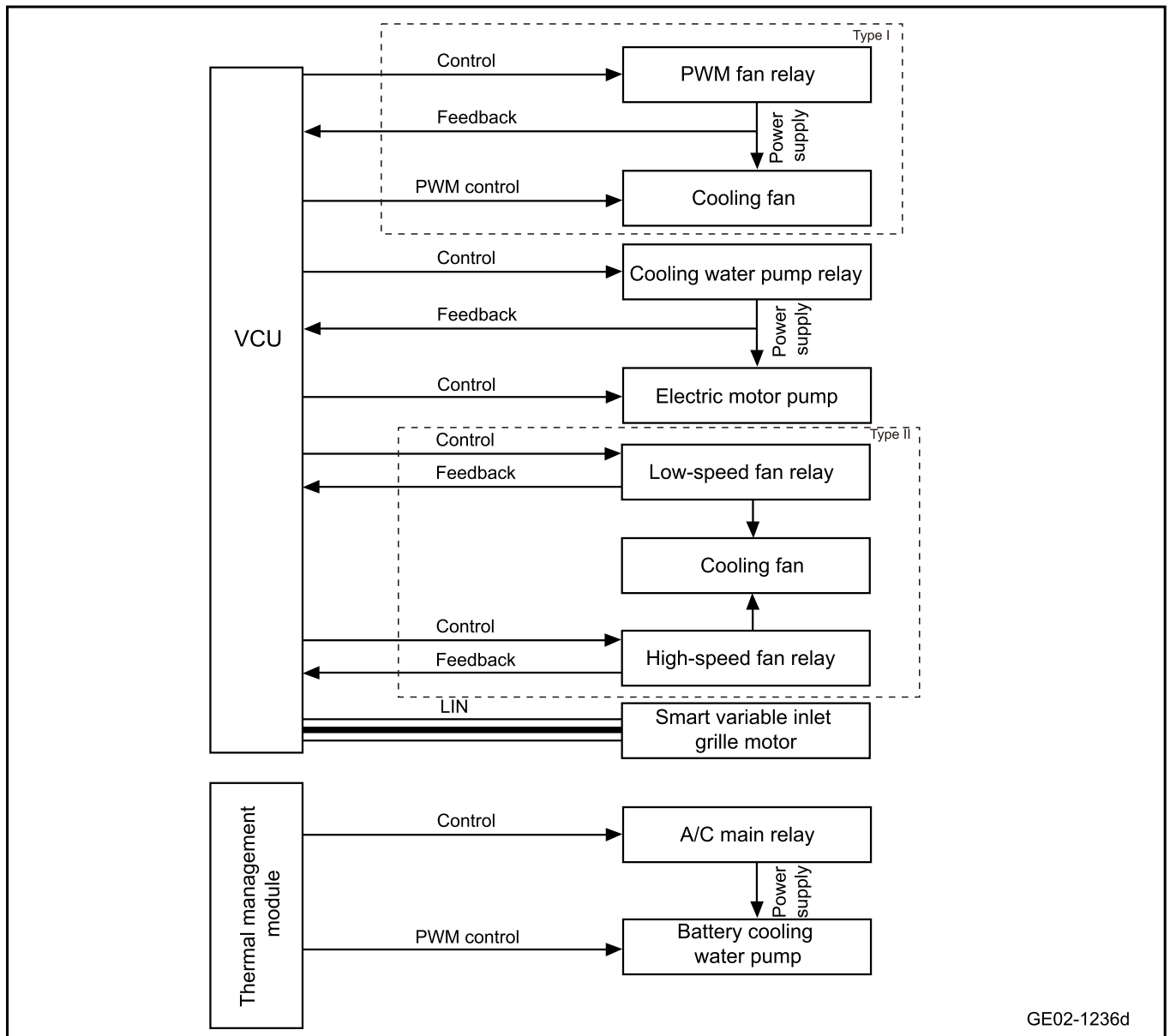


- | | | | |
|-----|--|-----|-----------------------------------|
| 1. | Inlet pipe of the electrical heating three-way solenoid valve. | 17. | Inlet pipe of the heater |
| 2. | Four-way valve | 18. | Heating water pump(20w) |
| 3. | Water refilling hose | 19. | Battery cooling water pump |
| 4. | Expansion tank assembly (side mounted) | 20. | Outlet pipe of heating water pump |
| 5. | Cooling and ventilation hose of the drive motor | 21. | Battery inlet pipe |
| 6. | Cooling and ventilation hose of the drive motor | 22. | Inlet pipe of heating water pump |
| 7. | Water outlet pipe of the charger | 23. | Outlet hose of the heat exchanger |
| 8. | Battery outlet pipe | 24. | Inlet pipe of battery water pump |
| 9. | Outlet pipe of electronic heating water pump | 25. | Battery cooling water pump |
| 10. | Front inlet hose of the electric heating water pump | 26. | Radiator water outlet pipe |

- | | |
|--|---------------------------------------|
| 11. Coolant expansion tank assembly | 27. Radiator |
| 12. Electric heating ventilation hose | 28. Variable intake grille assembly |
| 13. Air conditioning heater inlet pipe | 29. Cooling fan |
| 14. Air conditioning heater outlet pipe | 30. Radiator water inlet pipe |
| 15. Outlet hose of the heater | 31. Three-way solenoid valve assembly |
| 16. Rear inlet hose of the electric heating water pump | |

2.5.6 Electrical block diagram

2.5.6.1 Electrical Schematic Diagram of Cooling System



GE02-1236d

2.5.7 Diagnostic information and procedures

2.5.7.1 Diagnosis Description

Refer to description and operation.

2.5.7.2 Routine inspection

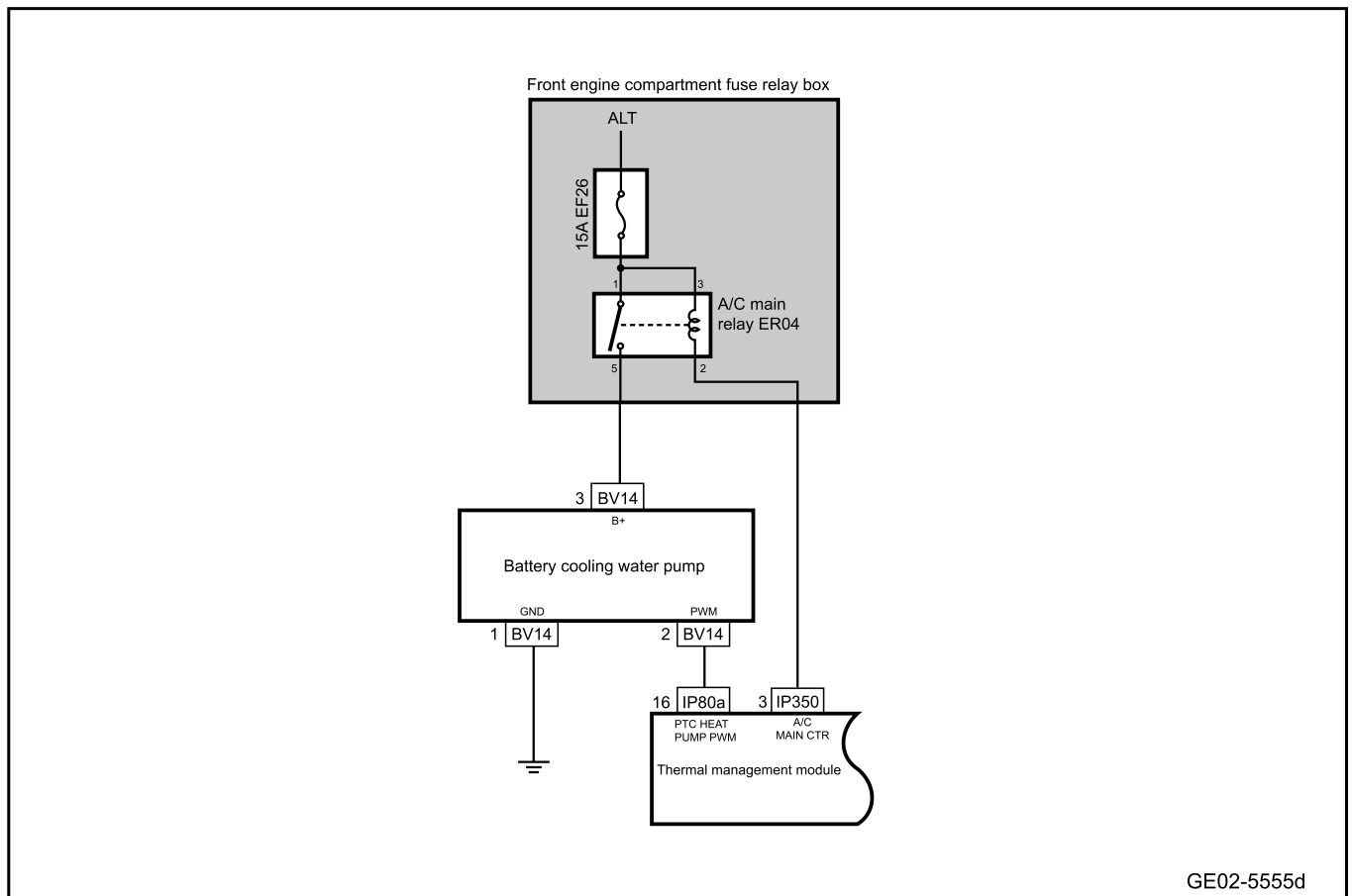
1. Check the after-sales installations that may affect the performance of the cooling system.
2. Check easily accessible or visible cooling system components, wiring, for obvious damage or conditions that could lead to failure.
3. Check easily noticed or visible cooling system pipelines for coolant leaks.
4. You can use the "function test" in the fault diagnosis instrument to force the cooling fan to check whether the fan can work normally to quickly determine the fault.

2.5.7.3 Cooling fan does not work (Type I)

Refer to [Cooling Fan Fault\(Type I\)](#)

2.5.7.4 Battery cooling water pump does not work

1. Circuit diagram:



2. Diagnosis steps:

Step 1 Primary check.

- A. Check the battery cooling water pump for signs of damage, falling off, etc.
- B. Check the battery cooling water pump and thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check the A/C main relay ER04.

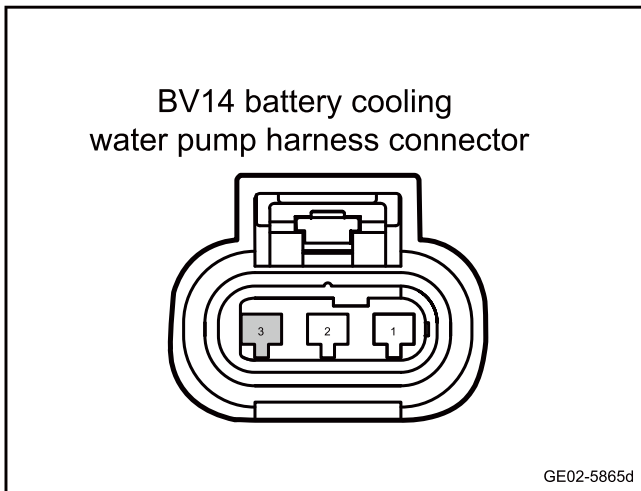
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug A/C main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 3 Check whether the harness between the battery cooling water pump and the A/C main relay is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the A/C main relay ER04.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	ER04(5)	Standard resistance: less than 1Ω

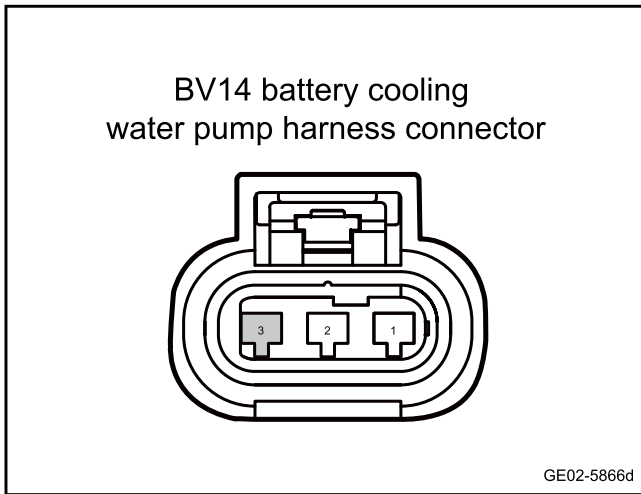
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the wire between the battery cooling water pump and the main relay of air conditioner for short circuit to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the A/C main relay ER04.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. Use a multimeter to measure each terminal according to the table below:

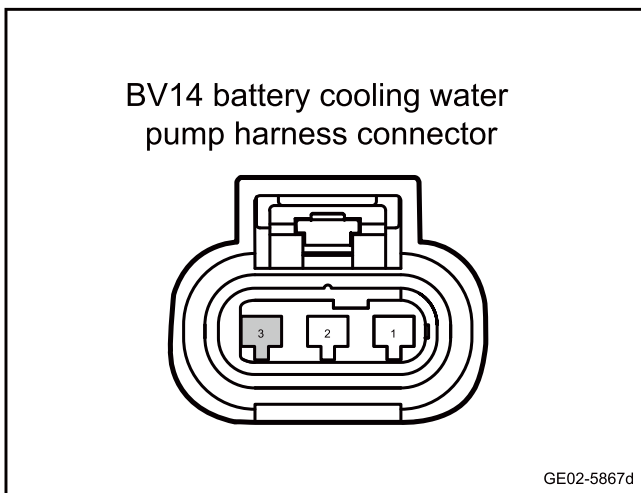
Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check the line between the battery cooling water pump and the main relay of air conditioner for short circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the A/C main relay ER04.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	Vehicle body is grounded.	Standard voltage: 0V

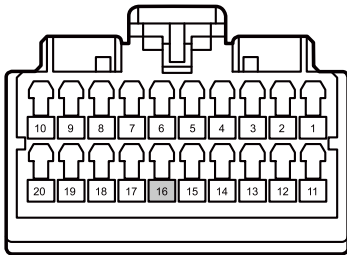
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

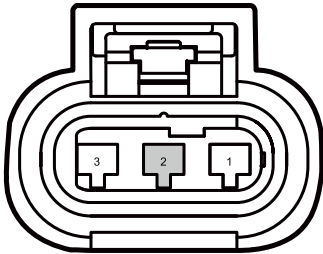
Step 6 Check the circuit between the battery cooling water pump and the thermal management control module for open circuit.

IP80a thermal management control module harness connector 2



GE02-5868d

BV14 battery cooling water pump harness connector



GE02-5869d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	BV14(2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

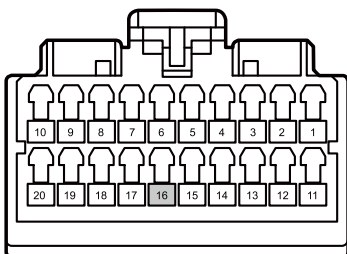
No

Repair or replace the harness.

Yes

Step 7 Check the circuit between the battery cooling water pump and the thermal management control module for short circuit to ground.

IP80a thermal management control module harness connector 2



GE02-5870d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

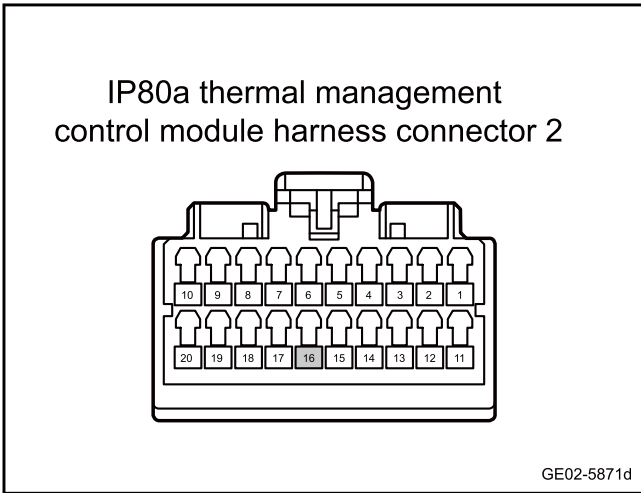
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check the circuit between the battery cooling water pump and the thermal management control module for short circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	Vehicle body is grounded.	Standard voltage: 0V

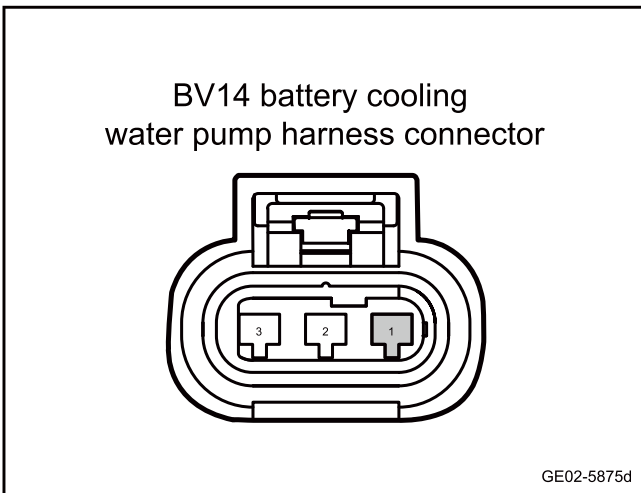
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check whether the battery cooling water pump grounding wire is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the battery cooling water pump harness connector BV14.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV14(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10 Replace the battery cooling water pump.

- A. To replace the battery cooling water pump, please refer to [Replacement of Battery Cooling Water Pump](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Replace the thermal management control module.
---------	--

- A. Check whether the thermal management control module power supply and grounding harness is normal. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. To replace the thermal management module, please refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 12	Reprogram and reset the thermal management control module.
---------	--

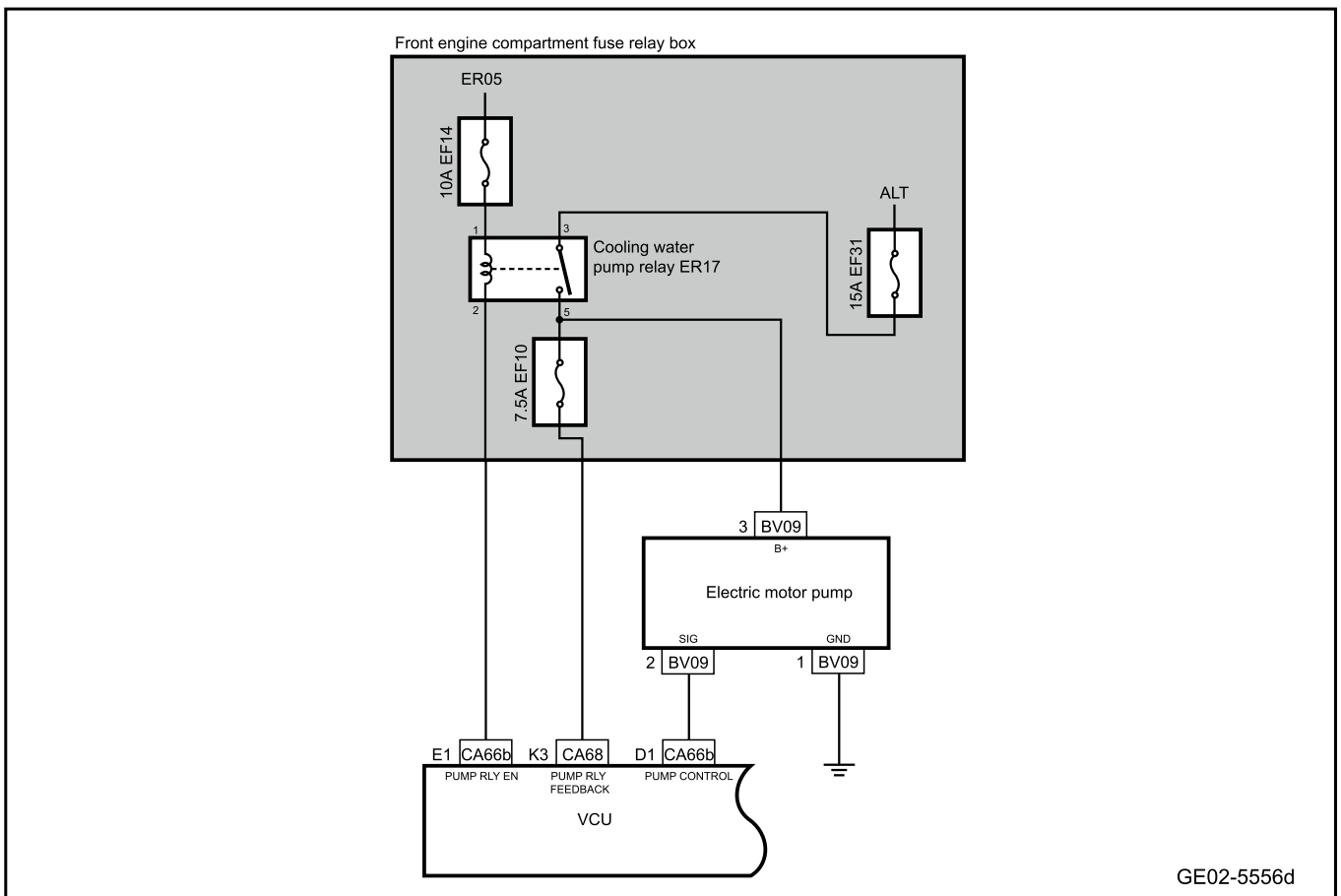
- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 13	System is normal.
---------	-------------------

2.5.7.5 Motor water pump does not work

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the motor water pump for signs of damage, falling off, etc.
- B. Check the motor water pump and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF10 of the front engine compartment.
Check whether the fuse EF10 is blown.

Rated capacity of fuse: 7.5A
- C. Pull out the fuse EF31 of the front engine compartment.
Check whether the fuse EF31 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the cooling water pump relay ER17.

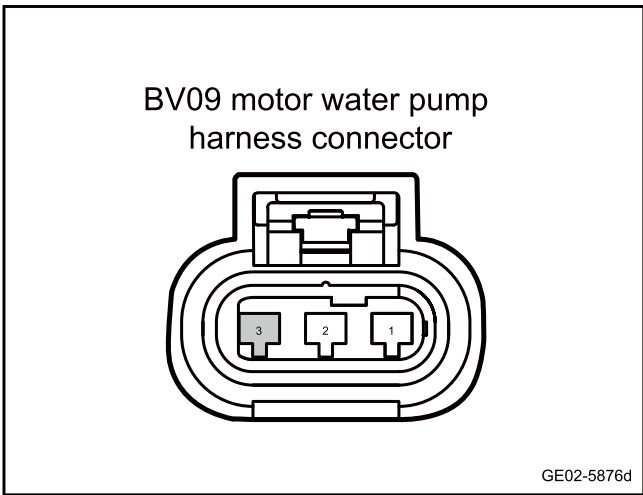
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug cooling water pump relay ER17 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 Check whether the circuit between the motor water pump and the cooling water pump relay is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the electronic water pump harness connector BV09.
- D. Use a multimeter to measure the resistance between terminal 3 of motor water pump harness connector BV09 and the terminal 5 of relay ER17 of cooling water pump.

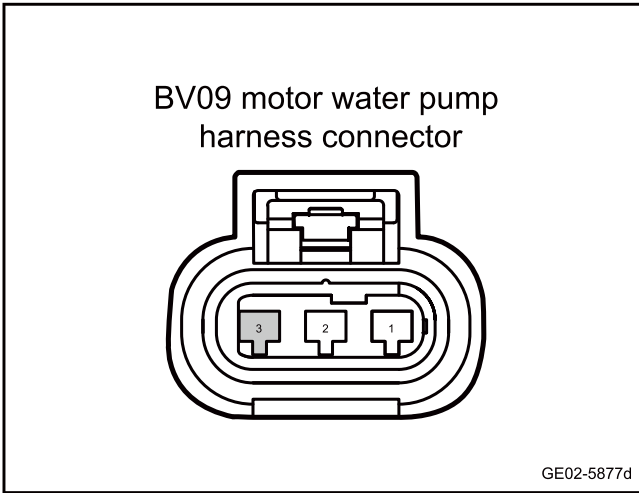
Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the line between motor water pump and cooling water pump relay is shorted to GND.



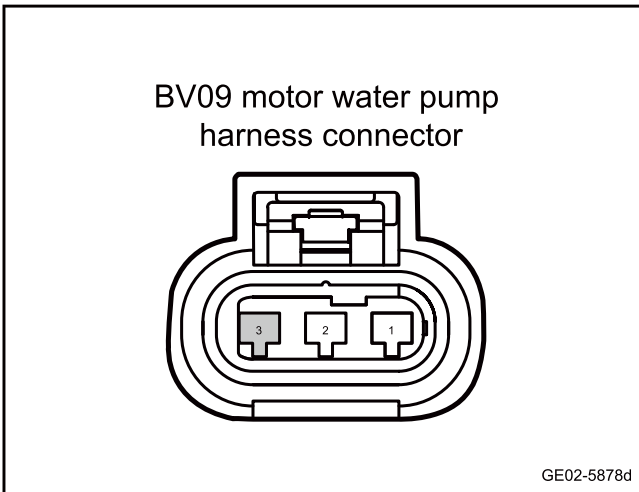
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the electronic water pump harness connector BV09.
- D. Use a multimeter to measure the resistance between terminal 3 of motor water pump harness connector BV09 and the body grounding.
Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Check whether the circuit between motor water pump and the cooling water pump relay is shorted to power supply.



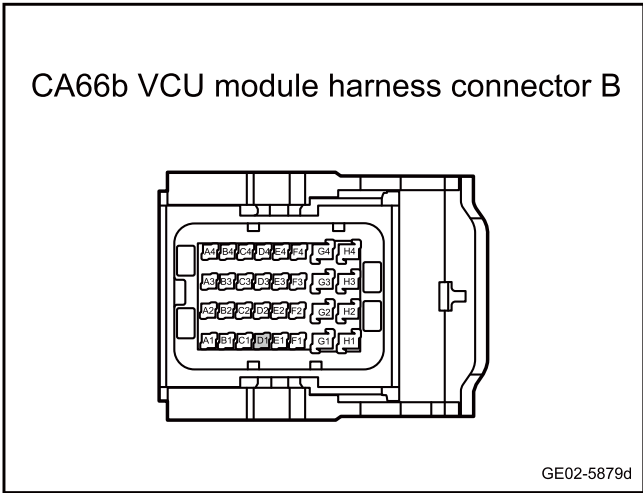
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the electronic water pump harness connector BV09.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between terminal 3 of the motor water pump harness connector BV09 and body grounding.
Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No

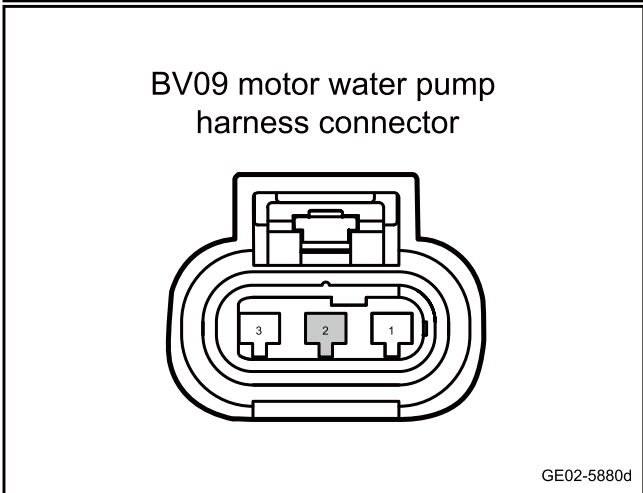
Repair or replace the harness.

Yes

Step 7 | Check whether the circuit between the motor water pump and the VCU is open.



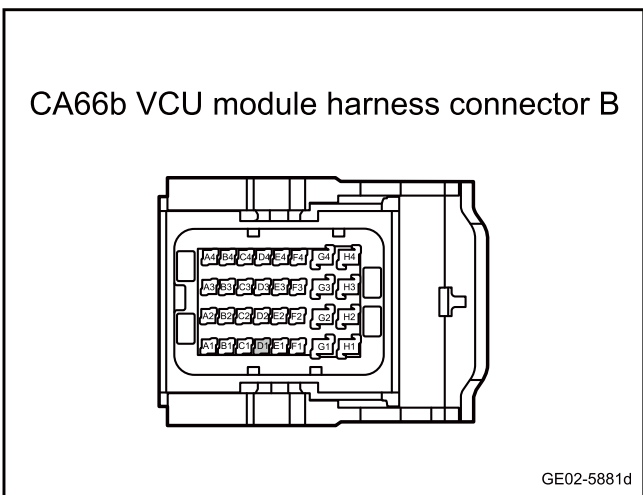
- A. Multimedia settings from vehicle power supply to OFF gear.
 - B. Disconnect the VCU harness connector CA66b.
 - C. Disconnect the electronic water pump harness connector BV09.
 - D. Use a multimeter to measure the resistance between terminal D1 of the VCU harness connector CA66b and terminal 2 of the motor harness connector BV09.
- Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.



No → Repair or replace the harness.

Yes

Step 8 | Check whether the circuit between the motor water pump and the VCU is short to ground.



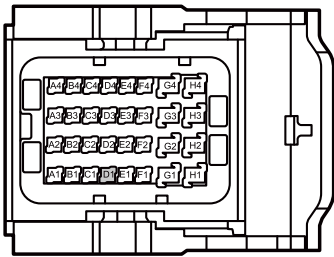
- A. Multimedia settings from vehicle power supply to OFF gear.
 - B. Disconnect the VCU harness connector CA66b.
 - C. Disconnect the electronic water pump harness connector BV09.
 - D. Use a multimeter to measure the resistance between terminal D1 of VCU harness connector CA66b and the body grounding.
- Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 | Check whether the circuit between motor water pump and VCU is shorted to power supply.

CA66b VCU module harness connector B



GE02-5882d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the electronic water pump harness connector BV09.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between terminal D1 of VCU harness connector CA66b and body ground .

Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

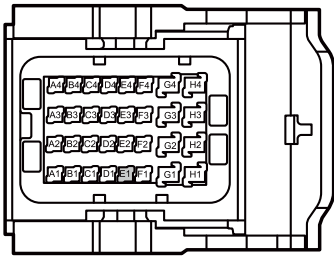
No

Repair or replace the harness.

Yes

Step 10	Check whether the circuit between the cooling water pump relay and the VCU is an open circuit.
---------	--

CA66b VCU module harness connector B



GE02-5883d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connectors CA66b and CA68.
- D. Use a multimeter to measure the terminals according to the following table:

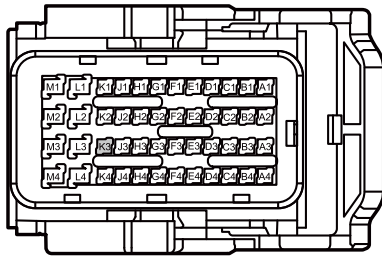
Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	ER17(2)	Standard resistance: less than 1Ω
CA68(K3)	ER17(5)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

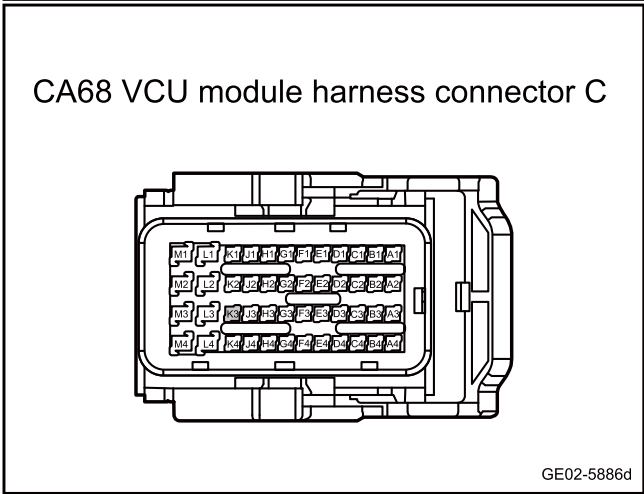
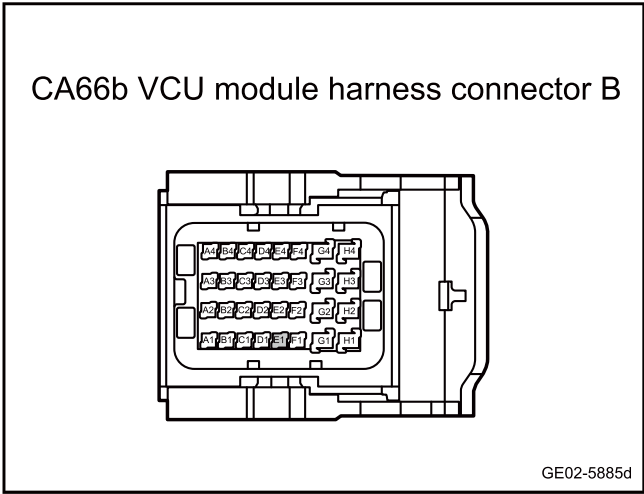
CA68 VCU module harness connector C



GE02-5884d

Yes

Step 11 Check whether the circuit between the cooling water pump relay and the VCU is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connectors CA66b and CA68.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA68(K3)		

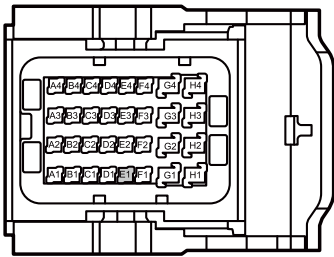
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

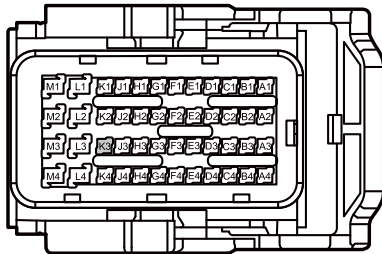
Step 12 Check whether the circuit between the cooling water relay and the VCU is short-circuited to power supply.

CA66b VCU module harness connector B



GE02-5887d

CA68 VCU module harness connector C



GE02-5888d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connectors CA66b and CA68.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E1)	Vehicle body is grounded.	Standard voltage: 0V
CA68(K3)		

- F. Confirm whether the measured value meets the standard.

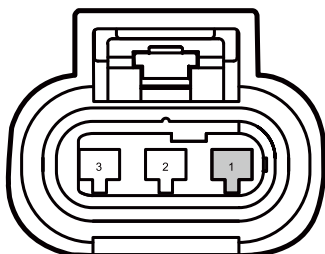
No

Repair or replace the harness.

Yes

Step 13	Check whether the grounding circuit of the motor water pump is normal.
---------	--

BV09 motor water pump harness connector



GE02-5889d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the electronic water pump harness connector BV09.
- C. Use a multimeter to measure the resistance between terminal 1 of motor water pump harness connector BV09 and the body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 14	Replace the motor water pump.
------------	-------------------------------

- A. To replace the motor water pump, please refer to [Replacement of Motor Water Pump](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 15	Replace the VCU
------------	-----------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 16	Reprogram and reset the VCU.
------------	------------------------------

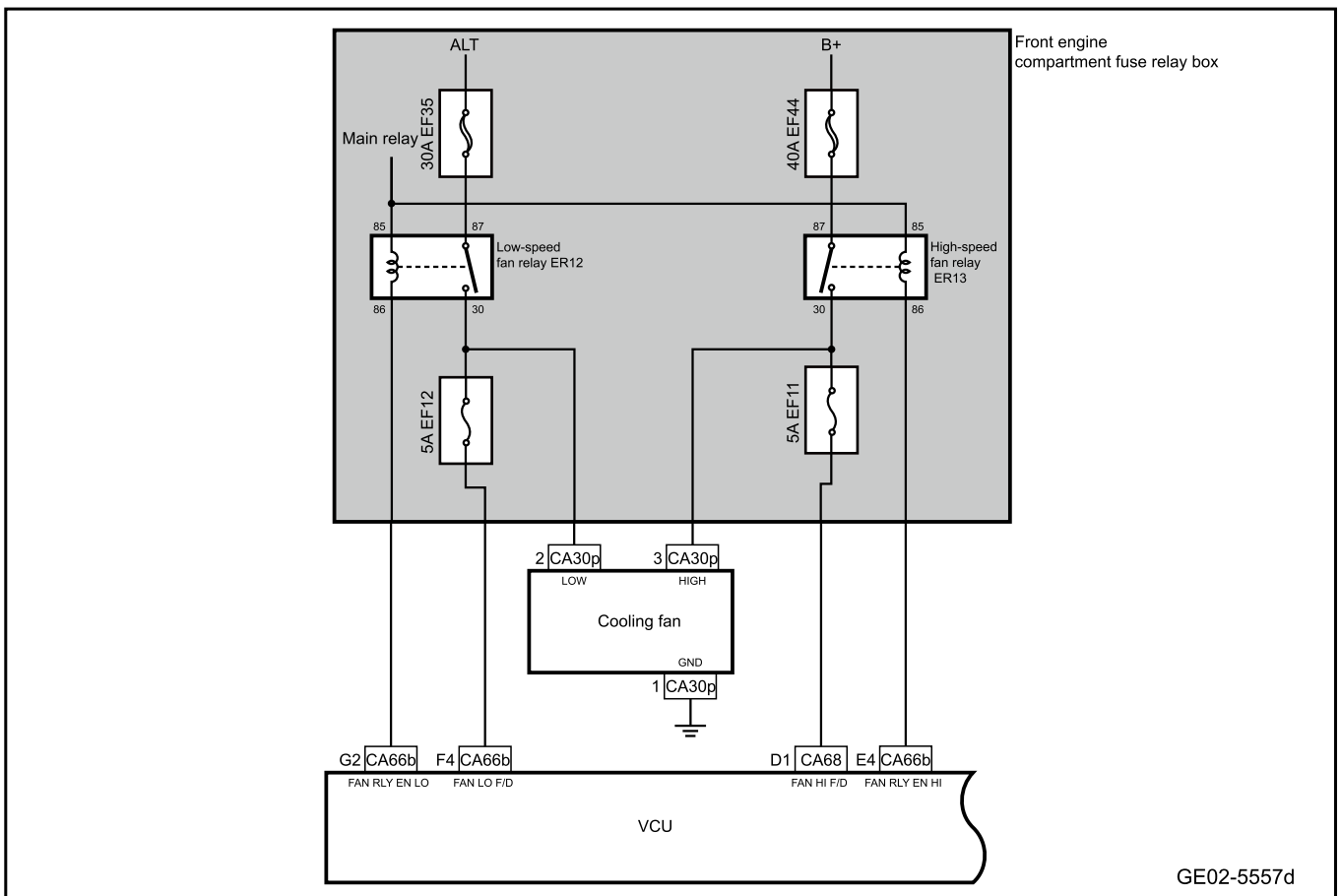
- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 17	System is normal.
------------	-------------------

2.5.7.6 Cooling fan does not work(Type II)

1. Circuit diagram:



2. Diagnosis steps:

This manual only diagnoses the faults of low-speed fans. The diagnosis of high-speed fans is the same as that of low-speed fans.

Step 1	Primary check.
--------	----------------

- A. Check the cooling fan for signs such as damage and falling off.
- B. Check the cooling fan and VCU harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No ▶ Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF12 of the front engine compartment.
Check whether the fuse EF12 is blown.

Rated capacity of fuse: 5A

- C. Pull out the fuse EF35 of the front engine compartment.
Check whether the fuse EF35 is blown.

Rated capacity of fuse: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the low-speed fan relay ER12.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out low-speed fan relay ER12. Use relay with the same specification to replace low-speed fan relay.
- C. Confirm whether the trouble is removed.

Yes

Replace the faulty relay.

No

Step 4 Check whether the power supply circuit of the low-speed fan relay is normal.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the low-speed fan relay ER12.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER12(85)	Vehicle body is grounded.	Standard voltage: 11-14V
ER12(87)		

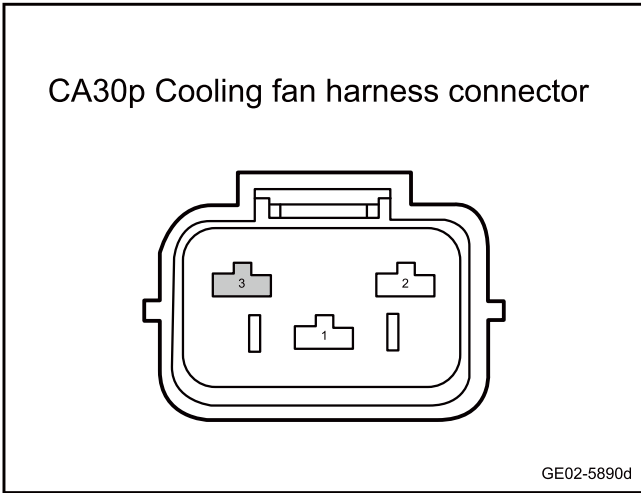
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the cooling fan and the low-speed fan relay is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the low-speed fan relay ER12.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(3)	ER12(30)	Standard resistance: less than 1Ω

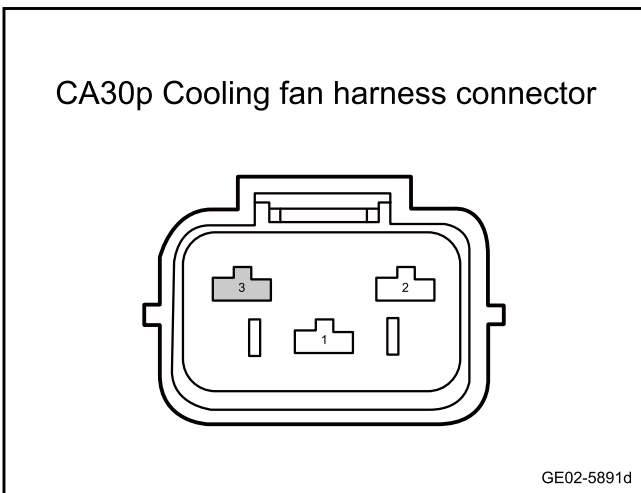
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the cooling fan and the low-speed fan relay is short to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the low-speed fan relay ER12.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(3)	Vehicle body is grounded.	Standard resistance: 10pΩ or higher

- E. Confirm whether the measured value meets the standard.

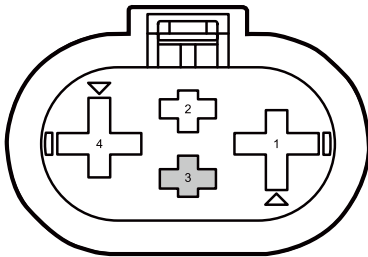
No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between the cooling fan and the low-speed fan relay is short to power supply.

CA30 Cooling fan harness connector



GE02-5892d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the low-speed fan relay ER12.
- C. Disconnect the cooling fan harness connector CA30p.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

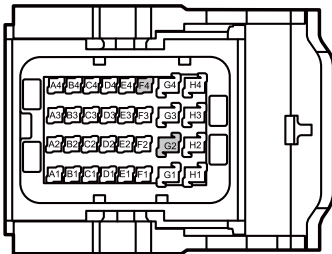
No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between the low-speed fan relay and the VCU is an open circuit.

CA66b VCU module harness connector B



GE02-5893d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the low-speed fan relay ER12.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(G2)	ER12(86)	Standard resistance: less than 1Ω
CA66b(F4)	ER12(30)	

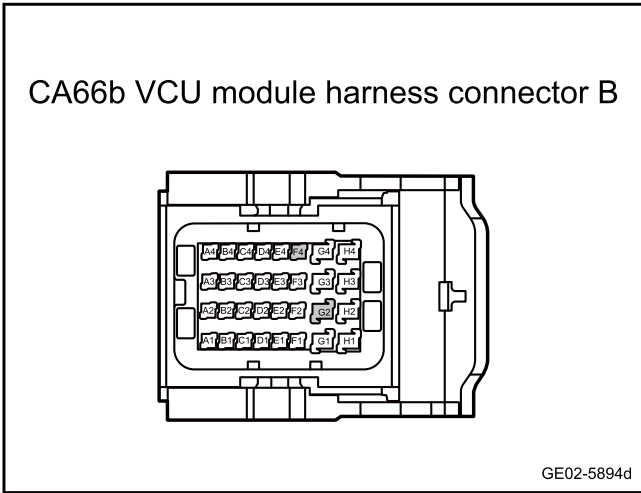
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check whether the circuit between the low-speed fan relay and the VCU is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Use a multimeter to measure the terminals according to the following table:

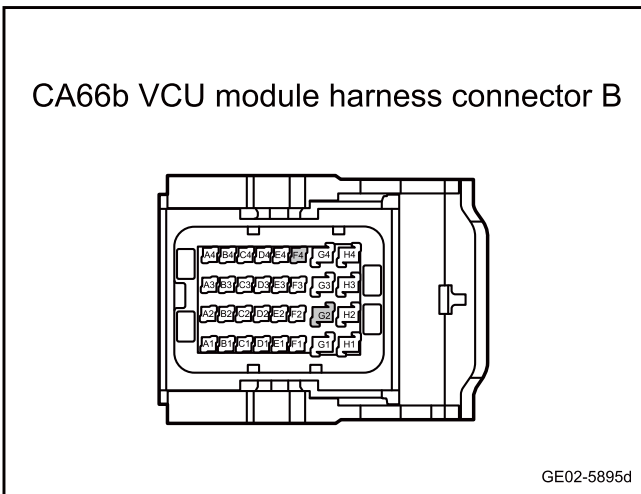
Measure terminal 1	Measure terminal 2	Standard value
CA66b(G2)	Vehicle body is grounded.	Standard resistance: 10pΩ or higher
CA66b(F4)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 10	Detect whether the circuit between ow speed fan relay and VCU is short to power supply.
---------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

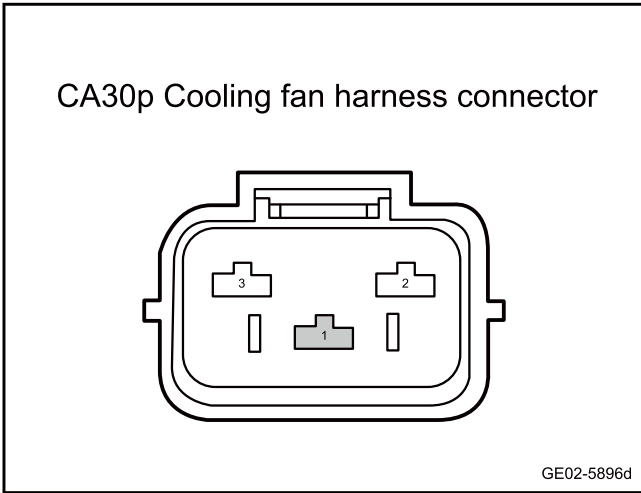
Measure terminal 1	Measure terminal 2	Standard value
CA66b(G2)	Vehicle body is grounded.	Standard voltage: 0V
CA66b(F4)	Vehicle body is grounded.	

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 11	Detect whether the circuit of cooling fan to ground is normal.
---------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the cooling fan harness connector CA30p.
- C. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 12	Replace the cooling fan.
---------	--------------------------

- A. To replace the cooling fan, please refer to [Replacement of Cooling Fan](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 13	Replace the VCU
---------	-----------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 14	Reprogram and reset the VCU.
---------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 15	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 16	System is normal.
------------	-------------------

2.5.8 Removing and installing

2.5.8.1 Coolant Level Check Procedure

Inspection procedure

- 1 Check the fluid level in the two reservoirs, and the fluid level should be between MAX and MIN.
- 2 Unscrew the filler cap and check if the freezing point of the coolant is normal.

Caution

If the coolant is not within the specified range, add coolant. If the coolant freezing point does not meet the requirements, it should be replaced.



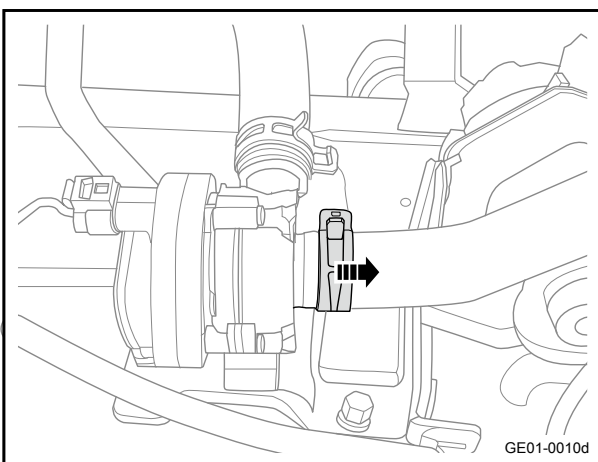
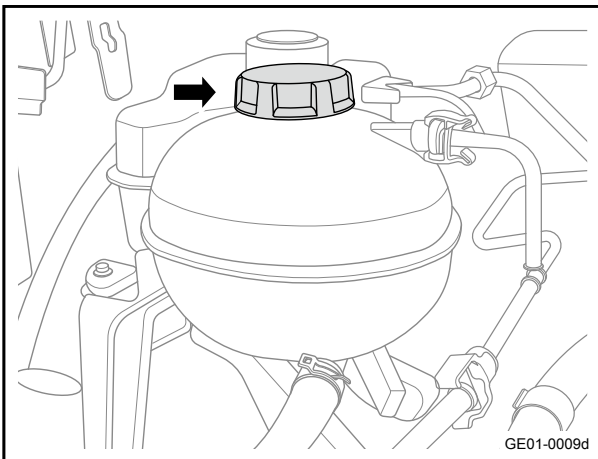
2.5.8.2 Coolant Replacement Procedure

Draining procedure (electric drive system coolant)

- 1 Open the expansion tank (motor cooling) cover.

Caution

Note: perform this operation when the electric drive system is in cooled state.

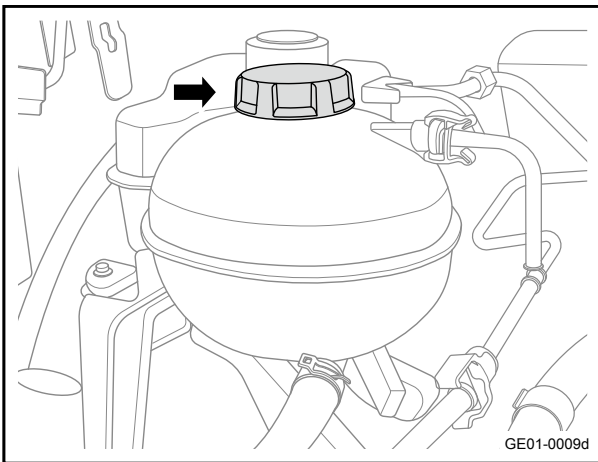
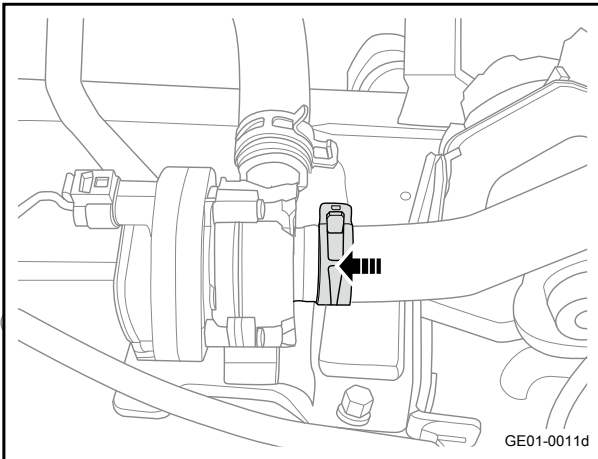


- 2 Disconnect the water inlet pipe of the cooling water pump assembly (integrated power controller), and use the recycling container to receive the drained coolant.

Caution

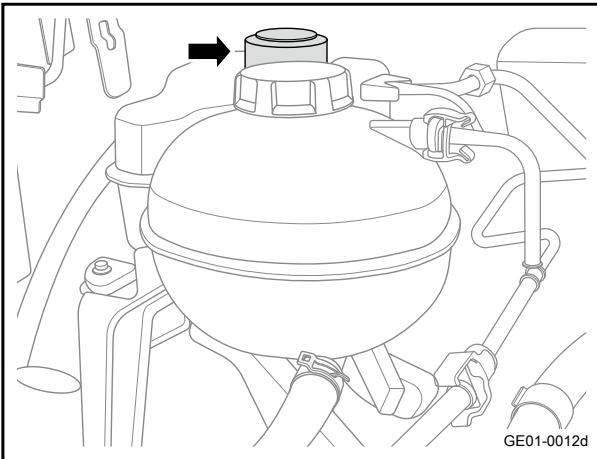
Collect and process the used electric drive system coolant in a centralized manner, waiting for scrapping or recycling, do not discharge the used electric drive system coolant into the sewer pipe to protect the environment.

Filling procedure (electric drive system coolant)

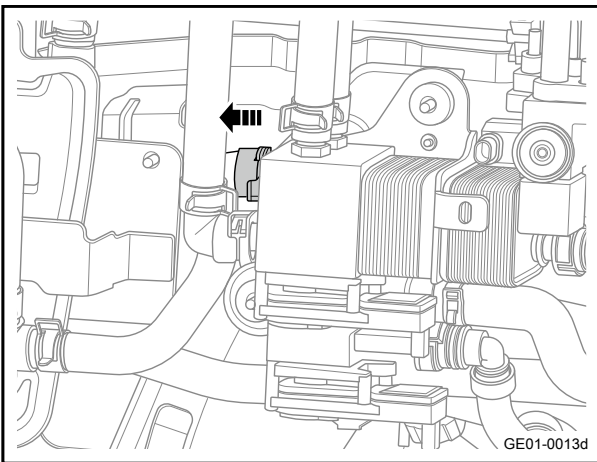


- 1 Connect all pipelines of motor circuit and battery circuit to ensure that the pipes are connected completely.
- 2 Open the cover of the coolant expansion tank of the heating circuit, and slowly add coolant until the coolant level in the expansion tank reaches MAX.
- 3 Power on the complete vehicle by Ready button and press the "AUTO" button and the "Rear Defrost" button for more than 3 seconds before releasing.
- 4 Check whether there are bubbles in the coolant pot and whether the coolant level drops (if not, press the "auto" button and the "rear defrost" button again at the same time).
- 5 The filling process should last for more than 30 minutes, and the whole vehicle needs to be powered off after the filling is completed.

Draining procedure (warm air system coolant)



- 1 Open the expansion tank (warm air system) cover.

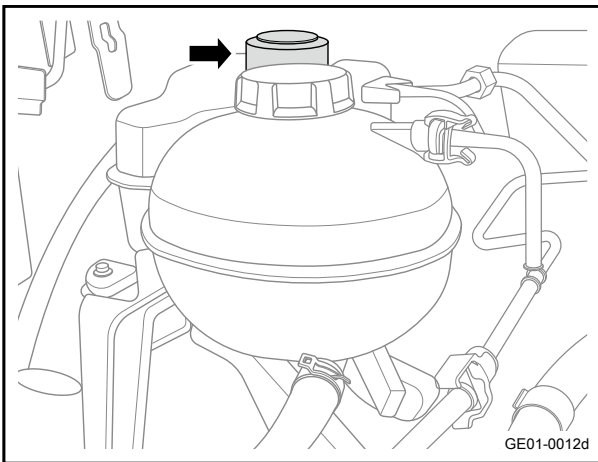
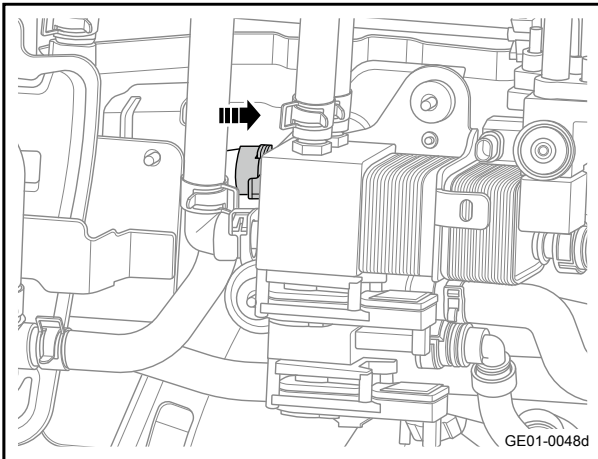


- 2 Disconnect the water inlet pipe of the PTC electric water pump (at the heat exchange control module side), and use the recycling container to receive the drained coolant.

Caution

Collect and process the used electric drive system coolant in a centralized manner, waiting for scrapping or recycling, do not discharge the used electric drive system coolant into the sewer pipe to protect the environment.

Filling procedure (warm air system coolant)

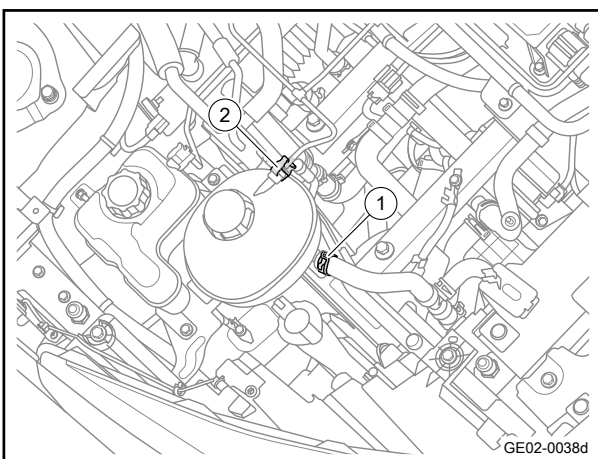


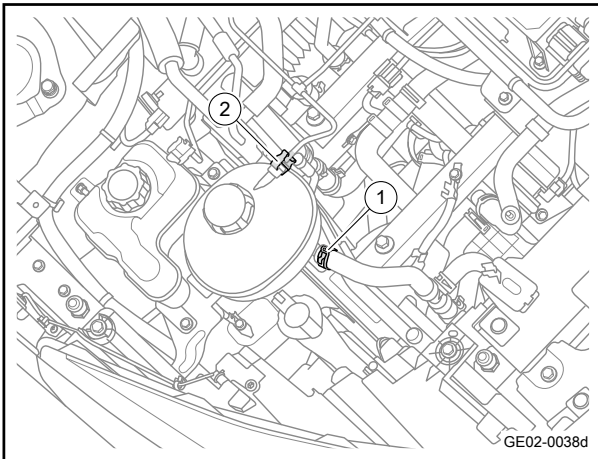
- 1 Connect the water inlet pipe of the PTC electric water pump (at the heat exchange control module side) to ensure that the pipe connection is complete.
- 2 Unscrew the expansion tank cover and start adding coolant until the coolant level reaches MAX.
- 3 Start the vehicle to ON gear and non-charged state, connect the diagnostic instrument and use the diagnostic instrument to enter the AC module in the C model, select the control option in AC mode, and select the option of "Heat Exchange Water Pump".
- 4 The duty circle of the water pump is controlled at 90%.
- 5 The filling process should last for more than 15 minutes, and exit the diagnosis after filling.

2.5.8.3 Replacement of expansion tank assembly (side mounted)

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front engine compartment cover Refer to [Replacement of Front Engine Compartment Cover Assembly](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disassemble the fastening clips 1 for the water inlet hose of the heating water pump, and disconnect the water inlet hose of the heating water pump.
- 5 Disconnect the cooling ventilation hose 2 between the expansion tank assembly (side mounted) and the drive motor.
- 6 Take off the expansion tank assembly (side mounted)





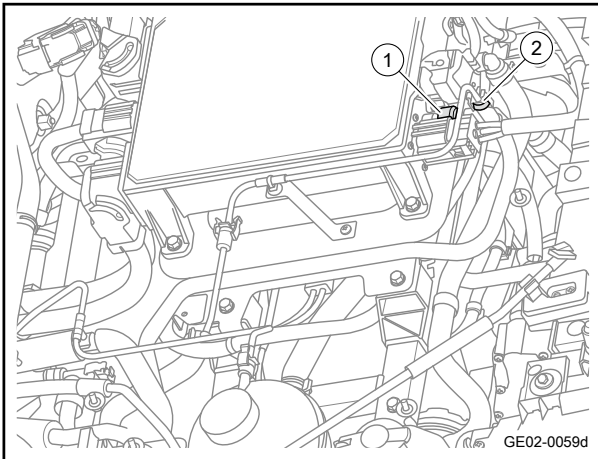
Installation procedure

- 1 Move the expansion tank assembly (side mounted) to the installation position.
- 2 Connect the cooling ventilation hose 2 between the expansion tank assembly (side mounted) and the drive motor.
- 3 Install the inlet pipe fixing clamp 1 of heating water pump.
- 4 Fill the power battery coolant.
- 5 Install the front engine compartment cover assembly.
- 6 Connect the negative cable of battery.

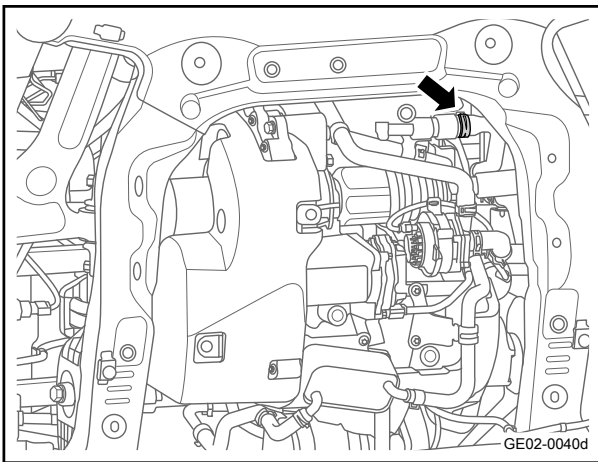
2.5.8.4 Replacement of Water Outlet Pipe of the Charger(low figuration)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front engine compartment cover assembly. Refer to [Replacement of Front Engine Compartment Cover Assembly](#)
- 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 5 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)

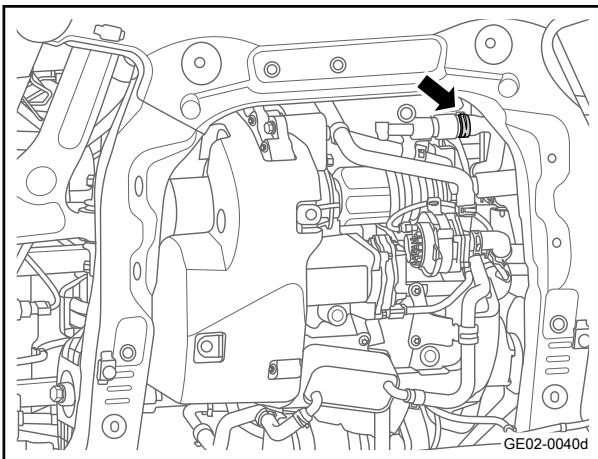


- 6 Disconnect the charger water outlet pipe 1 (the high and low-voltage charging system assembly side).
- 7 Disconnect the cooling ventilation hose 2 of the drive motor.

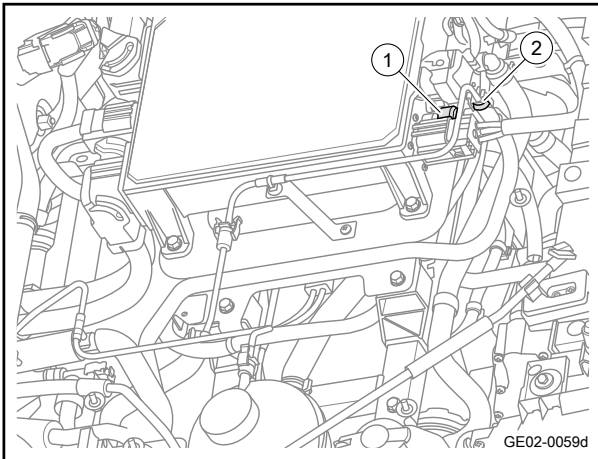


- 8 Disconnect fixing clamp of the water outlet pipe of the charger (the electric drive system side).
- 9 Disconnect the charger water outlet pipe positioning pipe clamp and take off the charger water outlet pipe.

Installation procedure



- 1 Move the water outlet pipe of the charger to the installation position. Install the charger outlet pipe positioning clamp.
- 2 Install the charger outlet pipe fixing clamp (electric drive system side).



- 3 Install the fastening clip 2 of the cooling and ventilation hose of the drive motor.
- 4 Install charger outlet pipe 1 (the high and low-voltage charging system assembly side).

- 5 Install the front engine compartment bottom shield.
- 6 Fill the power battery coolant.
- 7 Lower the vehicle.
- 8 Install the front engine compartment cover assembly.
- 9 Connect the negative cable of battery.

2.5.8.5 Replacement of Three-way Solenoid Valve Assembly

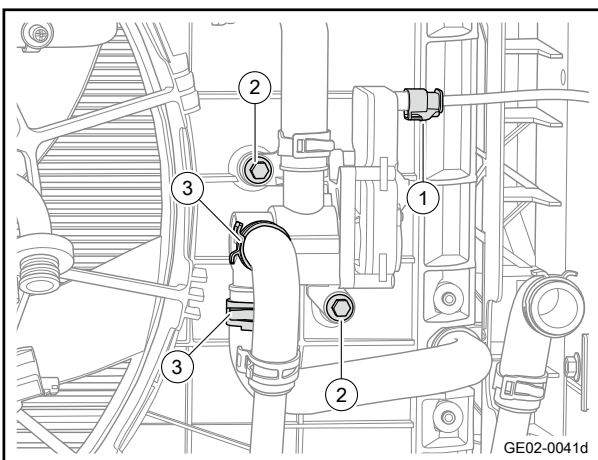
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

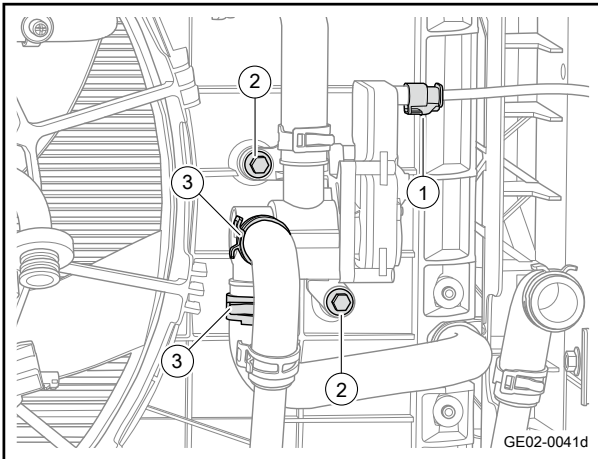
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disconnect the three-way solenoid valve assembly harness connector 1.
- 5 Remove the 2 fixing bolts 2 of the three-way solenoid valve assembly.
- 6 Remove the fastening clips 3 of the water inlet and outlet pipes of the radiator, and disconnect the water inlet and outlet pipes of the radiator and the inlet pipe of the electrical heating three-way solenoid valve.
- 7 Take off the three-way solenoid valve assembly.



Installation procedure



- 1 Move the three-way solenoid valve assembly to the mounting position.
- 2 Connect the water inlet and outlet pipes of the radiator and the inlet pipe of the electrical heating three-way solenoid valve, and install the fastening clips 3 of the inlet and outlet pipes of the radiator.
- 3 Install the 2 fixing bolts 2 of the three-way solenoid valve assembly.
Torque: 10N·m
- 4 Connect the three-way solenoid valve assembly harness connector 1.
- 5 Fill the power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.5.8.6 Replacement of Inlet Pipe of the Electrical Heating Three-way Solenoid Valve

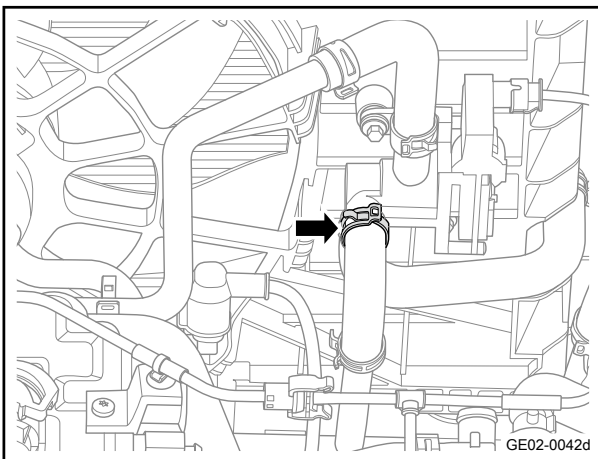
Removal procedure

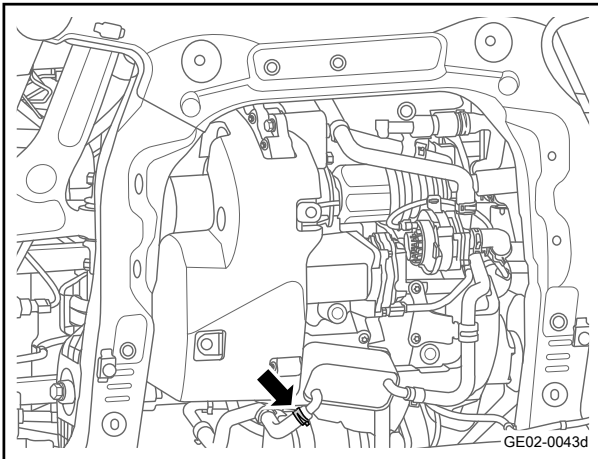
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

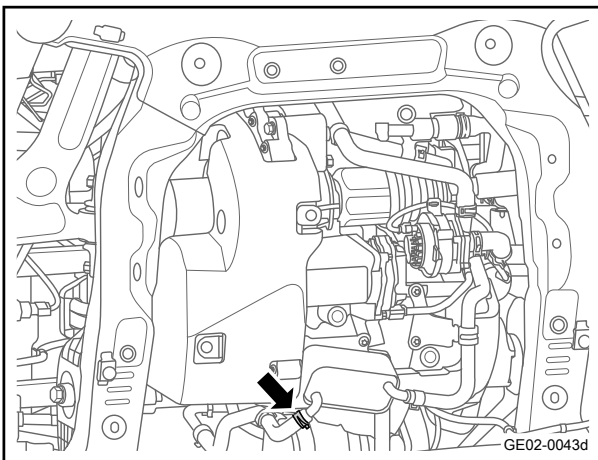
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 5 Remove the fastening clips of the inlet pipe of the electrical heating three-way solenoid valve (electric heating three-way solenoid valve side), and disconnect the inlet pipe of the electrical heating three-way solenoid valve (electric heating three-way solenoid valve side).



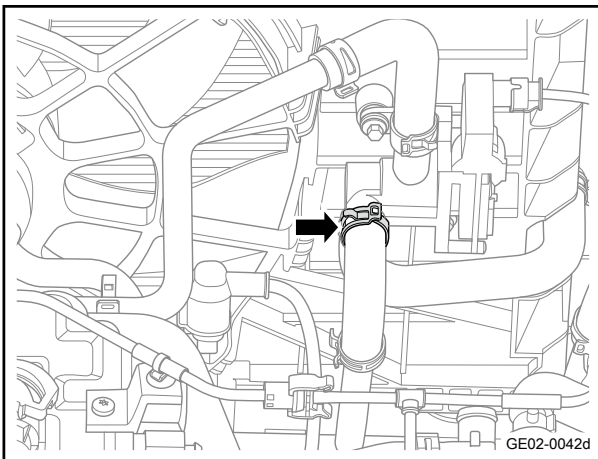


- 6 Remove the fastening clips of the inlet pipe of the electrical heating three-way solenoid valve (electric drive system side), and disconnect the inlet pipe of the electrical heating three-way solenoid valve (electric drive system side).
- 7 Take off the inlet pipe of the electrical heating three-way solenoid valve.

Installation procedure



- 1 Move the inlet pipe of the electrical heating three-way solenoid valve to the installation position.
- 2 Install the fastening clips of the inlet pipe of the electrical heating three-way solenoid valve (electric drive system side).

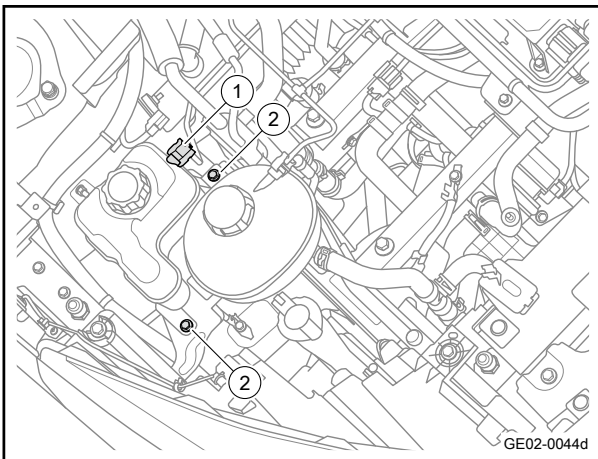
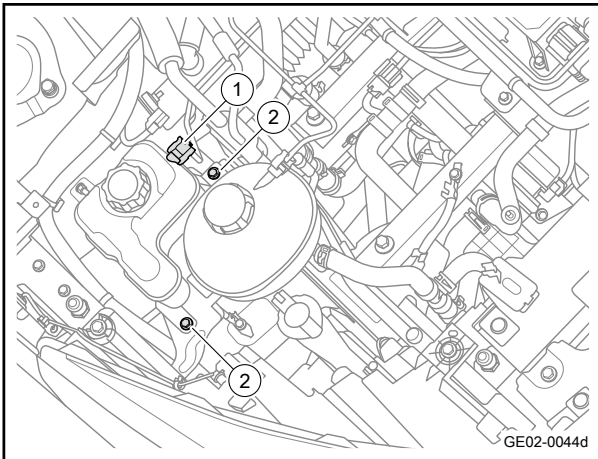


- 3 Install the fastening clips of the inlet pipe of the electrical heating three-way solenoid valve (electric heating three-way solenoid valve side).

- 4 Install the front engine compartment bottom shield.
- 5 Fill the power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.5.8.7 Replacement of Expansion Tank Assembly (Battery Cooling)

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disconnect the electric heating ventilation hose clip 1.
- 5 Remove the 2 fixing bolts 2 of the expansion tank assembly (battery cooling).
- 6 Disassemble the fastening clips 3 for the front water inlet hose of the electric heating water pump, and disconnect the front water inlet hose of the electric heating water pump.
- 7 Take off the expansion tank assembly (battery cooling).

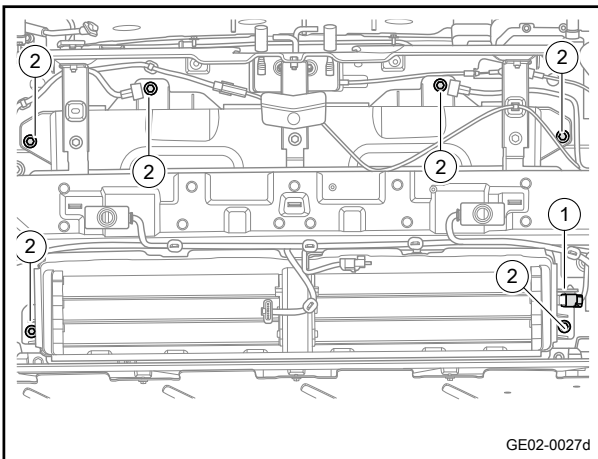
Installation procedure

- 1 Move the expansion tank assembly (battery cooling) to the installation position.
- 2 Install the fixing clip 3 of the front inlet hose of the electric heating water pump.
- 3 Install the 2 fixing bolts 2 of the expansion tank assembly (battery cooling).
Torque: 6N·m (metric system) 4.4 lb-ft (Imperial system)
- 4 Install the electric heating ventilation hose clip 1.

- 5 Fill the power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

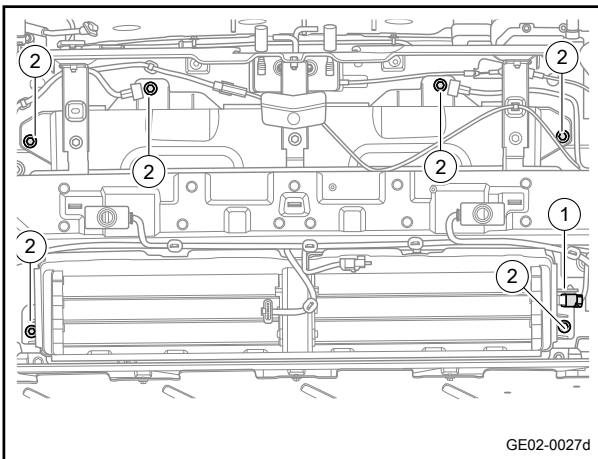
2.5.8.8 Replacement of Intake Grille Assembly

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- Warning
- Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
 - 3 Remove the pedestrian leg protection bracket. Refer to [Replacement of the leg protection bracket for pedestrians](#)
 - 4 Disconnect the intake grille assembly harness connector 1.
 - 5 Remove the 6 fixing bolts 2 of intake grille assembly.
 - 6 Remove intake grille assembly

Installation procedure



- 1 Move the intake grille assembly to the installation position.
 - 2 Install 6 fixing bolts of intake grille assembly
Torque: 6N·m
 - 3 Connect the harness connector 1 of the intake grille assembly.
- 4 Install the pedestrian leg protection bracket.
 - 5 Lower the vehicle.
 - 6 Connect the negative cable of battery.

2.5.8.9 Replacement of Cooling Module

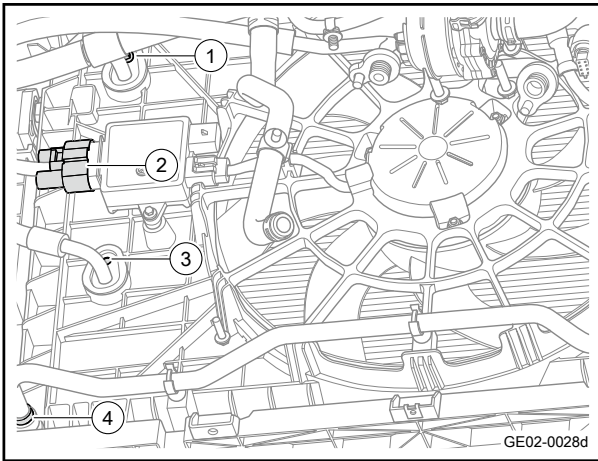
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

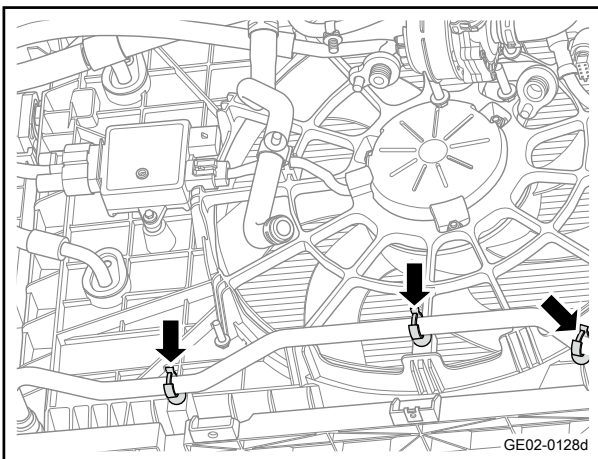
Warning

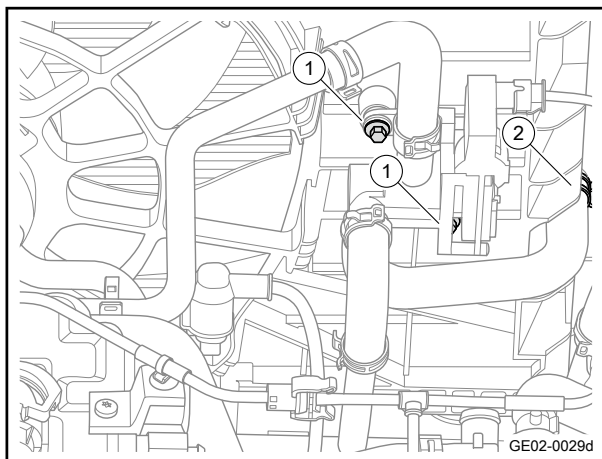
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 5 Dismount the intake grille assembly. Refer to [Replacement of Intake Grille Assembly](#)
- 6 Remove the 1 fixing bolt 1 of the condenser inlet pipe.
- 7 Disconnect the harness connector 2 of cooling fan.
- 8 Remove the 1 fixing bolt 3 of the condenser outlet pipe.
- 9 Dismount the radiator water outlet pipe hoop clip 4.

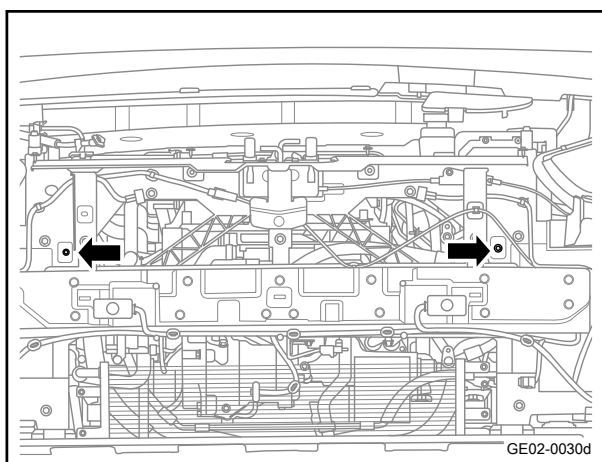


- 10 Disengage the fixing buckles of the radiator outlet pipe.

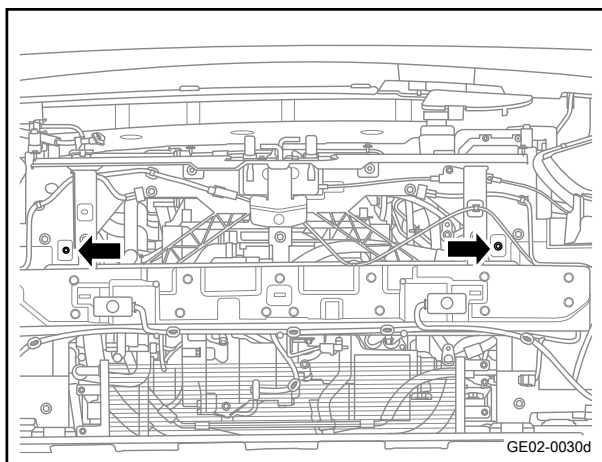




- 11 Remove the 2 fixing bolts 1 of the three-way solenoid valve.
- 12 Disengage the fastening clip 2 of the water inlet pipe of the radiator.



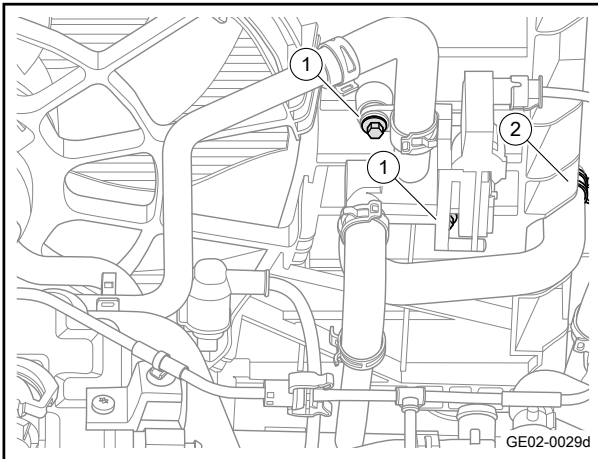
- 13 Remove the 2 fixing bolts of the cooling module.
- 14 Take off the cooling module.



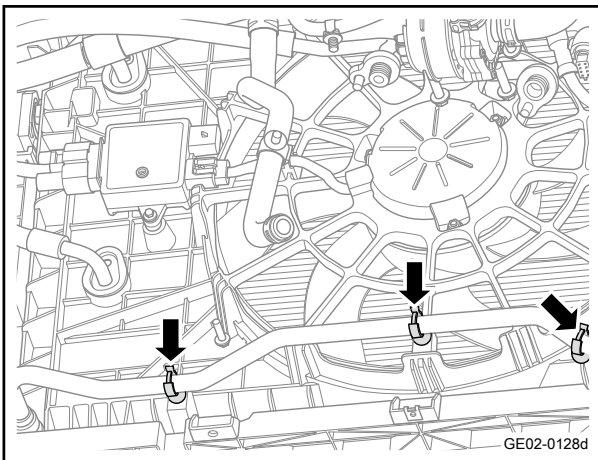
Installation procedure

- 1 Move the cooling module to the installation position.
- 2 Install the 2 fixing bolts of the cooling module.

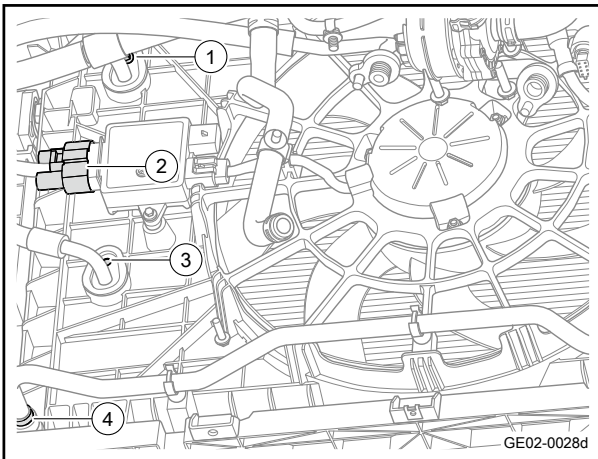
Torque: 9N·m



- 3 Install the fastening clip 2 of the water inlet pipe of the radiator.
- 4 Install the 2 fixing bolts 1 of the three-way solenoid valve assembly.
Torque: 9N·m



- 5 Mount the radiator water inlet and outlet pipes clamps.



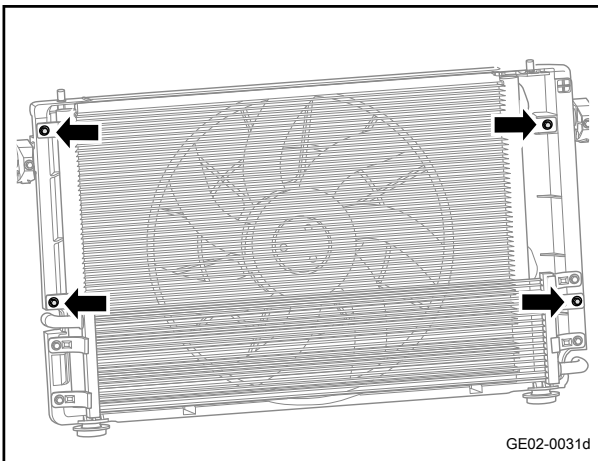
- 6 Mount the radiator water outlet pipe hoop clip 4.
- 7 Install the 1 fixing bolt 3 of the condenser outlet pipe.
Torque: 9N·m
- 8 Connect the harness connector 2 of cooling fan.
- 9 Install the 1 fixing bolts 1 of the condenser inlet pipe.
Torque: 9N·m

- 10 Mount the intake grille assembly.
- 11 Refill air conditioner refrigerant.
- 12 Fill the power battery coolant.
- 13 Lower the vehicle.
- 14 Connect the negative cable of battery.

2.5.8.10 Replacement of Cooling Fan Assembly

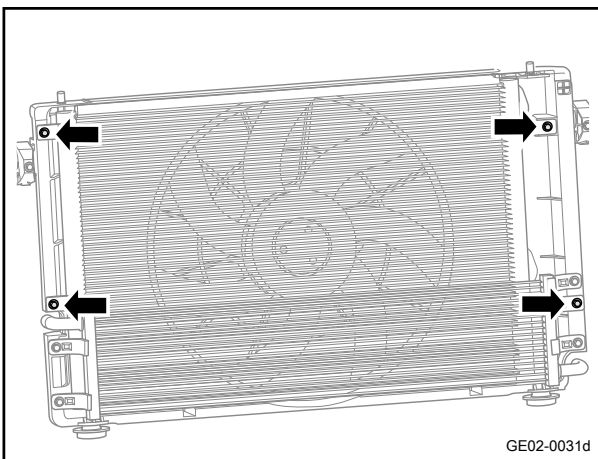
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 5 Remove the radiator assembly. Refer to [Replacement of Radiator Assembly](#)
- 6 Remove the 4 fixing bolts of the condenser.
- 7 Separate the condenser and the cooling fan assembly, and remove the cooling fan assembly.



Installation procedure

- 1 Move the cooling fan assembly to the installation position.
- 2 Install the 4 fixing bolts of the condenser.
Torque: 9N·m



- 3 Install the radiator assembly
- 4 Fill the power battery coolant.
- 5 Refill air conditioner refrigerant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.5.8.11 Replacement of radiator assembly

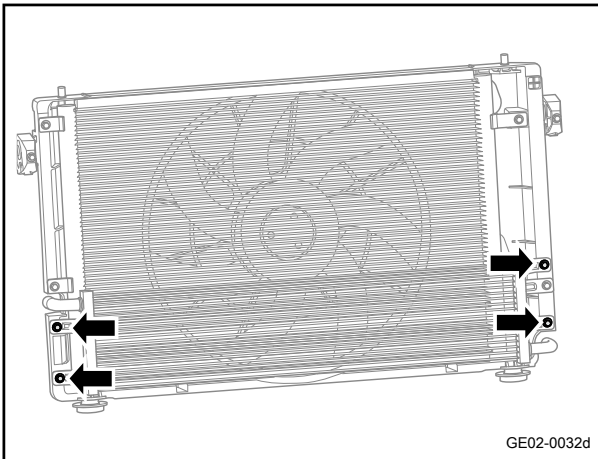
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

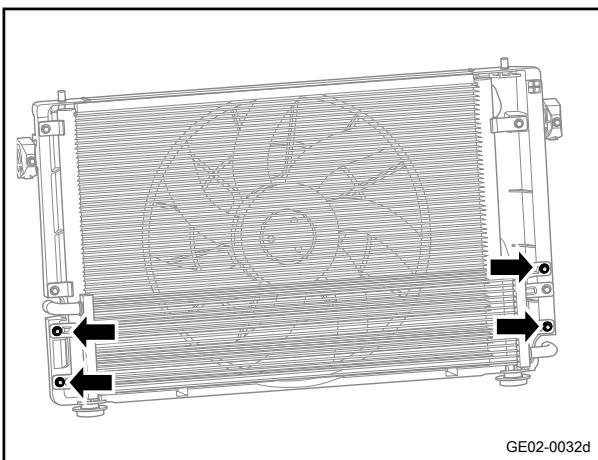
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 5 Remove the cooling module. Refer to [Replacement of Cooling Module](#)
- 6 Remove the 4 fixing bolts of the radiator assembly.
- 7 Take off the radiator assembly.



Installation procedure

- 1 Move the radiator assembly to the installation positions.
- 2 Install the 4 fixing bolts of the radiator assembly.
Torque: 9N·m



- 3 Install the cooling module.
- 4 Refill air conditioner refrigerant.
- 5 Fill the power battery coolant.

- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.5.8.12 Replacement of water outlet pipe of radiator

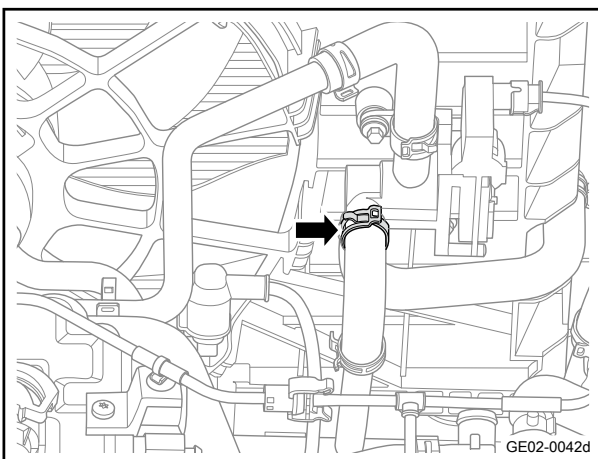
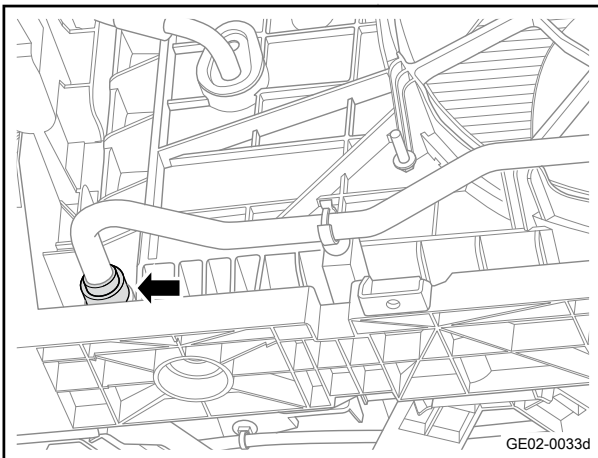
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

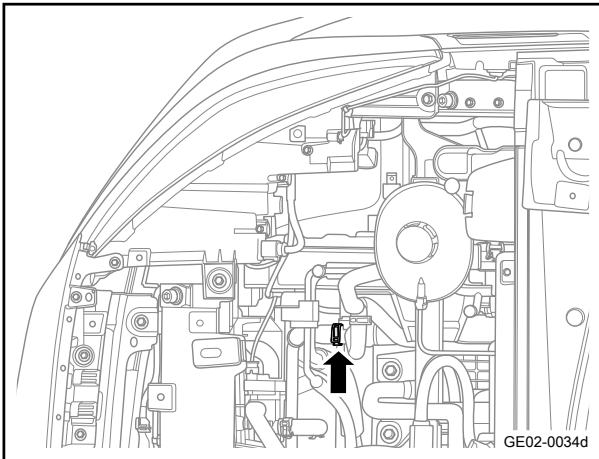
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disconnect the connection pipe between the water outlet pipe of the radiator and the cooling module.

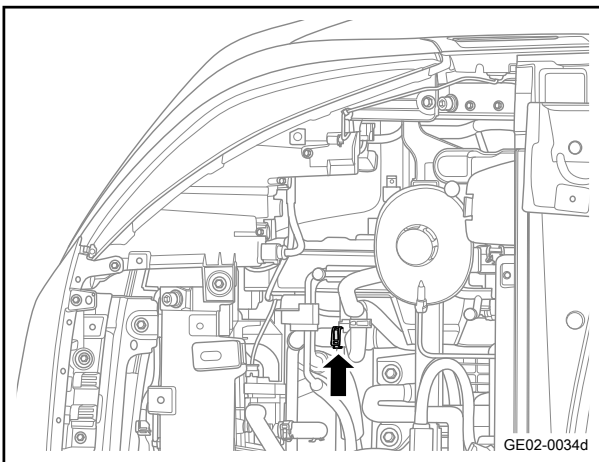


- 5 Disconnect the fastening clips connecting the water outlet pipe of the radiator with the three-way solenoid valve.

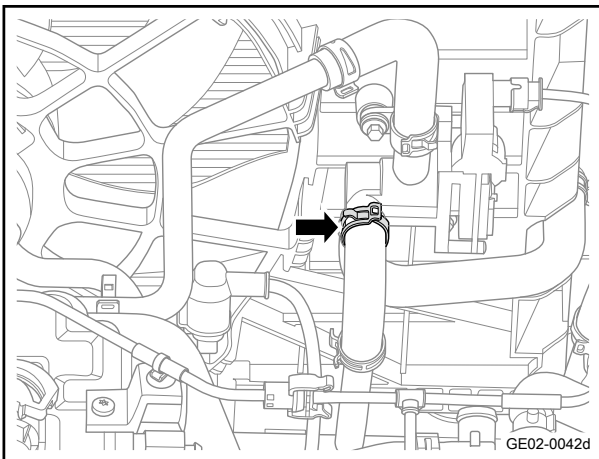


- 6 Disengage the fixing buckles of the radiator outlet pipe from four way valve.
- 7 Remove clamp from the water outlet pipe of radiato, and remove the water outlet pipe of radiator.

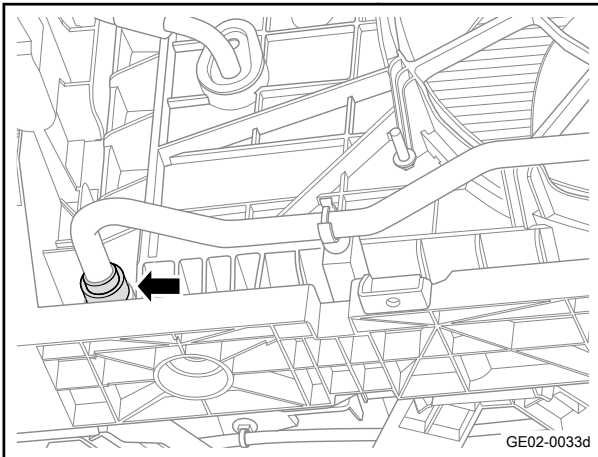
Installation procedure



- 1 Move the water outlet pipe of the radiator to the installation position and install the fixing clips of the water outlet pipe of the radiator.
- 2 Install the fixing buckles for radiator outlet pipe and four way valve.



- 3 Install the fixing clamp connecting the water outlet pipe of the radiator with the three-way solenoid valve.



- 4 Disconnect the water outlet pipe of the radiator and the cooling module.

- 5 Fill the power battery coolant.
- 6 Lower the vehicle.
- 7 Connect the negative cable of battery.

2.5.8.13 Replacement of water inlet pipe of radiator

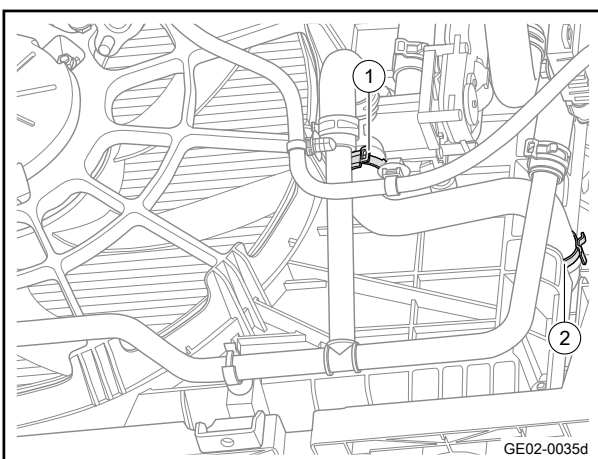
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

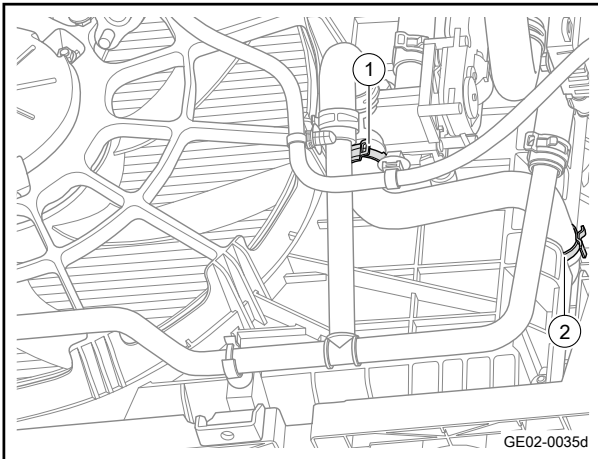
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Disconnect the fastening clip 1 connecting the water inlet pipe of the radiator with the three-way solenoid valve.
- 5 Disconnect the fastening clip 2 connecting the water inlet pipe of the radiator with the cooling module.
- 6 Take down water inlet pipe of radiator.



Installation procedure



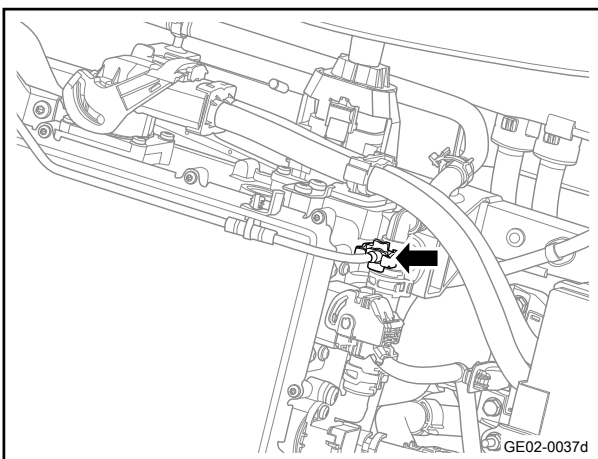
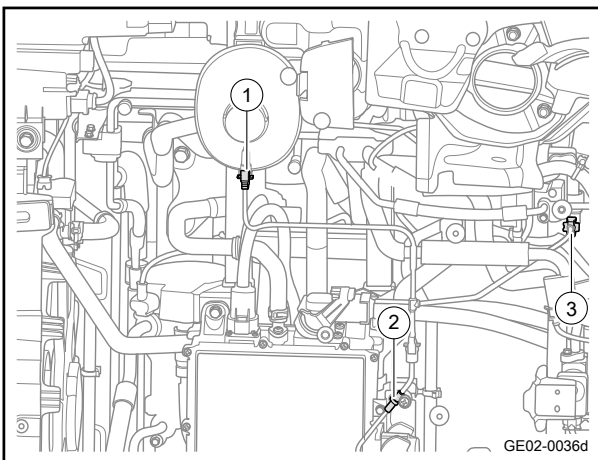
- 1 Move the water inlet pipe of the radiator to the installation positions.
- 2 Install the fastening clip 2 connecting the water inlet pipe of the radiator with the cooling module.
- 3 Install the fastening clip 1 connecting the water inlet pipe of the radiator with the three-way solenoid valve.

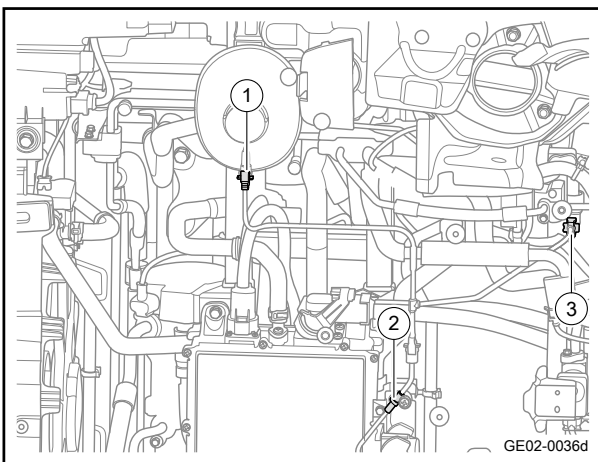
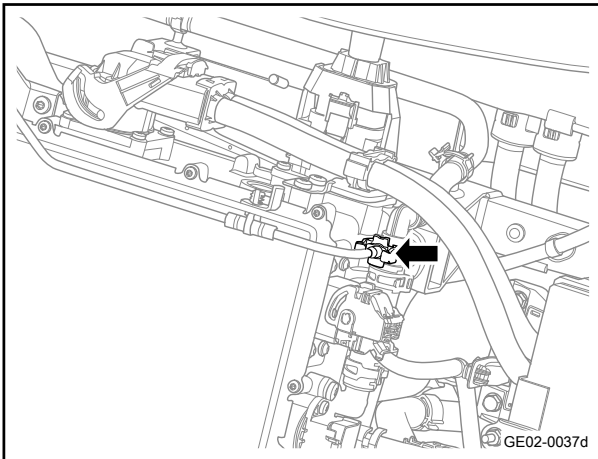
- 4 Fill the power battery coolant.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

2.5.8.14 Replacement of Cooling Ventilation Pipe of the Drive Motor

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Fasten the fixing clip 1 connecting the drive motor cooling and ventilation pipe and the expansion tank assembly (side-mounted).
- 4 Disconnect the fixing clip 2 of the cooling and ventilation pipe of the drive motor.
- 5 Disconnect the cooling and ventilation pipe of the drive motor and heat exchanger assembly 3.
- 6 Disconnect the driving motor cooling and ventilation pipe from the water outlet pipe of the charger.
- 7 Take off the cooling and ventilation pipe of the drive motor.





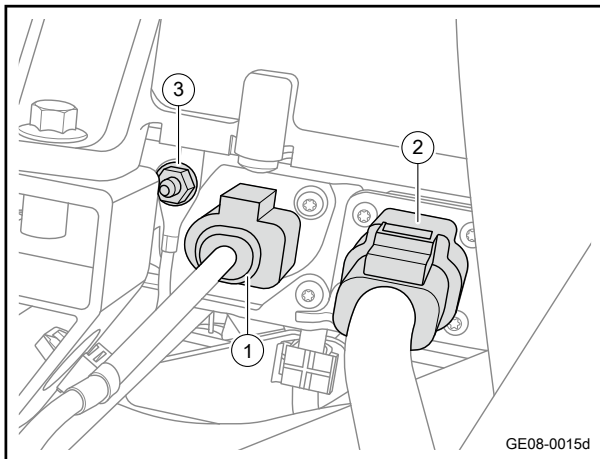
Installation procedure

- 1 Move the cooling and ventilation pipe of the drive motor to the installation position.
- 2 Connect the cooling and ventilation pipe of the drive motor and the water outlet pipe of the charger.
- 3 Connect the cooling and ventilation pipe of the drive motor and the heat exchange assembly 3.
- 4 Install the fastening clip 2 of the cooling and ventilation pipe of the drive motor.
- 5 Connecting the driving motor cooling and ventilation pipe and the expansion tank assembly 1 (side-mounted).
- 6 Fill the power battery coolant.
- 7 Lower the vehicle.

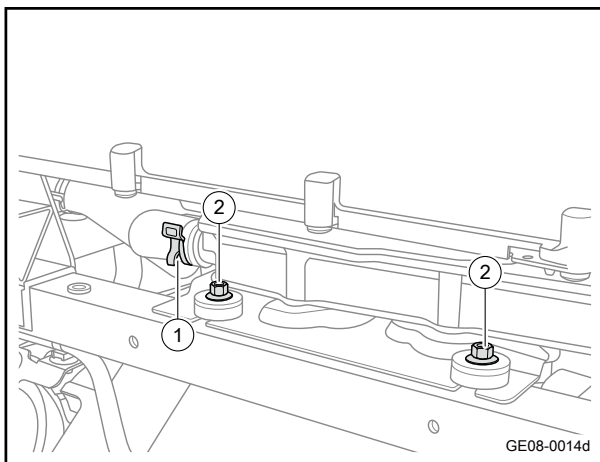
2.5.8.15 Replacement of PTC heat controller

Removal procedure

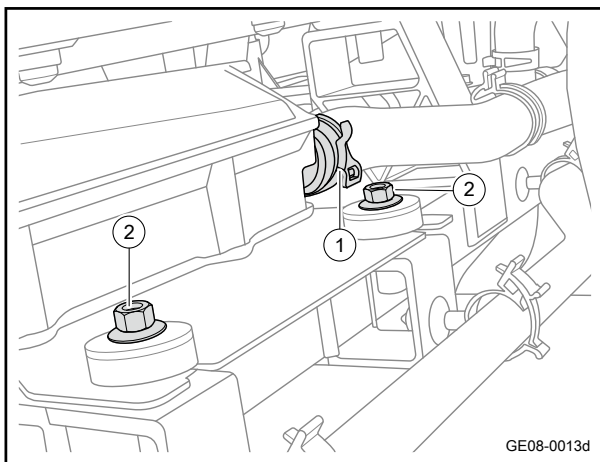
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- Warning**
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Disconnect the DC bus assembly (high and low voltage charging system side). Refer to [Replacement of DC Bus Assembly](#)
 - 3 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)



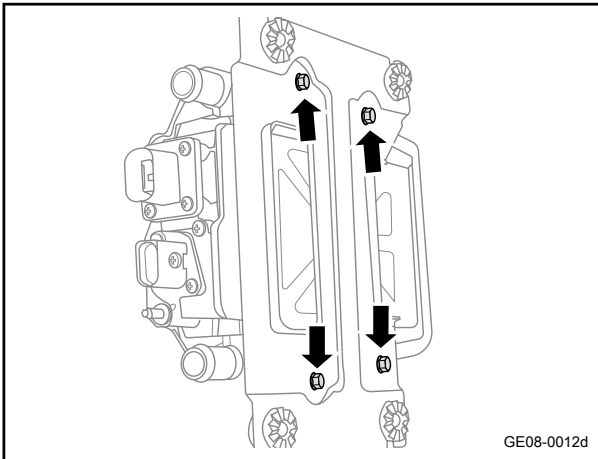
- 4 Disconnect the PTC heat controller high voltage harness connector 1.
- 5 Disconnect the PTC heat controller low voltage harness connector 2.
- 6 Remove the fixing nut 3 of the PTC heat controller ground wire.



- 7 Disconnect the PTC heat controller from the heater water inlet hose 1.
- 8 Remove 2 fixing bolts 2 of PTC heat controller bracket.

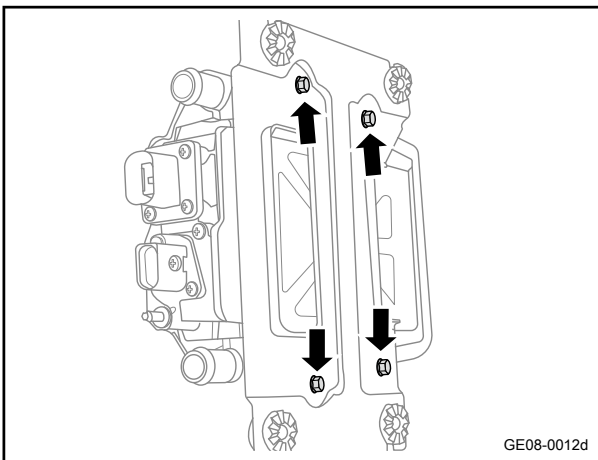


- 9 Disconnect the heater assembly from the water outlet hose 1 of the heater.
- 10 Remove 2 fixing bolts 2 of PTC controller bracket.
- 11 Take off the heater bracket assembly.

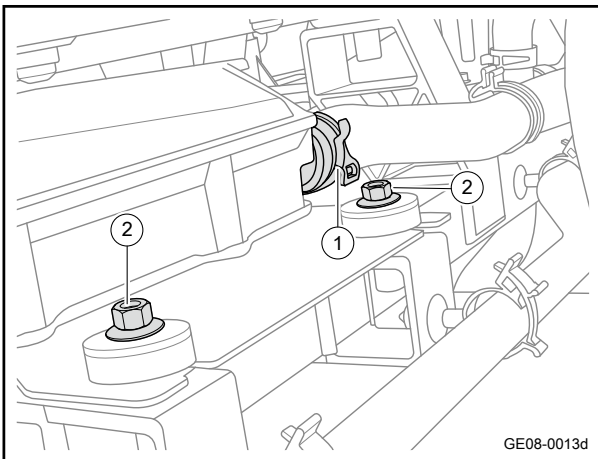


- 12 Remove the 4 fixing screws of the PTC heat controller.
- 13 PTC heat controller

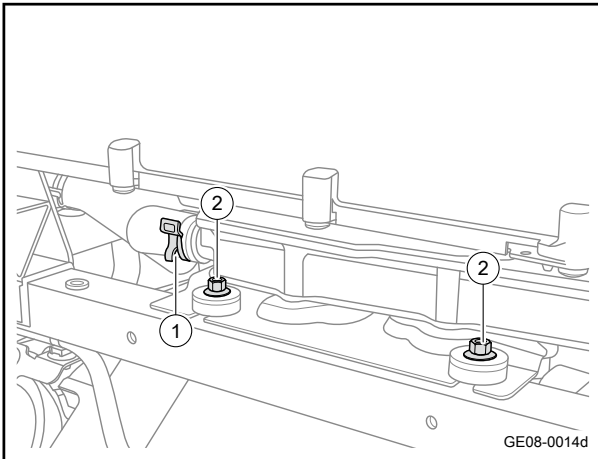
Installation procedure



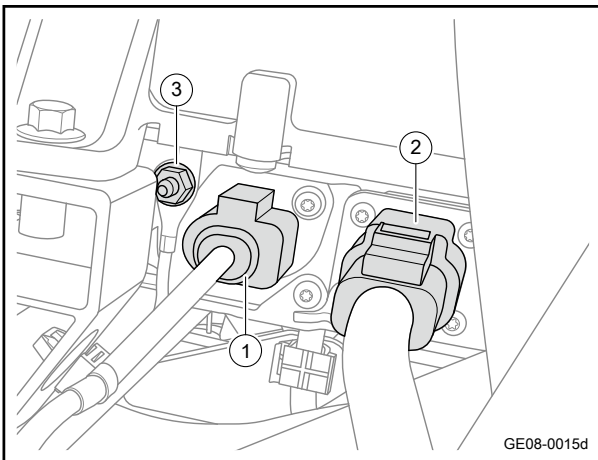
- 1 Move the PTC heat controller to the installation position.
- 2 Install 4 fixing bolts of PTC heat controller.
Torque: 3N·m (metric system) 2.2lb-ft (Imperial system)



- 3 Move the heater and bracket assembly to the installation positions.
- 4 Install 2 fixing bolts 2 of PTC heat controller bracket rear part.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 5 Connect the PTC heat controller with the water outlet hose 1 of the heater .



- 6 Install 2 fixing bolts 2 of PTC heat controller bracket front part.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 7 Connect the PTC heat controller and the heater water inlet hose 1.



- 8 Install the fixing nut 3 of the heater ground wire.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 9 Connection to PTC heating controller low-voltage harness connector 2.
- 10 Connection to PTC heating controller high-voltage harness connector 1.
- 11 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 12 Connect the DC bus assembly(at the high and low-voltage charging system side).
- 13 Connect the negative cable of battery.

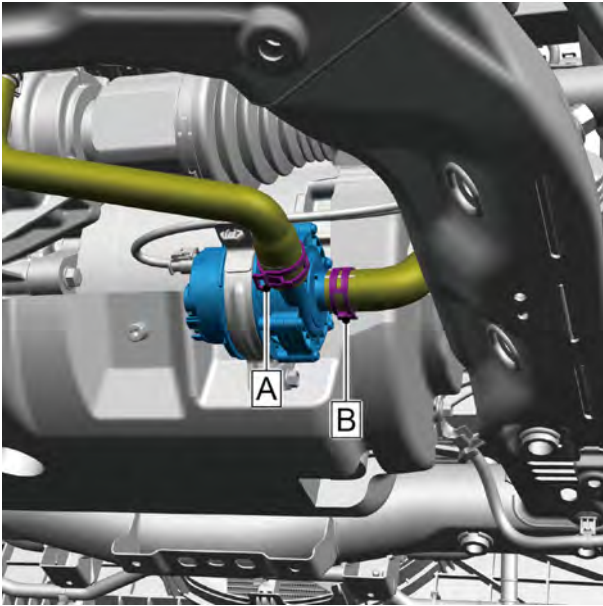
2.5.8.16 Battery Cooling Water Pump

Removal procedure

Caution

Perform maintenance of components in the cooling system while the vehicle is in the cold state.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Discharge coolant. Refer to [Coolant Replacement Procedure](#)



- 5 Remove the 1 fixing clamp A connecting the water inlet pipe of the battery with the cooling water pump, and disconnect the water inlet pipe of the battery from the cooling water pump.

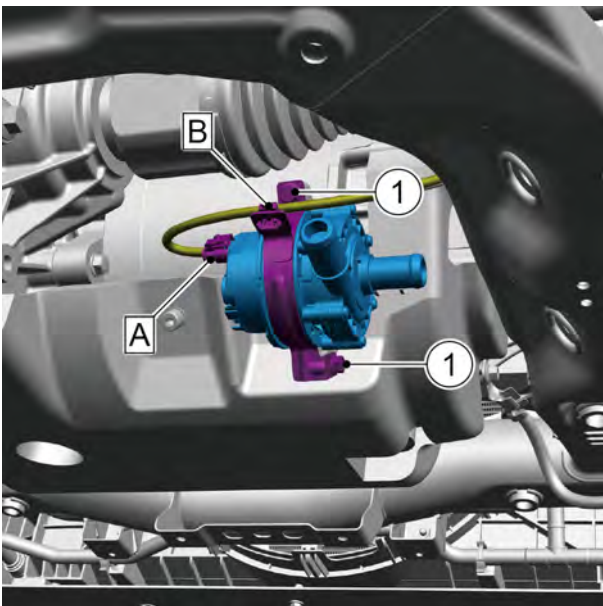
Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 6 Remove the 1 fixing clamp B connecting the water inlet pipe of the battery pump with the battery cooling water pump, and disconnect the water inlet pipe of the battery pump from battery cooling water pump.

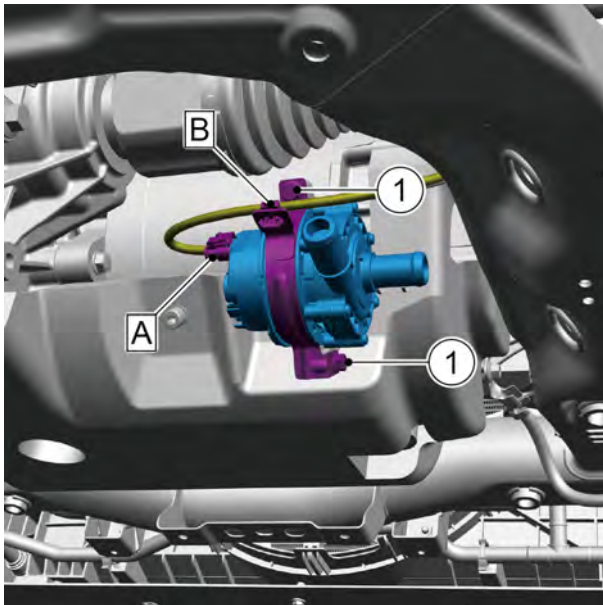
Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.



- 7 Disconnect the harness connector A between the power harness assembly and the battery cooling water pump.
- 8 Disconnect the 1 fixing clip B connecting the power harness and the heating water pump bracket.
- 9 Install the 2 fixing bolts 1 between motor water pump bracket and the electric driving system assembly, and take out the motor water pump bracket .
- 10 Take off the motor water pump assembly(70W).

Installation procedure



- 1 Move the motor electric oil pump (70W) to the installation position.

Caution

Remove the bundle of pipes.

- 2 Install motor water pump bracket. Install and tighten the 2 fixing bolts 1 between driving motor water pump bracket and the integrated electric driving system assembly.
Torque: 10N·m
- 3 Install the 1 fixing clip B connecting the power harness assembly and the heating water pump bracket.
- 4 Connect the harness connector A between the power harness assembly and the battery cooling water pump.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 5 Move the water inlet pipe of the battery pump to the installation position and install the 1 fixing clamp B connecting the water inlet pipe of the battery pump with the battery cooling water pump.

Caution

When installing, spray some grease on the water inlet pipe interface of the battery pump.

Remove the 1 fixing clamp B connecting the water inlet pipe of the battery water pump and the battery cooling water pump.

- 6 Move the water inlet pipe of the battery pump to the installation position and install the 1 fixing clamp A connecting the water inlet pipe of the battery pump with the battery cooling water pump.

Caution

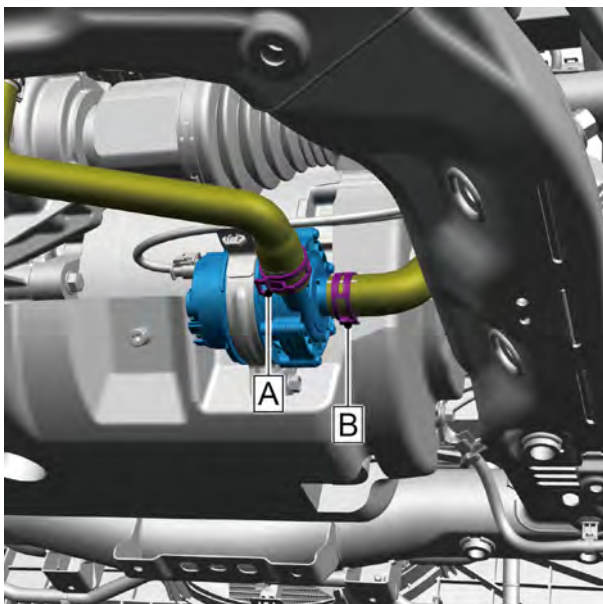
Spray some grease on the water inlet pipe interface of the battery.

Check whether the 1 fixing clamp A connecting the battery inlet pipe and the battery cooling water pump is installed in place.

- 7 Install the front engine compartment bottom shield.
- 8 Lower the vehicle.
- 9 Add warm air system coolant and exhaust.
- 10 Connect the negative cable of battery.

2.5.8.17 Replacement of Motor Water Pump

Removal procedure

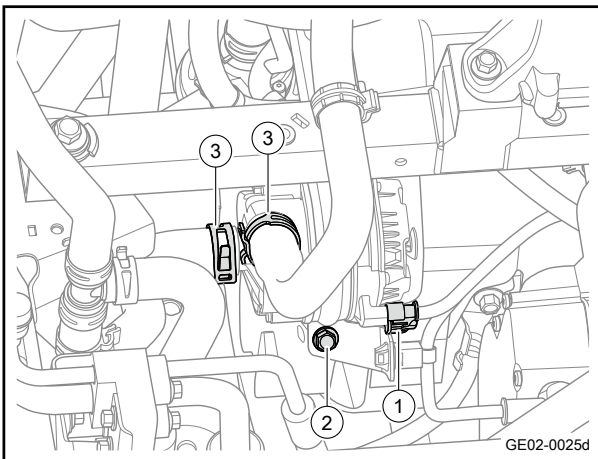


- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front engine compartment cover assembly. Refer to [Replacement of Front Engine Compartment Cover Assembly](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 5 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 6 Disconnect the harness connector 1 of the motor heating water pump .
- 7 Loosen the 2 fixing bolts 2 of the motor heating water pump.
- 8 Remove the 2 fixing clamps 3 of the water inlet and outlet pipes of the motor heating water pump, and disconnect the water inlet and outlet pipes of the motor heating water pump.
- 9 Take off the motor heating water pump.



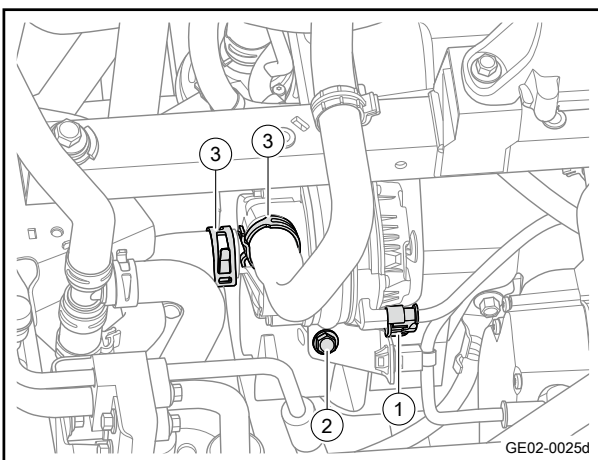
Installation procedure

- 1 Move the motor heating water pump to the installation position.
- 2 Install the 2 fixing clamps 3 of the water inlet and outlet pipes of the motor heating water pump.
- 3 Install the 2 fixing bolts 2 of the motor heating water pump. Torque: 9N·m
- 4 Connect the harness connector 1 of the motor heating water pump.

Caution

Pay attention to "one plug, two ring, three confirmation" when plugging.

- 5 Fill the power battery coolant.
- 6 Install the front engine compartment bottom shield.
- 7 Lower the vehicle.



- 8 Install the front engine compartment cover assembly.
- 9 Connect the negative cable of battery.

2.6 Charging System

2.6.1 Specification

2.6.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
AC charging socket wire harness assembly and vehicle body fixing bolt	M6×20	8.5-11.5
AC charging socket wire harness assembly and vehicle body fixing nut	M6	8.5-11.5
AC charging socket wire harness assembly fixing bolt	M6×20	8.5-11.5
High and low-voltage charging system assembly fixing bolt	M8×25	20-28
High and low-voltage charging system assembly fixing nut	M8	22-24
DC charging socket wire harness assembly fixing bolt	M6×25	8.5-11.5
DC charging socket wire harness assembly and vehicle body fixing bolt	M6×25	3.2-4.8
DC charging socket wire harness assembly and vehicle body fixing nut	M6	8.5-11.5
Battery strip fixing nut	M6	5-7

2.6.1.2 Specifications of the high and low-voltage charging system

6.6kW

Item	Parameter	Unit
Range of the input voltage	85-265	Vac
Range of the output voltage	250-500	Vdc
Maximum input current	32	A
Maximum output current	24	A
Output power	6.6	KW
Working efficiency	≥94% (full load)	-
Weight (without harness) (kg)	13	-
Temperature of the working environment (°C)	-40~85	°C
Protection grade	IP67/IP6K9K	-
Input impulse current	≤1.2*Iac	-
Communication	CAN	-

2.6.2 Instructions and operations

2.6.2.1 General

1. Overview

The charging system of this vehicle consists of ODP, DC and AC charging ports.

The charging system can be divided into external charging system and internal charging system in terms of type. The external charging system includes fast charging and slow charging; the internal charging system includes low-voltage power supply charging, intelligent charging and braking energy feedback.

The AC charging port is installed on the left rear side of the vehicle body, and the DC charging port is installed on the right front side of the vehicle body. When charging, according to the selected charging type, connect the AC charging plug or DC charging plug to the corresponding charging socket, and start charging after confirming that the connection is correct. After the charging port is connected, a detection loop is formed. When a connection failure occurs, the system can detect the fault.

2. Charging port cover switch

The charging port cover is unlocked in two stages, the first stage is electrically unlocking (synchronized with the door), the second stage is mechanically unlocking, and the Push-push type is adopted; Press to open the charging port cover, then open the charging port cover on the socket, select the appropriate charging equipment, and insert the charging gun into the charging socket to charge the vehicle.

3. AC charging status indication

The charging status indicator lamps are located on the left and right front fenders of the vehicle to indicate different charging states. The definition of charging status indicator lamp is as follows:

Status	Description
Breather at a frequency of 2 seconds	Charging, the power is less than or equal to 50%
Breather at a frequency of 4 seconds	Charging, the battery is greater than 50%
Turn off after 2 minutes of always on	Charge completed
Flash (lighted for 2 seconds, turned off for 2 seconds)	Charging and heating

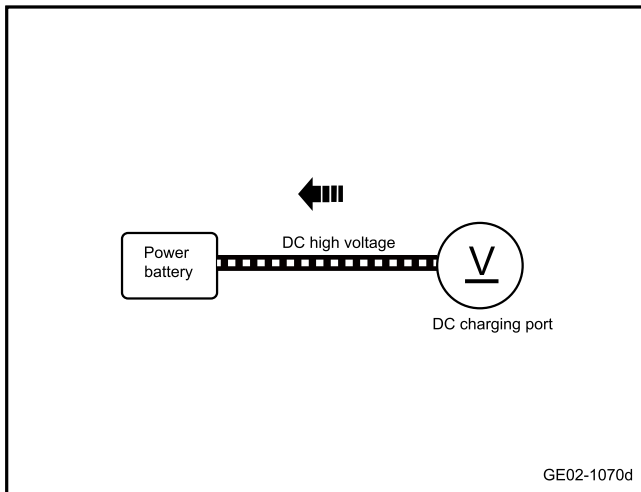
2.6.3 System working principles

2.6.3.1 System Working Principles

1. Fast charging (DC charging)

When the charging gun is connected to the DC charging socket of the complete vehicle, the DC charging equipment sends a charging wake-up signal to the BMS, and the BMS starts to work and carry out self-inspection. If there is no abnormality, the BMS receives the charging connection confirmation signal and charging message at the same time, and then the BMS closes the fast charging relay and the main negative relays to start charging. After the charging is completed, the BMS sends a charging stop command to the charging pile. After the charging pile stops charging, the BMS cuts off the fast charging relay and the main negative relay to end the charging process.

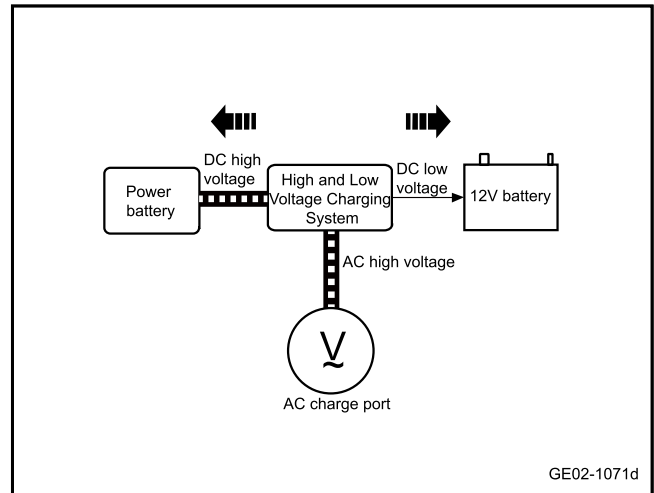
The energy transmission route of DC charging is shown in the figure below:



2. Slow charging (AC charging)

The VCU is woken up by the OBC, and when it receives the AC charging connection confirmation signals (CC, CP) sent by the OBC, the high-voltage interlock state sent by the BMS is closed, the SOC is less than 100%, and the vehicle gear is P, it sends a charging permission signal to the BMS. And then the BMS closes the main positive relay and the main negative relay at the same time to start charging. After the charging starts, when the OBC receives the AC charging command from the VCU, the internal DC/DC starts to work to charge the battery. After charging is completed, the VCU stops DC/DC operation, and then sends the command of disconnecting the main relay to the BMS. Charging ends.

The energy transmission route of AC charging is shown in the figure below:



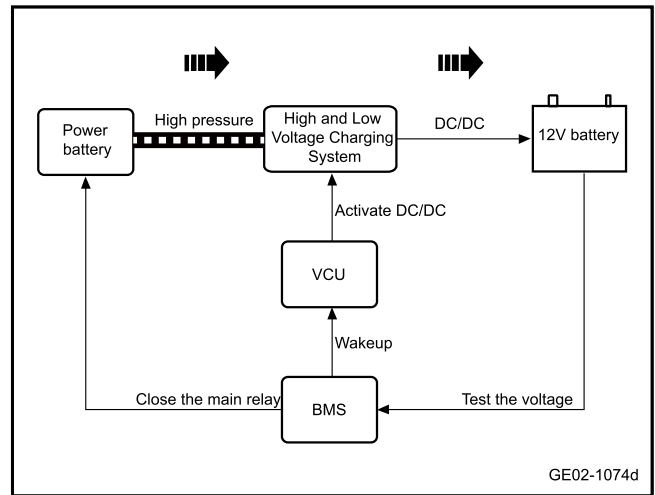
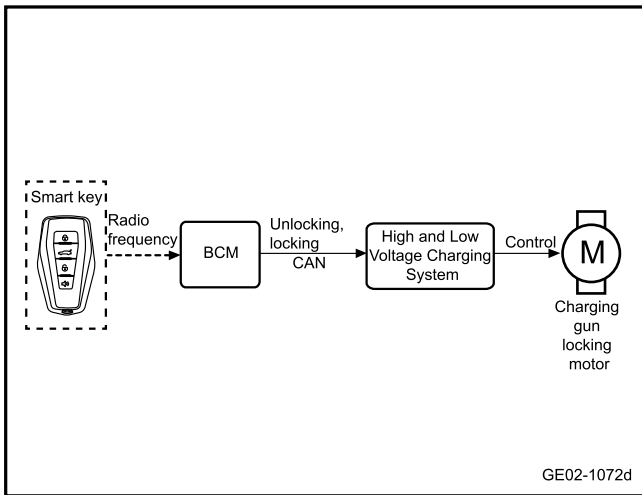
3. Charging function

The vehicle has the electronic locking function during AC charging, preventing hot-line charging gun plugging and unplugging, and playing the role of anti-theft of charging gun. The electronic lock is installed on the charging socket to realize the locking and unlocking functions by controlling the extension of the cylindrical lock rod.

Locking: insert the charging gun and lock it after receiving the BMS charging command.

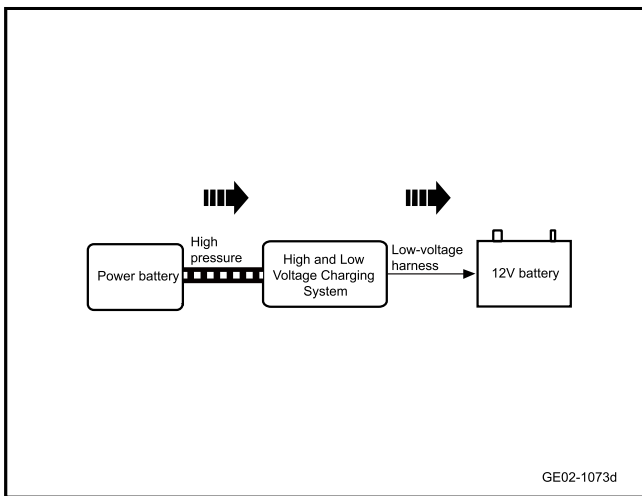
Unlocking: 1. When the vehicle is in the OFF gear, press the unlock button on the smart key to unlock; 2. When the vehicle is in the ON or READY gear, it can also be unlocked by the central control lock; 3. When the key unlocking fails, the unlocking can be realized by pulling the unlocking wire.

When entering AC charging, the OBC locks the AC charging gun after receiving the charging permission sent by the BMS. When receiving the unlocking signal sent by BCM/PEPS, unlock the AC charging gun and receive the locking command sent by BCM/PEPS to lock the charging gun. When the AC charging gun is in the unlocked state, the high and low voltage charging system is still charged, and the output power is 3.3 kW; after the electronic is locked, the high and low voltage charging system resumes full power charging; when the electronic unlocks or locking fails, the high and low voltage charging system receives the charging process of BMS 3.3KW charging



4. Low-voltage charging

Before powering on at a high voltage, the low voltage circuit system is powered by the 12V lead-acid battery. After powering on at a high voltage, the built-in DC/DC of the high and low voltage charging system converts the high voltage direct current output from the power battery into low voltage direct current to charge the 12V lead-acid battery and acts as an auxiliary low-voltage power supply.



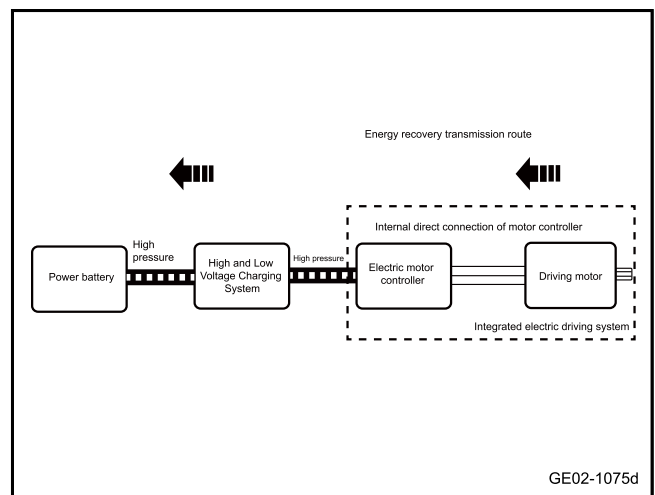
5. Intelligent charging

Long-term parking is easy to cause low-voltage battery loss, and when the low-voltage battery is seriously lost, the vehicle cannot be started and powered on. To avoid this problem, the vehicle is designed with an intelligent charging function. When the battery voltage is lower than the set value, the BMS sends an intelligent charging request to the VCU. At this time, if the VCU receives the power supply gear OFF, and judges that the four doors and two covers are in the closed state, it will send the BMS a command to close the main relay. After the main negative and main positive relays are closed, the DC/DC starts to charge the battery.

6. Energy feedback

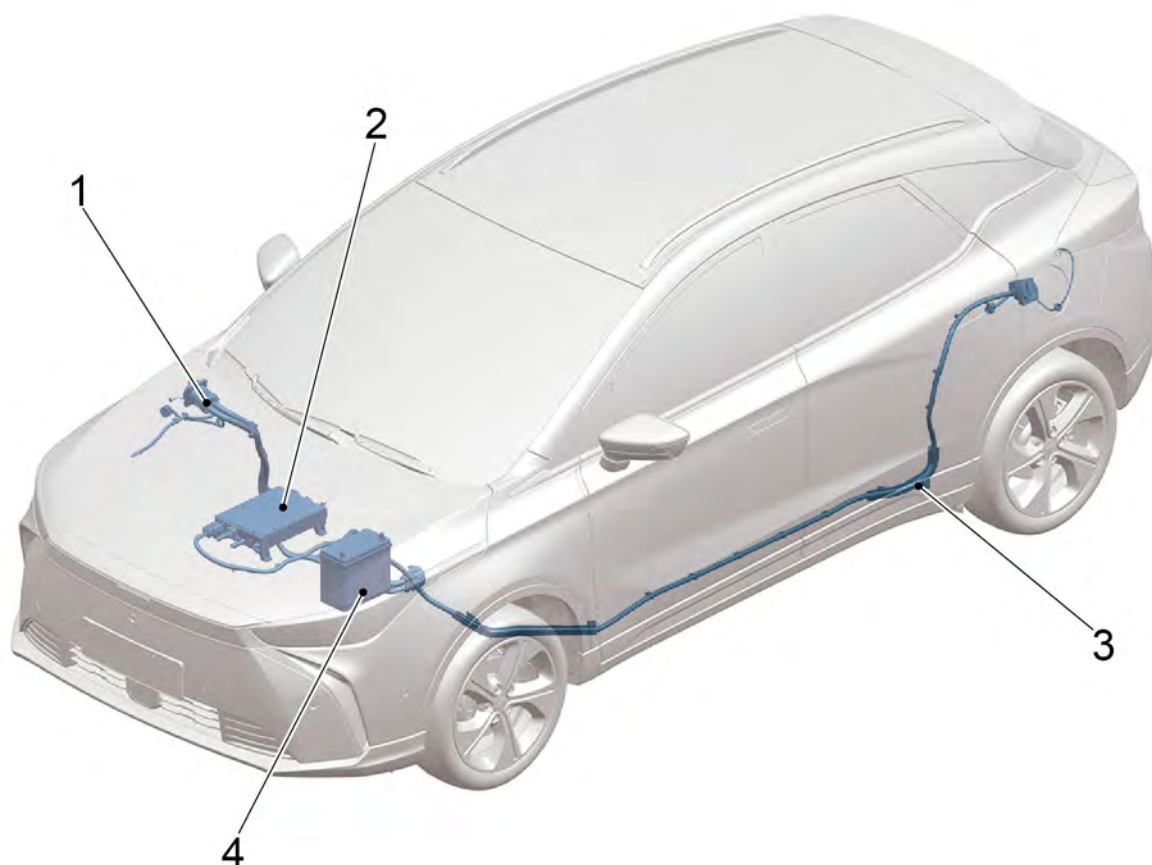
When the vehicle is taxiing or braking, the VCU calculates the required braking torque and sends it to the motor controller through state data acquisition. At this time, the motor switches from working mode to generating mode to charge the battery pack. The transmission route of braking energy recovery is opposite to energy consumption, as shown in the figure below:

During the braking energy recovery process, the motor consumes the kinetic energy of the wheel rotation and sends out alternating current to the motor controller. The motor controller converts the alternating current into direct current to charge the power battery.



2.6.4 Part position

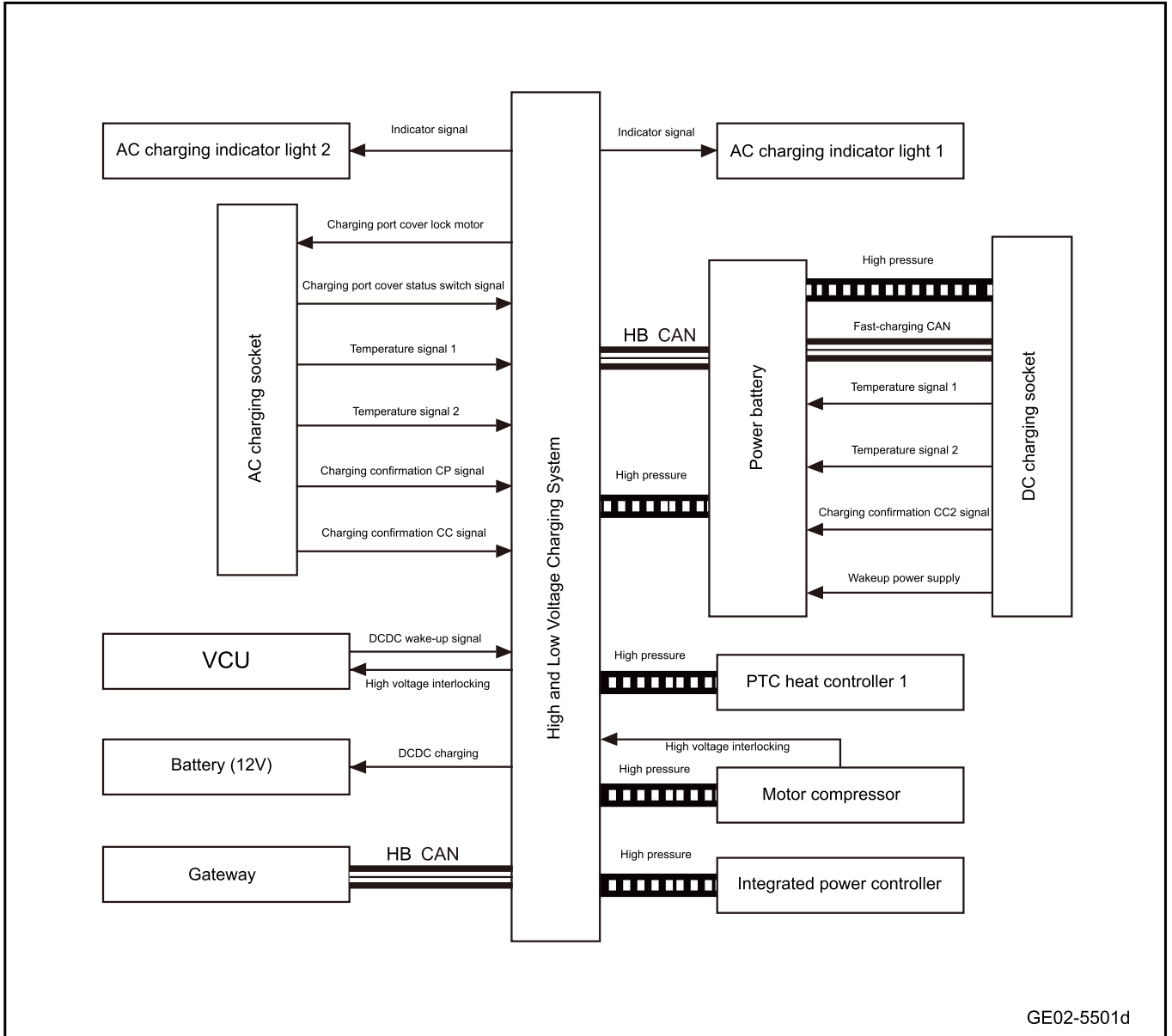
2.6.4.1 Part Position



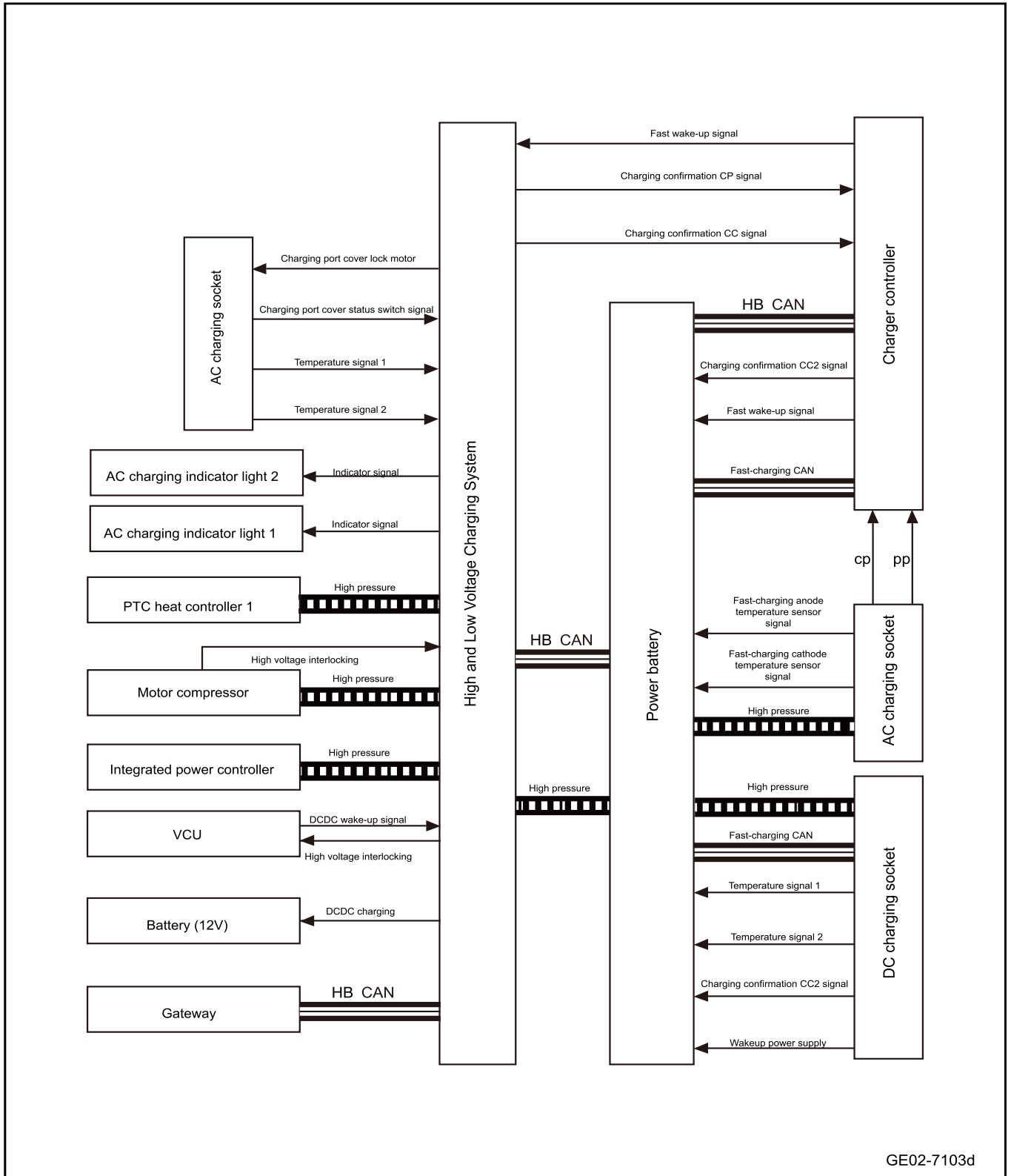
- | | |
|--|---|
| 1. DC charging socket wire harness assembly | 3. AC charging socket wire harness assembly |
| 2. High and low-voltage charging system assembly | 4. Battery assembly |

2.6.5 Electrical block diagram

2.6.5.1 Electrical Schematic Diagram of Charging System(Type I)



2.6.5.2 Electrical Schematic Diagram of Charging System(Type II)



2.6.6 Diagnostic information and procedures

2.6.6.1 Diagnosis Description

Refer to description and operation.

2.6.6.2 Routine inspection

1. Check the after-sales installations that may affect the operation of the charging system.

Caution

It is forbidden to modify or disassemble charging cables, charging sockets and charging plugs.

2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check whether there are foreign bodies such as water or dust inside the charging socket and charging plug.
4. Check the charging socket and charging plug for loose connections and for signs of rust inside.

2.6.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
High and Low Voltage Charging System does not work	1. Power supply failure of high and low voltage charging system fault	Refer to Power Failure of High and Low Voltage Charging System
	2. Communication failure of the high and low-voltage charging system fault	Refer to Communication Failure of High and Low Voltage Charging System
	3. High and low-voltage charging system fault	Refer to Hardware Fault of High and Low Voltage Charging System
	4. CC signal circuit failure	Refer to CC Signal Failure
	5. CP signal circuit failure	Refer to CP Signal Failure
	6. AC charging circuit fault	Refer to AC Input Signal Fault
	7. AC charging socket fault	Replace the AC charging socket.
Charging port status is abnormal	1. AC charging socket fault	Replace the AC charging socket.
	2. High and low-voltage charging system fault	Check the software version of the high and low voltage charging system and update it. Replace the high and low voltage charging system if necessary
	3. Charging port status circuit failure	Refer to Charging Port Status Switch Fault
AC Charging indicator lamp fault	1. AC charging socket fault	Replace the AC charging socket.
	2. High and low-voltage charging system fault	Check the software version of the high and low voltage charging system and update it. Replace the high and low voltage charging system if necessary
	3. AC Charging indicator lamp fault	Refer to AC Charging indicator lamp fault

2.6.6.4 Data stream list

Serial No.	DID description	Normal range	Unit
1	ECU supply voltage	0-25.4	V
2	Speed signal	0-460.6875	Km/h
3	Mileage	0-999999	Km
4	Charging gun connection detection	/	/
5	Charging power detection	/	/
6	Electronic lock motor	/	/
7	Grid input current	(-410)-410	A
8	Grid Input voltage	0-512	V
9	Output current of charger	(-410)-410	A
10	Output voltage of charger	0-512	V
11	Guide Circuit voltage	0~16	V
12	Duty cycle of guide circuit	0~100	%
13	Guide circuit cycle	0~1050	Hz
14	OBC status	0	/
15	BMS requests OBC status	/	/
16	BMS requests OBC output voltage	0~6553.5	V
17	BMS requests OBC output current	0~6553.5	A
18	Cooling water temperature	-40~215	°C
19	AC/DC temperature in OBC	-40~215	°C
20	DC/DC temperature in OBC	-40~215	°C
21	PCB temperature in OBC	-40~215	°C
22	Constant current charging operation state	0-8	/
23	KL15 signal level	0-1	/
24	KL15 mode:	0-4	/
25	DCDC integrated module control mode	0-1	/
26	Reason for limited DCDC integrated module output	/	/
27	Power factor correction circuit temperature	-40~215	°C
28	DC/DC circuit temperature	-40~215	°C
29	Transformer temperature	-40~215	°C
30	DCDC module status	/	/

Serial No.	DID description	Normal range	Unit
31	Power factor correction circuit module status	/	/
32	Actual output voltage of DCDC	-64-64	V
33	DCDC output current	-256-255	A
34	DCDC actual working mode	/	/
35	HCU requests DCDC mode	/	/
36	HCU sends DCDC target output voltage	/	V
37	Input input voltage	0-1024	V
38	DCDC input current	-256-255	A
39	DCDCLVMOSFET temperature	-256-255	°C
40	Cumulative total charging capacity of vehicle	0-1677721.5	kWh
41	The last average charging power	0~65535	W
42	Last charging time	0~65535	Min
43	Total charging power at the last charge	0~16777215	Wh
44	Cumulative total power discharge of vehicle	0-1677721.5	kWh
45	The last average discharging power	0~65535	W
46	Last discharging time	0~65535	Min
47	Total electric quantity of the last discharge	0~16777215	Wh

2.6.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

2.6.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

2.6.6.7 List of Diagnostic Trouble Codes (DTC)

DTC	Trouble description	Fault location/elimination method
P1A9F00	Vehicle-mounted charger CC is unreasonable	Refer to CC Signal Failure(Type I)
P1A881C	Charging connection failure	Refer to CC Signal Failure(Type II)
P1AA000	Vehicle-mounted charger CP range is unreasonable	Refer to CP Signal Failure(Type I) Refer to CP Signal Failure(Type II)
P1AA100	CP signal of the vehicle-mounted charger PWM frequency is unreasonable	
P1AA200	Vehicle-mounted charger CP signal PWM duty cycle is unreasonable	
P1AA300	The CP signal of the vehicle-mounted charger is inconsistent with the control command of S2	
P1A841C	CP voltage is abnormal	
P1A8538	The frequency of CP is abnormal at the internal test point of the charger(before S2 is closed)	
P1AA600	Vehicle-mounted charger AC input software overvoltage	Refer to AC Input Signal Fault (Type I) Refer to AC Input Signal Failure (Type II)
P1AA700	AC input software of the vehicle-mounted charger is undervoltage	
P1AA800	Open circuit at AC input side of vehicle-mounted charger	
P1AA900	The AC input frequency of the vehicle-mounted charger exceeds a certain range	

DTC	Trouble description	Fault location/elimination method	
P1AB100	Electronic lock unlocking failure	Refer to Charging Port Status Switch Fault (Type I) Refer to Charging Port Status Switch Fault (Type II)	
P1AA400	The temperature of the charging gun of the vehicle-mounted charger is too high	Refer to Over Temperature Failure of High and Low-voltage Charging System (Type I) Refer to Over Temperature Failure of High and Low Voltage Charging System (Type II)	
P1AA500	The temperature of the PCB of the vehicle-mounted charger is too high		
P1AB200	DCDCMOSFET temperature is too high		
P1AB300	Temperature of DCDC safety switch is too high		
P1A8698	Shutdown due to overtemperature		
P1A8998	The temperature of the charging gun of the vehicle-mounted charger fails		
P1AE900	The temperature signal of safety switch exceeds the lower limit		
P1AA496	The temperature of the charging gun of the vehicle-mounted charger is abnormal		
P1A9800	The vehicle-mounted charger restarts more than a certain number of times		Refer to Hardware Faults of High and Low-voltage Charging System (Type I) Refer to Hardware Fault of High and Low Voltage Charging System (Type II)
P1A9900	Overvoltage hardware protection of vehicle-mounted charger PFC output		
P1A9A00	Input overcurrent hardware protection of vehicle-mounted charger PFC		
P1A9B00	Overvoltage hardware protection of vehicle-mounted charger LLC output		
P1A9C00	Input overcurrent hardware protection of vehicle-mounted charger LLC		
P1A9D00	Vehicle-mounted charger LLC output overcurrent hardware protection		
P1A9E00	Over-undervoltage hardware protection of vehicle-mounted charger VDD5		
P1AAA00	Software protection against overvoltage of PFC output of vehicle-mounted charger		
P1AAB00	Software protection against undervoltage of PFC output of vehicle-mounted charger		
P1AAC00	Software overcurrent protection at AC side		

DTC	Trouble description	Fault location/elimination method
P1AAD00	Software protection against overcurrent of input of vehicle-mounted charger LLC	
P1AAE00	Software protection against output overvoltage at high voltage DC side of vehicle-mounted charger	
P1AAF00	Software protection for output undervoltage at high voltage DC side of vehicle-mounted charger	
P1AB000	Software protection for outputting overcurrent at high voltage DC side of vehicle-mounted charger	
P1AB400	DCDC hardware protection against high voltage and overvoltage	
P1AB500	DCDC hardware protection against high voltage and over current	
P1AB600	DCDC hardware protection against low voltage and overvoltage	
P1AB700	DCDC hardware protection against low voltage and reverse over current	
P1AB800	DCDC VDD5 hardware protection against overvoltage and undervoltage	
P1AB900	DCDC Software protection against high voltage and overvoltage	
P1ABA00	DCDC Software protection against high voltage and undervoltage	
P1ABB00	DCDC Software protection against low voltage and overvoltage	
P1ABC00	DCDC Software protection against low voltage and undervoltage	
P1ABD00	DCDC low voltage for long overvoltage	
P1ABE00	DCDC restarts more than a certain number of times	
P1AC100	PFC current rationality check	
P1AC200	Elock fault	
P1AC300	Elock detection line is short-circuited to ground or power supply	
P1AC500	DCLink voltage rationality check (compared with OBC or BMS value)	
P1AC600	Water cooled temperature signal exceeds the lower limit	

DTC	Trouble description	Fault location/elimination method
P1AC800	AD of high-voltage side safety related signals gets stuck	
P1AC900	Internal Relay does not conform to directive	
P1ACA00	Internal Relay voltage is out of range	
P1ACD00	PCB (circuit board) NTC (temperature detection) temperature sensor exceeds the lower limit	
P1ACE00	PFC (Power factor correction circuit) NTC (temperature detection) temperature sensor exceeds the lower limit	
P1ACF00	LLC (power conversion circuit) NTC temperature sensor exceeds the lower limit	
P1AD000	Verify the rationality of the PCB (circuit board) temperature sensor	
P1AD100	AC voltage signal exceeds the upper limit	
P1AD300	PFC (Power factor correction circuit) voltage signal exceeds the upper limit	
P1AD400	PFC (power factor correction circuit) current signal exceeds the upper limit: any one phase U/V/W	
P1AD600	LLC (power conversion circuit) the original current signal exceeds the upper limit (any phase A/B)	
P1AD700	LLC (power conversion circuit) two primary side current rationality check	
P1AD800	HVDC (high voltage DC voltage) output signal exceeds the upper limit	
P1ADA00	HVDC (high voltage DC voltage) output current signal exceeds the upper limit: fast sampling or slow sampling	
P1ADC00	OBC side 2.5V out of range	
P1ADD00	OBC13.5 Power supply is out of range	
P1ADE00	OBC side 21.5 out of range	
P1ADF00	DCLink (bus capacitance) voltage sensor exceeds the upper limit	
P1AE100	lInk (bus capacitor current) current signal exceeds the upper limit	

DTC	Trouble description	Fault location/elimination method
P1AE200	Check the rationality of bus current	
P1AE300	The voltage signal at the low-voltage output side exceeds the upper limit	
P1AE500	Low-voltage current signal exceeds the upper limit	
P1AE700	offset exceeds the threshold, check the deviation of the current read current from the calibration offset	
P1AE800	DCD ₂ temperature signal exceeds the lower limit	
P1AEA00	Buck (discharge) mode diagnosis	
P1AEB00	Standby (Standby) mode diagnosis	
P1AEC00	Short circuit detection at the low-voltage output side	
P1AED00	DCDC13.5V (internal drive power supply) power supply exceeds the upper limit	
P1AEE00	DCDC13.5V (internal drive power supply) power supply exceeds the lower limit	
P1AF400	OBC does not report normal output power when it is reported to be working in output mode	
P1AF700	LV MCU detects a problem with insulation at the HV side	
P1AF687	OBC internal CAN communication loss	
P1AF681	OBC internal CAN communication error	
P1A8811	Output short circuit of the charger	
P1A8A98	Fault of PFC module	
P1A8019	DC output current is too high	
P1A8017	OBC is off because the input voltage is too high	
P1A8016	OBC is off because the input voltage is too low	
P1A8403	The duty cycle of CP is abnormal at the internal test point of the charger	
P1A8617	Shut down because the output voltage is too high	
P1A8616	Shut down because the output voltage is too low	
P1A8719	Input overload	

DTC	Trouble description	Fault location/elimination method
P1A8806	Fault found in self-inspection	
P1A8B98	Fault of DCDC module	
P1A8A19	Over power protection during discharging	
P1A0119	The current at the high-voltage end of the DCDC is too high	
P1A0019	The current at the low-voltage end of the DCDC is too high	
P1AFD98	Rectifier circuit over temperature at the low-voltage side of the DCDC	
P1AFE98	OBC LLC (resonant circuit) power circuit over temperature	
P1AF800	CAN chip initialization failure	
P1D2100	Low-voltage output current signal feedback open loop	
P1D2000	No cooling water fault	
P1A1106	Fault of bias magnetic repair failure	
P1A1919	Over current at DCDC low voltage side	
P1A3C06	Safety switch S9 failure	
P1AF649	OBC power-off path fails	
P1A8B49	DCDC power-off path fails	
P1A2606	Repeated overrun at low voltage output side	
P1D2098	Water-cooled over-temperature fault (OBC and DCDC water-cooled)	
P1AFA00	The OBC software version at the high voltage side does not match the low voltage side requirements	
P1AFB00	Output current is detected after no power output requirement	
P1D2600	OBC high voltage side phase locking failure	
P1D2700	OBC PFC pre-charging failure at high-voltage side	
P1A3E06	EEPROM read error	
P1A3D06	EEPROM write error	
P1D241C	AC Hardware over voltage protection	

DTC	Trouble description	Fault location/elimination method
P1AF000	KL30 undervoltage	Refer to Power Failure of High and Low Voltage Charging System(Type I) Refer to Power Failure of High and Low Voltage Charging System(Type II)
P1AC700	The deviation between KL30 voltage and the low voltage side voltage is too large	
U300616	Low voltage and undervoltage	
U300617	Supply voltage of the controller is too high	
P1A3B06	13.5V drive voltage is overvoltage or undervoltage	
P1A3A06	Low voltage and overvoltage	
P1A3906	Low voltage is unreasonable	
U011287	Communication with BMSH is lost	Refer to Communication Failure of High and Low Voltage Charging System (Type I) Refer to Communication Failure of High and Low Voltage Charging System (Type II)
U041381	BMSH CAN communication error	
U007300	CAN bus off	
U111487	Communication with VCU_HBCAN is lost	
U140481	VCU CAN communication error	
U000100	CAN bus off inside OBC	
U247283	Error in communication check with BMS	
U347282	Error in communication checksum with BMS	
U24A883	Error in communication check with VCU	
U34A882	Error in communication checksum with VCU	
P1D2500	External CAN mode request error	

2.6.6.8 Power supply failure of high and low voltage charging system (Type I)

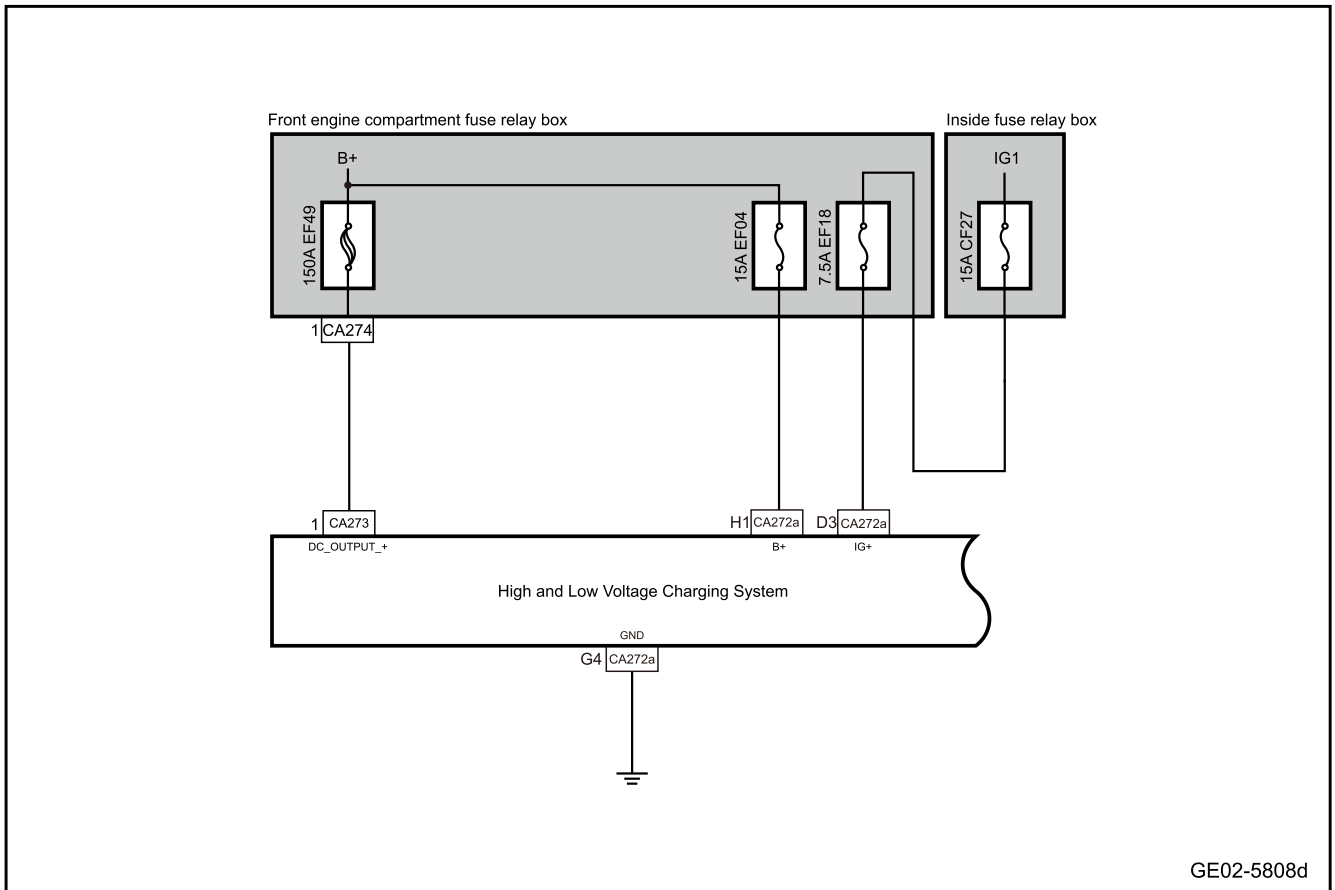
1. DTC description:

Diagnostic Trouble Code	Description
P1AF000	KL30 undervoltage
P1AC700	The deviation between KL30 voltage and the low voltage side voltage is too large
U300616	Supply voltage of the controller is too low
U300617	Supply voltage of the controller is too high
P1A3B06	13.5V drive voltage is overvoltage or undervoltage
P1A3A06	Low voltage or overvoltage
P1A3906	Low voltage is unreasonable

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AF000	Voltage <6V for 500ms	DCDC Active, Inactive	1. Battery 2. Circuit 3. Fuse 4. High and low-voltage charging system
P1AC700	Voltage difference >5V for 200ms		
U300616	The power supply voltage is lower than 8.8V for 500ms	Charger handle detected, 3 seconds after wake up (CCICP connection or NM or KL15)	
U300617	Power Voltage exceeds 16.2V for 500ms		
P1A3B06	VDD13.5V, undervoltage:12V, overvoltage:15V, lasting for 300 ms	All modes, except (Continuously @ All DCDC modes except L1 error flag ==True and global enable== 0)	
P1A3A06	'UBnet'> 17V, lasting for 300 ms	All modes, except (continuous @ all DCDC modes except global enabling == 0)	
P1A3906	1. Continuous @ All DCDC modes except global enabling === 0 2. All modes other than enable === 0 3. All DCDC modes other than continuously enabled === 0 4. Continuous @S9 PWM= 1 and whole\ENB=== 1	Low: <5V* 3% AD< 122, high: >5V* 97% AD> 3973 2V, lasts for 300 seconds	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No To Step 4.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes Repair or replace the faulty part.

No

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.

Standard voltage: 9-16V

- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF04 of the front engine compartment. Check whether the fuse EF04 is blown.

Rated capacity of fuse: 15A

- C. Pull out the fuse EF49 of the front engine compartment. Check whether the fuse EF49 is blown.

Rated capacity of fuse: 150A

- D. Pull out the fuse EF18 of the front engine compartment. Check whether the fuse EF18 is blown.

Rated capacity of fuse: 7.5A

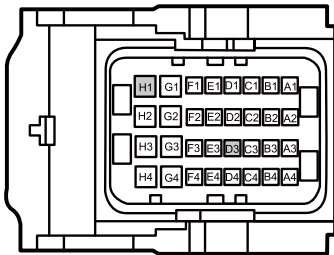
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

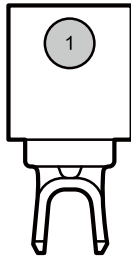
Step 5	Check whether the power supply circuit of the high and low voltage charging system is normal.
--------	---

CA272a High and low voltage charging system harness connector 3



GE02-5921d

CA273 High and low voltage charging system harness connector



GE02-5922d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high and low voltage charging system harness connectors CA272a and CA273.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(H1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA272a(D3)		
CA273(1)		

- E. Confirm whether the measured value meets the standard.

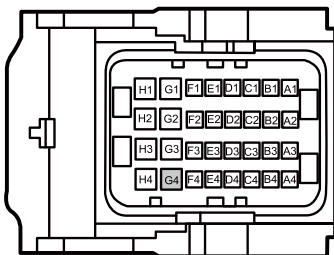
No

Repair or replace the harness.

Yes

Step 6 Check the grounding circuit of the high and low voltage charging system.

CA272a High and low voltage charging system harness connector 3



GE02-5923d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high and low voltage charging system harness connectors CA272 and CA272a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(G4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7	Replace the high and low-voltage charging system.
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- A. To replace the high and low voltage charging system, please refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8	Reprogram and reset the high and low voltage charging system.
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- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
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- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
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2.6.6.9 Communication failure of the high and low-voltage charging system(Type I)

1. DTC description:

Diagnostic Trouble Code	Description
U011287	Communication with BMSH is lost
U041381	BMSH CAN communication error
U007300	CAN bus off
U111487	Communication with VCU_HBCAN is lost
U140481	VCU CAN communication error
U000100	CAN bus off inside OBC
U247283	Error in communication check with BMS

Diagnostic Trouble Code	Description
U347282	Error in communication checksum with BMS
U24A883	Error in communication check with VCU
U34A882	Error in communication checksum with VCU
P1D2500	External CAN mode request error

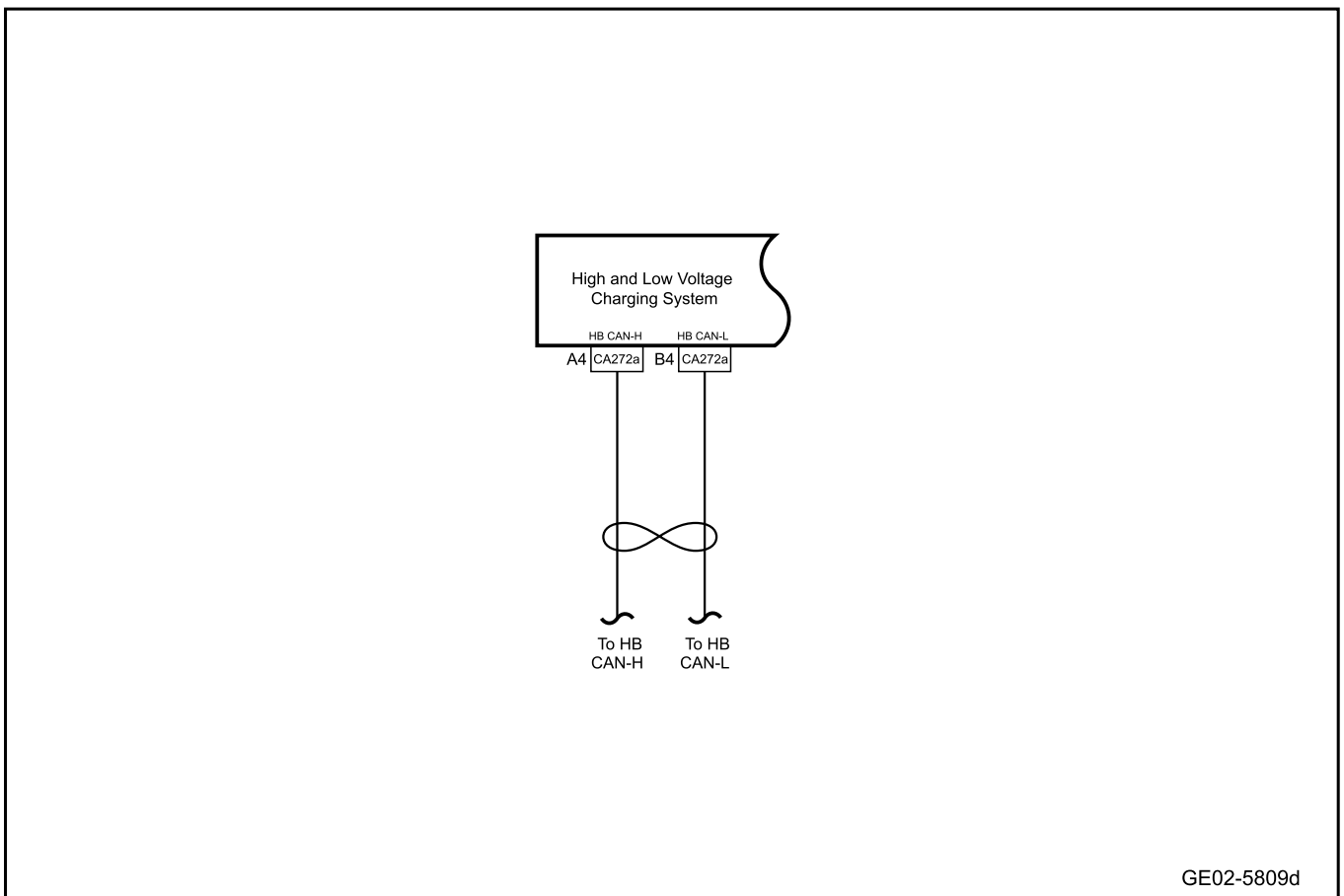
2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011287	5T lost BMSH (ID=0x211) message	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON 5. This DTC should be detected when the vehicle battery is charging 6. F110 BMS. F110 byte 3 bits 3 bits 1 	<ol style="list-style-type: none"> 1. Circuit 2. High and low-voltage charging system 3. Diagnostic interface
U041381	Detected activity counter errors or checksum errors or DLC < 8 equals 10	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON 5. Activity counter errors or checksum errors or DLC < 8 6. All received messages should be detected 	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Bus off detected 3. Ignition status is ignition ON 	
U111487	VCU(ID=0x161) message is lost for 250ms	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON 5. COMflgDiagActvF110VCU, F110 VCU, F110 byte 3 bits 5,1 	
U140481	Detected activity counter errors or checksum errors or DLC < 8 equals 10	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON 5. Activity counter errors or checksum errors or DLC < 8 6. All received messages should be detected 	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U000100	The bus switching off counter cL1ToL2 equals to 10.	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Bus off detected 3. Ignition status is ignition ON	
U247283	BMSH (ID= 0 x 211) message, the detected checksum error is equal to 10	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details).	
U347282	BMSH (ID= 0 x 211) message, the detected activity counter error is equal to 10	2. Meet the TDiagEnable condition	
U24A883	BMSH (ID= 0 x 161) message, the detected checksum error is equal to 10	3. No bus off is detected, more than 1000ms after the last bus disconnection recovery	
U34A882	BMSH (ID= 0 x 161) message, detected activity counter error equal to 10	4. KL15 in network mode 5. Activity counter errors or checksum errors or DLC < 8 6. All received messages should be detected	
P1D2500	200 ms (adjusted according to customer)	OBC: charging, emission, DCDC: charging, emission	

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
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- A. Check the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the integrity of the HB-CAN bus.
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- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm that the HB-CAN network is functioning properly.

No

Check or repair HB-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4	Replace the high and low-voltage charging system.
--------	---

- A. Check whether the power supply and grounding harness of the high and low voltage charging system are normal. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. To replace the high and low voltage charging system, please refer to [Replacement of High and Low Voltage Charging System Assembly\(Low figuration\)](#)

Next step

Step 5	Reprogram and reset the high and low voltage charging system.
--------	---

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

2.6.6.10 Hardware Failure of High and Low Voltage Charging System (Type I)

1. DTC description:

DTC	Trouble description
P1A9800	vehicle-mounted charger software restarts more than a certain number of times
P1A9900	Overvoltage hardware protection of vehicle-mounted charger PFC output
P1A9A00	Input overcurrent hardware protection of vehicle-mounted charger PFC
P1A9B00	Overvoltage hardware protection of vehicle-mounted charger LLC output
P1A9C00	Input overcurrent hardware protection of vehicle-mounted charger LLC
P1A9D00	Vehicle-mounted charger LLC output overcurrent hardware protection
P1A9E00	Over-undervoltage hardware protection of vehicle-mounted charger VDD5
P1AAA00	Software protection against overvoltage of PFC output of vehicle-mounted charger
P1AAB00	Software protection against undervoltage of PFC output of vehicle-mounted charger
P1AAC00	Software overcurrent protection at AC side
P1AAD00	Software protection against overcurrent of input of vehicle-mounted charger LLC
P1AAE00	Software protection against output overvoltage at high voltage DC side of vehicle-mounted charger
P1AAF00	Software protection for output undervoltage at high voltage DC side of vehicle-mounted charger
P1AB000	Software protection for outputting overcurrent at high voltage DC side of vehicle-mounted charger
P1AB400	DCDC hardware protection against high voltage and overvoltage
P1AB500	DCDC hardware protection against high voltage and overcurrent
P1AB600	DCDC hardware protection against low voltage and overvoltage
P1AB700	DCDC hardware protection against low voltage and reverse overcurrent
P1AB800	DCDC VDD5 hardware protection against low voltage and undervoltage
P1AB900	DCDC Software protection against high voltage and overvoltage
P1ABA00	DCDC Software protection against high voltage and undervoltage
P1ABB00	DCDC Software protection against low voltage and overvoltage
P1ABC00	DCDC Software protection against low voltage and undervoltage
P1ABD00	DCDC low voltage for long overvoltage
P1ABE00	DCDC restarts more than a certain number of times
P1AC100	PFC current rationality check

DTC	Trouble description
P1AC200	Elock fault
P1AC300	Elock detection line is short-circuited to ground or power supply
P1AC500	DCLink voltage rationality check (compared with OBC or BMS value)
P1AC600	Water cooled temperature signal exceeds the lower limit
P1AC800	AD of high-voltage side safety related signals gets stuck
P1AC900	Internal Relay does not conform to directive
P1ACA00	Internal Relay voltage is out of range
P1ACD00	PCB (circuit board) NTC (temperature detection) temperature sensor exceeds the lower limit
P1ACE00	PFC (Power factor correction circuit) NTC (temperature detection) temperature sensor exceeds the lower limit
P1ACF00	LLC (power conversion circuit) NTC temperature sensor exceeds the lower limit
P1AD000	Verify the rationality of the PCB (circuit board) temperature sensor
P1AD100	AC voltage signal exceeds the upper limit
P1AD300	PFC (Power factor correction circuit) voltage signal exceeds the upper limit
P1AD400	PFC (power factor correction circuit) current signal exceeds the upper limit: any one phase U/ V/W
P1AD600	LLC (power conversion circuit) the original current signal exceeds the upper limit (any phase A/B)
P1AD700	LLC (power conversion circuit) two primary side current rationality check
P1AD800	HVDC (high voltage DC voltage) output signal exceeds the upper limit
P1ADA00	HVDC (high voltage DC voltage) output current signal exceeds the upper limit: fast sampling or slow sampling
P1ADC00	OBC side 2.5V out of range
P1ADD00	OBC13.5 Power supply is out of range
P1ADE00	OBC side 21.5 out of range
P1ADF00	DCLink (bus capacitance) voltage sensor exceeds the upper limit
P1AE100	llnk (bus capacitor current) current signal exceeds the upper limit
P1AE200	Check the rationality of bus current
P1AE300	The voltage signal at the low-voltage output side exceeds the upper limit
P1AE500	Low-voltage current signal exceeds the upper limit
P1AE700	offset exceeds the threshold, check the deviation of the current read current from the calibration offset
P1AE800	DCD ₂ temperature signal exceeds the lower limit
P1AEA00	Buck (discharge) mode diagnosis
P1AEB00	Standby (Standby) mode diagnosis
P1AEC00	Short circuit detection at the low-voltage output side
P1AED00	DCDC13.5V (internal drive power supply) power supply exceeds the upper limit
P1AEE00	DCDC13.5V (internal drive power supply) power supply exceeds the lower limit

DTC	Trouble description
P1AF400	OBC does not report normal output power when it is reported to be working in output mode
P1AF700	LV MCU detects a problem with insulation at the HV side
P1AF687	OBC internal CAN communication loss
P1AF681	OBC internal CAN communication error
P1A8811	Output short circuit of the charger
P1A8A98	Fault of PFC module
P1A8019	DC output current is too high
P1A8017	OBC is off because the input voltage is too high
P1A8016	OBC is off because the input voltage is too low
P1A8403	The duty cycle of CP is abnormal at the internal test point of the charger
P1A8617	Shut down because the output voltage is too high
P1A8616	Shut down because the output voltage is too low
P1A8719	Input overload
P1A8806	Fault found in self-inspection
P1A8B98	Fault of DCDC module
P1A8A19	Over power protection during discharging
P1A0119	The current at the high-voltage end of the DCDC is too high
P1A0019	The current at the low-voltage end of the DCDC is too high
P1AFD98	Rectifier circuit over temperature at the low-voltage side of the DCDC
P1AFE98	OBC LLC (resonant circuit) power circuit over temperature
P1AF800	CAN chip initialization failure
P1D2100	Low-voltage output current signal feedback open loop
P1D2000	No cooling water fault
P1A1106	Fault of bias magnetic repair failure
P1A1919	Over current at DCDC low voltage side
P1A3C06	Safety switch S9 failure
P1AF649	OBC power-off path is not connected
P1A8B49	DCDC power-off path fails
P1A2606	Repeated overrun at low voltage output side
P1D2098	Water-cooled over-temperature fault (OBC and DCDC water-cooled)
P1AFA00	The OBC software version at the high voltage side does not match the low voltage side requirements
P1AFB00	Output current is detected after no power output requirement
P1D2600	High-voltage phase locking failure
P1D2700	OBC PFC pre-charging failure at high-voltage side
P1A3E06	EEPROM read error
P1A3D06	EEPROM write error
P1D241C	AC Hardware over voltage protection

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9800	OBC software is reset three times within 10 s	OBC initialization, standby, normal, derating, heating, discharging, interruption	1. High and low-voltage charging system
P1A9900	The PFC output voltage of OBC is greater than the hardware protection threshold of 873V within 60 s, and it occurs 4 times		
P1A9A00	The peak PFC input current of OBC within any 60 s is greater than the hardware protection threshold (less than $38A_{peak}$ during charging, threshold $35A_{peak}$ during discharging), 4 times occur		
P1A9B00	The peak value of the LLC output voltage of the OBC is greater than the hardware protection threshold of 520V within 60 s, and it occurs 4 times		
P1A9C00	Within 60 s, the LLC input current peak of the OBC is greater than the hardware protection threshold (threshold $21A_{peak}$ during charging and threshold $tbdA_{peak}$ during discharging), and it appears 4 times		
P1A9D00	Within 60 s, the LLC output current of the OBC is greater than the hardware protection threshold (single phase charging/discharging $>tbdA$, three-phase charging $>tbdA$), and 4 times occur		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9E00	The VDD5 output voltage of OBC within any 120 s exceeds the hardware protection threshold (> 5.5V or < 4.5V), and occurs 8 times		
P1AAA00	The PFC output voltage of the OBC is greater than the diagnostic threshold and is maintained for 10ms		
P1AAB00	The PFC output voltage of the OBC is less than the diagnostic threshold and maintains for 10ms		
P1AAC00	The effective value of any phase of the PFC current of the OBC is greater than the diagnostic threshold and is maintained for 100 ms		
P1AAD00	The effective value of any phase of the LLC input current of the OBC is greater than the diagnostic threshold and is maintained for 100 ms		
P1AAE00	The output voltage of high voltage DC side of OBC is greater than the diagnostic threshold and is maintained for 100ms		
P1AAF00	The output voltage of high voltage DC side of OBC is greater than the diagnostic threshold and is maintained for 100ms		
P1AB000	The output current at the high-voltage DC side of the OBC is greater than the diagnostic threshold and is maintained for 100 ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AB400	The high voltage of DCDC is greater than the hardware protection diagnostic threshold (522V), which occurs 10 times within 2 s (reset interval 200 ms)	DCDC: initialization, standby, voltage drop, discharge, fault	
P1AB500	The high voltage current of the DCDC is greater than the hardware protection diagnostic threshold (corresponding to the low voltage current of 220A), which occurs 10 times within 2 s (reset interval of 200 ms)	DCDC: standby, voltage drop, discharge, fault	
P1AB600	The low voltage of DCDC is greater than the hardware protection diagnostic threshold (23V), and it occurs 3 times within 300 ms	DCDC: active or inactive	
P1AB700	The low-voltage inverting current of DCDC is greater than the hardware protection diagnostic threshold, and it occurs 3 times within 90 ms		
P1AB800	The VDD5 voltage of the DCDC is greater than 5.5V or less than 4.5V	DCDC: standby, voltage drop, discharge, fault	
P1AB900	The high voltage of the DCDC is greater than the software protection diagnostic threshold and is maintained for 200ms	DCDC: active or inactive	
P1ABA00	The high voltage of the DCDC is less than the software protection diagnostic threshold and maintains for 200ms		
P1ABB00	The low voltage of DCDC is greater than 17V and is maintained for 150ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1ABC00	The low voltage of DCDC is less than 6V and is maintained for 200ms		
P1ABD00	The low voltage of DCDC is between 16.5- 17V and is maintained for 1000ms		
P1ABE00	Hardware types within DCDC 2 s can recover more than 10 times	DCDC: fault, standby	
P1AC100	During three-phase power: the current difference between two phases exceeds tbdArms for 200 ms	OBC: initialization, backup, normal, derating, heating, discharging, interruption	
P1AC200	Elock reports a fault for 200 ms		
P1AC300	Elock detection voltage is beyond the typical value of +/-2% V for 1 s		
P1AC500	30V, lasting for 150ms	DCDC: active or inactive	
P1AC600	Corresponding voltage value of AD< 5V for 150ms	OBC: initialization, backup, normal, derating, heating, discharging, interruption	
P1AC800	Safety related signals AD gets stuck, 200 ms		
P1AC900	When the internal Relay is off, the voltage should be tbdV; When the internal Relay is in the defined intermediate state, the voltage should be tbdV; When the internal Relay is in the closed state, the voltage should be tbdV; Fault confirmation time is 1000 ms, that is, the Relay state does not match the instruction. Report this DFC		
P1ACA00	Internal Relay voltage is beyond the typical range, lasting tbdms		
P1ACD00	AD< 50, > 4050, 2 s		
P1ACE00	AD< 50, > 4050, 2 s		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1ACF00	AD < 50, > 4050, 2 s		
P1AD000	The difference between any two internal temperatures exceeds 40°C and lasts for 800 ms (the specific temperature sensor and the threshold value are determined according to the subsequent thermal test)		
P1AD100	AD value corresponding to voltage value 5V* 97%, lasting for 200 ms		
P1AD300	AD: >5V* 97%, for 2 s AD value corresponding voltage value >5V* 97%, lasting for 2 s		
P1AD400	Corresponding voltage value of AD >5V* 97% or <5V* 3%, lasting for 2 s		
P1AD600	Corresponding voltage value of AD >5V* 97%, lasting for 2 s		
P1AD700	Flag bit enabled by positive or inverter current sharing loop)&& (the absolute value of iTnet >= 12A), and the difference between input currents of ILLC two phases exceeds 2A, lasting for 4 s		
P1AD800	AD: >4050 for 2 s AD value corresponding voltage > 4050, lasting for 200 ms		
P1ADA00	Corresponding voltage value of AD > 094 or <5V* 3%, lasting for 200 ms		
P1ADC00	2.6V <2.4V for tbd ms (to be calibrated) 2.6V or <2.4V, lasting for tbd ms		
P1ADD00	>15.5V or < 11.5V, lasting for 150 ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1ADE00	23V \leq <19V for tbd ms (to be calibrated) 23V or <19V,, lasting for tbd ms (calibrated later)		
P1ADF00	Corresponding value of AD value is $5V \times 97\%$ for 150ms	DCDC: active or inactive	
P1AE100	Corresponding value of AD value is $5V \times 97\%$ for 150ms		
P1AE200	3A, lasting for 150ms		
P1AE300	AD value corresponding to voltage value $5V \times 97\%$, lasting for 150 ms		
P1AE500	Corresponding voltage value of AD $>5V \times 97\%$ or $<5V \times 3\%$, lasting for 1 s		
P1AE700	Calibration value $\pm 15A$, lasting for 2s	DCDC is in Standby status	
P1AE800	Corresponding voltage value of AD $< 5V \times 3\%$ for 150ms	DCDC: active or inactive	
P1AEA00	Actual value of low voltage-target value of low voltage $> 0.6V$, high voltage current $> 30A$ or low voltage current $> 20A$; lasting for 2000 ms, target value of low voltage-actual value of low voltage $> 0.6V$, if low voltage current $< -20A$ or high voltage current $< -30A$; lasting for 2000 ms (UBnetSetP is the actual limit value after considering different internal conditions, not limited to VCU instructions)	DCDC is at Buck	
P1AEB00	standby mode: Low voltage-side current exceeds threshold or high voltage-side current exceeds threshold ($> 0.5A(HV) \parallel > 5A(LV)$), for 2000 ms	DCDC is in Standby status	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AEC00	current loop:UBnet < 3 V for 30ms Current loop: low-voltage output side voltage <3V, lasting for 30ms	DCDC: active or inactive	
P1AED00	>15.5V for 150ms	DCDC: initialization, standby, voltage drop, discharge, fault	
P1AEE00	<11.5V for 150ms	DCDC: initialization, standby, voltage drop, discharge, fault	
P1AF400	When the OBC charging-related mode is reported, if the actual output current is less than tbdA or there is no corresponding jump in the internal feedback at the high voltage side, it will last for 5 s	DCDC: active or inactive	
P1AF700	Insulation resistance < safety threshold (TBD), immediately (if false alarms are reported, KL30 suppression or response level adjustment should be considered later)		
P1AF687	-		
P1AF681	Detected activity counter errors or checksum errors or DLC < 8 equals 10	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. When KL15 on or network management is in NetworkMode status 3. When ASW is not in shutdown and KL30 is greater than or equal to 6V 4. Detected activity counter errors or checksum errors or DLC < 8 	
P1A8811	Iout >1A && Vout <2.5Vdc	Communication is normal, CC is connected, OBC is in discharge state	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A8A98	in case of PFC bus overvoltage (greater than 450V), undervoltage (less than the given value of 40V and lasts for 200ms), immediately stop the output, and then wait 5S to clear the fault, after the conditions are met, the reboot and output	DCDC: active or inactive	
P1A8019	High-voltage DC output current >26A	Communication is normal, CC is connected	
P1A8017	Charging mode: OBC input voltage >275Vac, inverter mode: inverter output voltage >240Vac		
P1A8016	Charging mode: OBC input circuit voltage <70Vac, inverter mode: inverter output circuit voltage <180Vac		
P1A8403	Duty cycle <8%; Duty cycle >0%	CC is connected, CP voltage >3	
P1A8617	Charging mode: HV out DC Vout >465Vdc Inverter mode: DC voltage (Vin) >465Vdc	Communication is normal, CC is connected	
P1A8616	Charging mode: HVDC Vout < 230V DC, converter mode: DC voltage Vin < 230Vdc		
P1A8719	Charging mode: AC input Iac > 32A, inverter mode: V2V: AC output Iac > IAC ImaxUseToV2 v, V2L (16A): AC output Iac > 16A, V2L (10A): AC output Iac > 10A		
P1A8806	Charger shuts down and locks up due to failed hardware self-test		
P1A8B98	DCDC fault detection 1s		
P1A8A19	DC2AC over power detection	Communication is normal, OBC is in discharge state	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A0119	High-voltage current is greater than 25A, lasting for 10ms	The communication is normal, and VCU requires DCDC to work	
P1A0019	Low-voltage current is greater than 216A, lasting for 20ms		
P1AFD98	Low-voltage rectifier mosfet temperature is greater than 120 °C for 3 seconds; or Low-pressure BUCK-mosfet temperature is greater than 120 °C for 3s		
P1AFE98	LLC bridge temperature is greater than 120°C for 3s; or DCDC-PFV inductor temperature is greater than 120°C for 3s		
P1AF800	CAN transceiver device initialization failed after 10 attempts	The power supply voltage is 9V-16V, no bus off is detected, more than 1000ms after the last bus disconnection recovery	
P1D2100	Low voltage current feedback PWM signal frequency is not within [90K, 110K]	The communication is normal, and VCU requires DCDC to work	
P1D2000	Internal water temperature during water inlet is greater than 40 °C	Power supply voltage is 9V-16V; wake up (CCICP connection or NM or KL15) after 3 seconds	
P1A1106	0.4A, lasting for 30ms	DCDC status Buck	
P1A1919	Actual overcurrent of 1000 ms (limit+10A)	DCDC status Buck	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A3C06	Level 1 failure occurs but does not respond' 1, Global_ Enable==1, debounce<80ms, pull down NERROR pin 2. After the request to pull down NERROR pin, monitor whether the Global_ENB signal is in "failure state", if not, report to DFC and ask L3 to trigger Watchdog response.	(L1 is @ fault mode) (L2 fault flag ==authentic)	
P1AF649	Level 3 closed path test failed	OBC: initialization, DCDC: initialization	
P1A8B49	DCDC closed path test failed	DCDC initialization	
P1A2606	Over-control threshold value of 16.5V is greater than 4 minutes within 2000 ms	DCDC status Buck	
P1D2098	OBC stops charging: Charging mode>= 86 degC for 1 s; discharging mode>= 86 degC for 1 s	OBC: initialization, standby, normal, derating, heating, discharge, interruption, shutdown, DCDC: initialization, backup, voltage relief, discharge, fault	
P1AFA00	Software version number verification at OBCHV side fails for 1 s	OBC: initialization, standby, normal, derating, heating, discharge, interruption, shutdown	
P1AFB00	Unexpected current deviation absolute value >5A (can be calibrated), lasting for 150 ms	OBC: initialization, standby, interruption	
P1D2600	Single phase: Phase lock fail, out of 43-67Hz for 3 Times phase locking fails three times and three phases: wait for two power frequency cycles (can be calibrated) when locking the phase, if the phase locking is still unsuccessful, it is judged that the phase locking failure	Normal, derated and heated	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1D2700	After detecting AC Error, debounce 2s	When normal, derating and heating start	
P1A3E06	There is an error reading data from the EEPROM	DCDC status: initialization, backup, voltage relief, discharge, fault	
P1A3D06	Write EEPROM process reports an error		
P1D241C	Charging mode: Set HI_VAC_POVP_REF to full duty cycle, set HI_VAC_NOVP_REF to 0 duty, so that the hardware OVP cannot report the discharge mode: 8 times> 275V (hardware fault after reset is captured, false->>true process) in 120 s	OBC: initialization, standby, normal, derating, heating, shutdown, interruption	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the high and low-voltage charging system.

- A. Check whether the power supply and grounding harness of the high and low voltage charging system are normal. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(low figuration\)](#)

Next step

Step 5 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

2.6.6.11 CC signal trouble (Type I)

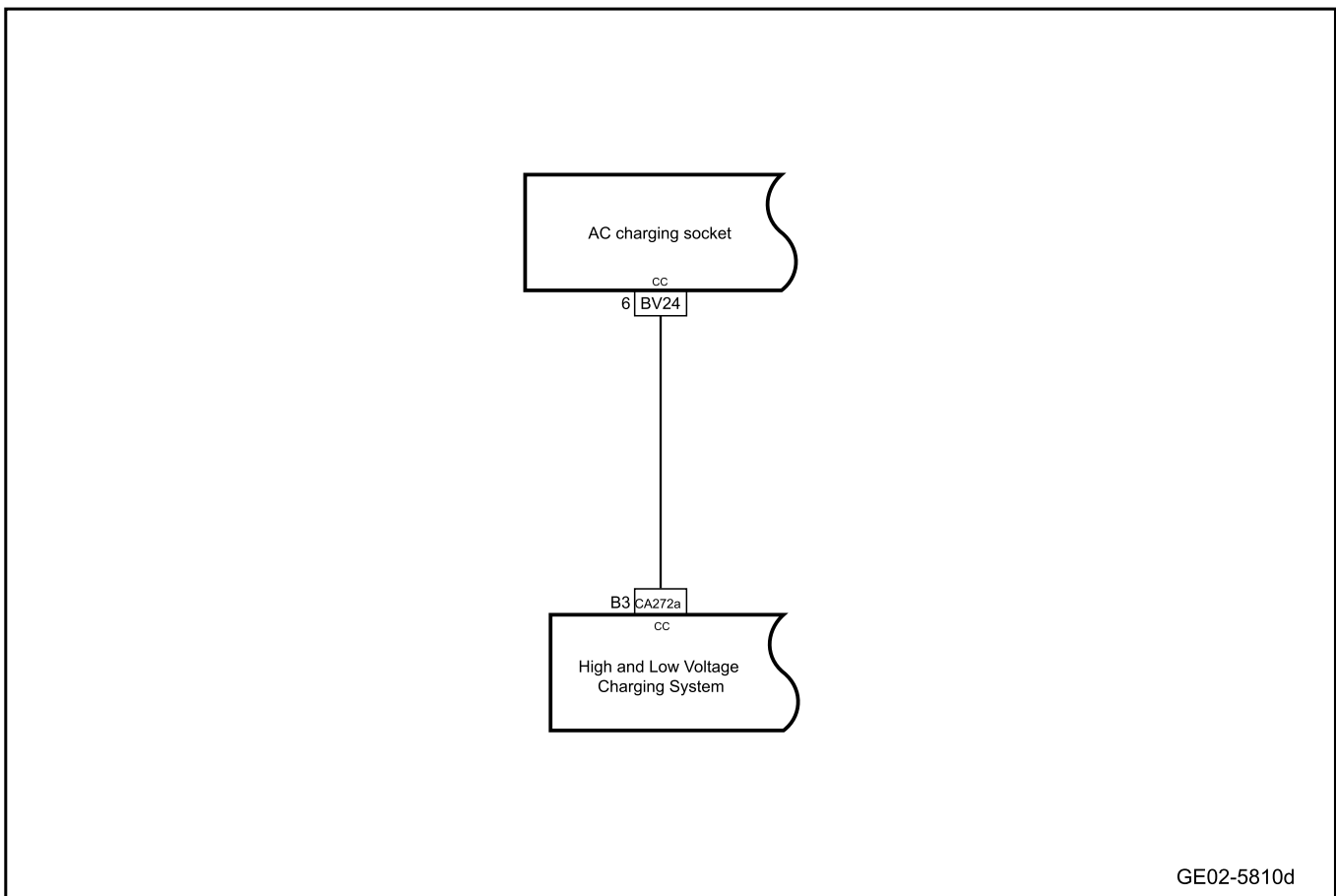
1. DTC description:

Diagnostic Trouble Code	Description
P1A9F00	Vehicle-mounted charger CC signal is unreasonable
P1A881C	Charging connection failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9F00	'out of range of ($\pm 20\%$ of typical value within 1 k $\pm 8\%$ of typical value above 1 k Disconnect) Debounce: 1000ms	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. AC charging socket 2. Circuit 3. High and low-voltage charging system
P1A881C	Exceed the range	CC is connected	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

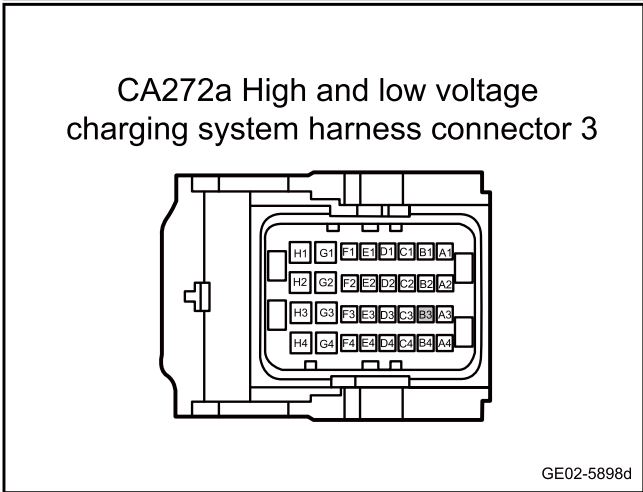
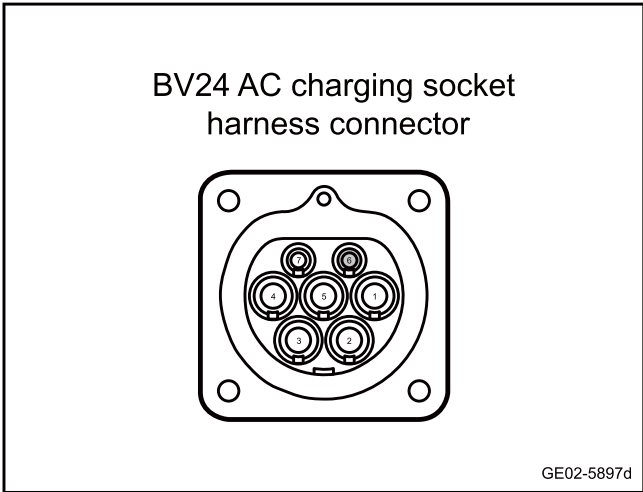
Step 2	Primary check.
--------	----------------

- A. Check AC charging socket, the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check AC charging socket, the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 3 Check the harness between the AC charging socket and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV24(6)	CA272a(B3)	Standard resistance: less than 1Ω

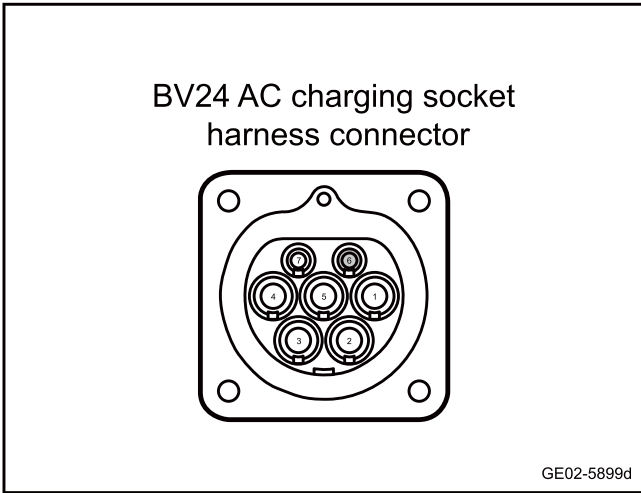
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the AC charging socket and high and low voltage charging system for an open circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

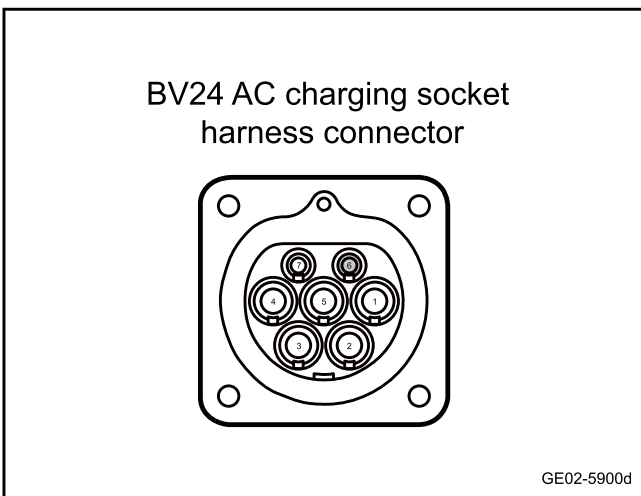
Measure terminal 1	Measure terminal 2	Standard value
BV24(6)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check the harness between the AC charging socket and high and low voltage charging system for an open circuit to the ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV24(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the AC charging socket.

- A. To replace the AC charging socket, please refer to [Replacement of AC Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the high and low-voltage charging system.

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.6.6.12 CP signal trouble (Type I)

1. DTC description:

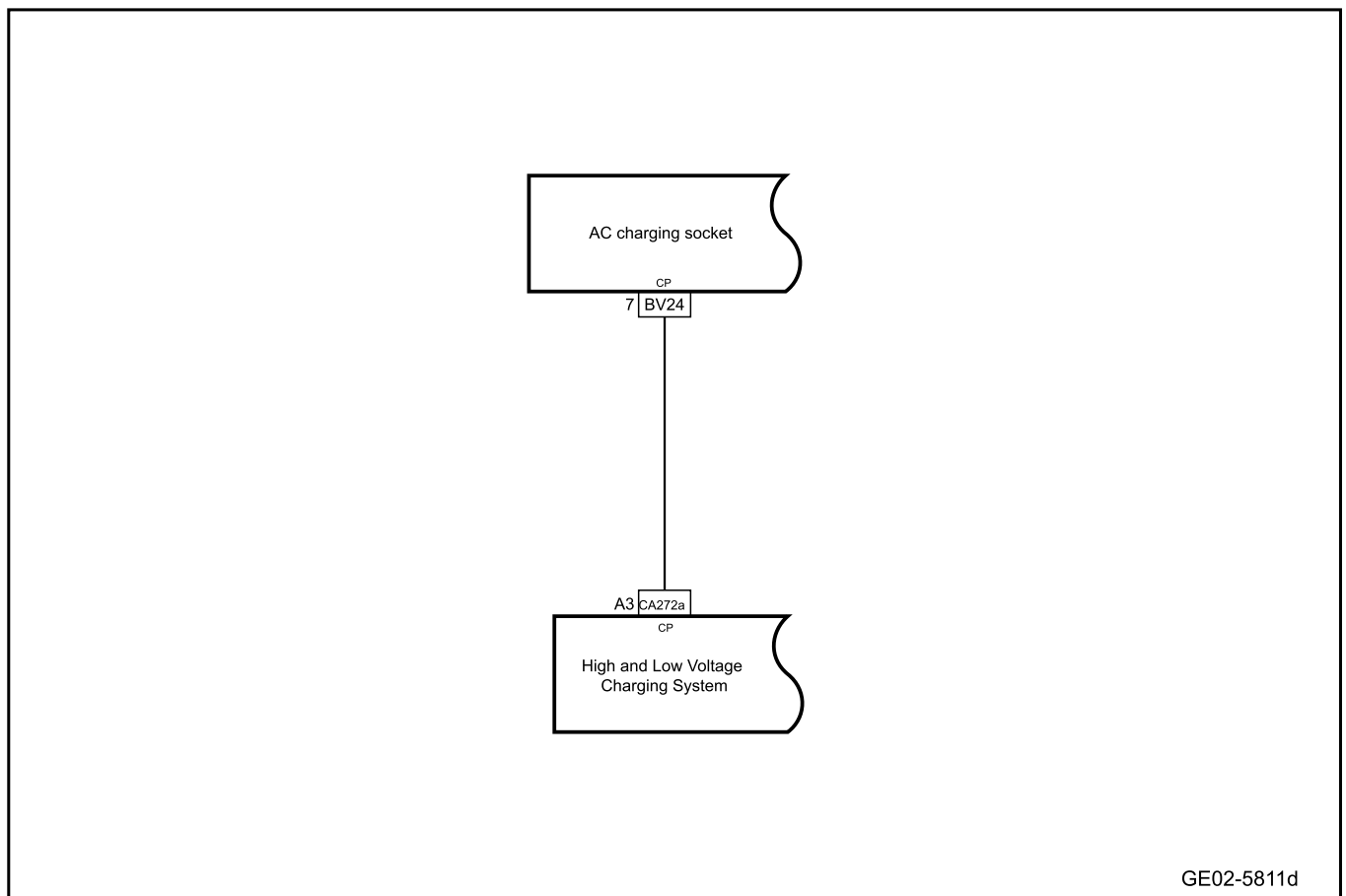
Diagnostic Trouble Code	Description
P1AA000	Vehicle-mounted charger CP signal range is unreasonable
P1AA100	CP signal of the vehicle-mounted charger PWM frequency is unreasonable
P1AA200	Vehicle-mounted charger CP signal PWM duty cycle is unreasonable
P1AA300	The CP signal of the vehicle-mounted charger is inconsistent with the control command of S2
P1A841C	CP voltage is abnormal
P1A8538	The frequency of CP is abnormal at the internal test point of the charger(before S2 is closed)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA000	The effective voltage of any phase of the OBC AC input voltage is greater than the protection threshold 273Vrms, 5 consecutive times; AC voltage is greater than the protection threshold 220Vrms+ 3%, 5 consecutive times	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. AC charging socket 2. Circuit 3. High and low-voltage charging system
P1AA100	The effective voltage of any phase in the AC input voltage is less than the protection threshold for 5 consecutive times		
P1AA200	During OBC single-phase charging, the AC input voltage is less than the diagnostic threshold (30Vdc) within 10 ms; or during three-phase charging, the AC voltage of any phase within 10 ms is less than the diagnostic threshold (30Vdc) and is maintained for 10 ms		
P1AA300	The AC input frequency of OBC is less than 45Hz or greater than 66Hz. It is carried out for 16 consecutive cycles		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A841C	Charging mode: out of range (4.0v~7.0v) && (7.5v~10.0v) V2V mode: out of range (4.7v~7.7v) & (8.2v~10.7v)	CC is connected and CP voltage >3V	
P1A8538	Out of range (900Hz~1100Hz)	CC is connected, CP duty > 0%, CP load < 100% and CP voltage > 3V	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

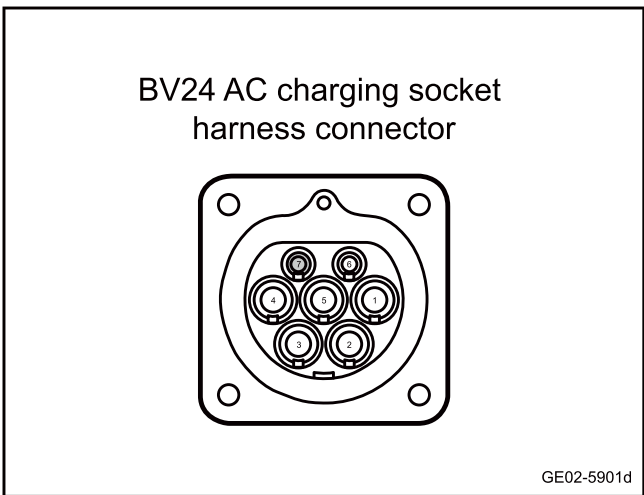
- A. Check AC charging socket, the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check AC charging socket, the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

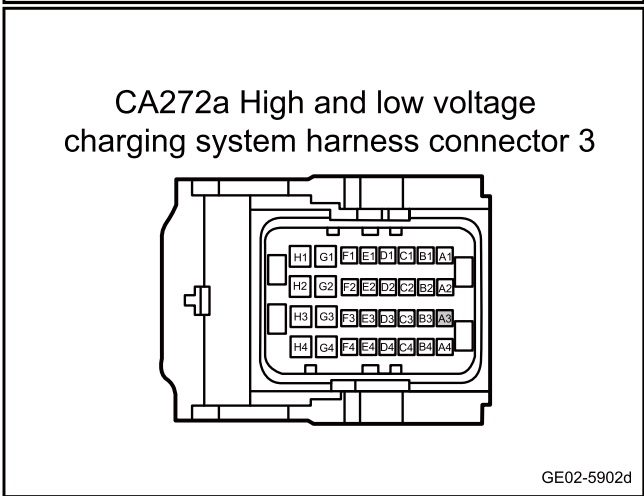
Step 3 Check the harness between the DC charging socket and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV24(7)	CA272a(A3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

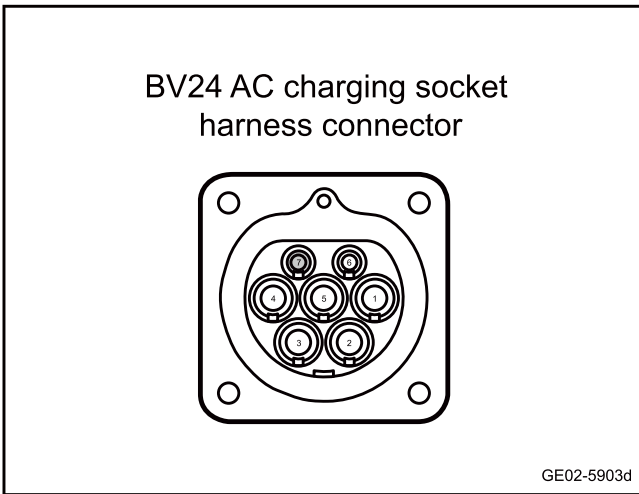


No

Repair or replace the harness.

Yes

Step 4 Check the harness between the DC charging socket and high and low voltage charging system for an open circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV24(7)	Vehicle body is grounded.	Standard voltage: 0V

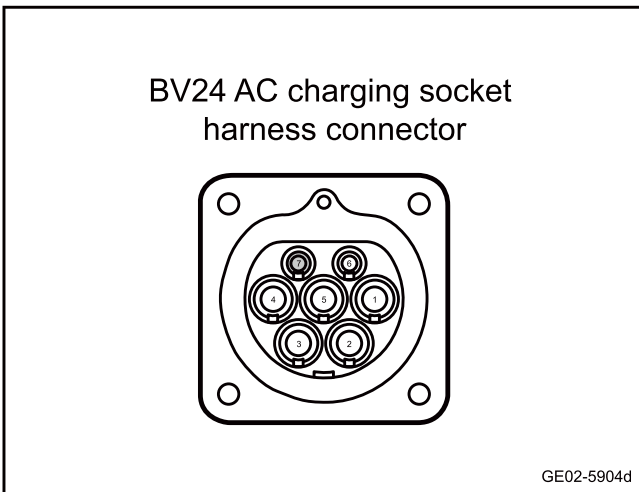
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check the harness between the DC charging socket and high and low voltage charging system for an open circuit to the ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV24(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the AC charging socket.

- A. To replace the AC charging socket, please refer to [Replacement of AC Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the high and low-voltage charging system.

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.6.6.13 AC Input signal fault (Type I)

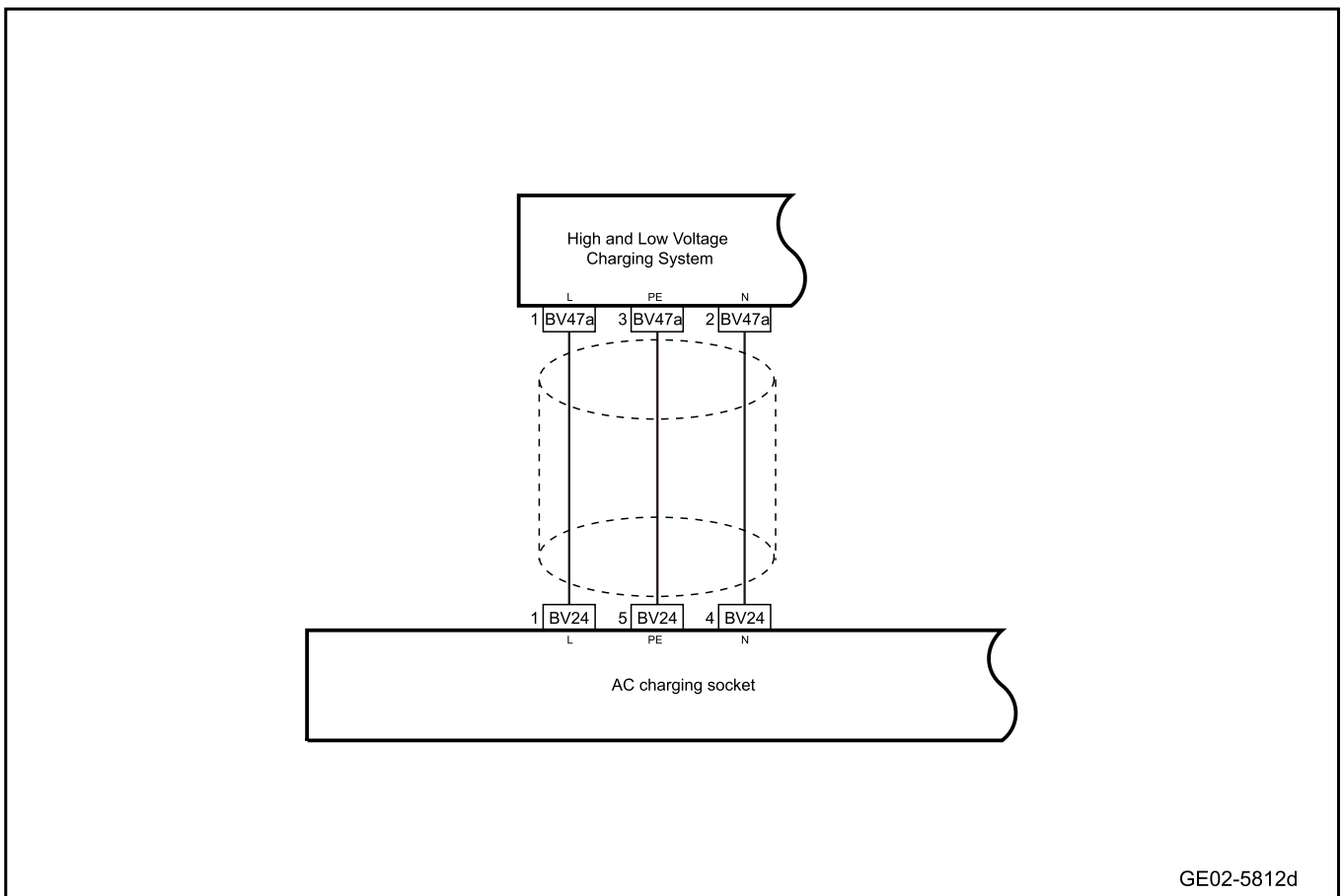
1. DTC description:

Diagnostic Trouble Code	Description
P1AA600	Vehicle-mounted charger AC input software overvoltage
P1AA700	AC input software of the vehicle-mounted charger is undervoltage
P1AA800	Open circuit at AC input side of vehicle-mounted charger
P1AA900	The AC input frequency of the vehicle-mounted charger exceeds a certain range

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA600	Exceed the normal range of 4.2V-10.8V and 0-0.5V for 1000 ms	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. AC charging socket 2. Circuit 3. High and low-voltage charging system
P1AA700	The PWM frequency of the CP signal of the OBC exceeds the range of 900-1100Hz and is maintained for 1000 ms		
P1AA800	Exceed 8%-90%, 0%, 100% duty cycle range for 1000 ms		
P1AA900	The CP amplitude is required to be 4.2V-7.5V when S2 is closed; CP amplitude is required to be 7.6V-10.8V when S2 is disconnected; if the status of S2 is not consistent with the CP command and lasts for 1000 ms, this fault is reported		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

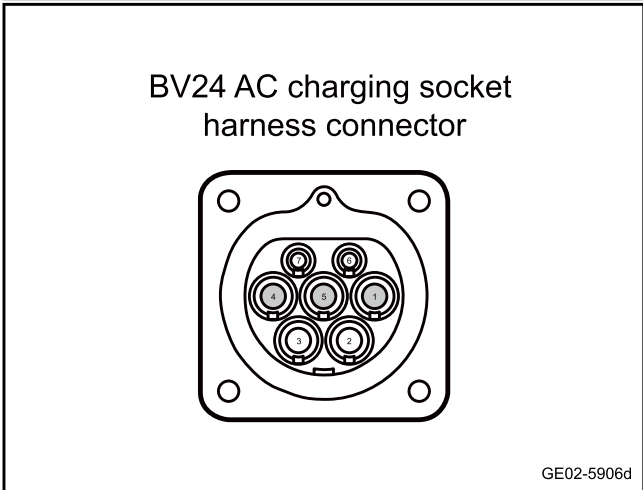
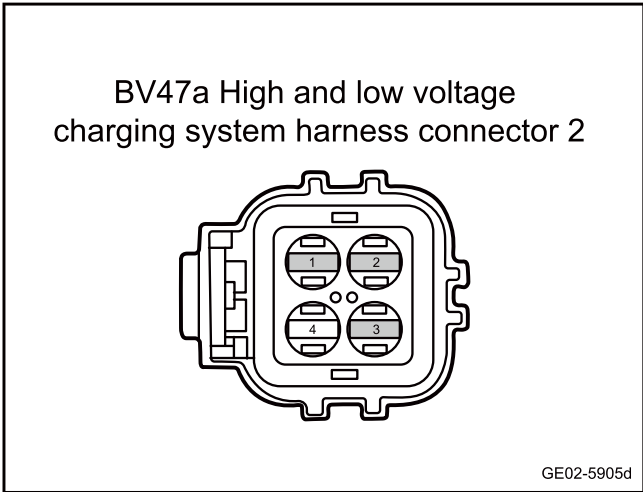
- A. Check AC charging socket and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check AC charging socket and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the AC charging socket and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector BV47a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47a(1)	BV24(1)	Standard resistance: less than 1Ω
BV47a(2)	BV24(4)	
BV47a(3)	BV24(5)	

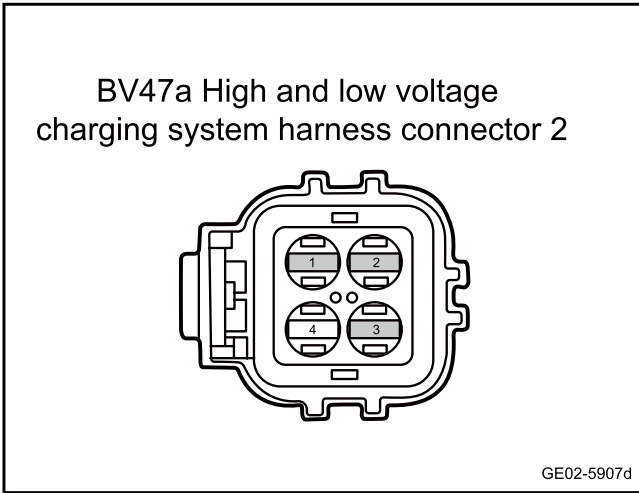
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the AC charging socket and high and low voltage charging system for an open circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector BV47a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

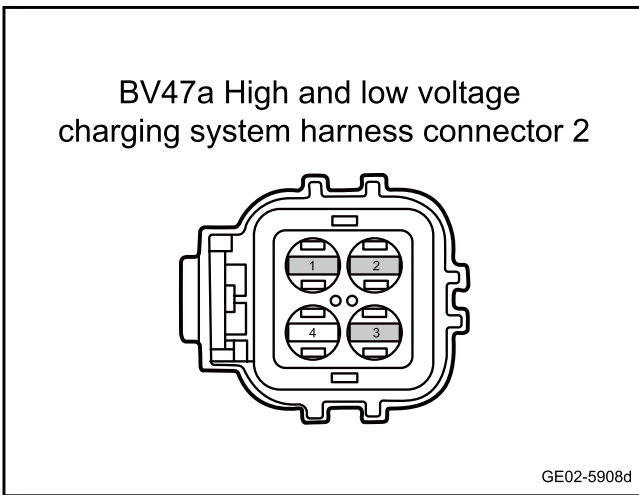
Measure terminal 1	Measure terminal 2	Standard value
BV47a(1)	Vehicle body is grounded.	Standard voltage: 0V
BV47a(2)		
BV47a(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5	Check the harness between the DC charging socket and high and low voltage charging system for an open circuit to the ground.
---------------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the DC charging socket harness connector BV24.
- C. Disconnect the high and low voltage charging system wiring harness connector BV47a.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
BV47a(2)		
BV47a(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6	Replace the AC charging socket.
---------------	---------------------------------

- A. To replace the AC charging socket, please refer to [Replacement of AC Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the high and low-voltage charging system.

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.6.6.14 Charging Port Status Switch Fault (Type I)

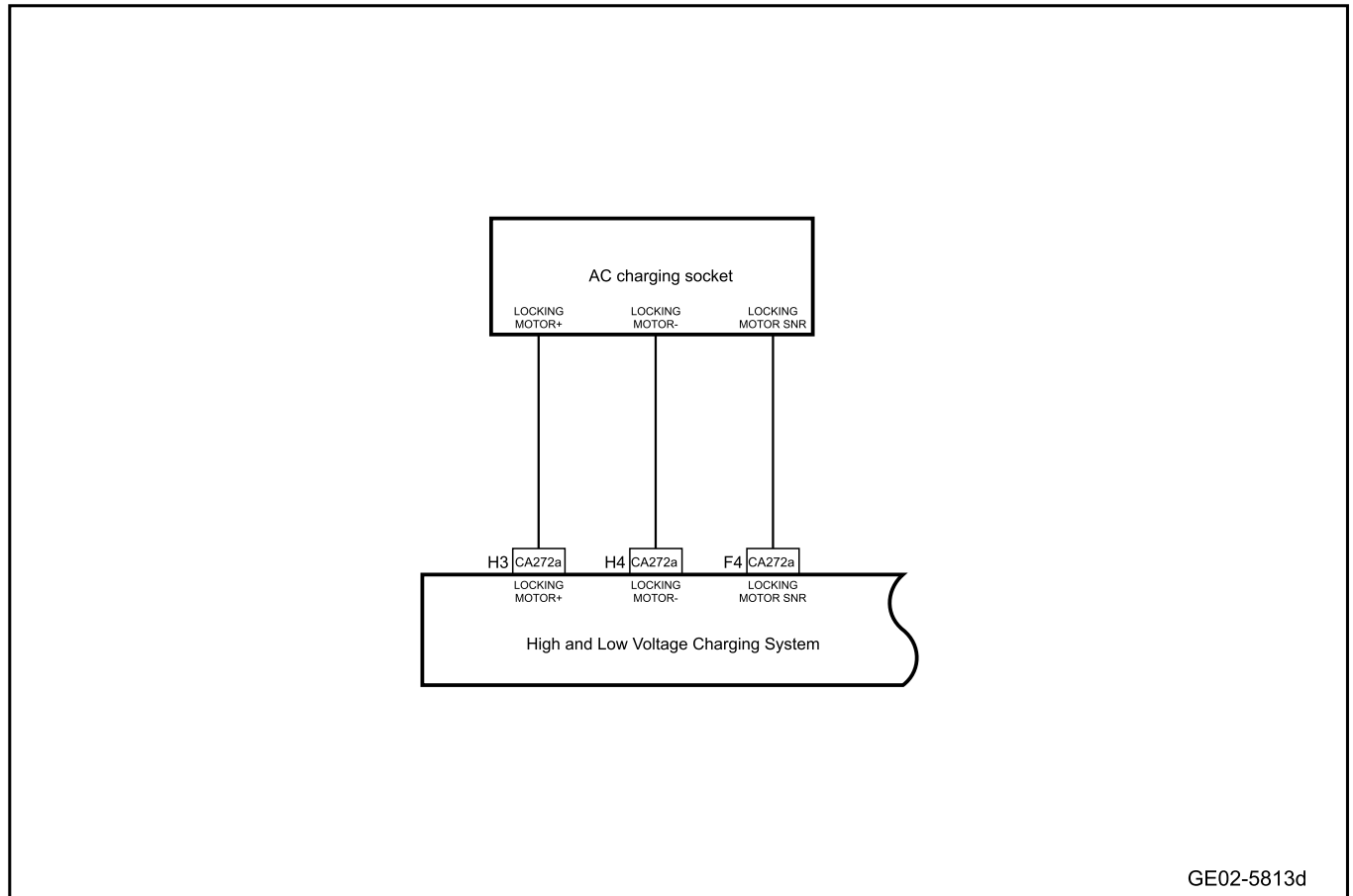
1. DTC description:

Diagnostic Trouble Code	Description
P1AB100	Electronic lock unlocking failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AB100	When the electronic locking is required, the electronic lock voltage signal exceeds the voltage range in the lock state	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. AC charging socket (charging cover status switch) 2. Circuit 3. High and low-voltage charging system

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

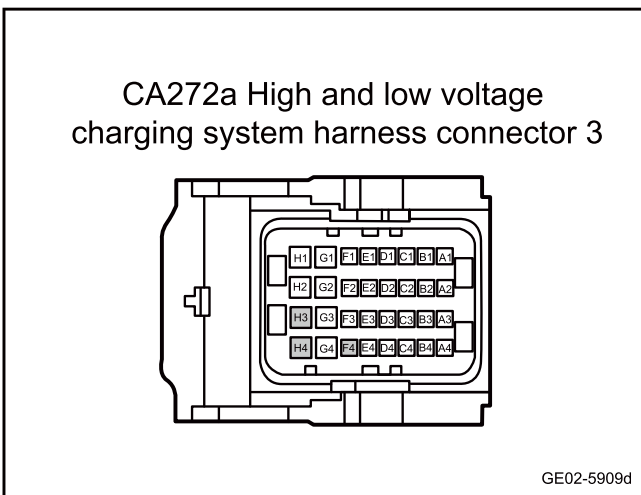
- A. Check AC charging socket (charging cover status switch) and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check AC charging socket (charging cover status switch) and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the AC charging socket (charging cover status switch) and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging socket (charging cover status switch) harness connector.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(H3)	AC charging socket (charging port cover status switch) end	Standard resistance: less than 1Ω
CA272a(H4)		
CA272a(F4)		

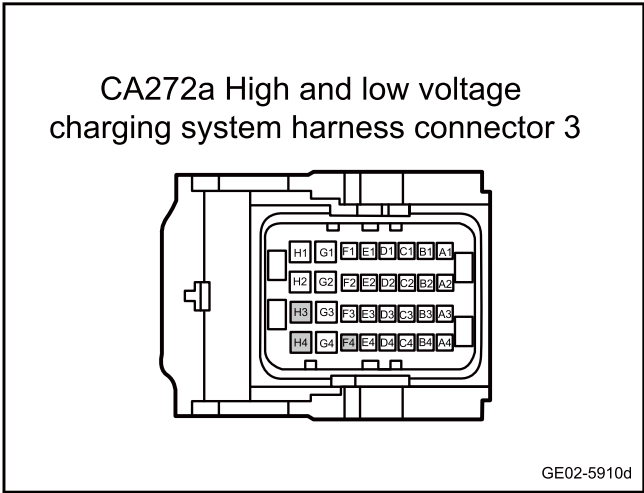
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the AC charging socket (charging cover status switch) and high and low voltage charging system for an open circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging socket (charging cover status switch) harness connector.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(H3)	Vehicle body is grounded.	Standard voltage: 0V
CA272a(H4)		
CA272a(F4)		

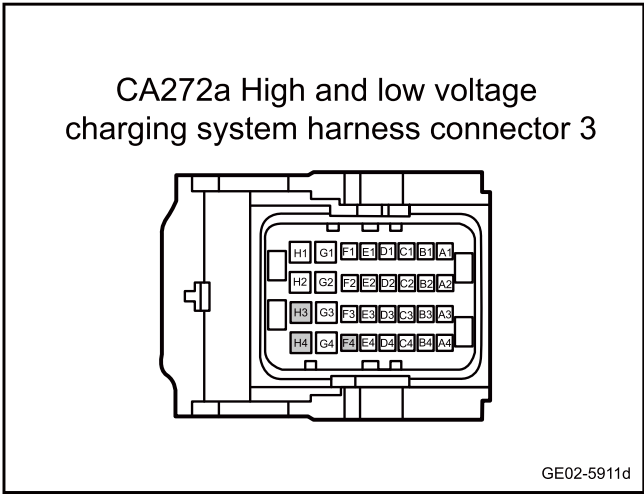
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check the harness between the AC charging socket (charging cover status switch) and high and low voltage charging system for an open circuit to the ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging socket (charging cover status switch) harness connector.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(H3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272a(H4)		
CA272a(F4)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the AC charging socket (charging cover status switch).
--------	--

- A. To replace the AC charging socket, please refer to [Replacement of AC Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7	Replace the high and low-voltage charging system.
--------	---

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8	Reprogram and reset the high and low voltage charging system.
--------	---

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

2.6.6.15 Over-temperature Failure of High and Low Voltage Charging System (Type I)

1. DTC description:

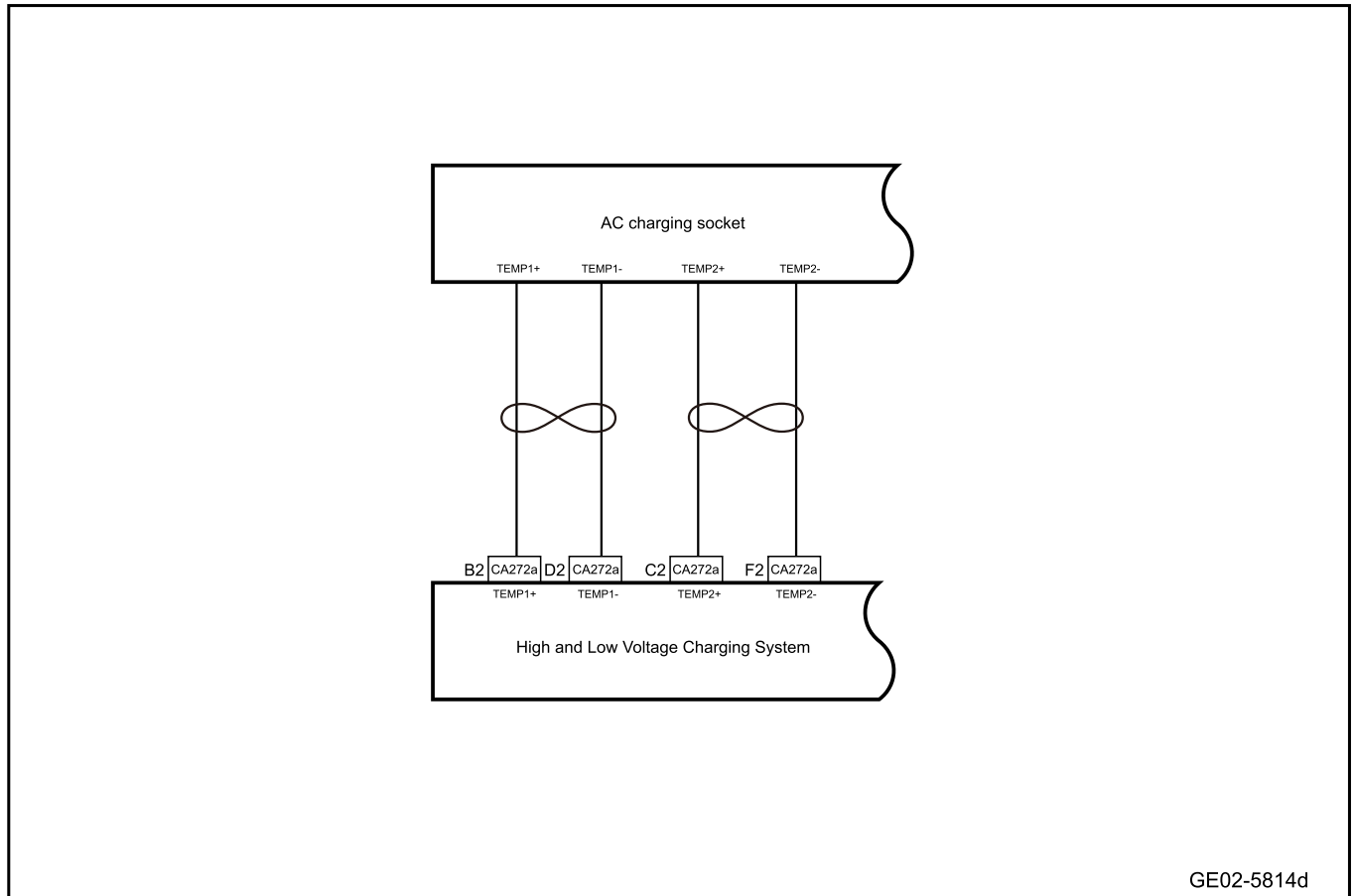
Diagnostic Trouble Code	Description
P1AA400	The temperature of the charging gun of the vehicle-mounted charger is too high
P1AA500	The temperature of the PCB of the vehicle-mounted charger is too high
P1AB200	DCDCMOSFET temperature is too high
P1AB300	Temperature of DCDC safety switch is too high
P1A8698	Shutdown due to overtemperature
P1A8998	The temperature of the charging gun of the vehicle-mounted charger fails
P1AE900	The temperature signal of safety switch exceeds the lower limit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA400	Since this temperature range exceeds the effective range of the NTC, the response to the socket fault (SkthiRng/SktLoRng) is unrecoverable	OBC initialization, standby, normal, derating, heating, discharging, interrupting	1. AC charging socket 2. Circuit 3. High and low-voltage charging system
P1AA500	The PCB temperature of the OBC, or PFC temperature, or LLC temperature reaches the corresponding diagnostic threshold for 500 ms	OBC: initialization, backup, normal, derating, heating, one charge and interruption	
P1AB200	The temperature of the DCDC MOSFET is greater than the diagnostic threshold and is maintained for 1500ms	DCDC: active or inactive	
P1AB300	>115 °C; 1500 ms > 115 °C; lasting for 1500 ms	DCDC: initialization, standby, voltage drop, discharge, fault	
P1A8698	T > 80°C	Communication is normal, No overvoltage/undervoltage, CC is connected	
P1A8998	Emergency shutdown: > 200°C. (>200,<-40)-> (AD<21,>3975)	OBC: initialization, standby, normal, derating, heating, charging, interruption	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AE900	AD: <111 or >3912, for 200ms AD value <111 or >3912, lasting for 200 ms	DCDC: initialization, backup, voltage drop, discharge, fault	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

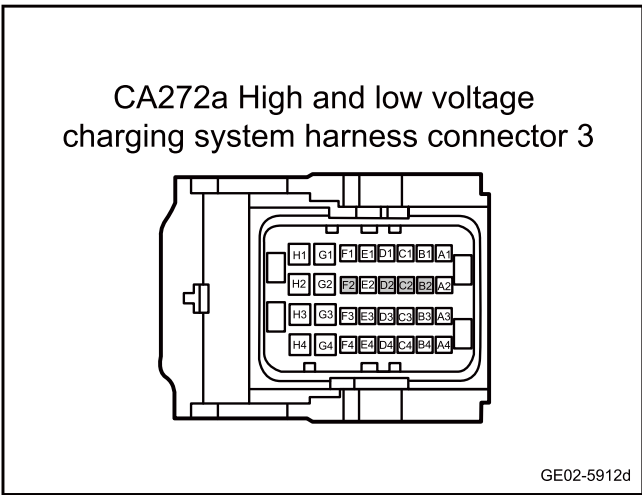
- A. Check AC charging socket and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check AC charging socket and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the AC charging socket and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging socket harness connector.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(B2)	AC charging socket end	Standard resistance: less than 1Ω
CA272a(D2)		
CA272a(C2)		
CA272a(F2)		

- E. Confirm whether the measured value meets the standard.

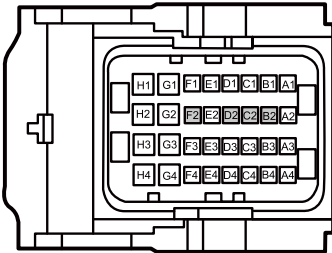
No

Repair or replace the harness.

Yes

Step 4 Check the harness between the AC charging socket and high and low voltage charging system for an open circuit to power supply.

CA272a High and low voltage charging system harness connector 3



GE02-5913d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging socket harness connector.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(B2)	Vehicle body is grounded.	Standard voltage: 0V
CA272a(D2)		
CA272a(C2)		
CA272a(F2)		

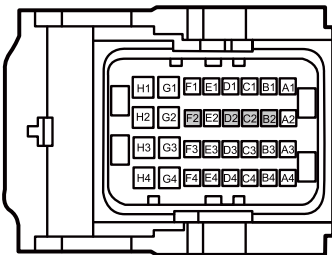
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check the harness between the AC charging socket and high and low voltage charging system for an open circuit to the ground.

CA272a High and low voltage charging system harness connector 3



GE02-5914d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging socket harness connector.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(B2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272a(D2)		
CA272a(C2)		
CA272a(F2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the AC charging socket.

- A. To replace the AC charging socket, please refer to [Replacement of AC Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the high and low-voltage charging system.

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

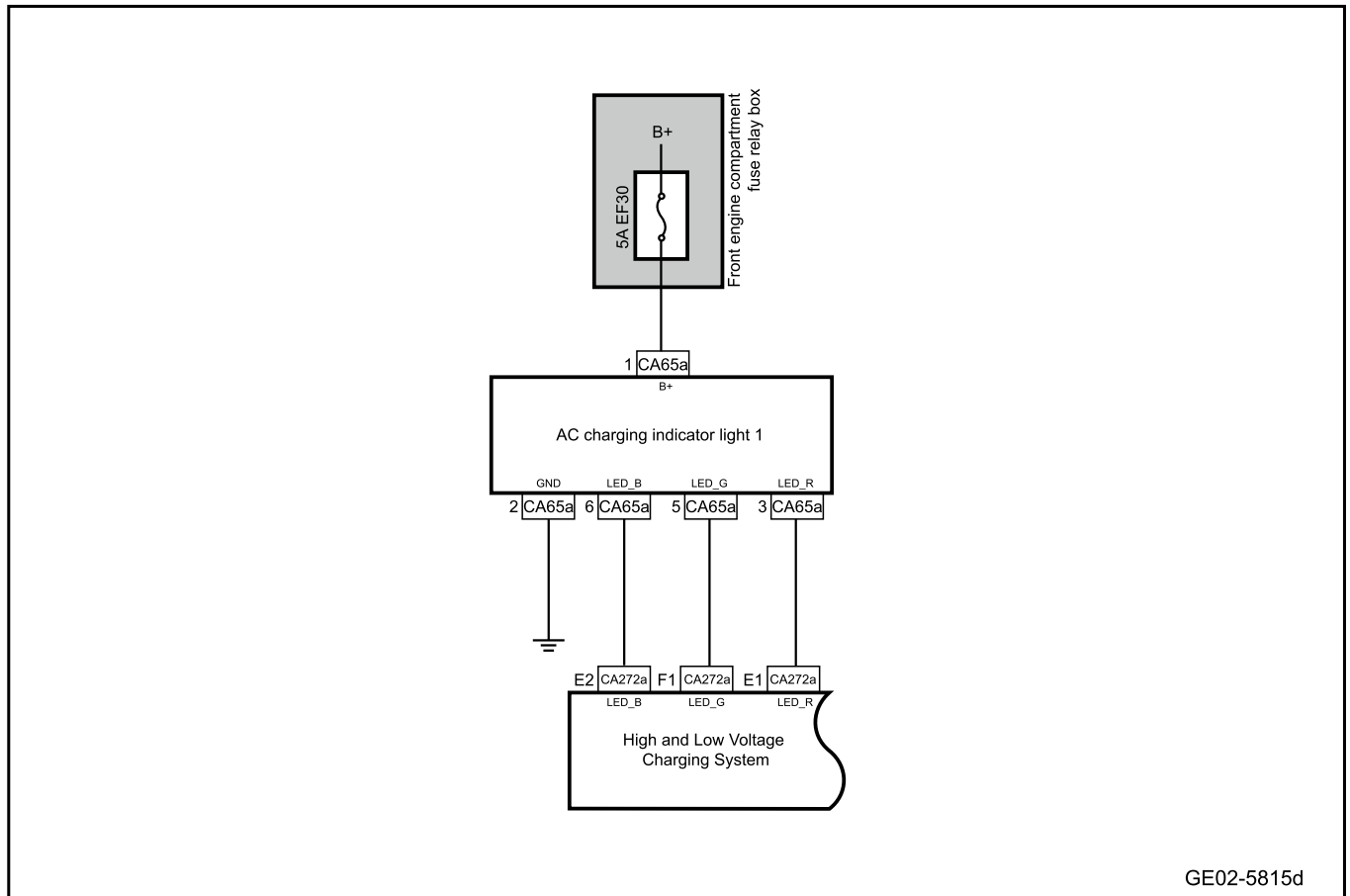
Diagnose according to the output trouble code.

No

Step 10 System is normal.

2.6.6.16 Charging indicator lamp fault(Type I)

1. Schematic circuit diagram:



GE02-5815d

2. Diagnosis steps

Caution

This manual only specifies the fault diagnosis of AC charging indicator lamp 1. The diagnosis method of AC charging indicator lamp 2 is similar to that of AC charging indicator lamp 1.

Step 1	Primary check.
--------	----------------

- A. Check AC charging indicator lamp 1 and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check AC charging indicator lamp 1 and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF30 of the front engine compartment. Check whether the fuse EF30 is blown.

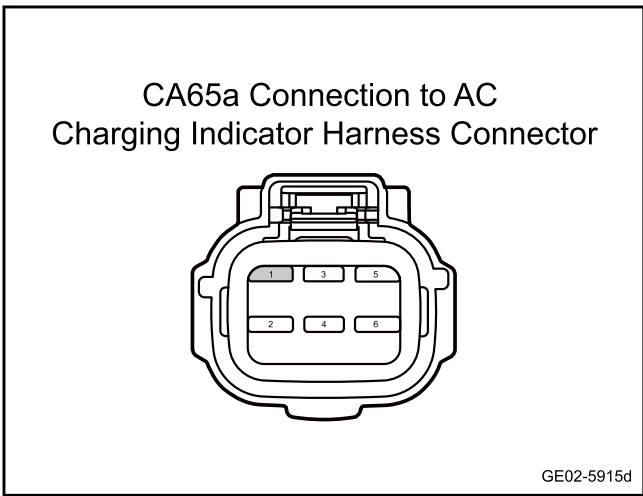
Rated capacity of fuse: 5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the AC charging indicator lamp 1 power circuit is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

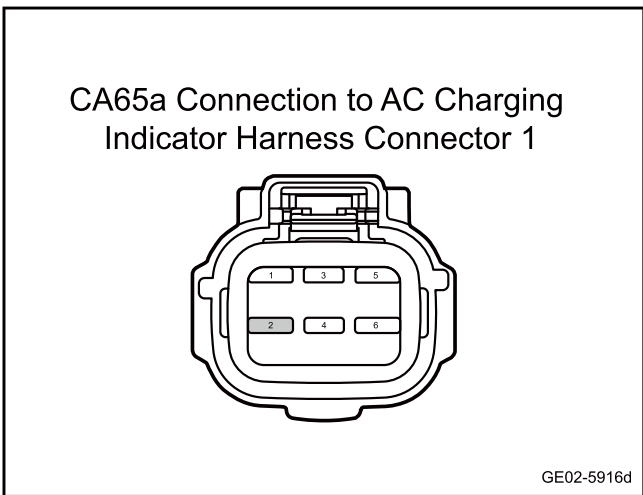
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the AC charging indicator lamp 1 grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

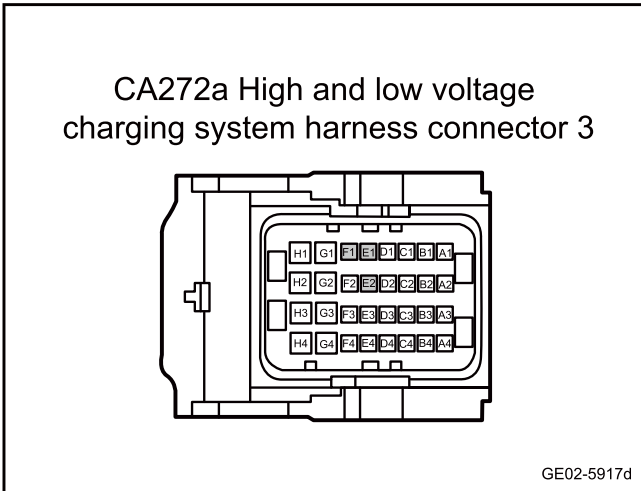
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

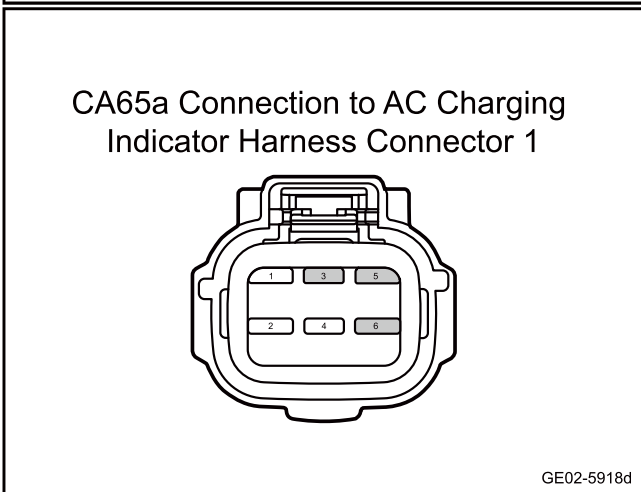
Yes

Step 5 Check the harness between the AC charging indicator lamp 1 and the high and low voltage charging system for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Configura- tion	Measure terminal 1	Measure terminal 2	Standard value
VMAX Model	CA272a (E1)	CA65a(3)	Standard resistance: less than 1Ω
	CA272a (F1)	CA65a(5)	
	CA272a (E2)	CA65a(6)	



- E. Confirm whether the measured value meets the standard.

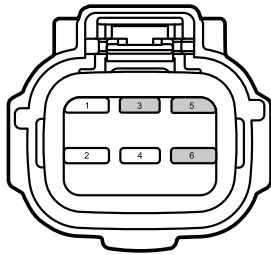
No

Repair or replace the harness.

Yes

Step 6 Check the harness between the AC charging indicator lamp 1 and the high and low voltage charging system for short circuit to power supply.

CA65a Connection to AC Charging Indicator Harness Connector 1



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(3)	Vehicle body is grounded.	Standard voltage: 0V
CA65a(5)		
CA65a(6)		

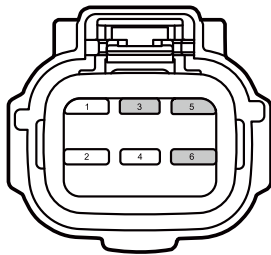
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Check the harness between the AC charging indicator lamp 1 and the high and low voltage charging system for short circuit to ground.

CA65a Connection to AC Charging Indicator Harness Connector 1



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. Disconnect the high and low voltage charging system harness connectors CA272a and CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA65a(5)		
CA65a(6)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Change AC charging indicator lamp 1

- A. To replace the AC charging indicator lamp 1, please refer to [Replacement of AC Charging Indicator lamp 1](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9 Replace the high and low-voltage charging system.

- A. Check the power supply and grounding harness of the high and low voltage charging system. Refer to [Power Failure of High and Low Voltage Charging System](#)
- B. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 10 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 System is normal.

2.6.6.17 Power supply failure of high and low voltage charging system(Type II)

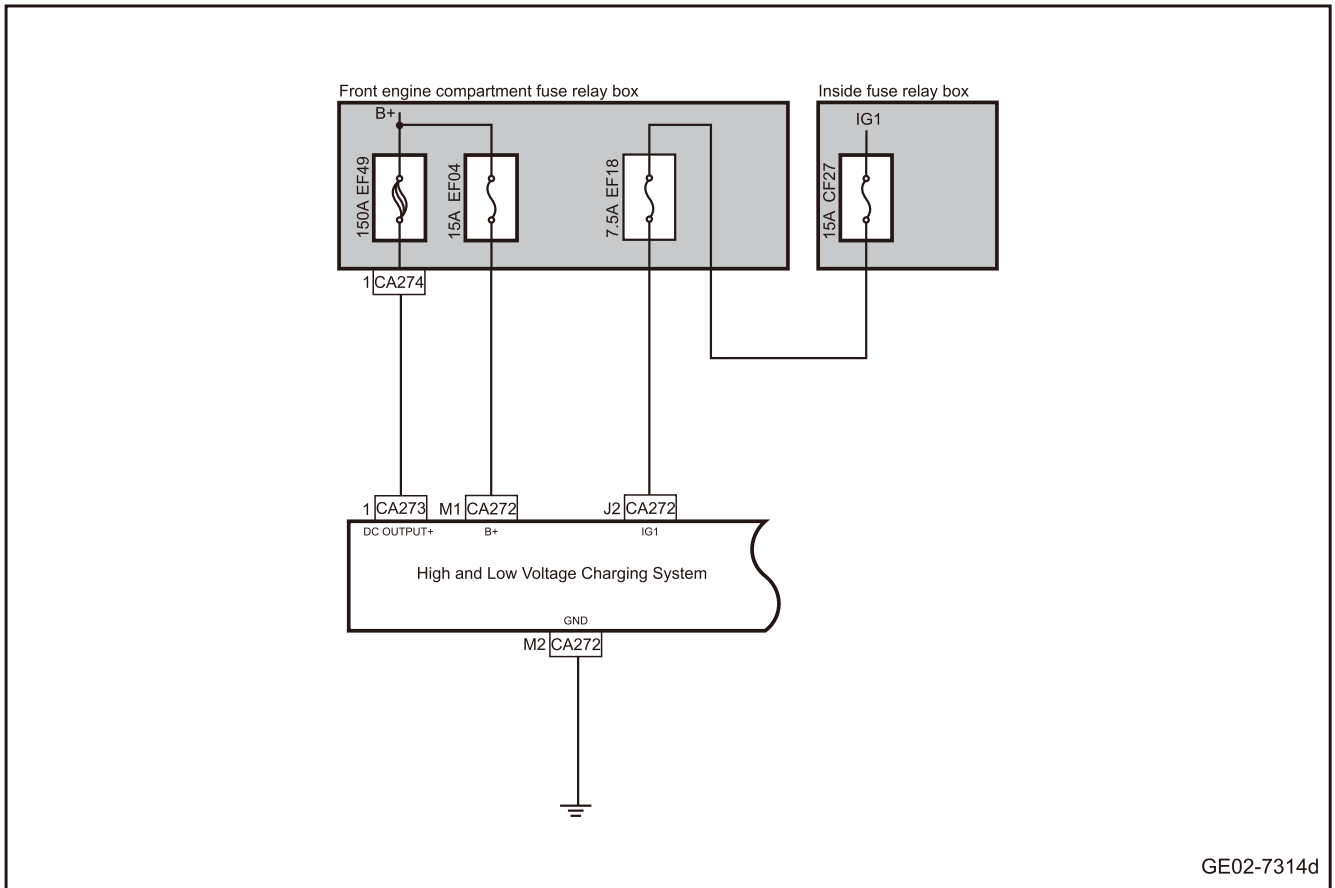
1. DTC description:

DTC	Trouble description
P1AC700	The deviation between KL30 voltage and the low voltage side voltage is too large
P1AF000	Diagnosis of KL30 Undervoltage in DCDC

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AC700	Voltage difference >5V for 2s	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	1. Harness 2. Fuse 3. Battery 4. High and low-voltage charging system
P1AF000	<6.5V for 1s		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 3.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Check whether the fuse is blown according to the below table.

Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF27	15A
Front engine compartment fuse relay box	EF04	15A
Front engine compartment fuse relay box	EF18	7.5A

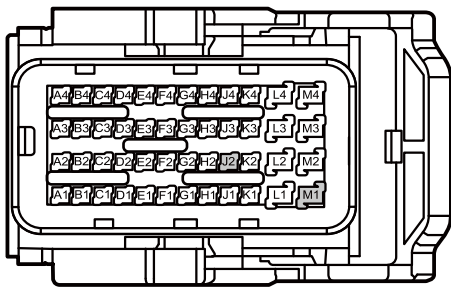
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

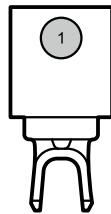
Step 4 | Check the power supply circuit of the high and low voltage charging system.

CA272 high and low voltage charging system harness connector



GE02-7324d

CA273 High and low voltage charging system harness connector



GE02-7325d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high and low voltage charging system harness connectors CA272 and CA273.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA272(J2)		
CA273(1)		

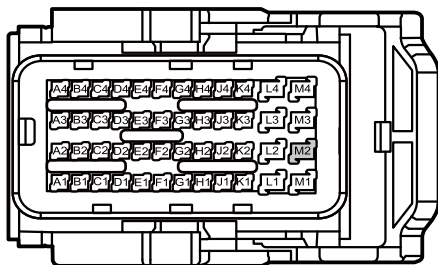
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 5 Check the grounding circuit of the high and low voltage charging system.

CA272 high and low voltage charging system harness connector



GE02-7326d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high and low voltage charging system wiring harness connector CA272.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 | Replace the high and low-voltage charging system.

- A. To replace the high and low voltage charging system, please refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 8 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 9 | System is normal.

2.6.6.18 Communication failure of the high and low-voltage charging system(Type II)

1. DTC description:

DTC	Trouble description
U011287	Communication with BMSH is lost
U247283	Error in communication check with BMS
U347282	Error in communication checksum with BMS
U041381	BMSH CAN communication error
U007300	CAN bus off
U111487	Communication with VCU_HBCAN is lost
U24A883	Error in communication check with VCU

DTC	Trouble description
U34A882	Error in communication checksum with VCU
U140481	VCU CAN communication error
U000100	CAN bus off inside OBC

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011287	5T (T) of BMSH (ID=0x211) information lost is the message period	<ol style="list-style-type: none"> The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) Meet the TDiagEnable condition No bus off is detected, more than 1000ms after the last bus disconnection recovery When KL15 is turned on or network management is in network mode This DTC should be detected when the vehicle battery is charging It is related to the bone parc cells in the network configuration word F110. When F110 completes byte 3 bit 3 is 1, it is enabled. When DLC fault and timeout fault occur simultaneously, DLC fault will be reported first. 	<ol style="list-style-type: none"> Circuit High and low-voltage charging system Diagnostic interface

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U247283	BMSH (ID= 0 x 211) message, the detected checksum error is equal to 10.	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. DLC>=8 6. It should be detected that a BMSH (ID= 0 x 211) message is received. 7. It is related to the bone parc cells in the network configuration word F110. When F110 completes byte 3 bit 3 is 1, it is enabled. 	
U347282	BMSH (ID= 0 x 211) message, the detected activity counter error is equal to 10.	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. DLC>= 8 and there is no checksum error; 6. It should be detected that a BMSH (ID= 0 x 211) message is received. 	

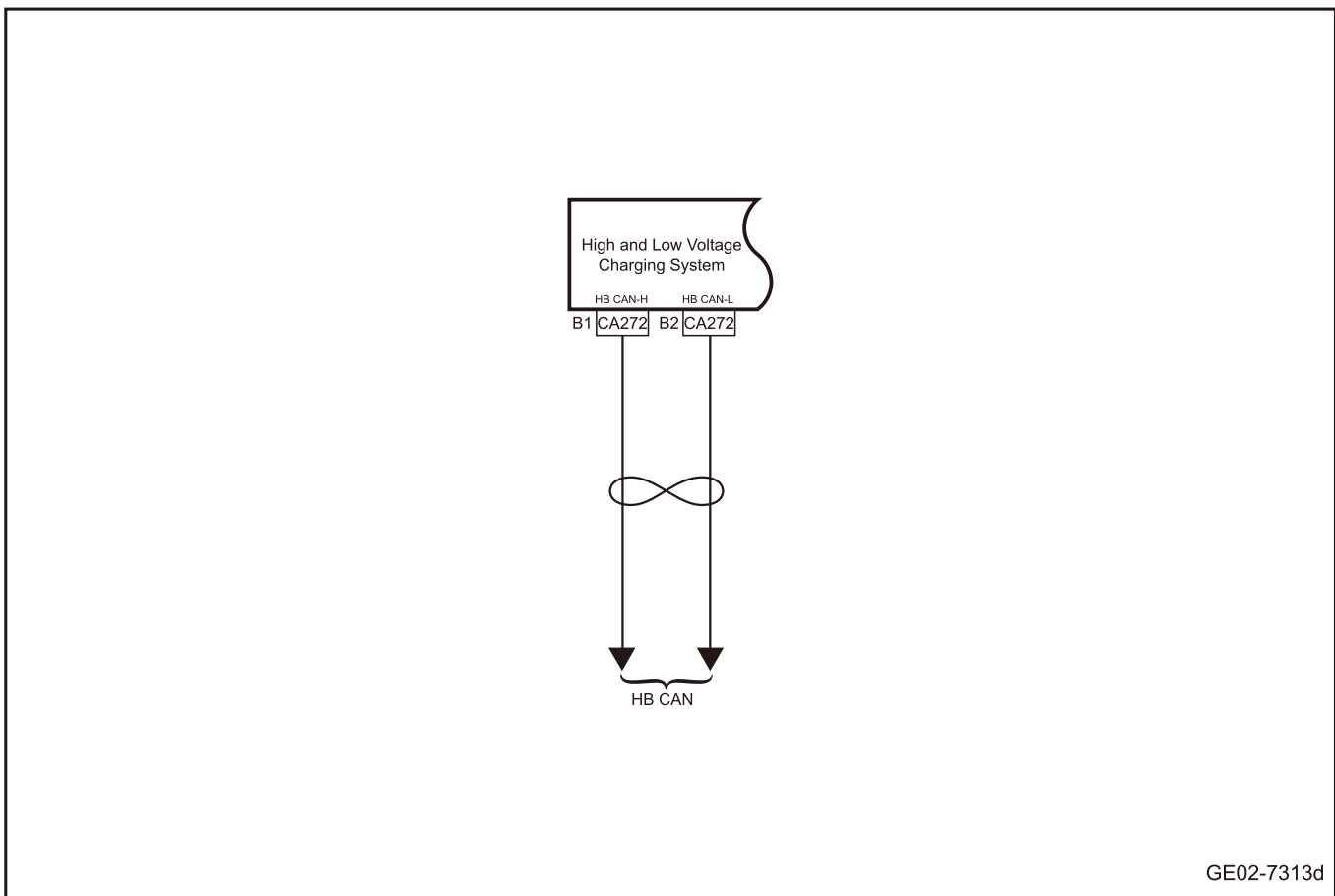
DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
		<p>7. It is related to the bone parc cells in the network configuration word F110. When F110 completes byte 3 bit 3 is 1, it is enabled.</p>	
U041381	<p>BMSH (ID= 0 x 211) message, it is detected that DLC < 8 equals 10.</p>	<p>1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. It should be detected that a BMSH (ID= 0 x 211) message is received. 6. It is related to the bone parc cells in the network configuration word F110. When F110 completes byte 3 bit 3 is 1, it is enabled.</p>	
U007300	<p>Bus switch-off counter cL1ToL2 equals 10.</p>	<p>1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. When KL15 is turned on or network management is in network mode</p>	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111487	Loss of VCU (ID=0x161) information within 250 milliseconds	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. It is related to the completion of the voltage control unit in the network configuration word F110. When F110 completes the 5th bit of byte 3, it is 1. Enable. 6. When DLC fault and timeout fault occur simultaneously, DLC fault will be reported first. 	
U24A883	VCU (ID= 0 x 161) message, the detected checksum error is equal to 10.	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. DLC>=8 6. Received VCU (ID= 0 x 161) message should be 	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
		<p>detected.</p> <p>7. It is related to the completion of the voltage control unit in the network configuration word F110. When F110 completes the 5th bit of byte 3, it is 1. Enable.</p>	
U34A882	VCU (ID= 0 x 161) message, the detected activity counter error is equal to 10.	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. DLC>=8 and no Checksum error 6. Received VCU (ID= 0 x 161) message should be detected. 7. It is related to the completion of the voltage control unit in the network configuration word F110. When F110 completes the 5th bit of byte 3, it is 1. Enable. 	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140481	VCU (ID= 0 x 161) message, it is detected that DLC < 8 equals 10.	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery. 4. When KL15 is turned on or network management is in network mode 5. Received VCU (ID= 0 x 161) message should be detected. 6. It is related to the completion of the voltage control unit in the network configuration word F110. When F110 completes the 5th bit of byte 3, it is 1. Enable. 	
U000100	Bus switch-off counter equals 11	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. When KL15 is turned on or network management is in network mode 	

3. Circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

- A. Check the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the integrity of the HB-CAN bus.
--------	--

- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm that the HB-CAN network is functioning properly.

No

Check or repair HB-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4	Reprogram and reset the high and low voltage charging system.
--------	---

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the high and low-voltage charging system.
--------	---

- A. To replace the high and low voltage charging system, please refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 7 System is normal.

2.6.6.19 Hardware faults of high and low voltage charging system (Type II)

1. DTC description:

DTC	Trouble description
P1A9800	Vehicle-mounted charger software restarts more than a certain number of times
P1A9900	Overvoltage hardware protection of vehicle-mounted charger PFC output
P1A9A00	Input overcurrent hardware protection of vehicle-mounted charger PFC
P1A9B00	Overvoltage hardware protection of vehicle-mounted charger LLC output
P1A9C00	Input overcurrent hardware protection of vehicle-mounted charger LLC
P1A9D00	Vehicle-mounted charger LLC output overcurrent hardware protection
P1A9E00	Over-undervoltage hardware protection of vehicle-mounted charger VDD5
P1AAA00	Software protection against overvoltage of PFC output of vehicle-mounted charger
P1AAB00	Software protection against undervoltage of PFC output of vehicle-mounted charger
P1AAC00	Software overcurrent protection at AC side
P1AAD00	Software protection against overcurrent of input of vehicle-mounted charger LLC
P1AAE00	Software protection against output overvoltage at high voltage DC side of vehicle-mounted charger
P1AAF00	Software protection for output undervoltage at high voltage DC side of vehicle-mounted charger
P1AB000	Software protection for outputting overcurrent at high voltage DC side of vehicle-mounted charger
P1AB400	DCDC Hardware protection against high voltage and overvoltage
P1AB500	DCDC Hardware protection against high voltage and over current
P1AB600	DCDC Hardware protection against low voltage and overvoltage
P1AB700	DCDC Hardware protection against low voltage reverse over current
P1AB800	DCDC VDD5 Hardware protection against over voltage and undervoltage
P1AB900	DCDC Software protection against high voltage and overvoltage
P1ABA00	DCDC Software protection against high voltage and undervoltage
P1ABB00	DCDC Software protection against low voltage and overvoltage
P1ABC00	DCDC Software protection against low voltage and undervoltage
P1ABD00	DCDC low voltage for long overvoltage
P1ABE00	DCDC restarts more than a certain number of times
P1AC100	PFC current rationality check
P1AC500	DCLink voltage rationality check (comparison with OBC value)
P1AC600	Water cooled temperature signal exceeds the lower limit
P1AC900	Internal Relay does not conform to directive

DTC	Trouble description
P1ACD00	PCB (circuit board) NTC (temperature detection) temperature sensor exceeds the lower limit
P1ACE00	PFC (Power factor correction circuit) NTC (temperature detection) temperature sensor exceeds the lower limit
P1ACF00	LLC (power conversion circuit) NTC temperature sensor exceeds the lower limit
P1AD100	AC voltage signal exceeds the upper limit
P1AD300	PFC (Power factor correction circuit) voltage signal exceeds the upper limit
P1AD400	PFC (power factor correction circuit) current signal exceeds the upper limit: any one phase U/ V/W
P1AD600	LLC (power conversion circuit) The primary current signal exceeds the upper limit (any phase A/B)
P1AD700	LLC (power conversion circuit) two primary side current rationality check
P1AD800	HVDC (high voltage DC voltage) output signal exceeds the upper limit
P1ADA00	HVDC (high voltage DC voltage) output current signal exceeds the upper limit: fast sampling or slow sampling
P1ADC00	OBC side 2.5V out of range
P1ADD00	OBC13.5 Power supply is out of range
P1ADE00	OBC side 21.5 out of range
P1ADF00	DCLink (bus capacitance) voltage sensor exceeds the upper limit
P1AE100	llnk (bus capacitor current) current signal exceeds the upper limit
P1AE200	Check the rationality of bus current
P1AE300	The voltage signal at the low-voltage output side exceeds the upper limit
P1AE500	Low-voltage current signal exceeds the upper limit
P1AE700	offset exceeds the threshold, check the deviation of the current read current from the calibration offset
P1AE800	DCD ₂ temperature signal exceeds the lower limit
P1AEA00	Buck (discharge) mode diagnosis
P1AEC00	Short circuit detection at the low-voltage output side of DC
P1AED00	DCDC13.5V (internal drive power supply) power supply exceeds the upper limit
P1AEE00	DCDC13.5V (internal drive power supply) power supply exceeds the lower limit
P1AF400	OBC does not report normal output power when it is reported to be working in output mode
P1AF700	LV MCU detects a problem with insulation at the HV side
P1AF687	OBC internal CAN communication error
P1AF681	OBC internal CAN communication loss
P1A1919	Over current at DCDC low voltage side
P1AF649	OBC power-off path fails
P1A8B49	DCDC power-off path fails
P1D2098	Water-cooled over-temperature fault (OBC and DCDC water-cooled)
P1D2600	OBC high voltage side phase locking failure

DTC	Trouble description
P1D2700	OBC PFC pre-charging failure at high-voltage side
P1A3E06	EEPROM read error
P1A3D06	EEPROM write error
P1D241C	AC Hardware over voltage protection

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9800	Repeatedly entering and exiting the Failure within 120s due to any recoverable fault (the sum of recoverable failures is calculated, regardless of whether a single failure enters and exits the failure 8 times within 120s)	OBC initialization, standby, normal, derating, heating, discharging, interruption	1. High and low-voltage charging system
P1A9900	The PFC output voltage of OBC within any 120 s is greater than the hardware protection threshold of 873V and occurs 8 times		
P1A9A00	The peak PFC input current of OBC within any 60 s is greater than the hardware protection threshold (less than $38A_{peak}$ during charging, threshold $35A_{peak}$ during discharging), 4 times occur		
P1A9B00	The peak LLC output voltage of OBC within any 120 s is greater than the hardware protection threshold of 541V, and it occurs 8 times		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9C00	The peak value of LLC input current of OBC is greater than the hardware protection threshold (threshold 25A _{peak} during charging and threshold 25A _{peak} during discharging) within any 60 s, and it appears 4 times		
P1A9D00	LLC output current of OBC is greater than hardware protection threshold (single phase/three-phase charging 60A, single phase discharging 48A) within any 60 s, 4 times		
P1A9E00	The VDD5 output voltage of OBC within any 120 s exceeds the hardware protection threshold (> 5.5V or < 4.5V), and occurs 8 times		
P1AAA00	During three-phase charging and inversion, the average value is > 860V _{pk} . When single-phase charging lasts for 2 s, the average value is greater than 750V _{pk} for 2 s		
P1AAB00	Forward: < (set point-100) V _{pk} , lasting for 2 s Inversion: 400V _{pk} , lasting for 2 s		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AAC00	<p>The effective value of any phase of the PFC current of the OBC is greater than the diagnostic threshold and is maintained for 5 s</p> <p>Forward: 1-Phase: Any phase PFC current > $(32A + 4A)/2$, lasting for 5 s</p> <p>3-Phase: PFC current of any phase > $16A + 2A$, lasting for 5 s</p> <p>inversion: current threshold of PFC of any phase > (both the allowable current and the maximum allowable current are small $+2.7A)/2$, lasting for 5 s</p> <p>Note inversion: (1) Current limit target value: 1) When the current limit target value changes from large to small at V2V, it will decrease after the current limit target value remains for 6 s; if the conditions for immediate shutdown are met due to fault or other reasons within the 6 second delay time, the shutdown will be immediately; 2) The target value of V2L current limit will change immediately (2) AC output software OCP diagnosis: when the OCP value changes from large to smaller, the original threshold needs to be maintained for 7 s, and then the threshold is reduced</p>		
P1AAD00	>15A, lasting for 4 s > 15A, lasting for 4 seconds		
P1AAE00	>For 1 s > 530V, lasting for 1 second		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AAF00	'Voltage after filtering'@ Normal, heating, derating: < 240V, lasting for 1 s, @ Discharging:270V, lasting for 1 s		
P1AB000	Sampling value>OBC current allowable value+2.5A, lasting for 1 s		
P1AB400	The high voltage of DCDC is greater than the hardware protection diagnostic threshold (522V), which occurs 10 times within 2 s (reset interval 200 ms)	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	
P1AB500	The high voltage current of the DCDC is greater than the hardware protection diagnostic threshold (corresponding to the low voltage current of 220A), which occurs 10 times within 2 s (reset interval of 200 ms)		
P1AB600	The low voltage of DCDC is greater than the hardware protection diagnostic threshold (23V), which occurs 10 times within 2 s (reset interval 200 ms)	DCDC: standby, voltage drop, discharge, fault, stop	
P1AB700	The low-voltage inverting current of DCDC is greater than the hardware protection diagnostic threshold -50A, which occurs 10 times within 2 s (reset interval 200 ms)		
P1AB800	The VDD5 voltage of the DCDC is greater than 5.5V or less than 4.5V		
P1AB900	>510V for 1s	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	
P1ABA00	<180 V for 1s	DCDC: step-down	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1ABB00	The low voltage of DCDC is greater than 17V and is maintained for 150ms	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	
P1ABC00	<7, lasts for 1s.		
P1ABD00	The low voltage of DCDC is larger than 16.5V and is maintained for 1000ms		
P1ABE00	Hardware types within DCDC 2 s can recover more than 10 times		
P1AC100	When single-phase power: The current difference between PFC two phases exceeds 3Arms, lasting for 4 s three-phase power: The current difference between two phases exceeds 3Arms, lasting for 4 s	OBC: normal, derated and heated	
P1AC500	Voltage>30V for 4s	DCDC: Start, standby, voltage drop, discharge, shutdown, fault and OBC voltage available	
P1AC600	The corresponding voltage value of AD is 50, 4013, lasting for 4 s	DCDC: initialization, standby, voltage drop, discharge, failure, turning off	
P1AC900	When the internal Relay is off, the voltage should be (Relay 2: 3.1V~5V; Relay 3: 3.0~5V; Relay 4/5: 3.1-5V; when the internal Relay is in the defined intermediate state, the voltage should be 0-1V; when the internal Relay is closed, the voltage should be (Relay 2: 1V~2.6V; Relay 3: 1~2.9V; Relay 4: 1~3V, Relay 5: 1-2.6V; Fault confirmation time is 2000 ms, that is, the Relay state does not match the instruction, report this DFC		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location	
P1ACD00	AD<50,>4050. It lasts for 2s.			
P1ACE00				
P1ACF00				
P1AD100	Corresponding voltage value of AD >5V* 97% or <5V* 3%, lasting for 2 s			
P1AD300	Corresponding voltage value of AD >5V* 97%, lasting for 2 s			
P1AD400	Corresponding voltage value of AD >5V* 97% or <5V* 3%, lasting for 2 s			
P1AD600	Corresponding voltage value of AD >5V* 97%, lasting for 2 s			
P1AD700	(Flag bit enabled by positive or inverter current sharing loop)&& (the absolute value of iTnet >= 12A), and the difference between input currents of ILLC two phases exceeds 2A for 4 s			OBC: normal, derated, heated, discharged
P1AD800	Corresponding voltage value of AD value> 4050, lasting for 2 s			OBC: initialization, standby, normal, derating, heating, discharging, interrupting, turning off
P1ADA00	Corresponding voltage value of AD > 4094 or <5V* 3%, lasting for 2 s			
P1ADC00	>2200 or < 1900, lasting for 100 ms			
P1ADD00	>16V or < 11.5V, lasting for 150 ms			
P1ADE00	>23V or < 19V, lasting for 200 ms			
P1ADF00	AD value is greater than 5V*97% for 1s	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown		
P1AE100				
P1AE200	AD>4095. It lasts for 2s.	DCDC: standby, initialization, failure, shutdown		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AE300	Corresponding voltage value of AD >5V* 97% or <5V* 3%, lasting for 1 s	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	
P1AE500			
P1AE700	Calibrated value+/-50. It lasts for 2s.	DCDC: standby, initialization, failure, shutdown	
P1AE800	AD value < 50 or > 4050, lasting for 1 s	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	
P1AEA00	When DCDC is in the voltage loop, the actual value of low voltage-the target value of low voltage > 0.6V, the high voltage current > 30A or low voltage current > 20A; When the target value of low voltage-the actual value of low voltage > 0.6V for 2000 ms, if the low voltage current <-20A or high voltage current <-30A; lasting for 2000 ms (UBnetSetP is the actual limit value after considering different internal conditions, not limited to the VCU)	DCDC is at Buck	
P1AEC00	Current loop: low voltage output side voltage <=5V and LV current > = 40A, 1 s		
P1AED00	>15.5V for 150ms	DCDC: initialization, standby, voltage relief, discharge, fault, shutdown	
P1AEE00	<11.5V for 150ms		
P1AF400	When the LV side reports an OBC charging-related mode and the output command voltage > battery voltage +10V, BMS current command >=5A, if the actual output current is less than 0.8A or there is no corresponding jump in the internal feedback of the high voltage side, it will last for 10 min	Normal, derate	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AF700	The measured insulation resistance insulation resistance relay insulation current exceeds the range of 10-120 mA, dump 1.0 s	discharge process	
P1AF687	Lost internal message 480ms	1. When KL15 on or network management is in NetworkMode status	
P1AF681	Activity counter error detected equals to 10		
P1A1919	Actual current of 1000 ms exceeds (limit+10A)	DCDC status: Buck	
P1AF649	High-voltage cutting route test failed	OBC: initialization DCDC: initialization	
P1A8B49	DCDC closed path test failed	DCDC initialization	
P1D2098	OBC stops charging: Charging mode \geq 86 degC for 1 s; discharging mode \geq 86 degC for 1 s	OBC: initialization, standby, normal, derating, heating, discharging, interrupting, turning off	
P1D2600	Single phase: The phase locking fails, exceeding 40 ~ 80Hz. Three-phase locking failure lasts three times. Three-phase: Wait for two power frequency cycles during the phase locking period (can be calibrated). If the phase locking is still unsuccessful, it is judged that the phase locking failed	Normal, derated and heated	
P1D2700	2 seconds after AC error is detected AC error (Pre-charging fault (after grid stability (2.5 s), the peak difference between FC voltage and AC voltage is 30V after more than 2 s)	When normal, derating and heating start	
P1A3E06	Error while reading data from EEPROM	DC status: Initialization, standby, voltage drop, discharge, fault, shutdown	
P1A3D06	'Write EEPROM process reports an error		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1D241C	Charging mode: Set HI_VAC_POVP_REF to full duty cycle and HI_VAC_NOVP_REF to 0 duty cycle. Therefore, it is impossible to report the hardware OVP discharging mode:8 times within 120 s > 275V (false-> true process of hardware fault after reset)	OBC: standby, normal, derating, heating, shutdown, interruption, discharging	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the high and low voltage charging system.
--------	---

- A. Reprogram and reset the high and low voltage charging system. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the high and low-voltage charging system.

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 5 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 System is normal.

2.6.6.20 CC signal trouble(Type II)

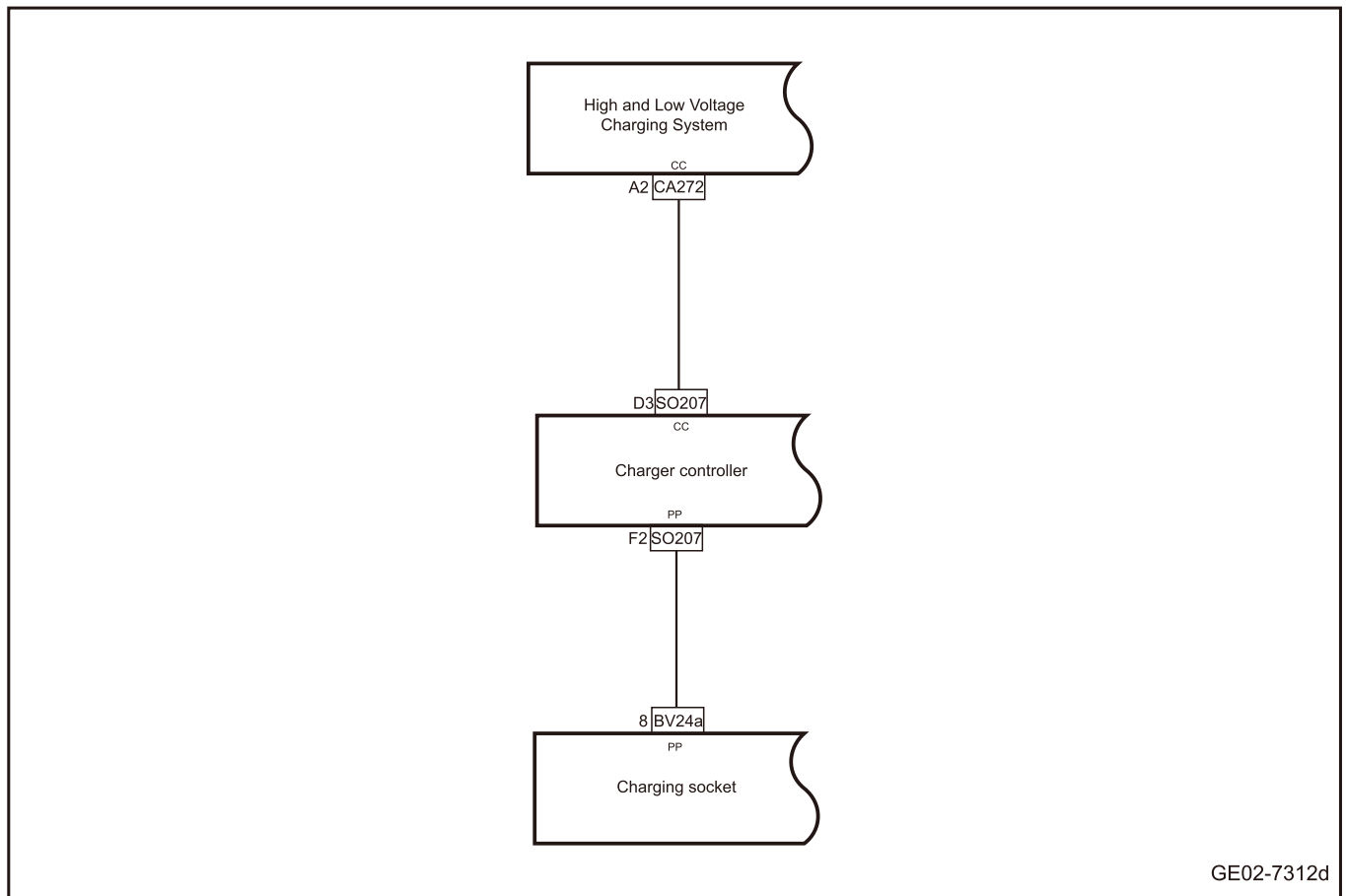
1. DTC description:

DTC	Trouble description
P1A9F00	Vehicle-mounted charger CC single is unreasonable

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1A9F00	'out of range of(± 20% of typical value within 1 k ± 8% of typical value above 1 k Disconnect)Debounce: 1000ms	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. Circuit 2. Charger controller 3. High and low-voltage charging system

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

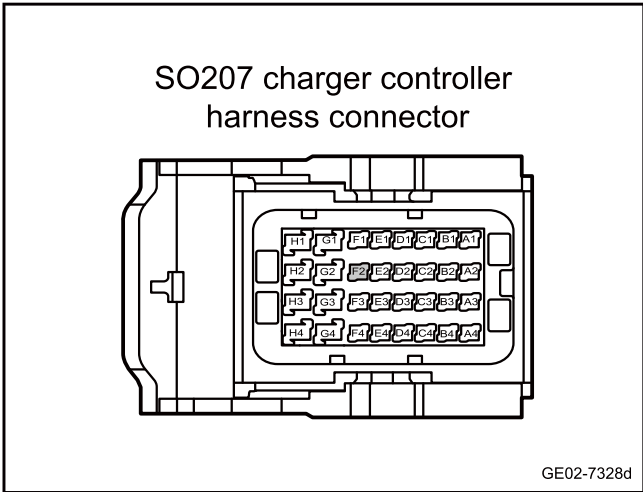
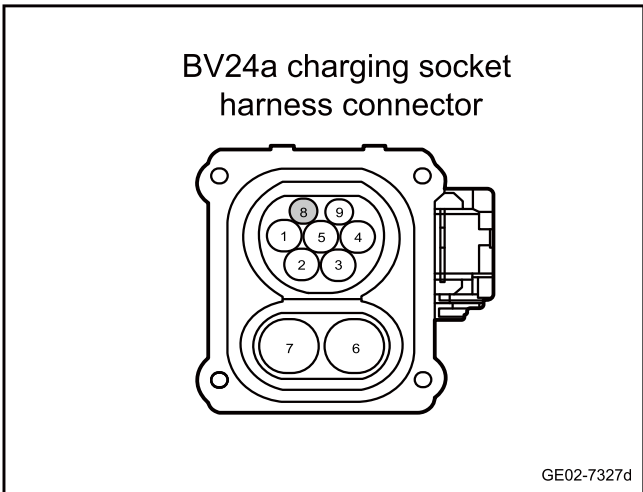
- A. Check the charger controller and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the charger controller and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the circuit between the charging socket and the charger controller.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charging socket harness connector BV24a.
- C. Disconnect the charger controller harness connector SO207.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO207(F2)	BV24a(8)	Standard resistance: less than 1Ω
SO207(F2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO207(F2)	Vehicle body is grounded.	Standard voltage: 0V

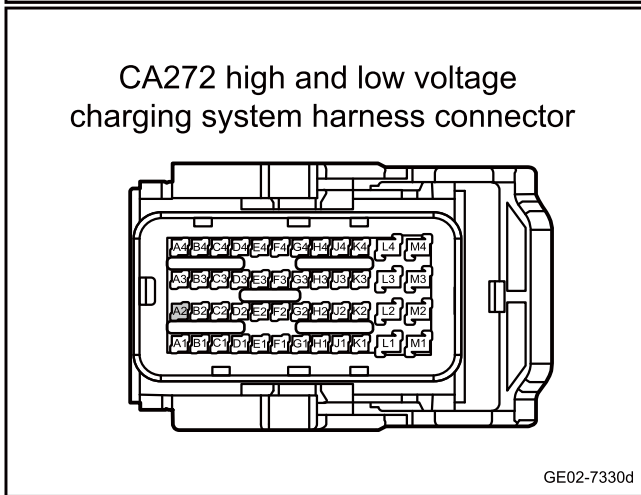
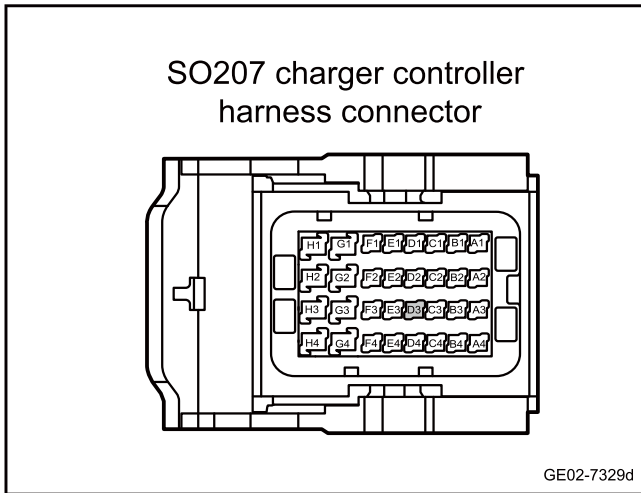
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the charger controller and the high and low voltage charging system.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charger controller harness connector SO207.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO207(D3)	CA272(A2)	Standard resistance: less than 1Ω
SO207(D3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO207(D3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Replace the charging socket.

- A. To replace the charging socket, please refer to [Replacement of Charging Socket](#)
- B. Confirm whether the system is working normally.

Yes → System is normal.

No

Step 6 Reprogram and reset the charger controller.

- A. Reprogram and reset the charger controller. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replacement of charger controller

- A. To replace the charger controller, please refer to [Replacement of Communication Control Module of Electric Vehicle](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the high and low-voltage charging system.

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(Low figuration\)](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

2.6.6.21 CP signal trouble(Type II)

1. DTC description:

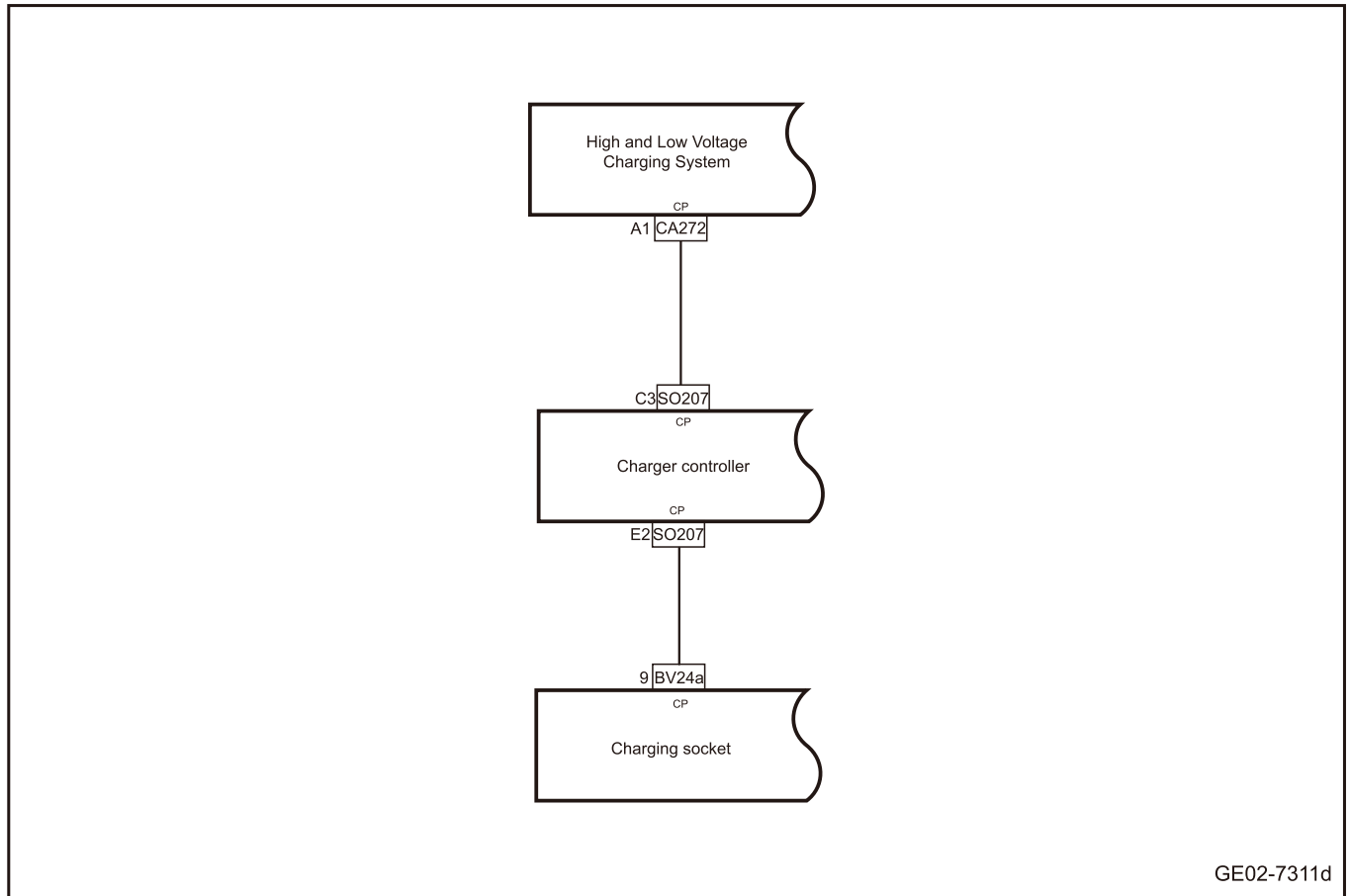
DTC	Trouble description
P1AA000	Vehicle-mounted charger CP range is unreasonable
P1AA100	CP signal of the vehicle-mounted charger PWM frequency is unreasonable
P1AA200	Vehicle-mounted charger CP signal PWM duty cycle is unreasonable
P1AA300	The CP signal of the vehicle-mounted charger is inconsistent with the control command of S2

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA000	The effective voltage of any phase of the OBC AC input voltage is greater than the protection threshold 273Vrms, 5 consecutive times; AC voltage is greater than the protection threshold 220Vrms+ 3%, 5 consecutive times	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. Circuit 2. Charger controller 3. High and low-voltage charging system
P1AA100	The effective voltage of any phase in the AC input voltage is less than the protection threshold for 5 consecutive times		
P1AA200	During OBC single-phase charging, the AC input voltage is less than the diagnostic threshold (30Vdc) within 10 ms; or during three-phase charging, the AC voltage of any phase within 10 ms is less than the diagnostic threshold (30Vdc) and is maintained for 10 ms		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA300	The AC input frequency of OBC is less than 45Hz or greater than 66Hz. It is carried out for 16 consecutive cycles		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

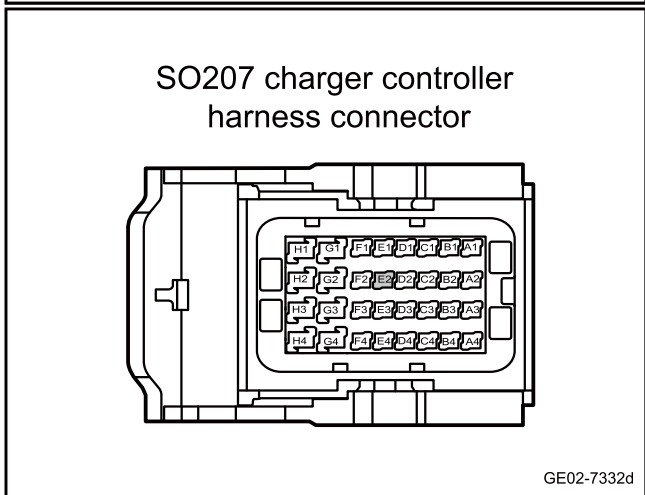
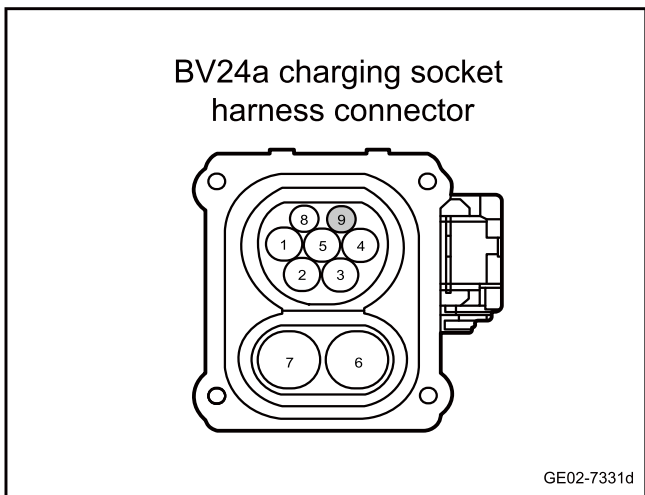
- A. Check the charger controller and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the charger controller and high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CP signal circuit between the charging socket and the charger controller.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charging socket harness connector BV24a.
- C. Disconnect the charger controller harness connector SO207.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO207(E2)	BV24a(9)	Standard resistance: less than 1Ω
SO207(E2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO207(E2)	Vehicle body is grounded.	Standard voltage: 0V

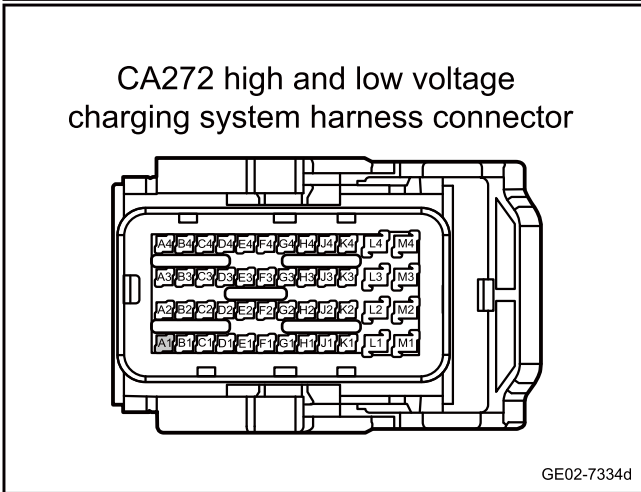
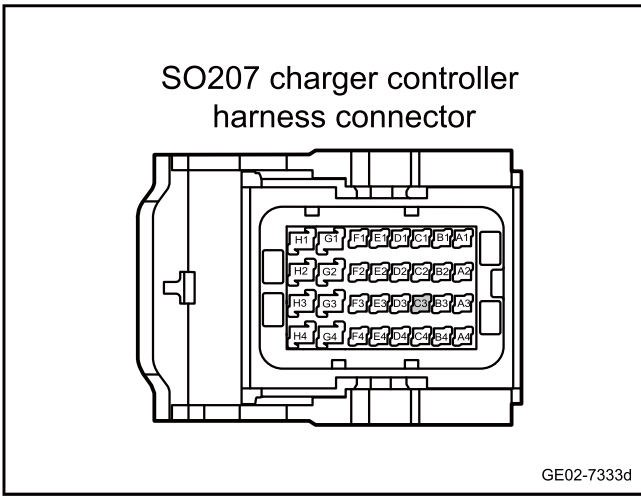
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the charger controller and the high and low voltage charging system.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charger controller harness connector SO207.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO207(C3)	CA272(A1)	Standard resistance: less than 1Ω
SO207(C3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO207(C3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the charging socket.

- A. Refer to [Replacement of AC Charging Socket and Harness Assembly\(Low figuration\)](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 6 Reprogram and reset the charger controller.

- A. Reprogram and reset the charger controller. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replacement of charger controller

- A. To replace the charger controller, please refer to [Replacement of Communication Control Module of Electric Vehicle](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the high and low-voltage charging system.

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

2.6.6.22 AC Input signal fault(Type II)

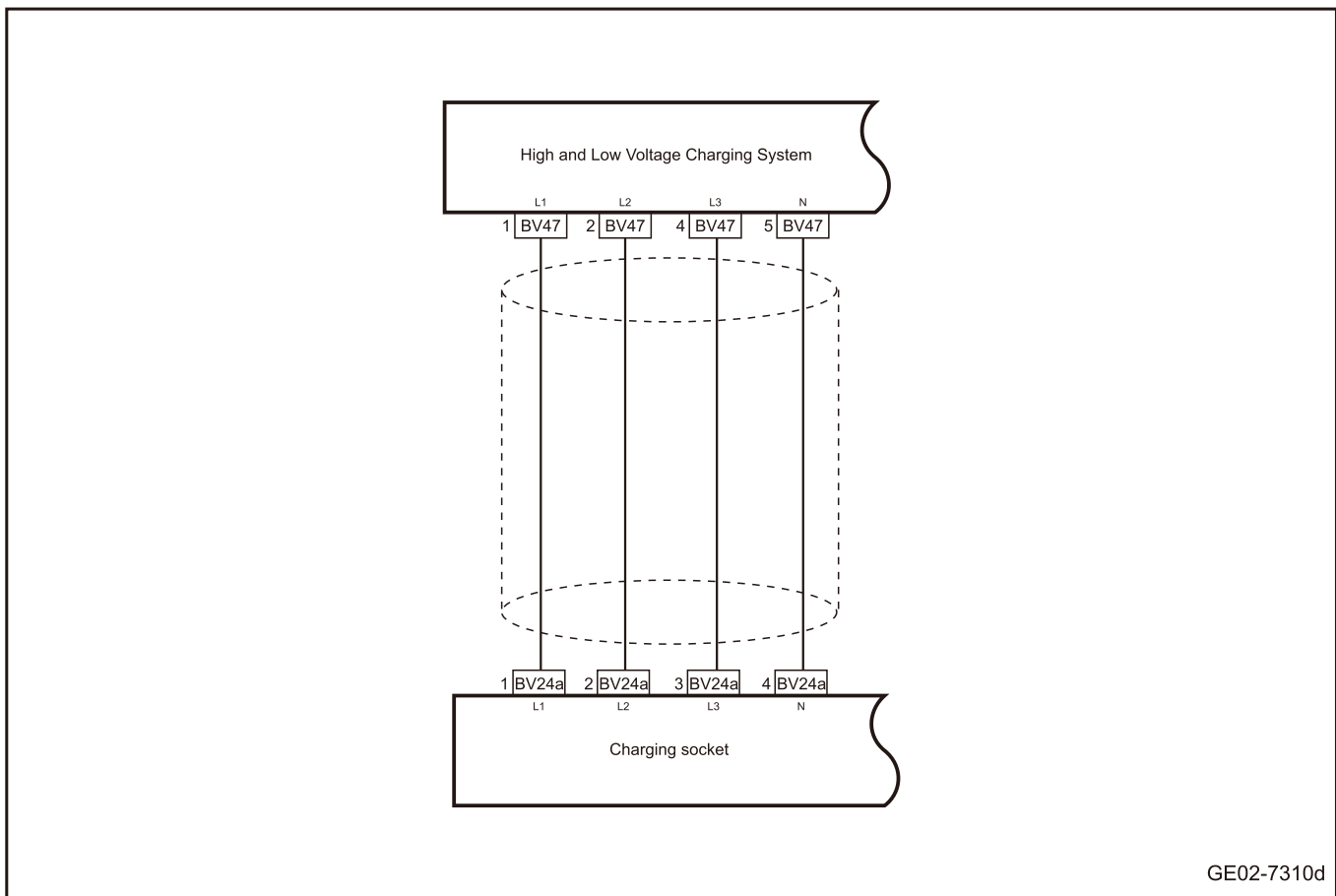
1. DTC description:

DTC	Trouble description
P1AA600	Vehicle-mounted charger AC input software overvoltage
P1AA700	AC input software of the vehicle-mounted charger is undervoltage
P1AA800	Open circuit at AC input side of vehicle-mounted charger
P1AA900	The AC input frequency of the vehicle-mounted charger exceeds a certain range

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA600	Exceed the normal range of 4.2V-10.8V and 0-0.5V for 1000 ms	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. Harness 2. Charging socket 3. High and low-voltage charging system
P1AA700	The PWM frequency of the CP signal of the OBC exceeds the range of 900-1100Hz and is maintained for 1000 ms		
P1AA800	Exceed 8%-90%, 0%, 100% duty cycle range for 1000 ms		
P1AA900	The CP amplitude is required to be 4.2V-7.5V when S2 is closed; CP amplitude is required to be 7.6V-10.8V when S2 is disconnected; if the status of S2 is not consistent with the CP command and lasts for 1000 ms, this fault is reported		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent fault check
----	---

Yes

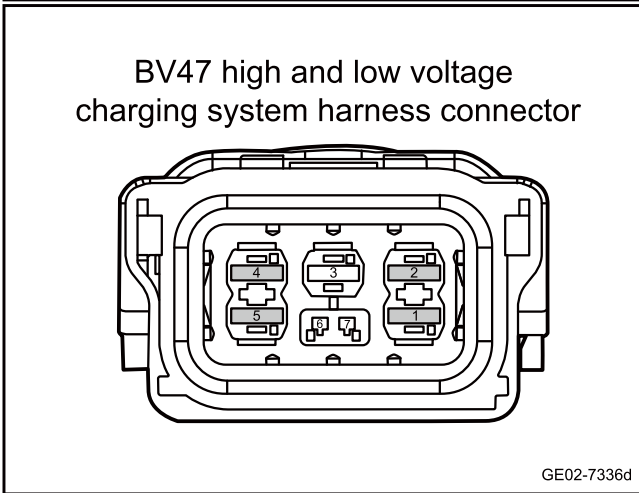
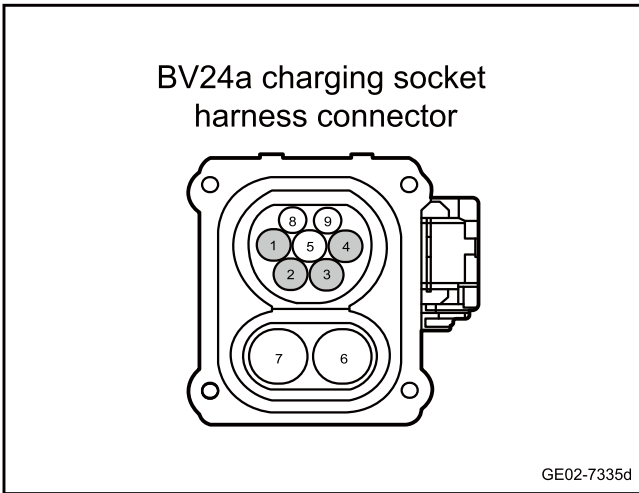
Step 2	Primary check.
--------	----------------

- A. Check the charging socket and high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the charging socket and high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check the circuit between charging socket and high and low voltage charging system.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charging socket harness connector BV24a.
- C. Disconnect the high and low voltage charging system wiring harness connector BV47.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	BV24a(1)	Standard resistance: less than 1Ω
BV47(2)	BV24a(2)	
BV47(4)	BV24a(3)	
BV47(5)	BV24a(4)	
BV47(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
BV47(2)		
BV47(4)		
BV47(5)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
BV47(1)	Vehicle body is grounded.	Standard voltage: 0V
BV47(2)		
BV47(4)		
BV47(5)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace the charging socket.

- A. Refer to [Replacement of AC Charging Socket and Harness Assembly\(Low figuration\)](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 5 | Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 | Replace the high and low-voltage charging system.

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System](#)

Next step

Step 7 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9 | System is normal.

2.6.6.23 Charging Port Status Switch Fault (Type II)

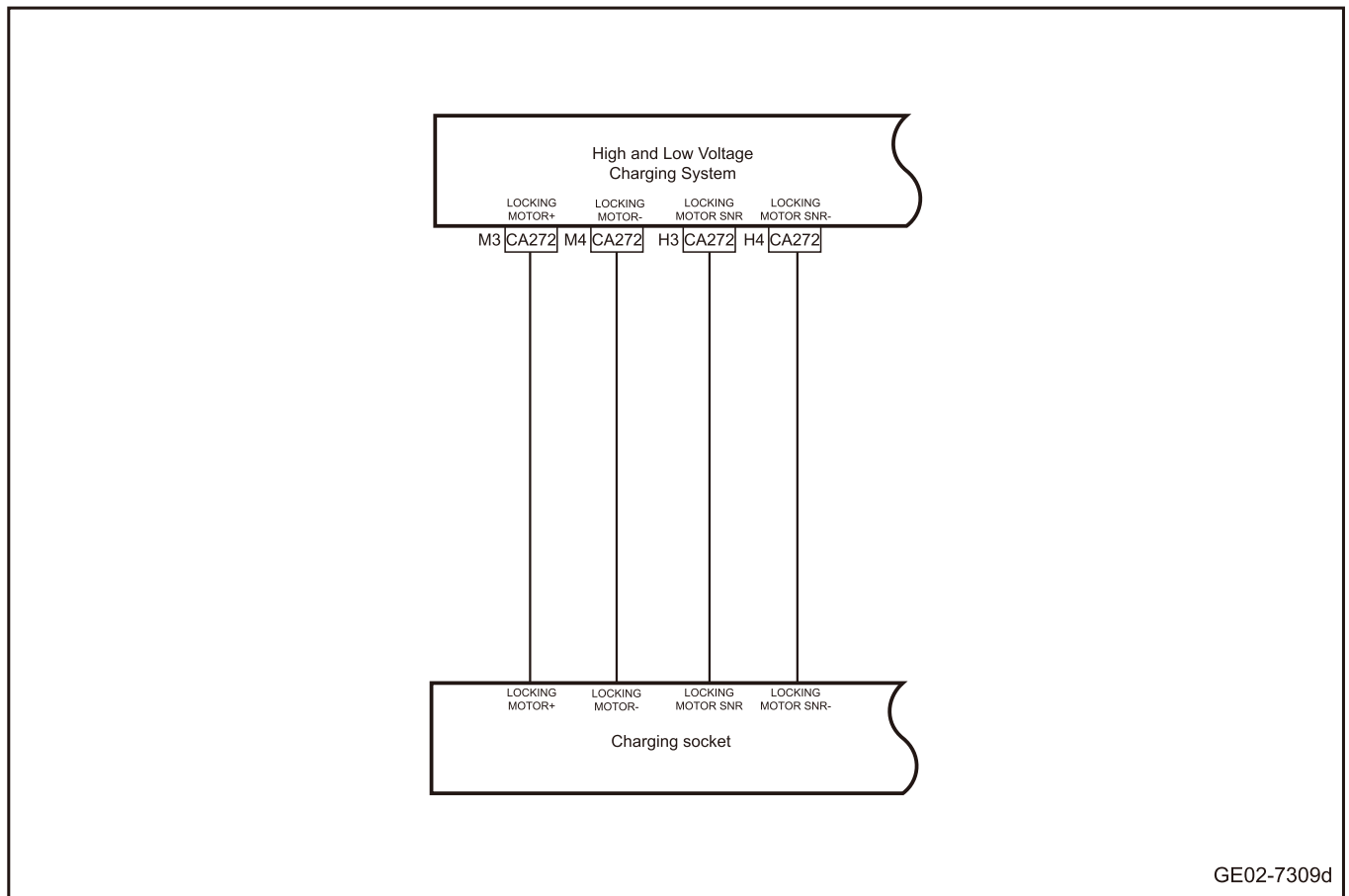
1. DTC description:

DTC	Trouble description
P1AB100	Electronic lock unlocking failure

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AB100	When the electronic locking is required, the electronic lock voltage signal exceeds the voltage range in the lock state	OBC initialization, standby, normal, derating, heating, discharging, interrupting OBC: initialization, backup, normal, derating, heating, one charge and interruption	1. Harness 2. Charging port cover switch (charging cover status switch) 3. High and low-voltage charging system

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

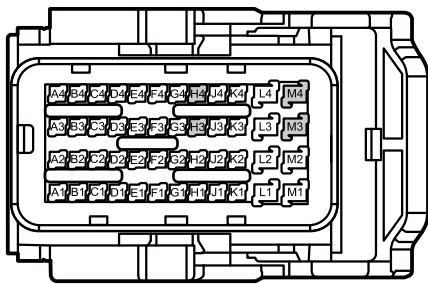
- A. Check charging socket (charging cover status switch) and the high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check charging socket (charging cover status switch) and the high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3	Check the circuit between charging socket (charging cover status switch) and high and low voltage charging system.
--------	--

CA272 high and low voltage charging system harness connector



GE02-7337d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of the charging socket (charging cover status switch)
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M3)	Charging socket (charging port cover status switch) end	Standard resistance: less than 1Ω
CA272(M4)		
CA272(H3)		
CA272(H4)		
CA272(M3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272(M4)		
CA272(H3)		
CA272(H4)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(M3)	Vehicle body is grounded.	Standard voltage: 0V
CA272(M4)		
CA272(H3)		

Measure terminal 1	Measure terminal 2	Standard value
CA272(H4)		

G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Replace the charging socket.

- A. Refer to [Replacement of AC Charging Socket Harness Assembly\(Low figuration\)](#)
- B. Confirm whether the system is working normally.

Yes → System is normal.

No

Step 5 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 6 Replace the high and low-voltage charging system.

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(Low figuration\)](#)

Next step

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

2.6.6.24 Over temperature faults of high and low voltage charging system(Type II)

1. DTC description:

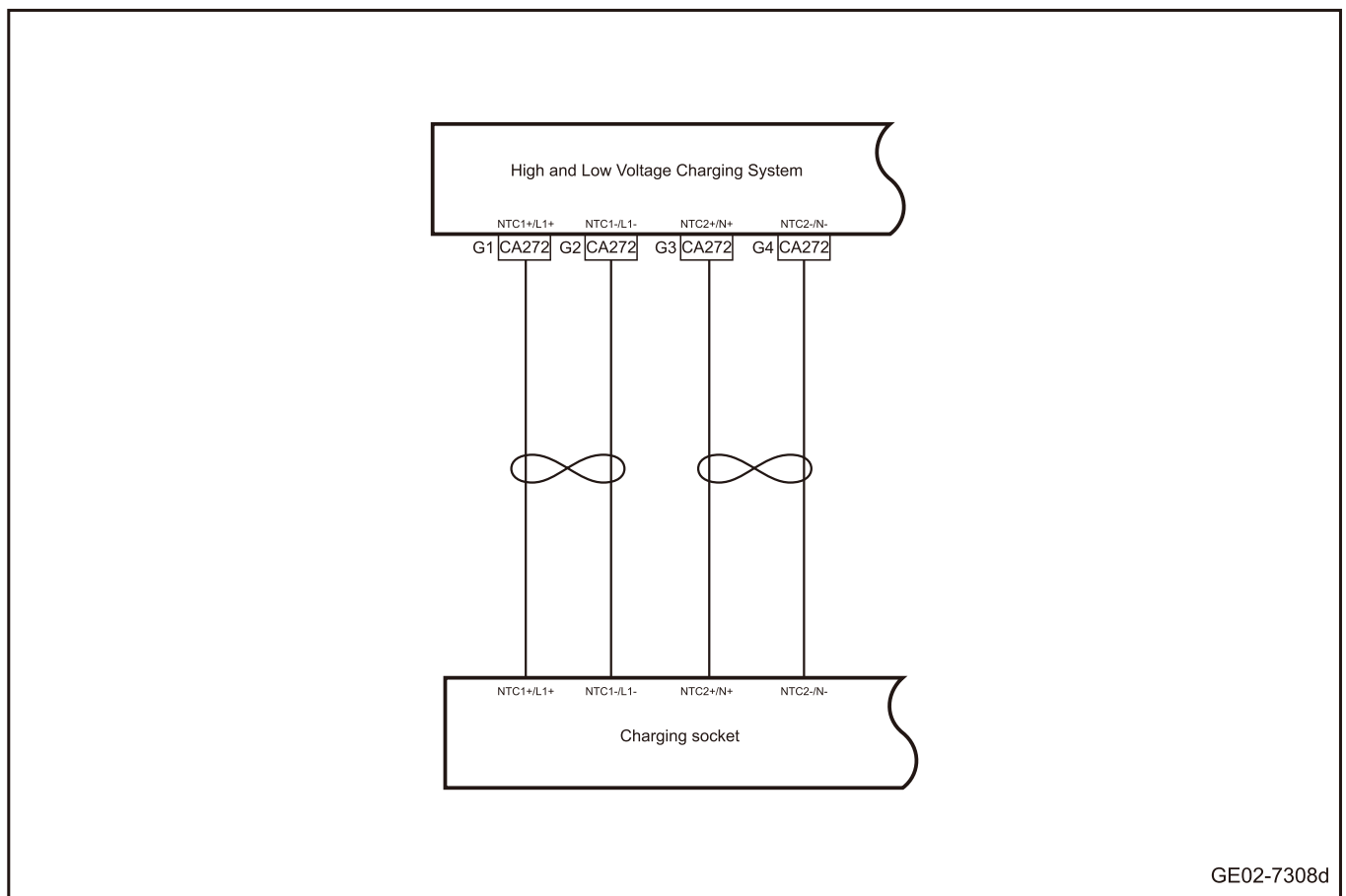
DTC	Trouble description
P1AA400	The temperature of the charging gun of the vehicle-mounted charger is too high
P1AA500	The temperature of the PCB of the vehicle-mounted charger is too high
P1AB200	DCDCMOSFET temperature is too high
P1AB300	Temperature of DCDC safety switch is too high
P1A8998	The temperature of the charging gun of the vehicle-mounted charger fails
P1AE900	The temperature signal of safety switch exceeds the lower limit
P1AA496	The temperature of the charging gun of the vehicle-mounted charger is abnormal

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AA400	Since this temperature range exceeds the effective range of the NTC, the response to the socket fault (SkthiRng/SktLoRng) is unrecoverable	OBC initialization, standby, normal, derating, heating, discharging, interrupting	1. Harness 2. Charging socket 3. High and low-voltage charging system
P1AA500	The PCB temperature of the OBC, or PFC temperature, or LLC temperature reaches the corresponding diagnostic threshold for 500 ms	OBC: initialization, backup, normal, derating, heating, one charge and interruption	
P1AB200	The temperature of the DCDC MOSFET is greater than the diagnostic threshold and is maintained for 1500ms	DCDC: active or inactive	
P1AB300	>115 °C; 1500 ms > 115 °C; lasting for 1500 ms	DCDC: initialization, standby, voltage drop, discharge, fault	
P1A8998	Emergency shutdown: > 200°C. (>200,<-40)-> (AD<21,>3975)	OBC: initialization, standby, normal, derating, heating, charging, interruption	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1AE900	AD: <111 or >3912, for 200ms AD value<111 or >3912, lasts for 200 ms	DCDC: initialization, backup, voltage drop, discharge, fault	
P1AA496	Emergency shutdown: <-40°C, lasting for 1 s; (<-40°C)->(> 3975)	OBC is in initialization, standby, normal, derating, heating, discharging, interrupting, off state	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

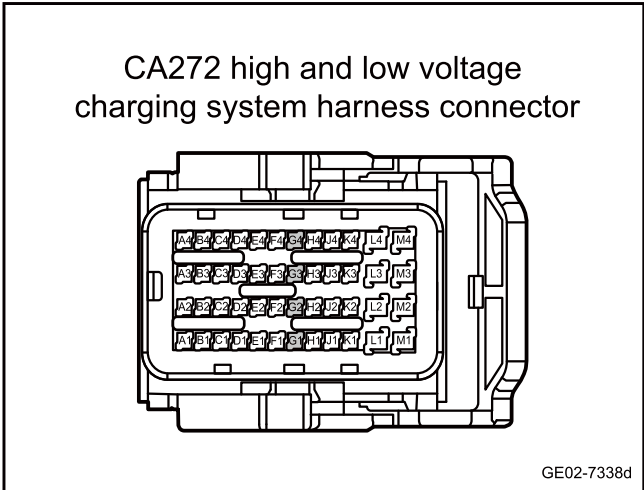
- A. Check the charging socket (temperature sensor) and high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the charging socket (temperature sensor) and high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the circuit between charging socket (temperature sensor) and high and low voltage charging system.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the charging socket (temperature sensor) harness connector.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(G1)	charging socket end	Standard resistance: less than 1Ω
CA272(G2)		
CA272(G3)		
CA272(G4)		
CA272(G1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272(G2)		
CA272(G3)		
CA272(G4)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(G1)	Vehicle body is grounded.	Standard voltage: 0V
CA272(G2)		
CA272(G3)		

Measure terminal 1	Measure terminal 2	Standard value
CA272(G4)		

G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Replace the charging socket.

- A. Refer to [Replacement of AC Charging Socket Harness Assembly \(Low figuration\)](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 5 Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 Replace the high and low-voltage charging system.

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(Low figuration\)](#)

Next step

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

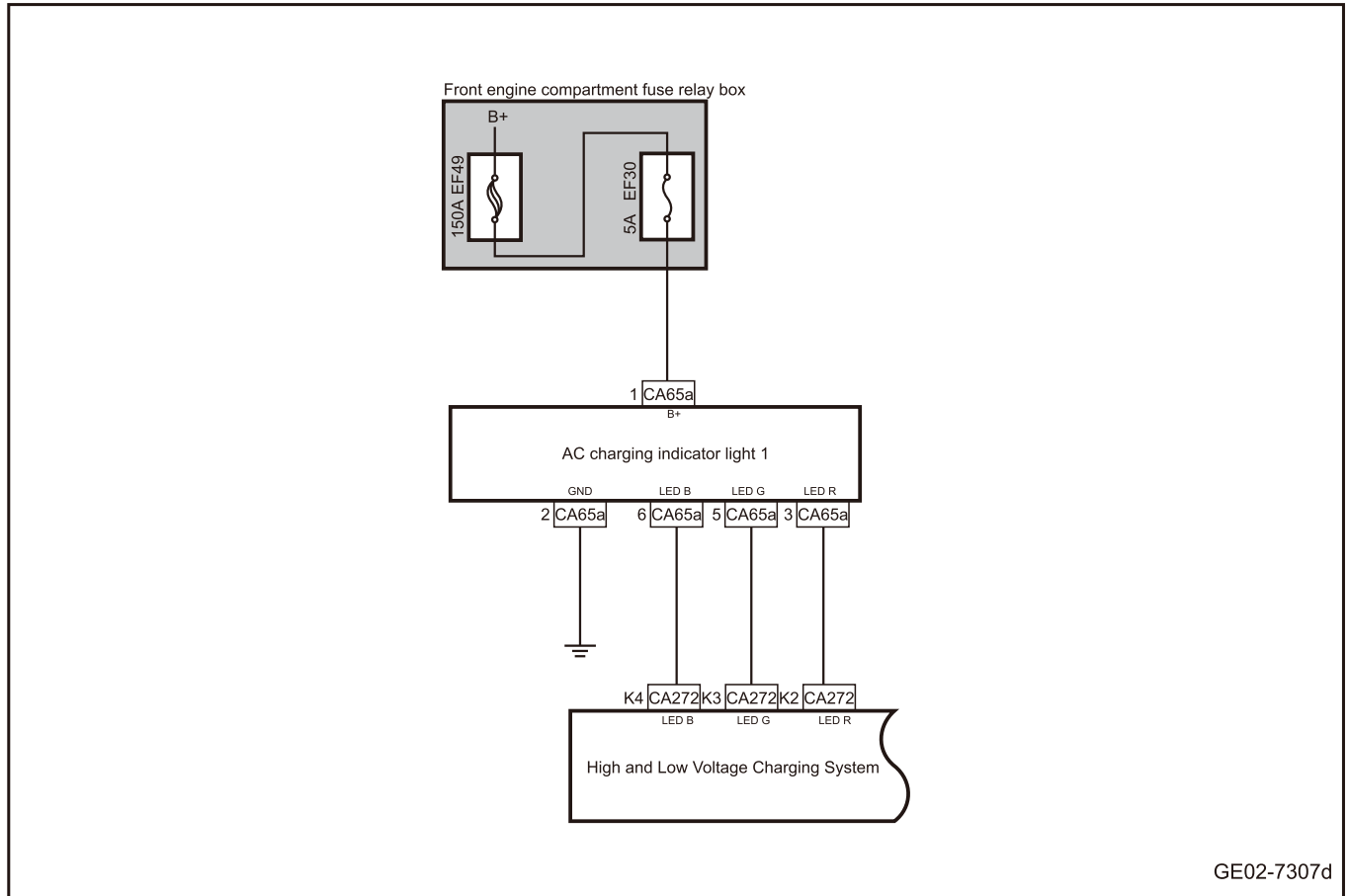
Diagnose according to the output trouble code.

No

Step 8 System is normal.

2.6.6.25 Charging indicator lamp fault (Type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

This manual only specifies the fault diagnosis of AC charging indicator lamp 1. The diagnosis method of AC charging indicator lamp 2 is similar to that of AC charging indicator lamp 1.

Step 1 Primary check.

- A. Check the AC charging indicator lamp 1 and high and low-voltage charging system for signs of damage, deformation, smudges, looseness, etc.
- B. Check the AC charging indicator lamp 1 and high and low-voltage charging system harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

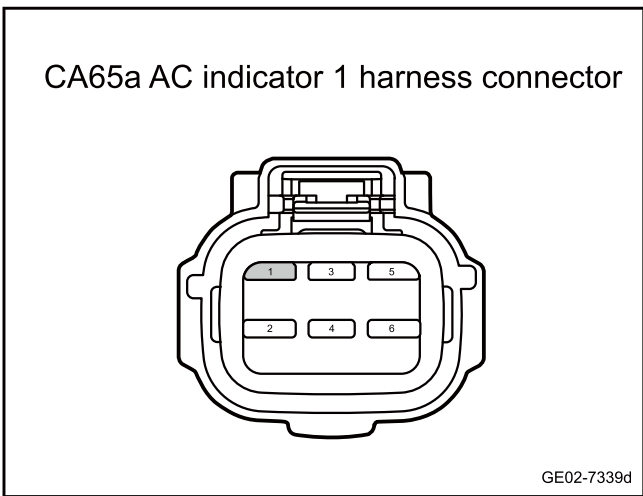
Fuse Position	Fuse Code	Fuse Rated Capacity
Front engine compartment fuse relay box	EF30	5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 | Check the power supply circuit of AC charging indicator lamp 1



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

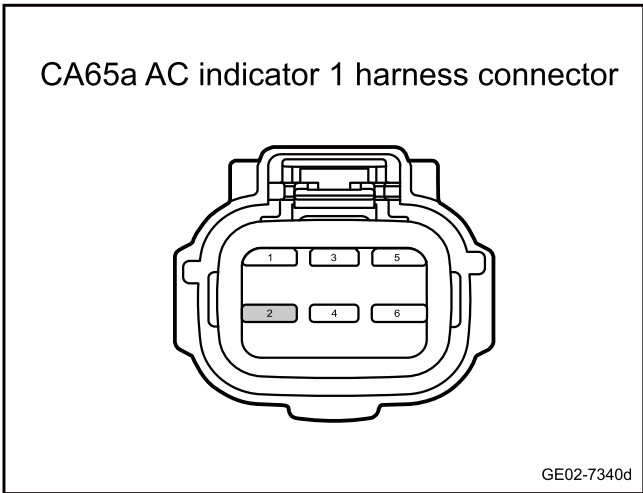
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the grounding circuit of AC indicator lamp 1.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA65a(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

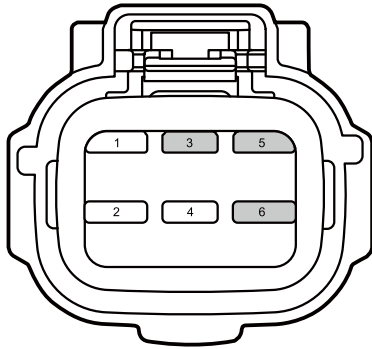
No

Repair or replace the harness.

Yes

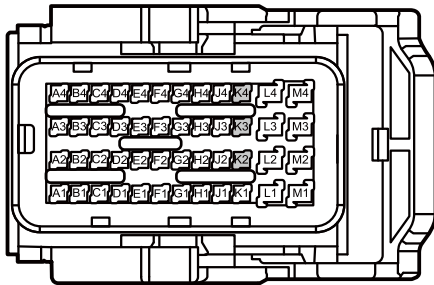
Step 5 Check the circuit between AC charging indicator lamp 1 and high and low voltage charging system.

CA65a AC indicator 1 harness connector



GE02-7341d

CA272 high and low voltage charging system harness connector



GE02-7342d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AC charging indicator lamp 1 harness connector CA65a.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(K4)	CA65a(6)	Standard resistance: less than 1Ω
CA272(K3)	CA65a(5)	
CA272(K2)	CA65a(3)	
CA272(K4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA272(K3)		
CA272(K2)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA272(K4)	Vehicle body is grounded.	Standard voltage: 0V
CA272(K3)		
CA272(K2)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Replace AC charging indicator lamp 1

- A. To replace the AC charging indicator lamp 1, please refer to [Replacement of AC Charging Indicator lamp 1](#)
- B. Confirm whether the system is working normally.

Yes → System is normal.

No

Step 7 | Reprogram and reset the high and low voltage charging system.

- A. Reprogram and reset the high and low voltage charging system. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Replace the high and low-voltage charging system.
--------	---

- A. Replace the high and low-voltage charging system. Refer to [Replacement of High and Low Voltage Charging System Assembly\(Low figuration\)](#)

Next step

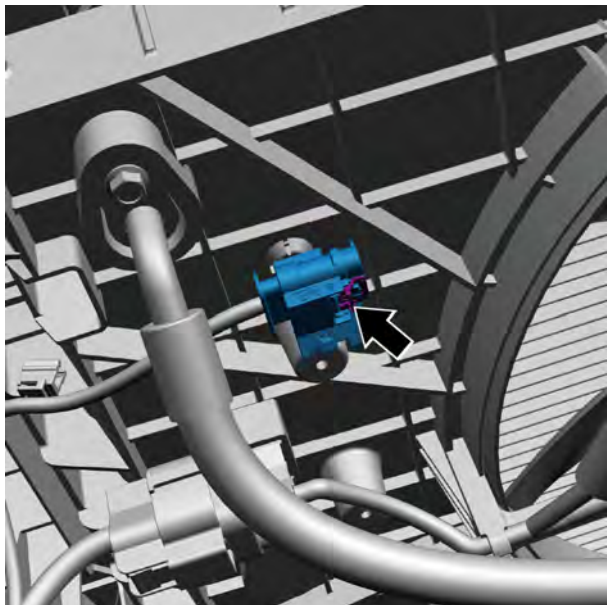
Step 9	System is normal.
--------	-------------------

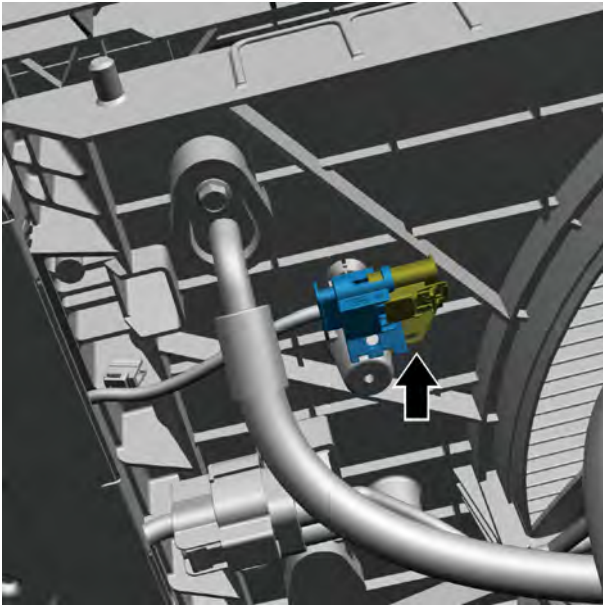
2.6.7 Removing and installing

2.6.7.1 Battery Cable Disconnection and Connection Procedures

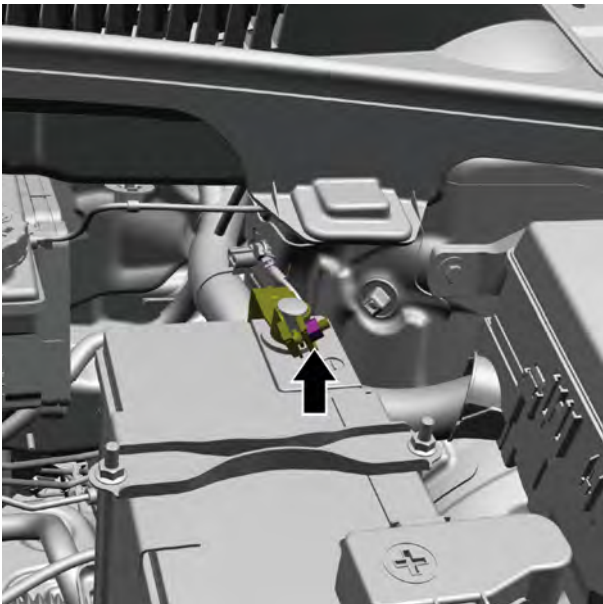
Disconnect program

- 1 Turn off all electrical equipment, and set the vehicle's power supply to OFF on multimedia.
- 2 Open the front engine compartment cover, close the door, and disconnect the latch of the service isolation switch.





- 3 Disconnect the service switch, lock with the locking device and keep the key.

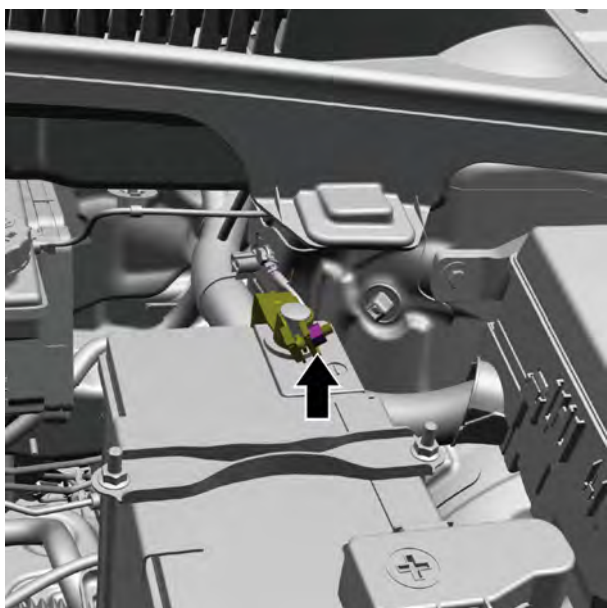


- 4 Release the fastening nut of battery negative cable and disconnect the battery negative cable from the battery.

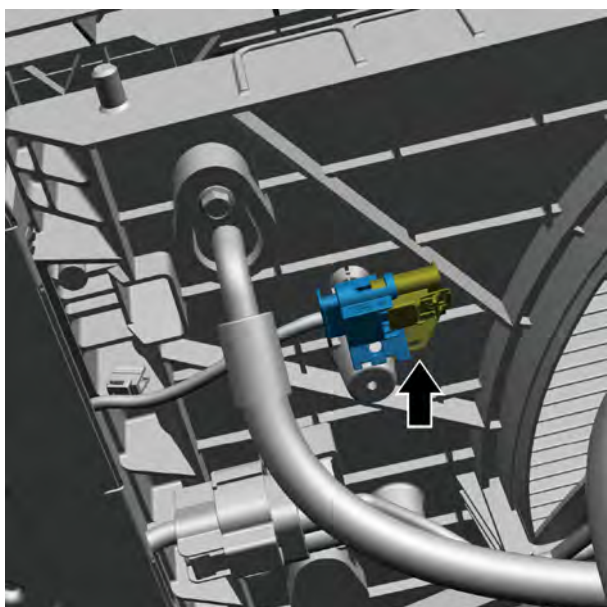
Caution

After disconnecting the 12V battery, it is necessary to wait for more than 3 minutes before operating other electrical devices on the vehicle.

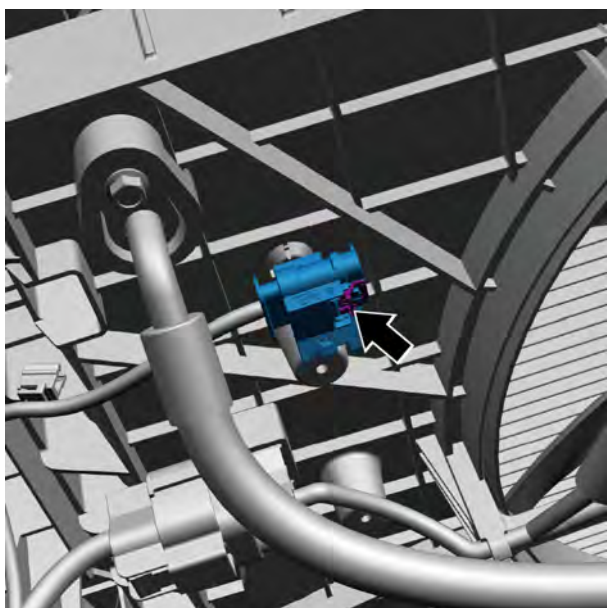
Connection procedure



- 1 Connect the battery negative cable with the battery, tighten the battery negative cable fixing nut.
Torque: 9 N·m (metric system) 6.7 lb-ft (Imperial system)



- 2 Use the key to remove the locking device and install the service isolation switch.



- 3 Install the buckle plate of the service isolation switch, and close the front engine compartment cover.
- 4 The key activates the power supply of the vehicle to ON.

2.6.7.2 Replacement of DC charging socket wire harness assembly

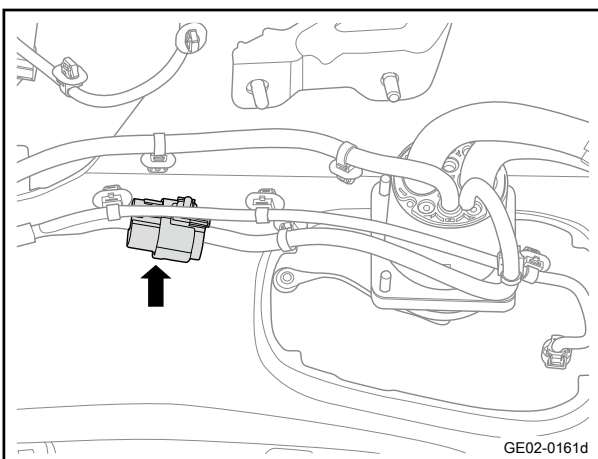
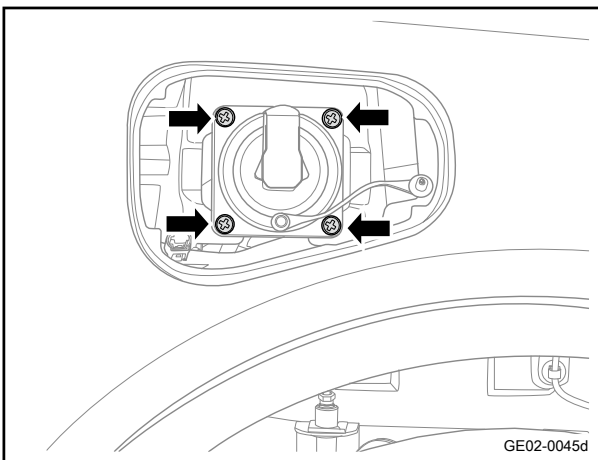
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

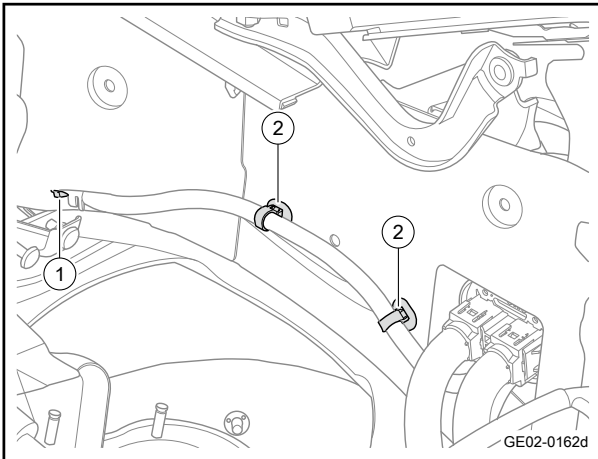
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

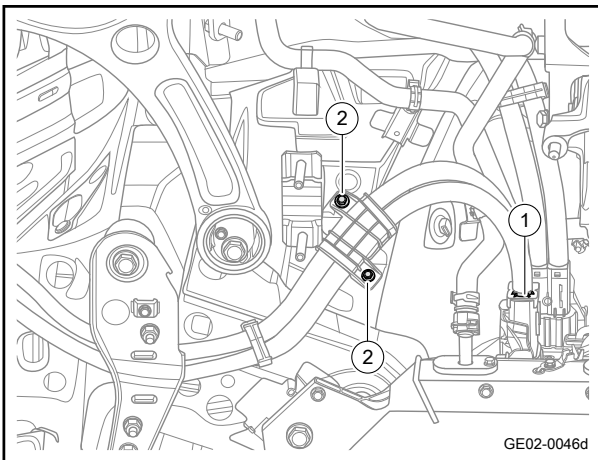
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 4 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 5 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 6 Remove the outer cover plate of the DC charging port. Refer to [Replacement of Outer Cover Plate of DC Charging Port](#)
- 7 Remove the 4 fixing bolts of the DC charging socket wire harness assembly.



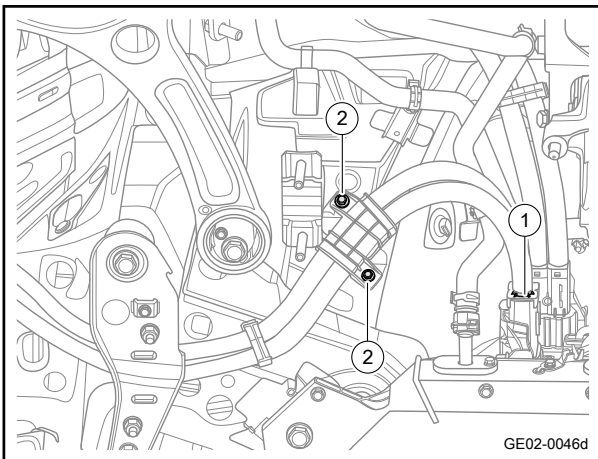
- 8 Disconnect the DC charging socket assembly harness connector.



- 9 Remove the grounding bolt 1 of the DC charging socket and harness assembly.
- 10 Disconnect the 2 fixing clips 2 of the DC charging socket harness assembly.

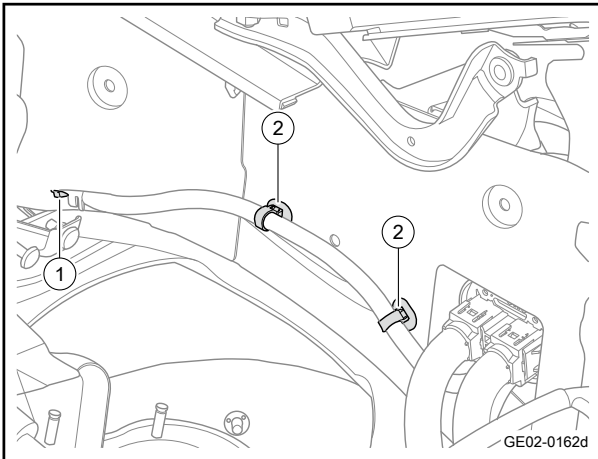


- 11 Disconnect the DC charging socket harness assembly harness connector 1.
- 12 Remove the 2 fixing nuts 2 of the DC charging socket wire harness assembly with vehicle body.
- 13 Remove the fixing clips of the DC charging socket wire harness assembly, take off the DC charging socket wire harness assembly.

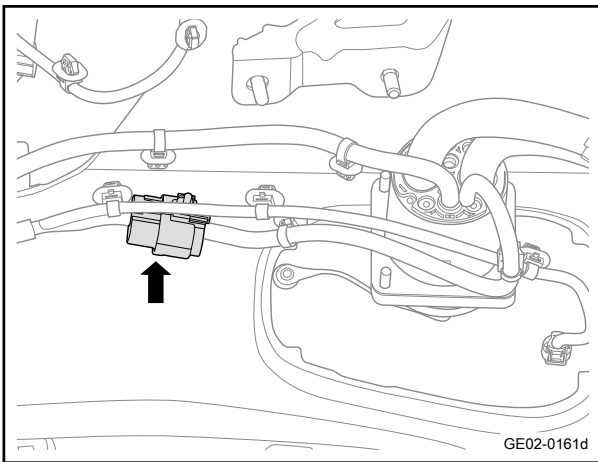


Installation procedure

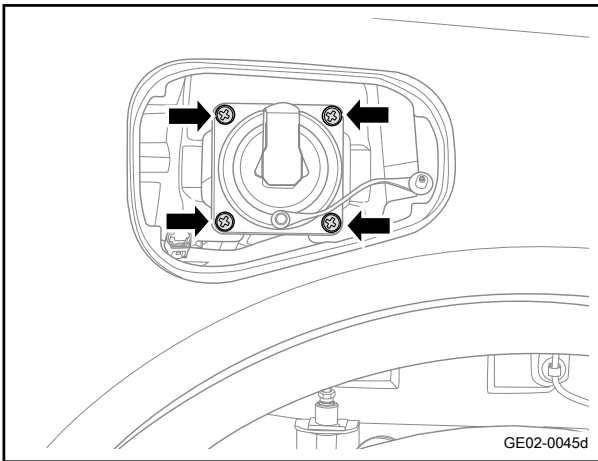
- 1 Move the DC charging socket harness assembly to the installation position and install the DC charging socket harness assembly.
- 2 Install the 2 fixing nuts 2 of the DC charging socket wire harness assembly with vehicle body.
Torque: 10N·m (metric system) 7.4lb·ft (Imperial system)
- 3 Connect the DC charging socket assembly harness connector 1.



- 4 Install the 2 fixing clips 2 of the DC charging socket wire harness assembly.
- 5 Install the grounding bolt 1 of the DC charging socket and harness assembly grounded.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 6 Connect the DC charging socket and harness assembly harness connector.



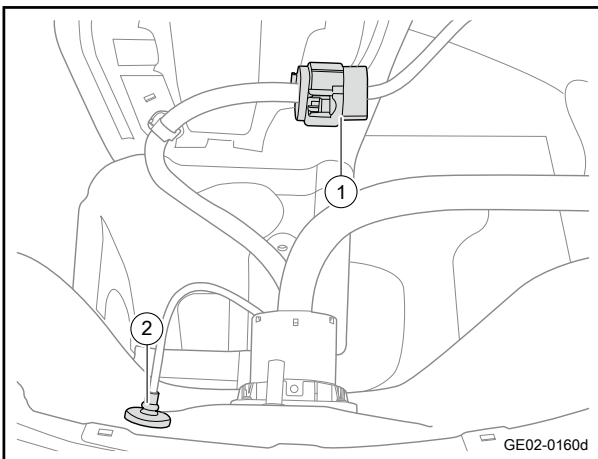
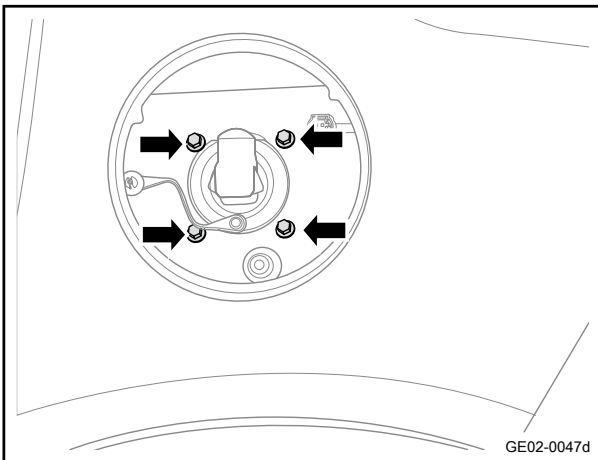
- 7 Install the 4 fixing bolts of the DC charging socket wire harness assembly.
Torque: 4N·m (metric system) 3lb-ft (Imperial system)

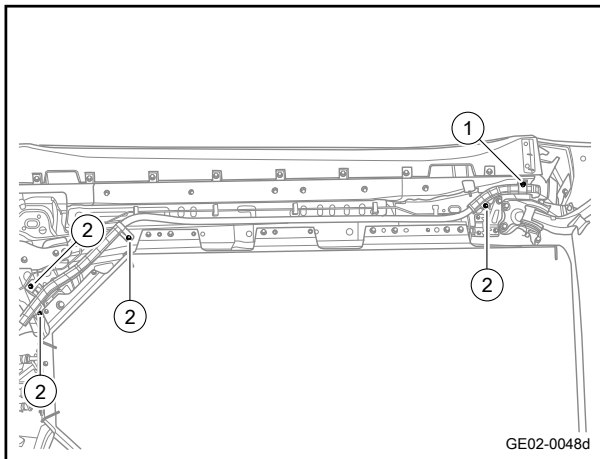
- 8 Install the outer cover plate of the DC charging port.
- 9 Install the power wire harness cover plate assembly.
- 10 Install the front wing liner RH.
- 11 Connect the DC bus assembly.
- 12 Lower the vehicle.
- 13 Connect the negative cable of battery.

2.6.7.3 Replacement of AC charging socket wire harness assembly(Low figuration)

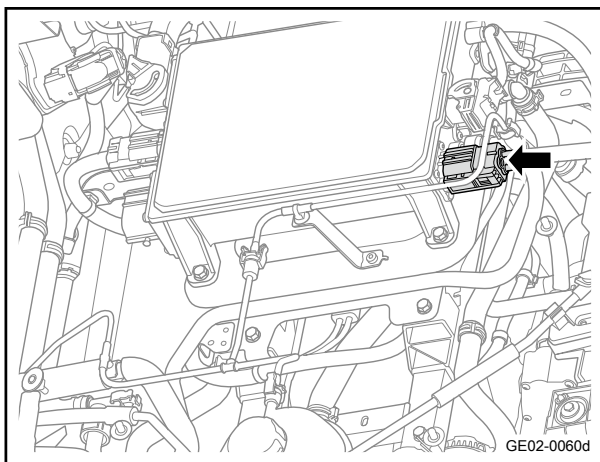
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 4 Remove the left rear fender liner plates. Refer to [Replacement of Left Rear Fender Liner](#)
- 5 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 6 Remove the battery bottom shield. Refer to [Replacement of Battery Bottom Shield](#)
- 7 Remove the outer cover plate of the AC charging port. Refer to [Replacement of Outer Cover Plate of AC Charging Port](#)
- 8 Remove the 4 fixing bolts of the AC charging socket wire harness assembly.
- 9 Disconnect the harness connector 1 of the AC charging socket harness assembly.
- 10 Disconnect AC charging socket wire harness assembly wire 2.



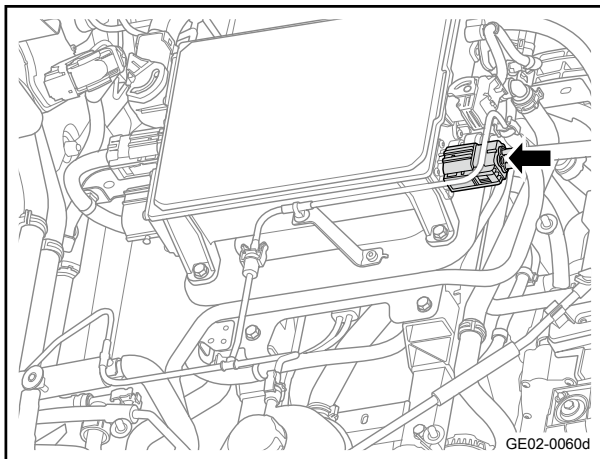


- 11 Remove the 1 fixing nuts 1 of the AC charging socket wire harness assembly and vehicle body.
- 12 Remove the 4 fixing bolts 2 of the AC charging socket wire harness assembly and vehicle body.

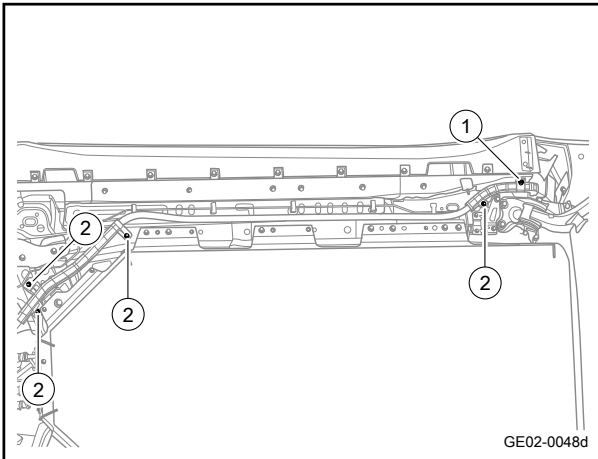


- 13 Disconnect the harness connector of the AC charging socket harness assembly.
- 14 Take off the AC charging socket wire harness assembly.

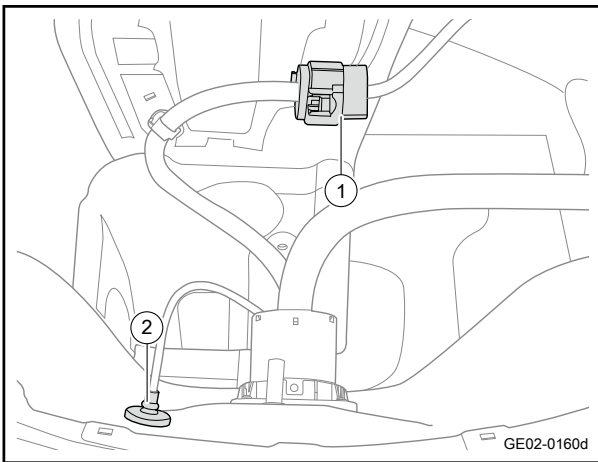
Installation procedure



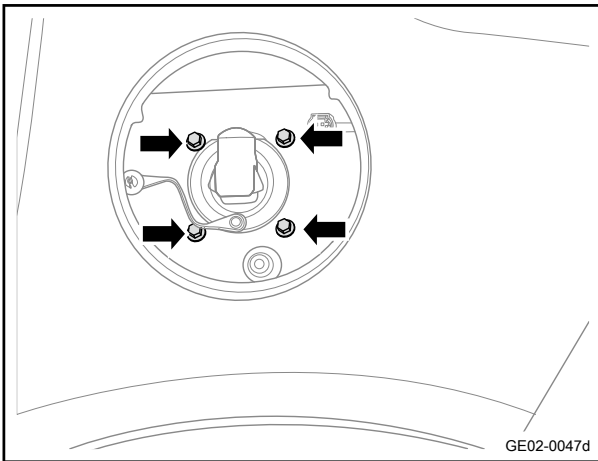
- 1 Move the AC charging socket harness assembly to the installation position.
- 2 Install AC charging socket and harness assembly connector.



- 3 Install the 4 fixing bolts 2 of the AC charging socket wire harness assembly with vehicle body.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 4 Install the 1 fixing nuts 1 of the DC charging socket wire harness assembly with vehicle body.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 5 AC charging socket wire harness assembly wire 2.
- 6 Connect the harness connector 1 of the AC charging socket harness assembly.



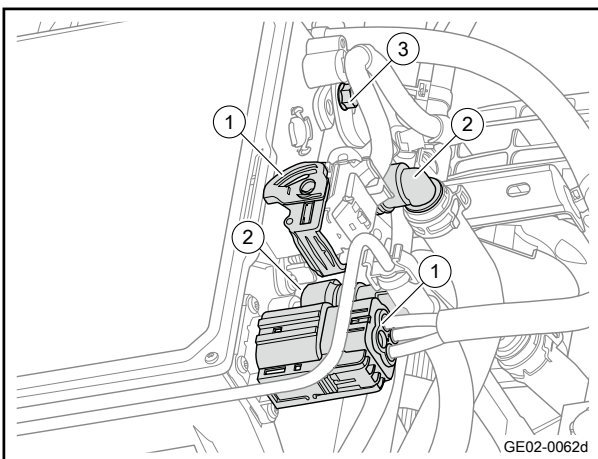
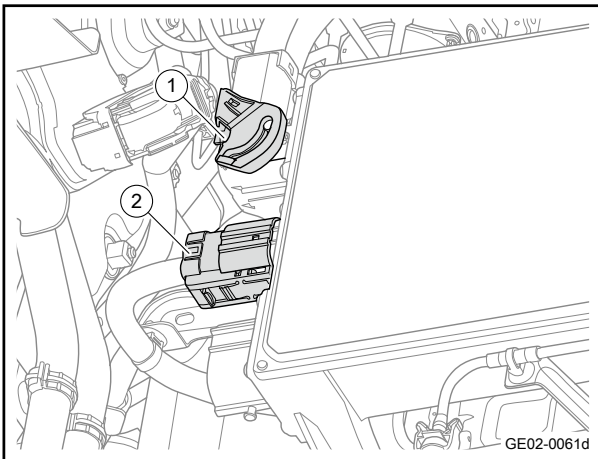
- 7 Install the 4 fixing bolts of the AC charging socket wire harness assembly.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)

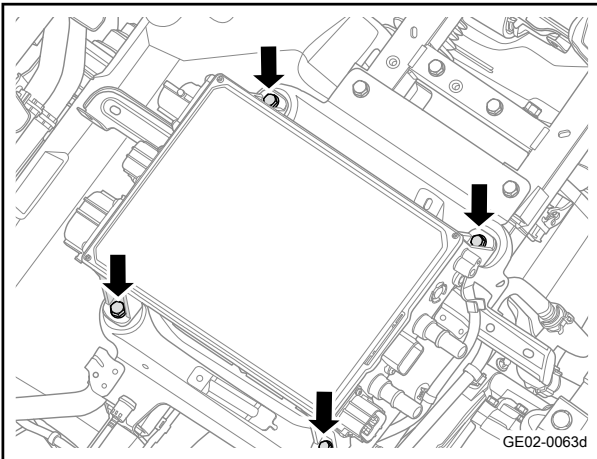
- 8 Install the outer cover plate of the AC charging port outer cover plate.
- 9 Install the battery bottom shield.
- 10 Install the power wire harness cover plate assembly.
- 11 Install the left and right rear fender liner plates.
- 12 Connect the DC bus assembly.
- 13 Lower the vehicle.
- 14 Connect the negative cable of battery.

2.6.7.4 Replacement of the high and low-voltage charging system assembly(Low figuration)

Removal procedure

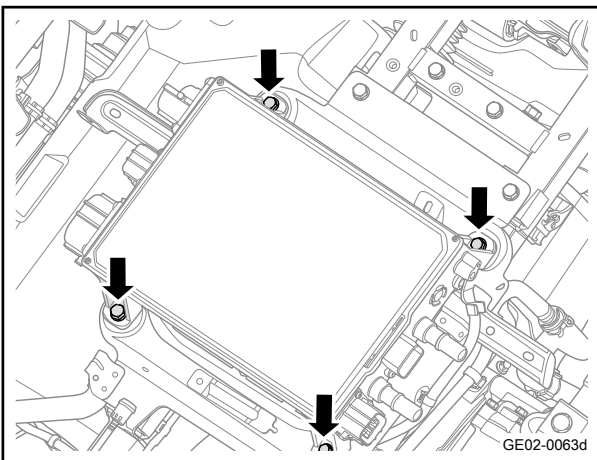
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
 - 3 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
 - 4 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
 - 5 Disconnect the IPU harness assembly harness connector 1.
 - 6 Disconnect the motor compressor harness assembly harness connector 2.
 - 7 Disconnect the high and low voltage charging system assembly harness connector 1.
 - 8 Disconnect the water pipe 2 of the high and low-voltage charging system assembly.
 - 9 Remove the 1 ground wire bolt 3 of the high and low-voltage charging system assembly.



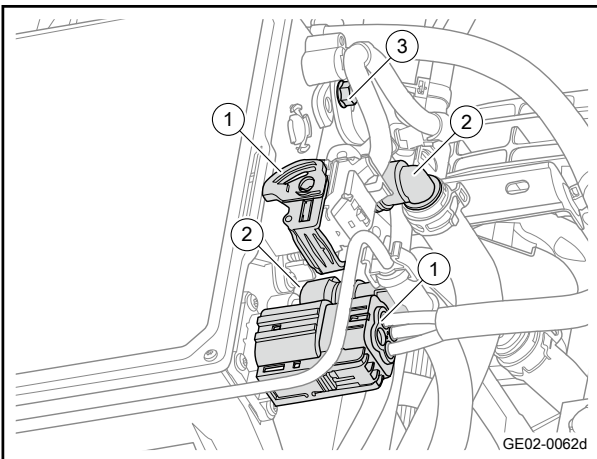


- 10 Remove the 4 fixing bolts of the high and low-voltage charging system assembly.
- 11 Take off the high and low-voltage charging system assembly.

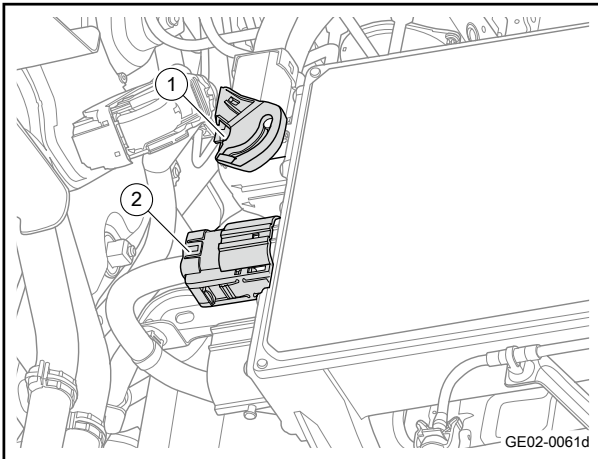
Installation procedure



- 1 Move the high and low-voltage charging system assembly to the installation position.
- 2 Install the 4 fixing bolts of the high and low-voltage charging system assembly.
Torque: 24N·m (metric system) 17.7lb-ft (Imperial system)



- 3 Install the 1 ground wire bolt 3 of the high and low-voltage charging system assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 4 Install the water pipe 2 of the high and low-voltage charging system assembly.
- 5 Connect the high and low voltage charging system assembly harness connector 1.



- 6 Connect the motor compressor harness assembly harness connector 2.
- 7 Connect the IPU harness assembly harness connector 1.

- 8 Fill the power battery coolant.
- 9 Connect the DC bus assembly.
- 10 Lower the vehicle.
- 11 Connect the negative cable of battery.

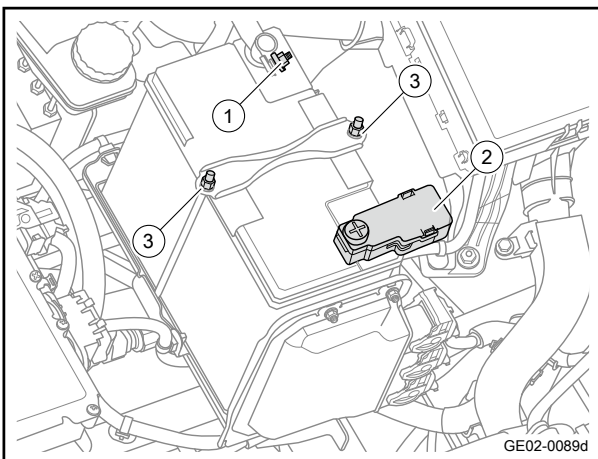
2.6.7.5 Replacement of the Battery Assembly

Removal procedure

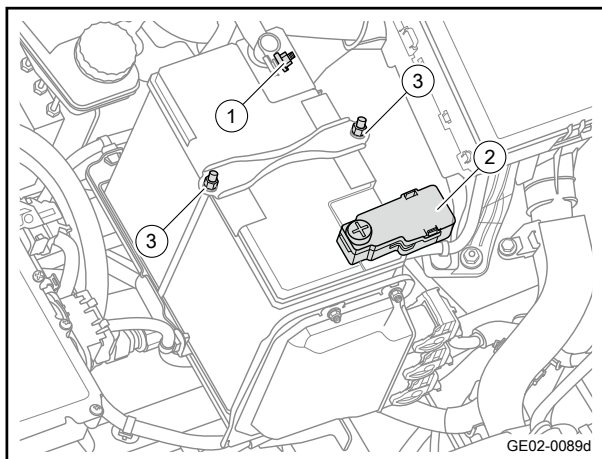
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 1 Remove the front engine compartment cover assembly.
Refer to [Replacement of Front Engine Compartment Cover Assembly](#)
- 2 Turn the power supply mode to the mode OFF.
- 3 Loosen the fixing nut 1 of the battery negative cable to disconnect the battery negative cable.
- 4 Open the battery positive cable protective cover 2 and loosen the battery positive cable fixing nut.
- 5 Disconnect the battery positive cable.
- 6 Remove the two fixing nuts 3 of the battery strip and take out the battery strip.
- 7 Take off the battery assembly.



Installation procedure



- 1 Move the battery assembly to the installation position.
- 2 Install the 2 fixing nuts 3 of the battery strip.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 3 Install the battery positive cable, tighten the battery positive cable fixing nuts, and close the battery positive cable protective cover 2.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 4 Install the battery negative cable, tighten the battery negative cable fixing nut 1.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 5 Install the front engine compartment cover assembly.

Reducer control system

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3.1 Warnings and precautions

3.1.1 Warnings and precautions

3.1.1.1 Warnings and Precautions

Warning

Because electric vehicles contain power battery assemblies, if the high-voltage components and vehicles are not handled correctly, there is a risk of electric shock, leakage or similar accidents. Be sure to follow proper working procedures during inspection and maintenance.

Before component inspection or maintenance, be sure to follow the process of powering on and off at a high voltage.

Before operating a high-voltage system, be sure to wear insulating protective equipment, including gloves, shoes and masks.

Clearly identify the person in charge of high-voltage work to ensure that others do not touch the vehicle. When inoperative, cover high-voltage components with an insulating cover plate or similar object to prevent contact with others.

Strong magnetism is used in parts and components of the vehicle, and personnel using medical devices such as pacemaker are not allowed to operate high-voltage electricity, because the function of medical equipment will be affected when close to parts using strong magnetism.

Caution

When adding reducer lubricating oil, the vehicle should be parked on a level road.

Before installing the reducer and drive motor, apply 12 ± 0.5 g grease to the reducer spline and motor spline.

Take care not to damage the seal ring when installing .

3.2 Reducer

3.2.1 Specification

3.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing bolt connecting the reducer assembly and the drive motor assembly (GLB Intelligent Power Technologies)	M18×45	31.5-38.5
Oil filling plug of reducer (GLB Intelligent Power Technologies)	–	24-30
Oil drain plug of reducer (GLB Intelligent Power Technologies)	–	24-30
Oil filling plug of reducer (NIDEC CORPORATION)	–	30-39
Oil drain plug of reducer (NIDEC CORPORATION)	–	30-39

3.2.1.2 Reducer specification

GLB Intelligent Power Technologies

Item	Unit	Parameter
Rated/Peak torque	N·m	135/310
Rated/maximum power rev	r/min	4250/15000
Main reduction gear ratio	-	10.43
Gear Lubricating oil	-	PETRO-CANADA
Lubricating oil quantity	L	1.2

NIDEC CORPORATION

Item	Unit	Parameter
Rated/Peak torque	N·m	135/310
Maximum Speed	r/min	≥15000
Main reduction gear ratio	-	10.294
Gear Lubricating oil	-	ATF MOTF TS-1
Lubricating oil quantity	L	2.6±0.1

3.2.2 Instructions and operations

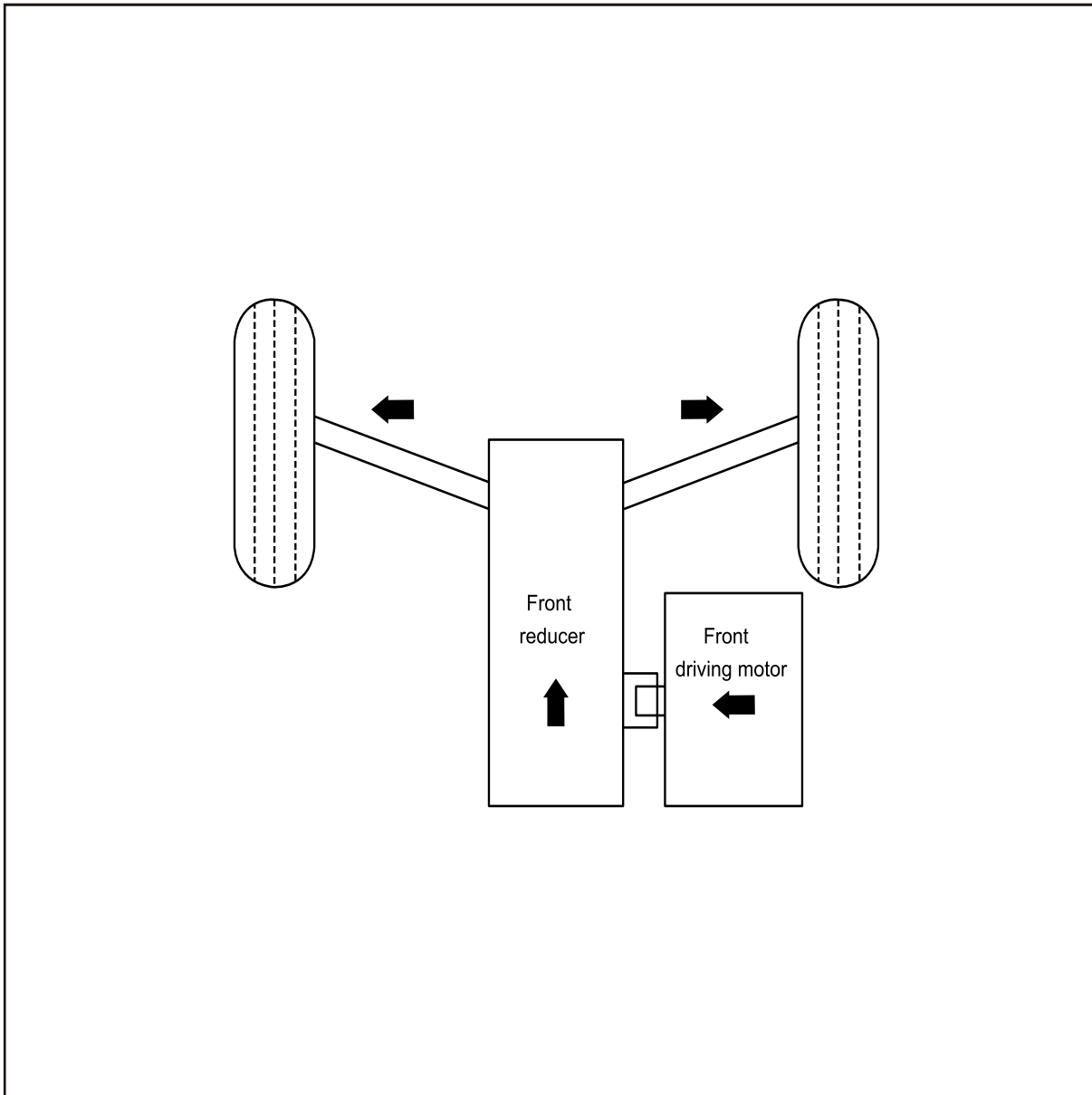
3.2.2.1 General

Reducer Working Principles

The speed-torque characteristic of the motor is very suitable for the demand of automobile driving. In the electric-only mode, the drive system of the vehicle no longer needs a multi-gear reducer, and the structure of the drive system is greatly simplified.

Note: Reverse gear of electric vehicle is realized by motor reverse.

The reducer is between the drive motor and the constant velocity drive shaft, and the power output shaft of the drive motor is directly connected with the input shaft gear of the reducer by splines. On the one hand, the reducer transfers the power of the driving motor to the constant velocity drive shaft, which plays a role in reducing the speed and increasing the torque; on the other hand, it meets the requirements of the left and right driving wheels rotating at different speeds when the vehicle turns and runs on uneven roads, so as to ensure the smooth operation of the vehicle. The power transmission route is shown in the figure below:



Working principles of the electronic gear shifter (integrated into the combination switch)

The driver operates the electronic gear shifter (integrated into the combination switch) to enter the P gear, the electronic gear shifter (integrated into the combination switch) sends the

parking request signal to the vehicle control unit (VCU), and the VCU determines whether the parking condition is met according to the current driving motor speed and wheel speed. When the conditions are met, the VCU sends a parking command to the electronic gear shifter (integrated into

the combination switch) control module, and the electronic gear shifter (integrated into the combination switch) control module controls the parking motor to enter the P position, thus locking the reducer. After parking is completed, the electronic gear shifter (integrated into the combination switch) control module will receive the P-gear position signal from the reducer, and feedback this signal to the VCU to complete the gear shifting process.

3.2.3 System working principles

3.2.3.1 System Working Principles

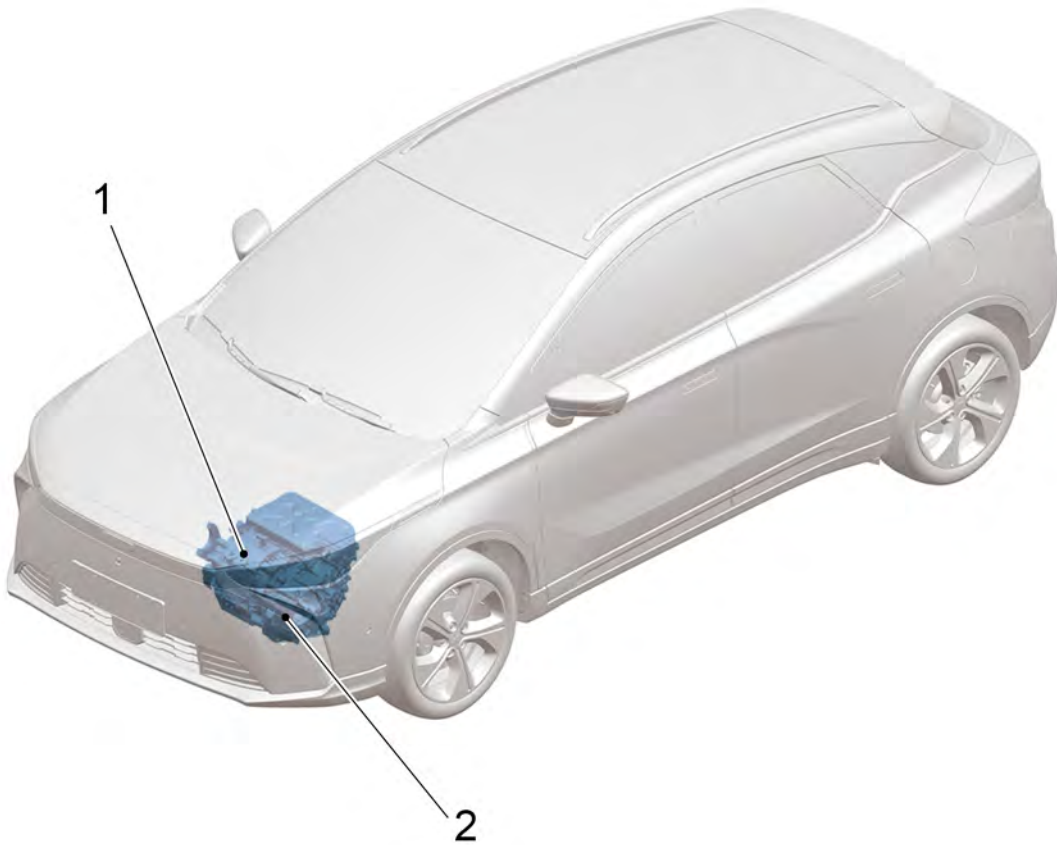
Reducer Working Principles

The motor input torque through the input shaft, and the torque is transmitted to the intermediate shaft through gear meshing, and then to the differential through the main reducer gear meshing, to the half shaft, and finally to the wheel. When the vehicle turns, the left and right half shafts of the differential can achieve different speeds. The input shaft turns clockwise when forwarding, and counterclockwise when reversing.

3.2.4 Part position

3.2.4.1 Part Position

GLB Intelligent Power Technologies



1. Driving motor assembly

2. Reducer assembly

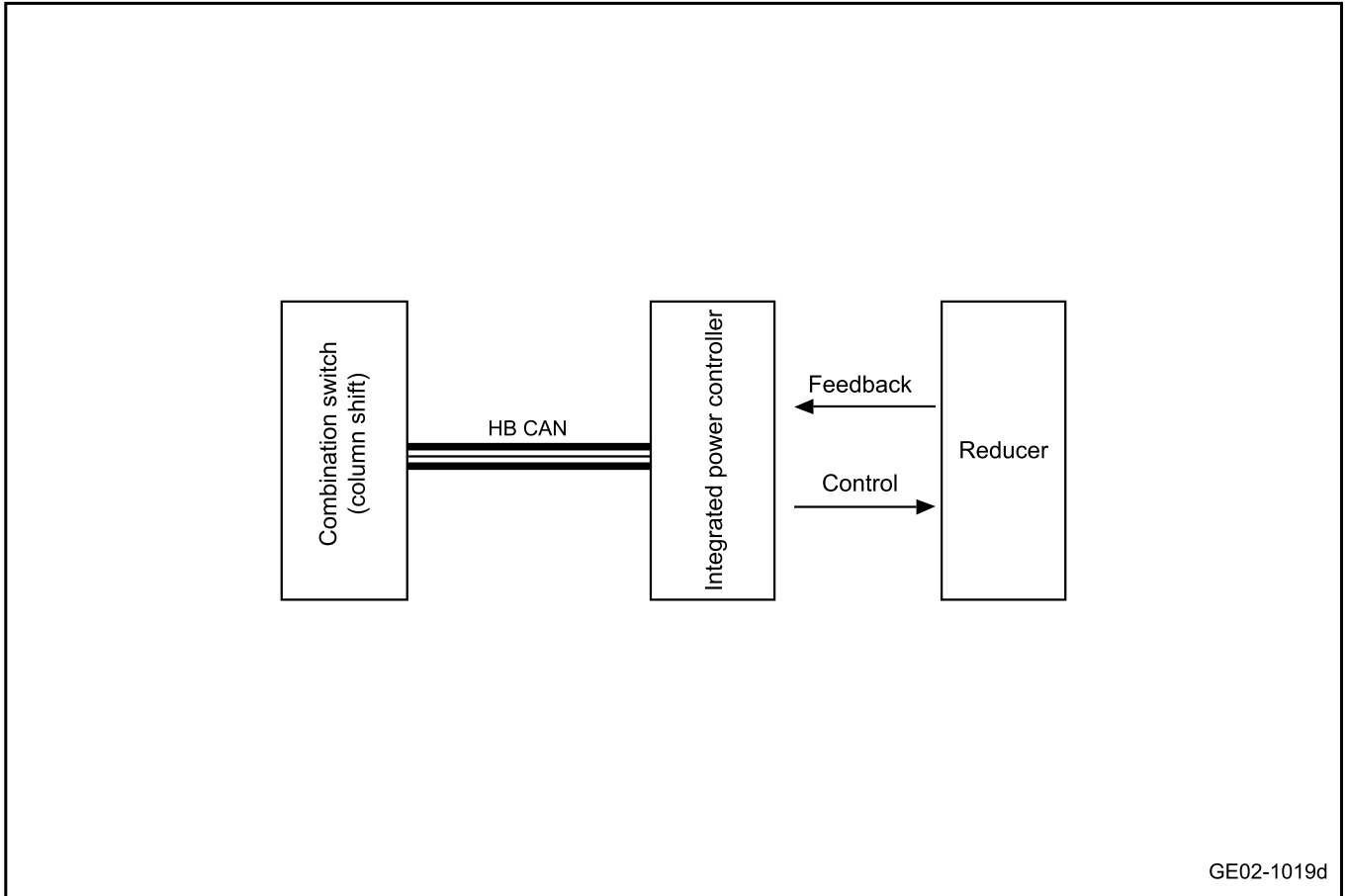
NIDEC CORPORATION



- 1. Electric drive system

3.2.5 Electrical block diagram

3.2.5.1 Electrical schematic diagram of reducer



3.2.6 Diagnostic information and procedures

3.2.6.1 Diagnosis Description

Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

3.2.6.2 Fault symptom table

Symptom	Possibility and cause	Measures
Invalid gear shifting system	1. Column shift switch fault	Refer to Column Shift Switch Power Supply Failure
	2. Communication failure of the column shift switch CAN	Refer to Column Shift Switch Communication Failure

3.2.6.3 Data stream list

Serial No.	DID description	Normal value range	Unit
1	EGSM Sensor Location	Manual Autonomous Up-up Up Intermediate Down Down-down	/

3.2.6.4 List of Diagnostic Trouble Codes (DTC)

The following DTCs are saved in column shift switch

U300616	System voltage is too low	Refer to Power Supply Failure of Column Shift Switch
U300617	Too high system voltage	
U007300	CAN bus off	Refer to Communication Failure of Column Shift Switch
U012287	Loss of communication the electronic stability control unit	
U111487	Communication with the complete vehicle control unit is lost	
U100044	Internal random memory (RAM) fault of the controller	Refer to Internal faults of the of Column Shift Switch
U100145	internal read-only memory fault (Flash ROM) of the controller	
U100347	Watchdog fault	
P168200	Hall sensor fault	
P168371	Ball head gear P key is caught	

3.2.6.5 Column shift switch power supply fault

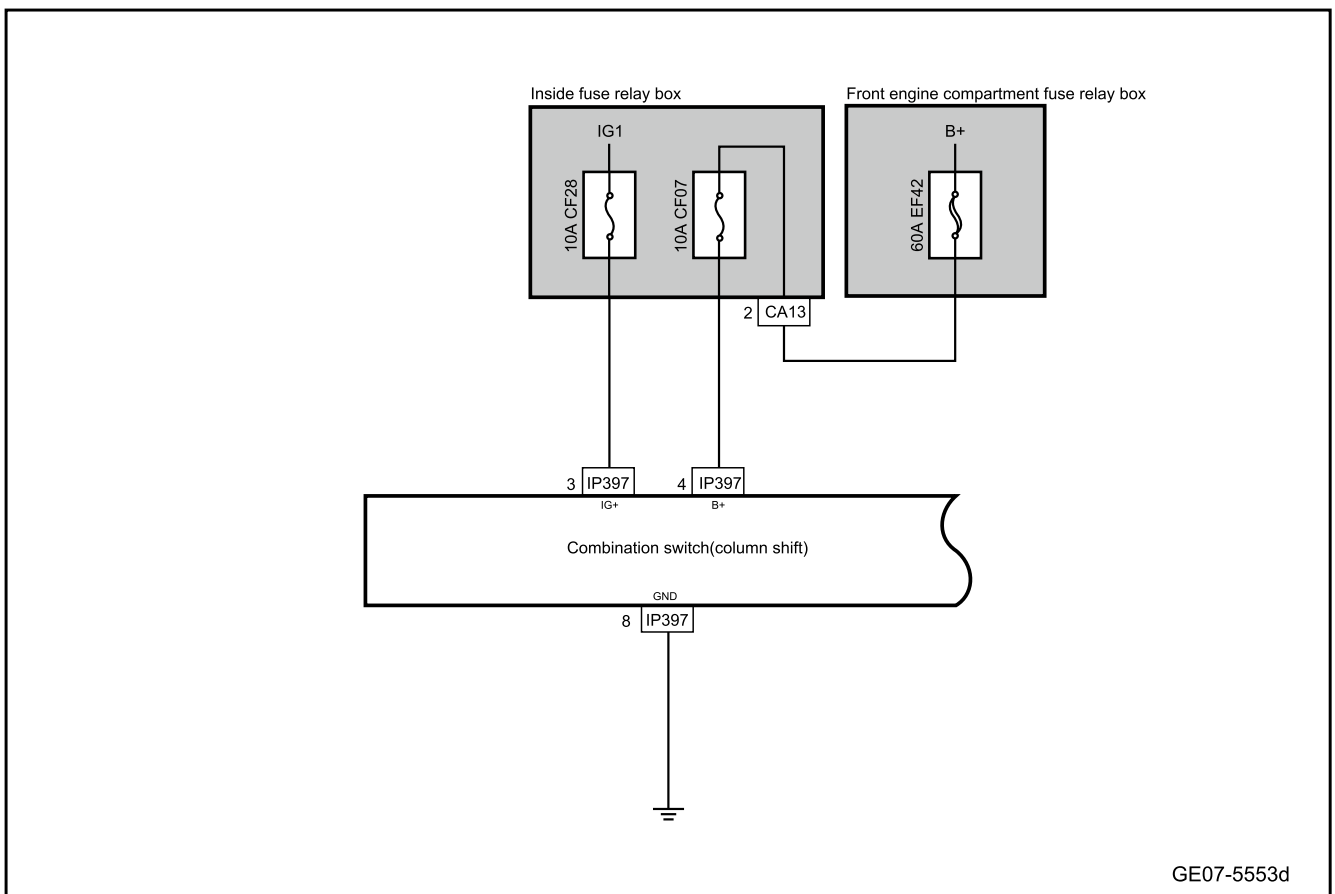
1. DTC description:

Diagnostic Trouble Code	Description
U300616	ECU power supply/system voltage is too low
U300617	ECU power supply/system voltage is too high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The voltage is lower than 9V.	Tester ECU communication is normal	1. Battery 2. Circuit 3. Fuse 4. Column shift switch
U300617	The voltage is higher than 16V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault code instructions.

Yes

Step 2 Primary check.

- A. Check the column shift switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the column shift switch fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse EF42 in the fuse relay box in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 60A

- C. Pull out fuse CF07 of the indoor fuse relay box. Check whether fuse CF07 is blown.

Rated capacity of fuse: 10A

- D. Pull out fuse CF28 of the indoor fuse relay box. Check whether fuse CF28 is blown.

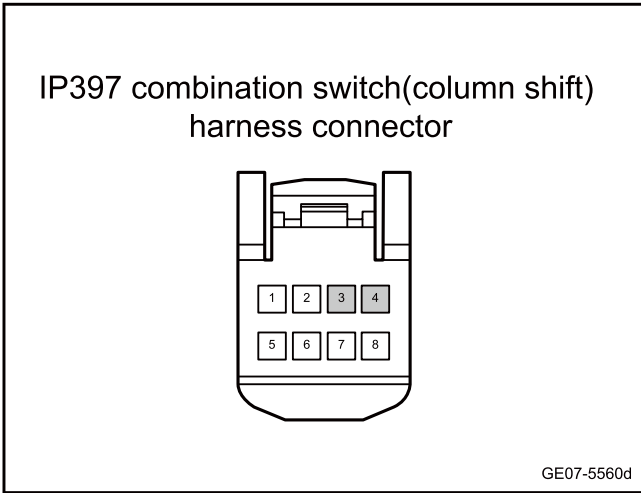
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check whether the column shift switch power supply circuit is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP397 of the column shift switch.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

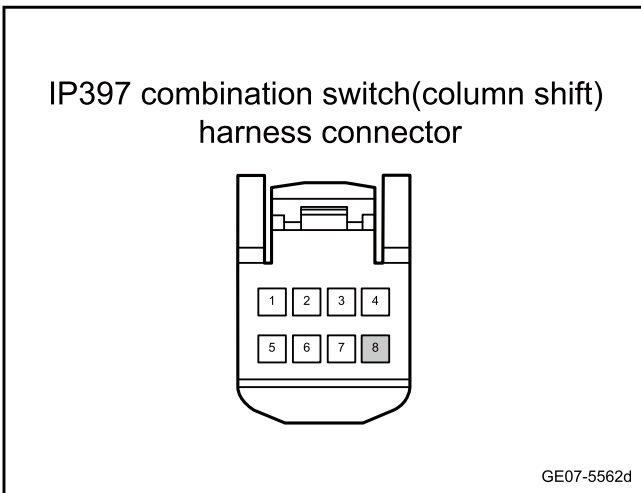
Measure terminal 1	Measure terminal 2	Standard value
IP397(3)	Vehicle body is grounded.	Standard voltage: 11-14V
IP397(4)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the column shift switch grounding circuit is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP397 of the column shift switch.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP397(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace column shift switch.

- A. To replace the column shift switch, please refer to [Replacement of Column Shift Switch](#)

Yes System is normal.

No

Step 7 Reprogram and reset the column shift switch.

- A. Reprogram and reset the column shift switch. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

3.2.6.6 Column shift switch communication fault

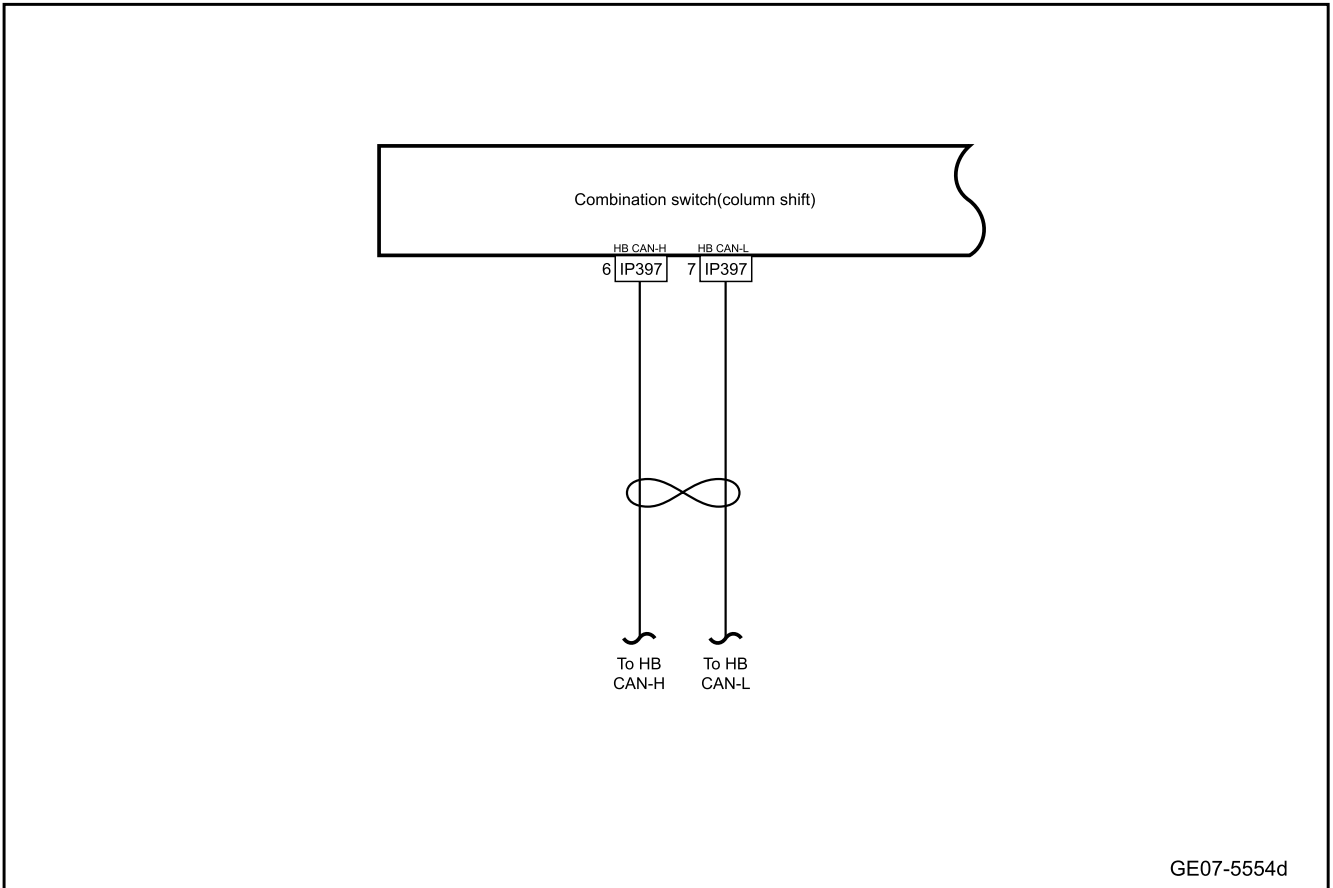
1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus off
U012287	Loss of communication with the electronic stability control unit
U111487	Communication with the complete vehicle control unit is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus fault	1. Tester ECU communication is normal 2. Normal working voltage 3. Communication is normal 4. No overvoltage or undervoltage	1. Circuit 2. Switch 3. Diagnostic interface
U012287	No received from ESP (0 x 125)		
U111487	No received from VCU (0 x 162)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the column shift switch for signs of damage, deformation, stain, loosening, etc.
- B. Check the column shift switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 | Check the HB-CAN network integrity.

- A. To check the instrument communication network, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm whether the HB-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 | Replace column shift switch.

- A. Check the column shift switch power supply and grounding harness. Refer to [Column Shift Switch Power Supply Failure](#)
- B. To replace the column shift switch, please refer to [Replacement of Column Shift Switch](#)

Next step

Step 5 | Reprogram and reset the column shift switch.

- A. Reprogram and reset the column shift switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

3.2.6.7 Column shift switch internal fault

1. DTC description:

DTC	Trouble description
U100044	Internal random memory fault (RAM) of the controller
U100145	Controller internal read-only memory fault (Flash ROM)
U100347	Watchdog fault
P168200	Hall sensor fault
P168371	Ball head gear P key is caught

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100044	RAM hardware fault	1. ECU communication is normal 2. Working voltage: normal 3. No overvoltage or undervoltage	Column shift switch
U100145	Flash hardware failure		
U100347	The task is delayed and the program fails		
P168200	Hall sensor fault		
P168371	Switch gets stuck		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

- A. Check the column shift switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the column shift switch.

- A. Reprogram and reset the column shift switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace column shift switch.

- A. Check whether the column shift switch power and grounding wire are normal. Refer to [Power Supply Failure of Column Shift Switch](#)
- B. Replace column shift switch. Refer to [Replacement of Column Shift Switch](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Reprogram and reset the column shift switch.

- A. Reprogram and reset the column shift switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

3.2.7 Removing and installing

3.2.7.1 Reducer Oil Level Check Procedure (GLB Intelligent Power Technologies)

Inspection procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 3 Place the vehicle horizontally and let the oil inside the reducer cool. Remove the reducer oil filling bolt. The oil level of the reducer should be flush with the lower edge of the filling hole.

Caution

If the oil level is too low, add the dedicated manual reducer oil through the filling hole plug until the oil begins to flow out.

- 4 Re-install and tighten the reducer oil filling bolt.
Torque: 27N·m

Caution

Wipe the oil fill plug, oil drain plug and surrounding area clean to check for oil leaks.

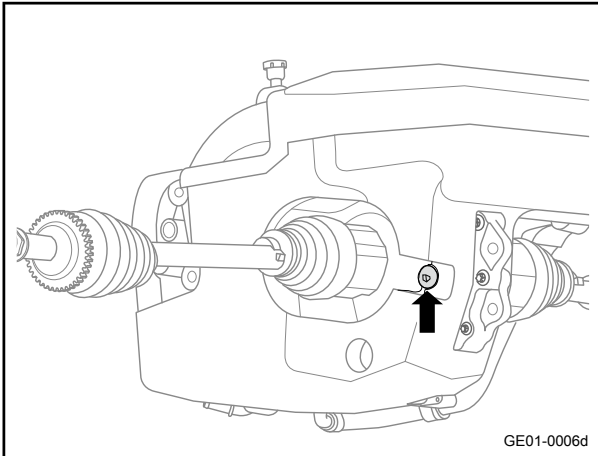
If the fuel filler plug or the end sealing ring is damaged, new plugs must be used to replace it.

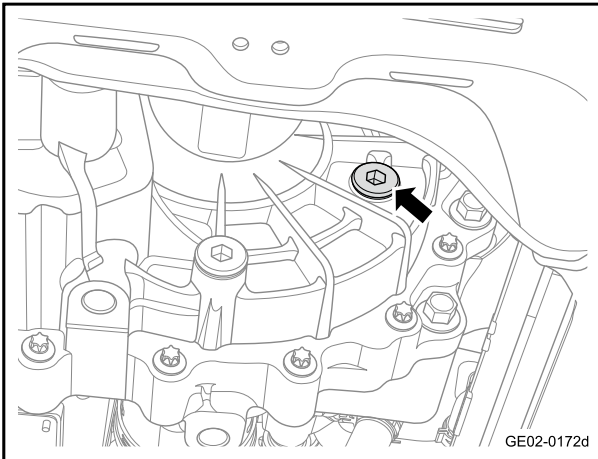
- 5 Install the front engine compartment bottom shield.
- 6 Lower the vehicle.

3.2.7.2 Reducer Oil Level Check Procedure (NIDEC CORPORATION)

Adjustment procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)





- 3 Place the vehicle horizontally and let the oil inside the reducer cool. Remove the reducer oil filling bolt. The oil level of the reducer should be flush with the lower edge of the filling hole.

Caution

If the oil level is too low, add the dedicated manual reducer oil through the filling hole plug until the oil begins to flow out.

- 4 Install and tighten the reducer oil filling bolt.

Torque: 34.5N·m

Caution

Check the oil plug for damage and whether its washer is damaged.

Wipe the oil filler plug and the surrounding area (recommended oil dispersant: SAINT-GOBAIN 7602T or ThreeBond 6602T), and check for lubrication oil leakage

- 5 Install the front engine compartment bottom shield.
- 6 Lower the vehicle.

3.2.7.3 Draining and filling of reducer oil(GLB Intelligent Power Technologies)

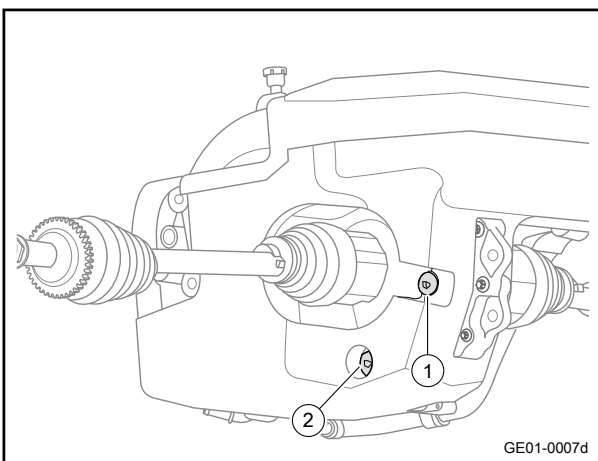
Adjustment procedure

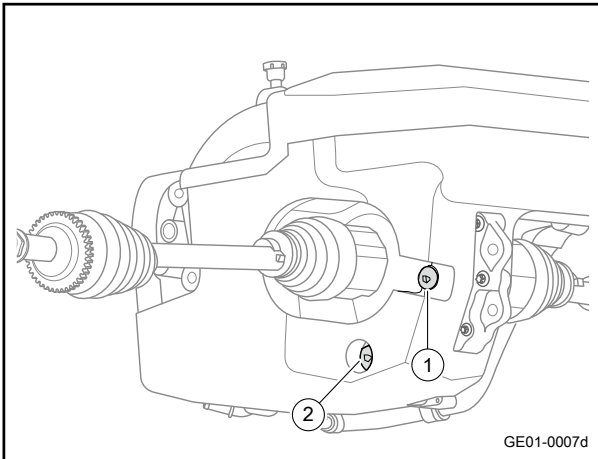
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 3 Remove the reducer oil filling plug 1.
- 4 Remove the reducer oil drain plug 2 and use the recycling container to receive the drained reducer oil.

Caution

Collect and process the used reducer oil in a centralized manner, waiting for scrapping or recycling, do not discharge the used reducer oil into the sewer pipe to protect the environment.

After the lubrication oil is discharged, clean the oil filler port and oil draining port.





- 5 Install the reducer oil drain plug 2.

Torque: 27N·m

Caution

The fuel drain plug is fitted with a magnet inside. Without a magnet, the fuel filler plug is prohibited from being mixed.

If the oil drain plug or the end sealing ring is damaged, new plugs must be replaced.

Wipe the oil drain plug and surrounding area clean to check for oil leaks.

- 6 Add the dedicated reducer oil through the filling hole plug until the oil begins to flow out.

Reference dosage: 1.2L

- 7 Re-install and tighten the reducer oil filling plug 1.

Torque: 27N·m

Caution

If the fuel filler plug or the end sealing ring is damaged, it must be replaced with a new one.

Wipe the oil fill plug and surrounding area clean to check for oil leaks.

- 8 Lower the vehicle.
- 9 Start the vehicle, run it electrically for 3 minutes, and check for oil leak.
- 10 Install the front engine compartment bottom shield.

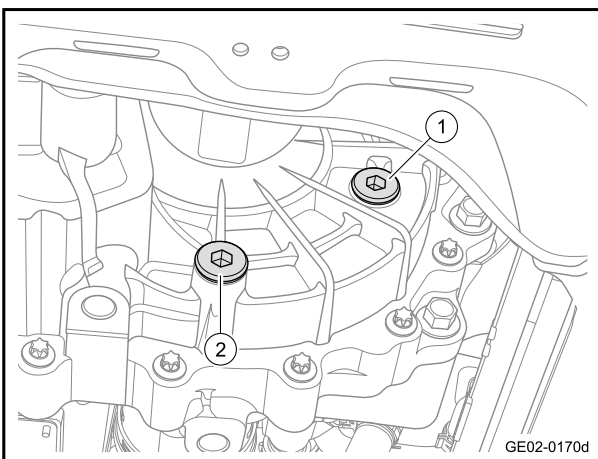
3.2.7.4 Draining and filling of reducer oil (NIDEC CORPORATION)

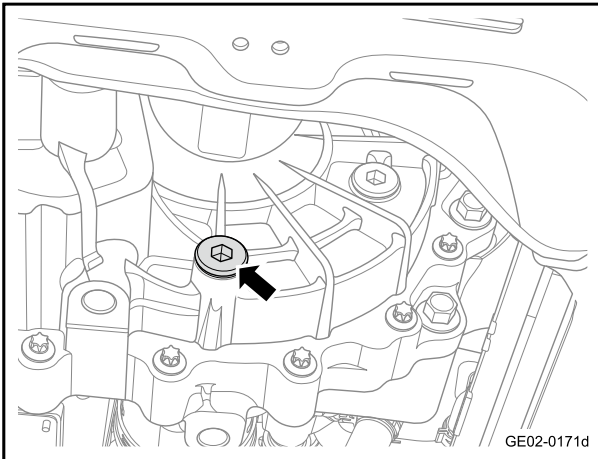
Adjustment procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 3 Place the lubrication oil collector under the reducer drain bolt.
- 4 Remove the reducer oil filling plug and washer 1.
- 5 Remove the reducer oil drain plug and washer 2 to drain the reducer lubricating oil.

Caution

After the lubrication oil is discharged, clean the oil filling port and oil drain port.





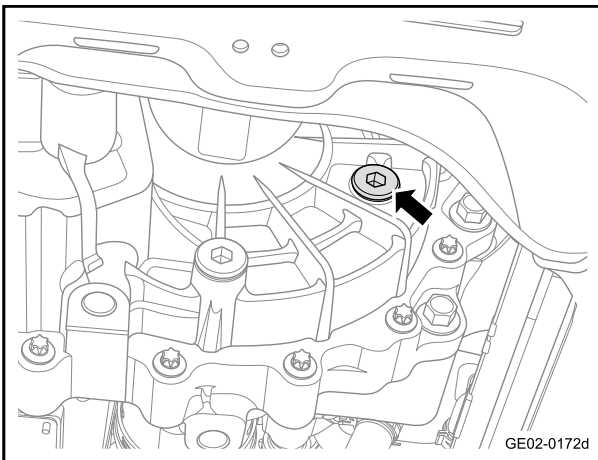
- 6 Install the reducer oil drain plug and washer.

Torque: 34.5N·m

Caution

Check the drain plug, oil filling plug for damage and whether the washer is damaged.

Wipe the draining and oil filling plug and the surrounding area (recommended oil dispersant: SAINT-GOBAIN 7602T or ThreeBond 6602T) clean, and check for lubrication oil leakage



- 7 Refill reducer lubrication oil.

Reference dosage: 2.6L±0.1L

- 8 Fill lubrication oil from the oil filling port until the lubrication oil overflows, and install the reducer oil filling plug and gasket.

Torque: 34.5N·m

- 9 Lower the vehicle.

- 10 Start the vehicle, run it electrically for 3 minutes, and check for oil leak.

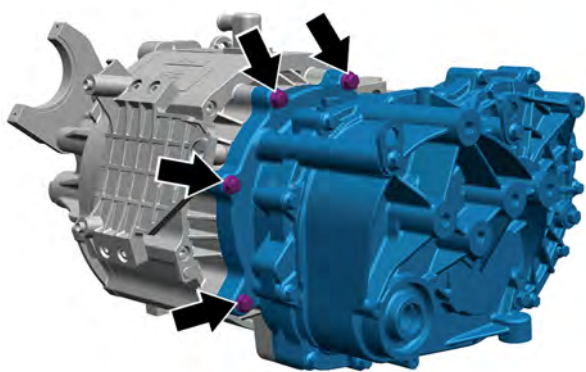
- 11 Install the front engine compartment bottom shield.

3.2.7.5 Replacement of reducer(GLB Intelligent Power Technologies)

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Disconnect the DC bus assembly. Refer to [Replacement of DC Bus Assembly](#)
- 5 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 6 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)

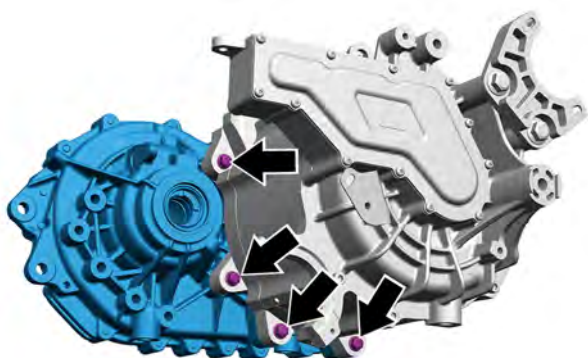
- 7 Remove the electric drive system. Refer to [Replacement of Electric Drive System](#)
- 8 Take off the drive motor controller assembly Refer to [Replacement of Drive Motor Controller Assembly](#)
- 9 Remove the 4 fixing bolt connecting the front end of the reducer with the drive motor.



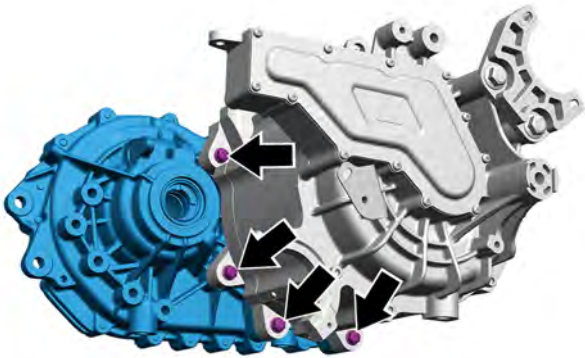
- 10 Remove the 4 fixing bolt connecting the rear end of the reducer with the drive motor.
- 11 Remove the reducer

Caution

Use the engine hanger to support the reducer.



Installation procedure



- 1 After supporting the reducer with an engine hanger, connect the reducer and the drive motor.

Caution

The assistance of multiple people is required when the reducer is connected with the drive motor.

Before installing the reducer, it is necessary to confirm whether the two O-rings on the motor front end cover and the shaft are damaged. If any damage, it is necessary to replace a new O-ring, the motor spline should be coated with wear-proof grease (at 1/2 or 2/3 of the splines); connect the reducer with the matching tooling, and then connect slowly and gently to prevent the motor splines!

- 2 Install the 4 fixing bolt connecting the rear end of the reducer with the drive motor assembly.

Torque: 35N·m

Caution

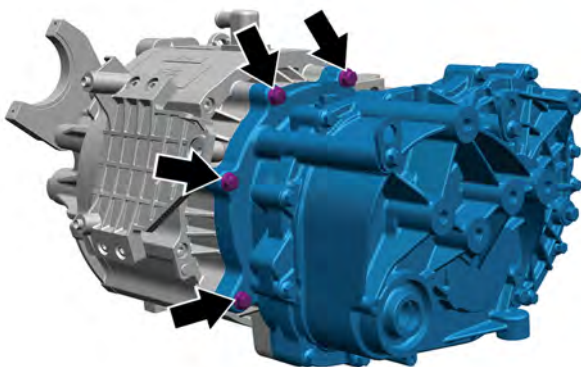
The fixing bolts connecting the reducer and the drive motor are disposable parts. If there is a disassembly, it must be replaced with a new one.

- 3 Install and tighten 4 fixing bolts connecting the front end of the reducer with the drive motor.

Torque: 35N·m

Caution

The fixing bolts connecting the reducer and the drive motor are disposable parts. If there is a disassembly, it must be replaced with a new one.



- 4 Install the driving motor controller
- 5 Install the electric drive system assembly.
- 6 Connect the DC bus assembly.
- 7 Add reducer oil.
- 8 Install the front engine compartment bottom shield.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.
- 11 Fill the power battery coolant.

3.2.7.6 Replacement of reducer(NIDEC CORPORATION)

Caution

The reducer and the drive motor are integrated power systems and cannot be simply removed.

Refer to [Replacement of Electric Drive System\(NIDEC CORPORATION\)](#)

3.2.7.7 Replacement of Reducer Oil Seal(GLB Intelligent Power Technologies)

Removal procedure

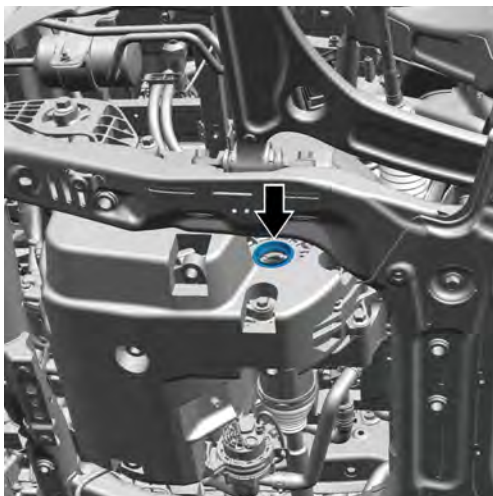
Caution

The reducer oil seals on the left and right sides are removed by the same method.

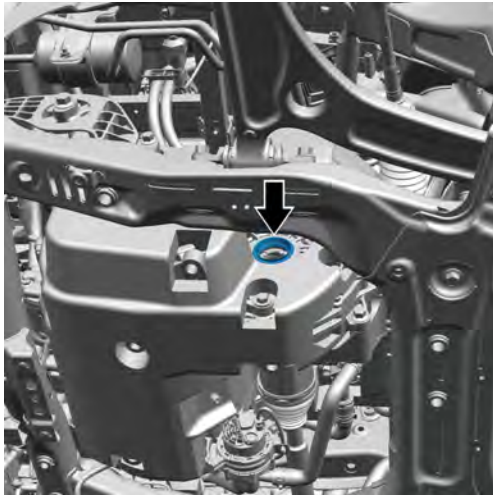
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)
- 3 Remove the left front constant velocity drive shaft. Refer to [Replacement of Left Front Constant Velocity Drive Shaft](#)
- 4 Use special tools to dismount the reducer oil seal.

Caution

The reducer oil seal is a disposable part, and must be replaced with a new one after removal.



Installation procedure



Caution

Check the new oil seal for damage and distortion.

Wipe and clean the surface of the housing steps in contact with the oil seal. After cleaning, apply oil or grease to prevent the oil seal outer ring rubber from being squeezed during assembly.

Apply grease to the inner and outer surfaces of the new oil seal to prevent the oil seal from twisting and scratching.

- 1 Use special tooling to fix the new oil seal to the installation position, and knock special tooling with a hammer to assemble the oil seal. When the hammer gives a sense of resilience, it indicates that the oil seal has been installed in place. Take out the special tooling, check whether the oil seal is in the correct position, and visually detect and measure the plane between the oil seal and the reference surface (or ≤ 0.5 mm).
- 2 Install the left front constant velocity drive shaft.
- 3 Add reducer oil.
- 4 Lower the vehicle.

3.2.7.8 Replacement of Reducer Oil Seal (NIDEC CORPORATION)

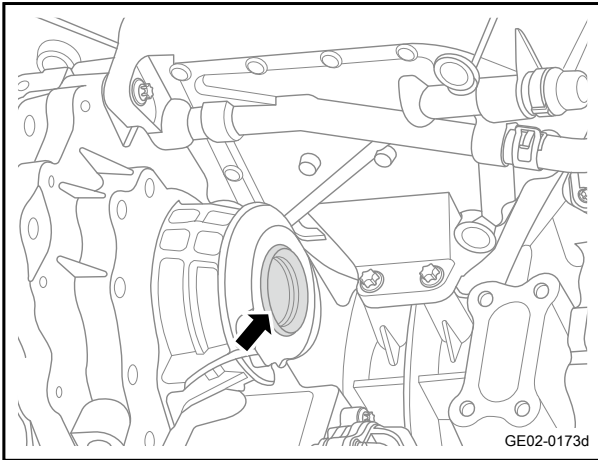
Removal procedure

Caution

The reducer oil seals on the left and right sides are removed by the same method.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(NIDEC CORPORATION\)](#)

- 3 Remove the right front constant velocity drive shaft. Refer to [Replacement of Right Front Constant Velocity Drive Shaft](#)

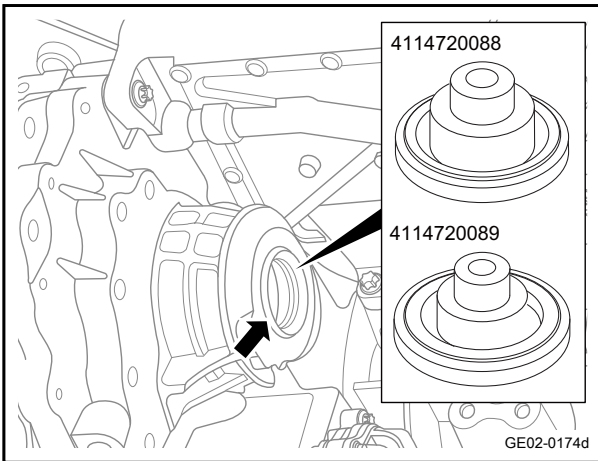


- 4 Remove the reducer oil seal with tooling.

Caution

The reducer oil seal is a disposable part, and must be replaced with a new one after removal.

Installation procedure



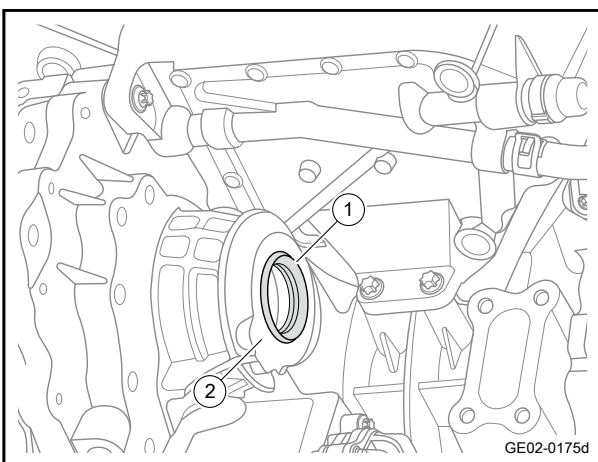
Caution

Check the new oil seal for damage and distortion.

Wipe and clean the housing surface in contact with the oil seal.

Pre-coat reducer lubricating oil ATF on the outside of the new oil seal to lubricate to prevent twisting and scratches during installation. And add sealing grease to the inside of the oil seal.

- 1 Press the two new oil seals with special tools into the reducer housing and the drive motor housing respectively, and the press-in force range is 0.35 - 5.0 kN.
Special tool number: 4114720088, 4114720089
- 3 Measure the height between the reducer oil seal 1 and the reducer base plane 2. Normal height: 3.5 - 5.0mm.



- 4 Install the right front constant velocity drive shaft.
- 5 Add reducer oil.
- 6 Lower the vehicle.

Suspension system

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4.1 Warnings and precautions

4.1.1 Warnings and precautions

4.1.1.1 Warnings and Precautions

Warning regarding assistant driving by another technician

Warning

When the technician is checking the fault parts reported for repair, the vehicle should be driven by another technician. Otherwise, it may lead to personal injury.

Warnings regarding battery disconnection

Warning

Before repairing any electrical components, the power mode must be in the "OFF" position, and all electrical loads must be "OFF", unless otherwise specified in the operating procedures. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

Warnings regarding road test

Warning

Road test should be conducted under the premise of ensuring safety and observing all traffic regulations. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions can cause serious personal injury and damage the vehicle.

4.2 Front suspension

4.2.1 Specification

4.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Bolt connecting the front suspension left lower swing arm assembly with the steering knuckle	M12×60	First time 90
		Second time: 75°
Fixing nut of the front suspension left lower swing arm assembly front part	M12×35	First time 90
		Second time: 90°
Fixing nut of the front suspension left lower swing arm assembly rear part	M14×90	First time 120
		Second time: 90°
Fixing nut at left front slide column assembly	M10	72-88
Fixing nut at left front slide column assembly upper part	M10	70-80
Lower bolt and nut assembly of FL sliding column assembly-nut	M14	183-213
Lower bolt and nut assembly lower of FL sliding column assembly-bolt	M14×58	183-213
Lower fixing nut of the stabilizer bar linkage	M10	70-80
Upper fixing nut of the stabilizer bar linkage	M10	67-83
Front stabilizer bar assembly fixing bolt	M10×60	63-77
Bolt connecting the steering knuckle and the front shock absorber	M14×58	183-213
Bolt and nut for connecting the steering knuckle and the front shock absorber	M14	183-213
Steering tie rod ball joint fixing nut	M12	50-60
Lower swing arm ball joint fixing bolt	M12	99-121
Outer locking nut of the driving shaft	M22	260-280

4.2.1.2 General Specification

Trafficability	Minimum turning diameter	≤10.7m
	Minimum ground clearance (full load)	≥140mm
	Approach angle	17°
	Departure angle	27.8°

4.2.2 Instructions and operations

4.2.2.1 Description and Operations

Suspension refers to all the connecting mechanism between the wheels and the body, and it is a subsystem of the "chassis" system. The suspension system is divided into independent suspension, semi-independent suspension and non-independent suspension in terms of free degree. Under ideal status, vehicle wheels should be perpendicular to ground no matter the road conditions, that is, the camber angle of wheels is 0° . Therefore, the front suspension of this vehicle adopts the classical McPherson independent suspension structure. The function of front suspension system of the vehicle is to maximize the friction between tires and roads in order to provide good directional control ability and stability, thus ensuring the comfort level of customer. It can absorb the energy of vertical acceleration wheels to free the frame and body from interruption while the wheels bounce up and down with the road.

The wheels adopting McPherson independent suspension can slide along the kingpin, but it is not exactly the same as the candle suspension whose kingpin can swing. McPherson suspension is a combination of swing arm suspension and candle suspension. Compared with double-wishbone suspension, McPherson suspension has the advantages of compact structure, small change of front wheel alignment parameters when wheels jump, good handling stability, and convenient arrangement of driving motor and steering system due to cancellation of upper wishbone.

McPherson suspension consists of coil spring, shock absorber, stabilizer bar and triangular lower swing arm. The main structure is simply that the coil spring is sleeved on the shock absorber. The shock absorber can avoid the forward, backward, left and right deviation of the coil spring when it is stressed, limit the spring to only vibrate in the up and down direction. The stroke length and tightness of the shock absorber can be used to set the softness and performance of the suspension. McPherson suspension is simple in structure, so it is lightweight and responsive, and can automatically adjust the camber angle of wheels under the geometry of a lower rocker arm and strut, so that it can adapt to the road surface during over-bending and maximize the ground-contact area of tires.

4.2.3 System working principles

4.2.3.1 Suspension system terminology

1. Sprung load:

- The sprung load refers to the weight of the vehicle supported by the spring.
- The sprung load should be greater than the non-sprung load to obtain normal handling performance.

Some examples of sprung load:

- Vehicle body and frame.
- Load or goods.
- Power battery.

The sprung parts include:

- Frame (including sub-frame).
- Body (including integral body).

Power system (engine, 7DCTH transmission)

- Steering gear.

2. Non-sprung load:

Non-sprung load refers to vehicle weight that is not supported by springs.

Non-sprung load should be as small as possible to ensure normal handling and drive comfort.

Some examples of non-sprung load:

- Wheels and tires.
- Wheel bearings and hubs.
- Axles and steering knuckles.
- Brake components (components on wheels).

Non-sprung load components include:

- Wheel/tire, ball joint, bearing, control arm, I-beam, beam bridge, integrated drive axle, etc.
- Anti-roll bars, control rods, etc.
- Core shafts, steering knuckles, brakes, etc.
- Suspension response is good if non-sprung load is light.

3. Components between sprung load and non-sprung load:

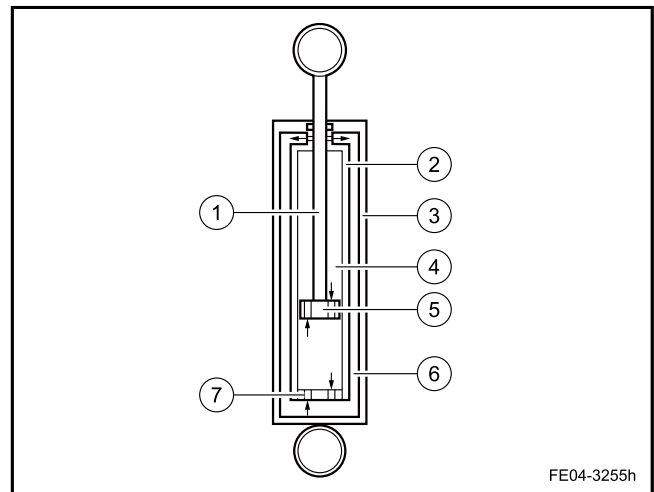
Steering linkage, drive shafts, stabilizer bar linkage and other components are between sprung load and non-sprung load components.

4.2.3.2 Operating principle of suspension system components

Spring:

The rigidity of spring will affect the response of the sprung mass when the vehicle is running. The vehicle with a small spring rigidity can eliminate turbulence and provide a very smooth driving feeling, but at the same time, it is prone to dive and squat during braking and accelerating, and prone to roll and tumble when turning. Vehicles with excessive spring rigidity have less stability on bumpy roads, but its body moves very little, which means they can be driven fast even when turning. Although the spring itself may look simple, by designing and implementing these devices in the automobile, and balancing the passenger's comfort with the handling performance of the automobile, the spring alone cannot provide an extremely smooth ride. Because springs are excellent at absorbing energy but less so in terms of dissipation capacity. Therefore, the suspension system requires a kind of component called shock absorber. Without a damper structure, the spring will bounce off at an uncontrollable rate and release the jolting energy it absorbs, continuing to bounce off at its frequency until it has exhausted all the energy originally applied to it. The suspension, built on a spring, will itself allow the automobile to drive in a bouncing manner without being controlled.

Shock absorber:



- | | |
|----------------------|--------------------------|
| 1. Piston push rod | 5. Piston and valve |
| 2. Inner cylinder | 6. Fluid reservoir |
| 3. Outer cylinder | 7. Inner cylinder bottom |
| 4. Hydraulic chamber | valve |

It controls the unwanted spring motion through a process called damping. Shock absorbers slow and reduce the magnitude of vibratory motion by converting the kinetic energy of suspension motion to heat energy that can be dissipated

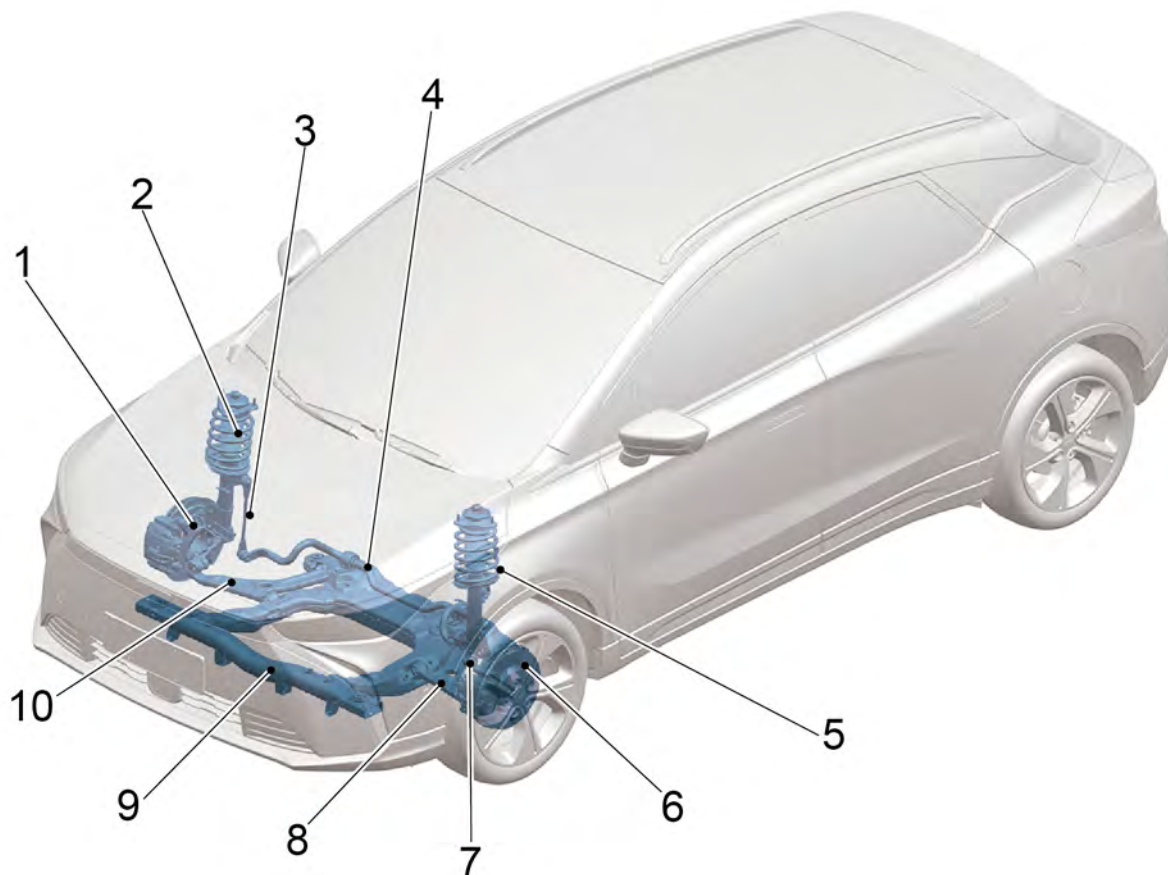
through hydraulic fluid. The upper support of the shock absorber is connected to the frame (namely sprung mass), and the lower support is connected to the shaft near the wheel (namely non-sprung mass). In double-cylinder design, one of the most common types of the shock absorber is the upper support connected to the piston rod, and the piston rod is connected to the piston, which is located in a cylinder filled with hydraulic oil. The inner cylinder is called pressure cylinder and the outer cylinder is called oil reservoir cylinder. The oil reservoir cylinder stores the excess hydraulic oil. When the wheel hits a bumpy road and causes spring compacts and stretches, the energy of spring is transferred to the shock absorber via the upper support and down to the piston via the piston rod. The piston has punched holes, through which hydraulic oil can leak out as the piston moves up and down in the pressure cylinder. Because these holes are so tiny that only very little hydraulic oil can pass through them under great pressure. This slows down the piston motion, thus slows down the spring. The operation of the shock absorber consists of two cycles - the compression cycle and the extension cycle. The compression cycle refers to compress the hydraulic oil below the piston when it moves downward. Extension cycle refers to the hydraulic oil above the piston as it moves upwards to the top of the pressure tank. For a typical automobile, the resistance of the extension cycle is greater than the resistance of the compression cycle. It should also be noticed that the compression cycle controls the movement of the unsprung mass of a vehicle, while the extension cycle controls the movement of the sprung mass which is relatively heavier. All modern shock absorbers have speed-sensing feature. The faster the suspension moves, the more resistance the shock absorber provides. It allows the shock absorber to adjust to road conditions and control any undesired movement that might occur in a moving vehicle, including bouncing, rolling, braking, diving, and accelerating into a crouch.

Stabilizer bar:

Used in conjunction with shock absorbers to provide additional stability to a moving automobile. The stabilizer bar is a metal rod that spans the entire vehicle shaft, which effectively connects the two sides of the suspension. As the suspension on one wheel moves up and down, the stabilizer bar will transmit the movement to the other wheels. This can make the ride smoother and reduce the inclination of the vehicle. In particular, it can offset the rollover tendency of the automobile on the suspension when turning.

4.2.4 Part position

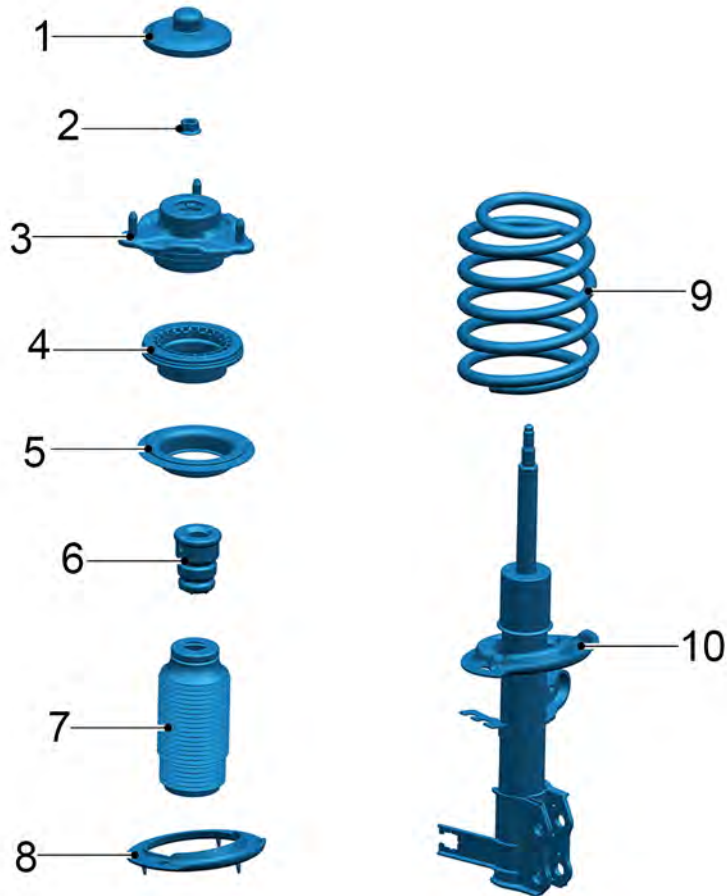
4.2.4.1 Part Position



- | | |
|---|--|
| 1. Right-front disk brake c/w steering knuckle assembly | 6. Left-front disk brake c/w steering knuckle assembly |
| 2. Left front shock absorber assembly | 7. Front left connecting rod assembly |
| 3. Front right connecting rod assembly | 8. Front suspension left lower swing arm assembly |
| 4. Front stabilizer bar assembly | 9. Front sub-frame assembly |
| 5. Right front shock absorber assembly | 10. Front suspension right lower swing arm assembly |

4.2.5 Breakdown drawing

4.2.5.1 Breakdown Drawing



- | | |
|--|--|
| 1. Dust cover of upper support of the front shock absorber | 6. Front shock absorber buffer block |
| 2. All-metal Hexagonal flange lock nut | 7. Front shock absorber dust cover |
| 3. Upper support assembly of the front shock absorber | 8. Lower vibration isolator of the front coil spring |
| 4. Front strut bearing | 9. Coil spring of the front suspension |
| 5. Upper vibration isolator of the front coil spring | 10. Front shock absorber assembly |

4.2.6 Diagnostic information and procedures

4.2.6.1 Diagnosis Description

Before diagnosing front suspension faults, refer to Description and Operation.

4.2.6.2 Check of shock absorber

Front shock absorber is too soft

Step 1	Check whether the front tire pressures are normal.
--------	--

No

Adjust tire pressures to standard values according to the specification on the tire labels.

Yes

Step 2	Check whether the vehicle is overloaded.
--------	--

No

Query users, and explain to users what the normal loading of vehicle is.

Yes

Step 3	Check whether the compression and rebound effects of the front shock absorber are normal.
--------	---

- A. Quickly press and release the corner closest to the front shock absorber bumper being detected. Compare the compression and rebound effects with those of normal similar vehicles to check whether the compression and rebound effects of the rear shock absorber are normal.

No

Replace the front shock absorber. Refer to [Replacement of front shock absorber components and springs](#)

Yes

Step 4	System is normal.
--------	-------------------

The front shock absorber is noisy

Step 1	Check whether the installation of shock absorber is normal and check whether all components of the shock absorber work normal. (No abnormal condition such as loosening is allowed.)
--------	--

No

Replace the front shock absorber if necessary. Refer to [Replacement of front shock absorber components and springs](#)

Yes

Step 2 | Check whether the compression and rebound effects of the front shock absorber are normal.

Quickly press and release the corner closest to the front shock absorber bumper assembly being detected. Compare the compression and rebound effects with those of normal similar vehicles to check whether the compression and rebound effects of the front shock absorber are normal.

No

Replace the front shock absorber. Refer to [Replacement of front shock absorber components and springs](#)

Yes

Step 3 | System is normal.

There is oil leakage in the shock absorber

Step 1 | Check whether the installation of shock absorber is normal and check whether all components of the shock absorber work normal. (No abnormal condition such as loosening is allowed.)

Next step

Step 2 | Check the sealing condition of shock absorber when it is fully extended, and whether the dust cover is damaged, etc.

No

Replace the front shock absorber. Refer to [Replacement of front shock absorber components and springs](#)

Yes

Step 3 | Check whether there is too much fluid on the shock absorber.

No

Replace the front shock absorber. Refer to [Replacement of front shock absorber components and springs](#)

Yes

Step 4 | System is normal.

4.2.6.3 Check the ball pin and the steering knuckle

Warning

Refer to “Warnings for vehicle lifting” in “Warnings and precautions”.

Step 1	Raise the front end of the vehicle and keep the front suspension in a freely suspended status.
--------	--

Next step

Step 2	Grab the top and bottom of the front tire and turn the top of the wheel inward and outward.
--------	---

Next step

Step 3	Note whether there is clearance and whether the steering knuckle moves horizontally relative to the control arm.
--------	--

Next step

Step 4	In case of the following situations, the ball head must be replaced.
--------	--

- A. Ball joint is loose.
- B. Ball joint seal is broken.
- C. The ball bolt is disconnected from the steering knuckle.
- D. The ball bolt is loose on the steering knuckle.
- E. The ball bolt twists in the seat when it is pressed with a finger.

Next step

Step 5	Test the tightening bolt torque. If the torque is loose, tighten the torque.
--------	--

Step 6	If the ball pin and steering knuckle are loose, please loosen the bolt, and then tighten the bolt according to the specified torque.
--------	--

Step 7	Parts are normal.
--------	-------------------

4.2.6.4 Over-large friction check

Check the front suspension for excessive friction as follows:

Step 1	Raise the front bumper to raise the vehicle as higher as possible.
--------	--

Next step

Step 2	Gently put down the bumper to make the vehicle to restore its normal vehicle front end height.
--------	--

Next step

Step 3	Measure the distance between ground and the center of bumper.
--------	---

Next step

Step 4	Press the bumper and then slowly release it to make the vehicle to restore its normal vehicle front end height.
--------	---

Next step

Step 5	Measure the distance between ground and the center of bumper.
--------	---

Next step

Step 6	The difference between the two measurements should be less than 12.7 mm (0.5 in). If the distance exceeds this limit, check the control arm, front shock absorber and ball joint for damage or wear.
--------	--

4.2.6.5 Driving smoothness diagnosis (too soft or too hard)

Too soft

Step 1	Check the front shock absorber for wear and replace it if necessary. Refer to Replacement of front shock absorber components and springs
--------	--

Next step

Step 2	Check whether the front coil spring is fractured or loose. Replace the front coil spring if necessary. Refer to Replacement of front shock absorber components and springs
--------	--

Too hard

Step 1	Check whether the front shock absorber is installed correctly, and whether the front shock absorber matches the vehicle model; replace the front shock absorber if necessary. Refer to Replacement of front shock absorber components and springs
--------	---

Next step

Step 2	Check whether the front coil spring is installed correctly. Replace the front coil spring if necessary. Refer to Replacement of front shock absorber components and springs
--------	---

4.2.6.6 The body inclines or swings when the vehicle turns

Step 1	Check the stabilizer bar link for loosening. Re-tighten the connecting nut of the stabilizer bar link and the front strut assembly according to the prescribed torque.
--------	--

Next step

Step 2	Check the front shock absorber and front bolt spring seat for wear, replace the front shock absorber if necessary, and re-tighten the fixing nut on the front shock absorber.
--------	---

Next step

Step 3	Check the vehicle for the overload and explain it to the user reasonably.
--------	---

Next step

Step 4	Check the front coil spring for breaking off or loosening and replace it if necessary. Refer to Replacement of front shock absorber components and springs
--------	--

4.2.6.7 Noise diagnosis

Step 1	Check whether ball joints are not lubricated.
--------	---

Yes

Replacement of ball joints.

No

Step 2	Check whether front suspension component is worn.
--------	---

Yes

Replace the damaged front suspension components.

No

Step 3	Check whether front suspension component is worn.
--------	---

Yes

Replace lower control arm bushing. Refer to [Replacement of Lower Swing Arm Bushing](#)

No

Step 4	Check whether front stabilizer bar link is loose.
--------	---

Yes

Fasten fixing nut of the front stabilizer bar link.

No

Step 5	Check whether the front shock absorber or front strut coil spring seat vibration isolator is misplaced or damaged.
--------	--

Yes

Replace the damaged components.

No

Step 6	Check whether there is misplace in the installment of the front strut coil spring.
--------	--

Yes

New installment of front coil spring.

No

Step 7	Check whether there is excess wearing in front stabilizer bar fixing bushing.
--------	---

Yes

 Replace the front stabilizer bar. Refer to [Replacement of Front Stabilizer Bar](#)

No

Step 8	Find a same model vehicle, and make a comprehensive assessment of whether the noise is normal working noise.
--------	--

Next step

Step 9	Normal system components.
--------	---------------------------

4.2.6.8 Vehicle front end height is abnormal

Step 1	Check whether the coil springs in the front strut assembly are broken or loosening and replace them when necessary.
--------	---

Next step

Step 2	Check whether the vehicle is overloaded, and explain the hazards of it to the user when necessary.
--------	--

Next step

Step 3	Check whether the coil springs in the front strut assembly are correct or too soft. Replace the coil spring of Geely original factory.
--------	--

4.2.7 Removing and installing

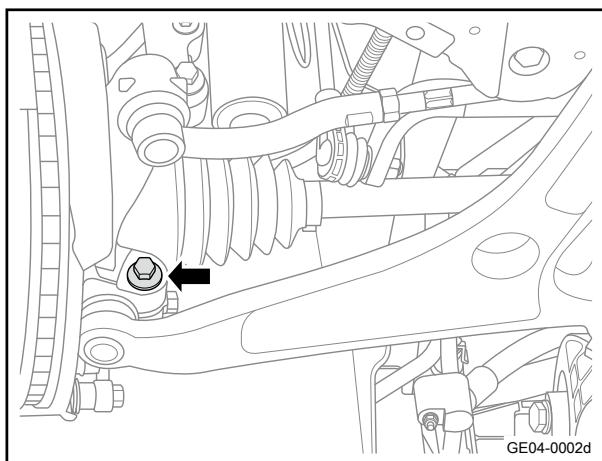
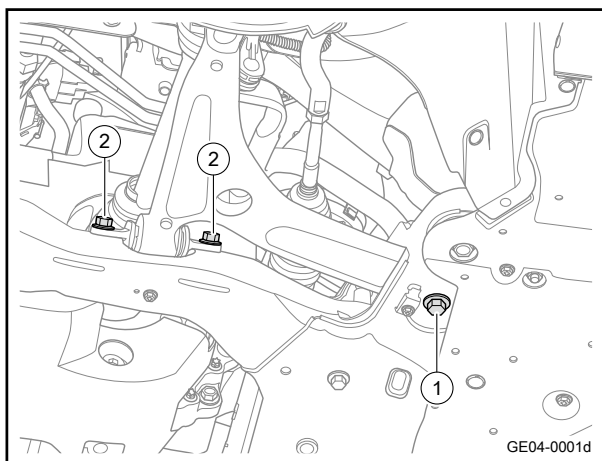
4.2.7.1 Replacement of front suspension left lower swing arm assembly

Removal procedure

Caution

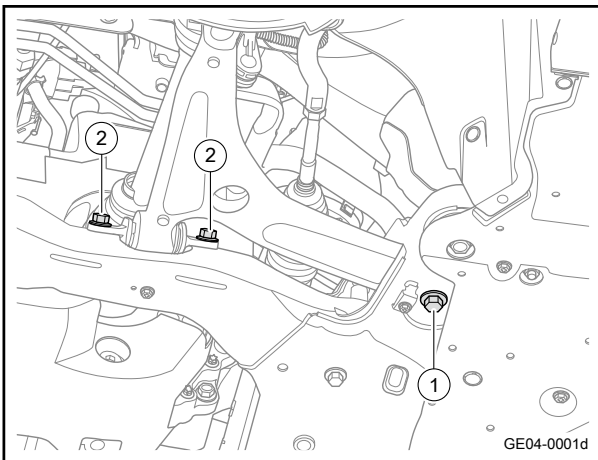
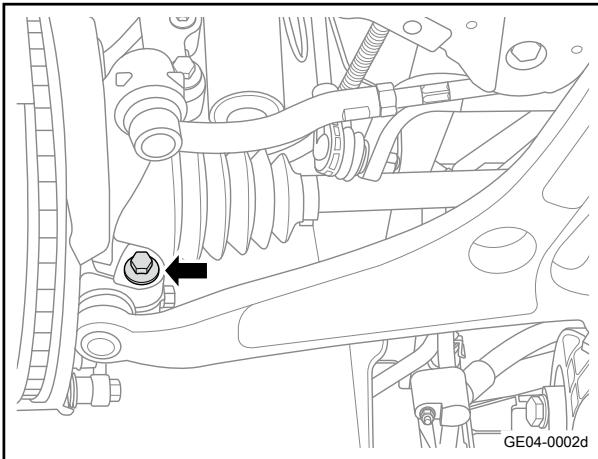
The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Remove the 1 fixing bolt 1 of the front part of the front suspension left lower swing arm assembly.
- 5 Remove the 2 fixing bolt 2 of the rear part of the front suspension left lower swing arm assembly.



- 6 Remove the 1 fixing nut connecting the front suspension left lower swing arm assembly and the steering knuckle.
- 7 Remove the front suspension left lower swing arm assembly.

Installation procedure



- 1 Move front suspension lower swing arm assembly to the mounting position.
- 2 Install 1 fixing nut connecting the front suspension left lower swing arm assembly and the steering knuckle.
Torque: $90+75^{\circ}$ N·m (metric system) $66.4+75^{\circ}$ lb-ft (Imperial system)
- 3 Install the 2 fixing bolts 2 of the front suspension left lower swing arm.
Torque: $90\text{N}\cdot\text{m}+90^{\circ}$ (metric system) $66.4\text{lb}\cdot\text{ft}+90^{\circ}$ (Imperial system)
- 4 Install the 1 fixing bolt 1 of the front suspension left lower swing arm.
Torque: $120++90^{\circ}$ N·m (metric system) $88.5++90^{\circ}$ lb-ft (Imperial system)
- 5 Install the front engine compartment bottom shield.
- 6 Install the wheel.
- 7 Lower the vehicle.

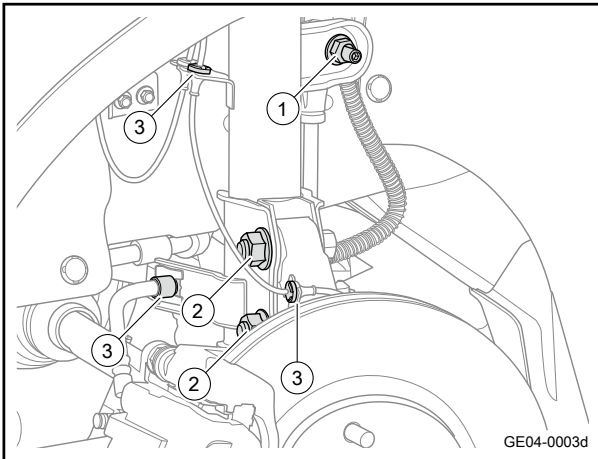
4.2.7.2 Replacement of left front sliding column assembly

Removal procedure

Caution

The removal method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove wheels. Refer to [Wheel Replacement](#)
- 4 Remove the front wiper arms Refer to [Replacement of Left Wiper Arm Assembly](#)
- 5 Dismount the cowl top cover. Refer to [Replacement of Ventilation Cover Plate Assembly](#)



- 6 Remove 1 fixing nut 1 of left front sliding column assembly upper part.
- 7 Remove 2 bolt and nut components 2 of the left front sliding column assembly lower part.

Caution

When removing the bolt and nut components, secure the nut with a wrench to prevent it from following.

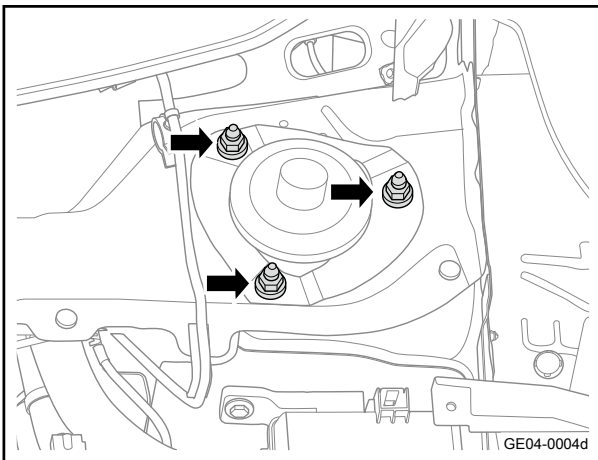
- 8 Disconnect the 3 harness clips 3 of the left front sliding column assembly.

- 9 Remove 3 fixing nuts of left front sliding column assembly.

Caution

When the last nut is removed, support the front pillar assembly to prevent personnel from being injured or damaging the half shaft dust cover.

- 10 Take off the left sliding column assembly.



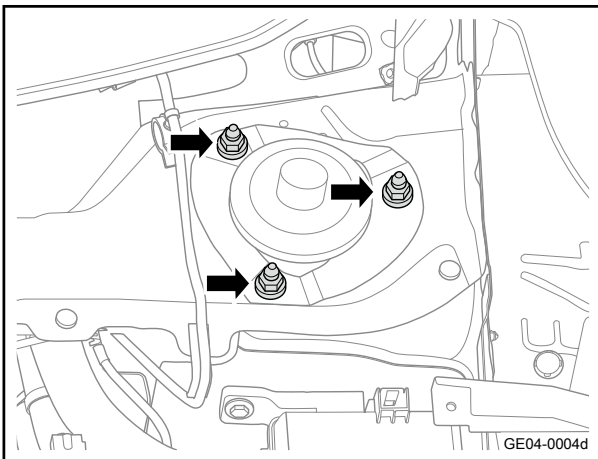
Installation procedure

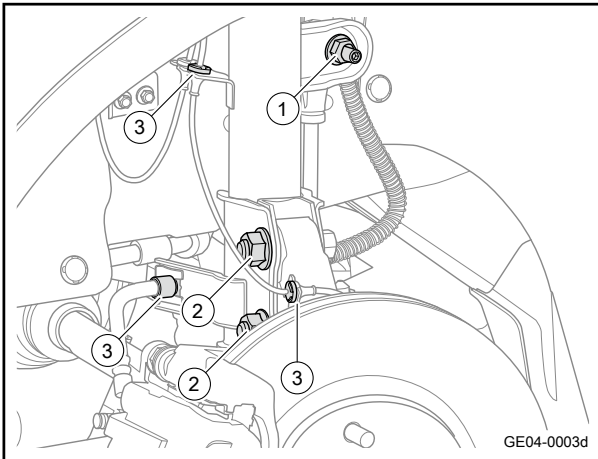
- 1 Move the left front sliding column assembly to the mounting position.
- 2 Install 3 fixing nuts at the top of left front sliding column assembly.

Torque: 80N·m (metric system) 59.0lb-ft (Imperial system)

Caution

Tighten the torque after the vehicle is on the ground.





- 3 Install the 3 clips 3 on left front sliding column assembly.
- 4 Install lower 2 bolt and nut assemblies 2 of the front sliding column assembly.
Torque: 198N·m (metric system) 146.1lb-ft (Imperial system)
- 5 Install 1 fixing nut 1 at the top of left front sliding column assembly.
Torque: 75N·m (metric system) 55.4lb-ft (Imperial system)
- 6 Mount the cowl top cover.
- 7 Install the front wiper arm.
- 8 Install the wheel.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

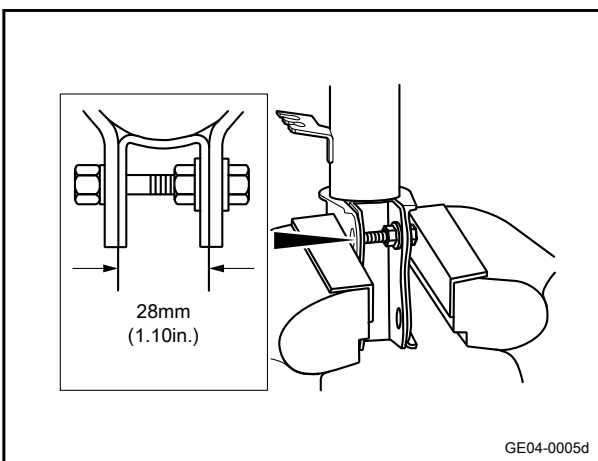
4.2.7.3 Replacement of front shock absorber components and springs

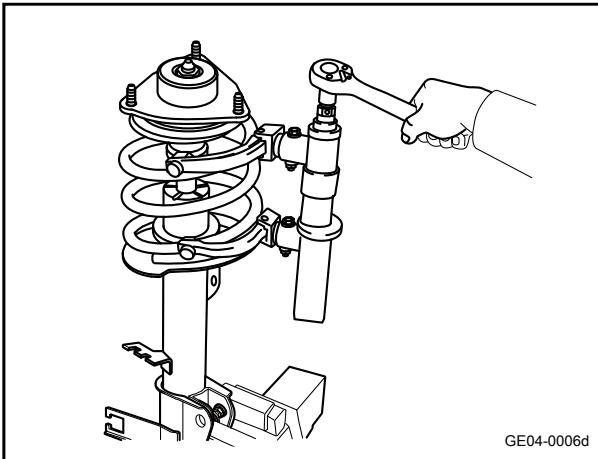
Removal procedure

Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the left front sliding column assembly. Refer to [Replacement of Left Front Sliding Column Assembly](#)
- 4 Install 2 nuts and 1 bolt on the front shock absorber bracket and fix it on the bench vise.

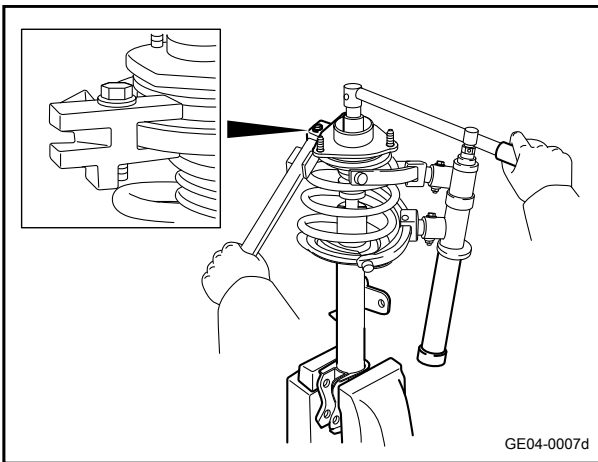




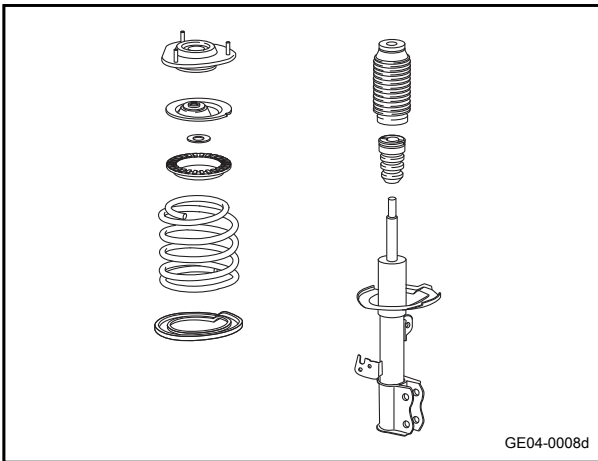
- 5 Use spring compression tools (4114720113) to the compress coil spring.

Caution

Do not use pneumatic wrench, otherwise it will damage the compression tool.

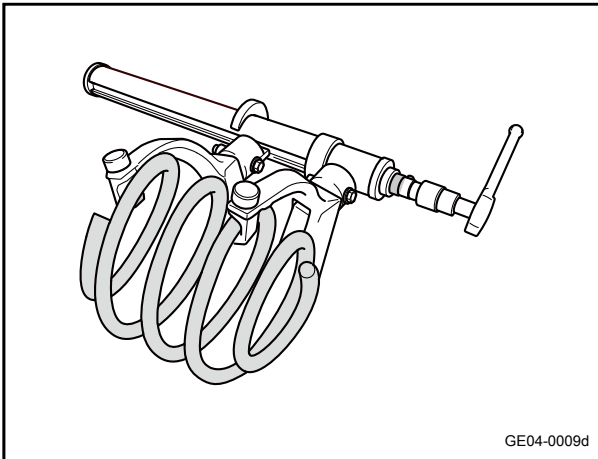


- 6 Remove front shock absorber upper support dust cap. Use special tools to fix spring plate and remove locknut.

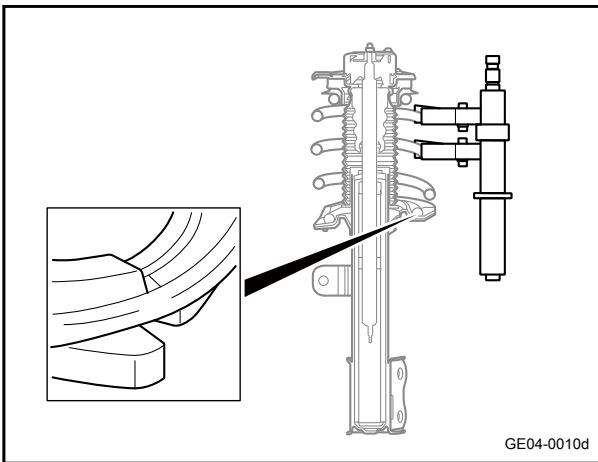


- 7 Remove front shock absorber upper support assembly, upper support of front coil spring, upper vibration insulator of front suspension coil spring, front suspension coil spring, front shock absorber dust cap, front shock absorber buffer block and lower vibration insulator of front coil spring.

Installation procedure



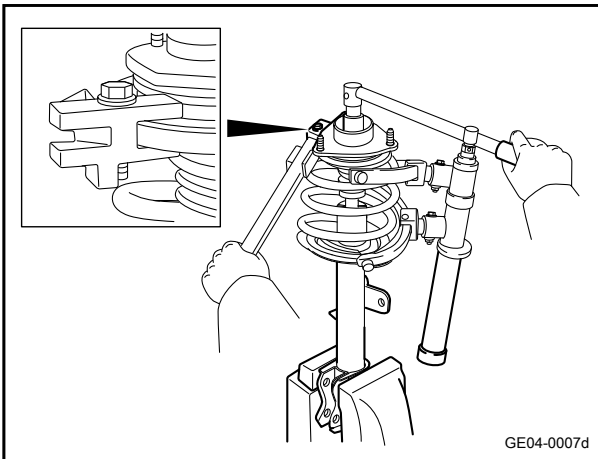
- 1 Use spring compression tools (4114720113) to the compress coil spring.



- 2 On the shock absorber bracket, install lower vibration insulator of front coil spring, front shock absorber buffer block, front shock absorber dust cap, front suspension coil spring, upper vibration isolator of front suspension coil spring, upper support of front coil spring, upper support assembly of front shock absorber.

Caution

Put the lower end of coil spring into the recess area of shock absorber spring plate.



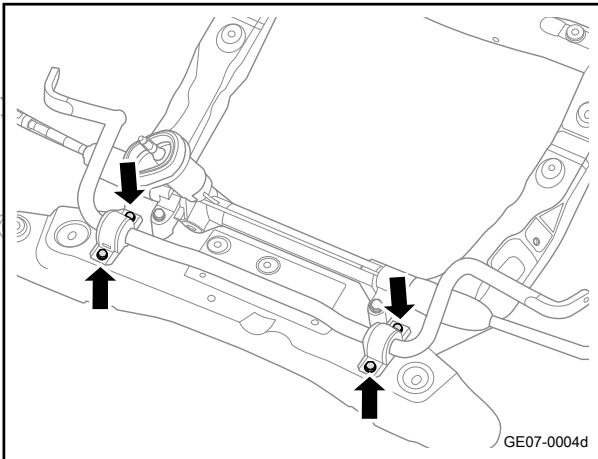
- 3 Use special tools to fix spring plate. Install locknuts and replace the front shock absorber upper support dust cap.
Torque: 70N·m (metric system) 51.6lb-ft (Imperial system)

- 4 Install the left front sliding column assembly.
- 5 Install the wheel.
- 6 Lower the vehicle.

4.2.7.4 Replacement of Front Stabilizer Bar Assembly

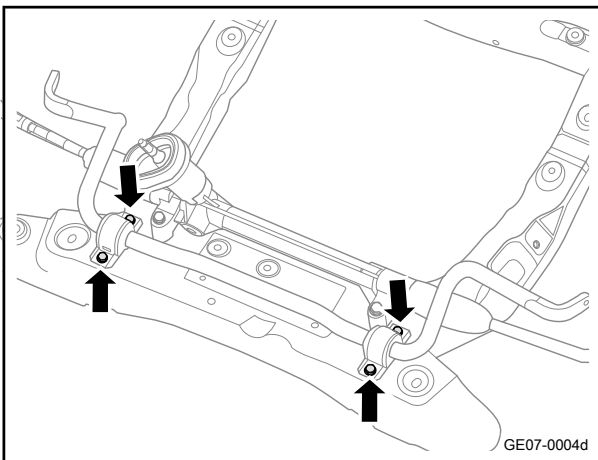
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front subframe assembly. Refer to [Replacement of Front Subframe Assembly](#)



- 3 Remove the 4 fixing bolts of the front stabilizer bar assembly.
- 4 Take off the front stabilizer bar assembly.

Installation procedure



- 1 Move the front stabilizer bar assembly to the mounting position.
- 2 Install and fasten 4 fixing bolts of front stabilizer bar assembly.
Torque: 70 N·m (metric system) 51.7lb-ft (Imperial system)

- 3 Install the front subframe assembly.
- 4 Lower the vehicle.

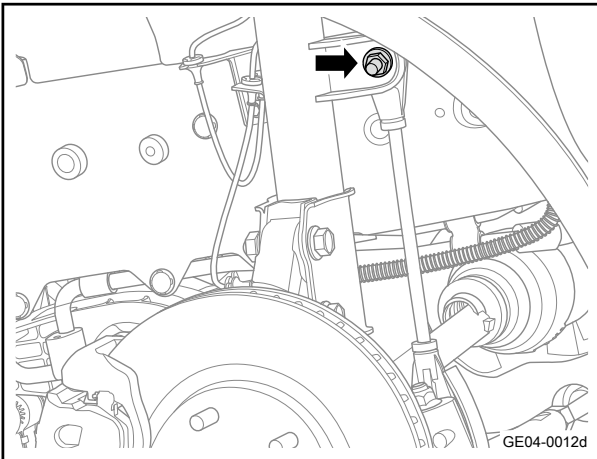
4.2.7.5 Replacement of front stabilizer bar link

Removal procedure

Caution

The removal method is the same for the left and right sides.

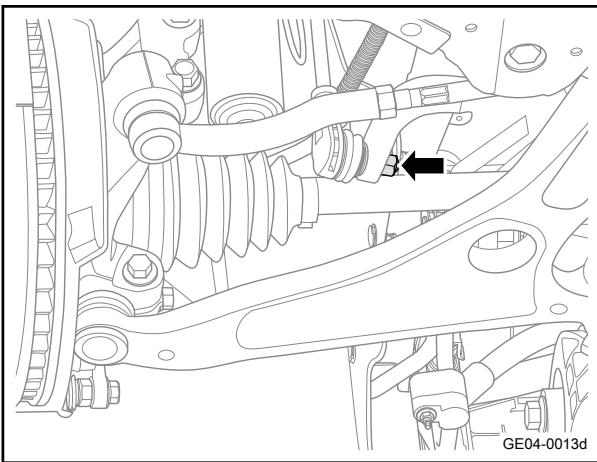
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)



- Remove the 1 upper fixing nut of the stabilizer bar link.

Caution

When removing the upper fixing nut on the stabilizer bar link, use tools to fix the ball pin to prevent the ball pin from following.



- Remove the 1 lower fixing nut of the stabilizer bar link.

Caution

When removing the lower fixing nut on the stabilizer bar link, use tools to fix the ball pin to prevent the ball pin from following.

- Take off the stabilizer bar link.

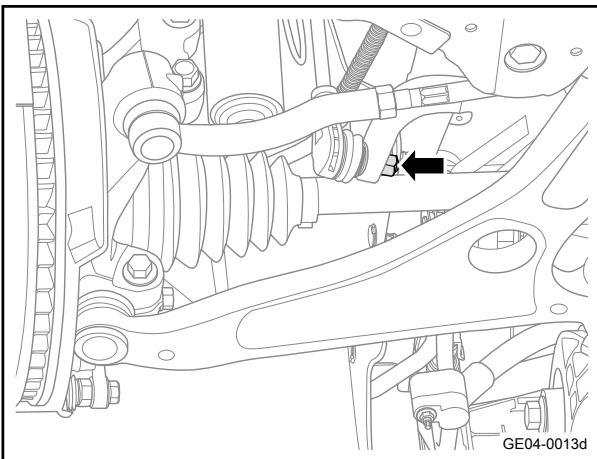
Installation procedure

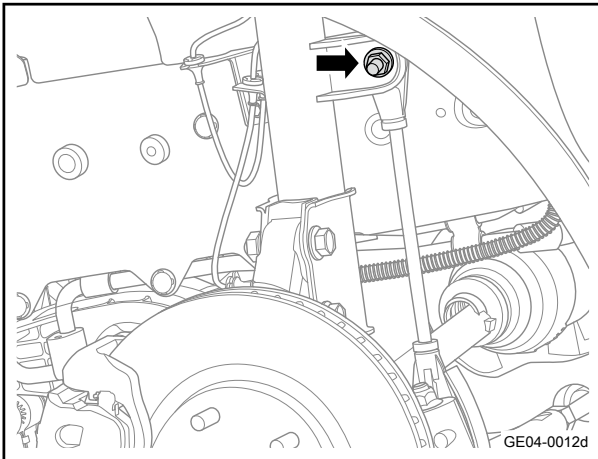
- Move the stabilizer bar link to the mounting position.
- Install the 1 lower fixing nut of the stabilizer bar link.

Caution

When installing the lower fixing nut on the stabilizer bar link, use tools to fix the ball pin to prevent the ball pin from following.

Torque: 75N·m (metric system) 55.4lb·ft (Imperial system)





- 3 Install the 1 upper fixing nut of the stabilizer bar link.

Caution

When installing the lower fixing nut on the stabilizer bar link, use tools to fix the ball pin to prevent the ball pin from following.

Torque: 75N·m (metric system) 55.4lb-ft (Imperial system)

- 4 Install the wheel.
- 5 Lower the vehicle.

4.2.7.6 Replacement of Left Steering Knuckle

Removal procedure

Caution

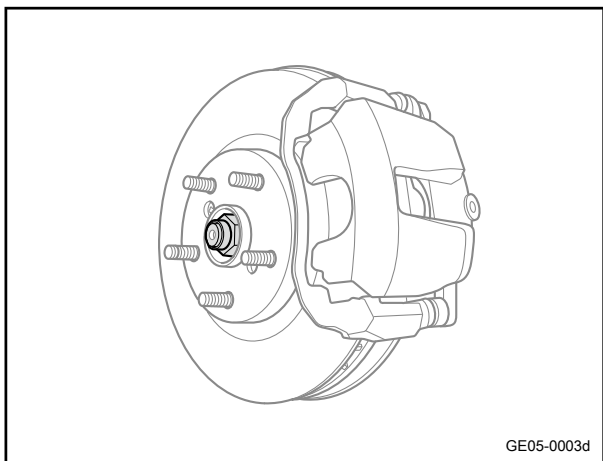
The removal method is the same for the left and right sides.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

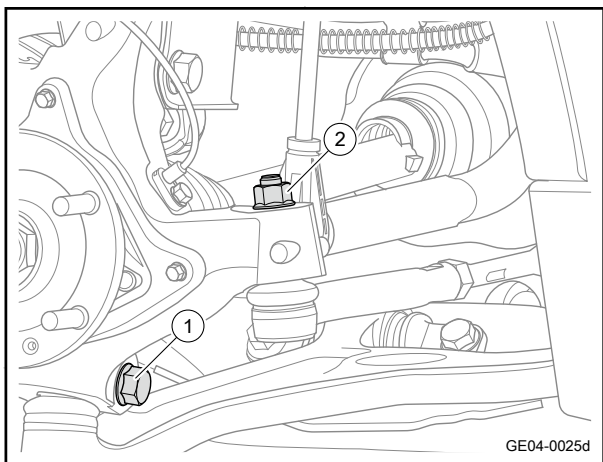
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove wheels. Refer to [Wheel Replacement](#)
- 4 Remove the front brake caliper assembly. Refer to [Replacement of Left Front Left Brake Caliper Assembly](#)
- 5 Remove the front brake disc. Refer to [Replacement of Front Brake Disc](#)
- 6 Remove the front brake disc dust cover. Refer to [Replacement of Front Brake Disc Dust Cover](#)
- 7 Remove the front left wheel speed sensor. Refer to [Replacement of Left Front Wheel Speed Sensor](#)



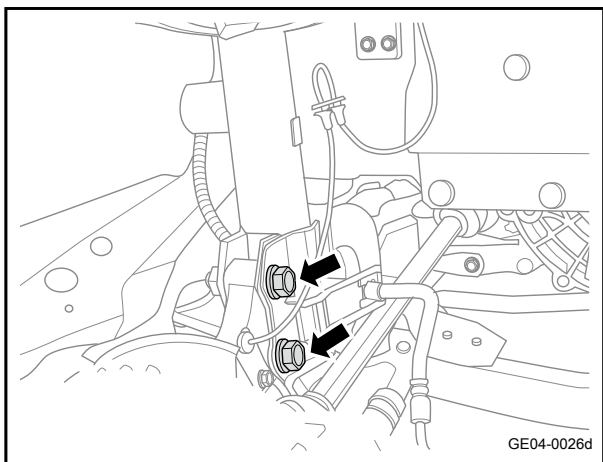
- 8 Remove the outer locking nut of the driving shaft.

Caution

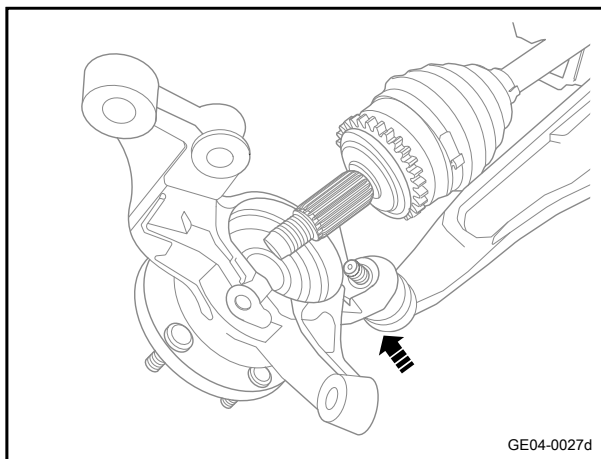
An assistant steps on the brake pedal to prevent the drive shaft from rotating.



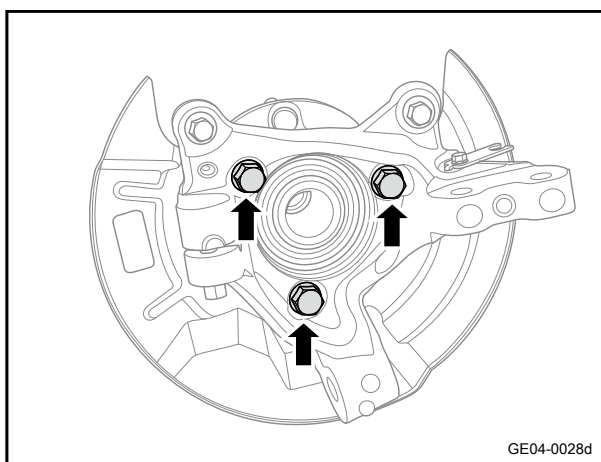
- 9 Remove the fixing bolt 1 of the lower swing arm ball joint.
- 10 Remove the fixing nut 2 of the steering tie rod ball joint.



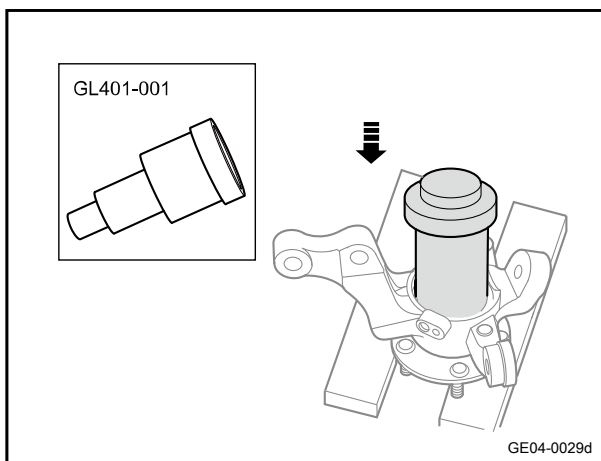
- 11 Remove the 2 bolt and nut assemblies for connecting the steering knuckle and the front shock absorber.
- 12 Disconnect the steering knuckle from the front shock absorber.



- 13 Install the steering knuckle c/w front hub.



- 14 Remove the 3 fixing bolts of the front hub assembly.

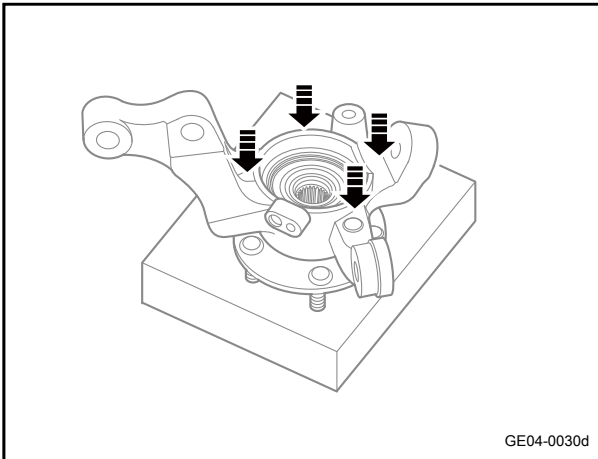


- 15 Remove the front hub assembly from the steering knuckle with special tools GL401-001.

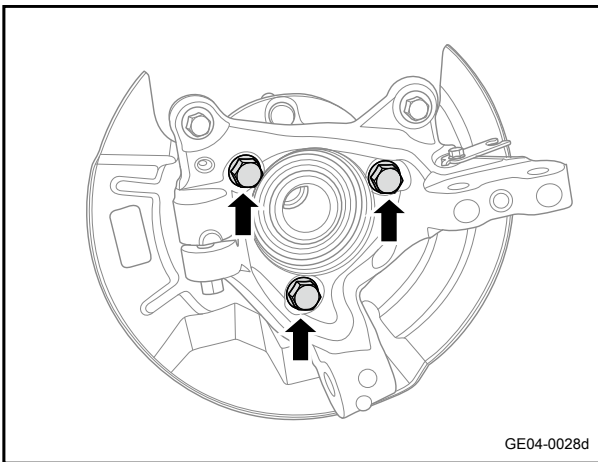
Caution

The hub bearing must be replaced after the hub assembly is removed from the steering knuckle.

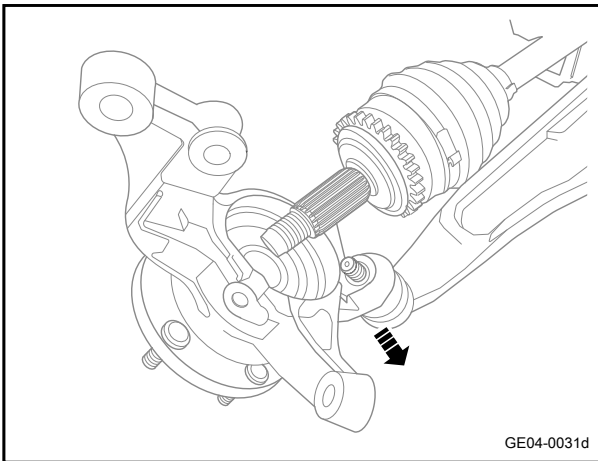
Installation procedure



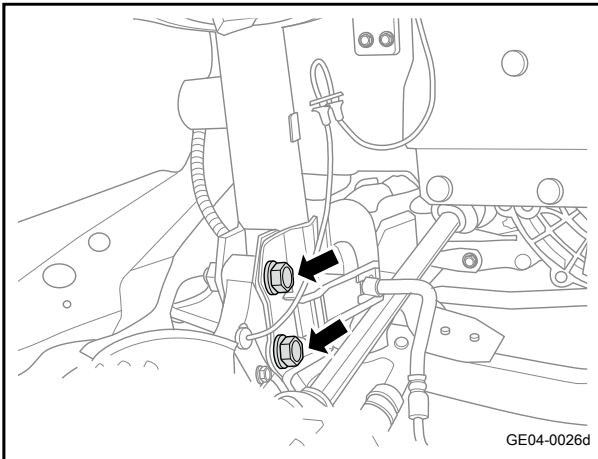
- 1 Pad a block under the front hub and press the front hub into the front steering knuckle.



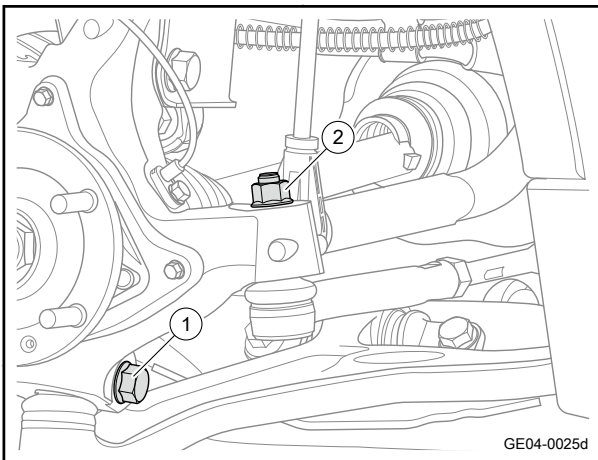
- 2 Install the 3 fixing bolts of the front hub assembly.



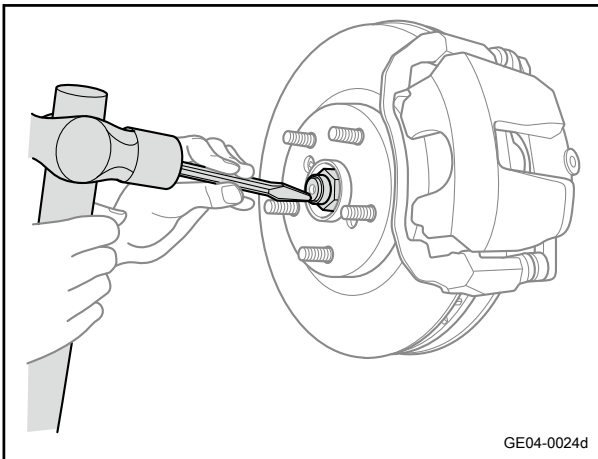
- 3 Install the steering knuckle c/w front hub assembly.



- 4 Install the 2 bolt and nut assemblies for connecting the steering knuckle and the front shock absorber.
Torque: 198N·m



- 5 Install the fixing nut 2 of the steering tie rod ball joint.
Torque: 55N·m
- 6 Install the fixing bolt 1 of the lower swing arm ball joint.
Torque:
First time 90N·m
Second time 75°



- 7 Install and tighten the outer locking nut of the driving shaft.
Torque: 270N·m

Caution

An assistant steps on the brake pedal to prevent the drive shaft from rotating.

- 8 Install the front left wheel speed sensor.
- 9 Install the front brake disc dust cover.
- 10 Install the front brake disc.
- 11 Install the front brake caliper assembly
- 12 Install the wheel.
- 13 Lower the vehicle.
- 14 Connect the negative cable of battery.

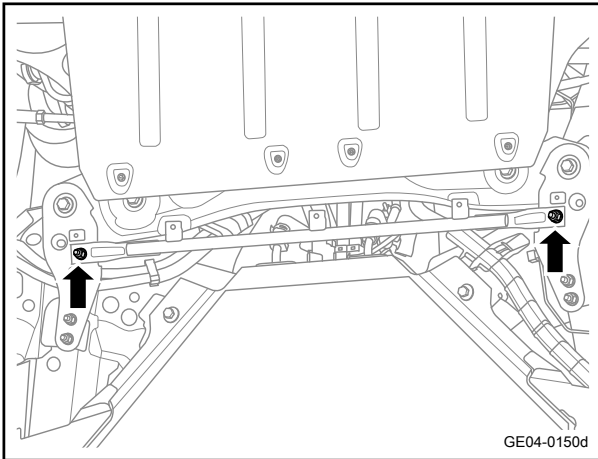
4.2.7.7 Replacement of front hub assembly

Refer to the [Replacement of Left Steering Knuckle](#)

4.2.7.8 Replacement of Battery bottom shield mounting bracket

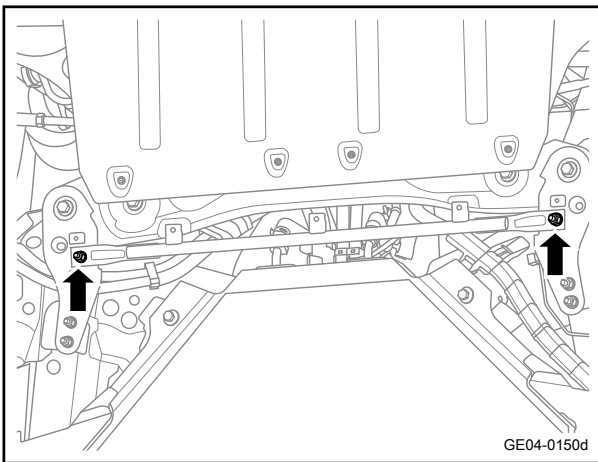
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the power battery wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 3 Remove the 2 fixing nuts of the mounting bracket of the battery bottom shield.
- 4 Replacement of Battery bottom shield mounting bracket



Installation procedure

- 1 Move the battery bottom shield mounting bracket to the installation position.
- 2 Install the 2 fixing nuts of the battery bottom shield mounting bracket.
Torque: 75N·m (metric system) 55.4lb-ft (Imperial system)



- 3 Install the power battery wire harness cover plate assembly.
- 4 Lower the vehicle.

4.3 Rear suspension

4.3.1 Specification

4.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Bolt and nut assembly connecting the rear shock absorber assembly and the rear axle	M12×80	126-154
Upper fixing bolt of the rear shock absorber assembly	M10×25	72-88
Upper fixing nut of the rear shock absorber assembly	M10	72-88
Install Rear wheel hub unit fixing bolt	M10×25	67-83
Fixing bolt connecting the rear axle assembly with the left and right rear axle mounting brackets	M14×130	First time: 150
		Second time: 60°
Fixing bolt connecting the left rear shock absorber assembly and the rear axle	M12×80	126-154
Fixing bolt connecting the left rear shock absorber assembly and the rear axle	M12	126-154

4.3.2 Instructions and operations

4.3.2.1 Description and Operations

Rear suspension and front suspension together provide the vehicle with excellent stability, operability and comfort. The main bearing parts and moving parts of the rear suspension can bear vertical and torsional forces, and enhance the anti-roll ability of the rear suspension device and the anti-nod ability of the whole vehicle. Shock absorbers accelerate the weakening of vibration. Coil springs bear and transmit vertical loads to reduce the impact of road surface. Torsion beam type half independent suspension is adopted for the suspension. A torsion beam semi-independent suspension, also known as torsion beam suspension, consists of two shock absorbers, two coil springs, one rear suspension assembly and two rubber bushings. The axle support assembly is connected to the underbody through a rubber bushing located on the front side of each control arm. The axle structure maintains the relationship between the wheels and the body, and balances the up and down jumps of the left and right wheels through a torsion beam to reduce the shaking of the vehicle and keep the vehicle stable.

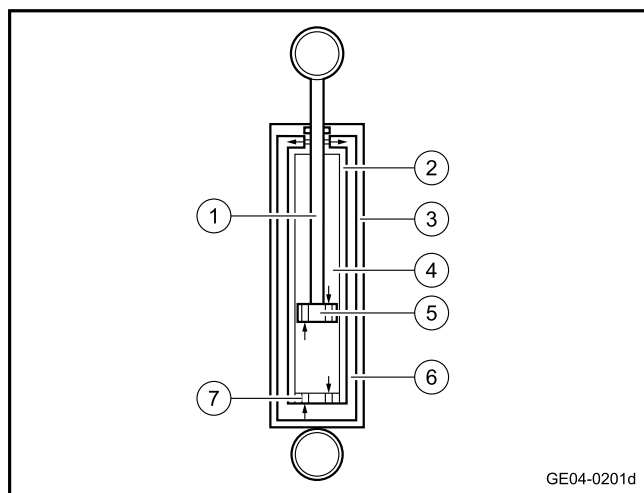
4.3.3 System working principles

4.3.3.1 Operating principle of suspension system components

Spring:

The rigidity of spring will affect the response of the sprung mass when the vehicle is running. The vehicle with a small spring rigidity can eliminate turbulence and provide a very smooth driving feeling, but at the same time, it is prone to dive and squat during braking and accelerating, and prone to roll and tumble when turning. Vehicles with excessive spring rigidity have less stability on bumpy roads, but its body moves very little, which means they can be driven fast even when turning. Although the spring itself may look simple, by designing and implementing these devices in the automobile, and balancing the passenger's comfort with the handling performance of the automobile, the spring alone cannot provide an extremely smooth ride. Because springs are excellent at absorbing energy but less so in terms of dissipation capacity. Therefore, the suspension system requires a kind of component called shock absorber. Without a damper structure, the spring will bounce off at an uncontrollable rate and release the jolting energy it absorbs, continuing to bounce off at its frequency until it has exhausted all the energy originally applied to it. The suspension, built on a spring, will itself allow the automobile to drive in a bouncing manner without being controlled.

Shock absorber



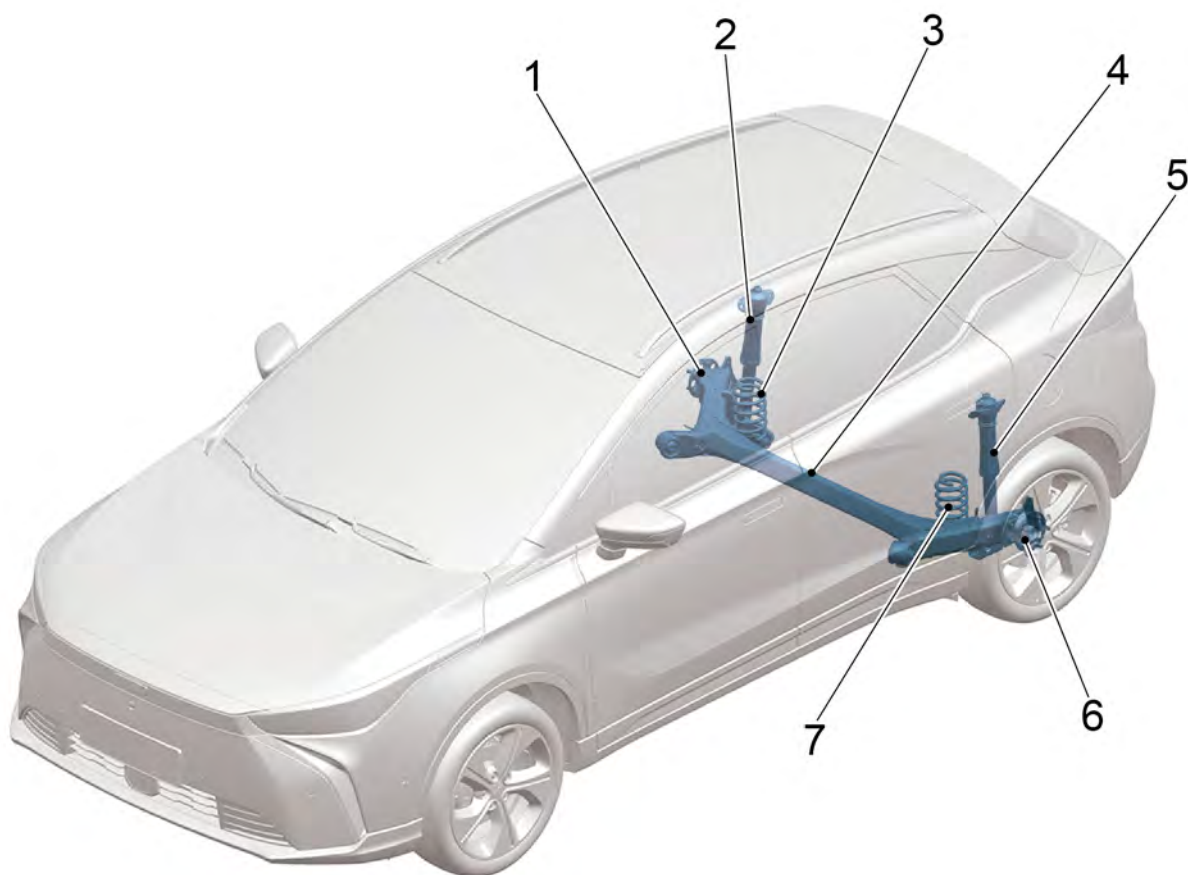
1. Piston push rod
2. Inner cylinder
3. Outer cylinder
4. Hydraulic chamber
5. Piston and valve
6. Fluid reservoir

7. Inner cylinder bottom valve

It controls the unwanted spring motion through a process called damping. Shock absorbers slow and reduce the magnitude of vibratory motion by converting the kinetic energy of suspension motion to heat energy that can be dissipated through hydraulic fluid. The upper support of the shock absorber is connected to the frame (namely sprung mass), and the lower support is connected to the shaft near the wheel (namely non-sprung mass). In double-cylinder design, one of the most common types of the shock absorber is the upper support connected to the piston rod, and the piston rod is connected to the piston, which is located in a cylinder filled with hydraulic oil. The inner cylinder is called pressure cylinder and the outer cylinder is called oil reservoir cylinder. The oil reservoir cylinder stores the excess hydraulic oil. When the wheel hits a bumpy road and causes spring compacts and stretches, the energy of spring is transferred to the shock absorber via the upper support and down to the piston via the piston rod. The piston has punched holes, through which hydraulic oil can leak out as the piston moves up and down in the pressure cylinder. Because these holes are so tiny that only very little hydraulic oil can pass through them under great pressure. This slows down the piston motion, thus slows down the spring. The operation of the shock absorber consists of two cycles - the compression cycle and the extension cycle. The compression cycle refers to compress the hydraulic oil below the piston when it moves downward. Extension cycle refers to the hydraulic oil above the piston as it moves upwards to the top of the pressure tank. For a typical automobile, the resistance of the extension cycle is greater than the resistance of the compression cycle. It should also be noticed that the compression cycle controls the movement of the unsprung mass of a vehicle, while the extension cycle controls the movement of the sprung mass which is relatively heavier. All modern shock absorbers have speed-sensing feature. The faster the suspension moves, the more resistance the shock absorber provides. It allows the shock absorber to adjust to road conditions and control any undesired movement that might occur in a moving vehicle, including bouncing, rolling, braking, diving, and accelerating into a crouch.

4.3.4 Part position

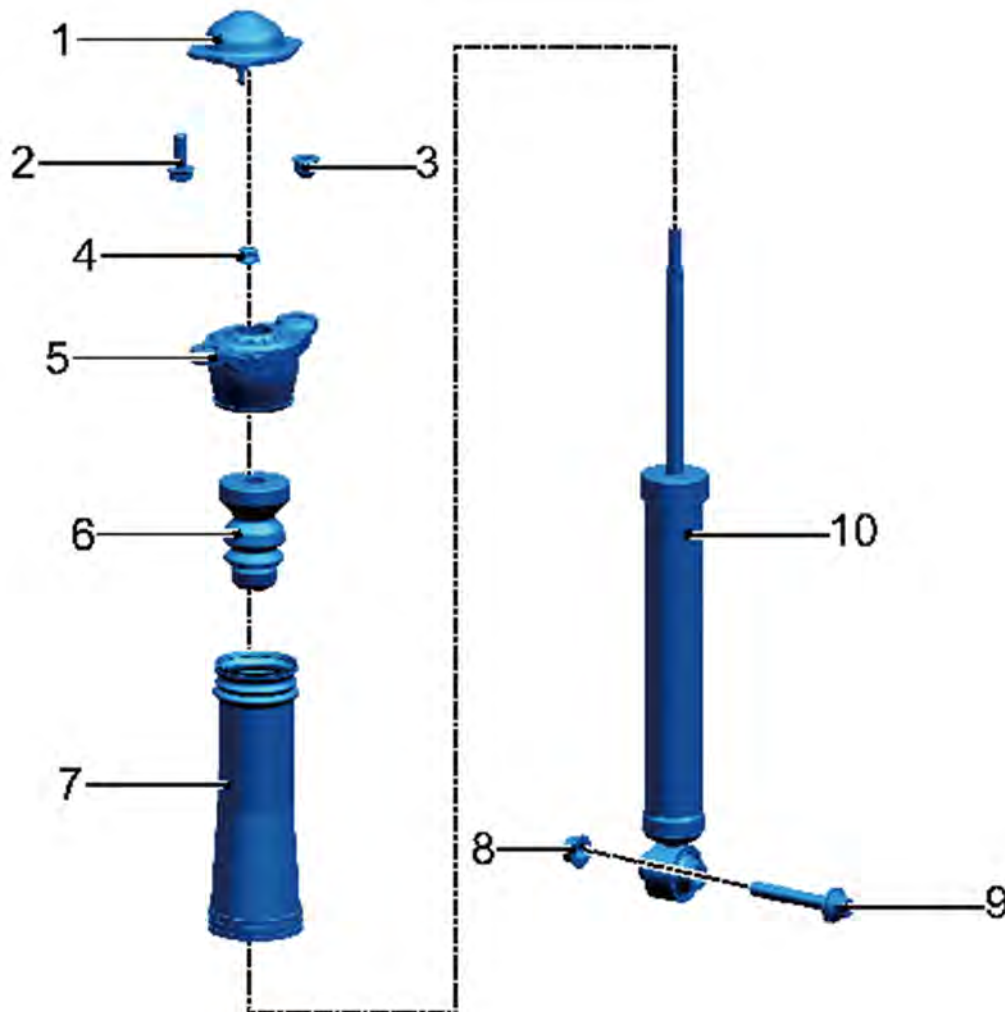
4.3.4.1 Part Position



- | | |
|---|--|
| 1. Right rear wheel hub assembly | 5. Left rear shock absorber assembly |
| 2. Right rear shock absorber assembly | 6. Left rear wheel hub assembly |
| 3. Right rear suspension helical spring | 7. Left rear suspension helical spring |
| 4. Rear axle assembly | |

4.3.5 Breakdown drawing

4.3.5.1 Breakdown Drawing



- | | | | |
|----|--|-----|---|
| 1. | Dust cover of upper support of the rear shock absorber | 6. | Rear shock absorber buffer block |
| 2. | Hexagon flange bolts | 7. | Rear shock absorber dust cover |
| 3. | All metal Hexagon flange locknut | 8. | Hexagon flange nut |
| 4. | Hexagon flange locknut | 9. | Hexagon flanged bolt and flat washer assembly |
| 5. | Upper support assembly of the rear shock absorber | 10. | Rear shock absorber assembly |

4.3.6 Diagnostic information and procedures

4.3.6.1 Diagnosis Description

Before diagnosing rear suspension faults, refer to [Description and Operation](#).

4.3.6.2 Check of rear shock absorber

Rear shock absorber is too soft

Step 1	Check whether the rear tire pressure is normal.
--------	---

No

Adjust tire pressures to standard values according to the specification on the tire labels.

Yes

Step 2	Check whether the vehicle is overloaded.
--------	--

No

Query users, and explain to users what the normal loading of vehicle is.

Yes

Step 3	Check whether the compression and rebound effects of the rear shock absorber are normal.
--------	--

- A. Quickly press and release the corner closest to the rear shock absorber bumper being detected. Compare the compression and rebound effects with those of normal similar vehicles to check whether the compression and rebound effects of the rear shock absorber are normal.

No

Replace the rear shock absorber Refer to [Replacement of Rear Shock Absorber Assembly](#)

Yes

Step 4	System is normal.
--------	-------------------

The rear shock absorber is noisy

Step 1	Check whether the installation of rear shock absorber is normal and check whether all components of the rear shock absorber work normal. (No abnormal condition such as loosening is allowed.)
--------	--

No

Replace the rear shock absorber if necessary. Refer to [Replacement of Rear Shock Absorber Assembly](#)

Yes

Step 2 | Check whether the compression and rebound effects of the rear shock absorber are normal.

- A. Quickly press and release the corner closest to the rear shock absorber bumper being detected. Compare the compression and rebound effects with those of normal similar vehicles to check whether the compression and rebound effects of the rear shock absorber are normal.

No

Replace the rear shock absorber Refer to [Replacement of Rear Shock Absorber Assembly](#)

Yes

Step 3 | System is normal.

There is oil leakage in the rear shock absorber

Step 1 | Check whether the installation of rear shock absorber is normal and check whether all components of the rear shock absorber work normal. (No abnormal condition such as loosening is allowed.)

Next step

Step 2 | Check the sealing condition of rear shock absorber when it is fully extended, and whether the dust cover is damaged, etc.

Yes

Replace the rear shock absorber Refer to [Replacement of Rear Shock Absorber Assembly](#)

No

Step 3 | Check whether there is too much fluid on the rear shock absorber.

Yes

Replace the rear shock absorber Refer to [Replacement of Rear Shock Absorber Assembly](#)

No

Step 4 | System is normal.

4.3.6.3 Over-large friction check

Check the rear suspension for excessive friction as follows:

Step 1	Lift the rear bumper and elevate the vehicle as much as possible.
--------	---

Next step

Step 2	Gently put down the bumper to make the vehicle to restore its normal vehicle front end height.
--------	--

Next step

Step 3	Measure the distance between ground and the center of bumper.
--------	---

Next step

Step 4	Press the bumper and then slowly release it to make the vehicle to restore its normal vehicle front end height.
--------	---

Next step

Step 5	Measure the distance between ground and the center of bumper.
--------	---

Next step

Step 6	The difference between two measure values should <12.7 mm (0.5 in). If the distance is more than this limitation, check for the signs of damage or wearing of coil spring, rear damper, rubber bushing and rear suspension assembly.
--------	--

4.3.6.4 Driving smoothness diagnosis (too soft or too hard)

Too soft

Step 1	Check whether the rear shock absorber is worn. Replace the rear shock absorber if necessary.
--------	--

Next step

Step 2	Check whether the rear coil spring is snapped or loosed. Replace the rear coil spring if necessary.
--------	---

Too hard

Step 1	Check whether the rear shock absorber is installed correctly and whether the rear shock absorber conforms to the model. Replace the rear shock absorber if necessary.
--------	---

Next step

Step 2	Check whether the rear coil spring is installed correctly. Replace the rear coil spring if necessary.
--------	---

4.3.6.5 The body inclines or swings when the vehicle turns

Step 1	It is needed to check whether the rear shock absorber and the rear bolt spring retainer wear. It is important to replace the rear shock absorber if necessary and re-fasten the fixing nut on the rear shock absorber.
--------	--

Next step

Step 2	Check the vehicle for the overload and explain it to the user reasonably.
--------	---

Next step

Step 3	It is important to check whether the rear coil spring is broken or loose. It is needed to replace it if necessary.
--------	--

4.3.6.6 Noise diagnosis

Step 1	Check whether the rear suspension components are worn.
--------	--

Yes

Replace the damaged rear suspension components.

No

Step 2	Check whether the rear stabilizer bar loosens.
--------	--

Yes

Tighten the fixing nut of the rear stabilizer bar.

No

Step 3	Check whether the installations of rear shock absorber and the vibration isolator of coil spring seat are misplaced and whether they are damaged, etc.
--------	--

Yes

Replace the damaged components.

No

Step 4	Check whether the installation of rear coil spring is misplaced.
--------	--

Yes

Re-install rear coil spring.

No

Step 5	Find a same model vehicle, and make a comprehensive assessment of whether the noise is normal working noise.
--------	--

Yes

Replace the damaged components.

No

Step 6 System components are normal.

4.3.6.7 Abnormal tail height

Step 1 It is important to check whether the rear coil spring is broken or loose. It is needed to replace it if necessary.

Next step

Step 2 Check whether the vehicle is overloaded, and explain the hazards of it to the user when necessary.

Next step

Step 3 Check whether rear coil spring is correct or too soft. Replace with the coil spring originally produced by Geely.

4.3.7 Removing and installing

4.3.7.1 Replacement of Rear Shock Absorber Assembly

Removal procedure

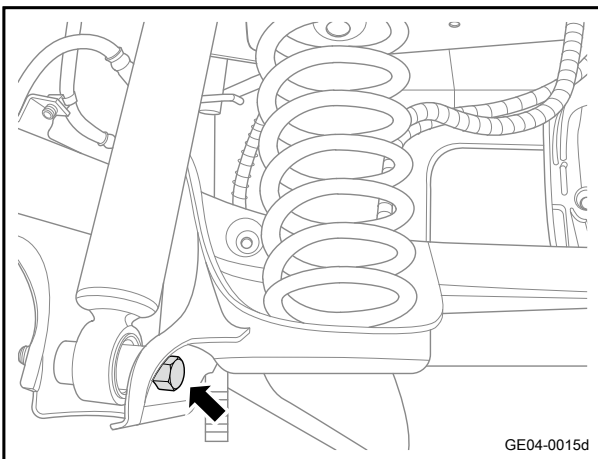
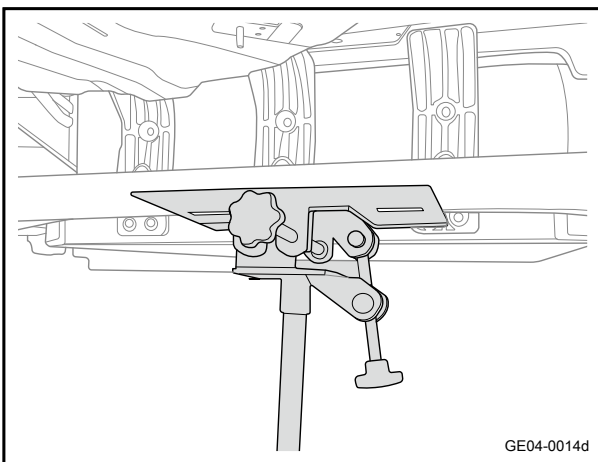
Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the left rear fender liner plates. Refer to [Replacement of Left Rear Fender Liner](#)
- 4 Use a jack to support the rear axle .

Caution

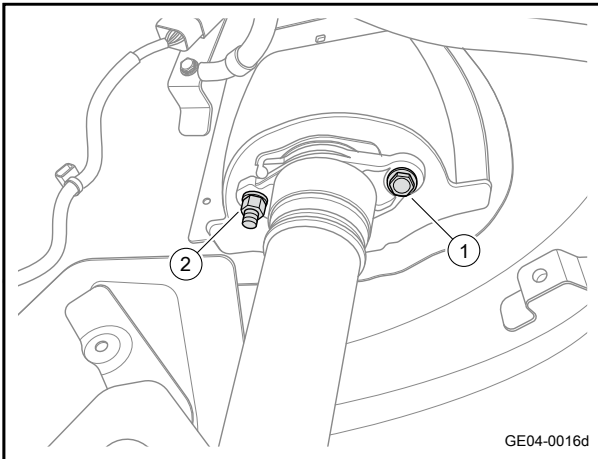
Do not jack the vehicle too high to prevent the vehicle from falling.



- 5 Remove the fixing bolt and nut assembly connecting the rear shock absorber assembly and the rear axle.

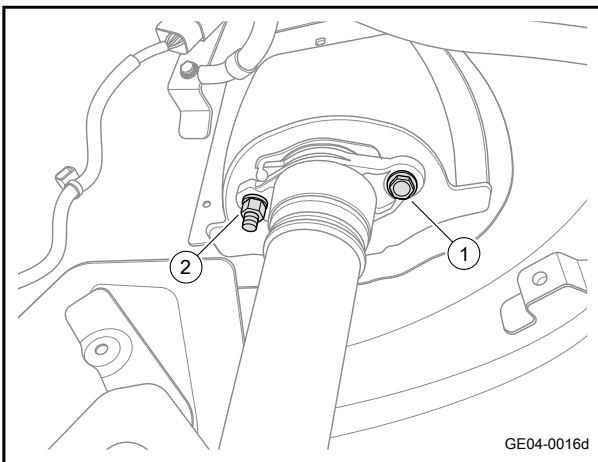
Caution

When removing the bolt and nut components, secure the nut with a wrench to prevent it from following.

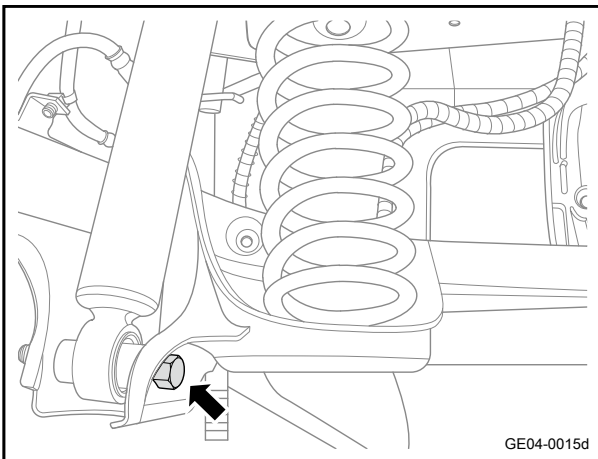


- 6 Remove the fixing bolt 1 and fixing nut 2 on the upper end of the rear shock absorber assembly.
- 7 Take down the rear shock absorber assembly.

Installation procedure



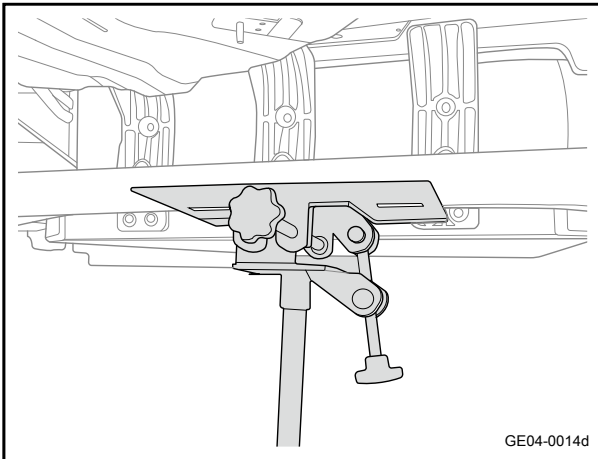
- 1 Move the shock absorber assembly to the installation positions.
- 2 Install the fixing bolt 1 and fixing nut 2 on the upper end of the rear shock absorber.
Torque: 80N·m (metric system) 59.0lb-ft (Imperial system)



- 3 Install the fixing bolt and nut assembly connecting the rear shock absorber assembly and the rear axle.
Torque: 140N·m (metric system) 103.3lb-ft (Imperial system)

Caution

When installing the bolt and nut components, secure the nut with a wrench to prevent it from following.



- 4 Slowly lower the jack and move it away from the vehicle body.

- 5 Install the left and right rear fender liner plates.
- 6 Install the wheel.
- 7 Lower the vehicle.

4.3.7.2 Replacement of coil spring of rear suspension

Removal procedure

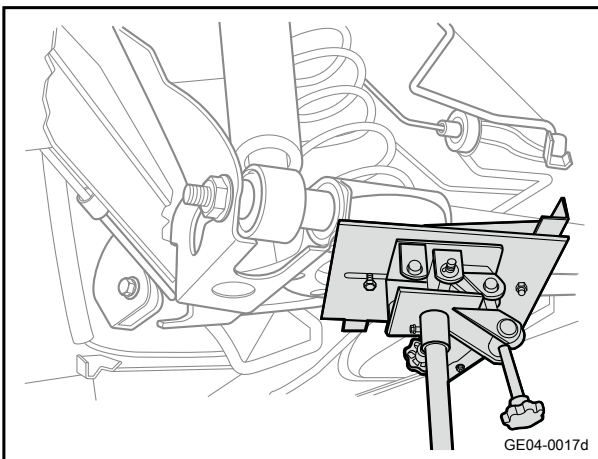
Caution

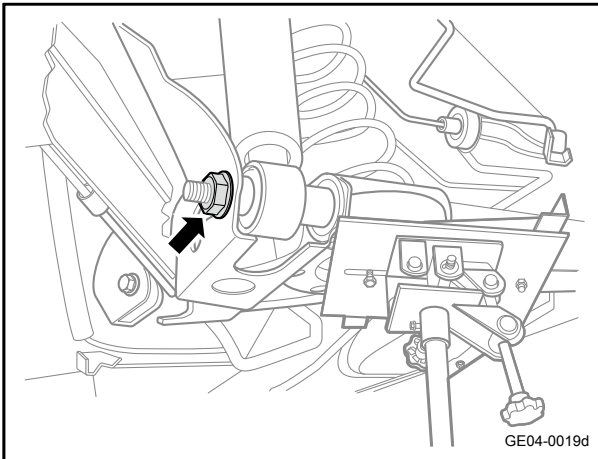
The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Use a jack to support the rear axle assembly.

Caution

Do not jack the vehicle too high to prevent the vehicle from falling.

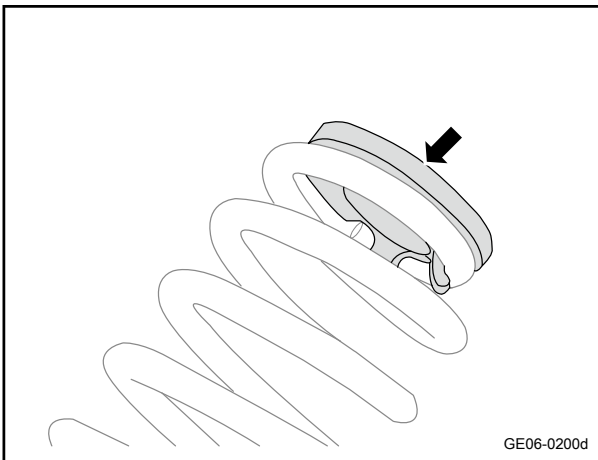




- 4 Remove the fixing bolt and nut assembly connecting the left rear shock absorber assembly and the rear axle.

Caution

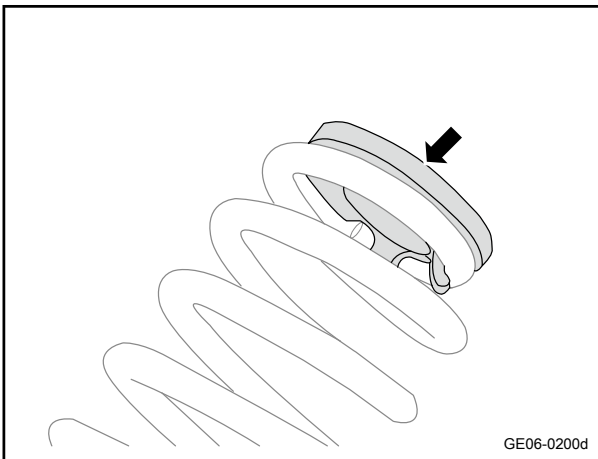
When removing the bolt and nut components, secure the nut with a wrench to prevent it from following.

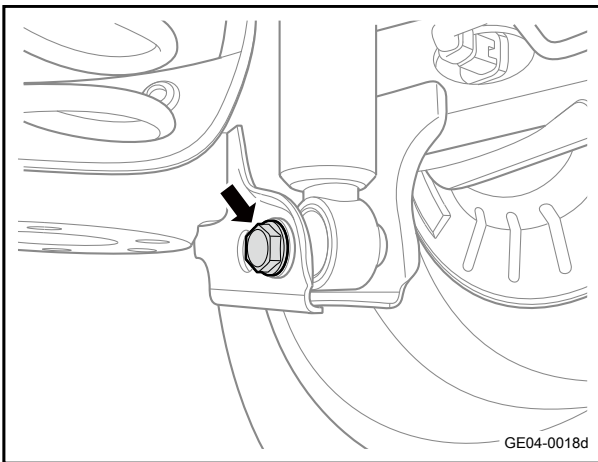
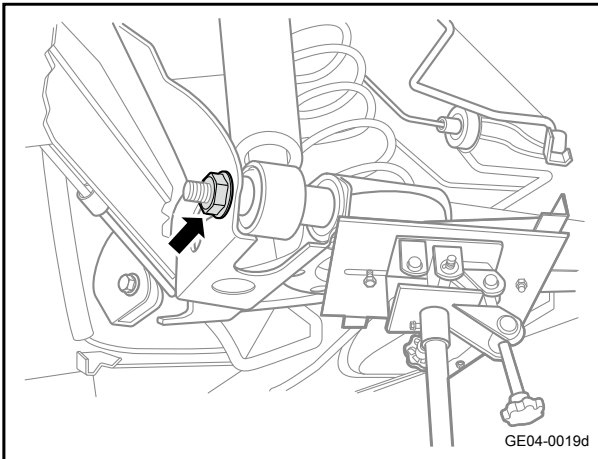


- 5 Slightly put down the jack and take out the coil spring of rear suspension.
- 6 Take off the rubber gasket.

Installation procedure

- 1 Install the rubber gasket on coil spring of the rear suspension
- 2 Put the rear suspension coil spring to mounting position and slowly lift the jack.





- 3 Install the fixing bolt and nut assembly connecting the rear shock absorber assembly and the rear axle.
Torque: 140N·m (metric system) 103.3lb-ft (Imperial system)

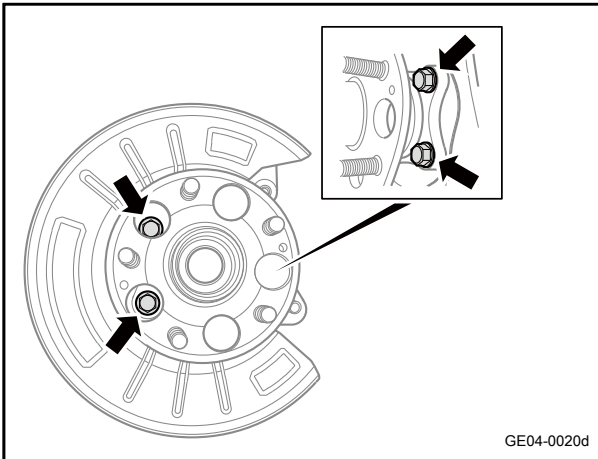
- 4 Install the fixing bolt and nut assembly connecting the rear shock absorber assembly and the rear axle. Slowly lower the jack and move out of the car.
Torque: 140N·m (metric system) 103.3lb-ft (Imperial system)

- 5 Install the wheel.
- 6 Lower the vehicle.

4.3.7.3 Replacement of Rear Wheel Hub

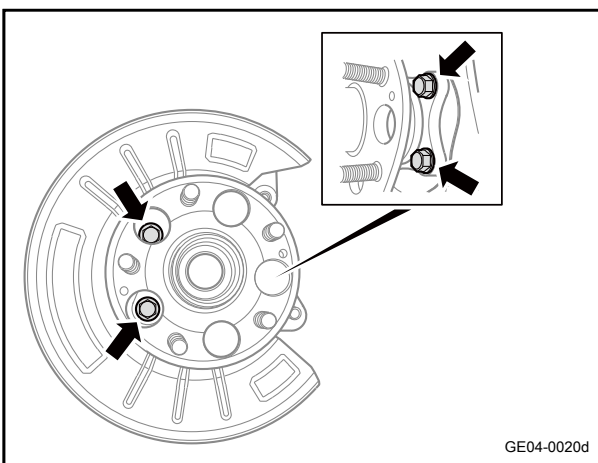
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove wheels. Refer to [Wheel Replacement](#)
- 4 Remove the rear brake caliper. Refer to [Replacement of Rear Brake Caliper](#)
- 5 Remove the rear brake disc. Refer to [Replacement of Rear Brake Disc](#)
- 6 Remove the rear wheel speed sensor. Refer to [Replacement of Rear Wheel Speed Sensor](#)



- 7 Remove the 4 fixing bolts of the rear wheel hub unit.
- 8 Remove the rear wheel hub unit and dust cover.

Installation procedure



- 1 Move the rear wheel hub unit and dust cover to the installation location.
- 2 Install the 4 fixing bolts of the rear wheel hub unit.
Torque: 75N·m (metric system) 55.3lb-ft (Imperial system)

- 3 Install the rear wheel speed sensor.
- 4 Install the rear brake disc.
- 5 Install the rear brake caliper.
- 6 Install the wheel.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

4.3.7.4 Replacement of the rear axle assembly

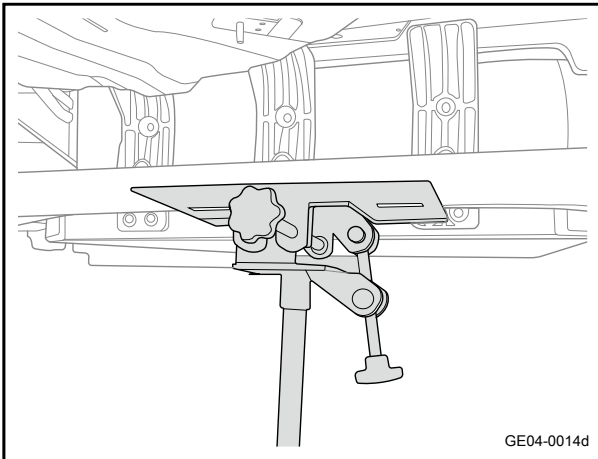
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

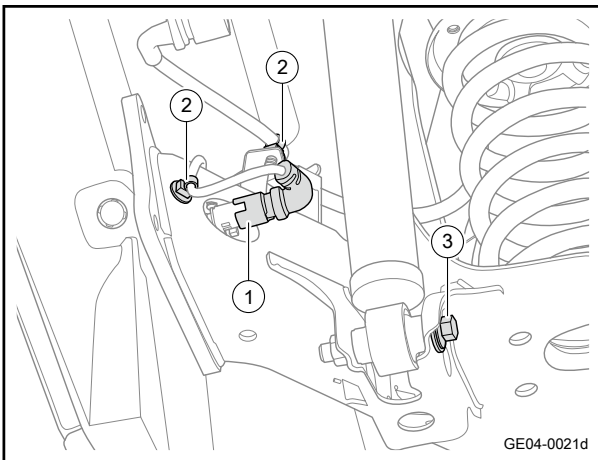
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove wheels. Refer to [Wheel Replacement](#)
- 4 Remove the rear wheel hub. Refer to [Replacement of Rear Wheel Hub](#)



- 5 Use a jack to support the rear axle assembly.

Caution

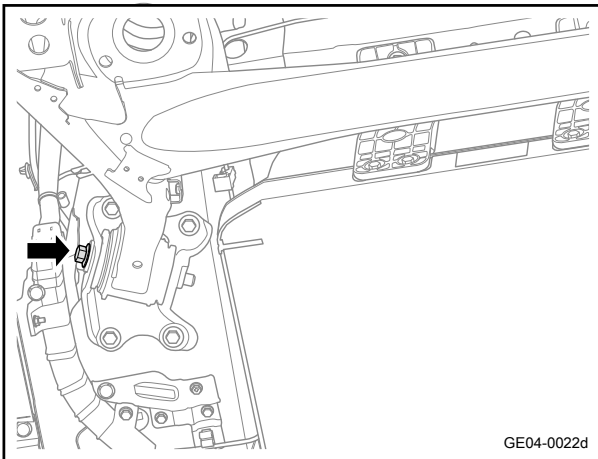
Do not jack the vehicle too high to prevent the vehicle from falling.



- 6 Disconnect the left and right caliper motor harness connector 1.

- 7 Disconnect 2 harness clips 2 each on the left and right caliper motor harnesses.

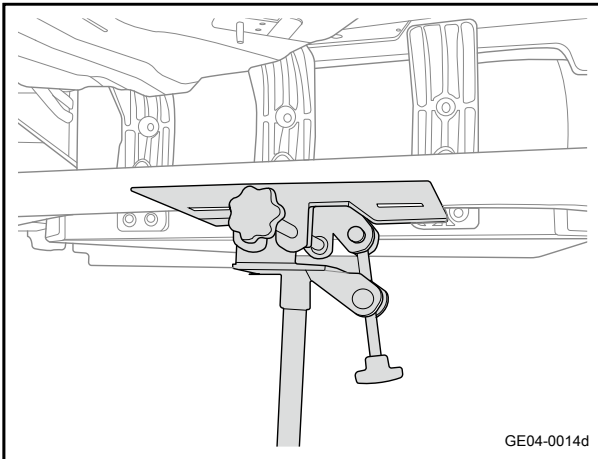
- 8 Remove 1 bolt and nut assembly 3 each on the lower part of the left and right rear shock absorbers.



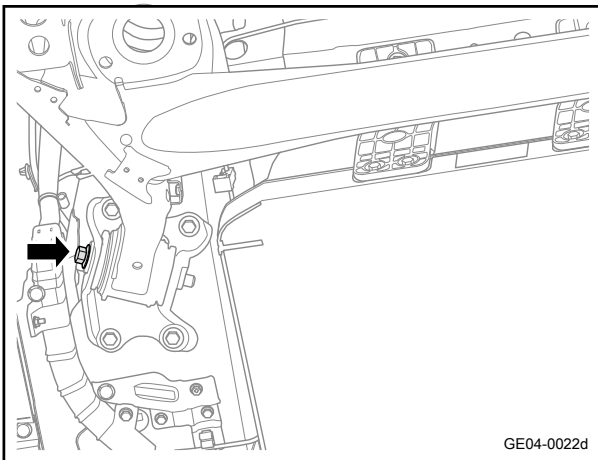
- 9 Remove the 1 fixing bolt connecting the rear axle assembly and the left and right rear axle mounting brackets.

- 10 Slowly lower the jack and lift the rear axle assembly with the help of an assistant.

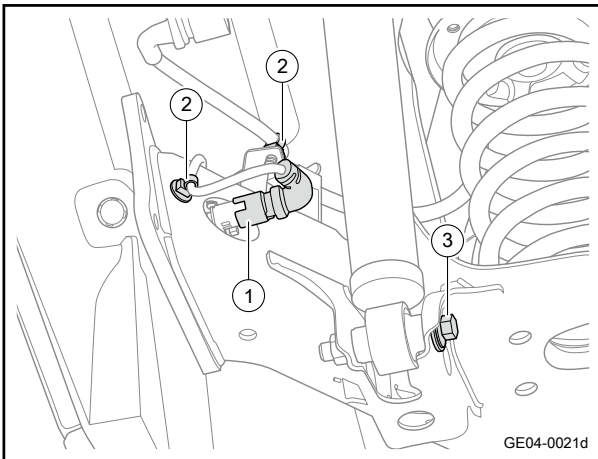
Installation procedure



- 1 With the assistance of an assistant, place the rear axle assembly on the jack, and slowly raise the jack to connect it with the vehicle body.



- 2 Install the 1 fixing bolt connecting the rear axle assembly and the left and right rear axle mounting brackets.
Torque: 150+60° N·m (metric system) 110.6+60° lb-ft (Imperial system)



- 3 Install 1 bolt and nut assembly each on the lower part of the left and right rear shock absorbers.
Torque: 140N·m (metric system) 103.3lb-ft (Imperial system)
- 4 Install 2 harness clips 2 each on the left and right caliper motor harnesses.
- 5 Install the left-side brake caliper motor harness connector 1.
- 6 Install the rear wheel hubs.
- 7 Install the wheel.
- 8 Lower the vehicle.
- 9 Connect the negative cable of battery.

4.4 Wheels and tires

4.4.1 Specification

4.4.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Wheel nut	M12	127-133

4.4.1.2 Tire size (Type I)

Item	Tire size	Rim model	Cold-state pressure (before/ after)
Tires in use	225/50R17	17×7.5J	240KPa
	225/45R18	18×7.5J	250KPa

Charge pressure conversion table					
kPa	psi	kPa	psi	kPa	psi
140	20	185	27	235	34
145	21	190	28	240	35
155	22	200	29	250	36
160	23	205	30	275	37
165	24	215	31	310	38
170	25	220	32	345	39
180	26	230	33	380	40

4.4.1.3 Tire size(Type II)

Item	Tire size	Rim model	Cold-state pressure (before/ after)
Tires in use	225/50R17	17×7.5J	240KPa
	225/45R18	18×7.5J	250KPa
spare tire	T125/80R17	-	420KPa

Charge pressure conversion table					
kPa	psi	kPa	psi	kPa	psi
140	20	185	27	235	34
145	21	190	28	240	35
155	22	200	29	250	36
160	23	205	30	275	37
165	24	215	31	310	38
170	25	220	32	345	39
180	26	230	33	380	40

4.4.1.4 Suspension positioning specification

Caution

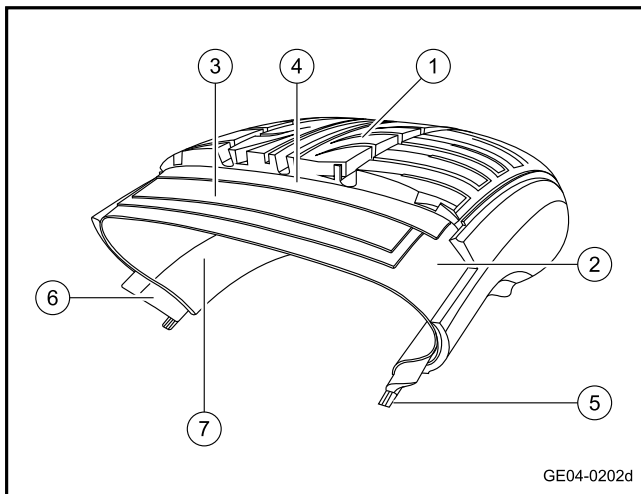
The following parameters refer to the technical parameters of the complete vehicle under a prepared status.

Wheel alignment (no load)	Camber angle of front wheel	-30'±30' (right-and-left difference: ≤30')
---------------------------	-----------------------------	--

	Kingpin inclination angle	12°±45' (right-and-left difference: ≤45')
	Kingpin caster angle	3°54'±30' (right-and-left difference: ≤30')
	Front wheel toe-in (two sides)	14'±10'
	Camber angle of rear wheel	-1°19'±30' (right-and-left difference: ≤30')
	Rear wheel toe-in (two sides)	10'±30'

4.4.2 Instructions and operations

4.4.2.1 Tie structure



1. Tread

The part of the tire in contact with the road surface enables the vehicle to have driving, braking and other properties through friction. So the tires should have good wear resistance, puncture resistance, impact resistance, heat dissipation and other properties.

2. Carcass

The casing ply in the tire, and the main stress-bearing component of the tire, are impact resistant and should have good flex resistance during driving.

3. Belt

The steel wire ply between the tread and the carcass protects carcass, inhibits tread deformation, maintains the ground-contact surface, and improves wear resistance and driving stability.

4. Cap ply

The special ply above the belt ply suppresses the movement of the belt layer when the tire is running, prevents the belt layer from detaching during high-speed driving, and maintains the stability of the tire size under high-speed conditions.

5. Bead

The rubber-hanging steel wire is wound according to a certain shape (quadrangle or hexagon), which plays the role of fixing the tire on the rim.

6. Triangle strips

The filling material on the bead in the tire prevents the bead from dispersing, slows down the impact of the bead, protects the bead, and prevents air from entering during molding.

7. Inner liner

The airtight part of a tubeless tire is made of special rubber, which plays the role of an inner tube.

4.4.2.2 Meaning and pressure instructions of tire side identifications of tires

Meanings of tire side identifications of tires

Example: 205/55 R16 91 V

205 - Nominal section width (unit: mm)

55 - Flatness ratio (height-width ratio: %)

R - Radial structure

16 - Nominal diameter of rim (unit: in)

91 - Load index

V - Speed rating (240 km/h)

Common speed class correspondence table:

Speed rating	Maximum speed (km/h)
S	180
T	190
H	210
V	240
W	270
Y	300
ZR	Above 240

Pressure instructions of tires

Tire pressures have a decisive influence on wear, fault, and damage of tires, thus, the normal pressure must be maintained and the pressure must be checked regularly to drive safely.

- The load capacity of the tire is corresponding to its inflation pressure, and the reasonable air pressure of the tire must be determined according to the load condition of the vehicle. Changes in climates and seasons should not be reasons for tire pressure adjustments.

- In the initial use of a new tire, the outer edge of the tire will change due to the heat generated by the flexing motion, which will reduce the tire air pressure. Therefore, the air pressure should be checked and adjusted after 24 hours of use or 2,000-3,000km of travel.

- When driving at high speed for a long time, the tire pressure should be increased by 10%-15%.

1. Harm of insufficient pressure

Insufficient air pressure will lead to increased deformation of the tire sidewall and increased heat generation, which will greatly reduce tire service life and bring the following problems and potential hazards:

- a. Excessive wear at tire shoulder.
- b. Increased possibility of tire bumping.
- c. Delamination due to decreased adhesion between tire components.
- d. Tire sidewall damage due to severely insufficient air pressure.
- e. Excessive tire run-out, causing abnormal wear between the bead and the rim, and damaging the rim.
- f. Increased rolling resistance and fuel consumption.

2. Harm of the excessive pressure

Excessive air pressure will reduce the ground contact area of the tire tread, increase the stiffness of the carcass, reduce the cushioning performance, and bring the following problems and hazards:

- a. Excessive wear at the center of the tread.
- b. Increased risk of tire rupture or even puncture when impacted by external force.
- c. The reduction of the ground contact area leads to a decrease in maneuverability, which is prone to dangers such as tail drift and sliding.

d. Decreased drive comfort.

e. Poor driving comfort and long-term driving with too much air pressure likely cause damage to the vehicle chassis.

3. Even tire pressures at the same suspension can cause:

- a. The braking force is uneven from left to right.
- b. Steering deviation
- c. Reduced maneuverability.
- d. Bias when accelerating.
- e. Bias when the vehicle is running.

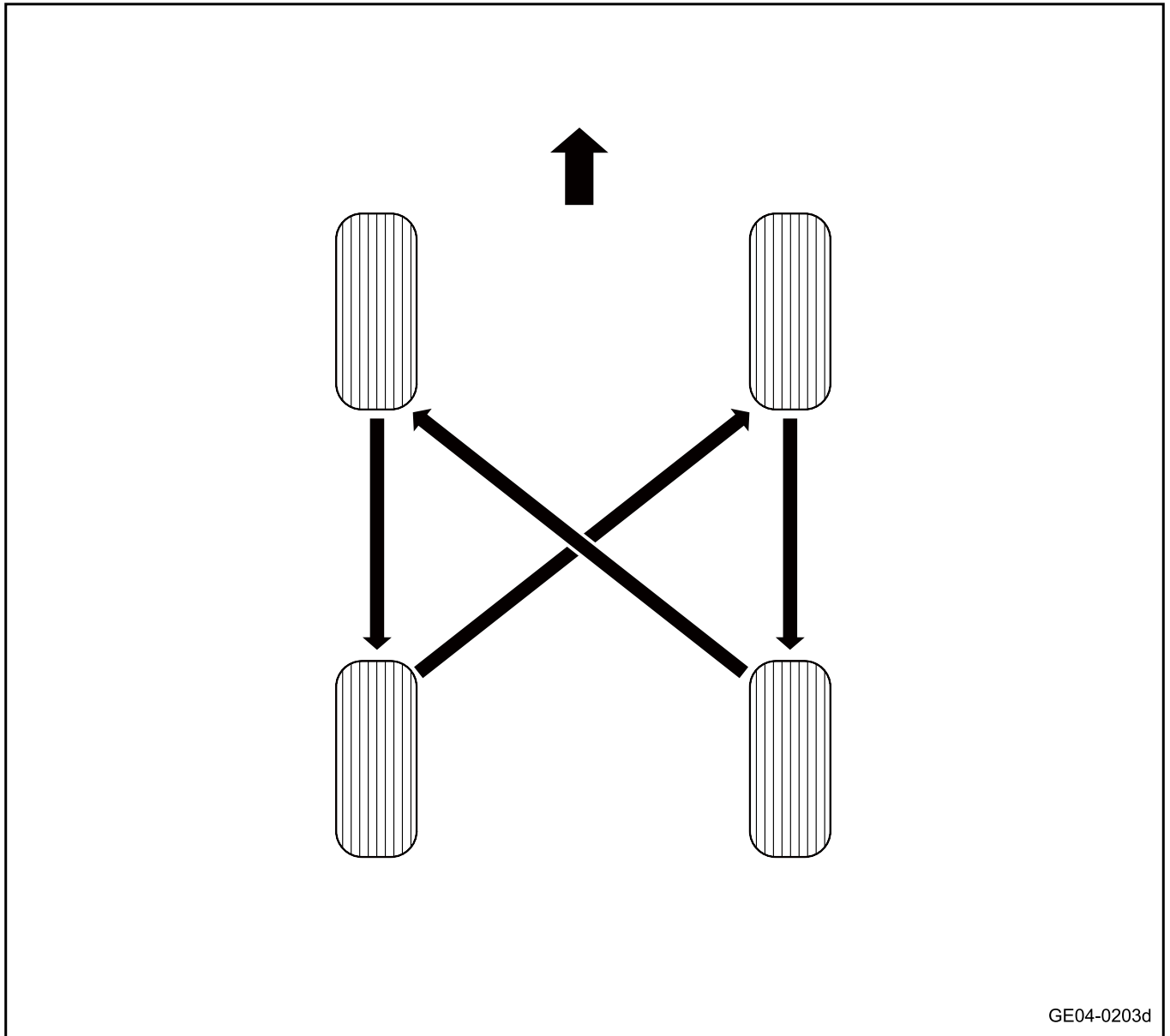
4.4.2.3 Tire rotation

Tire rotation

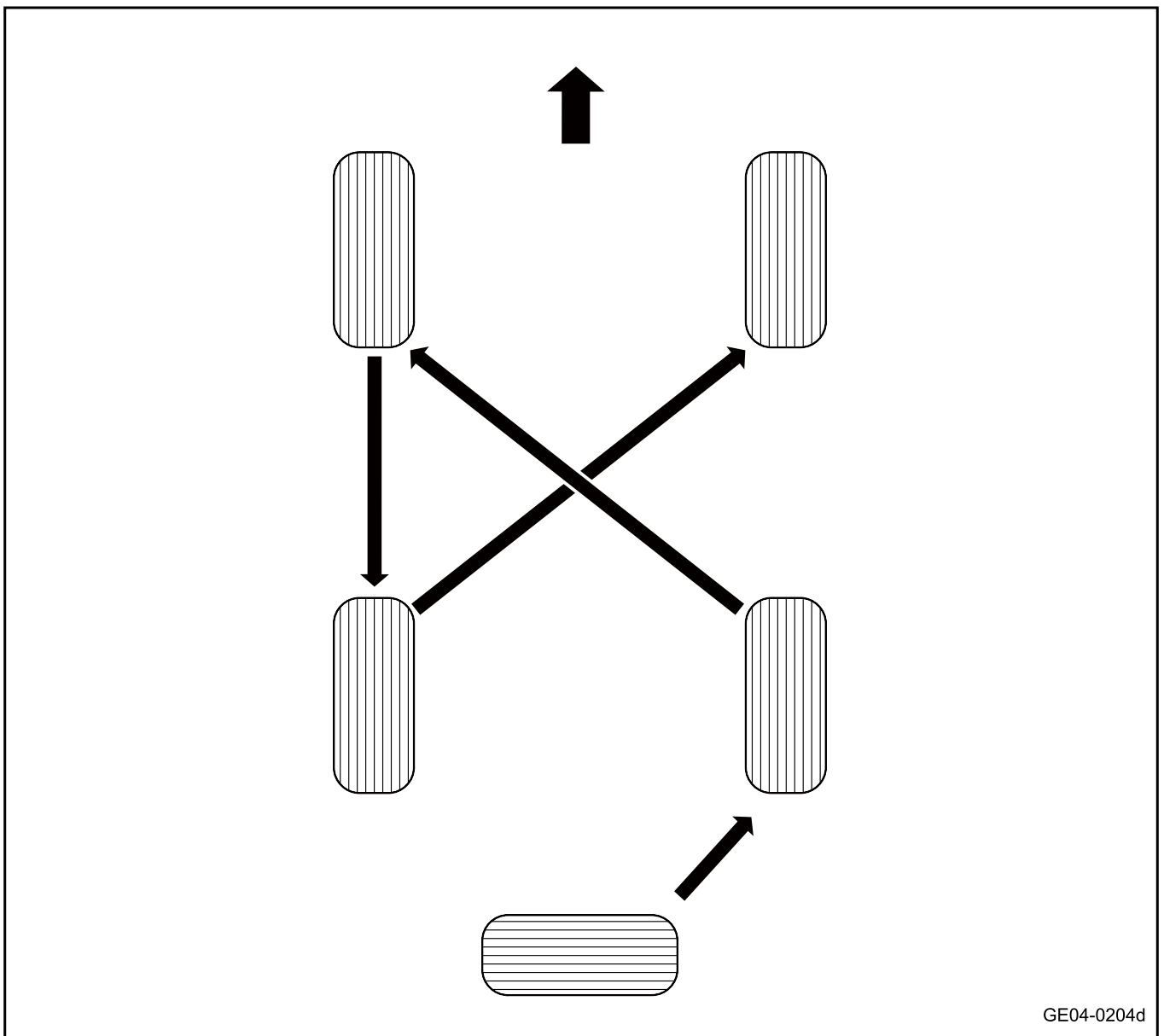
Due to the different loads on the front and rear wheels of the vehicle during running, their wear conditions will also be very different. Therefore, in order to prevent the tires from being worn in one direction, perform regular and timely tire rotation to make the tires wear evenly, thereby prolonging the life of the tires. It is recommended to perform tire rotation every 5,000 - 8,000 km, the main purposes of tire rotation are:

- a. To ensure the uniformity of tire wear and fatigue, to ensure stability and economy.
- b. To check the condition of tires when changing positions to detect damage in time and prevent accidents.

Tire rotation is performed as follows:



Enable rotation of the spare tire (if equipped)



GE04-0204d

For parallel rotation and cross rotation, please refer to [Description of Tire Rotation](#)

4.4.3 System working principles

4.4.3.1 Wheel alignment

The driver turns the steering wheel to drive the vehicle in the desired direction. However, when driving on a straight road, the driver needs to keep operating the steering wheel to keep the vehicle driving in a straight line; or when turning a corner, it takes a lot of force to turn the vehicle, so the driver will consume a lot of physical strength and bear a lot of mental pressure. To solve the problem and prevent the early worn of the tires, the tires are installed at the vehicle (or the chassis) according to certain requirements and at certain angles.

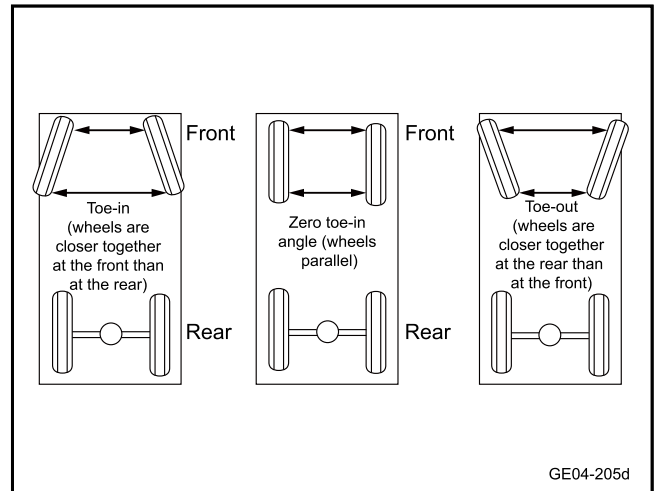
These angles are collectively known as “wheel alignment”. Alignment is a synthetic noun of angle relations between the front and rear axles, wheels, steering parts, and suspension parts.

With the wheels aligned correctly, steering is easy. When driving in a straight line, the driver only needs to adjust the steering wheel slightly to keep it in the straight-position, and only a small amount of force is required when turning. That is to say, if all angle relationships that make up “wheel alignment” are adjusted correctly, the steering will be easy. But if any of them is not adjusted correctly, the following problems will occur: difficult steering, poor steering stability, poor steering return, and shortened tire service life.

The alignment angles of the vehicle include: toe-in, camber angles of the tires, kingpin caster angle, kingpin inclination, steering angle, included angle, thrust angle, grinding wheel radius, and others. The above angles and dimensions depend on the vehicle's suspension system, tire drive system (front-powered front-wheel drive or front-powered rear-wheel drive, two-wheel drive or four-wheel drive), and steering system (manual or power steering). By adjusting these factors, driving performance and steering stability can achieve the optimum status. Besides, the service life of the parts can be extended.

Usually, the only angle recommended for adjustment during maintenance is the toe-in value.

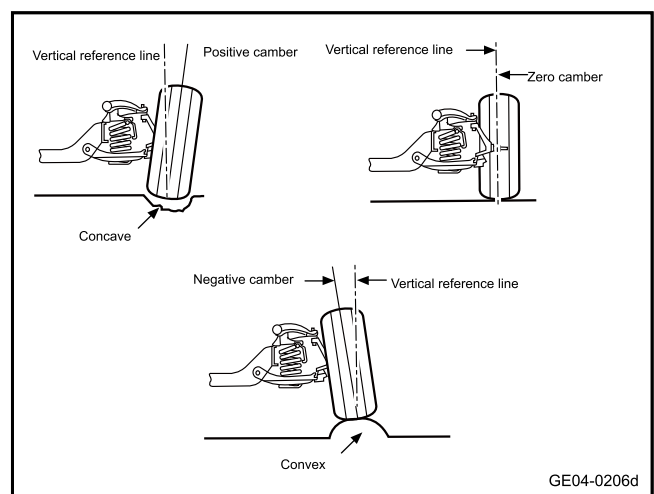
1. Toe-in



The toe-in is used for measuring the distance of the wheels moving forward or off the center line of the vehicle. The toe-in can be understood as the comparison between the distance of the front part of two wheels and the rear part of the same wheels. If the wheels are completely parallel, the two measured values should be equivalent and the toe-in angle is zero. If the front wheels incline inward toward the center line, the toe-in angle is said to be positive. If the wheels incline outward, the toe-in angle is said to be negative. The positive and negative toe-in angles are commonly referred to as the toe-in and toe-out of the front wheels.

The toe-in is used for compensating the tendency of the tires to roll inward and outward due to the camber angle and surface resistance, so as to ensure the straight-line running of the vehicle.

2. Camber angle



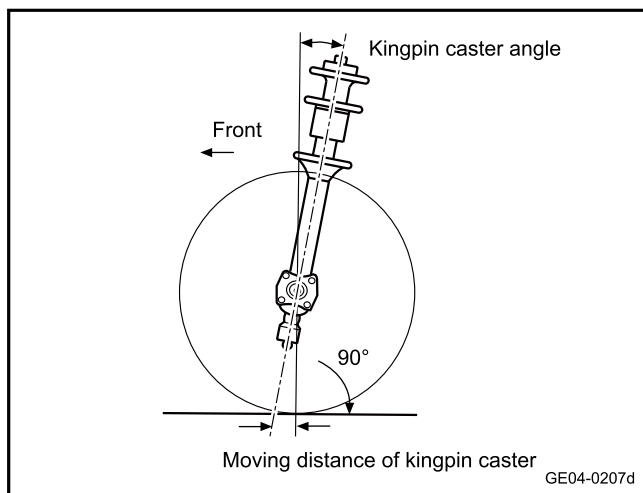
The camber angle is the angle of inclination of the tires relative to the vertical reference line. When the top of a tire inclines outward, the camber angle can be said to be positive. When the top of a tire inclines inward, the camber angle can be said to be negative. The setting of the camber angle may influence the control of the vehicle direction and tire wear.

The design of suspension and steering devices aims at reducing the tire tread wear and transferring the traction to the greatest extent by keeping the wheels perpendicular to the ground and driving in a straight line.

Inappropriate camber angle setting will cause excessive tire wear or uneven wear. Excessive positive camber angle will lead to wear on the outside wall of the tire tread. When the load on the outside wall of the tread is higher than that on the inside wall, uneven wear will occur.

Excessive negative camber angle will lead to wear on the inside wall of the tire tread. When the load on the inside wall of the tread is higher than that on the outside wall, uneven wear will occur.

3. Kingpin caster angle



The kingpin caster angle is the angle at which the kingpin axis slopes forward or backward. The kingpin caster angle is obtained by measuring the angle between the steering axis and the vertical line by observing from the side. Inclining backward from the vertical line is called a positive kingpin caster angle, and inclining forward is called a negative kingpin caster angle. The center line of the steering axis intersects with the ground at a point, and the tire has a central point of contact with the road, the distance between these two points is called scrub radius. The kingpin caster angle can produce the stability of driving in a straight line: If the vehicle is provided with a positive kingpin caster angle, when the wheel turns to the left, the left journal tends to sink. (This is due to the fact that the journal rotates along the steering axis, and

the axis is inclined.) But because the journal is fixed on the wheel assembly and the ground stops it moving downward. So the journal will not move downward, but the left steering knuckle is forced to move upward. This causes the vehicle body to rise slightly. After the steering is completed, the weight of the lifted body forces the steering knuckle to move down again after the steering wheel is released, so that the journal returns to the original position of driving straight ahead.

4.4.4 Diagnostic information and procedures

4.4.4.1 Diagnosis Description

Before diagnosing the fault of wheel and tire, refer to the description and operation and system working principle. Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

4.4.4.2 Routine inspection

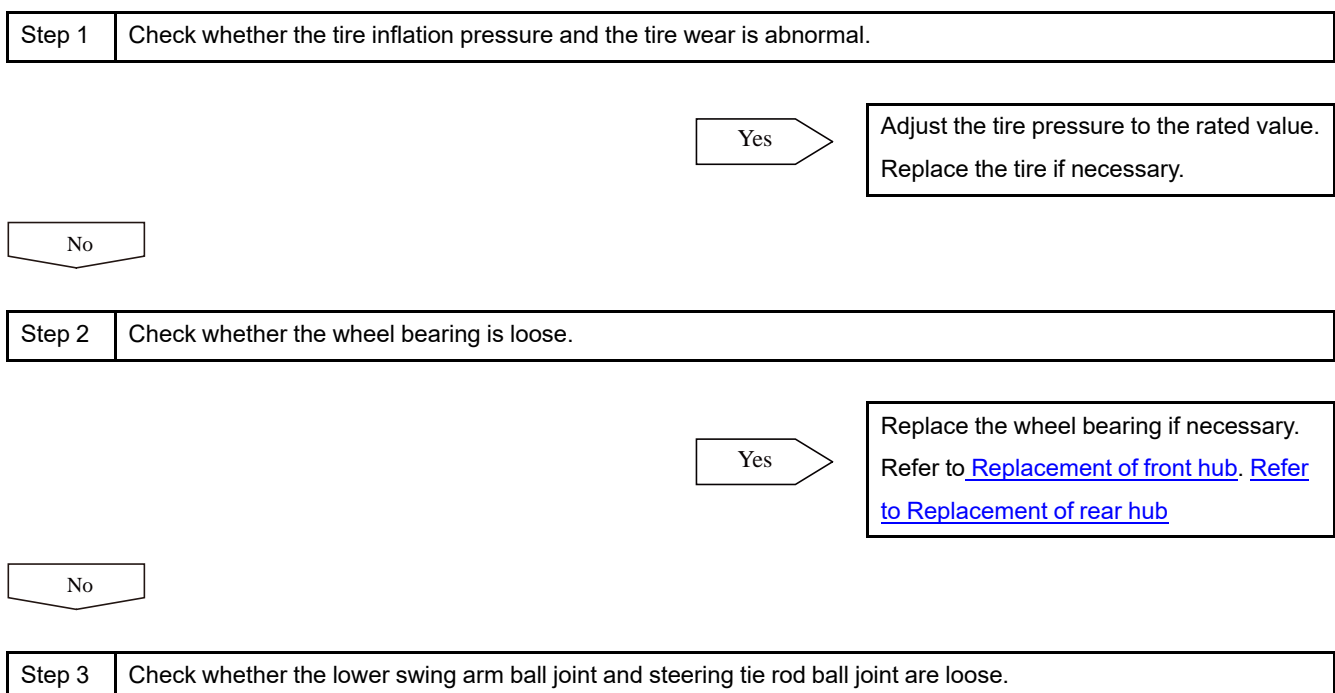
- Check the after-sale installations to confirm that these installations will not influence the normal operation of the wheels and tires.
- Checking system parts that are easily accessible or can be seen to guarantee that there is no obvious damage or situation that may cause a fault.
- Check for the following conditions:
 - Obvious tire and wheel run-out.
 - Obvious drive axle run-out.
 - Incorrect tire pressure.
 - Incorrect vehicle front end height.
 - Wheel curve or damage.
 - Scarps on tires or wheels.
 - Abnormal or excessive tire wear.
 - Defects in tires, including tread distortion and separation caused the collision and slight indentation of tire side wall, are normal, which do not affect the driving quality.

In case of any of the above circumstance, please repair or replace the corresponding parts.

4.4.4.3 Preliminary review before tire positioning

Caution

Before positioning the tire, the following check steps must be performed. Otherwise it may result in new faults due to inaccurate positioning.



Fasten the nut. Replace the lower swing arm ball joint if necessary. Refer to [Replacement of Lower Swing Arm Bushing Or the steering tie rod ball joint.](#) Refer to [Replacement of Steering Tie Rod and Ball Joint](#)

Yes

No

Step 4 Check whether the tire and wheel run-out value are abnormal.

Measure and correct the wheel run-out value.

Yes

No

Step 5 Check whether the vehicle front end height is abnormal.

Correct the vehicle front end before adjusting toe-in.

Yes

No

Step 6 Check whether the strut assembly installation is incorrect.

Replace the strut assembly. Refer to [Replacement of front strut assembly](#) Refer to [Replacement of rear shock absorber assembly](#)

Yes

No

Step 7 Check whether the lower swing arm is loose.

Fasten and control the lower swing arm connecting bolt. Replace the lower swing arm bushing if necessary. Refer to [Replacement of Lower Swing Arm Bushing](#)

Yes

No

Step 8 Check whether the vehicle curb weight is abnormal and whether overload exists.

Yes

Restore the vehicle to the factory curb weight condition.

No

Step 9 Perform the process of four-wheel alignment.

4.4.4.4 Wheel bearing diagnosis

Warning

Test the vehicle in safe conditions and comply with all traffic regulations. Do not try any operation that may endanger the control of the vehicle. In case of violation of the above safety instructions, it may result in the serious accident to people and damage to the vehicle

Step 1 The trial run should be carried out on the road to confirm the fault phenomenon.

Prompt: when the sealed wheel bearing is damaged, impurities will enter the inside of the bearing and damage it. When the bearing is rotated by an external force, it will emit a humming sound similar to that of an airplane taking off, so the noise only occurs when the vehicle is running, and the noise is stable without fluctuation, and increases with the increase of vehicle speed.

Next step

Step 2 Confirm whether the noise is from the wheel bearing. If it is uncertain to confirm whether the noise is from the wheel bearing during the trial run, lift and jack the vehicle.

Warning

To avoid vehicle damage, serious personal injury and even death, when the main components are removed from the vehicle, and the lifter is used for support, the jack should be used to support the vehicle part corresponding to the components to be removed.

Next step

Step 3 Check whether the wheel is bent.

Yes

Replace the wheel. Refer to [Wheel Replacement](#)

No

Step 4 Check whether the wheel is imbalanced.

Yes

Dynamically re-balance the wheel.

No

Step 5 Rotate the tire and wheel assembly. Listen whether noise exists in the wheel bearing.

Warning

At the time of rotating the wheel with hand, the hand must hold the rotating tire. In case of an incorrect position, it may result in personal injury.

Yes

Replace the wheel bearing. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

No

Step 6 Shake the wheel with hands to check whether the wheel bearing is loose.

Caution

The front wheel bearing is mounted on the steering knuckle, and the rear wheel bearing is in the rear hub unit. If the retainer ring is separated from the wheel bearing, it may cause noise.

Yes

Replace the wheel bearing. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

No

Step 7 Make a comprehensive comparison test with the same type and normal vehicle to confirm whether the noise belongs to the normal working noise.

Next step

Step 8 Diagnosis is completed.

4.4.4.5 Wheel vibration diagnosis

Tire dynamic balancing

Tire dynamic balancing is the easiest procedure to be checked. If the vehicle vibrates at high speeds, dynamic balance should be done first. First, double-sided dynamic balance is performed under the vehicle to correct the imbalance of the tire and wheel assemblies. The final balance on the vehicle can correct the imbalance of the brake disc or hubcap. If the balancing operation fails to eliminate the vibration at high speed, or if the vibration occurs at low speed, the run-out is probably the cause of vibration.

Run-out

Tires, wheels, or the way the wheels are connected to the vehicle can cause a run-out. To detect the possibility of a wheel run-out, refer to the [Check of wheel run-out](#)

Warning

Test the vehicle in safe conditions and comply with all traffic regulations. Do not try any operation that may endanger the control of the vehicle. In case of violation of the above safety instructions, it may result in the serious accident to people and damage to the vehicle

Step 1	Road test the vehicle to confirm fault symptoms and whether the vibration described by the distributor belongs to fault.
--------	--

No

Replace the wheel. Refer to [Wheel Replacement](#)

Yes

Step 2	Determine if the vehicle speed is above 65 km/h when vibration occurs.
--------	--

No

Go to Step 5.

Yes

Step 3	Perform tire dynamic balancing under the vehicle and vehicle road test to confirm whether the fault exists.
--------	---

No

Trouble is removed.

Yes

Step 4	Perform final balance on vehicle and vehicle road test to confirm whether the fault exists.
--------	---

No

Trouble is removed.

Yes

Step 5	Check the free end face of the wheel and the radial run-out (standard value: 1.0 mm/0.0394 in) on the vehicle to see if it is consistent with the specified value.
--------	--

No

Go to Step 8.

Yes

Step 6	Check whether the vehicle transmission system is unbalancing.
--------	---

A. Check thoroughly whether the drive axle and constant velocity universal joint are normal and without damage.

No

Replace the damaged components.

Yes

Step 7	Check the run-out of the hub flange (standard value: 0.26 mm/0.0102 in), and whether the run-out amount is consistent with the specified value.
--------	---

No

Replace the wheel hub assembly. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

Yes

Step 8	Remove the wheel assembly, remove the tire from the assembly, and measure the wheel run-out (standard value: 0.8 mm/0.03 in) to check whether it is consistent with the specified value.
--------	--

No

Replace the wheel. Refer to [Wheel Replacement](#)

Yes

Step 9	Replace tire(s).
--------	------------------

Next step

Step 10	Confirm that the trouble is removed.
---------	--------------------------------------

4.4.4.6 Check of wheel run-out

Use a dialgauge to measure the wheel run-out above and below the vehicle, but guarantee the installation surface is correct. Measurement both with and without tires are available. Measure the radial and end face run-out inside and outside the wheel rim flange. Fix a dial indicator beside the wheel and tire assembly, and slowly rotate the wheel for a circle to record the dialgauge reading. In the case, the measured value is larger than the following specifications and the wheel balance cannot eliminate the vibration, replace the wheel.

– Aluminous wheel

Radial run-out: 0.8 mm (0.03 in)

End face run-out: 0.8 mm (0.03 in)

Free radial run-out: 1.5 mm (0.06 in)

4.4.4.7 Diagnosis of the abnormal tire wear

There are many reasons behind the abnormal or premature tire wear, including incorrect inflation pressure, no regular tire rotation, bad driving habits or incorrect wheel alignment. If readjustment of wheel alignment is needed due to tire wear, make sure to adjust toe-in to approach zero as long as the specification is permitted.

- Rotate the tires if:
 - Front tire wear is different from rear tire.
 - There is difference in wear condition of front left and front right tires.
 - There is difference in wear condition of rear left and rear right tires.
- Check wheel alignment if:
 - There is difference in wear condition of front left and front right tires.
 - Tread of any of front tires is worn unevenly.
 - There is feather-shaped scratch on one side of the pattern strip or pattern block of front tire tread.
- Several typical tire wear conditions are as follows:
 - Eccentric wear:

Reasons:

- a. Rotating parts such as axles or bearings are faulty.
- b. Brake System.
- c. Quick start and quick brake.
- d. Unevenness in wheel weight and center of gravity.
- e. There is discrepancy in size of tire and rim.
 - Feather-like wear on tire sidewall:

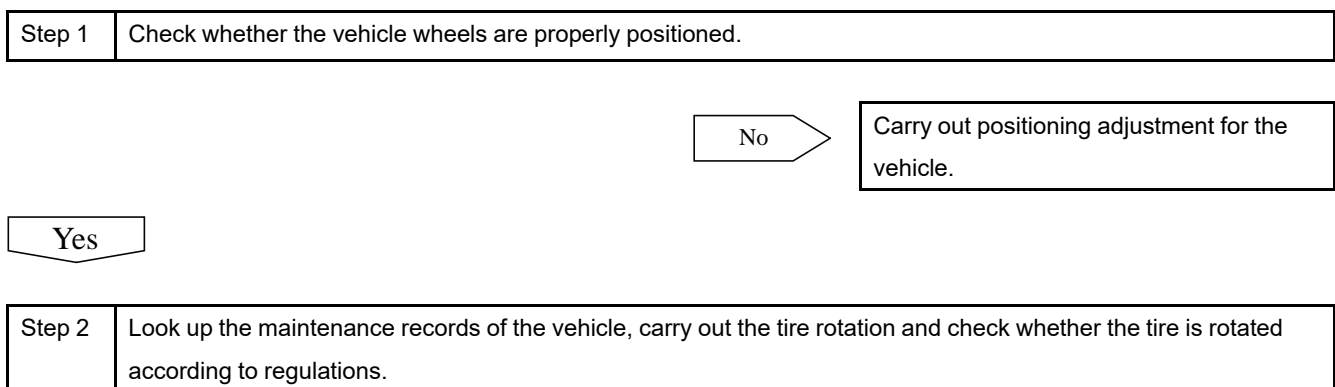
Reasons:

- a. Toe-in value is incorrect.
 - Abnormal tire wear:

Reasons:

- a. Camber is incorrect.
- b. Toe-in value is incorrect.
- c. Incorrect dynamic balance.
- d. Incorrect wheel alignment

4.4.4.8 Diagnosis of excessive tire wear



No

Carry out the tire rotation. Refer to [Tire Rotation](#)

Yes

Step 3 Check whether the tire balance is normal and whether the tire pressure is normal.

No

Adjust the tire pressure to the standard value and balance the tire dynamically.

Yes

Step 4 Check that the vehicle is not overloaded.

No

Explain to the user the importance of maintaining a reasonable load.

Yes

Step 5 Check whether the coil spring is working properly.

No

Replace the coil spring. Refer to [Replacement of Front Shock Absorber Components and Springs](#)

Yes

Step 6 Check that the strut assembly is working properly.

No

Replace the faulty parts.

Yes

Step 7 Check whether the lower control arm is working properly. (There should be no bending, loosening and other faults)

No

Replace the lower control arm. Refer to [Replacement of Lower Swing Arm Assembly](#)

Yes

Step 8 Check whether the wheel bearing is working properly. (There should be no wear, looseness and other faults)

No

Replace the wheel bearing. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

Yes

Step 9

Check whether the ball joint of the lower control arm and the ball joint of the steering tie rod work normally. (There should be no wear or looseness and other faults)

No

Replace the ball joint of the lower control arm.
Tighten nuts and replace the steering tie rod and ball joint if necessary. Refer to [Replacement of Steering Tie Rod and Ball Joint](#)

Yes

Step
10

Check whether the wheel run-out is normal.

- A. To check wheel run-out, please refer to [Check of Wheel Run-out](#)
B. Whether the wheel run-out is normal.

No

Reassemble the tire and replace the tire or wheel if necessary. Refer to [Wheel Replacement](#)

Yes

Step 11

Confirm that the trouble is removed.

4.4.4.9 Diagnosis of vehicle lateral run-out while driving

Step 1

Check whether the tire balance is normal and whether the tire pressure is normal.

No

Adjust the tire pressure to the standard value and balance the tire dynamically.

Yes

Step 2

Check whether the vehicle wheels are properly positioned.

No

Re-align the wheels.

Yes

Step 3 | Check whether the tire wear is normal.

No

Replace tire(s). Note: The wheels of the vehicle should be aligned immediately after tire replacement.

Yes

Step 4 | Check whether the hub run-out is normal.

No

Measure the hub flange run-out and replace the hub if necessary. Refer to [Replacement of front hub](#). Refer to [Replacement of rear hub](#)

Yes

Step 5 | Check whether the steering tie rod ball joint is functioning properly. (There should be no wear or looseness and other faults)

No

Tighten the nut and replace the steering tie rod ball joint if necessary. Refer to [Replacement of Steering Tie Rod and Ball Joint](#)

Yes

Step 6 | Check whether the lower control arm ball joint is functioning properly. (There should be no wear or looseness and other faults)

No

Fasten the nut. Replace the lower swing arm ball joint if necessary.

Yes

Step 7 | Check for excessive wheel run-out.

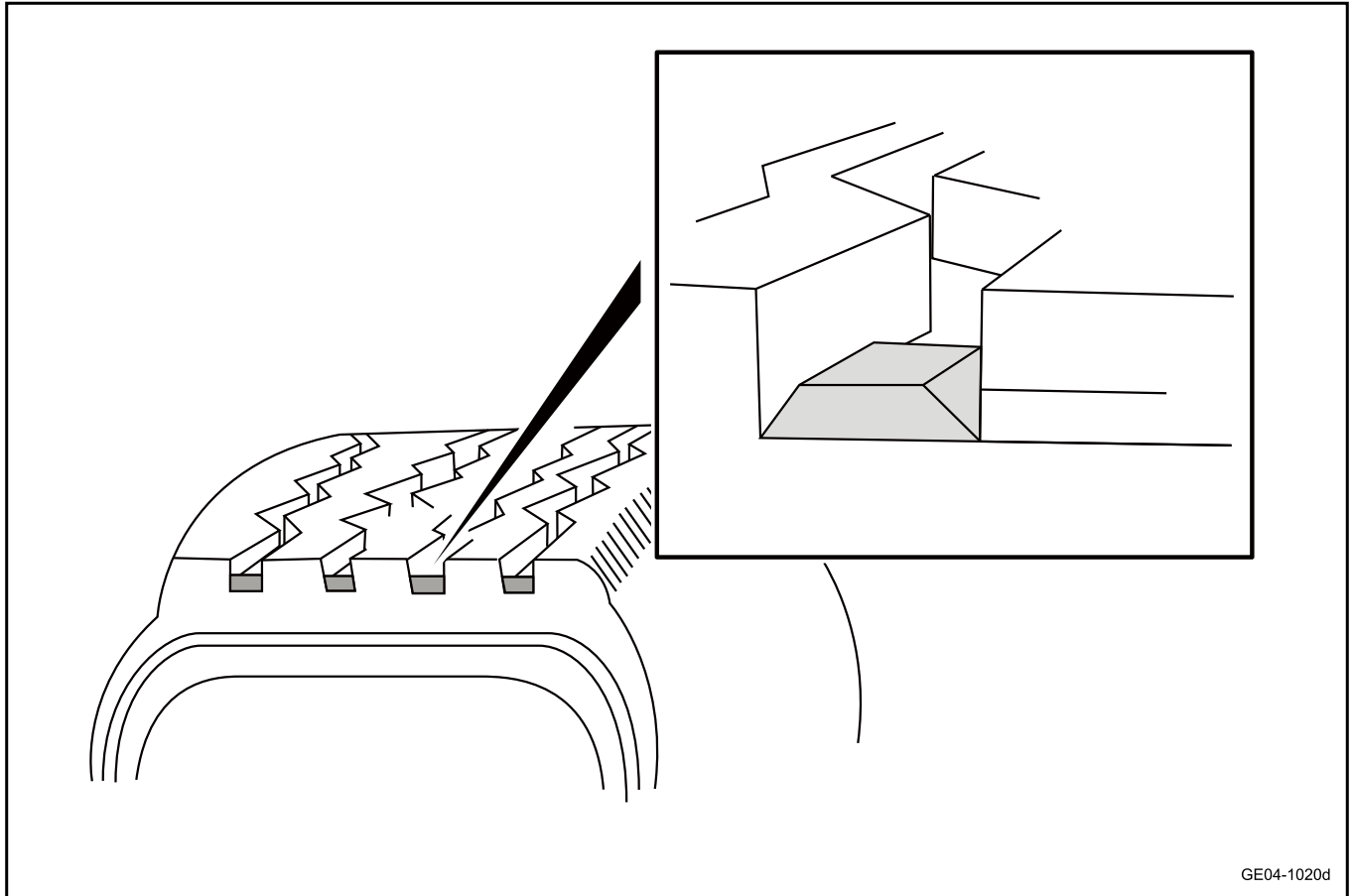
No

Measure wheel run-out, reassemble wheels and tires, and replace damaged parts if necessary.

Yes

Step 8	Confirm that the trouble is removed.
--------	--------------------------------------

4.4.4.10 Tire wear indicator



4.4.4.11 Calibration for radial tire running deviation

1. Fault definition:

In the process of driving in a straight line at a certain speed, the vehicle deviates from the original driving direction to the left or right without applying any external force to the steering wheel.

2. Judgment criteria for vehicle deviation:

- When a vehicle is running in a straight line at a certain speed, in order to maintain its original driving direction, a force is applied to the steering wheel to prevent it from rotating clockwise or counterclockwise.
- When the vehicle is driving in a straight line at a certain speed, after releasing the steering wheel, the vehicle deviates from the original driving direction to the left or right {usually refers to the situation where the driving direction is 100m (3940 in) away from the original driving direction by more than 1m (39.4 in)} .

Caution

Before calibration of the running deviation, the vehicle shall be inspected for basic items.

- Check the front and rear wheel brakes for dragging, etc.
- Check whether the tire wear degree of the same suspension differs too much.
- Check that the tire pressures of the same suspension differ too much.

Please adjust it to the normal state before vehicle for road test to confirm whether the fault is eliminated If there is any abnormality in the above.

3. Correction procedures:

Warning

Test the vehicle in safe conditions and comply with all traffic regulations. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions may cause serious personal injury and damage the vehicle.

Step 1	Vehicle for road test to judge whether the vehicle deviates.
--------	--

No

Explain the definition of running deviation to customers. According to different road conditions, vehicles may have the illusion of running deviation in a short period of time.

Yes

Step 2	Check that the tire pressure is up to standard.
--------	---

No

Adjust the vehicle tires according to the vehicle tire pressure standard.

Yes

Step 3	Check that the front wheel toe-in values of the vehicle are correct.
--------	--

No

Re-adjust the front wheel toe-in value of the vehicle and make alignment adjustments if necessary. Refer to [Adjustment of Front Wheel Toe-in](#)

Yes

Step 4	Check that the wheel alignment of the vehicle meets the specified values.
--------	---

No

Go to Step 10.

Yes

Step 5	Check that all locating parameters of the vehicle conform to the specifications in comparison of the values in the specification table.
--------	---

No

Readjust all locating parameters of the vehicle and make alignment adjustments if necessary.

Yes

Step 6 | Conduct the left tire transposition procedure.

- A. Replace the front left wheel assembly with the rear left wheel assembly.
- B. Vehicle for road test.
- C. Whether the vehicle is still deviating.

No

System is normal.

Yes

Step 7 | Conduct the right tire transposition procedure.

- A. Replace the right front wheel assembly with the right rear wheel assembly.
- B. Vehicle for road test.
- C. Whether the vehicle is still deviating.

Yes

Go to Step 1

No

Step 8 | Check the vehicle frame and suspension system components for damage such as bending.

No

Go to Step 1

Yes

Step 9 | Correct the frame, replace the damaged parts if necessary, and confirm the faults.

4.4.5 Removing and installing

4.4.5.1 Wheel Replacement (Type I)

Removal procedure

Caution

The four wheels are removed and installed in the same way.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Take the nut trim cover remover from the trunk to remove 5 wheel nut trim covers.



- 3 Lower the vehicle so that the wheels touch the ground, and loosen the 5 wheel nuts in the order shown in the Illustration 1-5.
- 4 Lift the vehicle. Tighten the 5 wheel nuts in the order shown in the Illustration 1-5.
- 5 Take off the wheel.

Caution

Do not scratch wheels when removing wheels.

Installation procedure



- 1 Move the wheels to the installation position.
- 2 Install the wheel nuts. Tighten the 5 wheel nuts in the order shown in the Illustration 1-5.
- 3 Lower the vehicle so that the wheels touch the ground. Tighten the 5 wheel nuts in the order shown in the Illustration 1-5.
Torque: 130N·m



- 4 Install the 5 nut trim cover of the wheel, and put the nut trim cover removal tool back in the trunk.

- 5 Lower the vehicle.

4.4.5.2 Wheel Replacement (Type II)

Removal procedure

Caution

The four wheels are removed and installed in the same way.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)



- 2 Take the nut trim cover remover from the trunk to remove the 5 wheel nut trim covers.



- 3 Lower the vehicle so that the wheels touch the ground, and loosen the 5 wheel nuts in the order shown in the Illustration 1-5.
- 4 Lift the vehicle. Tighten the 5 wheel nuts in the order shown in the Illustration 1-5.
- 5 Take off the wheel.

Caution

Do not scratch wheels when removing wheels.

Installation procedure



- 1 Move the wheel to the installation position.
- 2 Install the wheel nuts. Tighten the 5 wheel nuts in the order shown in the Illustration 1-5.
- 3 Lower the vehicle so that the wheels touch the ground. Tighten the 5 wheel nuts in the order shown in the Illustration 1-5.
Torque: 130N·m



- 4 Install the 5 nut trim covers of wheels, and put the nut trim cover removal tool back in the trunk.

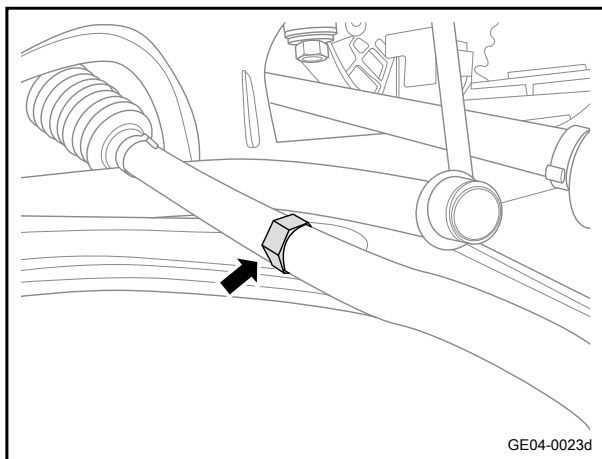
- 5 Lower the vehicle.

4.4.5.3 Toe-in adjustment of front wheels

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Adjust the four-wheel air pressure to the standard range.

Caution

Equipment: wheel alignment system.



- 3 Loosen the fixing nuts at the left and right ends of the tie rod.
- 4 Turn the tie rod clockwise or counterclockwise to adjust the toe-in value of the front wheels at both ends.
- 5 After adjusting the toe-in value of the front wheel to the standard range, tighten the fixing nuts at the left and right ends of the tie rod respectively.
- 6 Lower the vehicle.

Drive System/Shaft

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5.1 Warnings and precautions

5.1.1 Warnings and precautions

5.1.1.1 Warnings and Precautions

Warning regarding assistant driving by another technician

Caution

When the technician is checking the fault parts reported for repair, the vehicle should be driven by another technician. Otherwise, it may lead to personal injury.

Warnings regarding battery disconnection

Caution

Before repairing any electrical components, the power mode must be in the "OFF" position, and all electrical loads must be "OFF", unless otherwise specified in the operating procedures. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

Warnings regarding road test

Warning

Vehicles for road tests are carried out following all traffic laws and regulations while ensuring safety. Do not attempt any operation that may endanger vehicle control. Violation of the above safety instructions may result in serious personal injury and damage to the vehicle.

Notice for lifting the electric drive system

Caution

When lifting or supporting the electric driving system for any reason, do not support the jack under any sheet metal or the pipeline, and lifting the electric driving system incorrectly will result in damage to the components.

Notice for lifting the reducer

Caution

When lifting or supporting the reducer for any reason, do not support the jack under any sheet metal or reducer, and lifting the reducer incorrectly will result in damage to the components.

5.2 Drive Shaft System

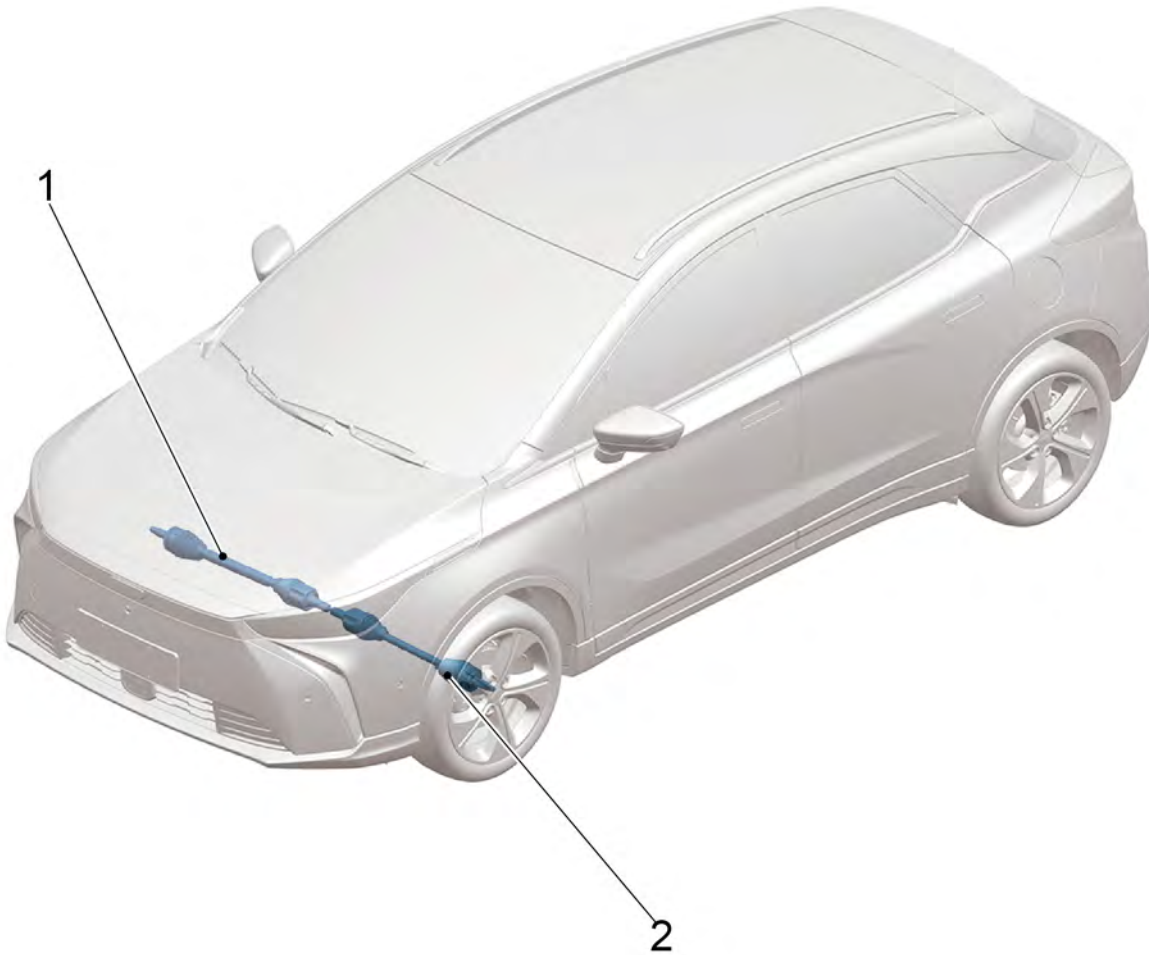
5.2.1 Specification

5.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left steering tie rod ball joint fixing nut	M12	50 - 60
Left lower swing arm ball joint fixing bolt	M12×130	99-121
Outer locking nut of the left driving shaft	M22	260-280
Right Steering tie rod ball joint fixing nut	M12	50 - 60
Right Lower swing arm ball joint fixing bolt	M12×130	99-121
Outer locking nut of the right driving shaft	M22	260 - 280

5.2.2 Part Position Diagram

5.2.2.1 Part Position



1. Right front constant velocity drive shaft

2. Left front constant velocity drive shaft

5.2.3 Diagnostic information and procedures

5.2.3.1 Fault symptom table

Symptom	Possibility and cause	Measures
Abnormal noise of drive shaft	1. Fixed ball cage type constant velocity universal joint (wear)	Refer to Replacement of Reducer Oil Seal(NIDEC CORPORATION) Refer to Replacement of Reducer Oil Seal(GLB Intelligent Power Technologies)
	2. Mobile tripod constant velocity universal joint (wear)	
	3. Dust cover at both ends (whether the corrugation is squeezed and rubbed)	
Drive shaft oil leakage	1. Dust cover at the fixed end (fracture)	
	2. Dust cover at the extension end (fracture)	

5.2.4 Removing and installing

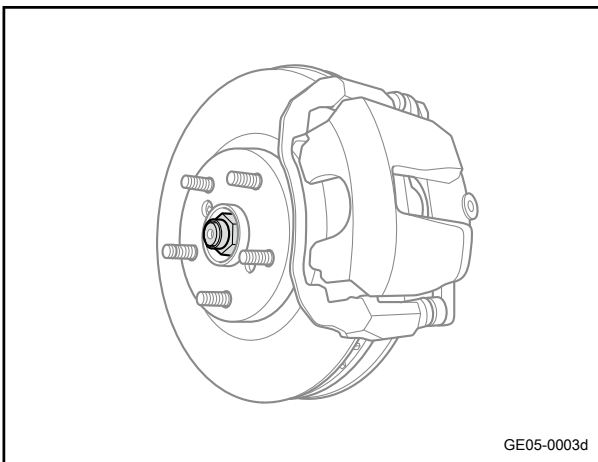
5.2.4.1 Replacement of Left Front Constant Velocity Drive Shaft

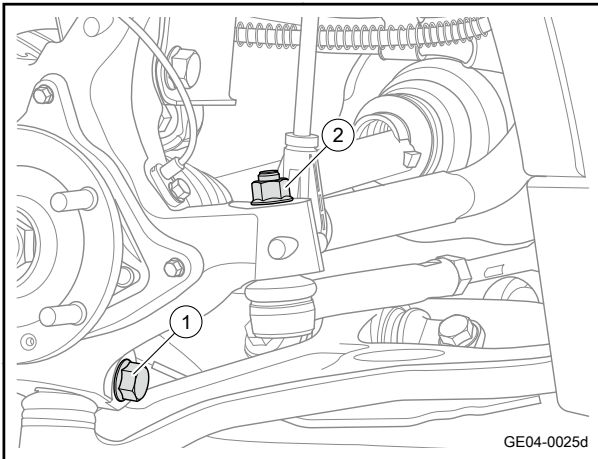
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling \(GLB Intelligent Power Technologies\)](#)
- 5 Remove the outer locking nut of the driving shaft.

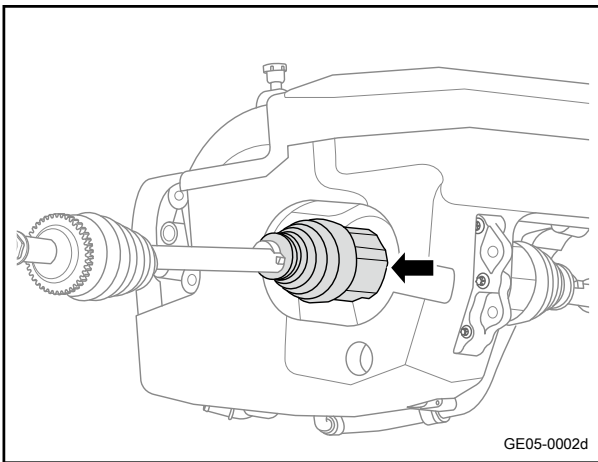
Caution

An assistant steps on the brake pedal to prevent the drive shaft from rotating.





- 6 Remove the fixing bolt 1 of the lower swing arm ball joint.
- 7 Remove the fixing nut 2 of the steering tie rod ball joint.
- 8 Take the outer end of the left front constant velocity drive shaft from the steering knuckle.



- 9 Remove the inner end of the drive shaft using the appropriate tool and remove the left front constant velocity drive shaft.

Caution

Prevent damage to reducer housing and oil seal side contact end face during removal.

Caution

The drive shaft assembly should be prevented from falling, and the dust cover and oil seal should not be damaged.

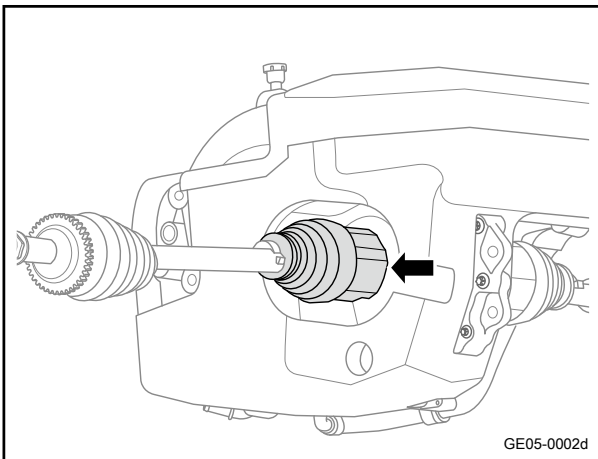
Installation procedure

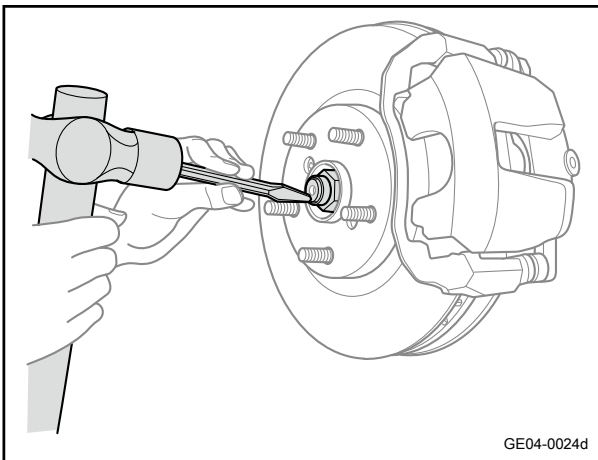
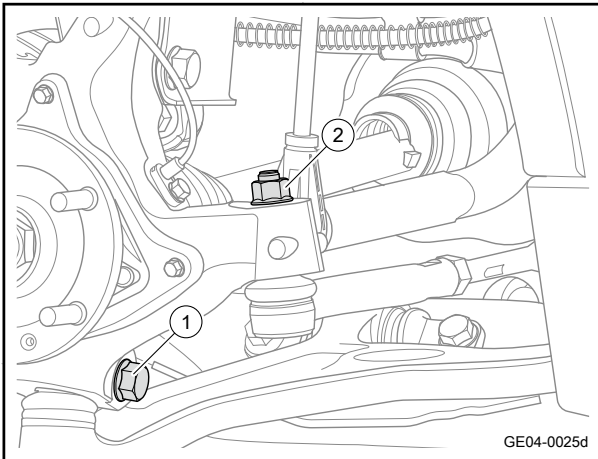
- 1 Move the left front constant velocity drive shaft to the installation position.

Caution

During the installation process, the drive shaft assembly should be prevented from falling, and the dust cover and oil seal should not be damaged.

- 2 Lubricate the inner end of the left front constant velocity drive shaft with lubricating oil, put the inner end of the left front constant velocity drive shaft into the reducer, and check whether the drive shaft circlip is stuck.



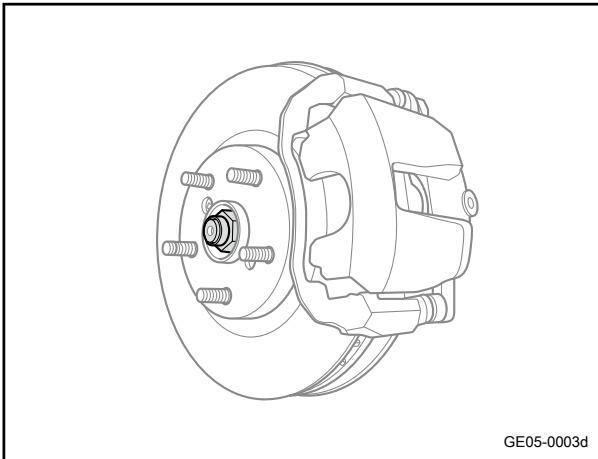


- 3 Put the outer end of the left front constant velocity drive shaft into the steering knuckle.
- 4 Install the fixing nut 2 of the steering tie rod ball joint.
Torque: 55N·m
- 5 Install the fixing bolt 1 of the lower swing arm ball joint.
Torque:
First time 90N·m
Second time 75°
- 6 Install and tighten the outer locking nut of the driving shaft.
Torque: 270N·m
Caution
An assistant steps on the brake pedal to prevent the drive shaft from rotating.
Caution
The outer locking nut of the drive shaft cannot be reused. Please replace it with a new one after removal.
- 7 Add reducer oil.
- 8 Install the front engine compartment bottom shield.
- 9 Install the wheel.
- 10 Lower the vehicle.

5.2.4.2 Replacement of Right Front Constant Velocity Drive Shaft

Removal procedure

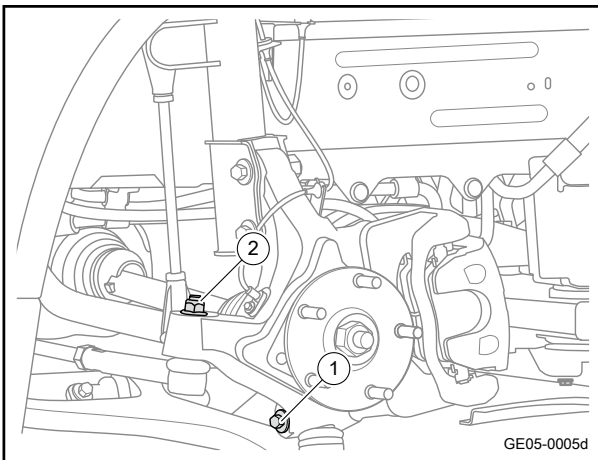
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the front engine compartment bottom shield.
Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 4 Drain the reducer oil. Refer to [Reducer Oil Discharging and Filling\(GLB Intelligent Power Technologies\)](#)



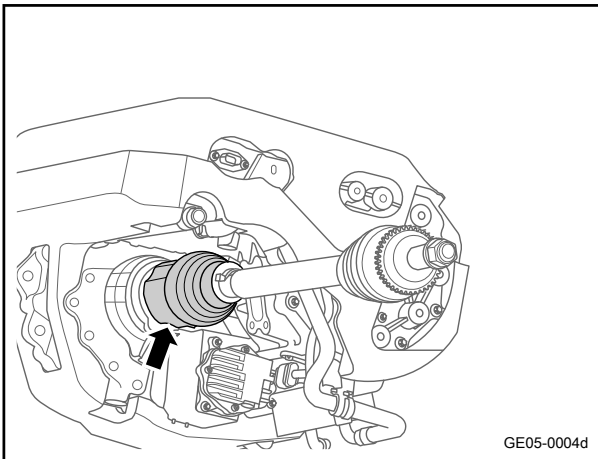
- 5 Remove the outer locking nut of the driving shaft.

Caution

An assistant steps on the brake pedal to prevent the drive shaft from rotating.



- 6 Remove the fixing bolt 1 of the lower swing arm ball joint.
 7 Remove the fixing nut 2 of the steering tie rod ball joint.
 8 Take the outer end of the right front constant velocity drive shaft from the steering knuckle.



- 9 Remove the inner end of the drive shaft using the appropriate tool and remove the right front constant velocity drive shaft.

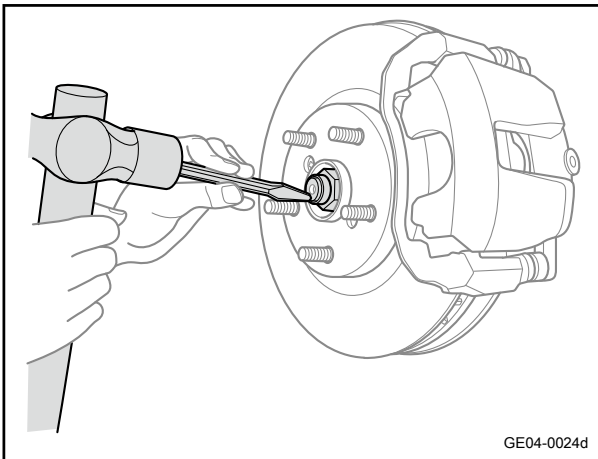
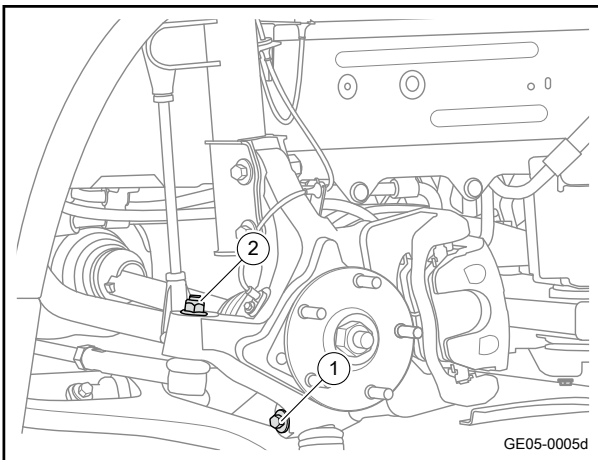
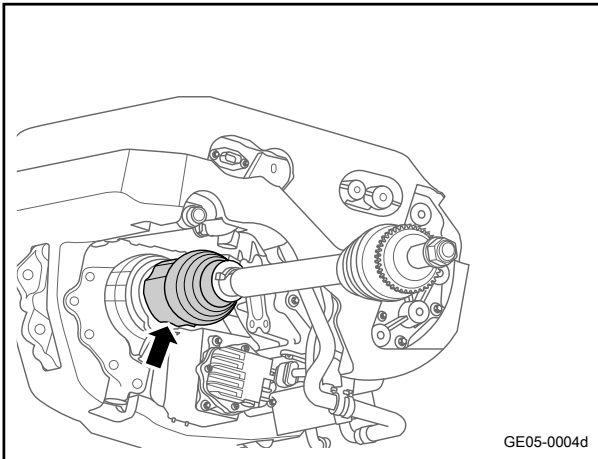
Caution

Prevent damage to reducer housing and oil seal side contact end face during removal.

Caution

The drive shaft assembly should be prevented from falling, and the dust cover and oil seal should not be damaged.

Installation procedure



- 1 Move the right front constant velocity drive shaft to the installation position.

Caution

During the installation process, the drive shaft assembly should be prevented from falling, and the dust cover and oil seal should not be damaged.

- 2 Lubricate the inner end of the right front constant velocity drive shaft with lubricating oil, put the inner end of the right front constant velocity drive shaft into the reducer, and check whether the drive shaft circlip is stuck.

- 3 Put the outer end of the right front constant velocity drive shaft into the steering knuckle.

- 4 Install the fixing nut 2 of the steering tie rod ball joint.

Torque: 55N·m

- 5 Install the fixing bolt 1 of the lower swing arm ball joint.

Torque:

First time 90N·m

Second time 75°

- 6 Install and tighten the outer locking nut of the driving shaft.

Torque: 270N·m

Caution

The outer locking nut of the drive shaft cannot be reused. Please replace it with a new one after removal.

- 7 Add reducer oil.
- 8 Install the front engine compartment bottom shield.
- 9 Install the wheel.
- 10 Lower the vehicle.

Brake system

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6.1 Warnings and precautions

6.1.1 Warnings and precautions

6.1.1.1 Warnings and Precautions

Warnings regarding the treatment of brake control module components

Warning

Some components of the brake control module cannot be repaired in isolation. Attempts to remove or disconnect some system components can result in personal injury or abnormal operation of system. Only those components that are permitted to be removed and installed can be repaired.

Warning regarding brake dust

Warning

Avoid the following operations when repairing wheel brake components:

- a. Do not clean wheel brake components with a dry brush or compressed air.

Some models or brake components of after-sales installation may contain fibers that can be mixed with the dust. Inhaling fiber-containing dust can seriously damage the body. Please clean any dust on the brake components with the wet cloth.

Warning regarding brake fluid

Warning

The composition of brake fluid is polyethylene glycol, which is prone to absorbing humidity and moisture. Please do not use the brake fluid in the open containers that may be contaminated with water and use improper or contaminated brake fluid, which may cause system fault, loss of control and personal injury.

Warning of brake fluid irritant

Warning

Brake fluid is irritating to skin and eyes. In case of contact, the following measures should be taken:

- a. Eye contact - flush thoroughly with water.
- b. Skin contact-wash with soap and water.

Warning regarding the replacement of brake pipe

Caution

When replacing the brake pipe, please install and fix it carefully and use the correct fasteners. Otherwise, it will cause damage to brake pipe and brake system, causing personal injury.

Notice of brake fluid filling in the brake system

Caution

When adding brake fluid to the brake master cylinder reservoir, only use brake fluid from a clean, sealed brake fluid container in compliance with Super DOT4. The use of the non-recommended brake fluid can lead to contamination and damage to rubber seals or rubber pads within hydraulic brake system components.

Notices for the brake caliper

Caution

When the brake caliper is removed, a steel wire should be used to hang the brake caliper to avoid damage to the brake pipe.

6.2 Front brake

6.2.1 Specification

6.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Brake caliper fixing bolt	M12×38	27-33
Left front brake caliper fixing bolt	M12×38	110-130
Fixing bolt of the brake hose and the brake caliper	M10×20	30-36
Front disc brake dust cover fixing bolt	M6×14	8 -10
Front brake disc fixing bolt	M6×14	5-7
Fixing bolt connecting right front brake hard pipe 1 and brake control module assembly	M10	17 ~ 19
Fixing bolt connecting right front brake pipe 1 and the right front brake pipe 2	M10	17 ~ 19
Fixing bolt connecting right front brake pipe 2 and the right front brake hose	M10	17 ~ 19
Fixing bolt connecting right front brake pipe 1 and the right front brake pipe 2	M10	17 ~ 19
Fixing bolt connecting left front brake pipe 1 and the left front brake pipe 2	M10	17 ~ 19
Fixing bolt connecting the left front brake pipe 1 and the brake control module assembly	M10	17 ~ 19
Fixing bolt connecting the left front brake pipe 2 and the left front brake hose	M10	17 ~ 19
Fixing bolt connecting left front brake pipe 2 and the left front brake pipe 1	M10	17 ~ 19
Fixing bolt connecting left rear brake pipe 2 and the left rear brake pipe 1	M10	17 ~ 19
Fixing bolt connecting the right rear brake pipe 1 and the brake control module assembly	M10	17 ~ 19
Fixing bolt connecting right rear brake pipe 1 and the right rear brake pipe 2	M10	17 ~ 19

6.2.1.2 Front brake system parts specification

Application	Part specification mm
Allowable end run-out of front brake disc	0.02
	If the end face run-out is ≥ 0.15 , the brake disc (both sides) need to be replaced; the thickness difference of the circle is ≥ 0.02 and replace the brake disc (both sides)
Thickness of front brake disc to be scrapped	26
Front brake pad standard thickness	11
Front brake pad minimum thickness	2

6.2.2 Instructions and operations

6.2.2.1 Description and Operations

Composition of front disc brake system:

The front disc brake system consists of the following components:

Brake pads: apply the mechanical output force from the hydraulic brake caliper on the friction surface of the brake disc.

Brake pad guide: it is located between the disc brake pad and the brake pad mounting bracket to keep the brake pad moving smoothly and eliminate noise.

Brake disc: uses the mechanical output force of disc brake pads acting on the friction surface of the brake disc to slow down the speed of the tire and wheel assembly so as to brake the vehicle.

Brake caliper: receives the liquid pressure from the brake master cylinder, converts the liquid pressure into mechanical output force acting on the inner brake pad; when the master cylinder returns, the brake caliper piston returns automatically.

Brake caliper and brake pad support: are used to fix the disc brake pad and brake caliper in place, and maintain the correct matching position with the hydraulic brake caliper. When the mechanical output force acts on the inner brake pad, the brake pad slides.

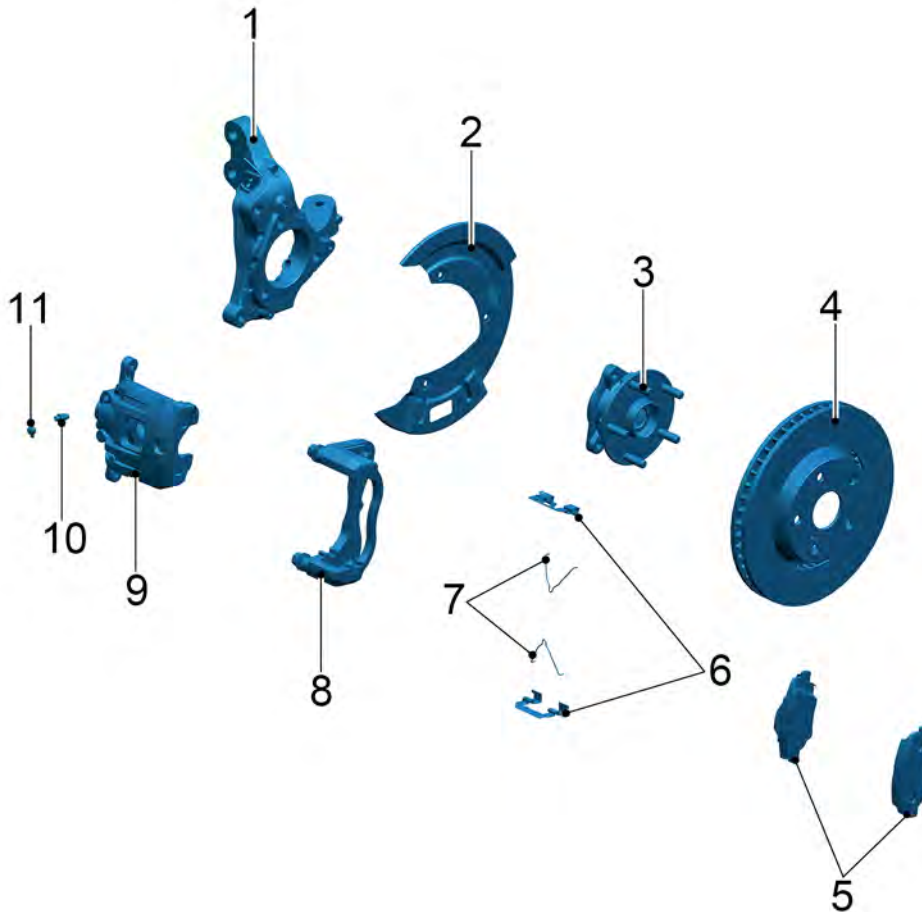
Brake caliper floating pin: it is used to install the hydraulic brake caliper, fix the brake caliper in place, and maintain the correct matching position with the brake caliper support. When there is mechanical output force, the brake caliper slides relative to the brake pad.

Operation of the front disc brake system:

The mechanical output force from the hydraulic brake caliper piston is acted on the internal brake pad. When the piston pushes and presses the internal brake pad outward, the brake caliper shell pulls the external brake pad inward at the same time to evenly distribute the output force. The brake pad acts the output force on the friction surface of two sides of the brake disc to slow down the speed of tire and wheel assemblies. Normal functions of the brake guide and the floating brake caliper are important for the uniform distribution of the brake force.

6.2.3 Breakdown drawing

6.2.3.1 Breakdown Drawing

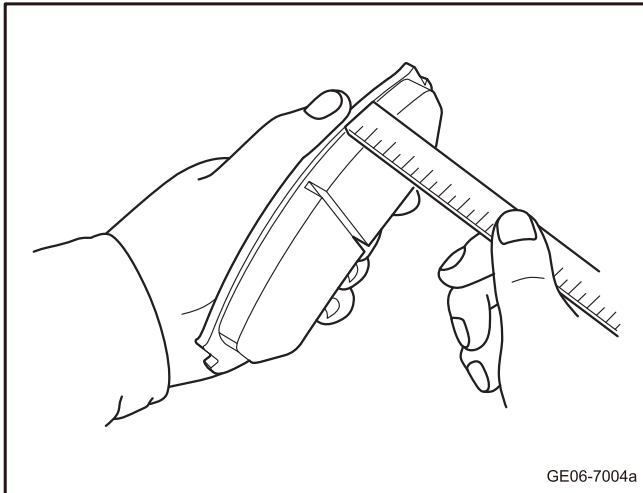


- | | | | |
|----|---------------------------------|-----|---|
| 1. | Front steering knuckle assembly | 7. | Active return spring. |
| 2. | front wheel brake dust cover | 8. | Front brake caliper c/w pin shaft bracket |
| 3. | Front hub | 9. | Front brake caliper |
| 4. | Front brake disc | 10. | Front Bleed screw |
| 5. | Front Brake pads | 11. | Front Bleed screw dust cover |
| 6. | Spring leaf | | |

6.2.4 Diagnostic information and procedures

6.2.4.1 Check brake pads

1. Regularly check the brake pads. Take the measurements as shown below. Replace the brake pads if they are out of specification.
2. If replacement is needed, the complete disc brake pads must be replaced.
3. Check whether the friction surface of disc brake pads is subject to crack, break or damage.



6.2.4.2 Check of brake caliper

1. Check whether the brake caliper shell is cracked, severely worn, and damaged. If the above conditions occur, the brake caliper needs to be replaced.
2. Check whether the seal ring of the brake caliper piston dust cover is cracked, broken, chipped, aging, and not properly installed in the brake caliper body. If any of the above conditions occur, replace the brake caliper.
3. Check whether there is brake fluid leakage around the seal ring of the brake caliper piston dust cover and on the disc brake pads. If there are signs of brake fluid leakage, replace the brake caliper.
4. Check whether the brake caliper piston can enter the brake caliper cylinder smoothly and the stroke is complete. The movement of the brake caliper piston in the brake caliper cylinder should be smooth and uniform. If the brake caliper piston is catching or it is difficult to reach the bottom, the brake caliper needs to be replaced.

6.2.4.3 Check of brake pad guide

- Check the brake pad guide for missing, serious corrosion and bending of installing projecting tongue.
- In case any above conditions is discovered, the brake pad guide needs replacement. Guarantee that the brake pads move smoothly on the disc brake pad guide without any obstruction.

6.2.4.4 Floating pin of brake caliper check

Check the floating pin of brake caliper for the following conditions:

- Catching
- Stuck
- Jacket cracking or damage
- Jacket missing

If any above conditions happen, the caliper and dust cover sealing ring need to be replaced.

6.2.4.5 Brake disc surface and wear check

1. Use industrial alcohol or allowed equivalent brake cleaner to clean the friction surface of the brake disc.

2. Check the brake disc friction surface for the following conditions:

- Serious corrosion and/or pitting
- Slight surface corrosion
- Cracks and/or burn spots
- Serious blue discoloration
- Deep scratches on the friction surface of the brake disc. In the case the friction surface of brake disc suffers from one or more above conditions, the brake disc requires

surface finishing or replacement.

Caution

After surface finishing or replacement of brake disc, the brake pads also require replacement.

6.2.4.6 Measurement of brake disc thickness

1. Clean the friction surface of brake disc with industrial alcohol or similar brake cleaner.
2. Use a micrometer to measure and record the minimum thickness of 4 or more position points evenly distributed along the circumference of the brake disc. Make sure that the measurement is only conducted in the contact area of the brake pad lining surface, and the distance between the micrometer and the outer edge of the brake disc must be equal each time.
3. If the brake disc thickness exceeds the specification, surface finishing or replacement should be made for the brake disc.

After surface finishing or replacement of brake disc, the brake pads also require replacement.

6.2.4.7 Measurement of end face run-out value upon the assembly of brake disc

Caution

When removing the brake disc from the hub, remove any rust or dirt from the mating surfaces of the hub and brake disc, otherwise it may cause excessive amount of end face run-out value upon the assembly of brake disc, which may result in brake runout.

1. Remove the brake disc from the vehicle. Refer to [Replacement of Brake Discs](#)
2. Clean the friction surface of brake disc with industrial alcohol or similar brake cleaner.
3. Install the brake disc onto the hub.
4. Install the nut by hand and tighten it with a wrench.
5. Install the dial indicator base to the steering knuckle and place the dial indicator measuring head so that it contacts the friction surface of the brake disc at 90°, and is about 13mm (metric) and 0.5in (imperial) from the outer edge of the brake disc.
6. Rotate the brake disc until the dial indicator shows minimum reading, then return the dial indicator to zero.
7. Rotate the brake disc until the dial indicator shows maximum reading
8. Mark and record the end face run-out value.
9. Compare the end face run-out value upon the assembly of brake disc with the specifications.

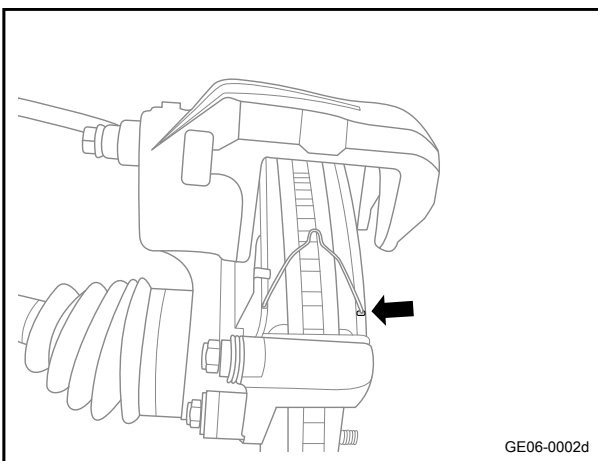
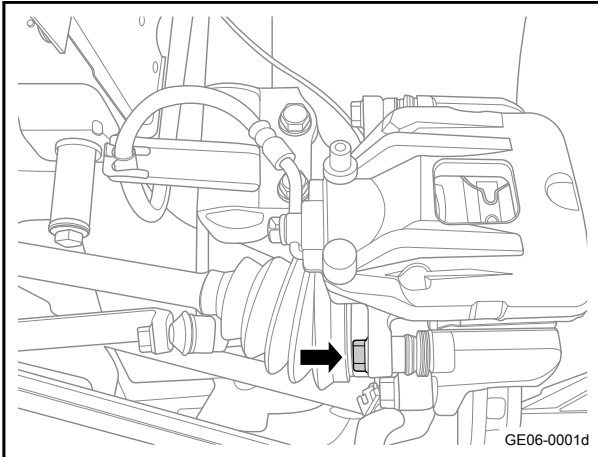
Standard value: 0.15mm (metric system) / 0.006in (Imperial system)
10. If the rear end face run-out value upon the assembly of brake disc exceeds the specifications, check axial clearance of bearing and run-out value of axle hub. If they are functioning properly and the brake disc thickness is within the specified range, surface dress the brake disc to ensure proper flatness.

6.2.5 Removing and installing

6.2.5.1 Replacement of Front Brake Pad

Removal procedure

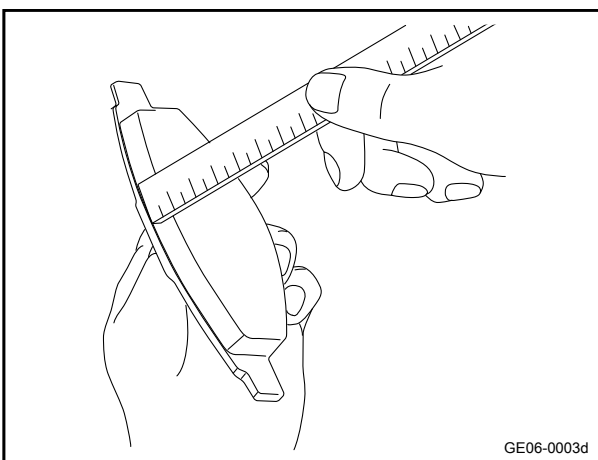
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the 1 fixing bolt at the lower end of the brake caliper.



- 4 Lift the brake caliper upwards and remove the brake pad.

Caution

When lifting the brake caliper upwards, remove the two springs of the brake pads in time to prevent them from popping out.



Inspection procedure

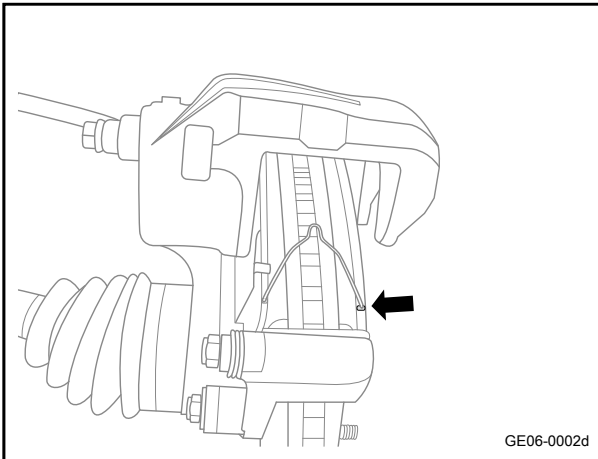
- 1 Check the thickness of the brake pad
Standard thickness: 11mm(0.43in)
Minimum thickness: 2mm(0.08in)

Caution

If the brake pad lining thickness is less than the minimum value, replace the front brake pad.

The brake pad is equipped with a mechanical alarm pad. If the alarm pad makes a dial alarm sound when driving or if the alarm pad is found to have signs of wear, the brake pad should be replaced immediately.

Installation procedure



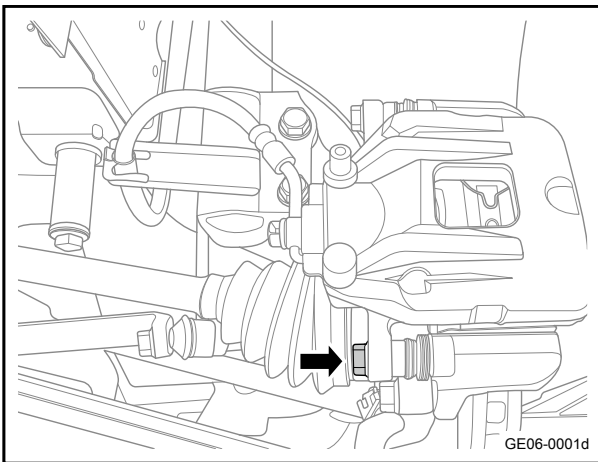
- 1 Move the brake pad to the installation position.
- 2 Lift the brake caliper upwards and install brake pad.

Caution

When installing brake pads, the pads with wear-indicating metal are installed on the inside.

Remember to install the brake pad springs after installing the brake pad.

When pulling the brake caliper downward and installing the lower fixing bolts, be careful not to damage the piston dust-proofing seal.



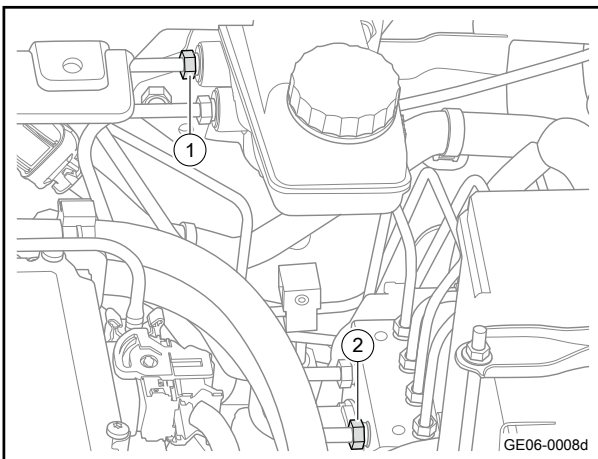
- 3 Install 1 fixing bolt at the lower end of the brake caliper.
Torque: 30N·m (metric system) 22.1lb-ft (Imperial system)

- 4 Install the wheel.
- 5 Lower the vehicle.

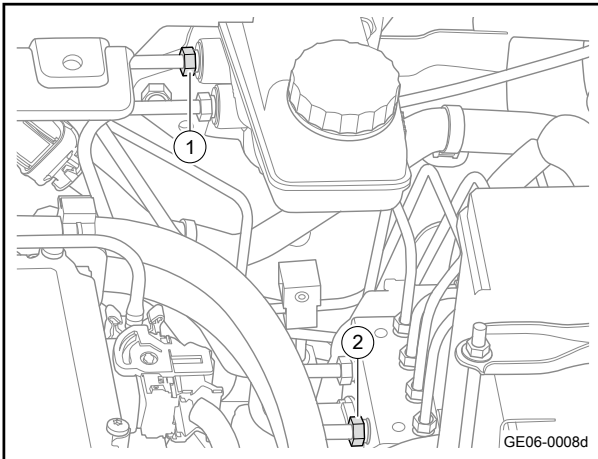
6.2.5.2 Replacement of Pipe 1 of Brake Master Cylinder

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove one fixing nut 1 connecting the pipe 1 of brake master cylinder and the intelligent booster.
- 4 Remove the 1 fixing nut 2 connecting the pipe 1 of brake master cylinder and the ESC control module.
- 5 Remove the pipe 1 of the brake master cylinder.



Installation procedure



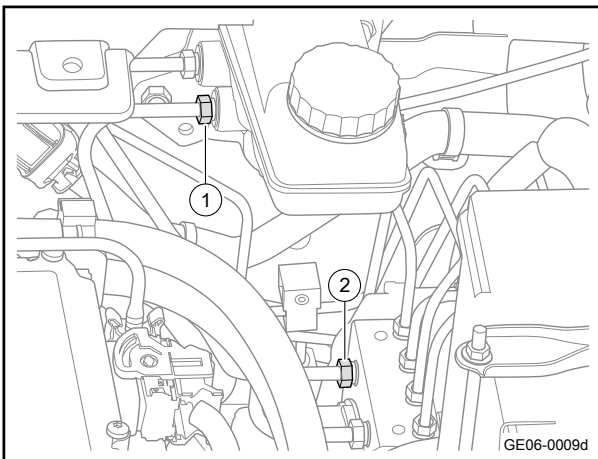
- 1 Move the pipe 1 of the brake master cylinder to the installation position.
- 2 Install the fixing nut 2 connecting the brake pipe 1 of brake master cylinder and the ESC control module.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 3 Install the 1 fixing nut connecting the brake pipe 1 of brake master cylinder and the intelligent booster.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 4 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 5 Lower the vehicle.

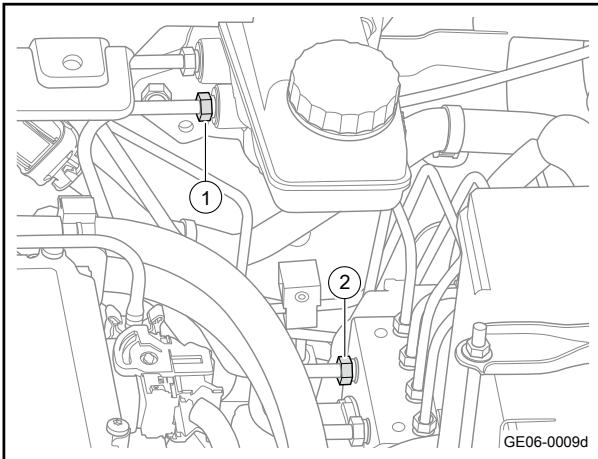
6.2.5.3 Replacement of Pipe 2 of Brake Master Cylinder

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove fixing nut 1 connecting the pipe 2 of brake master cylinder and the intelligent booster.
- 4 Remove the fixing nut 2 connecting the brake pipe 2 of brake master cylinder and the ESC control module.
- 5 Remove the No.2 rigid pipe of the brake master cylinder.



Installation procedure



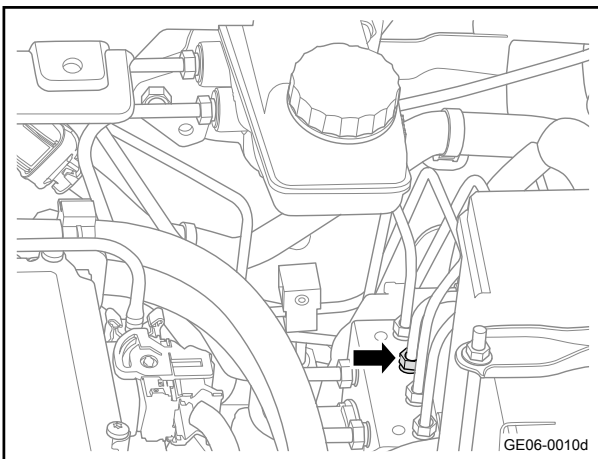
- 1 Move the No.2 rigid pipe of the brake master cylinder to the installation position.
- 2 Install the fixing nut 2 connecting the brake pipe 2 of brake master cylinder and the ESC control module.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

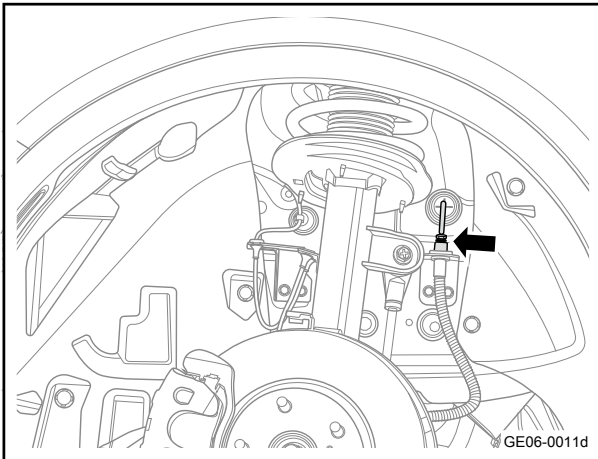
- 3 Install the 2 fixing nut connecting the pipe 1 of brake master cylinder and the intelligent booster.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 4 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 5 Lower the vehicle.

6.2.5.4 Replacement of Left Front Brake Pipe

Removal procedure

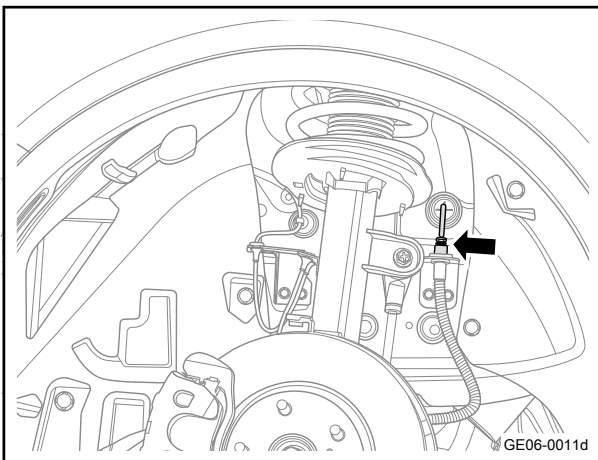
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove the left front wheel. Refer to [Wheel Replacement](#)
- 4 Remove the 1 fixing nut connecting the left front brake pipe and the ESC controller.



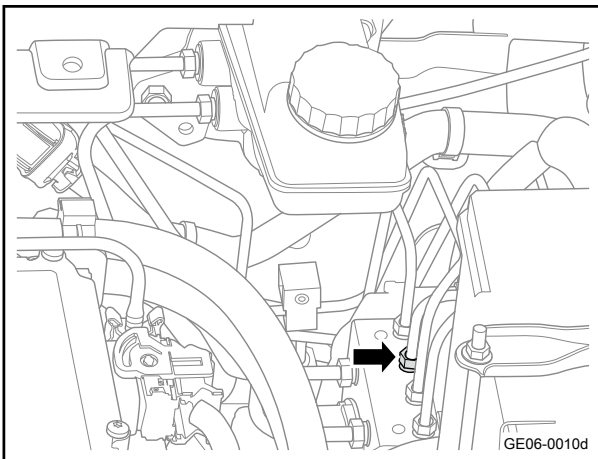


- 5 Remove the 1 fixing nut connecting the left front brake pipe and the left front brake hose.
- 6 Take off the left front brake pipe.

Installation procedure



- 1 Move the left front brake pipe to the installation position.
- 2 Install the 1 fixing nut connecting the left front brake pipe and the left front brake hose.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



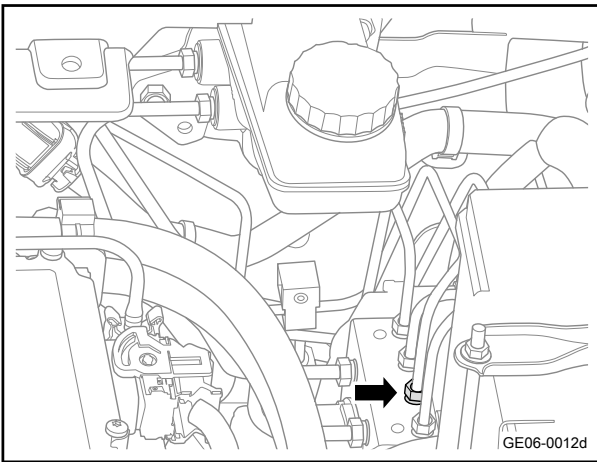
- 3 Install the 1 fixing nut connecting the left front brake pipe and the ESC controller.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 4 Install the left front wheel.
- 5 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 6 Lower the vehicle.

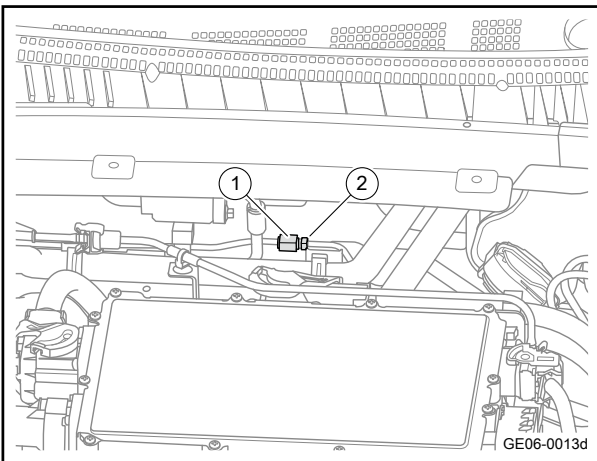
6.2.5.5 Replacement of Right Front Brake Pipe 1

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove the 1 fixing nut connecting the right front brake pipe 1 and the ESC controller.

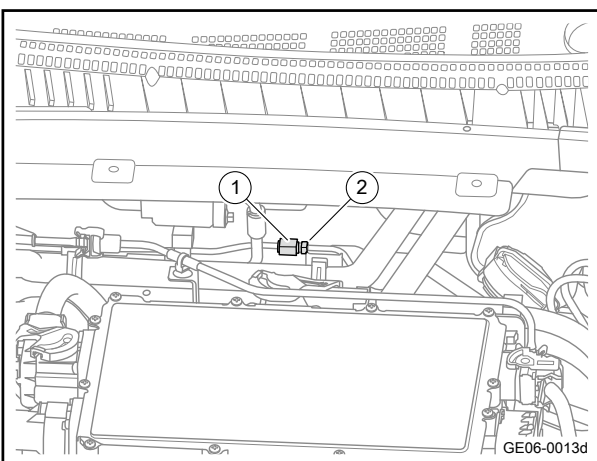


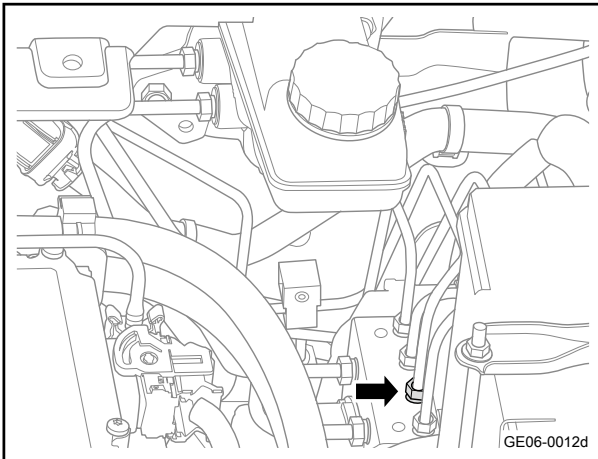
- 4 Use pliers to fix the right front No.2 hard brake pipe 1, and remove the 1 fixing nut 2 connecting the right front brake pipe 1 and the right front brake pipe 2.
- 5 Take off the right front brake pipe 1.



Installation procedure

- 1 Move the right front brake pipe 1 to the installation position.
- 2 Use pliers to fix the right front No.2 brake pipe 1, and install the 1 fixing nut connecting the right front brake pipe 1 and the right front brake pipe 2.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)





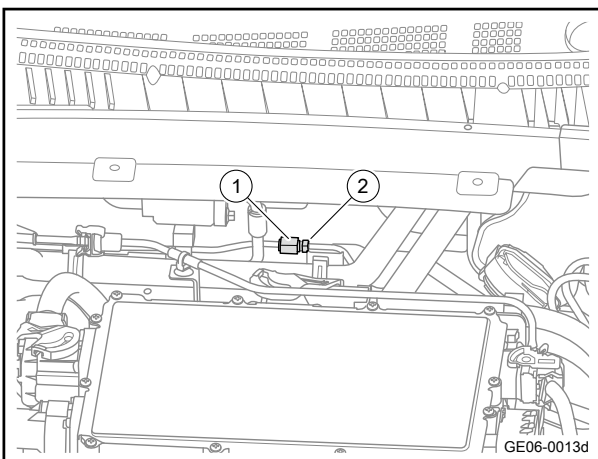
- 3 Install the 1 fixing nut connecting the right front brake pipe 1 and the ESC controller.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

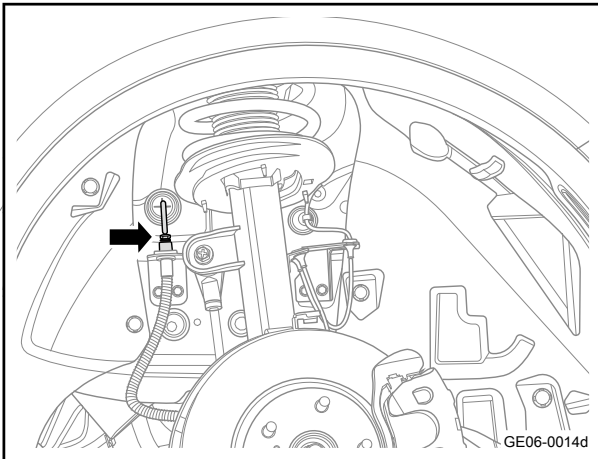
- 4 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 5 Lower the vehicle.

6.2.5.6 Replacement of Right Front Brake Pipe 2

Removal procedure

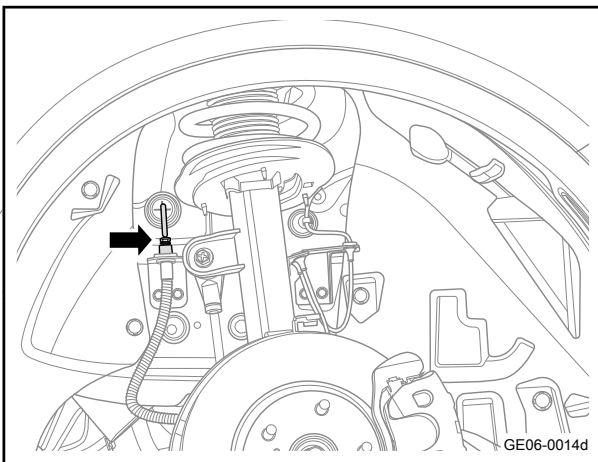
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove the right front wheels. Refer to [Wheel Replacement](#)
- 4 Use pliers to fix the right front No.2 hard brake pipe 1, and remove the 1 fixing nut connecting the right front brake pipe 2 and the right front brake pipe 1.



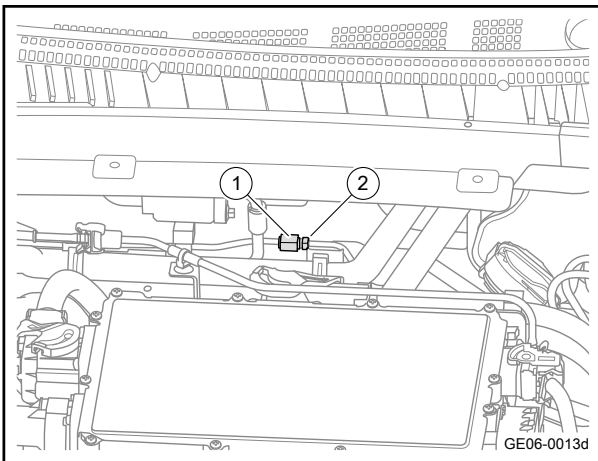


- 5 Remove the 1 fixing nut connecting the right front brake pipe and the right front brake hose.
- 6 Take off the right front brake pipe 2.

Installation procedure



- 1 Move the right front brake pipe 2 to the installation position.
- 2 Install the 1 fixing nut connecting the right front brake pipe 2 and the right front brake hose.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



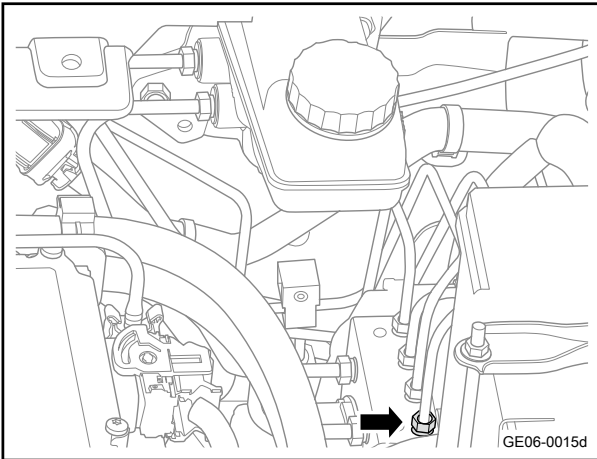
- 3 Use pliers to fix the right front No.2 hard brake pipe 1, and install the 1 fixing nut connecting the right front brake pipe 2 and the right front brake pipe 1.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 4 Install right front wheel.
- 5 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 6 Lower the vehicle.

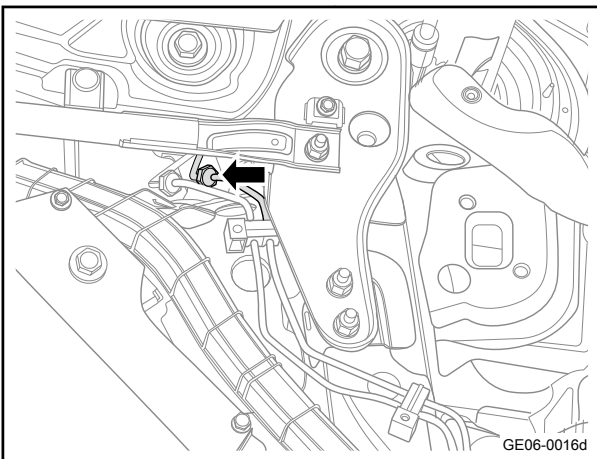
6.2.5.7 Replacement of Left Rear Brake Pipe 1

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 4 Remove the 1 fixing nut connecting the left rear brake pipe 1 and the ESC controller.

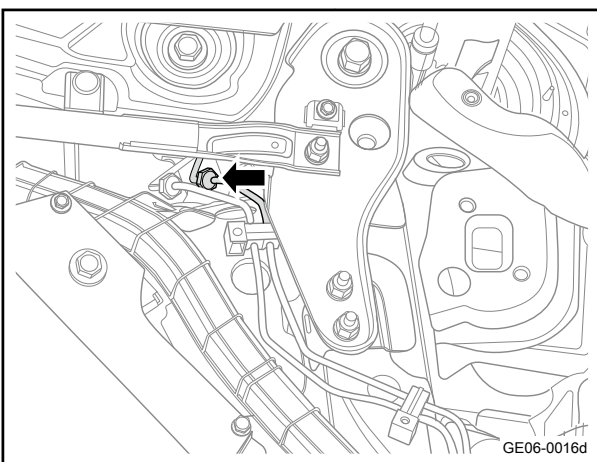


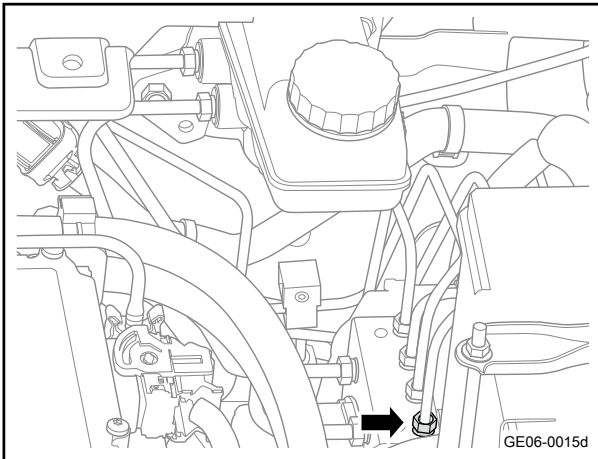
- 5 Remove the 1 fixing nut connecting the left rear brake pipe 1 and the left rear brake pipe 2.
- 6 Take off the left rear brake pipe 1.



Installation procedure

- 1 Move the left rear brake pipe 1 to the installation position.
 - 2 Install the 1 fixing nut connecting the left rear brake pipe 1 and the left rear brake pipe 2.
- Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)





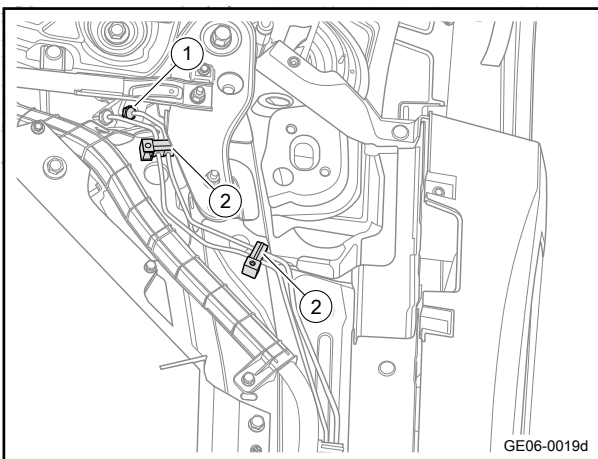
- 3 Install the 1 fixing nut connecting the left rear brake pipe 1 and the ESC controller.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

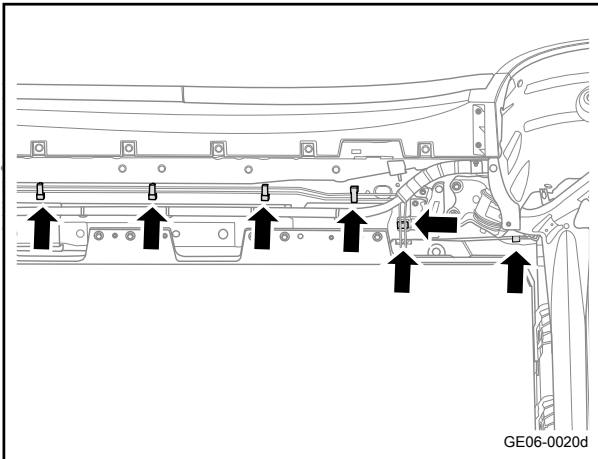
- 4 Install the power wire harness cover plate assembly.
- 5 Install the wheel.
- 6 Lower the vehicle.

6.2.5.8 Replacement of Left Rear Brake Pipe 2

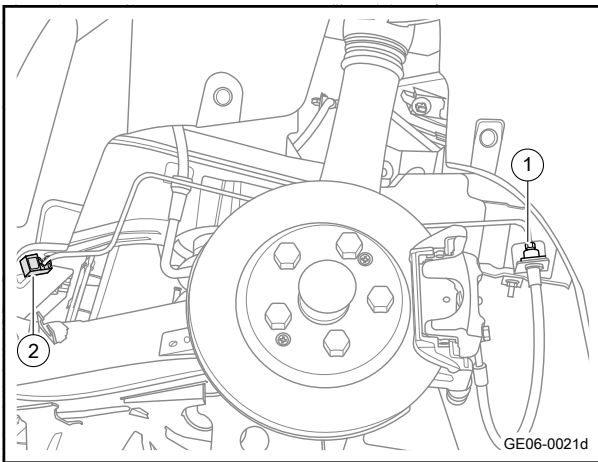
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the battery bottom shield. Refer to [Replacement of Battery Bottom Shield](#)
- 3 Drain the brake fluid. Refer to [Recovery and Filling of Brake Fluid](#)
- 4 Remove wheels. Refer to [Wheel Replacement](#)
- 5 Remove the 1 fixing nut 1 connecting the left rear brake pipe 1 and the left rear brake pipe 2.
- 6 Disengage the 2 fixed pipe clamps 2 of the left rear No. 2 brake pipe.



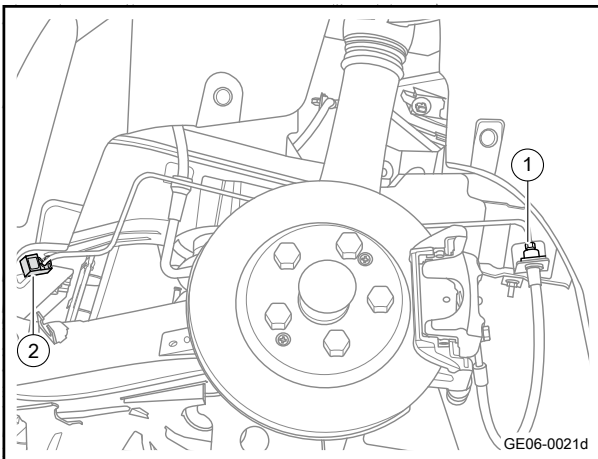


- 7 Disengage the 7 fixed pipe clamps of the left rear No. 2 brake pipe.

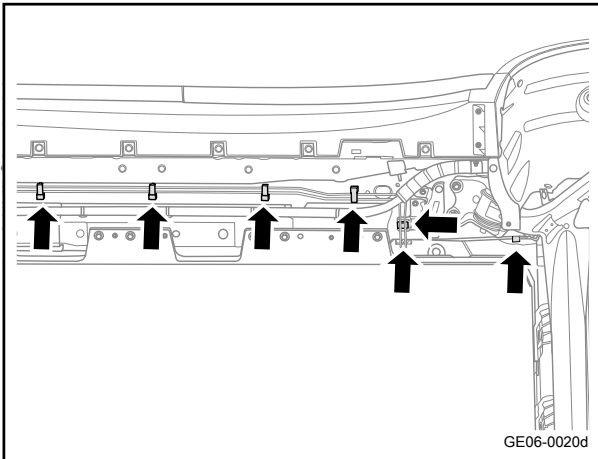


- 8 Remove the 1 fixing nut 1 of the front left No. 2 brake pipe
- 9 Disengage the 1 fixed pipe clamp 2 of the left rear No. 2 brake pipe.
- 10 Take off the left rear brake pipe 2.

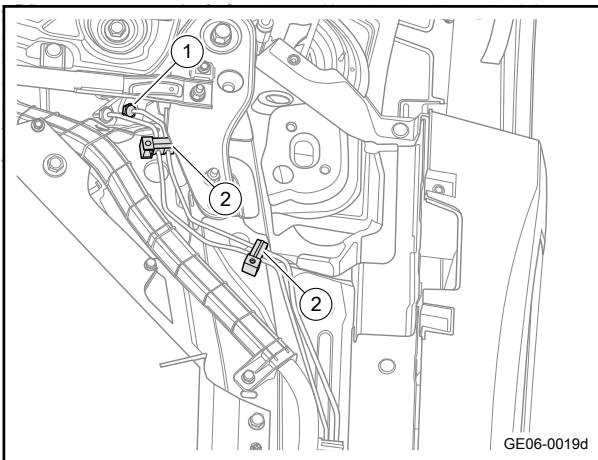
Installation procedure



- 1 Move the left rear brake pipe 2 to the installation position.
- 2 Install 1 fixed pipe clamp 2 on the left rear No. 2 brake pipe.
- 3 Install the 1 fixing nut 1 of the left rear brake pipe 2.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



- 4 Install 7 fixed pipe clamps on the left rear No. 2 brake pipe.



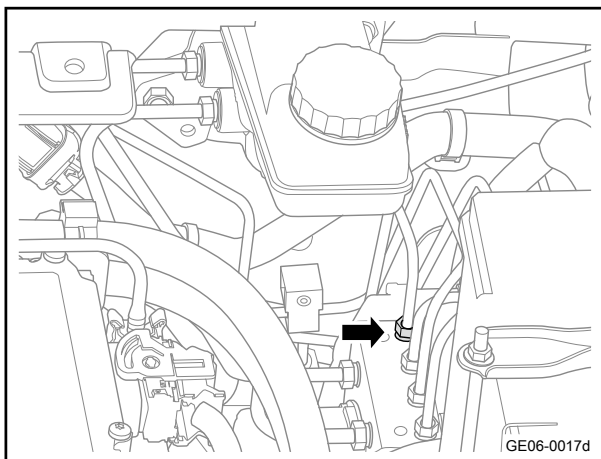
- 5 Install 2 fixed pipe clamps 2 on the left rear No. 2 brake pipe.
- 6 Install the 1 fixing nut 1 connecting the left rear brake pipe 1 and the left rear brake pipe 2.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 7 Install the wheel.
- 8 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 9 Install the battery bottom shield.
- 10 Lower the vehicle.

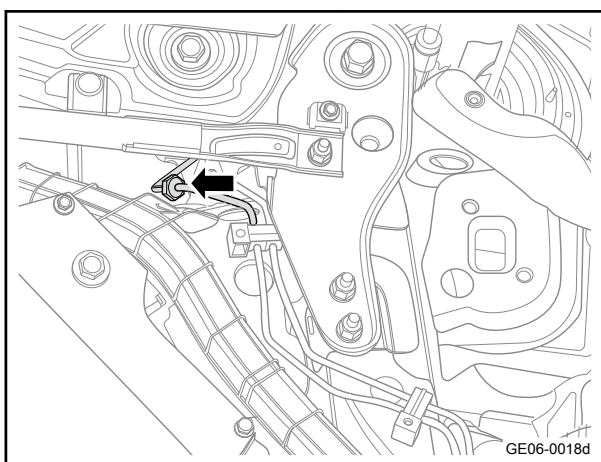
6.2.5.9 Replacement of Right Rear Brake Pipe 1

Removal procedure

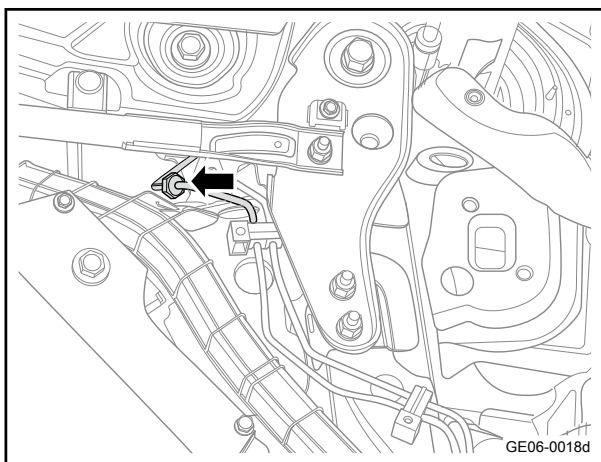
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)



- 4 Remove the 1 fixing nut connecting the right rear brake pipe 1 and the ESC controller.

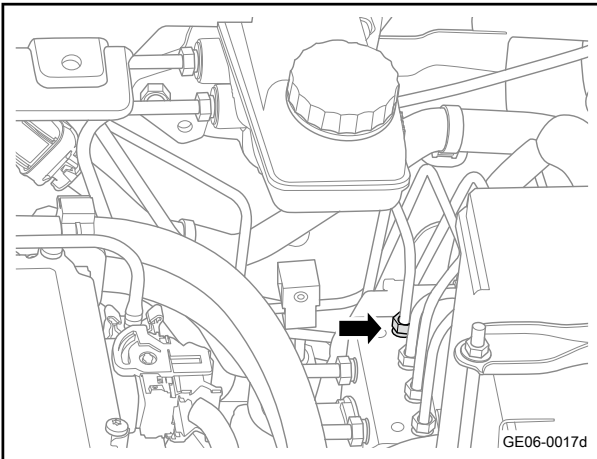


- 5 Remove the 1 fixing nut connecting the right rear brake pipe 1 and the right rear brake pipe 2.
- 6 Take off the right rear brake pipe 1.



Installation procedure

- 1 Move the right rear brake pipe 1 to the installation position.
- 2 Install the 1 fixing nut connecting the right rear brake pipe 1 and the right rear brake pipe 2.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



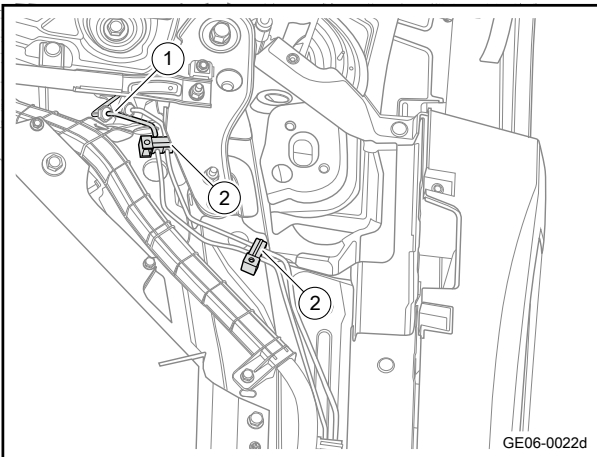
- 3 Install the 1 fixing nut connecting the right rear brake pipe 1 and the ESC controller.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

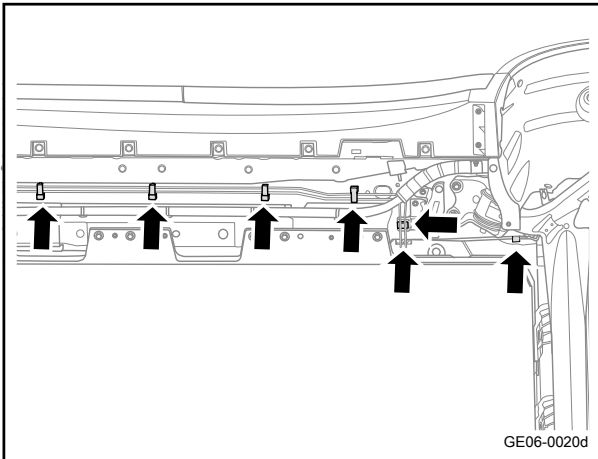
- 4 Install the power wire harness cover plate assembly.
- 5 Install the wheel.
- 6 Lower the vehicle.

6.2.5.10 Replacement of Right Rear Brake Pipe 2

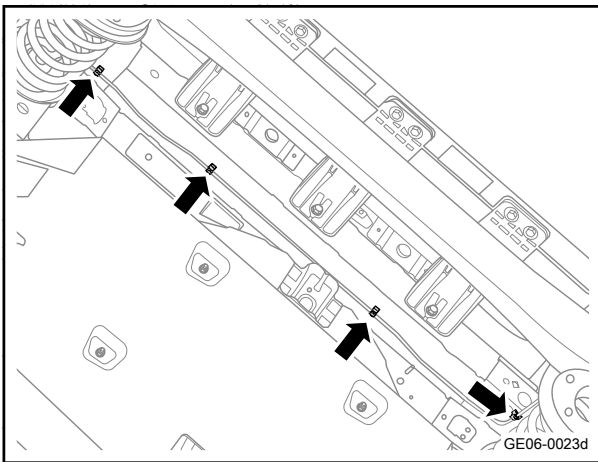
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the battery bottom shield. Refer to [Replacement of Battery Bottom Shield](#)
- 3 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)
- 4 Remove wheels. Refer to [Wheel Replacement](#)
- 5 Remove the 1 fixing nut 1 connecting the right rear brake pipe 1 and the right rear brake pipe 2.
- 6 Disengage the 2 fixed pipe clamps 2 of the right rear No. 2 brake pipe.

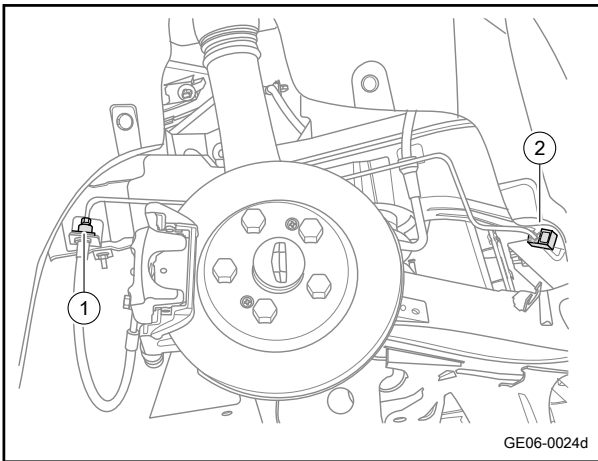




- 7 Disengage the 7 fixed pipe clamps of the right rear No. 2 brake pipe.

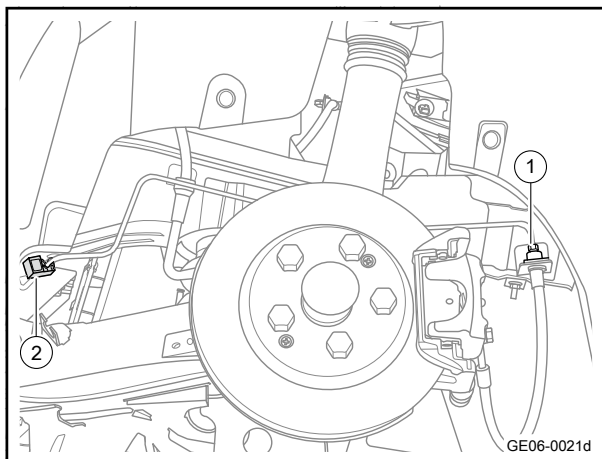


- 8 Disengage the 4 fixed pipe clamps of the right rear No. 2 brake pipe.

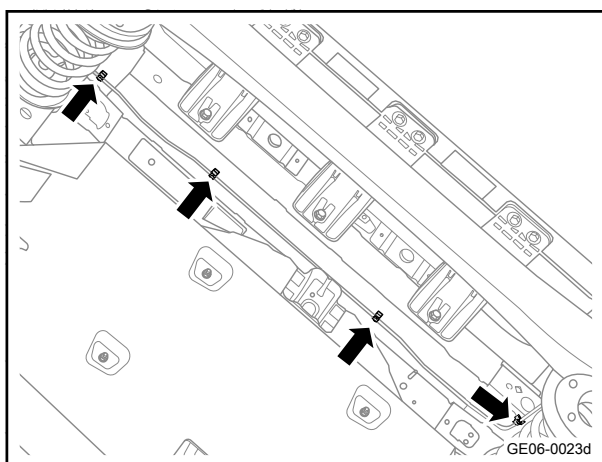


- 9 Remove the 1 fastening clip 1 of the right rear brake pipe 2.
- 10 Disengage the 1 fixed pipe clamps 2 of the right rear No. 2 brake pipe.
- 11 Take off the right rear brake pipe 2.

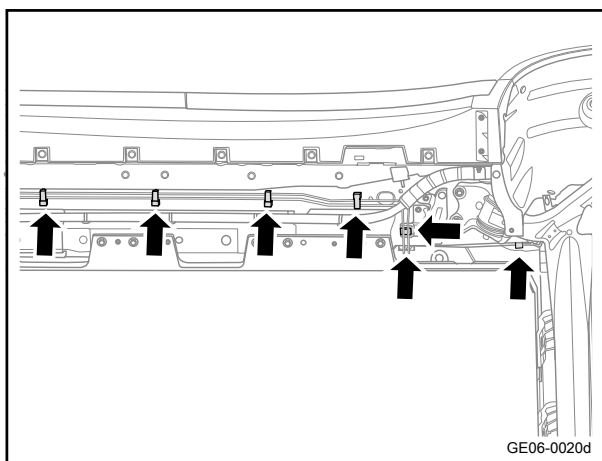
Installation procedure



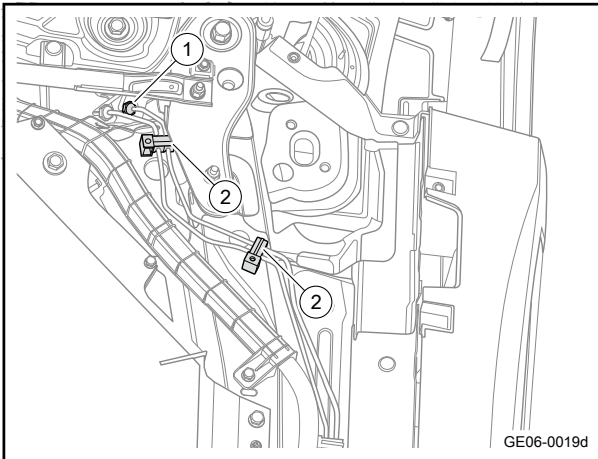
- 1 Move the right rear brake pipe 2 to the installation position.
- 2 Install 1 fixed pipe clamp 2 on the right rear No. 2 brake pipe.
- 3 Install 1 fixing nut 1 on the right rear No. 2 brake pipe.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



- 4 Disengage the 4 fixed pipe clamps of the right rear No. 2 brake pipe.



- 5 Install 7 fixed pipe clamps on the right rear No. 2 brake pipe.



- 6 Install 2 fixed pipe clamps 2 on the right rear No. 2 brake pipe.
- 7 Install the 1 fixing nut 1 connecting the right rear brake pipe 1 and the right rear brake pipe 2.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 8 Install the wheel.
- 9 Add the brake fluid and perform the hydraulic brake system exhaust procedure.
- 10 Install the battery bottom shield.
- 11 Lower the vehicle.

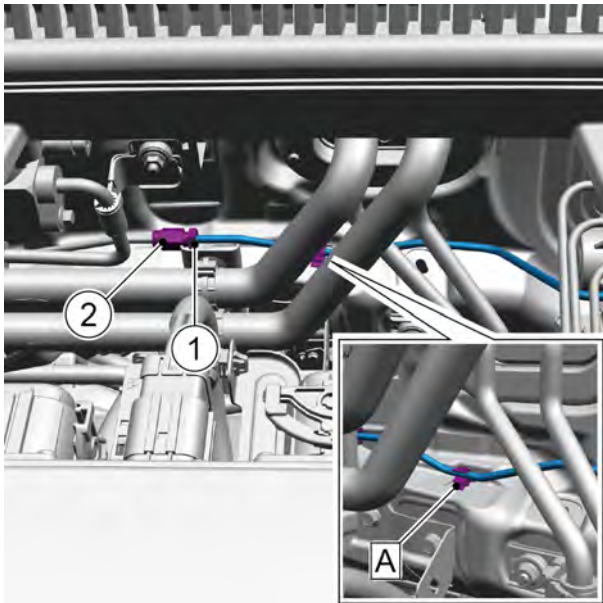
6.2.5.11 Replacement of Right Front Brake Pipe 1 (Type II)

Removal procedure

Caution

The brake fluid is corrosive and one should wear personal protective tools before repairing the brake system components.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Drain the brake fluid. See [Brake Fluid Filling and Replacement](#)

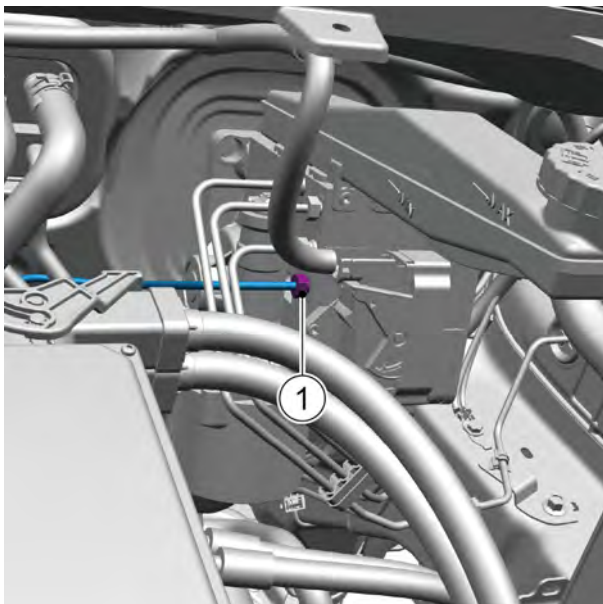


- 4 Use a wrench to fix the nut 2, and at the same time remove one fixing bolt 1 connecting the right front brake pipe 1 and the right front brake pipe 2.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 5 Disconnect the right front No.1 brake pipe from the single pipe clamp A.



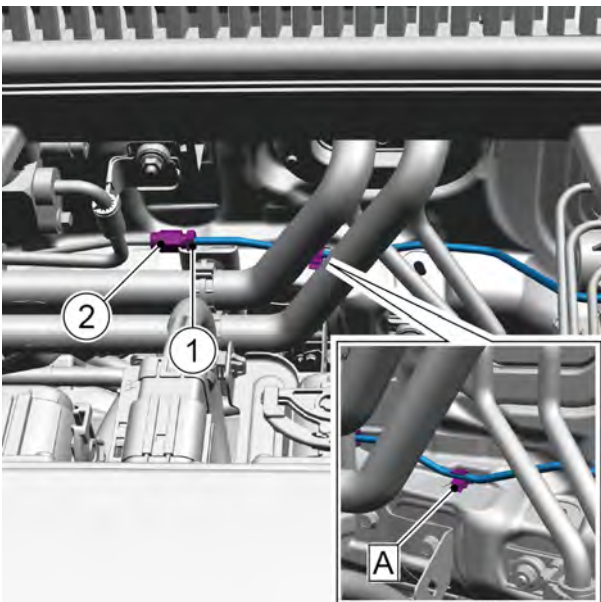
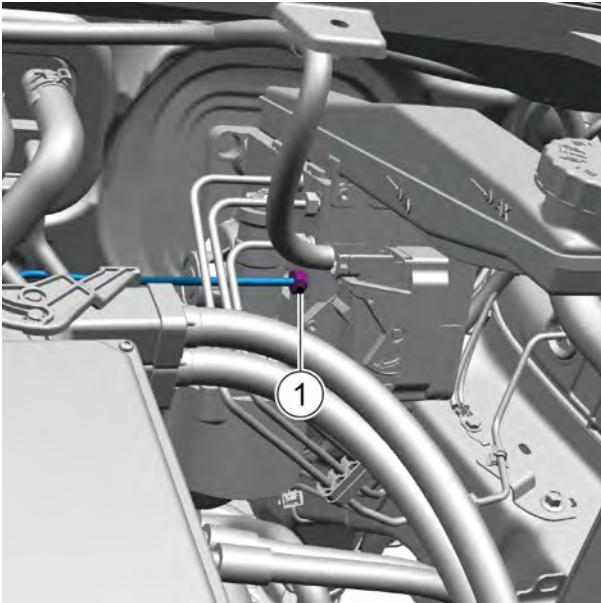
- 6 Remove the 1 fixing bolt 1 connecting the front right No.1 brake pipe with the brake control module assembly.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 7 Take off the right front brake pipe 1.

Installation procedure



- 1 Move the right front brake pipe 1 to the installation position.

Caution

Remove the bundle of pipes.

- 2 Install the 1 fixing nut 1 connecting the right front brake pipe 1 and the HECU controller assembly.

Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 3 Clamp the front right No.1 brake pipe into the single pipe clamp A .

- 4 Use a wrench to fix the nut 2, and install the 1 fixing nut 1 connecting the right front brake pipe 1 and the right front brake pipe 2.

Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 5 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)

- 6 Lower the vehicle.

- 7 Connect the negative cable of battery.

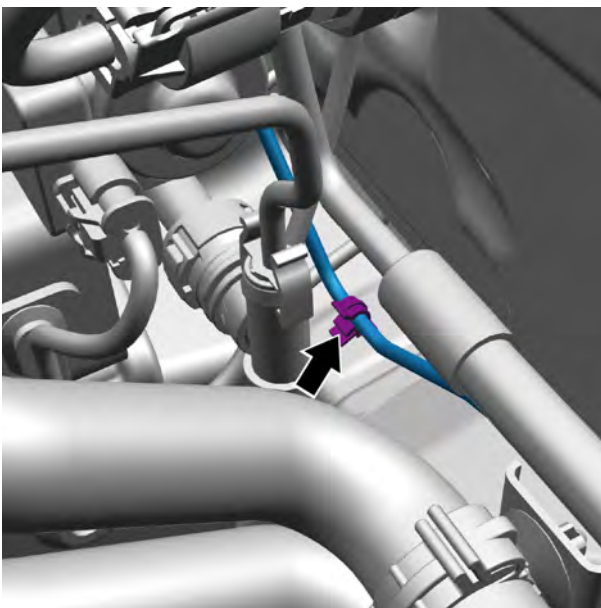
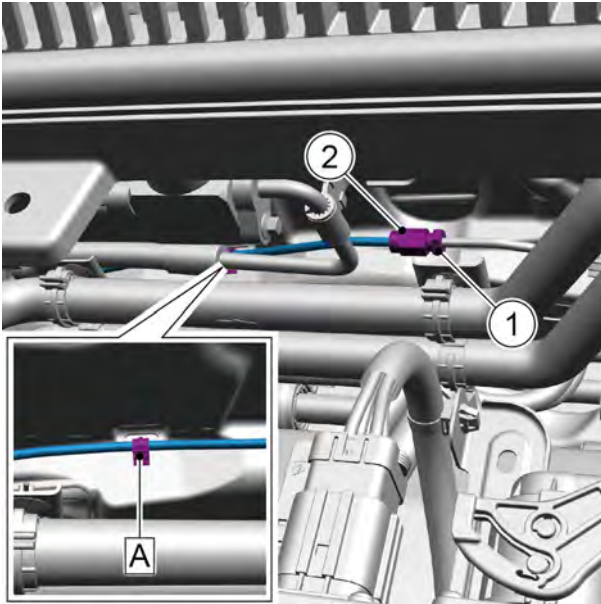
6.2.5.12 Replacement of Right Front Brake Pipe 2 (Type II)

Removal procedure

Caution

The brake fluid is corrosive and should wear personal protective tools before repairing the brake system components.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)

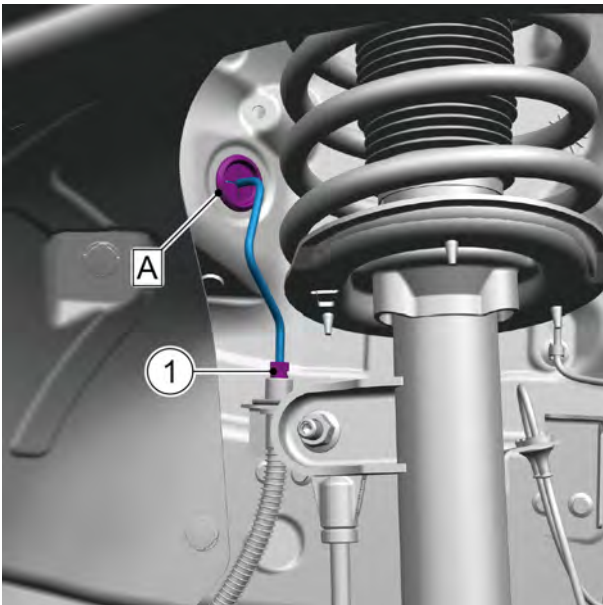


- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove the right front wheels. Refer to [Wheel Replacement \(Type I\)](#)
- 4 Use a wrench to fix the nut 2, and install the 1 fixing nut 1 connecting the right front brake pipe 1 and the right front brake pipe 2.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 5 Disconnect Right front brake pipe 2 from the single pipe clamp A.
- 6 Disconnect Right front brake pipe 2 from the single pipe clamp.



- 7 Remove the 1 fixing bolt1 connecting the right front brake pipe 2 and the right front brake hose.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 8 Disconnect the rubber plug A of the right front brake pipe 2 from the vehicle body.
- 9 Take off the right front brake pipe 2.

Installation procedure

- 1 Move the right front brake pipe 2 to the installation position.

Caution

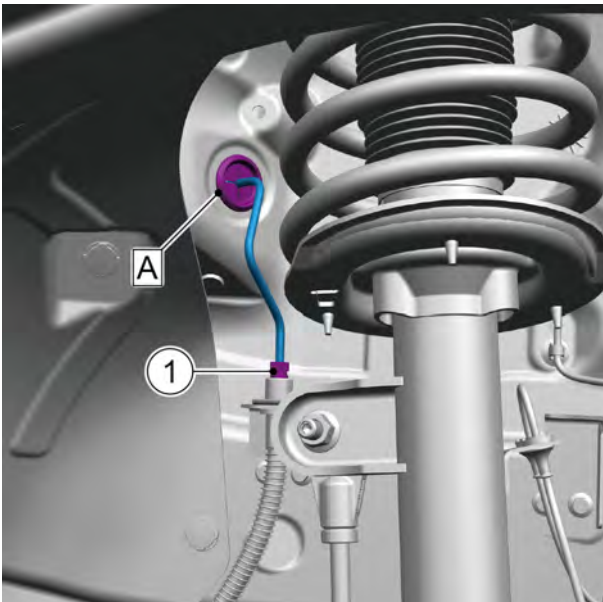
Remove the bundle of pipes.

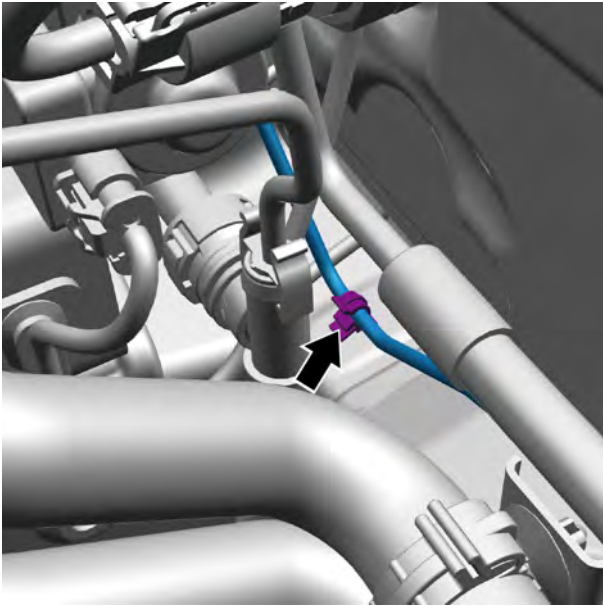
- 2 Insert the rubber plug A of the right front brake pipe 2 into the vehicle body.
- 3 Install the 1 fixing bolt 1 connecting the right front brake pipe 2 and the right front brake hose.

Torque: 18N·m

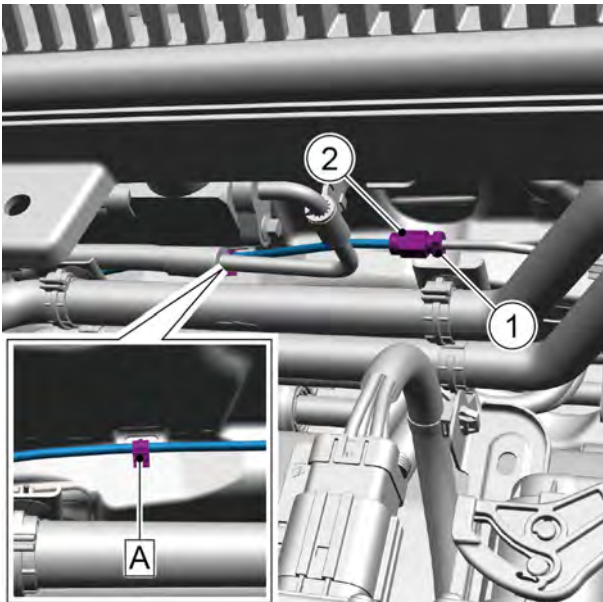
Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.





- 4 Clamp Right front brake pipe 2 into the single pipe clamp.



- 5 Right front brake pipe 2 into the single pipe clamp A.
- 6 Use a wrench to fix the nut 2, and install the 1 fixing bolt1 connecting the right front brake pipe 1 and the right front brake pipe 2.

Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 7 Install right front wheels.
- 8 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 9 Lower the vehicle.

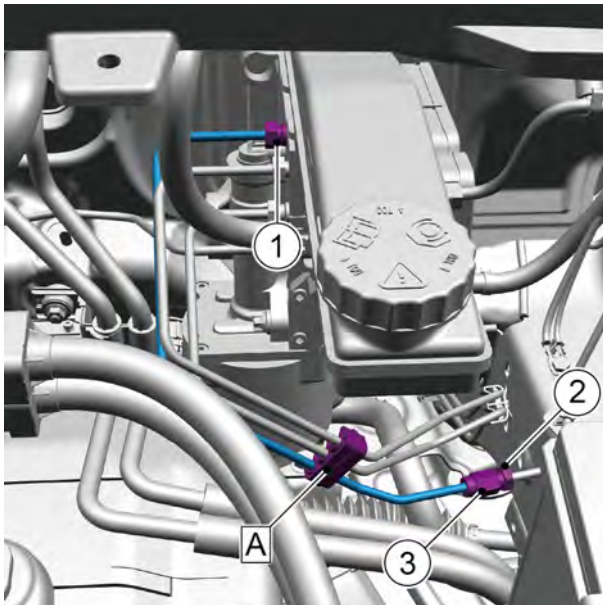
6.2.5.13 Replacement of Front Left Pipe 1 (Type II)

Removal procedure

Caution

The brake fluid is corrosive and should wear personal protective tools before repairing the brake system components.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)

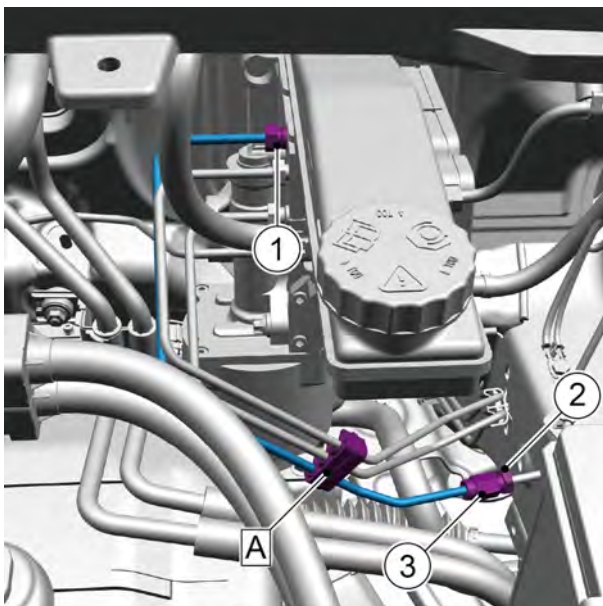


- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove the 1 fixing bolt 1 connecting the front left rigid pipe 1 and the brake control module assembly.
- 4 Use a wrench to fix the nut 3, and loosen the 1 fixing bolt 2 connecting the left front brake pipe 2 and the left front brake pipe 1.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 5 Disengage Left front brake pipe 1 from triple pipe clamp A.
- 6 Take off the front left pipe 1.



Installation procedure

- 1 Move the left front brake pipe 1 to the installation position.

Caution

Remove the bundle of pipes.

- 2 Clamp left front brake pipe 1 into the triple pipe clamp.
- 3 Use a wrench to fix the nut 3, and install the 1 fixing bolt 2 connecting the left rear brake pipe 1 and the left rear brake pipe 2.
Torque: 18N·m
- 4 Install and tighten the 1 fixing bolt1 connecting the left front brake pipe 1 and the brake control module.
Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 5 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 6 Lower the vehicle.

6.2.5.14 Replacement of Left Rear Brake Pipe 2 (Type II)

Removal procedure

Caution

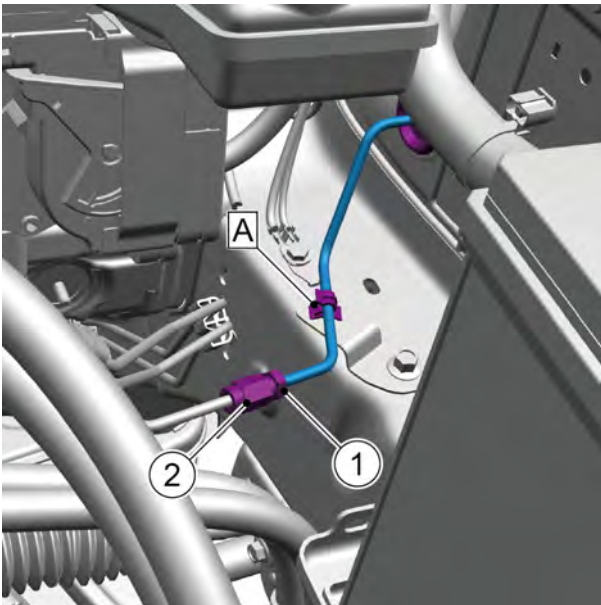
The brake fluid is corrosive and should wear personal protective tools before repairing the brake system components.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove the left front wheel. Refer to [Wheel Replacement \(Type I\)](#)
- 4 Use a wrench to fix the nut 2, Loosen the 1 fixing nut 1 connecting the right front brake pipe 2 and the right front brake pipe 1.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 5 Disconnect the left front brake pipe 2 from the single pipe clamp A.

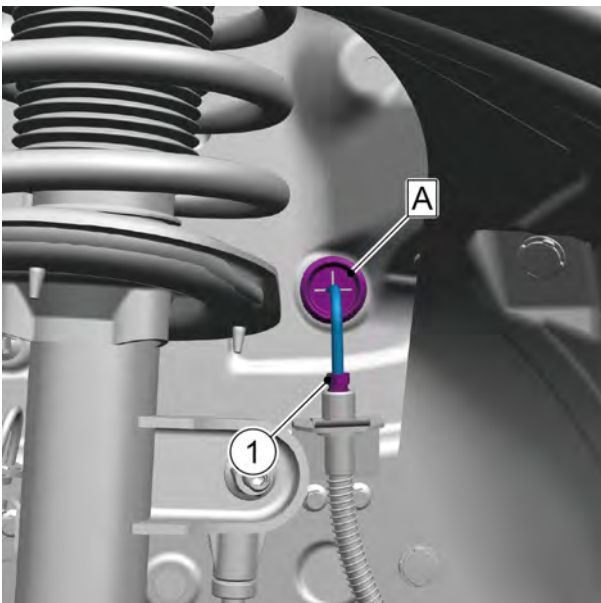


- 6 Remove the 1 fixing bolt1 connecting the left front brake pipe 2 and the left front brake hose.

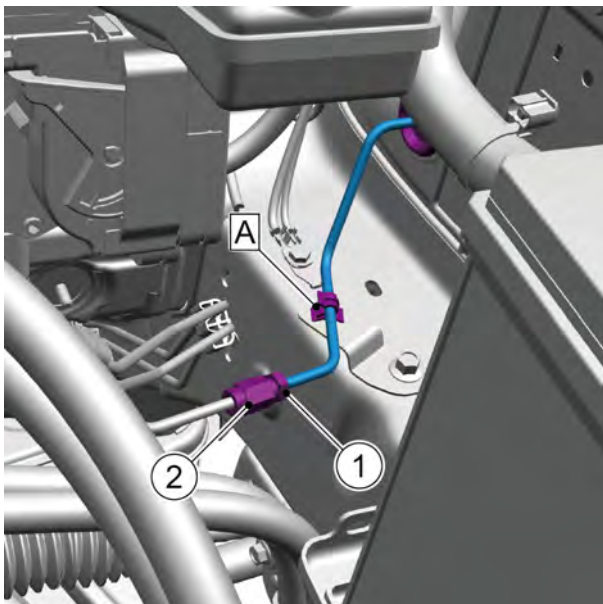
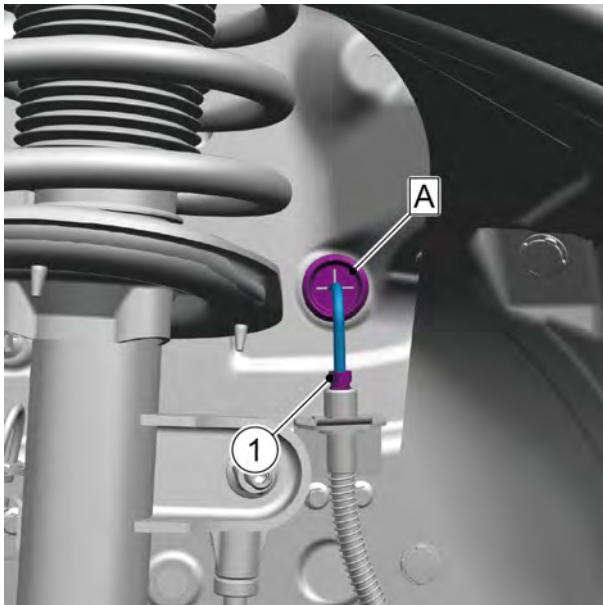
Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 7 Disconnect the rubber plug A of the left front brake pipe 2 from the vehicle body.
- 8 Take off the front left pipe 2.



Installation procedure



- 1 Move the left front brake pipe 2 to the installation position.

Caution

Remove the bundle of pipeline.

- 2 Insert the rubber plug A of the left front brake pipe 2 into the vehicle body.
- 3 Install and tighten the 1 fixing bolt 1 connecting the left front brake pipe 2 and the left front brake hose.

Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 4 Insert the left front brake pipe 2 into single pipe A.
- 5 Use a wrench to fix the nut 2, Install the 1 fixing nut 1 connecting the left front brake pipe 2 and the left front brake pipe 1.

Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 6 Install the left front wheel.
- 7 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 8 Lower the vehicle.

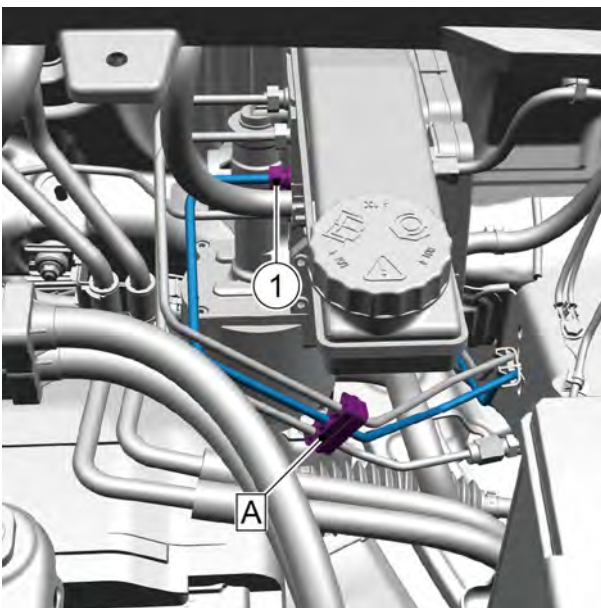
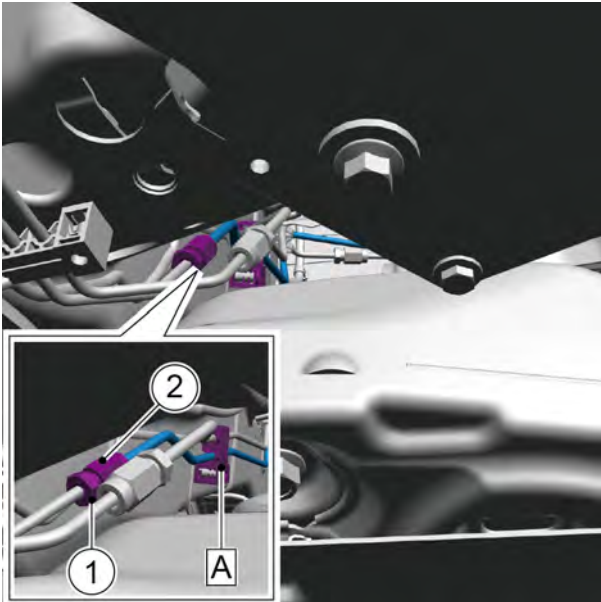
6.2.5.15 Replacement of Left Rear Brake Pipe 1 (Type II)

Removal procedure

Caution

The brake fluid is corrosive and should wear personal protective tools before repairing the brake system components.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)



- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove Battery bottom shield mounting bracket Refer to [Replacement of Battery Bottom Shield mounting bracket](#)
- 4 Use a wrench to fix the nut 2, Loosen the 1 fixing bolt 1 connecting the left rear brake pipe 2 and the left rear brake pipe 1.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 5 Disconnect the left rear brake pipe 1 from the double pipe clamp A.

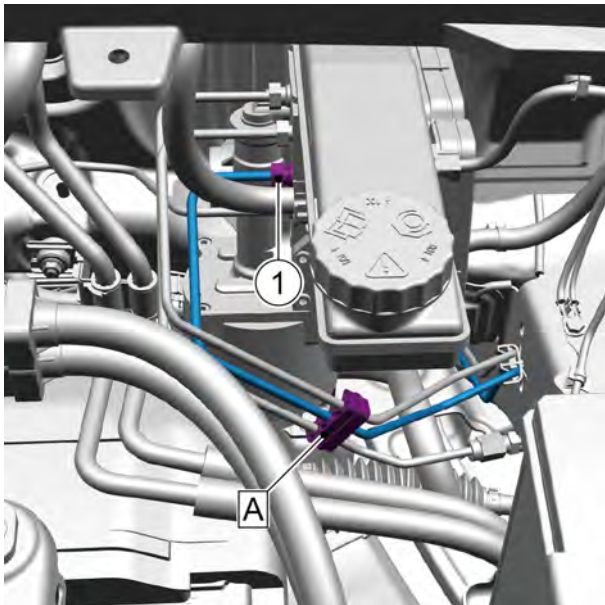
- 6 Remove the 1 fixing bolt 1 connecting the front left pipe 1 and the brake control module.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 7 Disconnect the left rear brake pipe 1 from the three-pipe clip A.
- 8 Take off the left rear brake pipe 1.

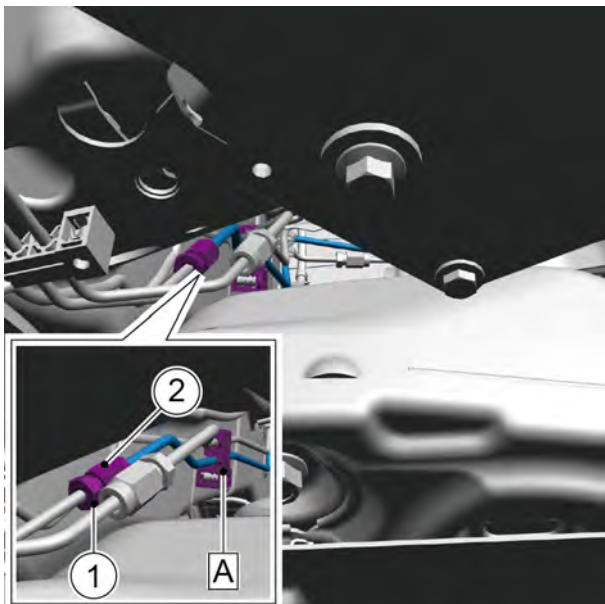
Installation procedure



- 1 Move the left rear brake pipe 1 to the installation position.
Caution
Remove the bundle of pipes.
- 2 Insert the left rear brake pipe 1 into the three-pipe clip A.
- 3 Install and tighten the 1 fixing bolt 1 connecting the left rear brake pipe 1 and the brake control module assembly.
Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.



- 4 Insert the left rear brake pipe 1 into the single pipe clip A.
- 5 Use a wrench to fix the nut 2, Install the 1 fixing bolt 1 connecting the left rear brake pipe 2 and the left rear brake pipe 1.
Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 6 Battery bottom shield mounting bracket replacement
- 7 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 8 Lower the vehicle.

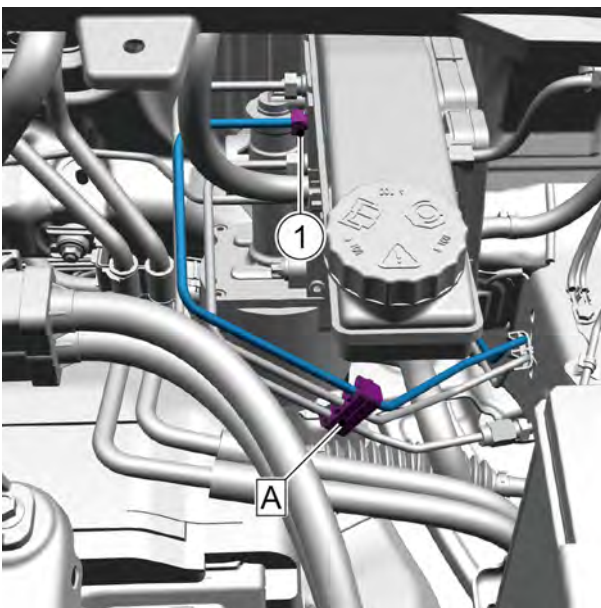
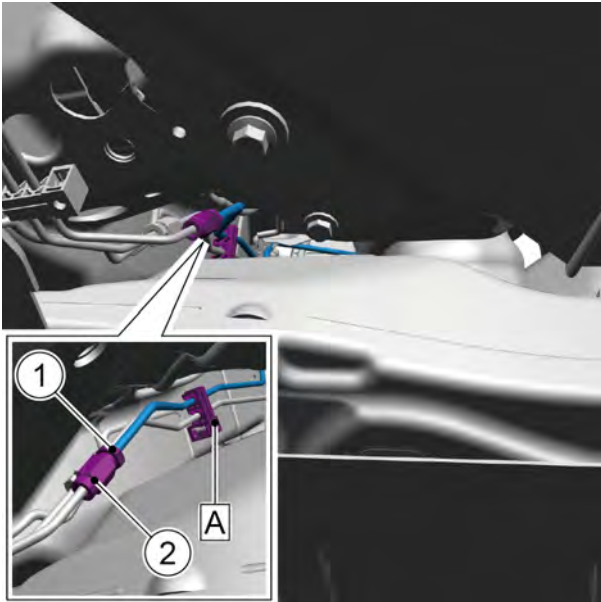
6.2.5.16 Replacement of Right Rear Brake Pipe 1 (Type II)

Removal procedure

Caution

The brake fluid is corrosive and should wear personal protective tools before repairing the brake system components.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)



- 2 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
- 3 Remove Battery bottom shield mounting bracket Refer to [Replacement of Battery Bottom Shield mounting bracket](#)
- 4 Use a wrench to fix nut 2, and install the 1 fixing bolt 1 connecting the right rear brake pipe 1 and the right rear brake pipe 2.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 5 Disconnect the right rear brake pipe 1 from the double pipe clamp A.

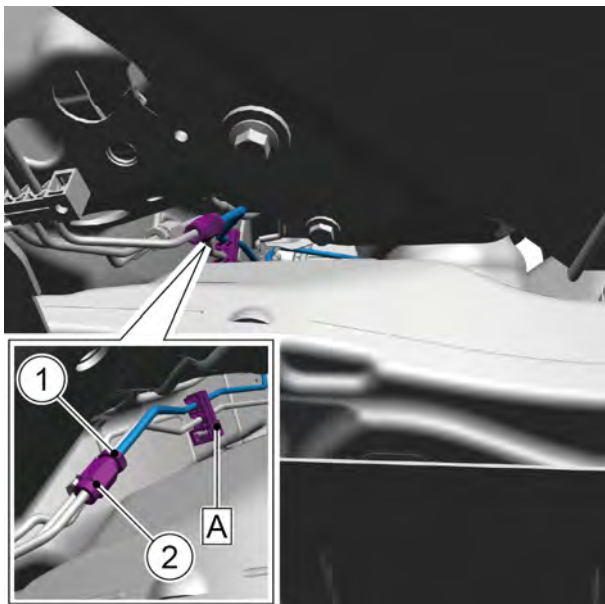
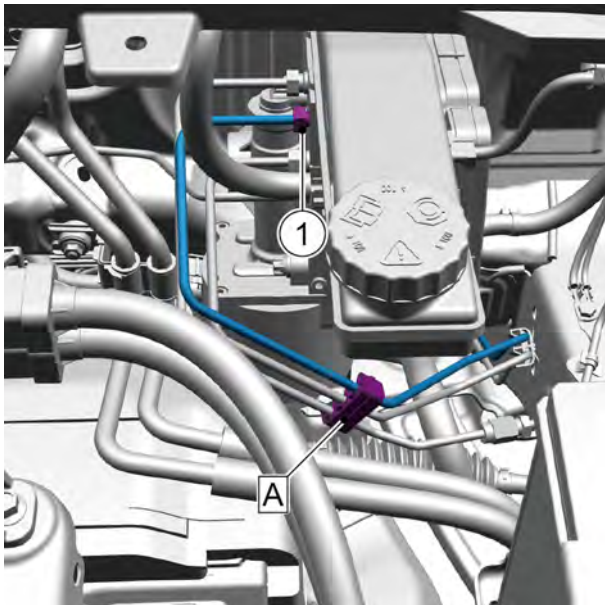
- 6 Loosen the 1 fixing bolt 1 connecting the right rear brake pipe 1 and the brake control module assembly.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

- 7 Disconnect the right rear brake pipe 1 from the three-pipe clip A.
- 8 Take off the right rear brake pipe 1.

Installation procedure



- 1 Move the right rear brake pipe 1 to the installation position.

Caution

Remove the bundle of pipes.

- 2 Insert the right rear brake pipe 1 into the three-pipe clip A.
- 3 Install and tighten the 1 fixing bolt 1 connecting the right rear brake pipe 1 and the brake control module assembly.
Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 4 Insert the right rear brake pipe 1 into the single pipe clip A.
- 5 Use a wrench to fix nut 2, and install the 1 fixing bolt 1 connecting the right rear brake pipe 1 and the right rear brake pipe 2.
Torque: 18N·m

Caution

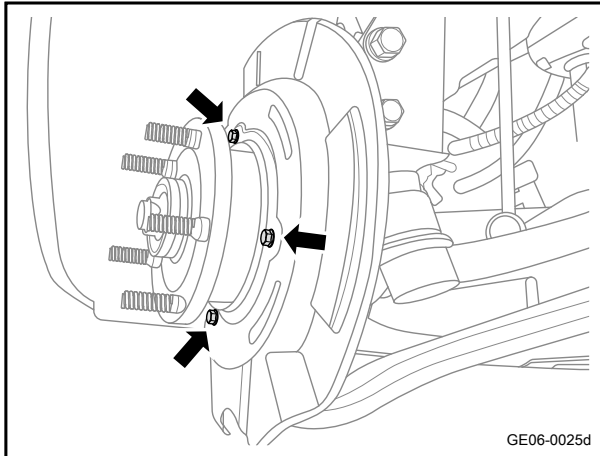
During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.

- 6 Battery bottom shield mounting bracket replacement
- 7 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 8 Lower the vehicle.

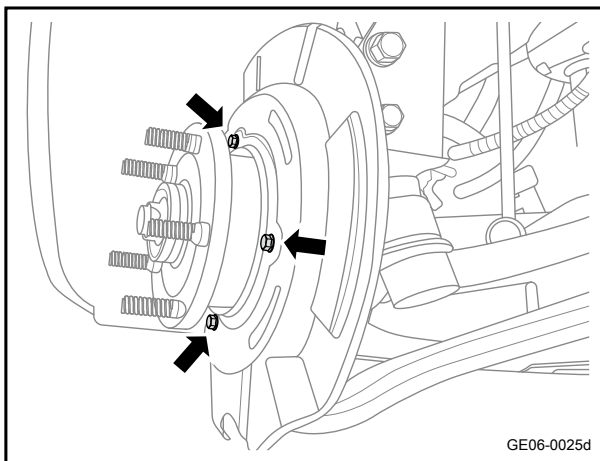
6.2.5.17 Replacement of Front Brake Disc Dust Cover

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the front brake caliper. Refer to [Replacement of Front Left Brake Caliper Assembly](#)



- 4 Remove the front brake disc. Refer to [Replacement of Front Brake Disc](#)
- 5 Remove the 3 fixing bolts of the left front brake disc dust cover.
- 6 Remove the front left brake disc dust cover.



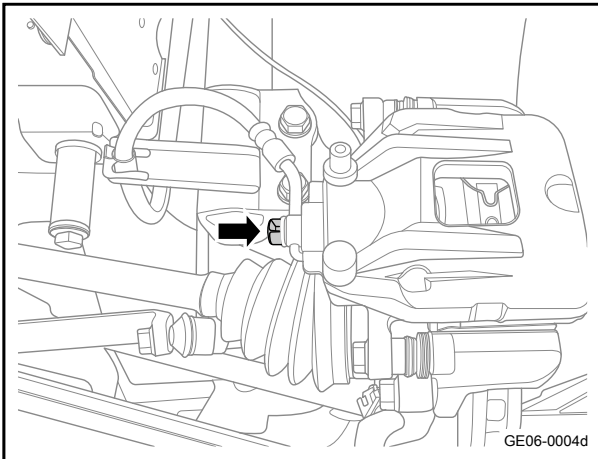
Installation procedure

- 1 Move the left front brake disc dust cover to the installation position.
- 2 Install 3 fixing bolts of the left front brake disc dust cover.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

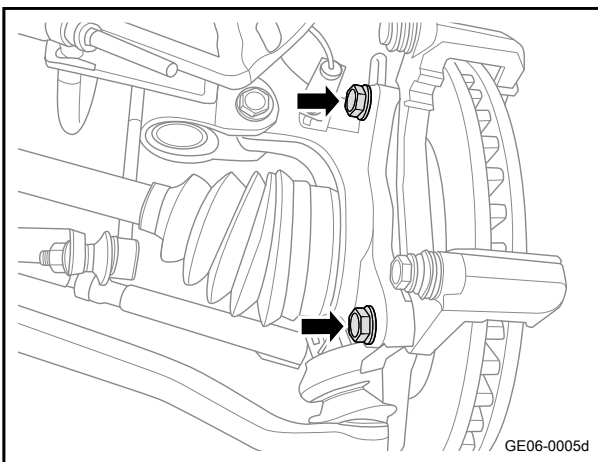
- 3 Install the front brake disc.
- 4 Install the front brake caliper.
- 5 Install the wheel.
- 6 Lower the vehicle.

6.2.5.18 Replacement of Left Front Brake Caliper Assembly

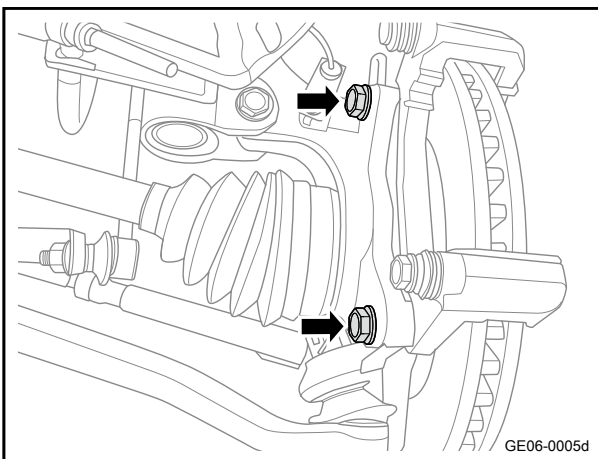
Removal procedure



- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove one fixing bolt of the brake caliper brake hose, remove the brake hose, and plug the brake caliper inlet and brake hose to prevent brake fluid from loss or contamination.

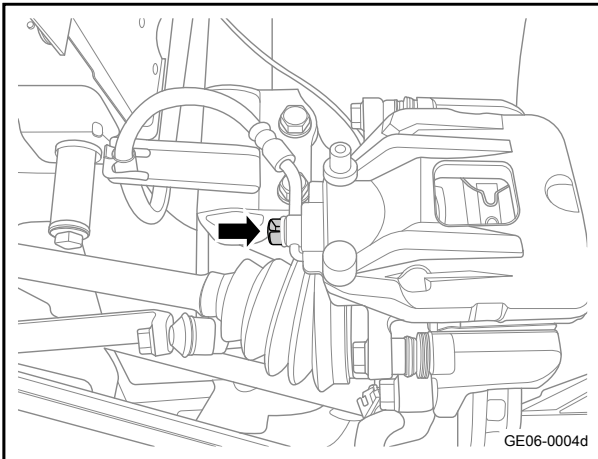


- 3 Remove 2 fixing bolts of left front brake caliper assembly.
- 4 Remove the front left brake caliper assembly.



Installation procedure

- 1 Move the left front brake caliper assembly to the installation position.
- 2 Install the 2 fixing bolts of the left front brake caliper assembly.
Torque: 120N·m (metric system) 88.6lb-ft (Imperial system)



- 3 Install one fixing bolt connecting the brake hose and the brake caliper
Torque: 33N·m (metric system) 22.4lb-ft (Imperial system)

- 4 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 5 Lower the vehicle.

6.2.5.19 Replacement of Front Brake Discs

Removal procedure

Caution

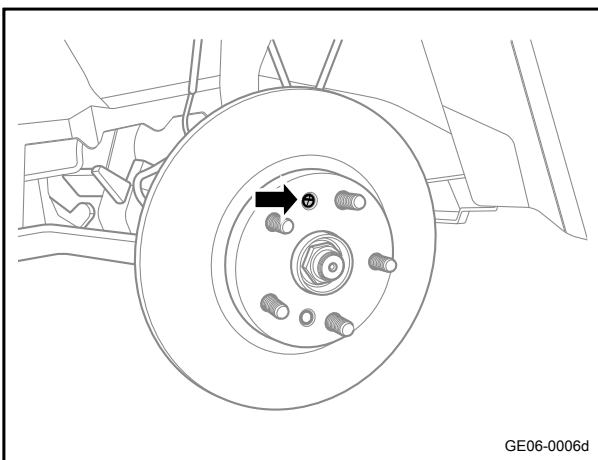
The left and right front brake discs are removed and installed in a similar way.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front left brake caliper assembly. Refer to [Replacement of Front Left Brake Caliper Assembly](#)

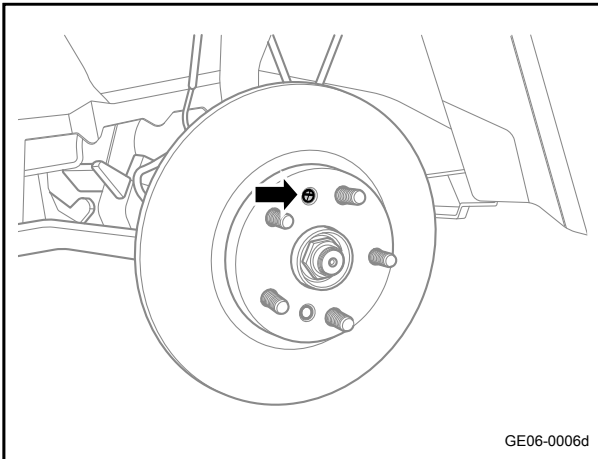
Caution

Remove the brake caliper. No need to remove the brake hose of brake caliper. One steel wire shall be used to hang the brake caliper to avoid any damage to the brake hose.

- 3 Remove the 1 fixing bolt of the front brake disc.
- 4 Take off the front brake disc.



Installation procedure



- 1 Move the front brake disc to the installation position.
- 2 Install the 1 fixing screws of the front brake disc.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)

- 3 Install the front left brake caliper assembly.
- 4 Lower the vehicle.

6.3 Rear brake

6.3.1 Specification

6.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Rear brake caliper bracket fixing bolt	M12×37	110-130
Fixing bolt connecting the brake hose and the brake slave cylinder	M10×20	30-36

6.3.1.2 Specifications of the rear disc brake parts

Application	Part specification mm
Allowable end run-out of rear brake disc	0.02
	If the end face run-out is ≥ 0.15 , the brake disc (both sides) need to be replaced; the thickness difference of the circle is ≥ 0.02 and the brake disc (both sides)
Thickness of rear brake disc to be scrapped	10
Rear brake pad standard thickness	11
Rear brake pad minimum thickness	2

6.3.2 Instructions and operations

6.3.2.1 Description and Operations

Disc brake system composition:

The rear disc brake system consists of the following components:

Brake pads

Apply the mechanical output force from the hydraulic brake caliper on the friction surface of the brake disc.

Brake pad guide

It is located between the disc brake pad and the brake pad mounting bracket to keep the brake pad moving smoothly and eliminate noise.

Brake disc

It uses the mechanical output force of disc brake pads acting on the friction surface of the brake disc to slow down the speed of the tire and wheel assembly so as to brake the vehicle.

Brake caliper c/w EPB assembly

It receives the liquid pressure from the brake master cylinder, converts the liquid pressure into mechanical output force acting on the inner brake pad; when the master cylinder returns, the brake caliper piston returns automatically. The brake caliper integrates an electronic parking brake (EPB) motor, which can be controlled by the EPB switch to realize electronic parking.

Brake caliper and brake pad support

They are used to fix the disc brake pad and brake caliper in place, and maintain the correct matching position with the hydraulic brake caliper. When the mechanical output force acts on the inner brake pad, the brake pad slides.

Brake caliper floating pin

It is used to install the hydraulic brake caliper, fix the brake caliper in place, and maintain the correct matching position with the brake caliper support. When there is mechanical output force, the brake caliper slides relative to the brake pad.

Operations of rear disc brake system:

The mechanical output force from the hydraulic brake caliper piston is acted on the internal brake pad. When the piston pushes and presses the internal brake pad outward, the brake caliper shell pulls the external brake pad inward at the same time to evenly distribute the output force. The brake pad acts the output force on the friction surface of two sides of the brake disc to slow down the speed of tire and wheel assemblies. Normal functions of the brake guide and the

floating brake caliper are important for the uniform distribution of the brake force.

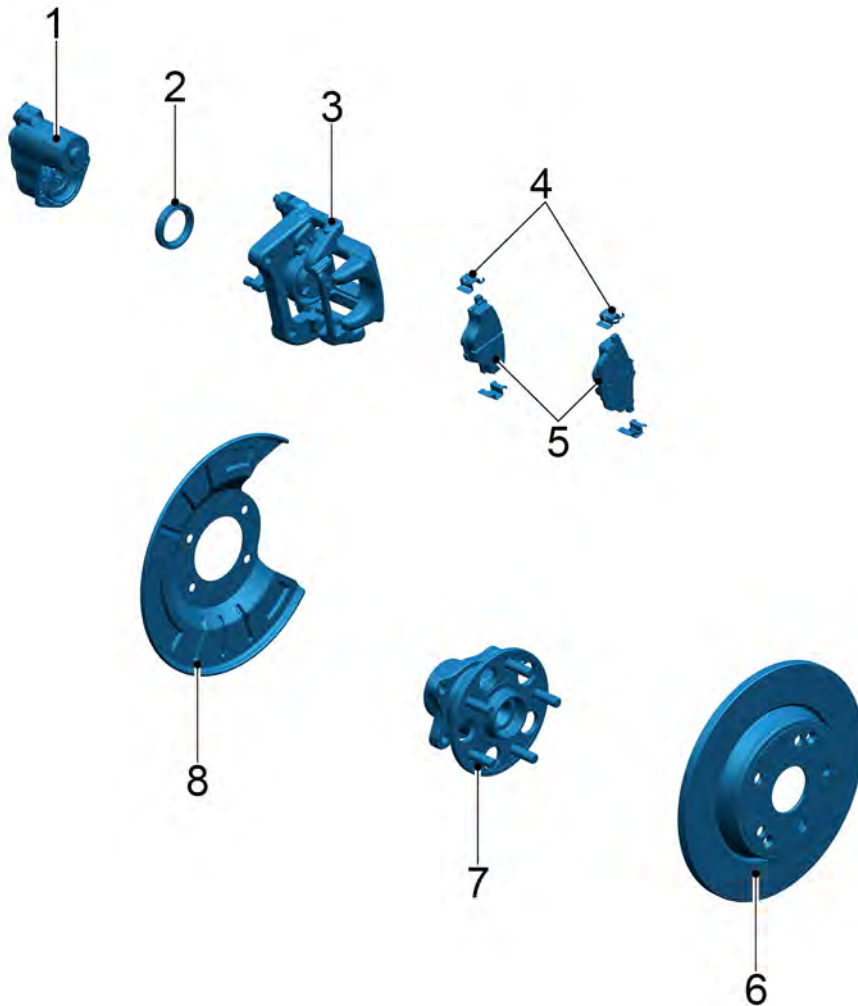
Operations of releasing the EPB

For removing rear brake pads

1. Connect the diagnostic apparatus.
2. Operate the vehicle power supply to the mode ON.
3. Operate the diagnostic apparatus and select EPB system.
4. Operate the vehicle management system, select the replacement mode (before replacement) option, the system automatically opens the piston of the rear brake caliper and releases the parking brake.
5. Turn the power supply mode to the mode OFF.

6.3.3 Breakdown drawing

6.3.3.1 Breakdown Drawing



1. Electronic parking motor

2. sealing ring

3. Rear brake calipers

4. Spring leaf

5. Rear brake pads

6. Rear brake disc

7. Rear wheel hub assembly

8. Left rear brake bottom plate (EPB)

6.3.4 Diagnostic information and procedures

6.3.4.1 Diagnostic information and procedures

Refer to diagnostic information and procedures for front brake

6.3.5 Removing and installing

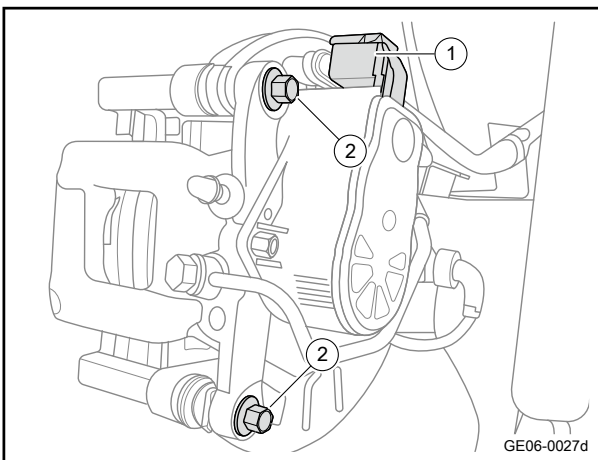
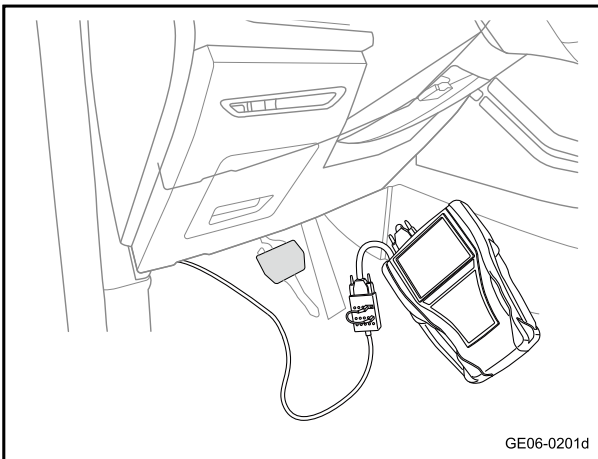
6.3.5.1 Replacement of rear brake pad

Removal procedure

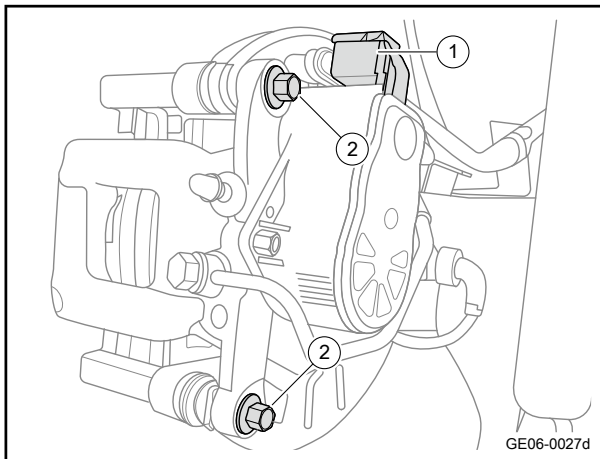
Caution

Replacement at left and right sides are performed in the same way.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Connect the diagnostic apparatus.
- 4 Turn the power supply mode to the mode ON.
- 5 Operate the diagnostic apparatus and select EPB system.
- 6 Select vehicle management system and select replacement mode (before replacement) option. The system automatically opens the piston of rear brake caliber. Releases the parking brake.
- 7 Turn the power supply mode to the mode OFF.
- 8 Disconnect harness connector 1 of the EPB motor.
- 9 Remove the 2 fixing bolts 2 on the brake oil pipe.
- 10 Take off the brake pad.



Installation procedure



- 1 Move the rear brake pad to the installation position.
- 2 Install the 2 fixing bolts 2 of the rear brake caliper.
Torque: 29.5N·m (metric system) 21.8lb-ft (Imperial system)

Caution

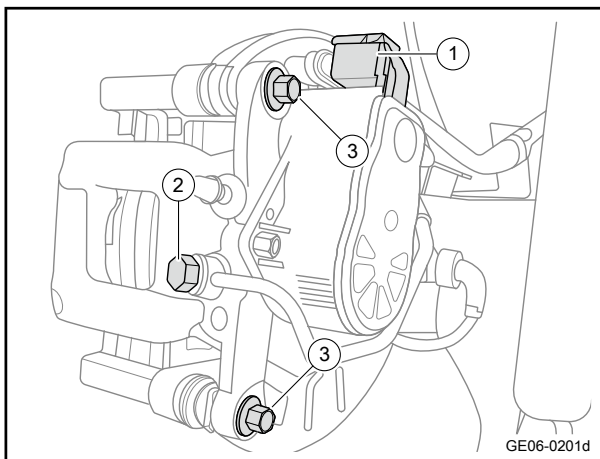
Take care not to damage the piston dust seal when installing the brake caliper.

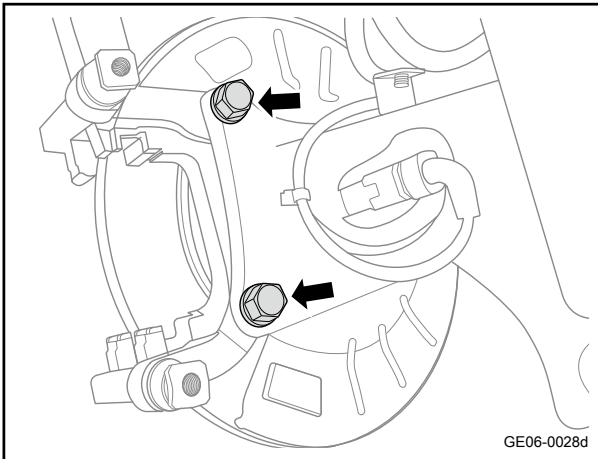
- 3 Connect the EPB motor harness connector 1.
- 4 Turn the power supply mode to the mode ON.
- 5 Use the diagnostic instrument, select the replacement mode (after replacement) option under the vehicle system management menu to reset the new EPB and clear the fault code.
- 6 Turn the power supply mode to the mode OFF.
- 7 Install the wheel.
- 8 Lower the vehicle.

6.3.5.2 Replacement of rear brake caliper

Removal procedure

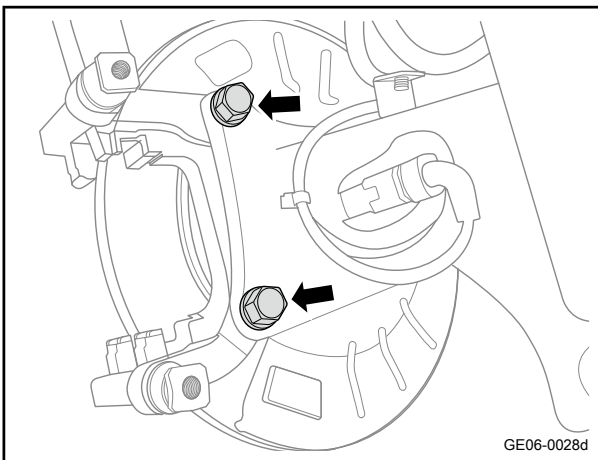
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Release the parking brake.
- 4 Disconnect the negative cable of battery.
- 5 Disconnect the EPB harness connector 1.
- 6 Remove the brake caliper brake hose inlet bolt 2, and plug the brake caliper inlet and brake hose to prevent brake fluid loss or contamination.
- 7 Remove the 2 fixing bolts 3 on the brake oil pipe.
- 8 Take off the rear brake pad.



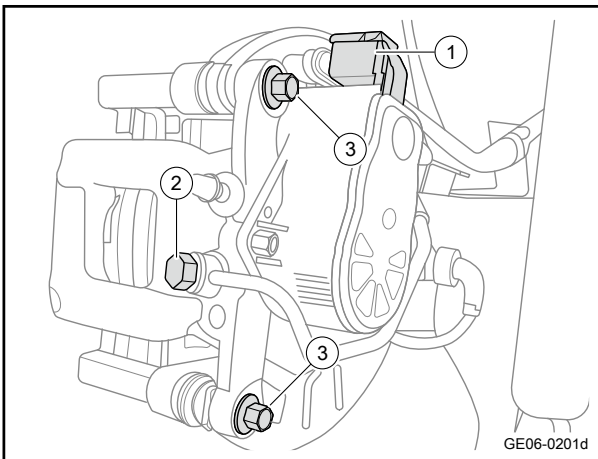


- 9 Remove 2 fixing bolts of the rear brake caliper bracket.
- 10 Remove the rear brake caliper.

Installation procedure



- 1 Move the rear brake caliper to the installation position.
- 2 Install the 2 fixing bolts of the rear brake caliper bracket.
Torque: 120N·m (metric system) 88.6lb-ft (Imperial system)



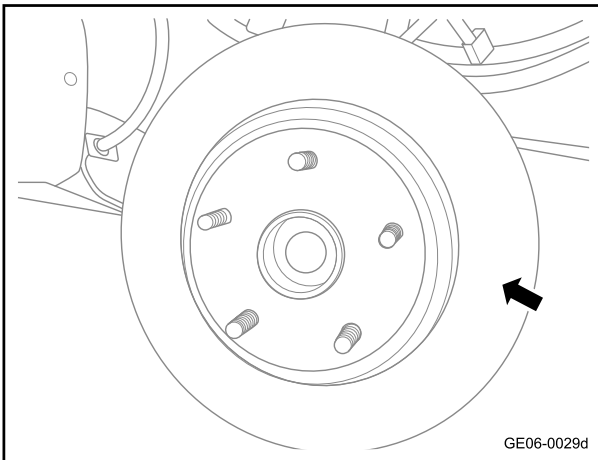
- 3 Install the rear brake pad.
- 4 Install the rear brake caliper and tighten the 2 fixing bolts 3.
- 5 Install the rear brake caliper brake hose inlet bolt 2.
- 6 Connect the EPB harness connector 1.

- 7 Refill brake fluid.
- 8 Perform Hydraulic Brake System Exhaust Procedure
Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 9 Install the wheel.
- 10 Lower the vehicle.

6.3.5.3 Replacement of rear brake disc

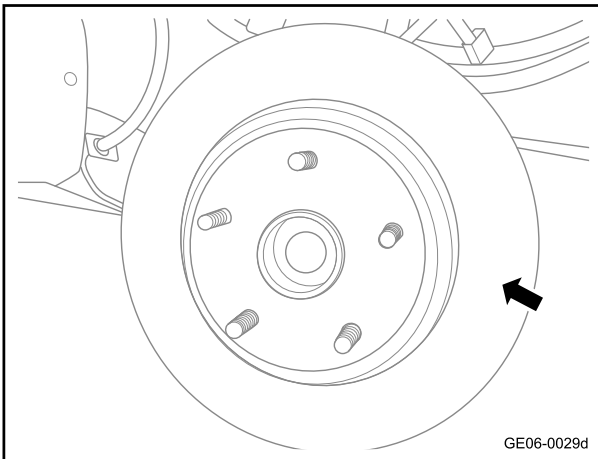
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the rear brake caliper. Refer to [Replacement of Rear Brake Caliper](#)
- 3 Remove the rear brake disc.



Installation procedure

- 1 Move the rear brake disc to the installation position.



- 2 Install the rear brake caliper.
- 3 Lower the vehicle.

6.3.5.4 Replacement of Rear Brake Disc Dust Cover

Refer to [Replacement of Front Brake Disc Dust Cover](#)

6.4 Hydraulic Brake

6.4.1 Specification

6.4.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Brake module assembly fixing nut	M8	20-26
Fixing bolt connecting the left front brake hose and the brake slave cylinder	M10×20	30-36
Bolt connecting the left front brake hose and the brake pipe	M10	17-19
Bolt connecting the left rear brake hose and the brake pipe	M10	17-19
Fixing bolt connecting the brake hose and the brake slave cylinder	M10×20	30-36
Brake pedal fixing bolt	M8×35	20-28
Brake pedal fixing nut	M8	20-28

6.4.2 Instructions and operations

6.4.2.1 Description and Operations

Hydraulic brake system includes the following parts

Brake pedal

Receive, enlarge, and transmit the input force of the brake system from the driver.

Brake pedal push rod:

Transmit the enlarged brake pedal input force to the brake module assembly.

Brake module assembly

The brake control module assembly is a control unit including electromechanical operations of starting and adjusting functions. The brake control module assembly is a non-vacuum brake system that converts the driver's brake demand into an enlarged brake pressure. The brake control module assembly can also be used as an electronic stability control unit, such as to perform anti-lock brake control, traction control and stability control functions. When the driver depresses the brake pedal, the target brake pressure is worked out based on the input lever stroke, and then the control unit calculates the drive signal of the motor accordingly. The motor generates the movement of the hydraulic piston through the gear set. The generated hydraulic pressure is transmitted to the wheel brake through the brake fluid.

Brake master cylinder tank:

The brake fluid used by the hydraulic brake system is provided inside.

Brake pipe and brake hose

Transfer brake fluid through the hydraulic brake system parts.

Brake cylinder:

Convert the hydraulic input pressure into a mechanical output force.

System Operation

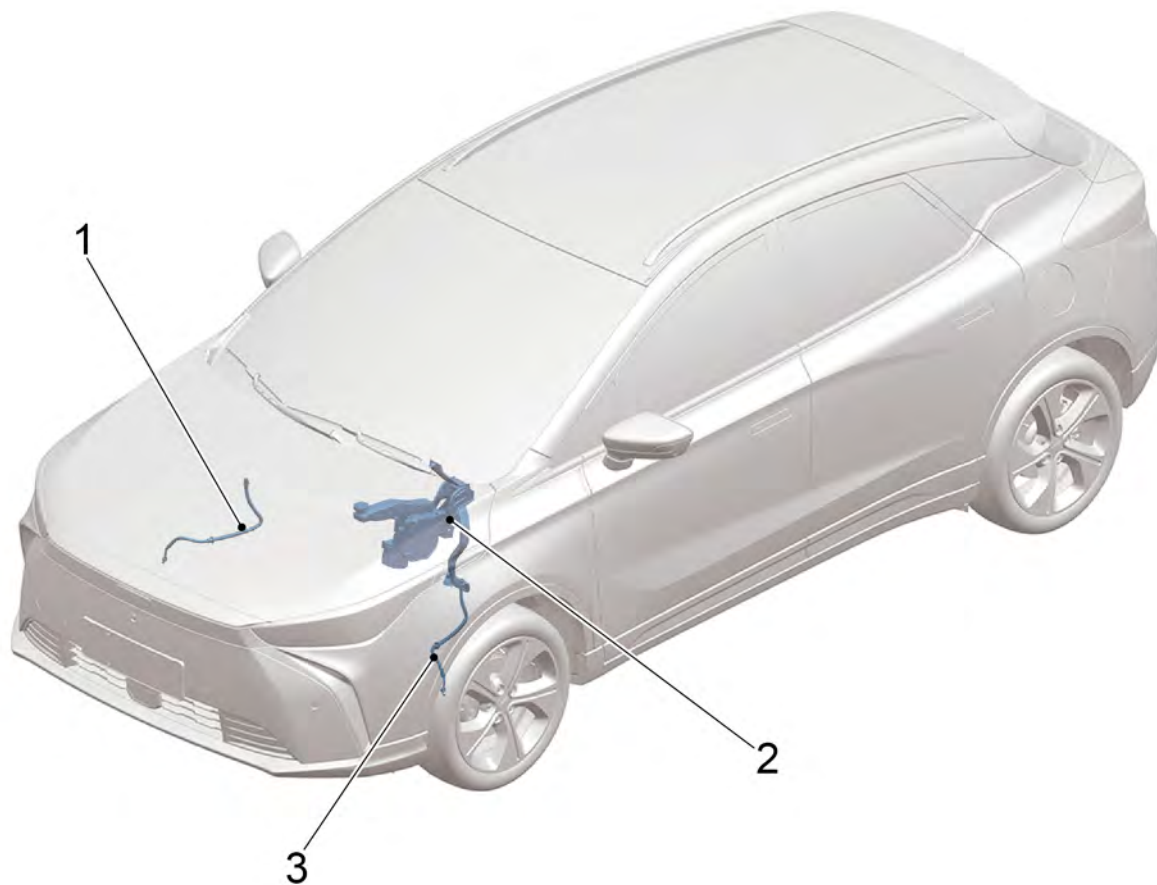
The mechanical force from the brake pedal is converted by the master cylinder to oil pressure, after the adjustment of the brake control assembly unit, and is transferred to the brake cylinder through the brake pipe and brake hose. The brake cylinder converts the oil pressure into the mechanical force to make the brake pad press the brake disc to conduct the brake of the vehicle.

Brake system fault indicator light

If the instrument cluster detects that the brake fluid level is too low, the instrument cluster will turn on the brake system fault indicator.

6.4.3 Part position

6.4.3.1 Part Position



1. Front right brake hose
2. Brake module assembly

3. Left front brake hose

6.4.4 Diagnostic information and procedures

6.4.4.1 Diagnosis Description

Before diagnosing the fault of hydraulic brake system, refer to the description and operation, and system working principle.

6.4.4.2 Visual Check

- Check after-sales installations that may influence hydraulic brake system operation and ensure that these installations do not affect the hydraulic brake system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or situation that may cause a fault; if so, repair the fault components.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

6.4.4.3 Diagnostic completed notice

1. Be careful when replacing various parts, because it may affect the performance of the brake system and cause driving hazards. Standard parts of Geely Company should be taken.
2. When the brake system is maintained, it is very important to keep the parts and the site clean.
3. If brake fluid leakage is found, the components must be removed. If any abnormalities are found, new components should be replaced.
4. When removing the brake components, wrap the connection part of the brake pipe to prevent dust, soil, and other impurities from entering the pipe.
5. When removing or installing the brake pipe, do not damage or distort the brake pipe.
6. When installing the brake pipe or brake hose, make sure that there is no twist or bend.
7. The brake hose must be kept away from absorber oil, grease, etc.
8. After installing the brake pipe and brake hose, make sure that they do not interfere with other components.
9. Do not allow brake fluid to adhere to painted surfaces such as the vehicle body. If brake fluid leaks onto the painted surface, remove it immediately.

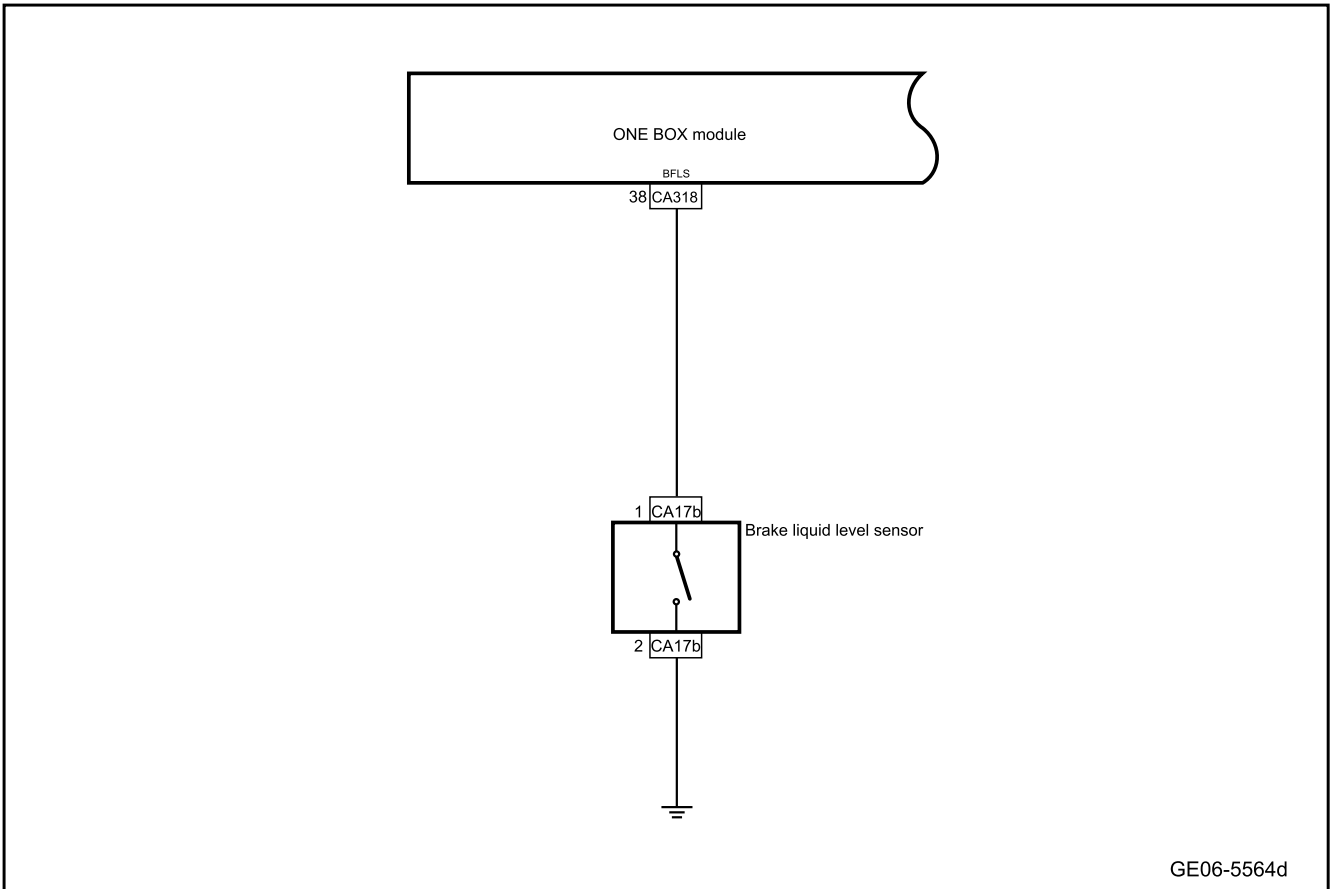
6.4.4.4 Fault symptom table

Symptom	Possibility and cause	Measures
Brake fluid level low alarm	1. Brake fluid is insufficient.	Repair the leakage part and add brake fluid to a proper position.
	2. Excessive wear of the brake pad	Refer to Replacement of Brake Pad for brake pad replacement
	3. Braking fluid level sensor fault	Refer to Replacement of Front Brake Pad
	4. ONE BOX module failure	
The brake system is noisy	1. Brake pads (cracked, dirty, corrosion)	To remove the brake pads, please refer to Replacement of brake pad
	2. Brake caliper bracket fixing bolt (loose)	Tighten brake caliper bracket fixing bolt
	3. Brake caliper fixing bolt (loose)	Tighten brake caliper fixing bolt
	4. Brake disc (with scratches)	Replace the brake disc Refer to Replacement of brake disc
	5. Brake disc guide (loose)	Tighten Brake disc guide (loose)
	6. Brake caliper floating pin (wear)	Replace Brake caliper floating pin

Symptom	Possibility and cause	Measures
Brake deviation	1. Piston (fixed, stuck)	Replace the brake caliper Refer to Replacement of brake caliper
	2. Brake disc (with scratches)	Replace the brake disc Refer to Replacement of brake disc
	3. Brake pads (cracked, twisted or oily)	To remove the brake pads, please refer to Replacement of brake pad
	4. Brake pipe, hose (twisted, deformed)	To replace the brake pipe and brake hose, please refer to Replacement of Brake Tubes
The brake pedal is too hard	1. Hydraulic brake booster system (vacuum leakage, failure)	Repair or replace leakage related parts.
	2. Brake pipe, hose (twisted, deformed)	To replace the brake pipe and brake hose, please refer to Replacement of Brake Tubes
	3. Vacuum booster pump fault	To replace the vacuum booster pump, please refer to Replacement of vacuum booster pump
The brake pedal is too soft and the brake is insufficient	1. Brake fluid leakage in the brake system	Repair or replace leakage related parts.
	2. Air in the brake system	Perform air exhaust. Refer to Hydraulic Brake System Exhaust Procedure
	3. Brake disc (with scratches)	Replace the brake disc Refer to Replacement of brake disc
	4. Brake pads (cracked, twisted, excessively worn or oily)	To remove the brake pads, please refer to Replacement of brake pad
	5. Brake master cylinder (internal leak)	Remove the brake master cylinder, refer to Replacement of brake master cylinder
Brake drag	1. Brake pedal free travel (insufficient)	Adjust Brake pedal free travel
	2. Parking brake lever stroke(too small)	Adjust the parking brake lever to a suitable position.
	3. Left and right parking brake cables (stuck)	Release the parking brake.
	4. Brake pad (stuck)	Clean and lubricate the brake pads.
	5. Piston (fixed, stuck)	Replace the brake caliper Refer to Replacement of brake caliper
	6. Brake master cylinder (fault)	Remove the brake master cylinder, refer to Replacement of brake master cylinder

6.4.4.5 The brake alarming indicator is always on

1. Circuit diagram:



2. Diagnosis steps

Step 1	Check the brake fluid level.
--------	------------------------------

A. Check whether the brake fluid level is normal.

No

Confirm that there is no leakage in the brake system, and fill brake fluids to MAX position if brake facing is normal.

Yes

Step 2	Primary check.
--------	----------------

A. Check the harness connector of braking fluid sensor for signs of damage, poor contact, aging, loosening, etc.

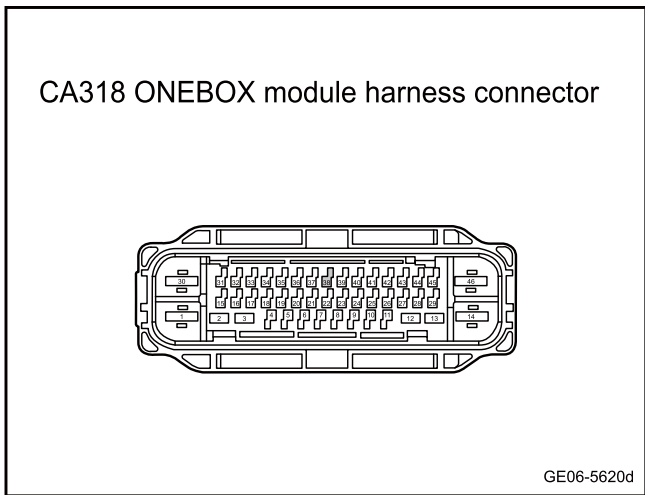
B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the harness between the ONE BOX module and the brake fluid level sensor.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX module harness connector CA318.
- C. Disconnect harness connector of brake fluid level sensor CA17b.
- D. Use a multimeter to measure the resistance between terminal 38 of the ONE BOX module harness connector CA318 and body grounding.

Standard resistance: 10kΩ or higher
- E. Confirm whether the resistance meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Replace braking fluid sensor.

- A. Replace braking fluid sensor, refer to replacement of braking fluid sensor
- B. Confirm whether the trouble is removed.

Yes → System is normal.

No

Step 5 Replace the ONE BOX module.

- A. Check the ONE -BOX power supply and grounding harness. Refer to [ONE -BOX Power Supply Failure](#)
- B. To replace the ONE BOX module, please refer to [Replacement of ONE BOX module](#)

Next step

Step 6 Reprogram and reset the ONE BOX module.

- A. Reprogram and reset the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

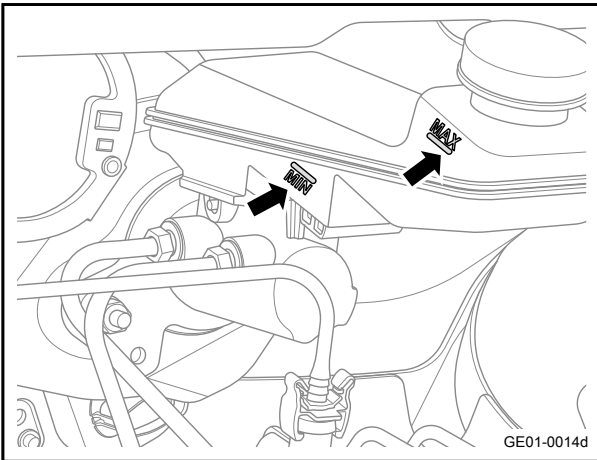
No

Step 7	System is normal.
--------	-------------------

6.4.5 Removing and installing

6.4.5.1 Brake Fluid Level Check Procedure

Inspection procedure



- 1 Check the fluid level in the reservoir, and the fluid level should be between MAX and MIN.
- 2 Unscrew the filler cap and check if the color of the brake fluid is cloudy.

Caution

If the brake fluid is not within the specified range, add brake fluid. If the color of the brake fluid is cloudy, it should be replaced.

6.4.5.2 Brake Fluid Filling and Replacement

Adjustment procedure

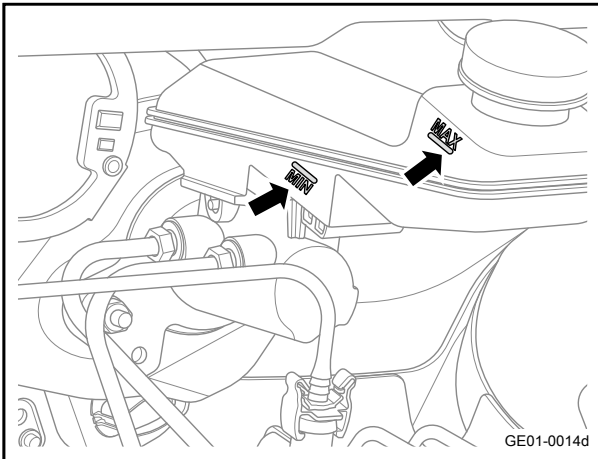
Refer to [Hydraulic Brake System Exhaust Procedure](#)

Caution

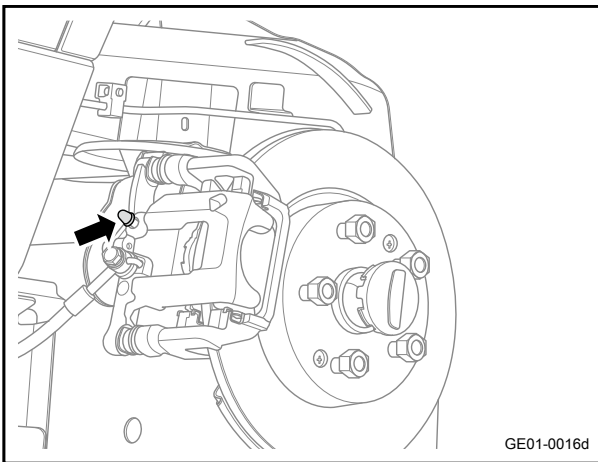
When replacing the brake fluid, the hydraulic brake system exhaust procedure shall be performed.

6.4.5.3 Hydraulic brake system exhaust procedure

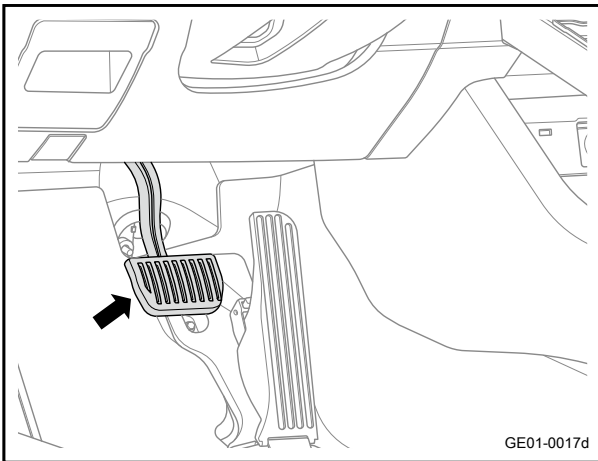
Adjustment procedure



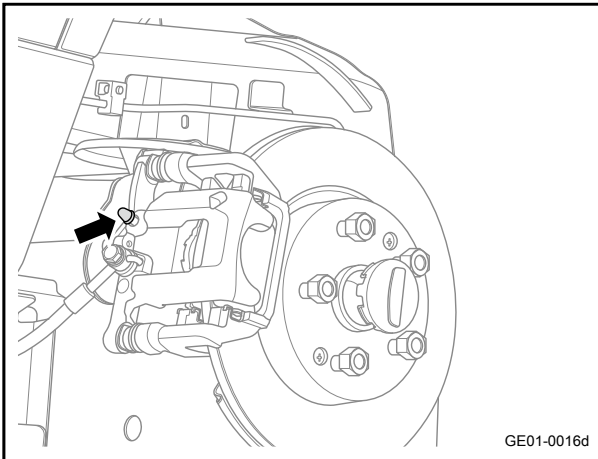
- 1 Keep the power in an off state. Press the brake pedal several times until the pressure in the booster is completely removed.



- 2 Remove the bleed screw dust cover. Connect one transparent pipe to the rear bleed screw on the right rear brake clamp to immerse the pipe into the brake fluid in the transparent container. Discharge air from the right rear brake clamp in accordance with the following steps.



- 3 Step on brake pedal slowly, do not slam on the brake pedal.



- 4 When pressing the brake pedal, loosen the bleed screw to discharge air from the brake clamp.
- 5 After the air bubbles have escaped into the brake fluid container, slightly tighten the bleed screw.
- 6 Slowly release the brake pedal.
- 7 Repeat steps 3-4 until all air is exhausted.
- 8 At the time of loosening the bleed screw, if no more bubble appears in the container, it indicates that all air has been discharged.

Caution

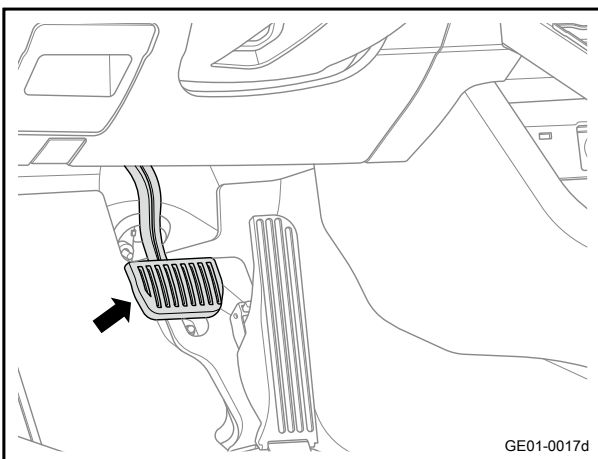
In the exhaust process, liquid level of the total pump fluid reservoir should be maintained over half at least.

- 9 Fasten the bleed screw
Torque: 11.5 N·m (metric system) 8.5lb-ft (Imperial system)
- 10 Exhaust the air in the rest of the brake caliper in the order of left rear, right front and left front. Operate in accordance with the procedure in the step 2-7.

Caution

Exhaust the air in the brake pipeline from the the wheel furthest from the master cylinder.

- 16 After discharging the whole air in the brake caliper, check whether the brake pedal is soft. In case the pedal is soft, repeat the whole exhaust procedure until normal.



6.4.5.4 Replacement of brake control module

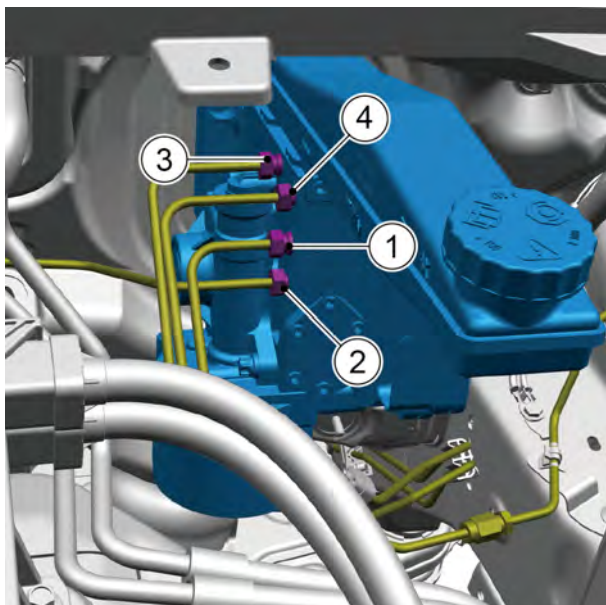
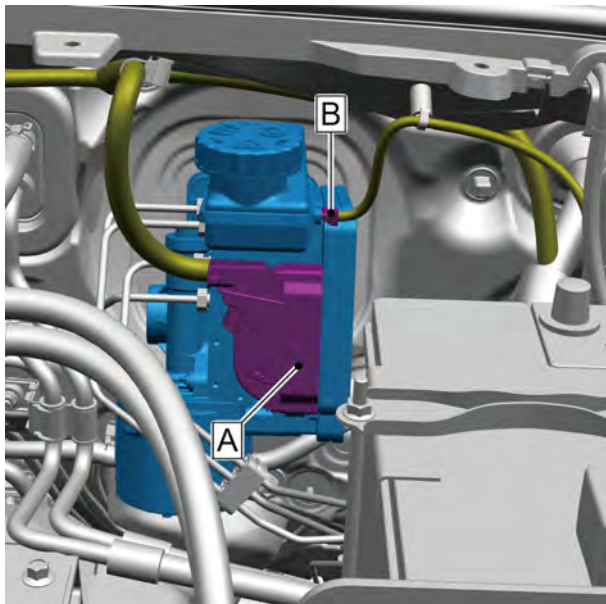
Removal procedure

Caution

The brake fluid is corrosive and should wear personal protective tools before repairing the brake system components.

Before removing the oil pipe connecting the brake control module use the label to make a mark to facilitate the correct installation of the oil pipe.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)

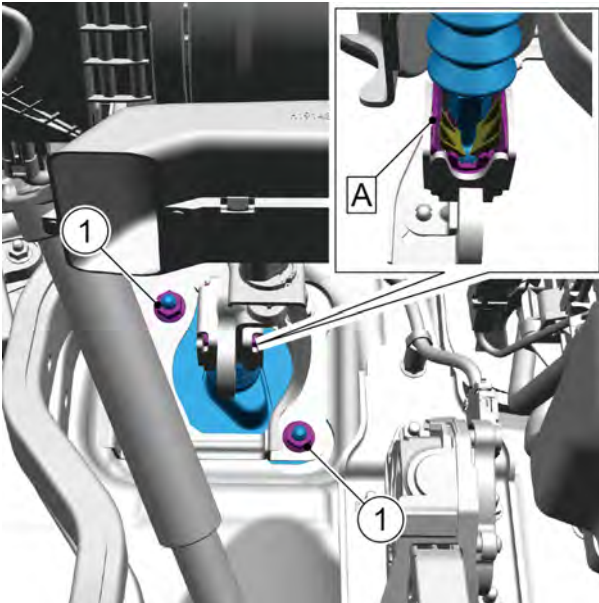


- 3 Drain the brake fluid. Refer to [Brake Fluid Filling and Replacement](#)
 - 4 Remove the left lower fender apron assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
 - 5 Press the harness connector lock catch, pull up the harness connector handle, and disconnect the 1 harness connector A connecting the front engine compartment harness with the brake control module assembly.
- Caution**
- Make sure the handle is completely disengaged and slowly unplug the harness connector horizontally so as not to damage the harness connector and harness pins.
- 6 Disconnect the 1 harness connector B connecting the front engine compartment harness with the brake controller assembly.

- 7 Remove the 1 fixing bolt 1 connecting the front left rigid pipe No.1 and the brake control module.
- 8 Remove the 1 fixing bolt 2 connecting the rear right rigid pipe No.1 and the brake control module.
- 9 Remove the 1 fixing bolt 3 connecting the front left rigid pipe No.1 and the brake control module.
- 10 Remove the 1 fixing bolt 4 connecting the rear right brake pipe No.1 and the brake control module.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.



- 11 Disconnect the 1 fixing clip A connecting the brake control module assembly and the brake pedal assembly.

Caution

Use a slot type screwdriver to pry off the paddle on both sides of fixing clip A and pull out the brake control module assembly.

Do not damage the fixing clip A during removal.

- 12 Remove the 2 fixing nuts 1 connecting the brake module and the brake pedal assembly.
- 13 Remove the brake control module.

Installation procedure

- 1 Move the brake control assembly to the installation position.

Caution

Remove the bundle of pipes.

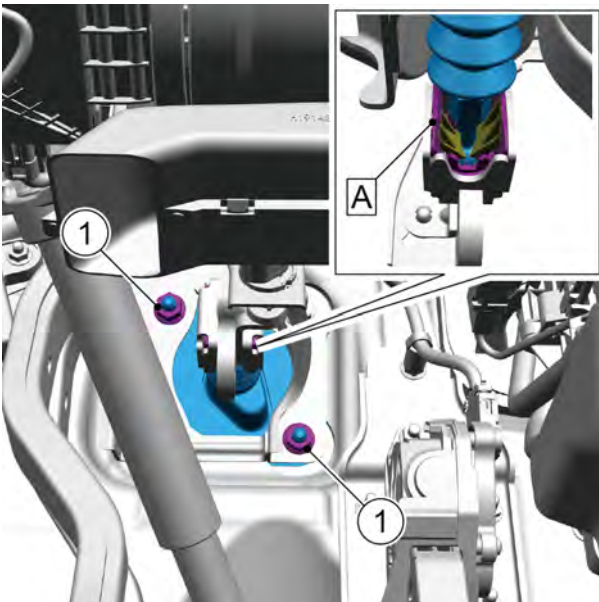
- 2 Remove the 2 fixing nuts 1 connecting the ONE BOX module and the brake pedal assembly.

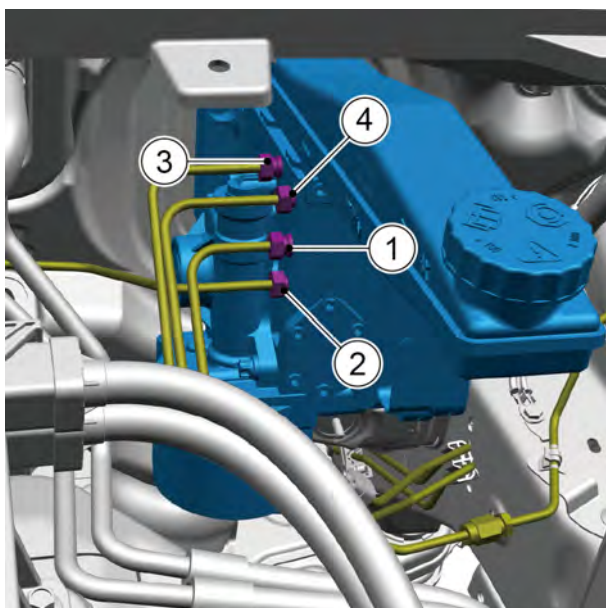
Torque: 18N·m

- 3 Install the 1 fixing clip A connecting the brake control module assembly and the brake pedal assembly.

Caution

Check whether the fixing clip A connecting the brake control module and the brake pedal assembly is clamped in place.

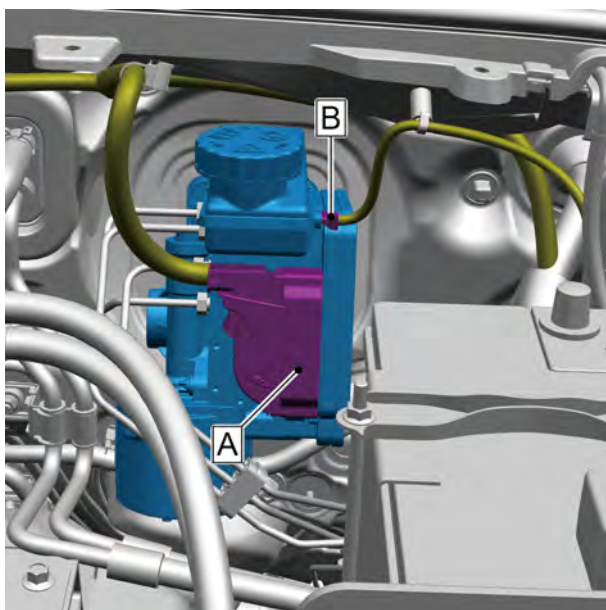




- 4 Install and tighten the 1 fixing bolt 4 connecting the right rear brake pipe 1 and the brake control module.
Torque: 18N·m
- 5 Install and tighten the 1 fixing bolt 3 connecting the left rear brake pipe 1 and the brake control module.
Torque: 18N·m
- 6 Install and tighten the 1 fixing bolt 2 connecting the right front brake pipe 1 and the brake control module.
Torque: 18N·m
- 7 Install and tighten the 1 fixing bolt 1 connecting the left front brake pipe 1 and the brake control module.
Torque: 18N·m

Caution

During installation, ensure that the brake pipe interface is "flat and straight" engaged. Pre-tighten the bolts by hand before fastening the bolts with tools.



- 8 Connect the 1 harness connector B between the front engine compartment harness and the brake controller assembly.

Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".

- 9 Connect the 1 harness connector A connecting the front engine compartment harness with the brake control module assembly, and press the harness connector handle.

Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".

- 10 Install the left lower shield assembly of the dashboard.
- 11 Add the brake fluid and perform the hydraulic brake system exhaust procedure. Refer to [Hydraulic Brake System Exhaust Procedure](#)
- 12 Lower the vehicle.
- 13 Connect the negative cable of battery.

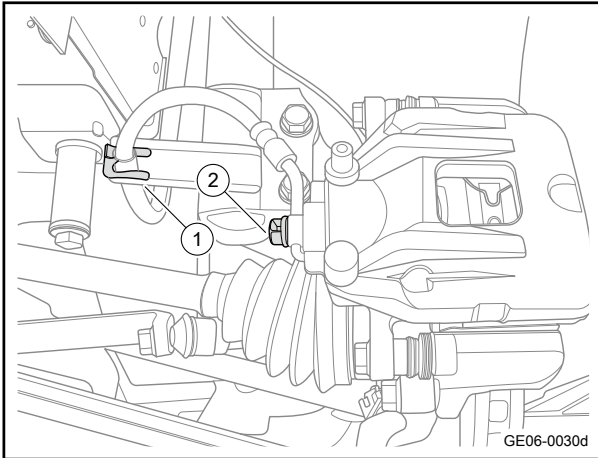
6.4.5.5 Replacement of Left Front Brake Hose

Removal procedure

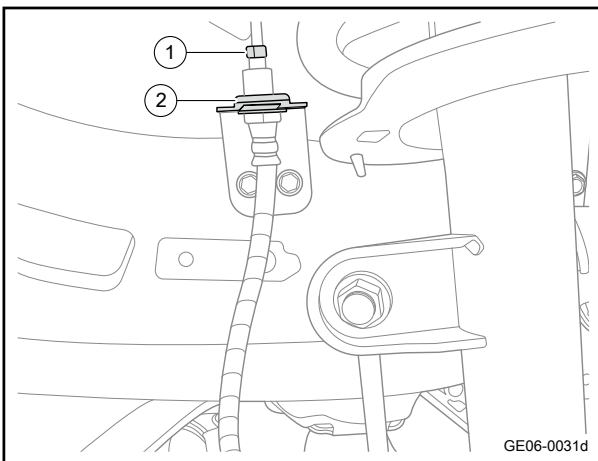
Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the spring stopper 1 of the left front brake hose and disconnect the left front brake hose.
- 4 Remove the 1 fixing bolt 2 connecting the left front brake hose and the brake slave cylinder.



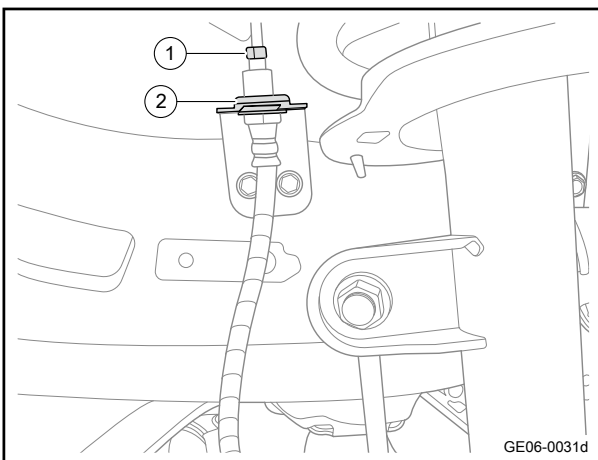
- 5 Remove the 1 fixing bolt 1 connecting the left front brake hose and the brake pipe.
- 6 Remove the stop plate 2 connecting the left front brake oil pipe.
- 7 Take off the left front brake hose.

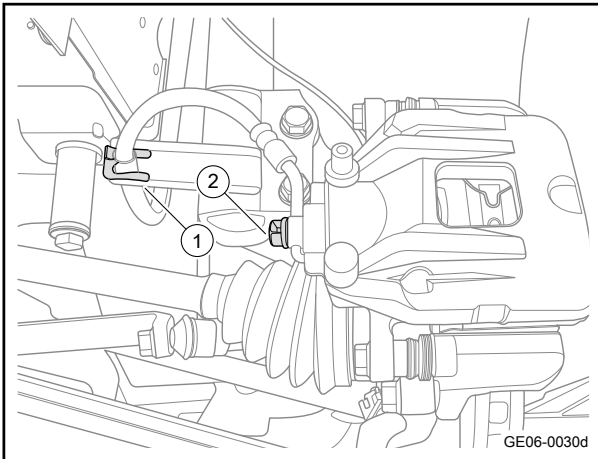


Installation procedure

- 1 Move the left front brake hose to the installation position.
- 2 Install the stop plate 2 connecting the left front brake oil pipe.
- 3 Install the 1 fixing bolt 1 connecting the left front brake hose and the brake pipe.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)





- 4 Install the 1 fixing bolt 2 connecting the left front brake hose and the brake slave cylinder.
Torque: 33N·m (metric system) 24.4lb-ft (Imperial system)
- 5 Install the spring stopper 1 of the left front brake hose.

- 6 Install the wheel.
- 7 Lower the vehicle.

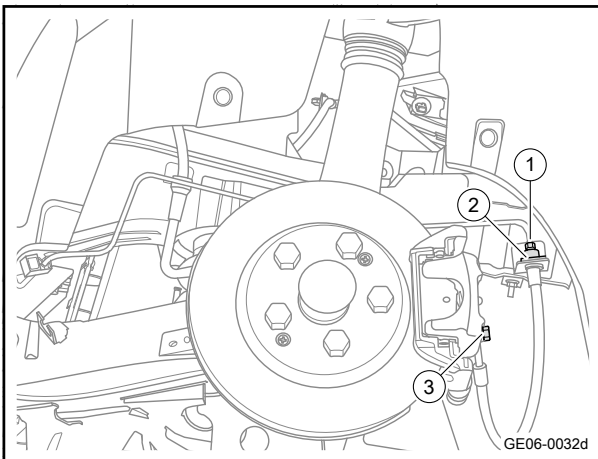
6.4.5.6 Replacement of Left Rear Brake Hose

Removal procedure

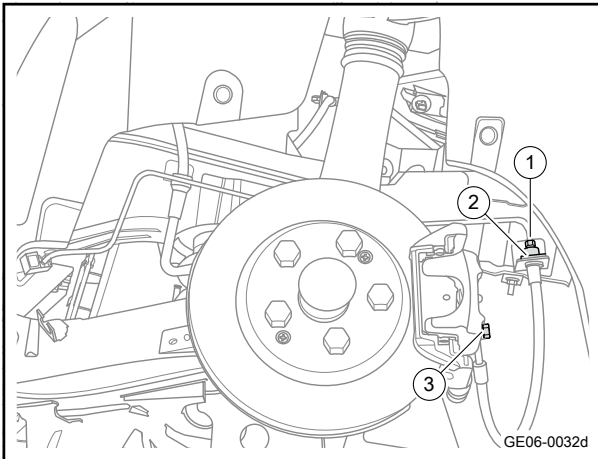
Caution

The removal method is the same for the left and right sides.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Remove the connecting bolt 1 between the left rear brake hose and the brake cylinder.
- 4 Remove the stop plate 2 connecting the left rear brake oil pipe.
- 5 Remove the bolt 3 connecting the left rear brake hose and the brake cylinder.
- 6 Remove left rear brake hose.



Installation procedure



- 1 Move the left rear brake hose to the installation position.
- 2 Install the connecting bolt 3 of the left rear brake hose and the brake cylinder.
Torque: 33N·m (metric system) 24.4lb-ft (Imperial system)
- 3 Install the stop plate 2 connecting the left rear brake oil pipe.
- 4 Install the connecting bolt 1 of the left rear brake hose and the brake pipe.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 5 Install the wheel.
- 6 Lower the vehicle.

6.4.5.7 Replacement of brake pedal assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the 1 fixing bolt connecting the electric-assisted steering column c/w intermediate shaft assembly and the mechanical steering gear c/w tie rod assembly.

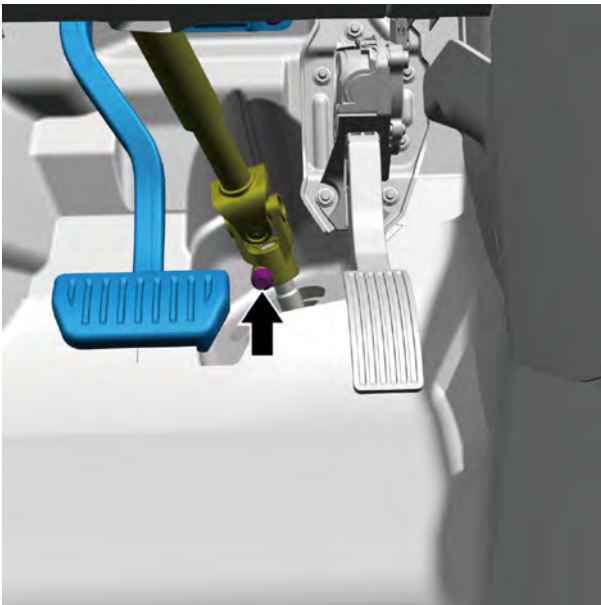
Caution

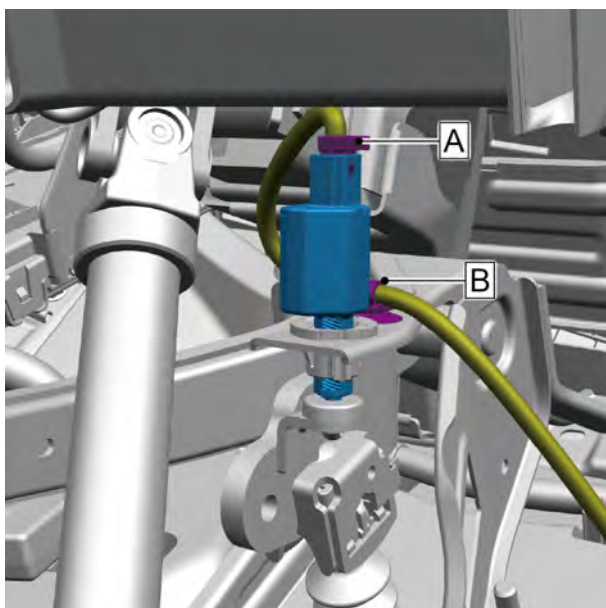
Before removal, turn the steering wheel assembly straight ahead, and lock and fix it.

- 3 Disengage the electric-assisted steering column c/w intermediate shaft assembly from the mechanical steering gear c/w tie rod assembly. Remove electric-assisted steering column c/w intermediate shaft assembly.

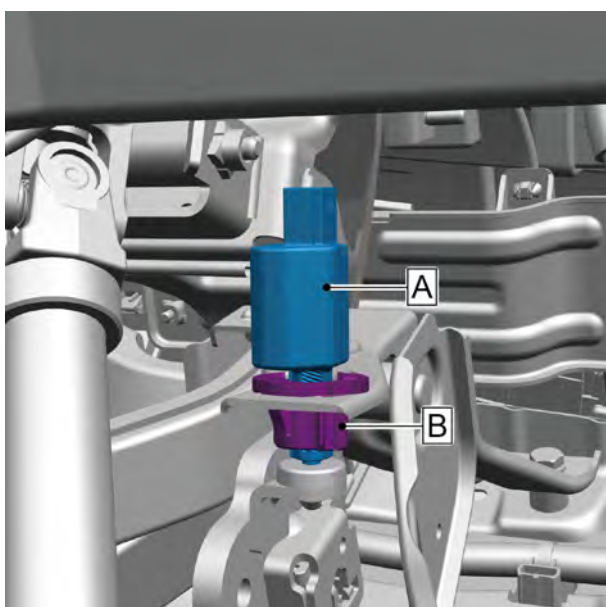
Caution

After the electric-assisted steering column c/w intermediate shaft assembly is disconnected, do not rotate the steering wheel assembly to prevent damage to the clock spring.





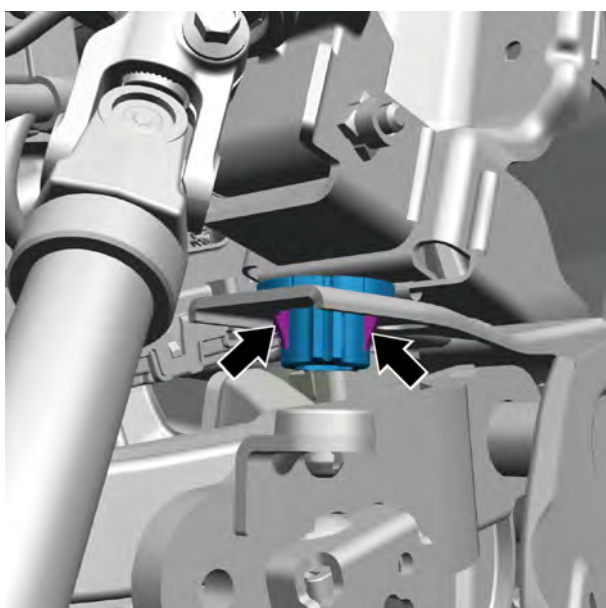
- 4 Disconnect the 1 harness connector A of the instrument panel harness and brake pedal switch.
- 5 Disconnect the 1 fixing clips B of the instrument panel harness and brake pedal assembly.



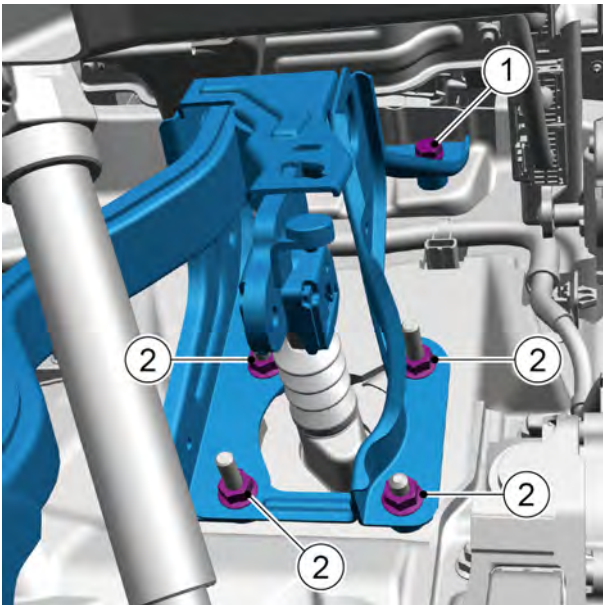
- 6 Loosen the brake switch A counterclockwise from the fixing clip B.
- 7 Remove the brake switch A.

Caution

Before removing, use a marker to mark the installation positions of the brake switch A and the fixing clip B.



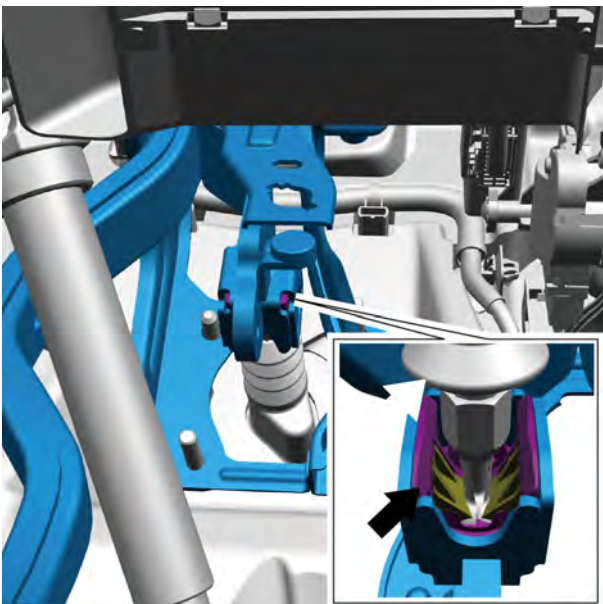
- 8 Disconnect the 2 fixing clips connecting the two sides of the fixing clip with the brake pedal assembly.
- 9 Take off the fixing clip.



- 10 Remove the fixing bolt 1 connecting the brake pedal assembly and the vehicle body.
- 11 Remove the 4 fixing nuts 2 connecting the brake pedal assembly and the vehicle body.

Caution

Do not move the brake control module assembly after removing the nut.



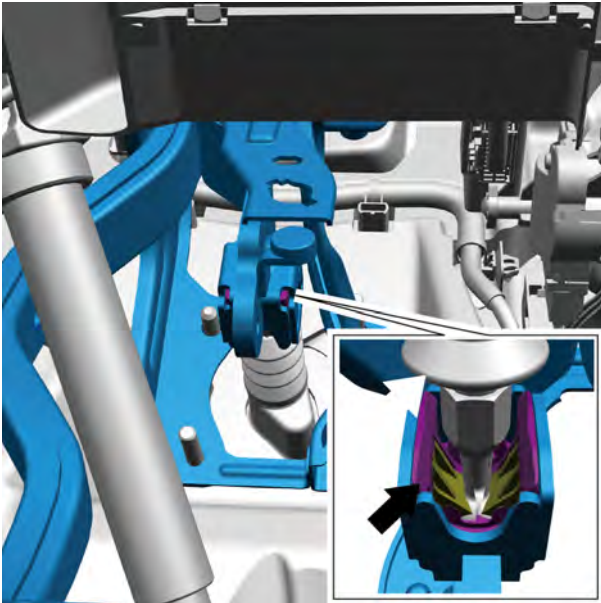
- 12 Disconnect the 1 fixing clip connecting the brake pedal assembly and the brake control module assembly.

Caution

Use a straight screwdriver to pry open the paddle on both sides of the fixing clip from the backside. Do not damage the fixing clip during removal.

- 13 Take off the brake pedal assembly.

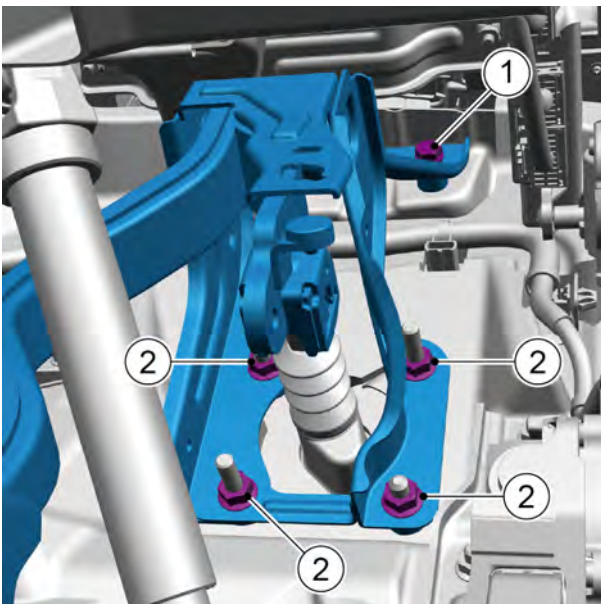
Installation procedure



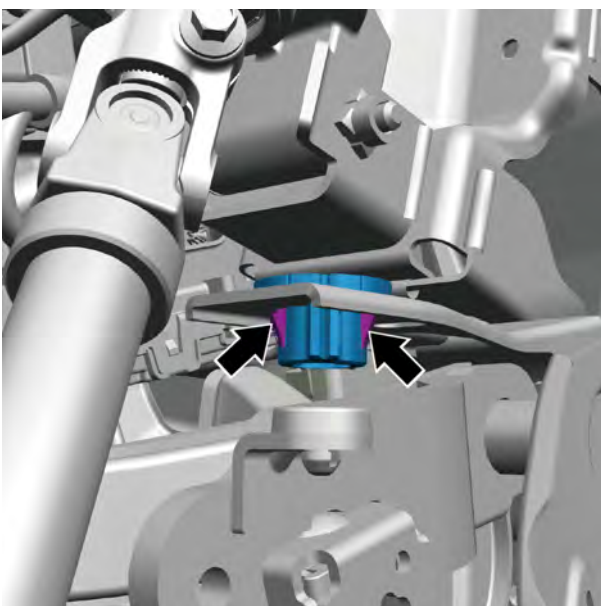
- 1 Move the brake pedal assembly to the installation position.
- 2 Install the 1 fixing clip connecting the brake pedal assembly and the brake control module assembly.

Caution

Check whether the fixing clips connecting the brake pedal assembly and the brake control module assembly are installed in place.



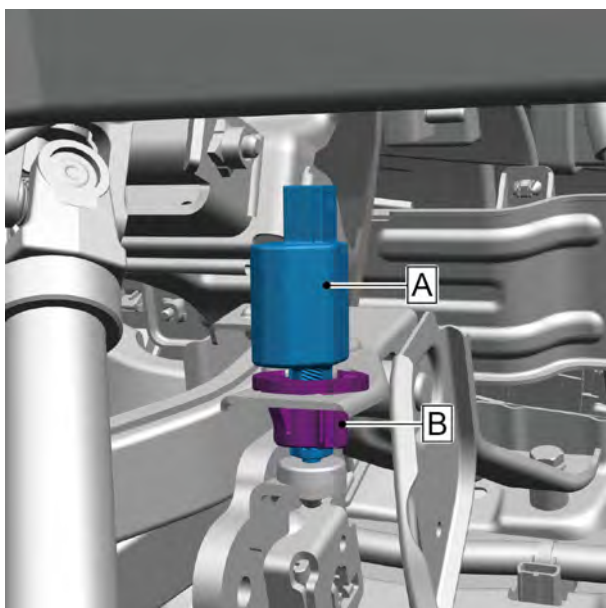
- 3 Tighten the 4 fixing nuts 2 connecting the brake pedal assembly and the vehicle body.
Torque: 24N·m
- 4 Install and fasten 1 fixing bolt 1 that hold the brake pedal assembly to the vehicle body.
Torque: 24N·m



- 5 Clip the retaining clips into the brake pedal assembly.

Caution

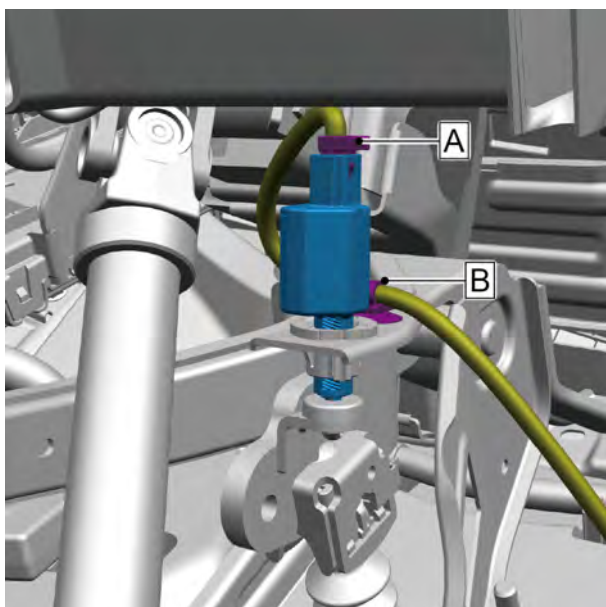
Check whether the installation is firm after installation.



- 6 Insert the brake switch into the fixing clip B.

Caution

Align the position of the mark.

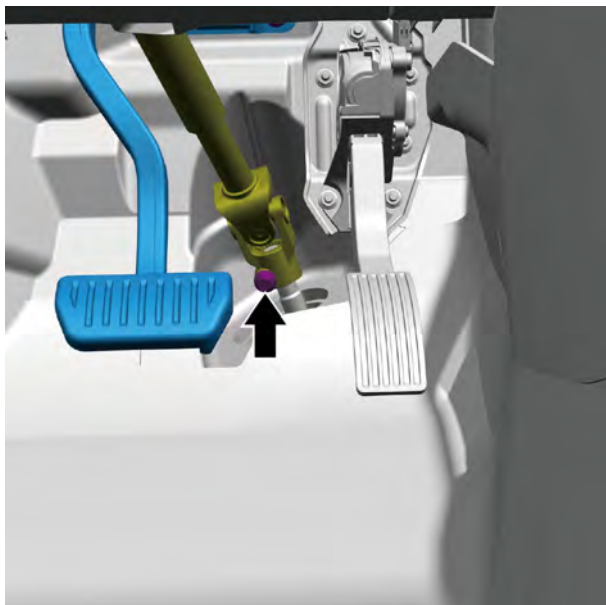


- 7 Install the 1 fixing clip B of the instrument panel harness and brake pedal assembly.

- 8 Connect the 1 harness connector A of the instrument panel and harness and brake pedal switch.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



- 9 Insert the electric-assisted steering column assembly with intermediate shaft assembly into the mechanical steering gear c/w tie rod assembly.
- 10 Install the 1 fixing bolt connecting electric-assisted steering column assembly with intermediate shaft assembly and the mechanical steering gear c/w tie rod assembly.
Torque: 39N·m

- 11 Connect the negative cable of battery.

6.5 Parking system

6.5.1 Specification

6.5.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
EPB switch fixing screw	ST4.2×13	1.5-2.5

6.5.2 Instructions and operations

6.5.2.1 Description and Operations

Structure and description of EPB electronic parking brake system

The EPB parking brake switch is located on the left lower guard assembly of the dashboard on the left side of the driver. When the parking brake switch is pulled up, the parking brake is locked, and when the parking brake switch is pressed down, the parking brake is released.

The EPB system of parking brake is achieved by rear wheel brake caliper that is directly controlled by parking brake control motor. It composes of three parts: parking brake switch, brake control module assembly and parking brake actuator motor.

The EPB system design is integrated on the brake control module assembly. Its main function is to receive the information from the EPB switch and the information on the CAN data bus, and then control the parking brake control motor through the processing and analysis of these information.

The parking brake control motor is installed on the left and right brake calipers of the rear wheel respectively. The motor is divided into two parts, the DC motor and the gear box, and is integrated with the rear wheel brake caliper. If any part fails, the brake caliper assembly with EPB control motor needs to be replaced, and the EPB actuator cannot be replaced separately. The control motor works during the parking braking. There is no corresponding sensor inside the control motor to detect the clamping force of the brake pads, but the clamping force can be known by the change of motor current caused by the change of load when the brake pad is meshed, and then the working condition of the DC motor is controlled by brake control module assembly.

The EPB system is assembled to control the brake caliper to realize the parking braking. If there is a fault that the parking brake cannot be released, it is needed to open the rear cover of the parking brake control motor, and then use a special wrench to rotate the push rod in the motor to release the brake caliper. After completing the operation, it is needed to use a dedicated diagnostic apparatus to reset the brake caliper.

Advantages of EPB electronic parking brake system

1. The parking brake is automatically applied when the electric drive system is switched off.
2. Different drivers have different power levels. Traditional parking brakes have differences in actual parking brakes.

EPB brake force is stable and will not vary from person to person. It achieves the parking brake by simple manual switch operation. Consequently, the comfort and safety of the complete vehicle are greatly improved.

3. Automatic functions such as start assisting can be added. It occupies a small space, which makes the vehicle interior design more convenient.

6.5.3 System working principles

6.5.3.1 System Working Principles

The parking brake system of this model adopts the electronic parking brake system (EPB). The EPB system replaces the traditional mechanical parking brake system and does not differ the vehicle braking efficiency due to the driver's power.

The electronic parking brake switch controls the rear wheel parking motor and makes the operation more convenient, which improves the safety and comfort of the vehicle. The EPB system is mainly composed of three parts: parking brake switch, brake control module assembly and EPB motor.

The electric parking brake system is controlled by the brake control module assembly. The power mode is in the ON state. Step on the brake pedal and pull up the parking brake switch. After receiving the switch signal, the brake control module assembly controls the EPB motor to work. The motor drives the reduction mechanism to push the piston of the rear wheel brake caliper to drive the rear wheel brake pad to realize the parking brake.

Electric parking system has the functions stated in the following table

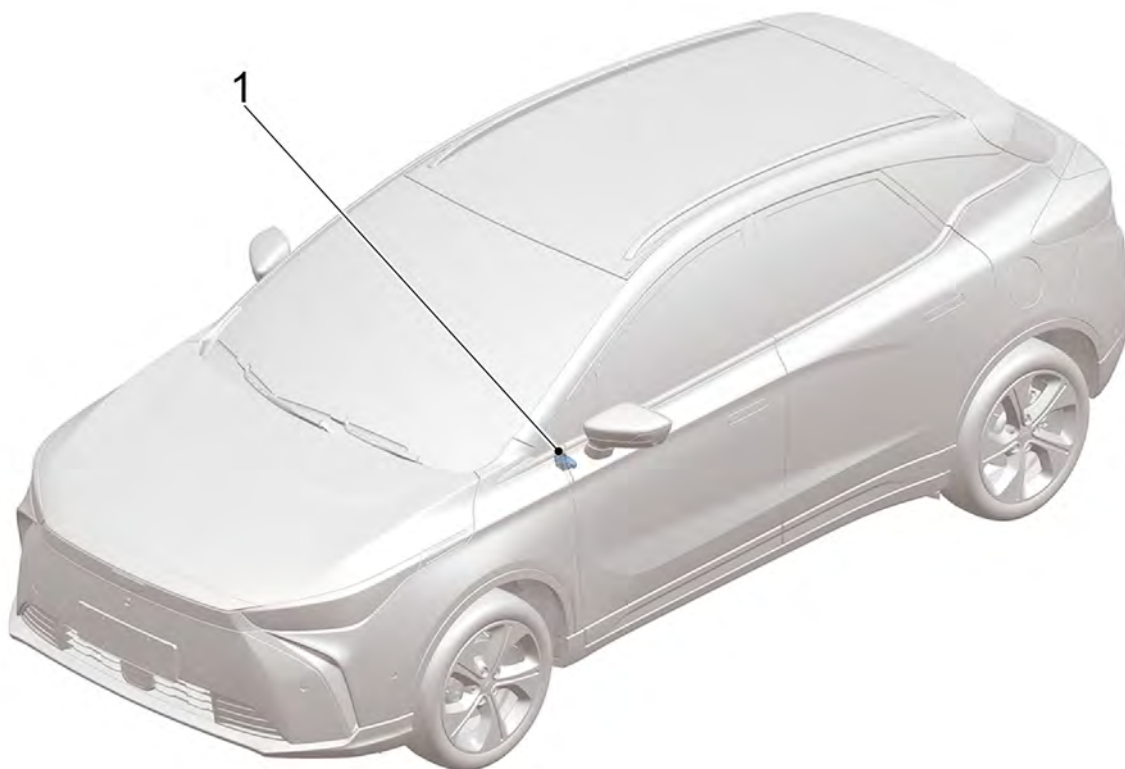
Functions			Function description	Results:
Mode	Description 1	Description 2		
Static pull up mode	Pull up the handbrake	-	The driver manually pulls up the parking switch to achieve the parking function.	OK
	Smart pull up	-	Different parking braking forces are applied according to road slope.	OK
	Clamp again	Loss of force-re-clamp	It will be clamped again when it is detected that the clamping force applied has suddenly dropped below the set target clamping force.	OK
		Sliding car-clamping again	Clamp when the vehicle slides according to the wheel speed pulse signal.	OK
	Autonomous pull up	-	When it is detected that the power mode is from ON to OFF, the EPB will automatically pull up for parking.	OK
Stationary release mode	Manual release	-	The driver steps on the brake pedal and manually presses down the parking switch to release the parking function.	OK

Functions			Function description	Results:
Mode	Description 1	Description 2		
	Auto Drive Away Release	-	The EPB is automatically released when the driver senses the driver's intention to drive (the door is closed, the driver seat belt is fastened, and the accelerator pedal is depressed).	OK
	Fault release	-	When the brake position or pressure sensor signal fails, you need to press and hold the switch for 2 s to release it.	OK
	Service release	-	When the EPB needs to be repaired, depress the brake pedal when the power mode is ON. Press and hold the switch for 10 s and release it again. The EPB is completely released.	OK
	Pre-release	-	According to the seat belt and gear signals, part of the parking brake force will be released in advance without sliding.	OK
Dynamic pull up mode	-	EPB Anti-lock braking system	When dynamic pulling, the EPB follows the wheel speed signal, and the ESC applies appropriate hydraulic braking force to prevent the wheels from locking.	OK

Functions			Function description	Results:
Mode	Description 1	Description 2		
	-	Fault pull up	When the wheel speed signal fails, the EPB slowly pulls up the brake.	OK
Dynamic release mode	-	-	In dynamic mode, the driver releases the EPB switch to a natural state, the EPB stops pulling up dynamically. The braking force is also released immediately.	OK
Mad Mode	-	-	When the power mode is ON, after 50 consecutive repeated pull-ups and releases, the EPB automatically locks up, preventing children from playing with the wrong operation, and increases the maneuverability after 5 s.	OK
Run-in Process	-	-	RUN-IN is cyclically pulled up and released four times to realize the initialization of EPB according to different vehicle states. This function is to adjust the initial handling length of the cable according to the pulling force of each cable.	OK

6.5.4 Part position

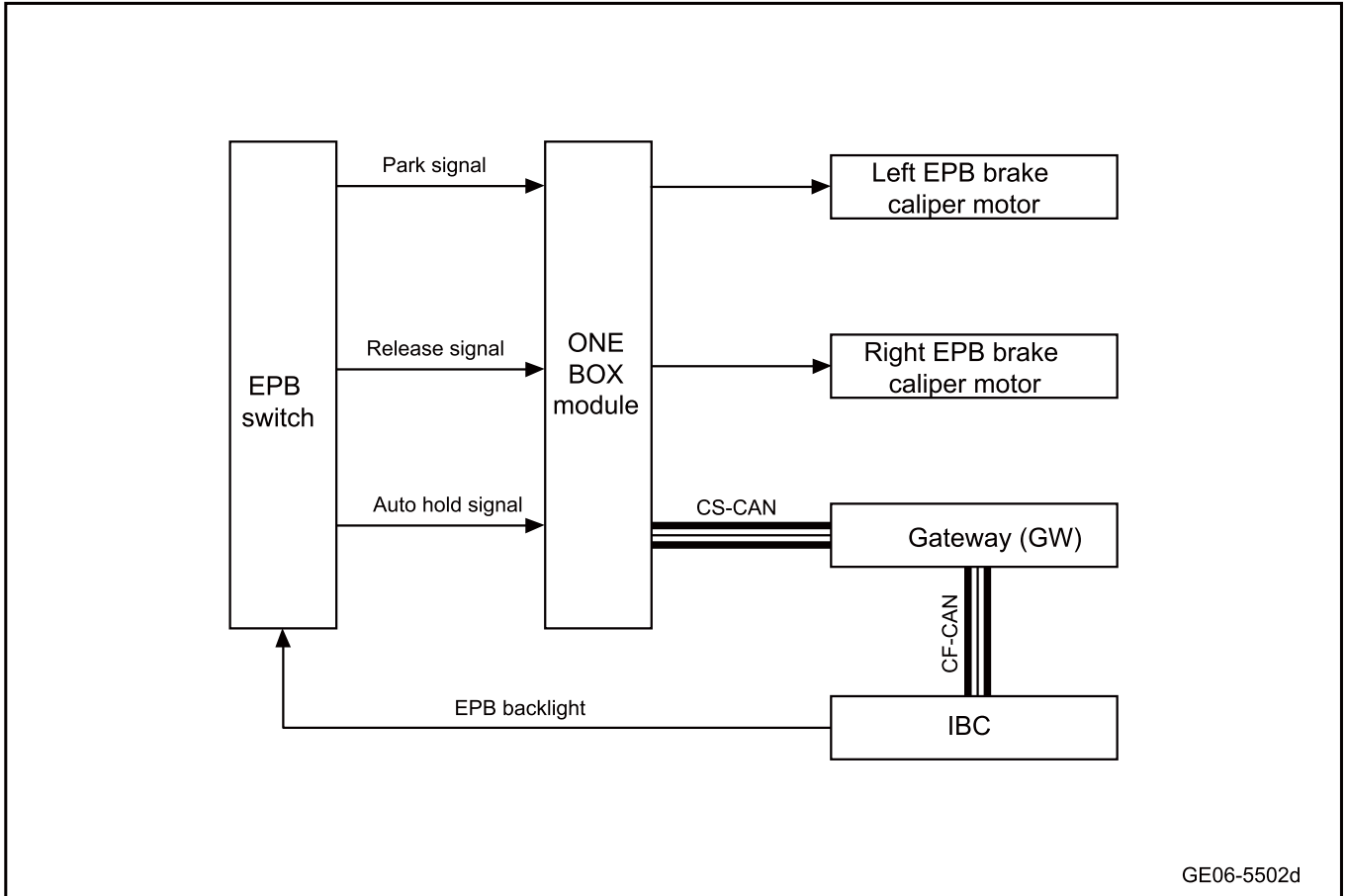
6.5.4.1 Part Position



- 1. Dashboard left switch assembly

6.5.5 Electrical block diagram

6.5.5.1 Electrical Schematic Diagram of Parking System



6.5.6 Diagnostic information and procedures

6.5.6.1 Diagnosis Description

The fault code can be read through the data connector of the vehicle (DTC diagnostic interface), the data table of ONE BOX module can be used to read the data table displayed on the intelligent tester, and the functions of reading switch and sensor values can be performed without removing any parts. Reading data table is the first step in trouble shooting and one of the ways to reduce diagnostic time.

6.5.6.2 Routine inspection

- Confirm trouble symptom

The most difficult situation in trouble shooting is the absence of any symptoms. In this case, the fault described by the user must be thoroughly analyzed. The same or similar conditions and environment when the fault of the distributor's vehicle comes out should be simulated. No matter how experienced and skilled the maintenance personnel is, if they do not confirm the symptoms of the fault, they will ignore some important things in the repair and make wrong guesses in some places. It will make trouble shooting to fail.

- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

- The connector joints and vibration fulcrum are the main parts that should be thoroughly checked. Vibration method is recommended in case of failure due to vibration.

1. Gently vibrate the potentially faulty sensor part with fingers and check for faults.
2. Gently shake the connector in both vertical and horizontal directions.
3. Gently shake the harness in both vertical and horizontal directions.

6.5.6.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

6.5.6.4 Fault symptom table

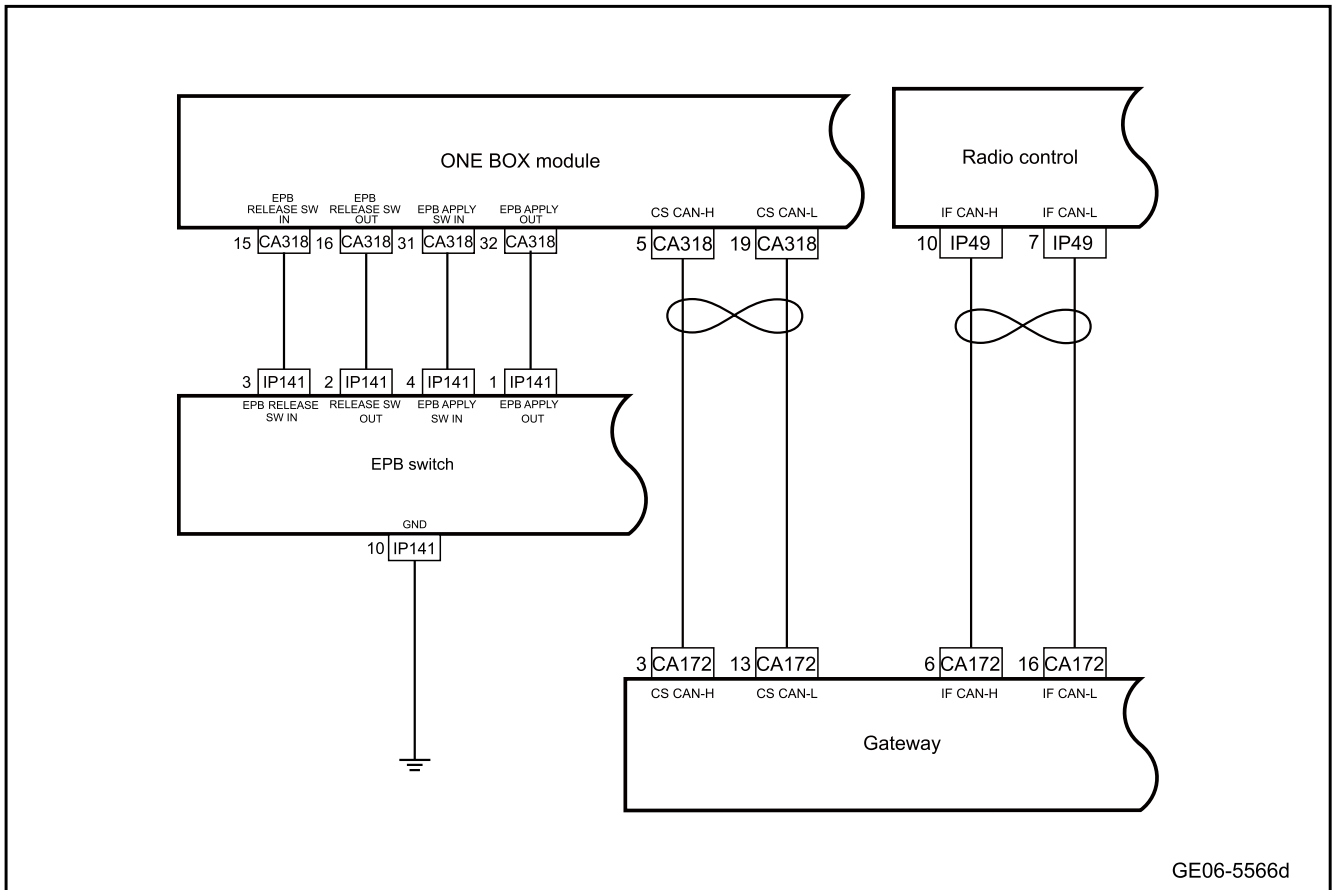
If a normal code is displayed during the DTC checking and the fault still exists, the circuit should be checked for symptoms of various faults in the order given in the table below. Then go to the relevant maintenance plan to eliminate faults.

Symptom	Possibility and cause	Measures
EPB indicator fault	1. EPB Switch Signal Harness Failure	Refer to EPB Indicator Lamp Failure
	2. EPB switch fault	Replace EPB switch

Symptom	Possibility and cause	Measures
	3. ONE BOX module failure	Check the ONE BOX module software version and update it. Replace the ONE BOX module if necessary
	4. Head unit	Check the software version of the head unit and update it. Replace the head unit if necessary.
	5. Instrument cluster display screen fault	Replace the instrument cluster display screen
brake caliper motor fault	1. Brake caliper motor harness fault	Refer to Right Brake Caliper Motor Fault
	2. Left brake caliper motor fault	Replace left-side brake caliper motor.
	3. Right brake caliper motor fault	Replace right brake caliper motor.
	4. ONE BOX module failure	Check the ONE BOX module software version and update it. Replace the ONE BOX module if necessary
EPB switch failure	1. Harness fault	Refer to EPB Switch Circuit Fault
	2. EPB switch fault	Replace EPB switch
	3. ONE BOX module failure	Check the ONE BOX module software version and update it. Replace the ONE BOX module if necessary

6.5.6.5 EPB indicator fault

1. Circuit diagram:



GE06-5566d

2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster controller, EPB switch and ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

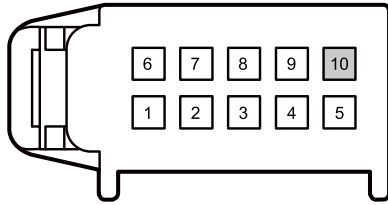
No

Repair or replace the faulty part.

Yes

Step 2	Check the grounding circuit of EPB switch.
--------	--

IP141 EPB switch harness connector



GE06-5630d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Measure the resistance between the terminal 10 of harness connector IP141 for EPB switch and the body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

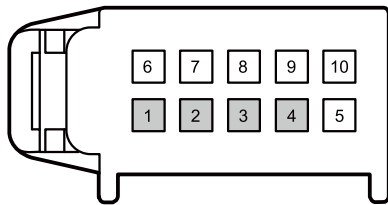
No

Repair or replace the harness.

Yes

Step 3 | Check the circuit between EPB switch and ONE BOX module.

IP141 EPB switch harness connector



GE06-5631d

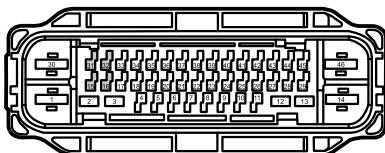
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Disconnect the ONE BOX module harness connector CA318.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP141(3)	CA318(15)	Standard resistance: less than 1Ω
IP141(2)	CA318(16)	
IP141(1)	CA318(32)	
IP141(4)	CA318(31)	
IP141(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP141(2)		
IP141(1)		
IP141(4)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP141(3)	Vehicle body is grounded.	Standard voltage: 0V
IP141(2)		
IP141(1)		

CA318 ONE BOX module harness connector



GE06-5632d

Measure terminal 1	Measure terminal 2	Standard value
IP141(4)		

G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Replace EPB switch.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Replace EPB switch. Refer to [Replacement of EPB Switch](#)
- C. Confirm whether the EPB switch operates normally.

Yes System is normal.

No

Step 5 Check the CS-CAN bus integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm that the CS-CAN network is functioning properly.

No Check or repair CS-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 6 Check the IF-CAN bus integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm that the IF-CAN network is functioning properly.

No Check or repair IF-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module Assembly](#)
- C. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Change the head unit.
--------	-----------------------

- A. Check whether the head unit power supply and grounding harness is normal. Refer to [Head unit power supply failure](#)

Next step

Step 10	System is normal.
---------	-------------------

6.5.6.6 Left brake caliper motor fault

1. DTC description:

Diagnostic Trouble Code	Description
C150309	Motor does not start normally - left caliper
C150318	Insufficiently increased clamp forces- the left caliper
C150319	Coefficient of friction is too high - the left caliper
C150371	Motor stall - the left caliper
C150391	Suspicious motor parameters- the left caliper
C150393	No increase in force detected - the left caliper
C102200	The left brake fault of automatic parking brake (Only for ESC)
C102401	Electrical fault of the left brake for automatic parking (Only for ESC)

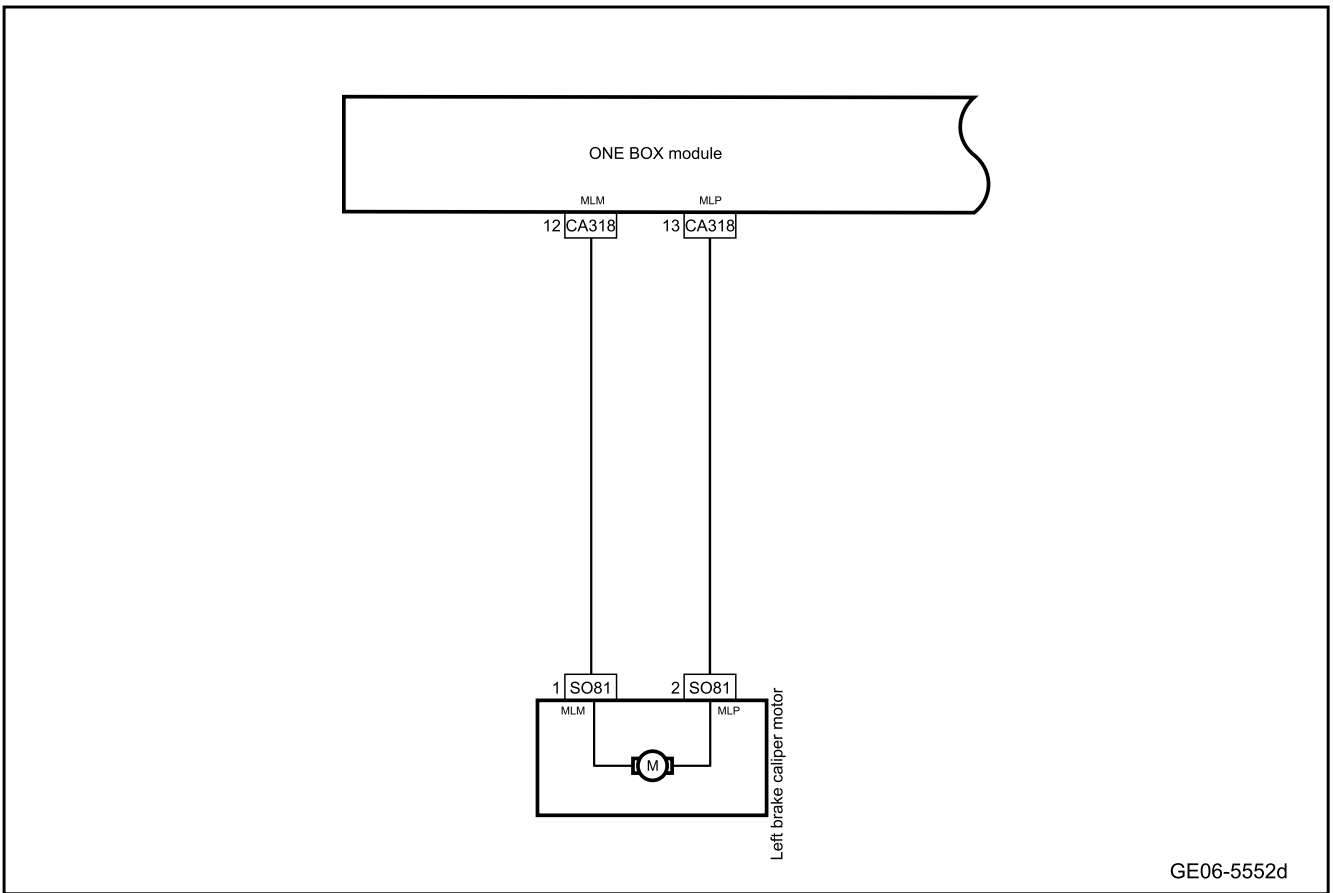
Diagnostic Trouble Code	Description
C102719	The left-side motor overcurrent of automatic parking brake (Only for ESC)
C102400	Internal hardware fault of EPB left motor drive
C102411	EPB left motor is short to GND
C102412	EPB left motor is short to power supply
C102413	EPB left motor open circuit
C102419	EPB left motor pre-drive status overcurrent
C10241E	The left brake fault of automatic parking brake or ECU fault(Only for ESC)
C102494	Unexpected movement of EPB left actuator
C150373	Left parking caliper-release failure
C150377	Parking caliper LH-ESP limit action
C150907	The left caliper is wrongly executed

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150309	Every time the APB starts, the power supply circuit is faulty (such as motor circuits are disconnected and the resistance is too high)	1. Power supply mode is ON 2. System initialization 3. Normal working voltage (9V-16V)	1. Circuit 2. Left brake caliper motor 3. ONE BOX
C150318	If the force accumulation current of the left brake is too low, if the force (F1 14500N/ F2 18500N) is not reached within 4.5 s during the force accumulation phase.		
C150319	If the left brake idle current is too high, if idle current exceeds current threshold.		
C150371	If the left braking force increases too fast during use, motor stall is detected.		
C150391	At the beginning of each locking cycle, check the motor for defects, parameter estimate errors/harness faults		
C150393	If the left brake power boost is not started, if the force is not reached within 20 seconds		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C102200	1. Incorrect polarity of left-side ECU motor voltage. 2. The left-side EPB motor stalls in release period. 3. The left-side EPB motor stalls in application period.		
C102401	1. The left-side APB motor circuits are short-circuited to battery. (Voltage at motor terminals (M+ and M-) is greater than 4.2V, less than 4.9V) 2. The left-side APB motor circuits are short-circuited to ground. 3. If the absolute voltage value of left positive left motor-left negative motor is higher than the specified threshold, then the fault is set		
C102719	If excessive current is detected, the EPB will set the fault bit.		
C102400	EPB Motor drive circuit failure		
C102411	EPB left motor is short to GND		
C102412	EPB left motor is short to power supply		
C102413	EPB left motor open circuit		
C102419	EPB left motor H bridge fault		
C10241E	EPB left motor drive current is too low		
C102494	EPB left motor unexpected action		
C150373	Left EPB motor does not return to the target position		
C150377	Motion of left-side EPB motor is limited by HOST		
C150907	EPB left motor drive state exceeds 20 s		

3. Circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

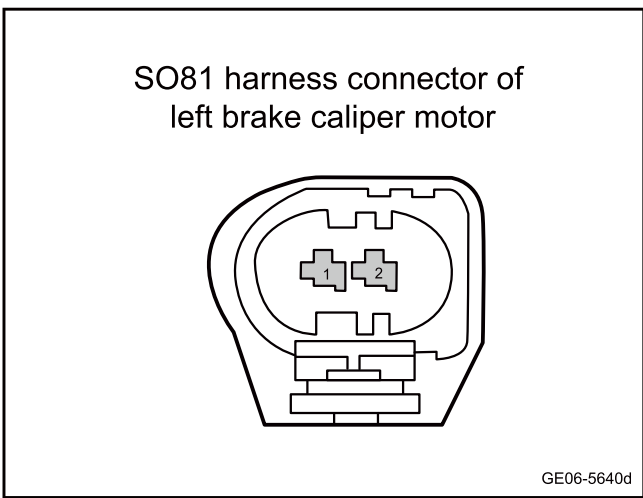
- A. Check the left brake caliper motor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the left-side brake caliper motor and the ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

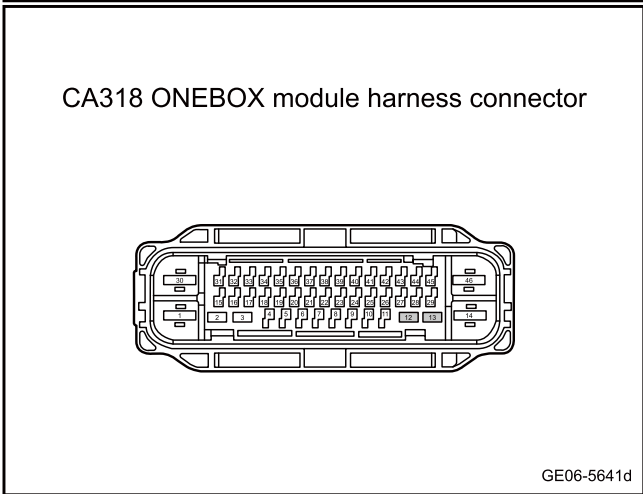
Step 3 Detect whether circuits between ONE BOX and left-side brake caliper motor are open



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO81 of the left-side brake caliper motor.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO81(1)	CA318(12)	Standard resistance: less than 1Ω
SO81(2)	CA318(13)	

- E. Confirm whether the measured value meets the standard.

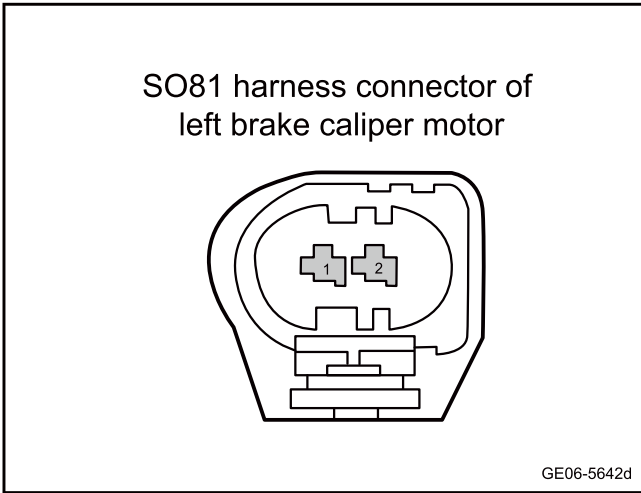


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between ONE BOX and the left brake caliper motor is short circuited to power supply



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO81 of the left-side brake caliper motor.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

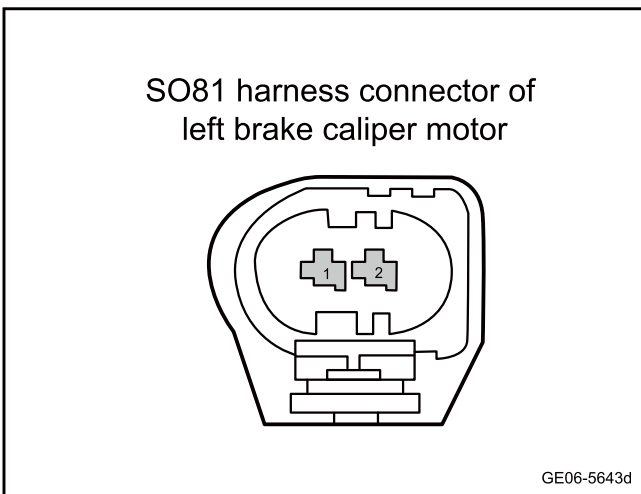
Measure terminal 1	Measure terminal 2	Standard value
SO81(1)	Vehicle body is grounded.	Standard voltage: 0V
SO81(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Detect whether circuits between ONE BOX and left-side brake caliper motor are shorted to GND



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO81 of the left-side brake caliper motor.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO81(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO81(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace left-side brake caliper motor.

- A. Replace left-side brake caliper motor. Refer to [Replacement of Left Brake Caliper Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [6.6.6.12 ONE-BOX Power Supply Failure](#)
- B. Replace ONE BOX Refer to [Replacement of Brake Control Module](#) Assembly

Next step

Step 8	Reprogram and reset the ONE-BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE-BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

6.5.6.7 EPB switch circuit fault

1. DTC description:

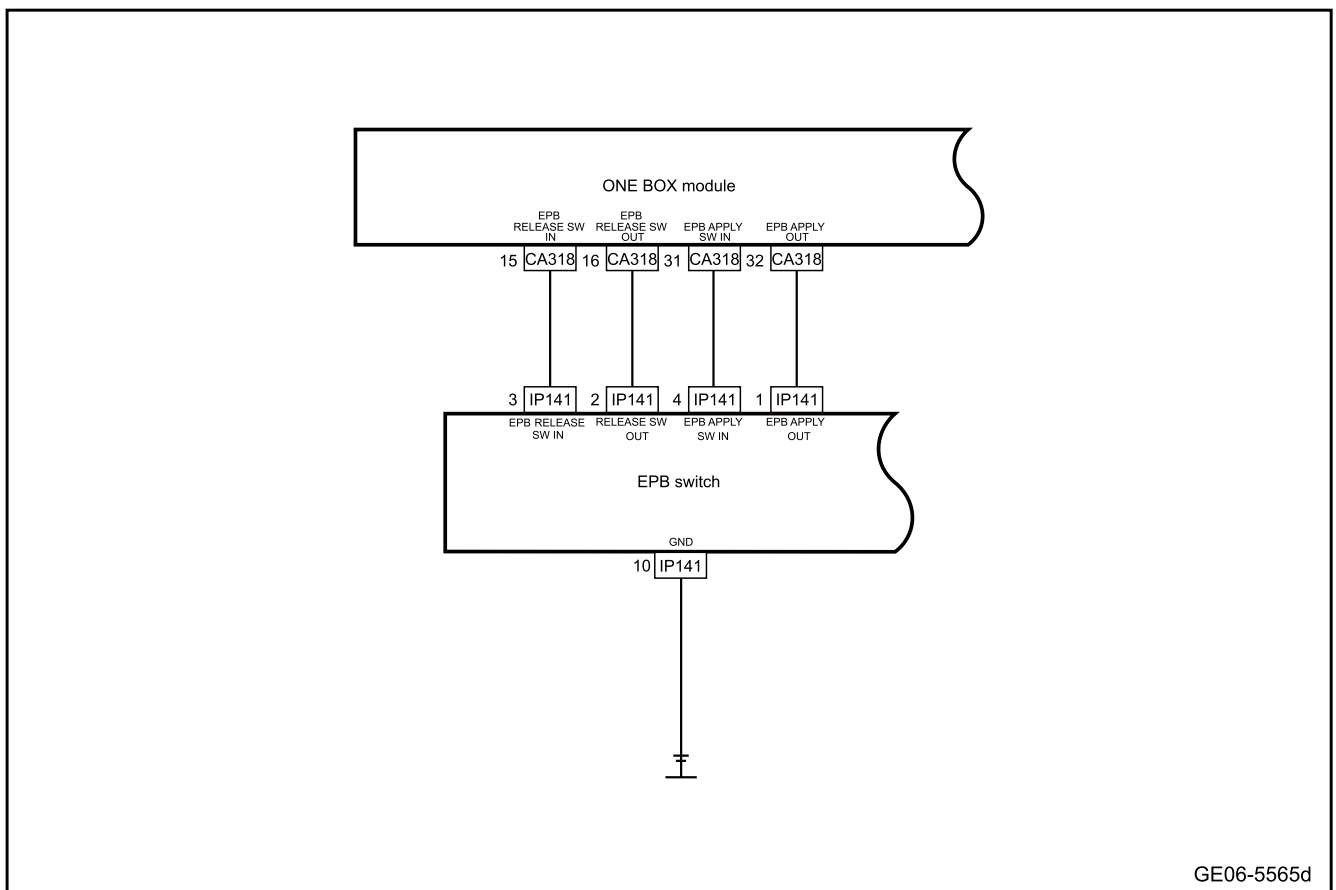
Diagnostic Trouble Code	Description
C102C71	Button catching of auto hold (Only for ONE BOX)
C102312	Button loop fault of auto hold (Only for ONE BOX)
C102216	EPB power supply voltage is too low

Diagnostic Trouble Code	Description
C102217	EPB power supply voltage is too high
C102316	EPB switch power supply voltage is too low

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C102C71	EPB switch is in lock state for 80s or release state for 20s.	1. Power supply mode is ON 2. System initialization 3. Normal working voltage (9V-16V)	1. Circuit 2. EPB switch 3. ONE BOX module
C102312	EPB switch state is not in any of the lock, release and neutral states for 1 s		
C102216	EPB power supply voltage exceeds the range of 8.5-16.5V for 3 s		
C102217	EPB power supply voltage exceeds the range of 8.5-16.5V for 3 s		
C102316	EPB supply voltage is lower than 7V for 1s.		

3. Schematic circuit diagram:



4. Diagnosis steps

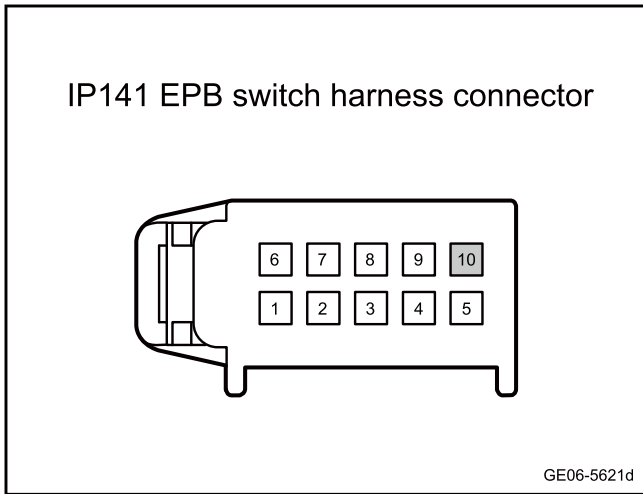
Step 1	Primary check.
--------	----------------

- A. Check the EPB switch and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the EPB switch and the harness connector of ONE BOX for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check the grounding circuit of EPB switch.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Measure the resistance between the terminal 10 of harness connector IP141 for EPB switch and the body grounding.

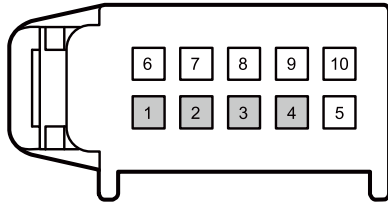
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

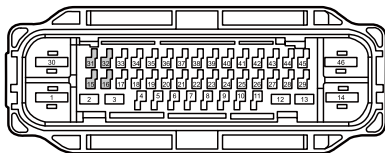
Step 3	Detect whether circuits between the EPB switch and ONE BOX are open.
--------	--

IP141 EPB switch harness connector



GE06-5622d

CA318 ONEBOX module harness connector



GE06-5623d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Disconnect the ONE BOX module harness connector CA318.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP141(3)	CA318(15)	Standard resistance: less than 1Ω
IP141(4)	CA318(31)	
IP141(2)	CA318(16)	
IP141(1)	CA318(32)	

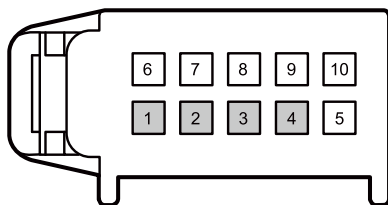
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Check whether the circuit between the EPB switch and ONE EPB is shorted circuit to power supply.

IP141 EPB switch harness connector



GE06-5624d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Disconnect the ONE BOX module harness connector CA318.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP141(1)	Vehicle body is grounded.	Standard voltage: 0V
IP141(3)		
IP141(4)		
IP141(2)		

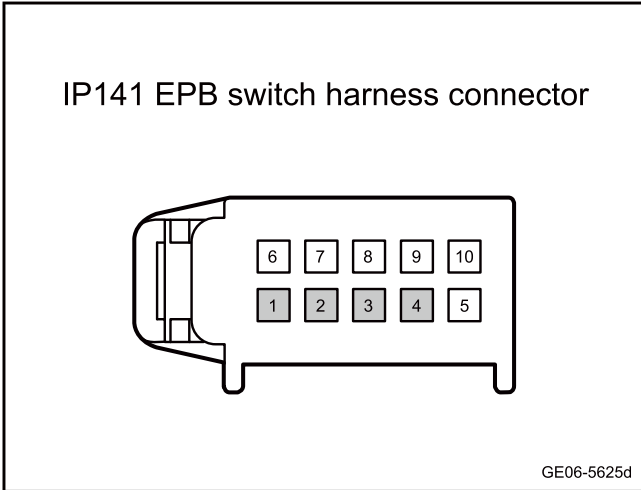
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the EPB switch and ONE BOX is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector IP141 of the EPB switch.
- C. Disconnect the ONE BOX module harness connector CA318.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP141(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP141(3)		
IP141(4)		
IP141(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace EPB switch.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Replace EPB switch. Refer to [Replacement of EPB Switch](#)
- C. Confirm whether the EPB switch operates normally.

Yes

System is normal.

No

Step 7 Replace the ONE BOX module.

- A. Check whether the power supply and grounding harness of ONE BOX module is normal. Refer to [6.6.6.12 ONE BOX Module Power Supply Failure](#)
- B. Replace the ONE BOX module. Refer to [Replacement of ONE -BOX Module](#)

Next step

Step 8	Reprogram and reset the ONE BOX module.
--------	---

- A. Reprogram and reset the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

6.5.6.8 Right brake caliper motor fault

1. DTC description:

Diagnostic Trouble Code	Description
C150409	Motor does not start normally - right caliper
C150418	Insufficient increased clamp force- right caliper
C150419	Coefficient of friction is too high - right caliper
C150471	Motor stall - right caliper
C150491	Suspicious motor parameters- right caliper
C150493	No increase in force detected - right caliper
C102100	The right brake fault of AUTO HOLD (only for ESC)
C102501	The right brake electrical fault of AUTO HOLD (only for ESC)
C102819	The right motor overcurrent of the AUTO HOLD (only for ESC)
C102500	Internal hardware fault of EPB right motor drive
C102511	EPB right motor is short to GND
C102512	EPB right motor is short to power supply

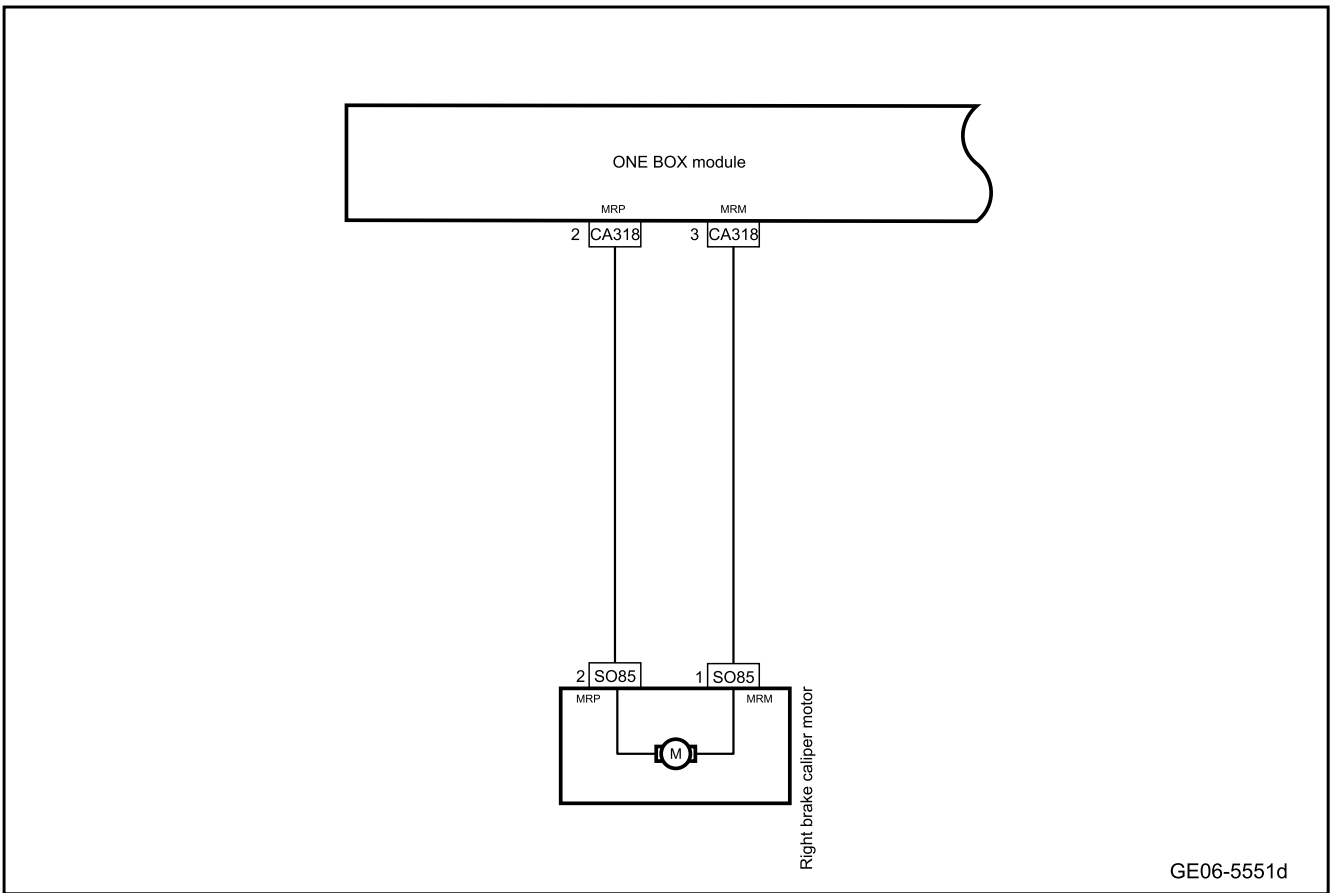
Diagnostic Trouble Code	Description
C102513	EPB right motor open circuit
C102519	EPB right motor pre-drive status overcurrent
C10251E	The right brake fault of AUTO HOLD or ECU fault
C102594	Unexpected action of EPB right actuator
C150473	Right parking caliper-release fails
C150477	Right parking caliper-ESP limit action
C150A07	The right caliper is wrongly executed

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150409	Every time the APB starts, the power supply circuit is faulty (such as motor circuits are disconnected and the resistance is too high)	1. Power supply mode is ON 2. System initialization 3. Normal working voltage (9V-16V)	1. Circuit 2. Right brake caliper motor 3. ONE BOX
C150418	If the force accumulation current of the right brake is too low, if the force (F1 14500N/F2 18500N) is not reached within 4.5 s during the force accumulation phase.		
C150419	Right brake idle current is too high, if idle current exceeds current threshold.		
C150471	If the right braking force increases too fast during use, motor stall is detected.		
C150491	At the beginning of each locking cycle, check the motor for defects, parameter estimate errors/harness faults		
C150493	If the right brake power boost is not started, if the force is not reached within 20 seconds		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C102100	1. Right ECU motor voltage polarity faults. 2. The right-side EPB motor stalls in release period. 3. The right-side EPB motor stalls in application period.		
C102501	1. The right APB motor circuits are short to battery. (Voltage at motor terminals (M+ and M-) is greater than 4.2V, less than 4.9V) 2. The right APB motor circuits are short to ground. 3. If the absolute voltage value of right up-right down of the motor is higher than the specified threshold, then a fault is set		
C102819	If excessive current is detected, the EPB will set the fault bit.		
C102500	EPB right motor drive circuit failure		
C102511	EPB right motor is short to GND		
C102512	EPB right motor is short to power supply		
C102513	EPB right motor open circuit		
C102519	EPB right motor H bridge fault		
C10251E	EPB right motor drive current is too low		
C102594	EPB right motor accidental action		
C150473	Right EPB motor does not return to the target position		
C150477	Right EPB motor action is restricted by HOST		
C150A07	EPB right motor drive state exceeds 20 s		

3. Circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

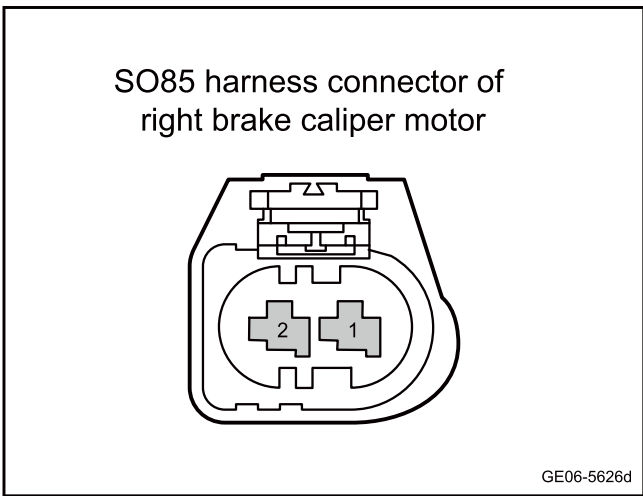
- A. Check the right brake caliper motor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the right brake caliper motor and the ONE BOX harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

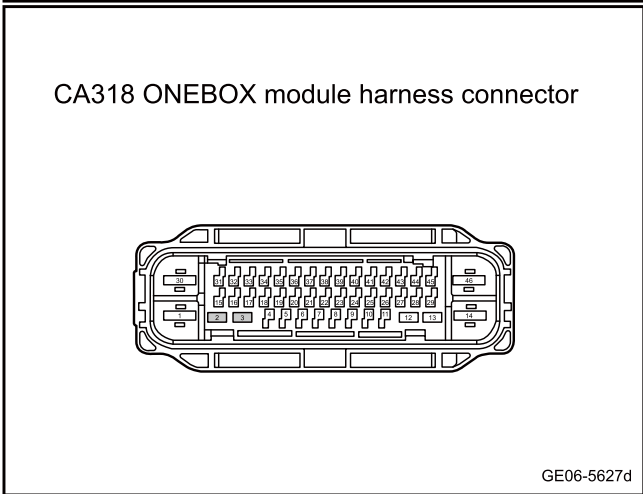
Step 3 Check whether circuit between ONE BOX and right brake caliper motor is open



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the right side brake caliper motor harness connector SO85.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO85(1)	CA318(3)	Standard resistance: less than 1Ω
SO85(2)	CA318(2)	

- E. Confirm whether the measured value meets the standard.

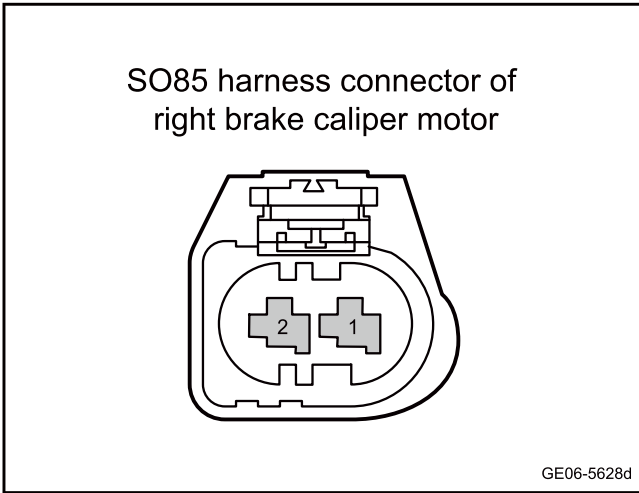


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between ONE BOX and the right brake caliper motor is short circuited to power supply



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the right side brake caliper motor harness connector SO85.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

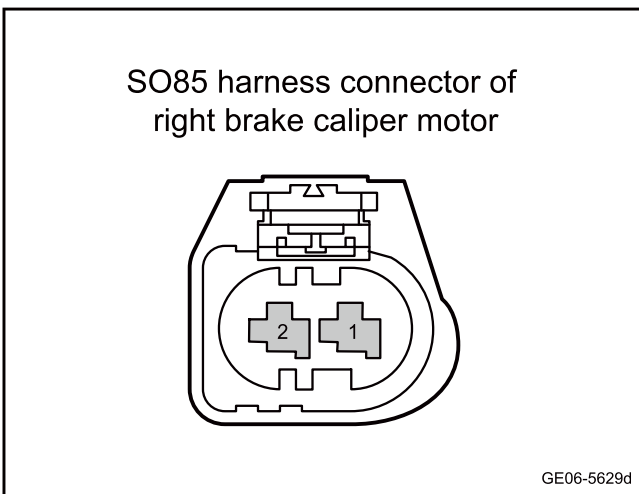
Measure terminal 1	Measure terminal 2	Standard value
SO85(1)	Vehicle body is grounded.	Standard voltage: 0V
SO85(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between ONE BOX and right brake caliper motor are short to GND



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the right side brake caliper motor harness connector SO85.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO85(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO85(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace right brake caliper motor.

- A. Replace right brake caliper motor. Refer to [Replacement of Right Brake Caliper Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace ONE BOX Refer to [Replacement of Brake Control Module Assembly](#)

Next step

Step 8	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

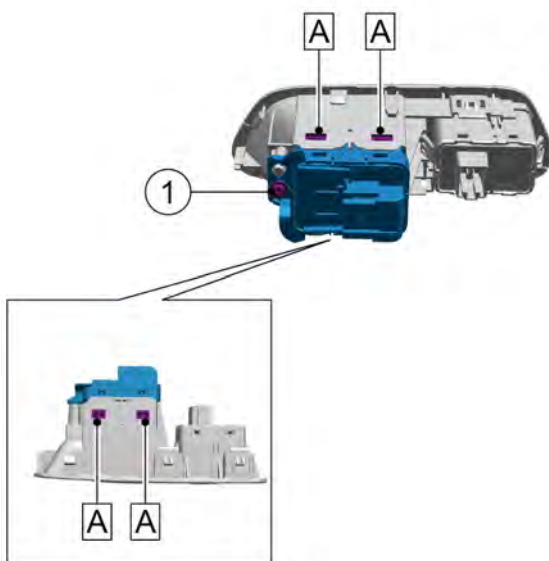
Step 10	System is normal.
---------	-------------------

6.5.7 Removing and installing

6.5.7.1 Replacement of EPB switch

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower fender apron assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Remove the instrument cluster switch. Refer to [Replacement of Instrument Cluster Switch](#)
- 4 Remove 1 fixing screw 1 that connects EPB switch with the middle trim panel of auxiliary dashboard.
- 5 Disconnect the 4 fastening clips A connecting the parking brake switch and the instrument cluster switch.
- 6 Remove Parking brake switch



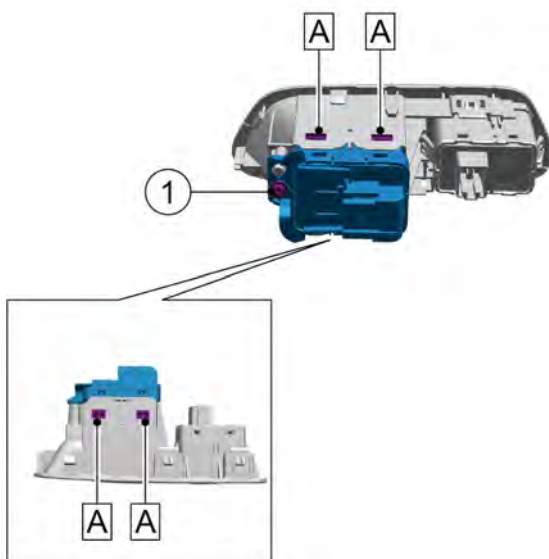
Installation procedure

- 1 Move the parking brake switch to the installation position.
- 2 Install the 4 fastening clips A connecting the parking brake switch and the instrument cluster switch.

Caution

Check whether the 4 fixing clips A connecting the parking brake switch and the left switch block of the instrument panel are installed in place.

- 3 Install and tighten the 1 fixing screw 1 connecting the parking brake switch and the instrument combination switch.



- 4 Install the instrument cluster switch.

- 5 Install the left lower shield assembly of the dashboard.
- 6 Connect the negative cable of battery.

6.6 ABS/EBD/ESC

6.6.1 Specification

6.6.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left front speed sensor fixing bolt	M6×12	8 -10
Rear wheel speed sensor fixing bolt	M6×12	8.5-11.5

6.6.1.2 Wheel speed sensor technical specifications

Speed sensor	Description
Sensor type	Intelligent revolution speed sensor
Rated working voltage	12V
Peak working voltage	20V
Rated signal current	5.9mA-16.8mA
Peak signal current	34mA
Clearance value with signal panel	Front 0.6~1mm, rear 0.2~0.6mm

6.6.2 Instructions and operations

6.6.2.1 Description and Operations

This vehicle is equipped with Anti-lock Brake System (ABS), Electronic Braking-force Distribution (EBD), Electronic Stability Control (ESC), Hill Hold Control (HHC), Traction Control System (TCS), Brake Assist System (BA), Hill Descent Control (HDC), Brake Override System (BOS), Auto Hold System (Auto hold), providing the driver with excellent braking performance, maneuverability, stability and safety in various bicycle situations.

Anti-lock Brake System (ABS)

The main function of the anti-lock braking system (ABS) is to improve the braking performance of the complete vehicle, improve the driving safety, and prevent the wheels from locking (that is, stop rolling) during the braking process, thus ensuring the driver can control the direction when braking and preventing the rear wheels from slipping. Its working principle is as follows: during emergency braking, when the wheel speed sensor installed on each wheel finds that a wheel is locked, the ABS computer immediately controls the corresponding solenoid valve to relieve the pressure of the wheel brake wheel cylinder, and the wheel resumes rotation to prevent the wheel from locking. The working process of ABS is actually a cyclic working process of "lock-release-lock-release", so that the vehicle is always in the rolling state with a critical locking clearance, effectively overcoming the vehicle deviation caused by wheel locking during emergency braking, and preventing the vehicle body from losing control.

The anti-lock braking system (ABS) consists of the following components:

1. Hydraulic Electronic Control Unit (HECU)

Caution

There is a rubber vibration isolator between the mounting bolt of the hydraulic electronic control unit and the bracket. The function of the rubber vibration isolator is to protect the hydraulic electronic control unit from the impact of vehicle vibration. The hydraulic electronic control unit cannot be decomposed and should be replaced as an assembly.

The hydraulic electronic control unit (HECU) controls system functions and detects malfunctions. When the power supply is ON and there are no ABS DTCs, the system energizes the relay to provide battery positive voltage to the solenoid and pump. The hydraulic electronic control unit (HECU) continuously detects the state of the wheels and controls the slip rate of the wheels within a

certain range, thereby maintaining the stability of the vehicle. The hydraulic control pipeline adopts a diagonal shunt configuration, so that the oil of the brake master cylinder flows to the left front wheel and the right rear wheel all the way, and the other oil flows to the right front wheel and the left rear wheel. Diagonal shunts are hydraulically isolated so that when one main brake circuit leaks or fails, the other can ensure continuous braking capability. The hydraulic electronic control unit (HECU) consists of the following components:

- ABS control module
- ABS pump and its relay
- Oil inlet valves, one for each wheel
- Oil drain valves, one for each wheel
- Electromagnetic coil relay

2. Wheel speed sensor

The wheel speed sensor is a Hall-type speed sensor, and as the wheel rotates, the ABS control module uses the wheel speed signal to calculate the wheel speed. The wheel speed sensor can be replaced separately, but the signal plate (ring gear) is embedded in the half shaft and can only be replaced together with the half shaft.

3. Brake lamp switch

When the brake pedal is depressed, the brake lamp turns on, and the braking signal is sent to the ABS control module.

4. ABS warning lamp

Mounted on the instrument cluster, it turns on to notify the driver of ABS failure. The instrument cluster will turn on the ABS warning lamp when any of the following events occurs:

- The ABS control module detects that the ABS system is faulty, and the instrument cluster receives a request to turn on the information from the ABS control module through the CAN bus. The instrument cluster performs a self-test at the beginning of each ignition cycle, and the indicator lamp turns on for about 3s.
- The instrument cluster performs a self-test at the beginning of each ignition cycle, and the indicator light turns on for about 3s.
- The instrument cluster has detected a loss of communication with the ABS control module.

Electronic Braking-force Distribution (EBD)

Electronic braking-force distribution (EBD) is actually an auxiliary function of ABS, which can improve the efficacy of ABS. When braking, all four brake cylinders of the vehicle will work, but due to road conditions, plus the transfer of the vehicle's center of gravity during deceleration, the grip between the four wheels and the ground will be different, and the braking force of each wheel will be different when the vehicle is unloaded and fully loaded. Under these conditions, EBD automatically monitors the grip between each wheel and the ground, reasonably distributes the braking force of the front and rear wheels, and maximizes the working efficiency of the braking system. With the assistance of the EBD system, the braking system maximizes its work efficiency, shortens the braking distance significantly, and keeps the vehicle stable when braking, improves the safety of driving, and better maintains the stability function of the vehicle when braking at corners, and increases the safety of driving at corners.

Electronic Stability Control System (ESC)

The electronic stability control system (ESC) is a further extension of Anti-lock Brake System (ABS) and Traction Control System (TCS) functions, and on this basis, yaw rate sensor, lateral acceleration sensor, steering wheel angle sensor and ESC switch are added. The control unit judges the running state of the vehicle through the signals of these sensors, and then sends instructions. ESC can actively detect and analyze the running conditions of the vehicle and correct the driver's errors in time. ESC is particularly sensitive to over-steer or under-steer of vehicles. When it is found that the vehicle turns or turns too fast on a slippery road, resulting in under-steer or over-steer, the system will quickly apply braking force to single or multiple wheels when the sensor detects slippage, so as to restore the adhesion of the wheels, adjust the attitude of the vehicle when turning, and keep the car on the original road, thus greatly improving the stability and safety of vehicle when turning.

Traction control system (TCS)

The traction control system can identify the driving wheel slip trend during vehicle start or acceleration, and control the wheel slip ratio by intervening in power management control or applying wheel brake to ensure the driving stability and comfort.

The system is automatically turned on, and the driver can turn it off through the ESC OFF switch on the panel. After the function is turned on, when starting or accelerating, the system automatically monitors the slip ratio of the driving wheels. When it exceeds the set value range, the system reduces the power output torque or applies hydraulic brake to

the wheels to prevent them from slipping and reducing the lateral adhesion; when it is lower than the set value range, the system increases power output (not higher than driver demand) and reduces braking torque. When the system monitors a fault, TCS will be switched off promptly. When torque needed by the driver is less than possible output torque, the intervention of TCS in power output will stop promptly.

When the system is powered on, it will perform a self-inspection. At this time, the indicator lamp of the instrument is always on, and it will go out after a few seconds if there is no fault. When TCS is invalid, yellow ESC fault lamp on instrument will be lightened. If the fault is not eliminated, the fault lamp will always be on. After troubleshooting, function resumes on the next ignition cycle. After the ESC OFF switch is pressed, the TCS function is turned off, and the ESC OFF light on the instrument is always on.

Hill Hold Control (HHC)

In the Hill Hold Control mode, the driver can release the brake when climbing, keep the vehicle in place, and simplify the climbing operation.

The system is automatically turned on, and the vehicle is stationary on a slope by depressing the brake pedal. When the driver intends to drive by releasing the brake pedal and stepping on the accelerator pedal, the HHC system continues to apply hydraulic pressure on the four wheels to prevent the wheels from sliding backward. Keep the vehicle stopping for 1s, when the driving force is greater than the starting resistance, the system will immediately release the hydraulic braking force on the wheels to let the vehicle start. When the function is activated, the rear brake lamp turns on.

Brake Assist System (BA)

Brake assist system (BA) can judge the driver's braking action, increase the braking force and shorten the braking distance during emergency braking. It automatically determines whether it is an emergency braking according to the strength and speed of the driver depressing the brake pedal, and then reasonably applies an appropriate auxiliary braking force, thus providing an effective, reliable and safe braking, avoiding the driver being unable to brake in time due to the insufficient braking force applied by the driver on the brake pedal in case of emergency braking.

Hill Descent Control (HDC)

When going downhill at a low speed on a road with a large slope and poor adhesion, the HDC system uses brake intervention to control the vehicle speed and acceleration. Generally, the same pressure is applied to all four brakes, but

the pressure of a single brake can be adjusted through the ABS and ESC functions to maintain the stability of the vehicle.

Brake Override System (BOS)

When the driver depresses the accelerator pedal and the accelerator pedal is fully depressed, the system that can stop the vehicle by depressing the brake pedal means that the brake priority system will intervene the power of the power system to perform brake operation on the vehicle when it detects that the driver's attempt to perform brake is not successful.

Auto Hold

The AUTO HOLD function can help the driver to start more comfortably on sloping roads. After releasing the brake pedal, the system holds braking, so that the driver has enough time to step on the accelerator pedal to start, reducing the impact of sliding.

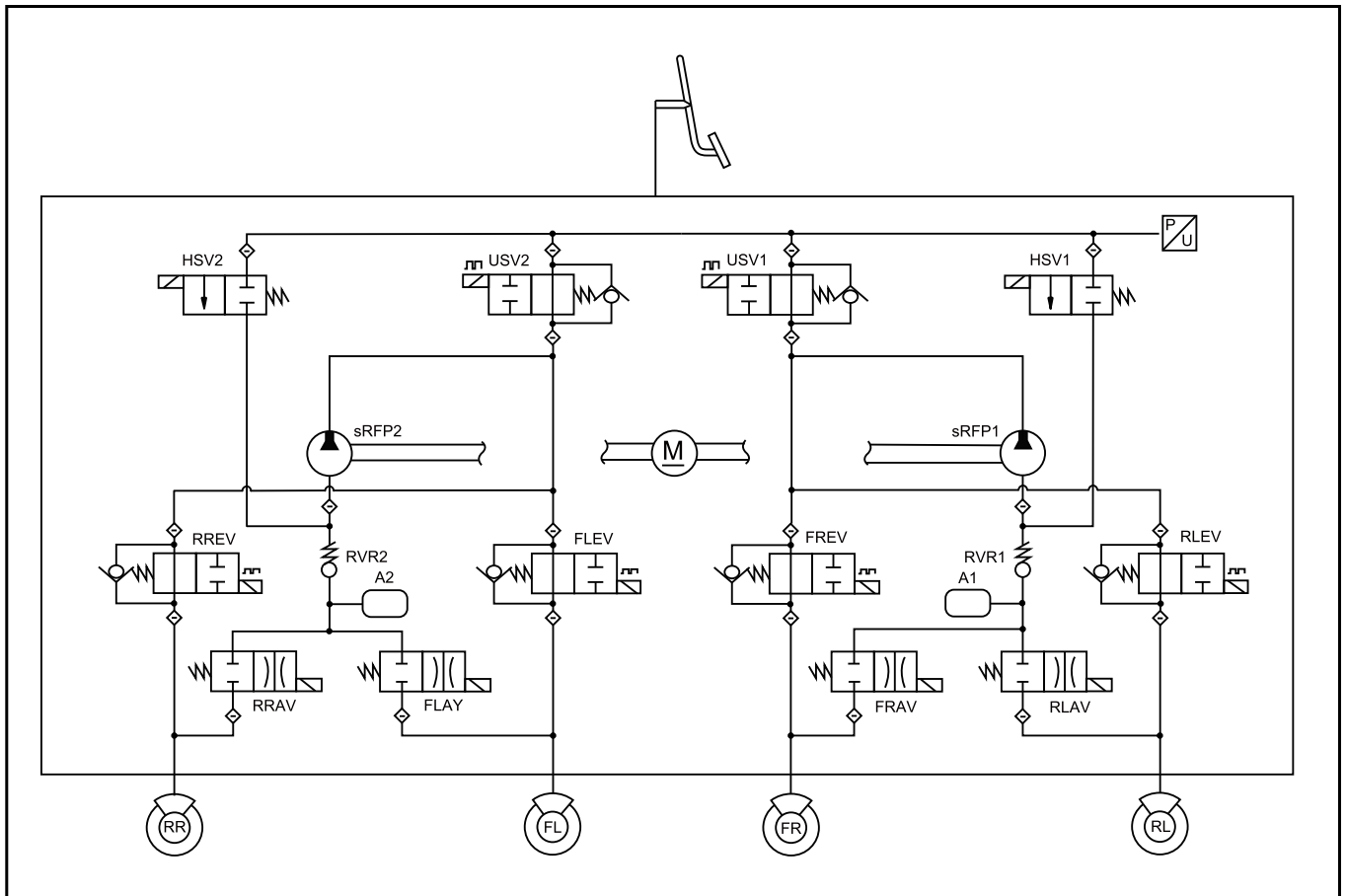
6.6.3 System working principles

6.6.3.1 System Working Principles

Working principle: under certain road surface conditions and vehicle loading conditions, the maximum adhesion that the wheel can provide is a fixed value, that is, under limit conditions, the longitudinal force to which the wheel is subject (along the rolling direction of the wheel) and the lateral force (perpendicular to the rolling direction of the wheel) disappear. The ESC program can separately control the longitudinal braking force of each wheel, thereby affecting the lateral force, thereby improving the handling performance of the vehicle. When the longitudinal force reaches the extreme value (such as the wheel is locked), the lateral force is 0, and the lateral movement of the vehicle will not be controlled, that is, side slipping, and it may be unable to change lanes or turn according to the driver's wishes. The electronic stability program can detect and prevent vehicle side slipping. When the electronic stability program detects that the vehicle is going to be out of control, it will apply braking force to specific wheels to help the vehicle move in the desired direction of the driver.

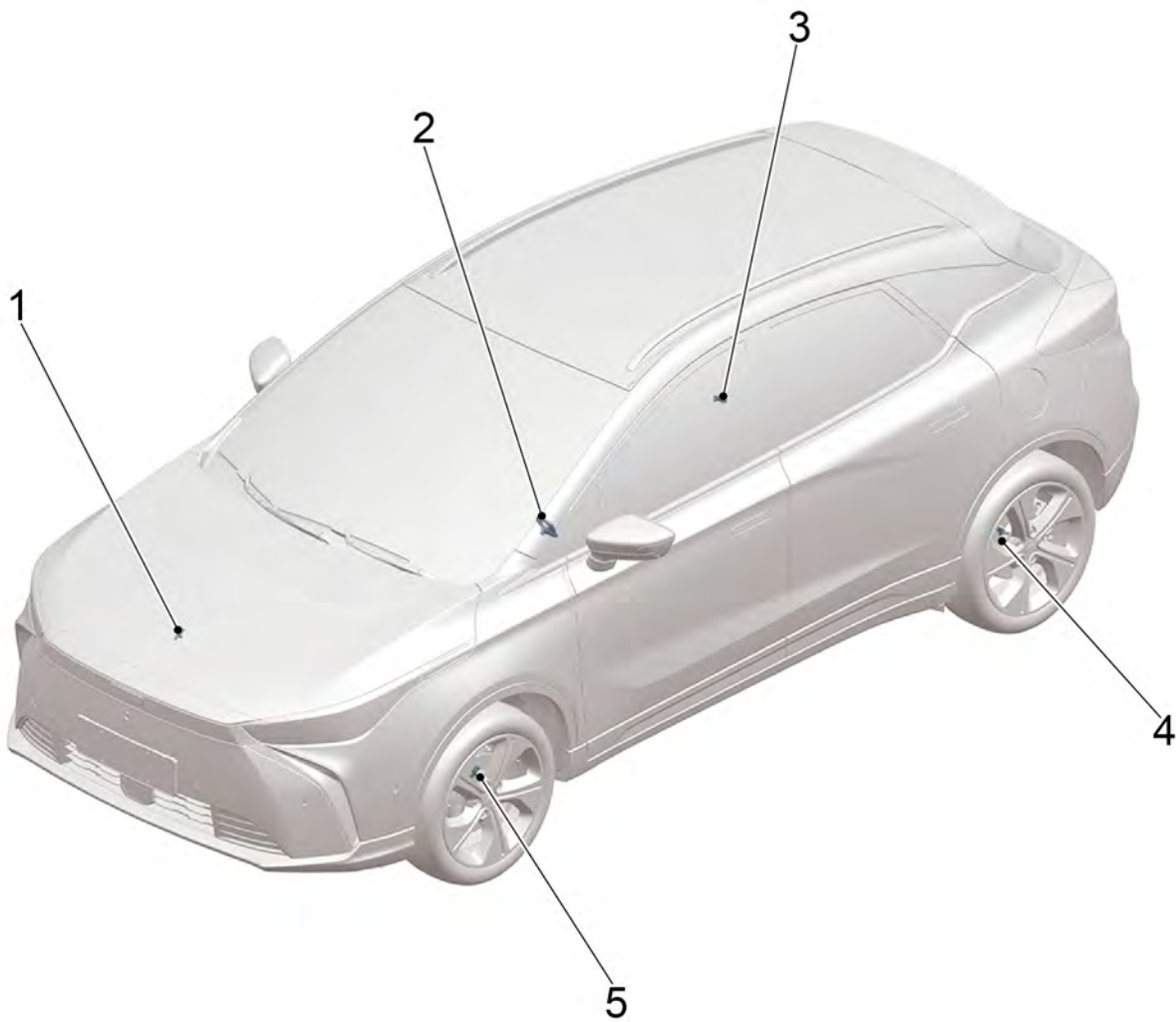
Working process: The driver applies the braking intention to the brake pedal, the brake pedal transfers the force to the brake control module, analyzes and processes it, presses the brake fluid and distributes it to each brake cylinder. The brake cylinder drives the brake pads on both sides through the piston to press the brake disc, the brake pads and the brake disc to friction to make the vehicle brake.

Working schematic diagram



6.6.4 Part position

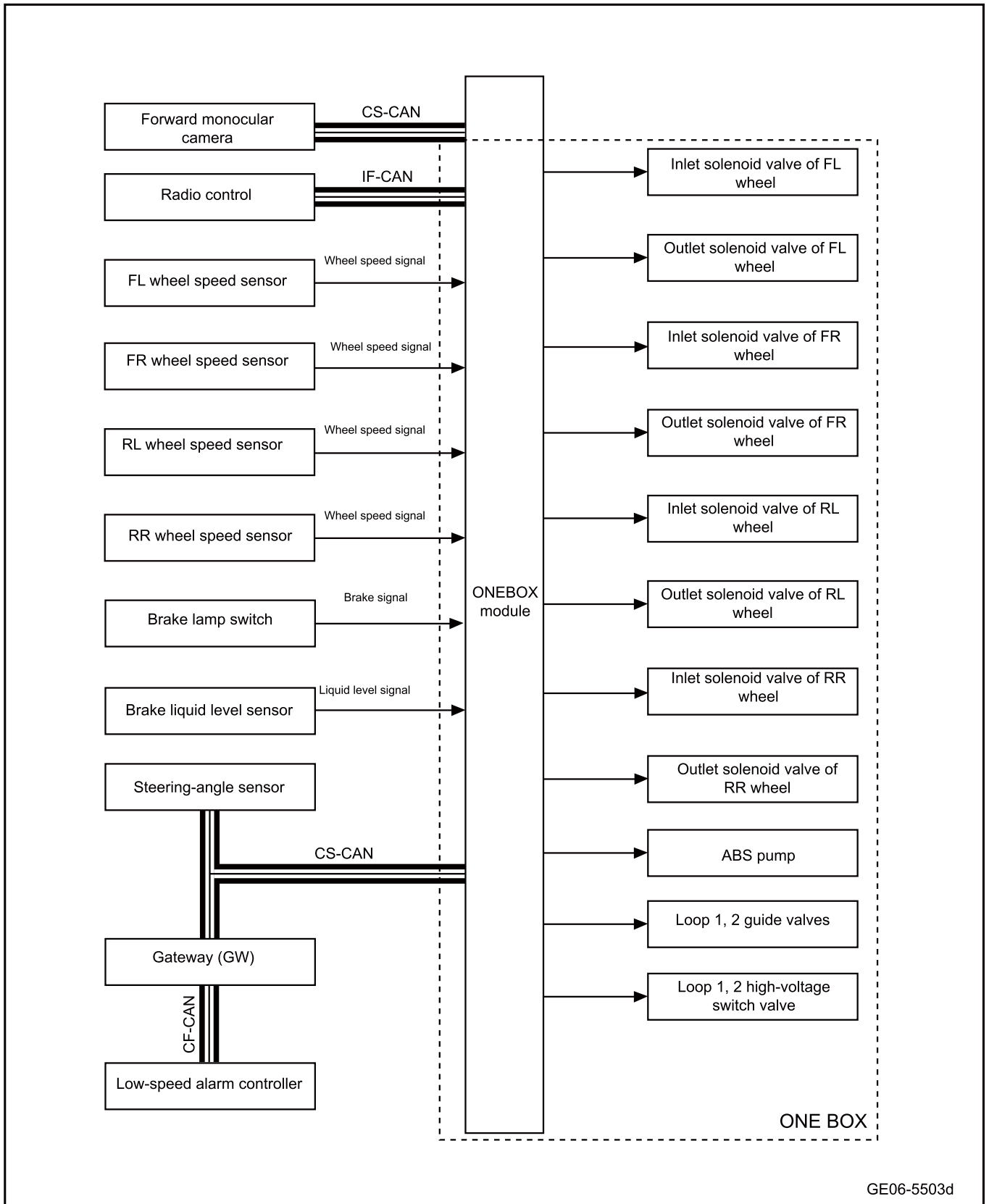
6.6.4.1 Part Position



- | | |
|-----------------------------------|-----------------------------------|
| 1. FR wheel speed sensor assembly | 4. RL wheel speed sensor assembly |
| 2. Steering-angle sensor | 5. FL wheel speed sensor assembly |
| 3. RR wheel speed sensor assembly | |

6.6.5 Electrical block diagram

6.6.5.1 Electrical Schematic Diagram of ABS and ESC System



6.6.6 Diagnostic information and procedures

6.6.6.1 Diagnosis Description

The fault code can be read through the vehicle's data connector (DLC diagnostic interface). The data table of the ONE BOX control module can be used to read the data table displayed on the intelligent tester, and the functions of the reading switch and sensor values can be performed without removing any parts. Reading data table is the first step in trouble shooting and one of the ways to reduce diagnostic time.

6.6.6.2 Routine inspection

– Confirm fault symptom. The most difficult case in fault elimination is absence of symptom. In this case, a complete analysis of fault description narrated by users must be made. The same or similar conditions and environment when the fault of the distributor's vehicle comes out should be simulated. No matter how experienced and skilled the maintenance personnel is, if they do not confirm the symptoms of the fault, they will ignore some important things in the repair and make wrong guesses in some places. It will make trouble shooting to fail.

– Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

– The connector joints and vibration fulcrum are the main parts that should be thoroughly checked. Vibration method is recommended in case of failure due to vibration.

1. Gently vibrate the potentially faulty sensor part with fingers and check for faults.
2. Gently shake the connector in both vertical and horizontal directions.
3. Gently shake the harness in both vertical and horizontal directions.

6.6.6.3 The diagnostic apparatus cannot communicate with vehicles

Connect the diagnostic instrument to the data connector (DLC diagnostic interface), the key activates the power supply of the vehicle to ON, and if the display shows a communication error message when operating the diagnostic instrument, the vehicle or the diagnostic instrument is faulty.

– If the tester communicates normally with another vehicle, check the DLC on the original vehicle.

– When the tester is still unable to establish communication with other vehicles, there may be a fault with the tester.

6.6.6.4 Fault symptom table

Symptom	Possibility and cause	Measures
ABS is always working or is inoperative at any time	1. Speed sensor installation fault	Reinstall the wheel speed sensor and adjust the gap between the wheel speed sensor and the signal wheel. If necessary, replace the wheel speed sensor and the signal wheel.
	2. The clearance between the wheel speed sensor and the signal panel is wrong or blocked by foreign matters.	
	3. Wheel speed sensor fault	Refer to Left Front Wheel Speed Sensor Fault Refer to Right Front Wheel Speed Sensor Fault Refer to Left Rear Wheel Speed Sensor Fault Refer to Right Rear Wheel Speed Sensor Fault
	4. Brake switch fault	Refer to Brake Lamp Switch Fault
	5. ONE BOX module failure	Check and update the ONE BOX module software version. Replace the ONE BOX module if necessary.

Symptom	Possibility and cause	Measures
ESC system fault warning lamp keeps always on	1. Wheel speed sensor	Reinstall the wheel speed sensor and adjust the gap between the wheel speed sensor and the signal wheel. If necessary, replace the wheel speed sensor and the signal wheel.
	2. The clearance between the wheel speed sensor and the signal panel is wrong or blocked by foreign matters.	
	3. Wheel speed sensor fault	Refer to Left Front Wheel Speed Sensor Fault Refer to Right Front Wheel Speed Sensor Fault Refer to Left Rear Wheel Speed Sensor Fault Refer to Right Rear Wheel Speed Sensor Fault
	4. ONE BOX module failure	Check and update the ONE BOX module software version. Replace the ONE BOX module if necessary.
	5. ONE BOX module communication failure	Refer to ONE BOX Module Power Supply Failure

6.6.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. the key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

6.6.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

6.6.6.7 Data stream list

Serial No.	DID description	Normal value range	Unit
1	Number of times of flash	0-255	/
2	Number of flash attempts	0-255	/
3	Filling state	Injection is not completed/ injection is completed and OK/injection is completed but not OK/delivery status	/
4	Offline detection status	EOL test not completed/EOL test completed and OK/EOL test completed but not OK/ delivery status	/
5	Valve relay state	OFF/ON	/
6	Pump motor state	OFF/ON	/
7	FL inlet valve	OFF/ON	/
8	Front left outlet valve	OFF/ON	/
9	Right front liquid inlet valve	OFF/ON	/
10	Front right outlet valve	OFF/ON	/
11	Rear left inlet valve	OFF/ON	/
12	Rear left outlet valve	OFF/ON	/
13	Rear liquid inlet valve RH	OFF/ON	/
14	Rear right outlet valve	OFF/ON	/
15	CSV0 valve execution status	OFF/ON	/
16	CSV1 valve execution status	OFF/ON	/
17	PSV0 valve execution status	OFF/ON	/
18	PSV1 valve execution status	OFF/ON	/
19	TSV valve execution state	OFF/ON	/
20	SSV valve execution state	OFF/ON	/
21	Brake lamp switch	OFF/ON	/
22	Pressure of master cylinder	-42.5-425	Bar
23	Steering angle	-1440-1440	°
24	Lateral Yaw angle speed	-180-180	rad/s
25	Lateral acceleration	-2.1-2.1	g
26	Longitudinal acceleration	-2.1-2.1	g
27	Electronic parking brake (EPB) state	Release/close/in process	/
28	Left front wheel speed direction	Forward/backward/stalling/ invalid	/

Serial No.	DID description	Normal value range	Unit
29	Right front wheel speed direction	Forward/backward/stalling/ invalid	/
30	Left rear wheel speed direction	Forward/backward/stalling/ invalid	/
31	Right rear wheel speed direction	Forward/backward/stalling/ invalid	/
32	Position of accelerator pedal	0-100	%
33	Transmission gears	N/D/P/R	/
34	Handbrake status	Enable/release	/
35	ECU supply voltage	9-16	V
36	Vehicle speed	0-120	km/h
37	Fault occurrence numbers	0-255	/
38	Mileage of first fault	0-999999	km
39	Left parking Caliper status	Fully released/enabled/ released/while parking/ released/uncertain gear/ parking hold	/
40	Right parking Caliper status	Fully released/enabled/ released/while parking/ released/uncertain gear/ parking hold	/

6.6.6.8 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
C006102	Lateral acceleration value is invalid	Refer to ONE BOX Module Internal Failure
C006202	Longitudinal acceleration value is invalid	
C006302	Yaw angle speed value is invalid	
C100004	ECU hardware fault	
C101E01	Pressure sensor line fault (only ESC)	
C101E12	The pressure sensor line 1 is short to power supply	
C101E64	Pressure sensor signal fault (only ESC)	
C101F29	Steering angle sensor fault (only ESC)	
C101F54	Wrong calibration of steering angle sensor (only ESC)	
C150107	Suspected actuator status	
C150200	Invalid hydraulic assist	
C100100	Fault of solenoid valve 1 coil of master cylinder	

Diagnostic Trouble Code	Description	Fault location/elimination method
C10011D	Current feedback fault of isolating valve 1 of master cylinder	
C100171	Hydraulic fault of isolating valve 1 of master cylinder	
C100200	Fault of pressurized cylinder isolating valve 1 coil	
C10021D	Current feedback fault of pressurized cylinder isolation valve 1	
C100300	Fault of solenoid valve 2 coil of master cylinder	
C10031D	Current feedback fault of isolating valve 2 of master cylinder	
C100371	Hydraulic fault of isolating valve 2 of master cylinder	
C100400	Fault of pressurized cylinder isolating valve 2 coil	
C10041D	Current feedback fault of pressurized cylinder isolation valve 2	
C10047A	Hydraulic fault of pressurized cylinder isolation valve	
C100500	Fault of pedal simulator valve coil	
C100614	Open or short circuit of the detection valve coil	
C10061E	Detect valve coil drive failure	
C100641	Model configuration calibration area faults	
C100900	Internal Faults of ECU	
C100B45	ECU ROM hardware fault	
C100C45	Code Flash failure	
C101204	Fault of left front liquid intake valve	
C101304	Front left outlet valve fault	
C101404	Fault of right front liquid intake valve	
C101504	Fault of FR outlet valve	
C101604	Rear liquid inlet valve LH fault	
C101704	Rear left outlet valve fault	
C101804	Rear right liquid inlet valve fault	
C101904	Rear right outlet valve fault	
C101E1C	Power Supply Failure of Pressure Sensor	

Diagnostic Trouble Code	Description	Fault location/elimination method
C101E4B	Internal temperature fault of pressure sensor	
C101E61	Pressure sensor signal check fault (only ESC)	
C102901	Auxiliary system internal fault	
C102947	Auxiliary system drop fault	
C102981	Master and auxiliary system communication fault	
C103244	PBC storage area data error	
C103902	Invalid electric caliper demand fault	
C104202	Internal fault of the first way of pedal stroke sensor	
C104211	pedal stroke sensor signal is invalid	
C104214	The first signal of pedal stroke sensor is open circuit or short to GND	
C10421C	The supply voltage of the first signal of pedal stroke sensor is faulty	
C104228	Pedal stroke sensor ID is not calibrated	
C104229	Internal fault of pedal stroke sensor	
C104300	Internal fault of the second signal of pedal stroke sensor	
C104314	The second signal of pedal stroke sensor is open circuit or the supply voltage is low	
C104329	The difference between the two signals of the pedal stroke sensor is too large	
C104401	Valve power supply fault	
C104412	Brake booster solenoid valve is short-circuited to power supply at high side	
C104414	Brake booster solenoid valve high-side drive circuit is open	
C104501	Pressurized cylinder pressure sensor circuit fault	
C104512	Pressurized cylinder pressure sensor line 1 is short to power supply	
C104521	Pressurized cylinder circuit pressure is too low	
C104523	Pressurized cylinder pressure sensor signal is unreasonable to the position of plunger.	

Diagnostic Trouble Code	Description	Fault location/elimination method
C104561	Pressurized cylinder pressure sensor signal check fails.	
C104564	Pressurized cylinder pressure sensor signal fault	
C104623	Pressurized cylinder pressure sensor signal check fault	
C104701	Motor power supply fault	
C104800	Brush-free motor position sensor signal fault	
C104B28	Pedal stroke and pressure sensor are not calibrated	
C104B29	Multi-way sensor signal fault of pedal and master cylinder	
C104C71	Brake pedal stalls	
C104C72	Brake pedal is too soft	
C104C73	The brake pedal is too hard	
C104C74	Pedal simulator circuit detection fails	
C104C77	The pressurized cylinder cannot establish pressure	
C104C7A	Brake system intake is faulty	
C104D7A	Brake loop leakage detection is failed	
C104E7A	Brake fluid leakage in the brake system	
C104F00	Brake booster motor overcurrent	
C104F12	High-side power supply drive of brake booster motor is short-circuited to power supply	
C104F14	High-side power supply drive of the brake booster motor is open circuit	
C104F29	Brake booster motor position is not calibrated	
C104F4B	Drive temperature of the brake booster motor is too high 1	
C104F77	Brake booster motor has no response or backward timeout	
C104F79	Brake booster motor is open circuit or reset	
C105014	Brake Booster Motor Axle Drive Failure	
C105604	ECU storage hardware fault	
C105904	ECU NVM hardware fault	

Diagnostic Trouble Code	Description	Fault location/elimination method
C10724B	Brake system internal temperature is faulty	
C108D00	The hydraulic module is in the assembly mode	
U031700	The auxiliary system OTA fails, and the backup software runs	
C10681C	Internal ECU wheel speed MCU module supply voltage is out of range	
C106886	MCUUART communication fault of ECU internal wheel speed	
C106887	ECU internal wheel speed MCU signal is lost	
C100D11	Left front speed sensor is short GND	Refer to Left Front Wheel Speed Sensor Fault
C100D12	Left front speed sensor fault is short to power supply	
C100D13	Left front speed sensor is open circuit	
C100D64	Left front speed sensor signal fault (out of range, lost, noise and off and on)	
C100D65	Left front speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)	
C100D4A	FL wheel speed sensor direction fault	
C100E11	Short circuit to ground of FR speed sensor	Refer to Right Front Wheel Speed Sensor Fault
C100E12	FR speed sensor is short to power supply	
C100E13	Circuit open of FR speed sensor	
C100E64	FR speed sensor signal faults (exceeding range, losing, noise and intermittent)	
C100E65	Right front speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)	
C100E4A	FR wheel speed sensor direction fault	
C100F11	RL wheel speed sensor is short to GND	Refer to Left Rear Wheel Speed Sensor Fault
C100F12	RL wheel speed sensor is short to power supply	
C100F13	RL wheel speed sensor is open	
C100F64	Signal fault of RL wheel speed sensor (out of range, loss, noise, intermittent)	

Diagnostic Trouble Code	Description	Fault location/elimination method
C100F65	Left rear speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)	
C100F4A	RL wheel speed sensor direction fault	
C101011	RR speed sensor is shorted to GND	Refer to Right Rear Wheel Speed Sensor Fault
C101012	RR speed sensor is shorted to power supply	
C101013	Circuit open of RR speed sensor	
C101064	Right rear speed sensor fault (Out of range, lost, noise, intermittent)	
C101065	Right rear speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)	
C10104A	RR wheel speed sensor direction fault	
C101104	General error of the wheel speed sensor (replacement of sensor and multiple sensors errors)	Refer to Wheel Speed Sensor Fault
C102C71	Button catching of automatic parking brake (Only for ESC)	Refer to EPB Switch Circuit Fault
C102312	Button loop fault of auto hold (Only for ESC)	
C102216	EPB power supply voltage is too low	
C102217	EPB power supply voltage is too high	
C102316	EPB switch power supply voltage is too low	
C150309	Motor does not start normally - left caliper	Refer to Left Brake Caliper Motor Fault
C150318	Insufficiently increased clamp forces- the left caliper	
C150319	Coefficient of friction is too high - the left caliper	
C150371	Motor stall - the left caliper	
C150391	Suspicious motor parameters- the left caliper	
C150393	No increase in force detected - the left caliper	
C102200	The left brake fault of auto hold(Only for ESC)	
C102401	Electrical fault of the left brake for auto hold (Only for ESC)	

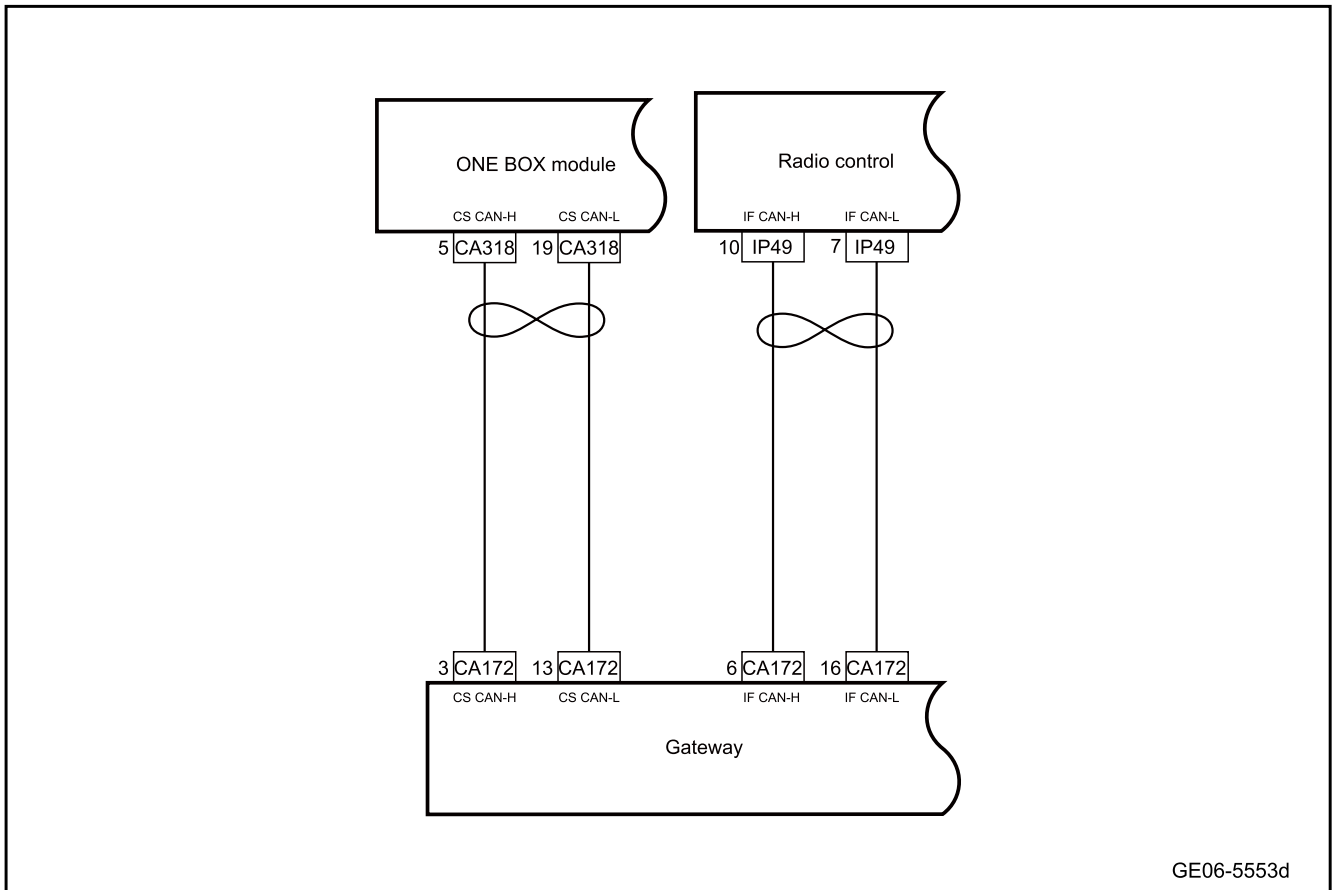
Diagnostic Trouble Code	Description	Fault location/elimination method	
C102719	The left-side motor overcurrent of auto hold(Only for ESC)		
C102400	Internal hardware fault of EPB left motor drive		
C102411	EPB left motor is short to GND		
C102412	EPB left motor is short to power supply		
C102413	EPB left motor open circuit		
C102419	EPB left motor pre-drive status overcurrent		
C10241E	The left brake fault of automatic parking brake or ECU fault(Only for ESC)		
C102494	Unexpected movement of EPB left actuator		
C150373	Left parking caliper-release failure		
C150377	Parking caliper LH-ESP limit action		
C150907	The left caliper is wrongly executed		
C150409	Motor does not start normally - right caliper		Refer to Right Brake Caliper Motor Fault
C150418	Insufficient increased clamp force- right caliper		
C150419	Coefficient of friction is too high - right caliper		
C150471	Motor stall - right caliper		
C150491	Suspicious motor parameters- right caliper		
C150493	No increase in force detected - right caliper		
C102100	The right brake fault of AUTO HOLD (only for ESC)		
C102501	The right brake electrical fault of AUTO HOLD (only for ESC)		
C102819	The right motor overcurrent of the AUTO HOLD (only for ESC)		
C102500	Internal hardware fault of EPB right motor drive		
C102511	EPB right motor is short to GND		
C102512	EPB right motor is short to power supply		
C102513	EPB right motor open circuit		
C102519	EPB right motor pre-drive status overcurrent		

Diagnostic Trouble Code	Description	Fault location/elimination method
C10251E	The right brake circuit fault of AUTO HOLD or ECU fault	
C102594	Unexpected action of EPB right actuator	
C150473	Right parking caliper-release fails	
C150477	Right parking caliper-ESP limit action	
C150A07	The right caliper is wrongly executed	
U003700	CAN 1 bus is switched off wrongly	Refer to ONE BOX Module Communication Failure
U007300	CAN bus off	
U011087	Communication with motor controller is lost	
U012687	Communication with the angle sensor is lost	
U014087	Communication with BCM is lost	
U015187	Communication with ACU is lost	
U015587	Communication with IPK is lost	
U015687	Loss of communication with multimedia module	
U031800	ECU software fault	
U041181	Invalid signal received from integrated power controller	
U042881	An invalid signal is received from the angle sensor (only ESC)	
U045281	An invalid signal is received from ACU	
U111487	Communication with VCU is lost	
U111587	Loss of communication with channels related to energy recovery of VCU (complete vehicle controller)	
U130055	Code configuration fault	
U140481	Invalid signal received from Vehicle control unit	
C100764	Lateral acceleration sensor signal fault (only ESC)	
C100864	Longitudinal acceleration sensor signal fault (only ESC)	
C100A64	Yaw angle sensor signal fault (only ESC)	
C106D00	Check time of steering wheel angle, yaw angle speed and lateral acceleration sensor signal is too long	
U010587	Communication with PEPS is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U015987	Communication with parking assist system is lost	
U016487	Communication with AC is lost	
U040681	Invalid signal received from PEPS system	
U045A81	Invalid signal received from PAS system	
U120387	Communication with front camera system module is lost	
U143381	Invalid signal received from FCS front camera	
U300616	ECU power supply voltage is too low	Refer to ONE BOX Module Power Supply Failure
U300617	Supply voltage of the controller is too high	
C102013	Redundant power supply mode failure	
C102049	Redundant power supply circuit self-check failure	
C102612	ABS solenoid valve is short-circuited to power supply at high side	
C102613	ABS solenoid valve high-side drive circuit is open	
C151016	Electronic parking brake motor voltage is low	
C151017	Electronic parking brake motor voltage is high	Refer to Brake Fluid Level Sensor Circuit Fault
C004914	Brake fluid level sensor fault	
C00497B	Brake fluid level is low.	Refer to Calibration of the Yaw Angle Sensor
U012355	Yaw sensor is not calibrated(ESC)	
C150D52	Caliper is not initialized	Refer to EPB Initial Setup
C150E92	The caliper is released after maintenance	Refer to EPB Caliper Release (Enter and Exit Maintenance Mode)
C161531	Fail to receive gear pulse signal	Refer to Speed Signal Failure
C161E29	Invalid speed signal received	
C161E31	No speed signal received	

6.6.6.9 ESC warning lamp keeps on

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the head unit and ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Use diagnostic apparatus to carry out the active test of ESC warning lamp.
--------	--

- A. Connect the diagnostic instrument, and activate the vehicle power supply with the key.
- B. Select “Active test” on function tests.

Active test: ESC warning lamp

Diagnostic instrument display	Test components
ESC warning	The ESC warning lamp is illuminated or not (ON/OFF)

- C. Check whether the ESC warning lamp is functioning properly.

Yes System is normal.

No

Step 3 | Check the CS-CAN bus integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm that the CS-CAN network is functioning properly.

No Check or repair CS-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4 | Check the IF-CAN bus integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm that the IF-CAN network is functioning properly.

No Check or repair IF-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 5 | Replace ONE BOX

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Change the head unit.
--------	-----------------------

- A. Check whether the head unit grounding harness is normal. Refer to [Head unit power supply failure](#)

Next step

Step 8	System is normal.
--------	-------------------

6.6.6.10 ESC warning lamp is always off under any circumstances

Diagnosis for ESC warning lamp is always off under any circumstances Refer to [ESC Warning Lamp is Always ON](#)

6.6.6.11 Power supply fault of ONE BOX module

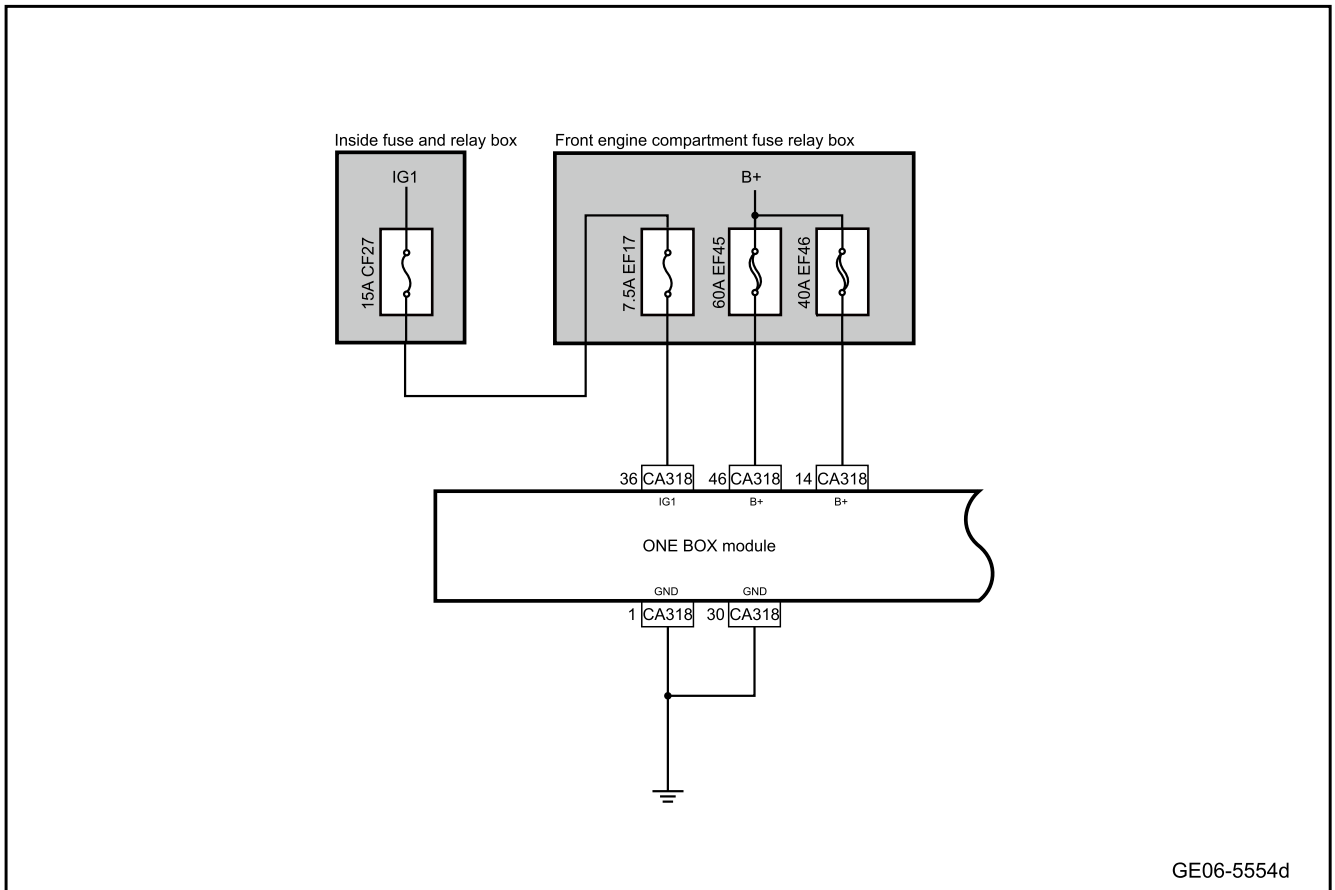
1. DTC description:

Diagnostic Trouble Code	Description
U300616	ECU power supply voltage is too low
U300617	Supply voltage of the controller is too high
C102013	Redundant power supply mode failure
C102049	Redundant power supply circuit self-check failure
C102612	ABS solenoid valve is short-circuited to power supply at high side
C102613	ABS solenoid valve high-side drive circuit is open
C151016	Electronic parking brake control circuit voltage is low
C151017	Electronic parking brake control circuit voltage is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The ECU power supply voltage divider has drifted or interrupted, or the hydraulic power supply voltage is lower than the full function range (8.6v), or the net power supply voltage is too low (<9v, detect 100ms).	1. Tester ECU communication is normal 2. Normal working voltage - CAN communication is normal	1. Battery 2. Circuit 3. Fuse 4. ONE BOX
U300617	ECU power supply voltage is higher than the full function voltage threshold (16.5V), or the net power supply voltage is too high (>18V, detect 100ms).		
C102013	Fault is detected in redundant power supply mode	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
C102049	The self-check of redundant power supply circuit is faulty		
C102612	ABS solenoid valve high side short circuit		
C102613	ABS solenoid valve high-side drive circuit open fault		
C151016	The supply voltage of EPB parking caliper exceeds 16V		
C151017	The supply voltage of EPB parking caliper is lower than 9V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 | Check whether other modules have power failure codes.

- A. Read the fault code and confirm whether other modules have output power failure code.

No → To Step 4.

Yes

Step 2 | Primary check.

- A. Check the ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the ONE BOX harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes → Repair or replace the faulty part.

No

Step 3 | Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 | Inspect the fuse.

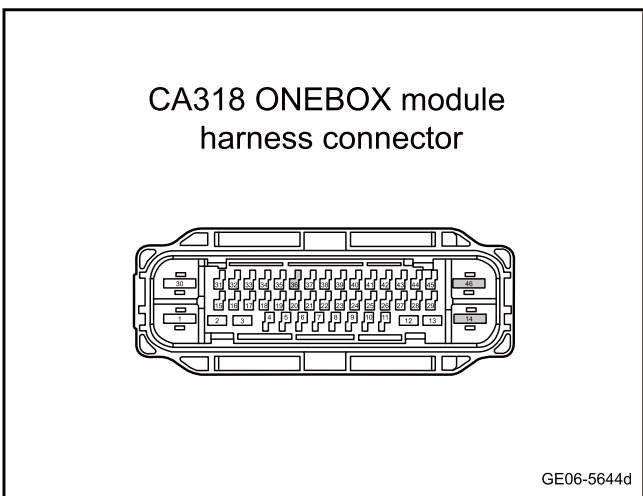
- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF17 of the front engine compartment.
Check whether the fuse EF17 is blown.
Rated capacity of fuse: 7.5A
- C. Pull out the fuse EF45 of the front engine compartment.
Check whether the fuse EF45 is blown.
Rated capacity of fuse: 60A
- D. Pull out the fuse EF46 of the front engine compartment.
Check whether the fuse EF46 is blown.
Rated capacity of fuse: 40A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 | Check the ONE BOX power supply circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(46)	Vehicle body is grounded.	Standard voltage: 11-14V
CA318(14)		
CA318(36)		

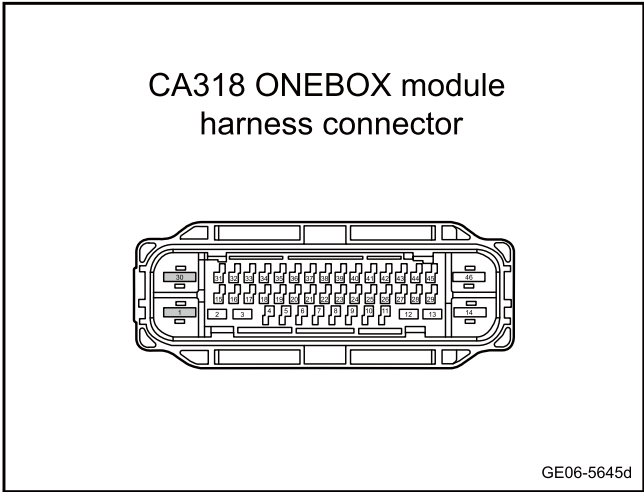
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check the ONE BOX grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA318(30)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the ONE BOX

- A. Replace the ONE BOX. Refer to [Replacement of Brake Control Module Assembly](#)

Next step

Step 8 Reprogram and reset the ONE BOX.

- A. Reprogram and reset the ONE BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

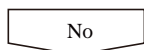
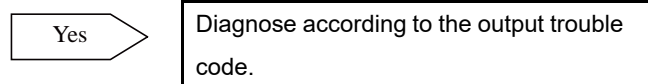
Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.



Step 10	System is normal.
------------	-------------------

6.6.6.12 ONE BOX module internal failure

1. DTC description:

DTC	Trouble description
C006102	Lateral acceleration value is invalid
C006202	Longitudinal acceleration value is invalid
C006302	Yaw angle speed value is invalid
C100004	ECU hardware fault
C101E01	Pressure sensor line fault (only ESC)
C101E12	Pressure sensor 1 line is short to power supply(only ESC)
C101E64	Pressure sensor signal fault (only ESC)
C101F29	Steering angle sensor fault (only ESC)
C101F54	Wrong calibration of steering angle sensor (only ESC)
C150107	Suspected actuator status
C150200	Invalid hydraulic assist
C100100	Fault of solenoid valve 1 coil of master cylinder
C10011D	Current feedback fault of isolating valve 1 of master cylinder
C100171	Hydraulic fault of isolating valve 1 of master cylinder
C100200	Fault of pressurized cylinder isolating valve 1 coil
C10021D	Current feedback fault of pressurized cylinder isolation valve 1
C100300	Fault of solenoid valve 2 coil of master cylinder
C10031D	Current feedback fault of isolating valve 2 of master cylinder
C100371	Hydraulic fault of isolating valve 2 of master cylinder
C100400	Fault of pressurized cylinder isolating valve 2 coil
C10041D	Current feedback fault of pressurized cylinder isolation valve 2
C10047A	Hydraulic fault of pressurized cylinder isolation valve
C100500	Fault of pedal simulator valve coil

DTC	Trouble description
C100614	Open or short circuit of the detection valve coil
C10061E	Detect valve coil drive failure
C100641	Model configuration calibration area faults
C100900	Internal Faults of ECU
C100B45	ECU ROM hardware fault
C100C45	Code Flash failure
C101204	Fault of left front liquid intake valve
C101304	Front left outlet valve fault
C101404	Fault of right front liquid intake valve
C101504	Fault of FR outlet valve
C101604	Rear liquid inlet valve LH fault
C101704	Rear left outlet valve fault
C101804	Rear right liquid inlet valve fault
C101904	Rear right outlet valve fault
C101E1C	Power Supply Failure of Pressure Sensor
C101E4B	Internal temperature fault of pressure sensor
C101E61	Pressure sensor signal check fault (only ESC)
C102901	Auxiliary System internal Fault
C102947	Auxiliary System drop Fault
C102981	Master System communication Fault
C103244	PBC storage area data error
C103902	Invalid electronic caliper demand fault
C104202	Internal fault of the first way of pedal stroke sensor
C104211	Pedal stroke sensor signal is short
C104214	The first signal of pedal stroke sensor is open circuit or short to GND
C10421C	The supply voltage of the first signal of pedal stroke sensor is faulty
C104228	Pedal stroke sensor ID is not calibrated
C104229	Internal fault of pedal stroke sensor
C104300	Internal fault of the second signal of pedal stroke sensor
C104314	The second signal of pedal stroke sensor is open circuit or the supply voltage is low
C104329	The difference between the two signals of the pedal stroke sensor is too large
C104401	Valve power supply fault
C104412	Brake booster solenoid valve is short-circuited to power supply at high side
C104414	Brake booster solenoid valve high-side drive circuit is open
C104501	Pressurized cylinder sensor circuit fault
C104512	Pressurized cylinder pressure sensor line 1 is short to power supply
C104521	Pressurized cylinder circuit pressure is too low
C104523	Pressurized cylinder pressure sensor signal is unreasonable to plug position

DTC	Trouble description
C104561	Pressurized cylinder pressure sensor signal check failure
C104564	Pressurized cylinder pressure sensor signal fault
C104623	Master cylinder, pressurized cylinder pressure sensor signal check fault
C104701	Motor power supply fault
C104800	Signal fault of brush-free motor position sensor
C104B28	Pedal stroke and pressure sensor are not calibrated
C104B29	Multi-way sensor signal fault of pedal and master cylinder
C104C71	Brake pedal stuck
C104C72	Brake pedal is too soft
C104C73	The brake pedal is too hard
C104C74	Pedal simulator circuit detection fails
C104C77	The pressurized cylinder cannot establish pressure
C104C7A	Brake system intake check is faulty
C104D7A	Brake loop leakage detection is failed
C104E7A	Brake circuit leakage in the brake system
C104F00	Brake booster motor overcurrent
C104F12	High-side power supply drive of brake booster motor is short-circuited to power supply
C104F14	High-side power supply drive of the brake booster motor is open circuit
C104F29	Brake booster motor position is not calibrated
C104F4B	Drive temperature of the brake booster motor is too high 1
C104F77	Brake booster motor has no response or backward timeout
C104F79	Brake booster motor is open circuit or reset
C105014	Brake Booster Motor Axle Drive Failure
C105604	ECU storage hardware fault
C105904	ECU NVM hardware fault
C10724B	Brake system internal temperature is faulty
C108D00	The hydraulic module is in the assembly mode
U031700	The auxiliary system OTA fails, and the backup software runs
C10681C	Internal ECU wheel speed MCU module supply voltage is out of range
C106886	MCUUART communication fault of ECU internal wheel speed
C106887	ECU internal wheel speed MCU signal is lost

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C006102	1. If the absolute value of lateral acceleration is greater than 20m/s ² . 2. The lateral acceleration sensor signal is inconsistent with yaw signal or sas signal		
C006202	1. The longitudinal acceleration sensor value exceeds the limit value of 20 m / s ² , in comparison with the acceleration value calculated with the vehicle speed. 2. The longitudinal acceleration sensor has an uncertain fault.	1. Vehicle mode: ignition on 2. ECU mode: system initialization	1.ONE BOX
C006302	1. If Yrs excursion exceeds 5.25 °/s 2. The absolute value of the yaw rate sensor signal exceeds 30°/ s at rest. 3. The absolute value of the yaw rate sensor (YRS) – signal absolute value> 180 94.75 deg/s. 4. For other sensor (WSS, SAS, AY) input, the measured yaw rate is unreasonable. 5. YawRate initial value (detected for 100 ms) 6. Redundancy error of the horizontal acceleration sensor is detected (mini detection for 20ms)	3. Working voltage: normal working voltage (9V-16V)	1.ONE BOX

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100004	<ol style="list-style-type: none"> 1. Flashing 2. uC fault reported via error signal module occurred. 3. A CPU abnormality occurs, and the normal program flow is stopped 4. Microcontroller RAM failure 5. Internal system stack or timing error 6. SPI fault, EEPROM error, ECUADC conversion failure 		
C101E01	Pressure sensor fault of master cylinder pipeline (detection for 100ms)		
C101E12	The pressure sensor 1 line is short-circuited to power supply or the sensor grounding is interrupted		
C101E64	<ol style="list-style-type: none"> 1. The offset value of master cylinder pressure sensor exceeds the specification 2. The sensitivity of the pressure sensor does not meet the specification 		
C101F29	<ol style="list-style-type: none"> 1. SAS signal and the values of other sensors are unreasonable 2. SAS offset exceeds limit 		
C101F54	Electronic control unit (ECU) received invalid calibration signal from SAS node		
C150107	If the actuator states are inconsistent, and if the braking power supply is inconsistent, the PBC left and right actuator states are different. ESC actuator state is different from PBC actuator state.		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C150200	If the hydraulic pressure is not confirmed, the Hps fails within 2 seconds		
C100100	Faults of open circuit, drive short circuit, overcurrent and overtemperature of isolating valve 1 of master cylinder		
C10011D	Current feedback fault of isolating valve 1 of master cylinder		
C100171	No pressure in master cylinder during solenoid valve power-off test		
C100200	Faults of open circuit, drive short circuit, overcurrent and overtemperature of pressurized cylinder isolating valve 1 coil		
C10021D	Current feedback fault of pressurized cylinder isolation valve 1		
C100300	Faults of open circuit, drive short circuit, overcurrent and overtemperature of isolating valve 2 of master cylinder		
C10031D	Current feedback fault of isolating valve 2 of master cylinder		
C100371	No pressure in master cylinder during solenoid valve power-off test		
C100400	Faults of open circuit, drive short circuit, overcurrent and overtemperature of pressurized cylinder isolating valve 2 coil		
C10041D	Current feedback fault of pressurized cylinder isolation valve 2		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C10047A	There is no pressure in the pressurized cylinder during the power-up and power-off detection of the solenoid valve.		
C100500	Faults of open circuit, drive short circuit, overcurrent and overtemperature of pedal simulator valve coil		
C100614	Open circuit and drive short circuit of detection valve coil		
C10061E	Check the valve coil for overcurrent and drive overtemperature		
C100641	ECU internal storage detection fails		
C100900	System stacking fault, ASIC internal clock fault		
C100B45	MCU Flash content checksum error		
C100C45	CodeFlash check detects a 2 bit error		
C101204	Left front normally open valve coil open circuit, drive short circuit, drive overcurrent, drive overtemperature		
C101304	Left front normally closed valve coil open circuit, drive short circuit, drive overcurrent, drive overtemperature		
C101404	Faults of open circuit, drive short circuit, drive overcurrent and drive overtemperature of right front normally open valve coil		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101504	Faults of open circuit, drive short circuit, drive overcurrent, and drive overtemperature of the right front normally closed valve coil		
C101604	Faults of open circuit, drive short circuit, drive overcurrent and drive overtemperature of the left rear normally open valve coil		
C101704	Faults of open circuit, drive short circuit, drive overcurrent, and drive overtemperature of the coil of the rear left normally closed valve		
C101804	Faults of open circuit, drive short circuit, drive overcurrent and drive overtemperature of right rear normally open valve coil		
C101904	Faults of open circuit, drive short circuit, drive overcurrent, and drive overtemperature of the right rear normally closed valve coil		
C101E1C	The supply voltage of pressure sensor exceeds the working range by 4.75V-5.25V		
C101E4B	The internal temperature of the pressure sensor exceeds the working range of -40°C ~ 125°C		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101E61	1. The second signal of the master cylinder pressure sensor is open or short-circuit; 2. The signal checksum of the master cylinder pressure sensor is out of range		
C102901	Internal fault 1 of the auxiliary system (supply voltage or drive failure of the auxiliary system)		
C102947	Auxiliary system software does not operate normally		
C102981	Main and auxiliary system communication signal verification failure		
C103244	PBC detects invalid eeprom data		
C103902	PBC control directive is inconsistent with HOST directive		
C104202	Internal magnetic field fault of pedal stroke sensor		
C104211	Two signals of pedal stroke sensor are shorted		
C104214	The first signal of pedal stroke sensor is open circuit		
C10421C	The supply voltage of the first signal of pedal stroke sensor is out of range by 4.5V-5.5V		
C104228	Pedal stroke sensor ID is not calibrated		
C104229	The offset value of pedal stroke sensor 1 exceeds 1 mm		
C104300	The second signal fault of pedal stroke sensor		
C104314	The second signal of pedal stroke sensor is open circuit or power supply failure		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C104329	The difference between the two signals of the pedal stroke sensor is too large (the difference between the two signals of pedal stroke exceeds 1.2 mm)		
C104401	The supply voltage of the brake booster solenoid valve is lower than		
C104412	Brake booster solenoid valve high side short circuit		
C104414	Brake booster solenoid valve high-side drive is faulty		
C104501	The pressure signal of the pressurized cylinder pressure sensor is lower than the supply voltage by 4% for 100 ms		
C104512	The pressure signal of the pressurized cylinder pressure sensor exceeds the supply voltage by 96% for 100 ms		
C104521	Pressurized cylinder circuit pressure is too low		
C104523	Pressurized cylinder pressure sensor signal is unreasonable to plug position		
C104561	1. The second signal of the pressurized cylinder pressure sensor is open or short-circuit; 2. The signal checksum of the pressurized cylinder pressure sensor is out of range;		
C104564	Pressurized cylinder pressure sensor signal is unstable		
C104623	Master cylinder, pressurized cylinder pressure sensor signal check fault		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C104701	The high-side power supply voltage of the brake booster motor is lower than 2V		
C104800	Many configuration failures of the brushless motor position sensor		
C104B28	1. Pedal stroke and pressure sensor are not calibrated; 2. Pedal stroke and pressure sensor calibration fails; 3. Pedal stroke and pressure sensor calibration status data reading fails; 4. Pedal stroke and pressure sensor calibration status data are damaged		
C104B29	The pedal stroke sensor and the multiplex sensor signals in the master cylinder pressure sensor are faulty		
C104C71	The pedal stroke value continues to be a certain value within the maximum value.		
C104C72	Master cylinder pressure is lower when pedal stroke value is higher		
C104C73	Master cylinder pressure is too large when pedal stroke is small		
C104C74	Pressure of master cylinder can not be established		
C104C77	The pressurized cylinder cannot establish pressure		
C104C7A	Gas detected in the brake system		
C104D7A	Leakage in brake circuit detected		
C104E7A	The brake circuit cannot establish pressure or the building pressure is too low		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C104F00	The brake booster motor overcurrent exceeds 95A		
C104F12	High-side short circuit of the brake booster motor		
C104F14	The drive of the high-side power supply circuit of the brake booster motor is faulty		
C104F29	1. The motor position of brake booster is not calibrated; 2. The motor position calibration of brake booster fails; 3. The reading of the positioning state data of the motor position of brake booster fails; 4. The motor position calibration state data of brake booster is damaged.		
C104F4B	Drive temperature of the brake booster motor exceeds the working range Brake booster motor driver temperature is above 180°C or below -40°C for 1 s		
C104F77	The brake booster motor cannot retreat to the original point or cannot respond to action requests		
C104F79	The brake booster motor cannot be reset to zero		
C105014	There is an internal fault in the brake booster motor axle drive circuit		
C105604	MCURAM check detects 2 bit error		
C105904	2 bit error is detected in dataflash check		
C10724B	The internal temperature of the system MCU and ASIC exceeds the working range (-40 ~ 150°C)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C108D00	filling of braking fluid is not performed		
U031700	OTA fails, and secondary system backup software runs		
C10681C	Battery voltage below 6.5V or above 20V, lasting for 100ms		
C106886	The main MCU did not receive the wheel speed sensor module MCUUART signal or the received signal is invalid for 1 s		
C106887	The main MCU did not receive the wheel speed sensor module MCUUART signal and wheel speed pulse signal for 5 s		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the ONE BOX harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the ONE BOX.

- A. Reprogram and reset the ONE BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace ONE BOX

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace ONE BOX Refer to [Replacement of Brake Control Module](#)

Next step

Step 5 Reprogram and reset the ONE BOX.

- A. Reprogram and reset the ONE BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

6.6.6.13 Wheel speed sensor fault

1. DTC description:

Diagnostic Trouble Code	Description
C101104	General error of the wheel speed sensor (replacement of sensor and multiple sensors errors)

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101104	1. Hardware wsstest error in system IC. (Detection for 15ms) 2. Replace the wheel anti-skid system of the front/rear axle 3. System degradation due to multiple WSS faults 4. Wheel speed sensor power is too low (detection for 60ms) 5. At least one wheel speed sensor is installed in the wrong direction. (Detection for 20000ms)	1. Tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Harness 2. ONE BOX 2. Speed sensor

3. Diagnosis steps:

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the wheel speed sensor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the wheel speed sensor, ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check FL wheel speed sensor fault.
--------	------------------------------------

- A. Refer to [Left Front Wheel Speed Sensor Fault](#)

Next step

Step 4	Check the front right wheel speed sensor fault
--------	--

- A. Refer to [Right Front Wheel Speed Sensor Fault](#)

Next step

Step 5	Check the rear left wheel speed sensor fault
--------	--

- A. Refer to [Left Rear Wheel Speed Sensor Fault](#)

Next step

Step 6	Check the rear right wheel speed sensor fault
--------	---

- A. Refer to [Right Rear Wheel Speed Sensor Fault](#)

Next step

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace ONE BOX Refer to [Replacement of Brake Control Module Assembly](#)

Next step

Step 8	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

6.6.6.14 Left front speed sensor fault

1. DTC description:

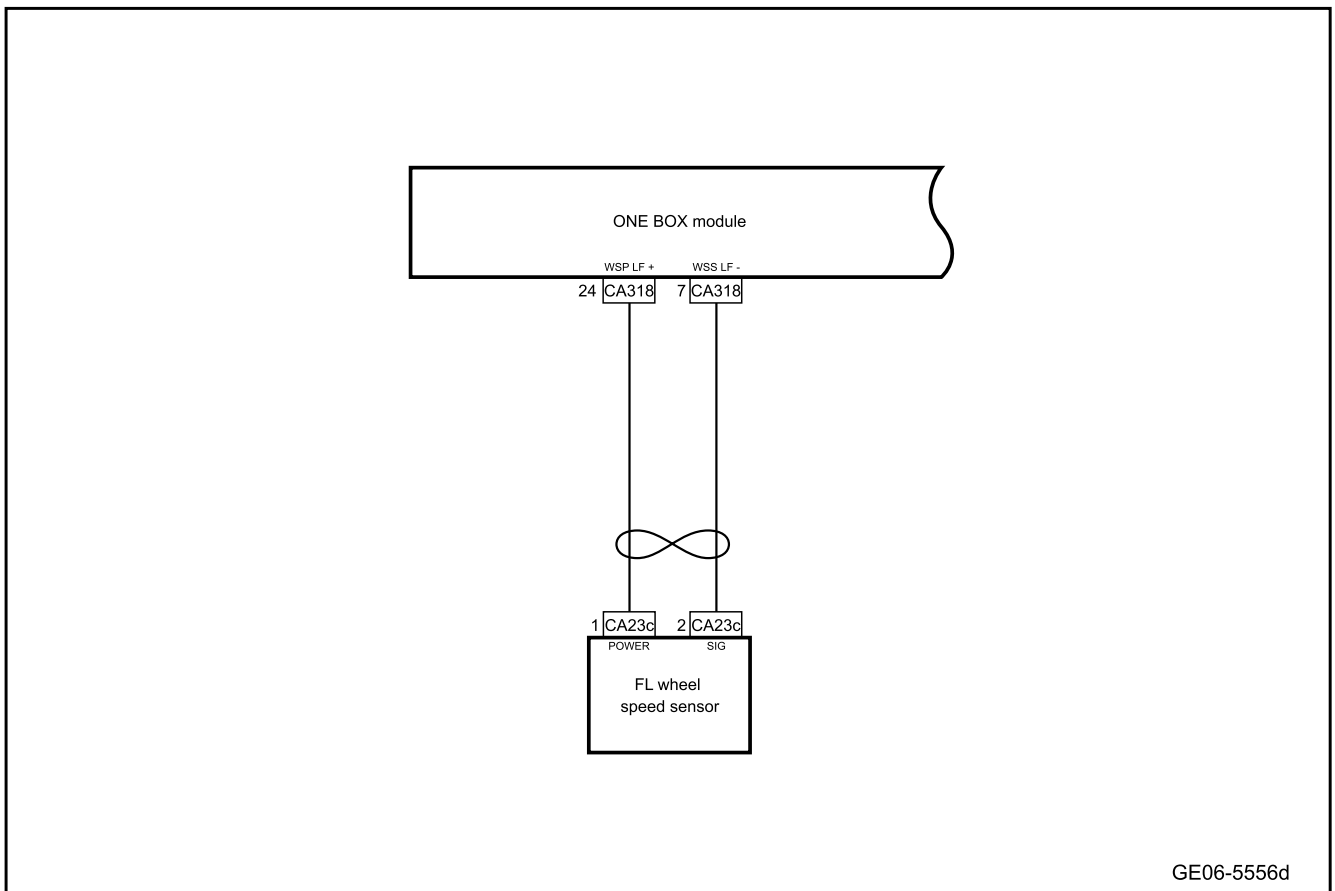
Diagnostic Trouble Code	Description
C100D11	Left front speed sensor is short GND
C100D12	Left front speed sensor fault is short to power supply
C100D13	Left front speed sensor is open circuit
C100D64	Left front speed sensor signal fault (out of range, lost, noise and off and on)
C100D65	Left front speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100D11	Left front WSS Power supply cable is short-circuited to GND. (Detection for 120ms)	1. Tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Circuit 2. ONE BOX 3. Left front wheel speed sensor
C100D12	WSS FL sensor circuit or power supply circuit is shorted to UBATT. (Detection for 120ms)		
C100D13	WSS UFL sensor circuit or power supply circuit is interrupted (detection 120 ms)		
C100D64	1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detection for 72s)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100D65	1. Left front wheel speed is greater than 3.58 m/s, and wheel speed pulse signal cannot be detected in 15 ms 2. Left front wheel speed sensor is lost 1. When braking, the vehicle speed is greater than 13 km/h, the left front wheel speed is greater than 33 km/h and no wheel speed pulse is received within 15 ms; 2. When no braking, the vehicle speed is greater than 13 km/h, and the left front wheel speed is greater than 25 km/h without receiving wheel speed pulse for 15 ms	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	

3. Schematic circuit diagram:



GE06-5556d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left front wheel speed sensor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the left front speed sensor and the ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

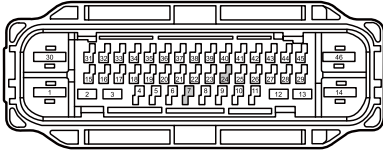
No

Repair or replace the faulty part.

Yes

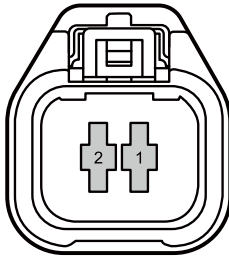
Step 3	Check whether the circuit between ONE BOX and the left front speed sensor is open.
--------	--

CA318 ONEBOX module harness connector



GE06-5646d

CA23c FL speed sensor harness connector



GE06-5647d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the left front speed sensor harness connector CA23c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(7)	CA23c(2)	Standard resistance: less than 1Ω
CA318(24)	CA23c(1)	

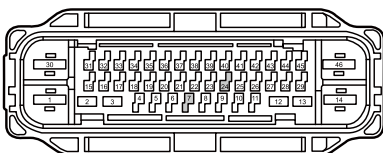
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Check whether the circuit between ONE BOX and the left front speed sensor is short to power supply.

CA318 ONEBOX module harness connector



GE06-5648d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the left front speed sensor harness connector CA23c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(7)	Vehicle body is grounded.	Standard voltage: 0V
CA318(24)		

- F. Confirm whether the measured value meets the standard.

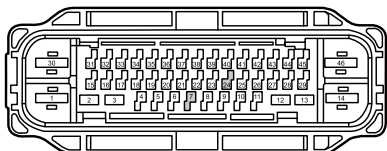
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between ONE BOX and the left front speed sensor is short to GND.

CA318 ONEBOX module harness connector



GE06-5649d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the left front speed sensor harness connector CA23c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA318(24)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace left front speed sensor

- A. Replace left front speed sensor Refer to [Replacement of Left Front Wheel Speed Sensor](#)
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7 Replace ONE BOX

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [6.6.6.12 ONE BOX Power Supply Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module Assembly](#)

Next step

Step 8 Reprogram and reset the ONE BOX.

- A. Reprogram and reset the ONE BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

6.6.6.15 FR speed sensor fault

1. DTC description:

Diagnostic Trouble Code	Description
C100E11	Short circuit to ground of FR speed sensor
C100E12	FR speed sensor is short to power supply
C100E13	Circuit open of FR speed sensor
C100E64	FR speed sensor signal faults (exceeding range, losing, noise and intermittent)
C100E65	Right front speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)
C100E4A	FR wheel speed sensor direction fault

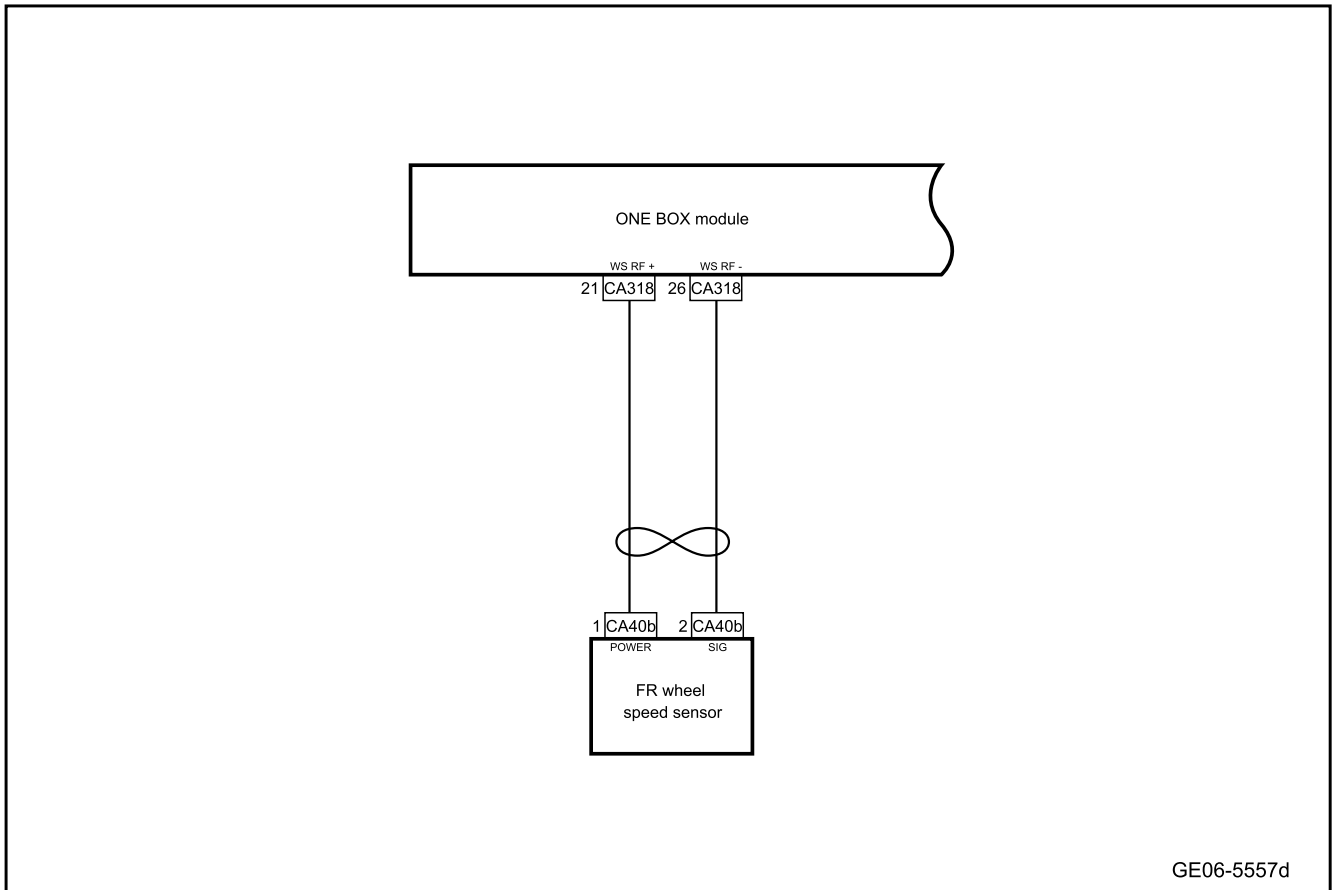
2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100E11	FR WSS Power supply cable is short-circuited to GND. (Detection for 120ms)	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	1. Circuit 2. ONE BOX 3. Right front wheel speed sensor

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100E12	WSS FR sensor circuit or power supply circuit is shorted to UBATT. (Detection for 120ms)		
C100E13	WSS UFL sensor circuit or power supply circuit is interrupted (detection 120 ms)		
C100E64	<ol style="list-style-type: none"> 1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detection for 72s) 		
C100E65	<ol style="list-style-type: none"> 1. Right front wheel speed is greater than 3.58 m/s, and wheel speed pulse signal cannot be detected in 15 ms 2. Right front wheel speed sensor signal loss 1. When braking, the vehicle speed is greater than 13 km/h, the right front wheel speed is greater than 33 km/h and no wheel speed pulse is received within 15 ms; 2. When no braking, the vehicle speed is greater than 13 km/h, and the right front wheel speed is greater than 25 km/h without receiving wheel speed pulse for 15 ms 		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100E4A	Right front wheel speed sensor direction is inconsistent with the vehicle direction		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

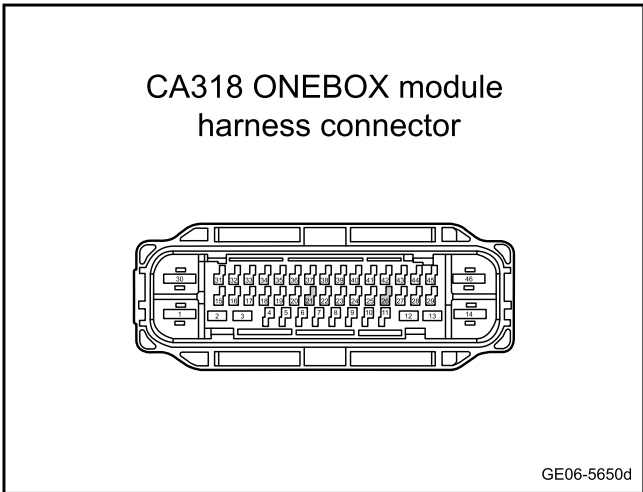
- A. Check the right front wheel speed sensor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the right front wheel speed sensor and ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

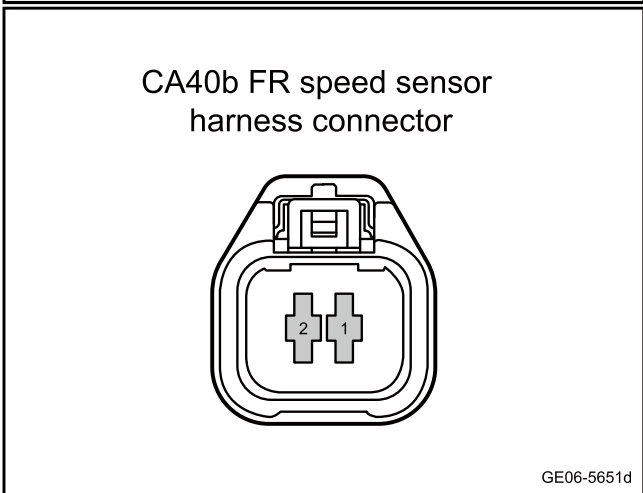
Step 3 Check whether the line between ONE BOX and FR speed sensor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the right front wheel speed sensor harness connector CA40b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(26)	CA40b(2)	Standard resistance: less than 1Ω
CA318(21)	CA40b(1)	

- E. Confirm whether the measured value meets the standard.

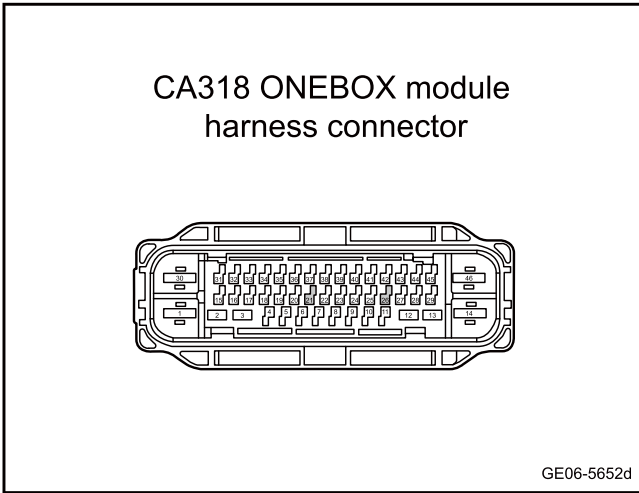


No

Repair or replace the harness.

Yes

Step 4 Check whether the line between ONE BOX and right front wheel speed sensor is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the right front wheel speed sensor harness connector CA40b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

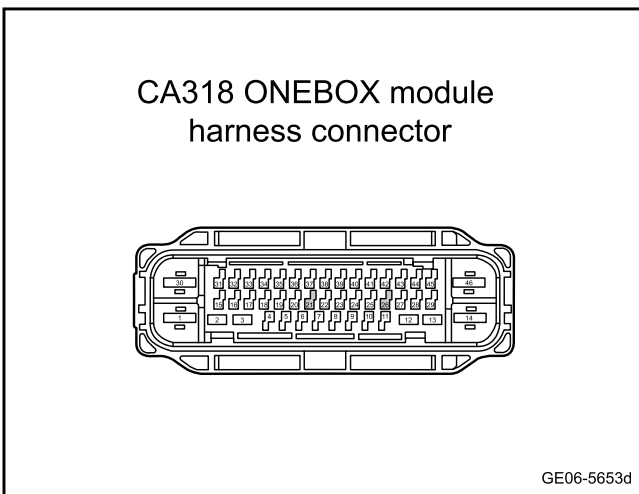
Measure terminal 1	Measure terminal 2	Standard value
CA318(26)	Vehicle body is grounded.	Standard voltage: 0V
CA318(21)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the line between ONE BOX and right front wheel speed sensor is shorted to GND



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the right front wheel speed sensor harness connector CA40b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(26)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA318(21)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the right front wheel speed sensor.

- A. Replace the right front wheel speed sensor. Refer to [Replacement of Right Front Wheel Speed Sensor](#)
- B. Confirm whether the system is normal.

Yes Trouble is removed.

No

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [6.6.6.12 ONE BOX Power Supply Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module](#)

Next step

Step 8	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

6.6.6.16 RL wheel speed sensor fault

1. DTC description:

Diagnostic Trouble Code	Description
C100F11	RL wheel speed sensor is short to GND
C100F12	RL wheel speed sensor is short to power supply
C100F13	RL wheel speed sensor is open

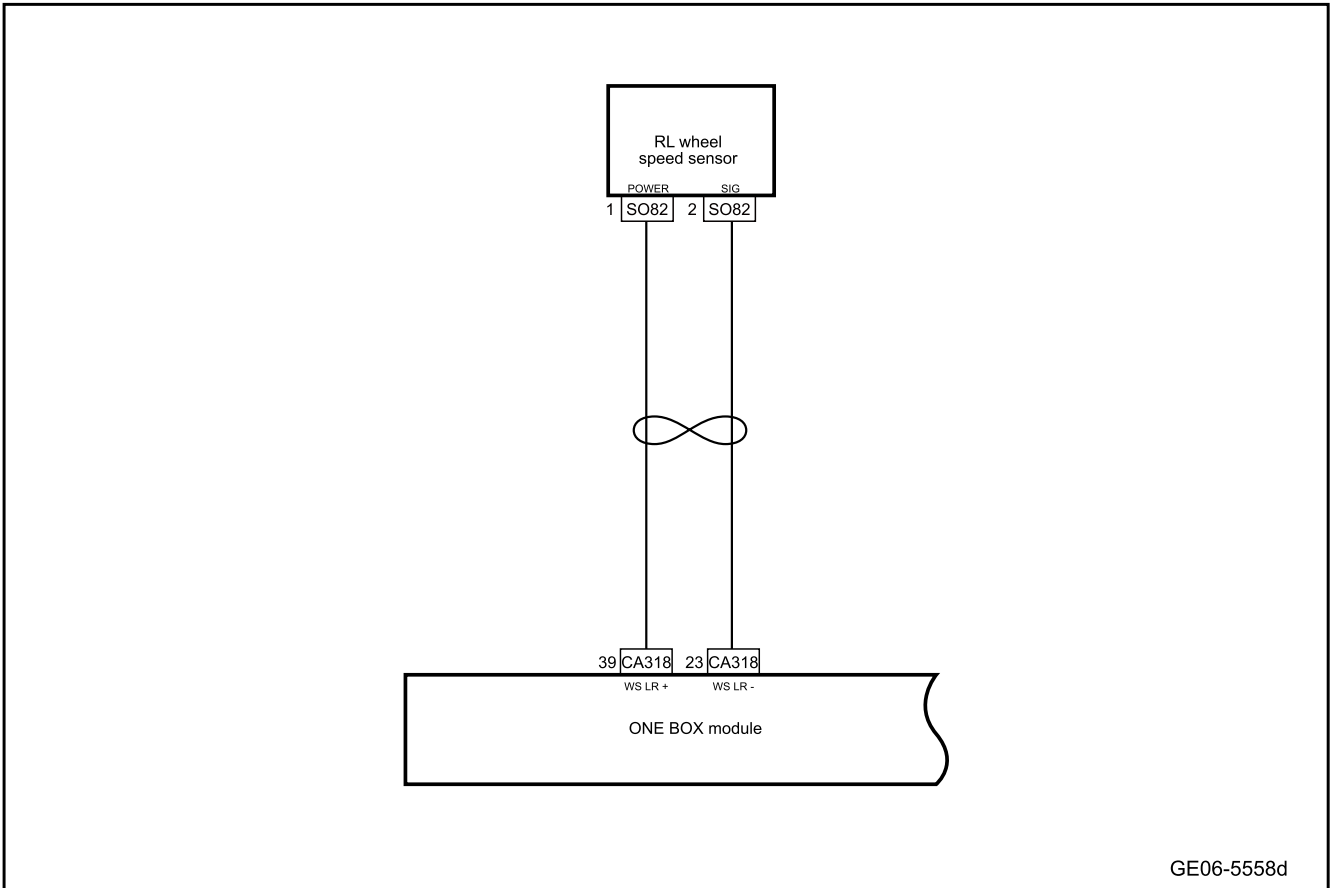
Diagnostic Trouble Code	Description
C100F64	Signal fault of RL wheel speed sensor (out of range, loss, noise, intermittent)
C100F65	Left rear speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)
C100F4A	RL wheel speed sensor direction fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100F11	Left rear WSS Power supply cable is short-circuited to GND. (Detection for 120ms)	1. Tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Circuit 2. ONE BOX 3. Left rear wheel speed sensor
C100F12	WSS RL sensor circuit or power supply circuit is shorted to UBATT. (Detection for 120ms)		
C100F13	WSSUL sensor circuit or power supply circuit is interrupted (detection 120 ms)		
C100F64	1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detection for 72s)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C100F65	1. Left rear wheel speed is greater than 3.58 m/s, and wheel speed pulse signal cannot be detected in 15 ms 2. Left rear wheel speed sensor signal loss 1. When braking, the vehicle speed is greater than 13 km/h, the left rear wheel speed is greater than 33 km/h and no wheel speed pulse is received within 15 ms; 2. When there is no braking, the vehicle speed is greater than 13 km/h, and the left rear wheel speed is greater than 25 km/h and no wheel speed pulse is received within 15 ms	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
C100F4A	Left rear wheel speed sensor direction is inconsistent with the vehicle direction		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

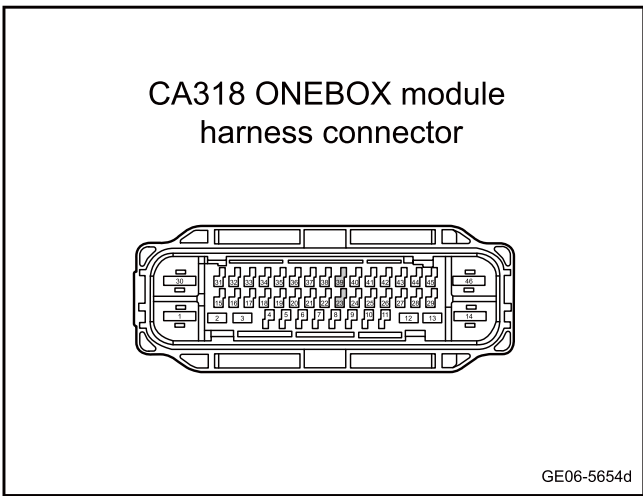
- A. Check the RL wheel speed sensor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check whether RL wheel speed sensor and the ONE BOX harness connector indicate any signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

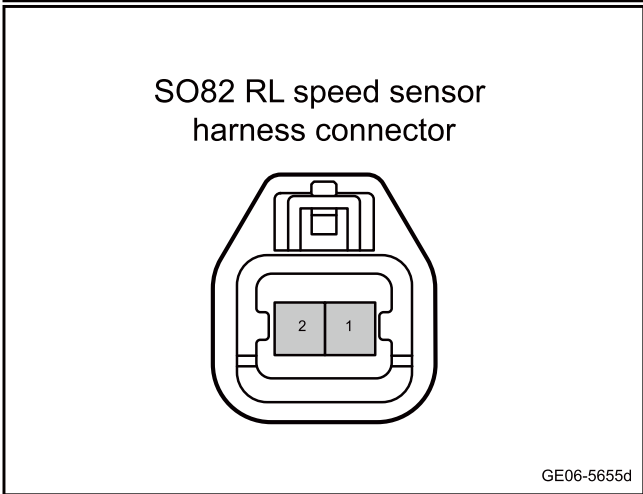
Step 3 Check whether the circuit of ONE BOX and RL wheel speed sensor is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO82 of RL wheel speed sensor.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(39)	SO82(1)	Standard resistance: less than 1Ω
CA318(23)	SO82(2)	

- E. Confirm whether the measured value meets the standard.

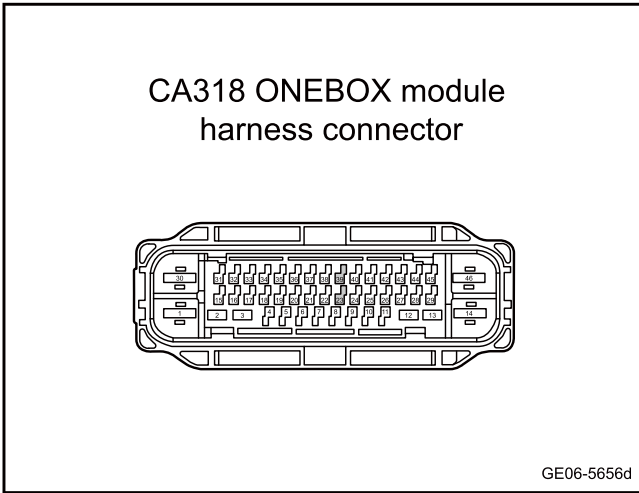


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit of ONE BOX and RL wheel speed sensor is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO82 of RL wheel speed sensor.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

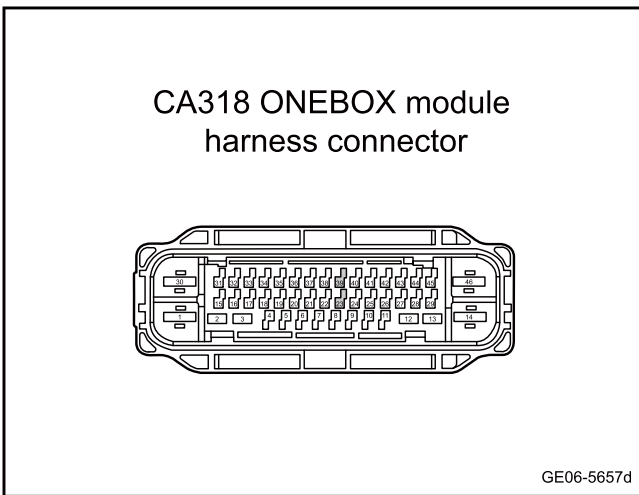
Measure terminal 1	Measure terminal 2	Standard value
CA318(39)	Vehicle body is grounded.	Standard voltage: 0V
CA318(23)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between ONE BOX and RL wheel speed sensor is short to GND.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO82 of RL wheel speed sensor.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(39)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA318(23)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace RL wheel speed sensor.

- A. Replace RL wheel speed sensor. Refer to [Replacement of Left Rear Wheel Speed Sensor](#)
- B. Confirm whether the system is normal.

Yes

Trouble is removed.

No

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [6.6.6.12 ONE BOX Power Supply Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module](#)

Next step

Step 8	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

6.6.6.17 RR speed sensor fault

1. DTC description:

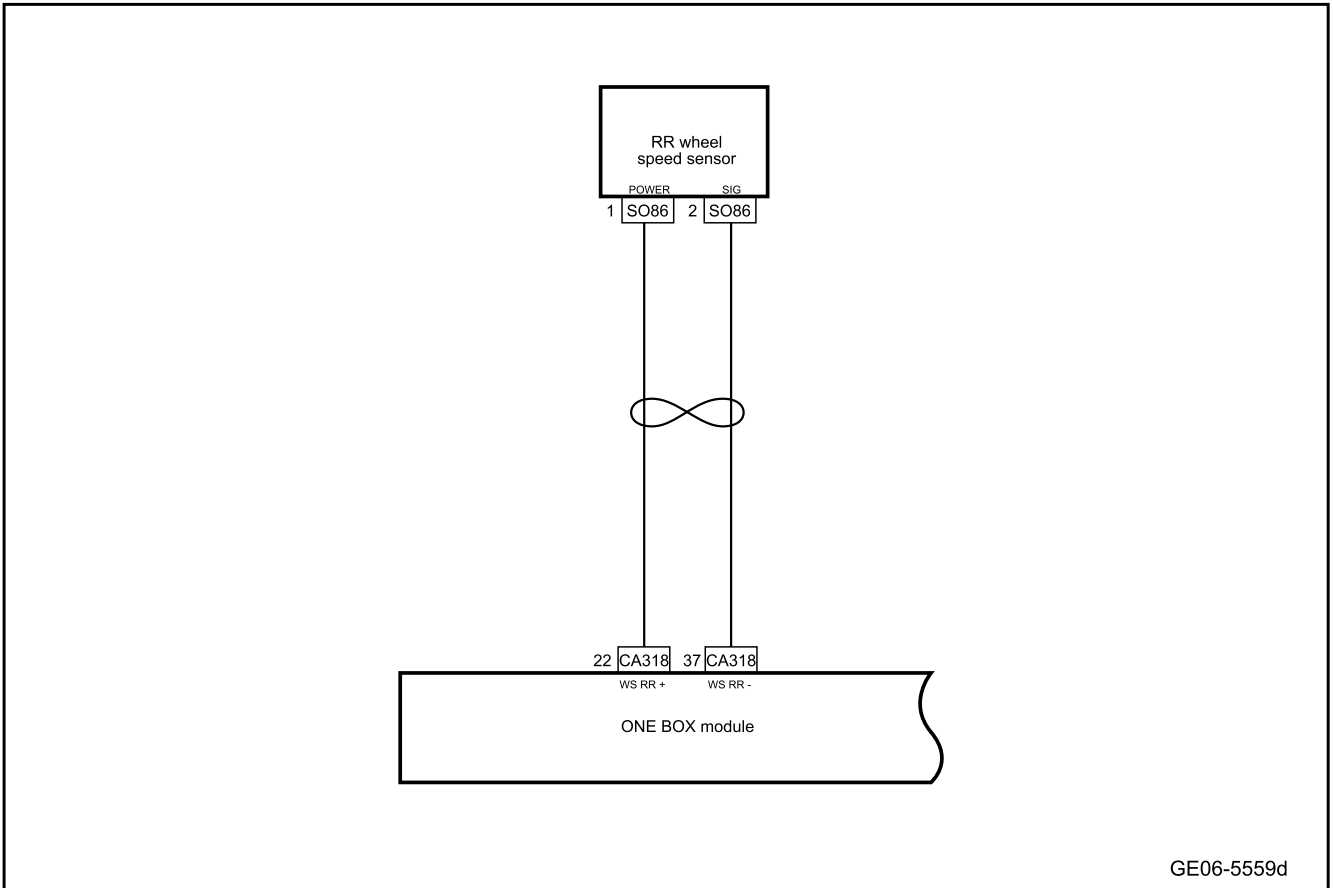
Diagnostic Trouble Code	Description
C101011	RR speed sensor is shorted to GND
C101012	RR speed sensor is shorted to power supply
C101013	Circuit open of RR speed sensor
C101064	Right rear speed sensor fault (Out of range, lost, noise, intermittent)
C101065	Right rear wheel speed sensor signal is lost (signal is discontinuous due to missing teeth, skip)
C10104A	RR wheel speed sensor direction fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101011	RR WSS Power supply cable is short-circuited to GND. (Detection for 120ms)	1. Tester ECU communication is normal 2. Normal working voltage 3. CAN communication is normal 4. No overvoltage or undervoltage	1. Circuit 2. ONE BOX 3. Right rear wheel speed sensor
C101012	WSS RR sensor circuit or power supply circuit is shorted to UBATT. (Detection for 120ms)		
C101013	WSSUL sensor circuit or power supply circuit is interrupted (detection 120 ms)		
C101064	1. Reach the maximum wheel speed 2. The fault caused by the lack of wheel speed 3. Wss signal interference or jamming 4. The flank (Edgecycle) of the wheel speed sensor is hard for confidence. 5. If the difference between the maximum and minimum wheel speed related to reference velocity exceeds 6% (detection for 72s)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C101065	1. Right rear wheel speed is greater than 3.58 m/s, and wheel speed pulse signal cannot be detected in 15 ms 2. Right rear wheel speed sensor signal loss 1. When braking, the vehicle speed is greater than 13 km/h, the right rear wheel speed is greater than 33 km/h and no wheel speed pulse is received within 15 ms; 2. When no braking, the vehicle speed is greater than 13 km/h, the right rear wheel speed is greater than 25 km/h and the received time of no wheel speed pulse is up to 15 ms	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
C10104A	Right rear wheel speed sensor direction is inconsistent with the vehicle direction		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

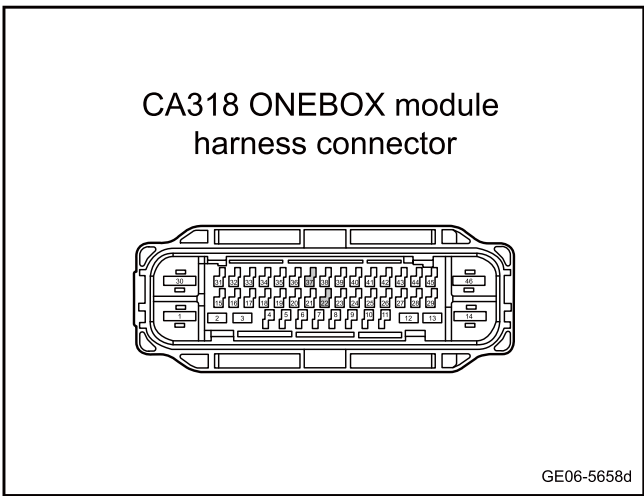
- A. Check the right rear wheel speed sensor and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the RR speed sensor and ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

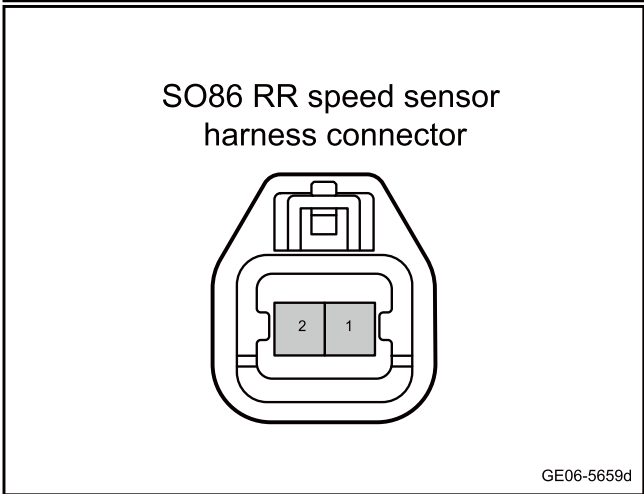
Step 3 Check whether the circuit between the ONE BOX and the RR speed sensor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO86 of RR speed sensor
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(37)	SO86(2)	Standard resistance: less than 1Ω
CA318(22)	SO86(1)	

- E. Confirm whether the measured value meets the standard.

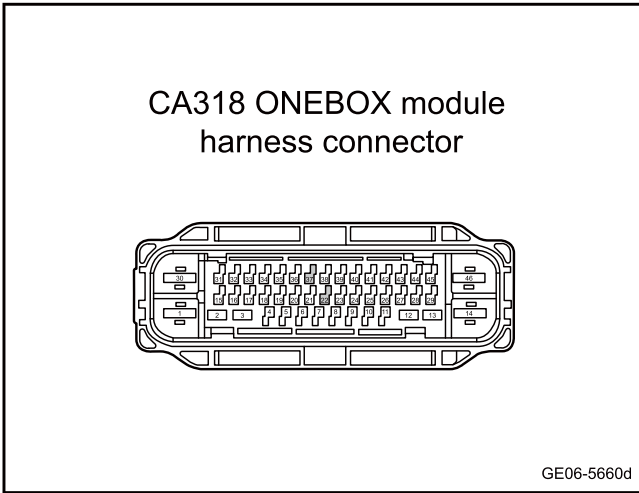


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between ONE BOX and RR speed sensor is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO86 of RR speed sensor
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

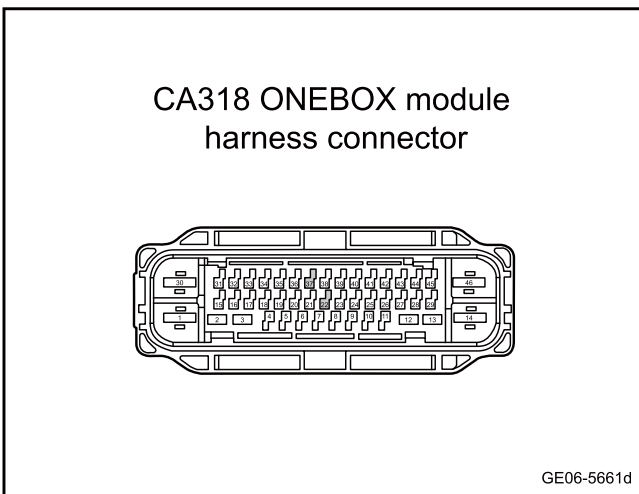
Measure terminal 1	Measure terminal 2	Standard value
CA318(37)	Vehicle body is grounded.	Standard voltage: 0V
CA318(22)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between ONE BOX and the RR speed sensor is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the harness connector SO86 of RR speed sensor
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(37)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA318(22)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the RR speed sensor

- A. Replace the RR speed sensor Refer to [Replacement of Right Rear Wheel Speed Sensor](#)
- B. Confirm whether the system is normal.

Yes Trouble is removed.

No

Step 7	Replace ONE BOX
--------	-----------------

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module Assembly](#)

Next step

Step 8	Reprogram and reset the ONE BOX.
--------	----------------------------------

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

6.6.6.18 ONE BOX module communication failure

1. DTC description:

Diagnostic Trouble Code	Description
U003700	CAN1 bus is switched off wrongly
U007300	CAN bus off
U011087	Communication with motor controller is lost
U012687	Communication with the angle sensor is lost

Diagnostic Trouble Code	Description
U014087	Communication with BCM is lost
U015187	Communication with ACU is lost
U015587	Communication with IPK is lost
U015687	Loss of communication with multimedia module
U031800	ECU software fault
U041181	Invalid signal received from integrated power controller
U042881	An invalid signal is received from the angle sensor (only ESC)
U045281	An invalid signal is received from ACU
U111487	Communication with VCU is lost
U111587	Loss of communication with channels related to energy recovery of VCU (complete vehicle controller)
U130055	Code configuration fault
U140481	Invalid signal received from vehicle control unit
C100764	Lateral acceleration sensor signal fault (ESC)
C100864	Longitudinal acceleration sensor signal fault (ESC)
C100A64	Yaw angle sensor signal fault (ESC)
C106D00	Check time of steering wheel angle, yaw angle speed and lateral acceleration sensor signal is too long
U010587	Communication with PEPS is lost
U015987	Communication with parking assist system is lost
U016487	Communication with AC is lost
U040681	Invalid signal received from PEPS system
U045A81	Invalid signal received from PAS system
U120387	Communication with front camera system module is lost
U143381	Invalid signal received from FCS system

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U003700	CAN(special) bus off, 100ms	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 4. Communication is normal	1. Circuit 2. ONE BOX 3. Diagnostic interface
U007300	CAN(Public) bus off failure, 100ms		
U011087	Message (0x0A8) from IPU node is lost for 250 milliseconds		
U012687	Message (0x0E0) from SAS node is lost for 100 milliseconds		

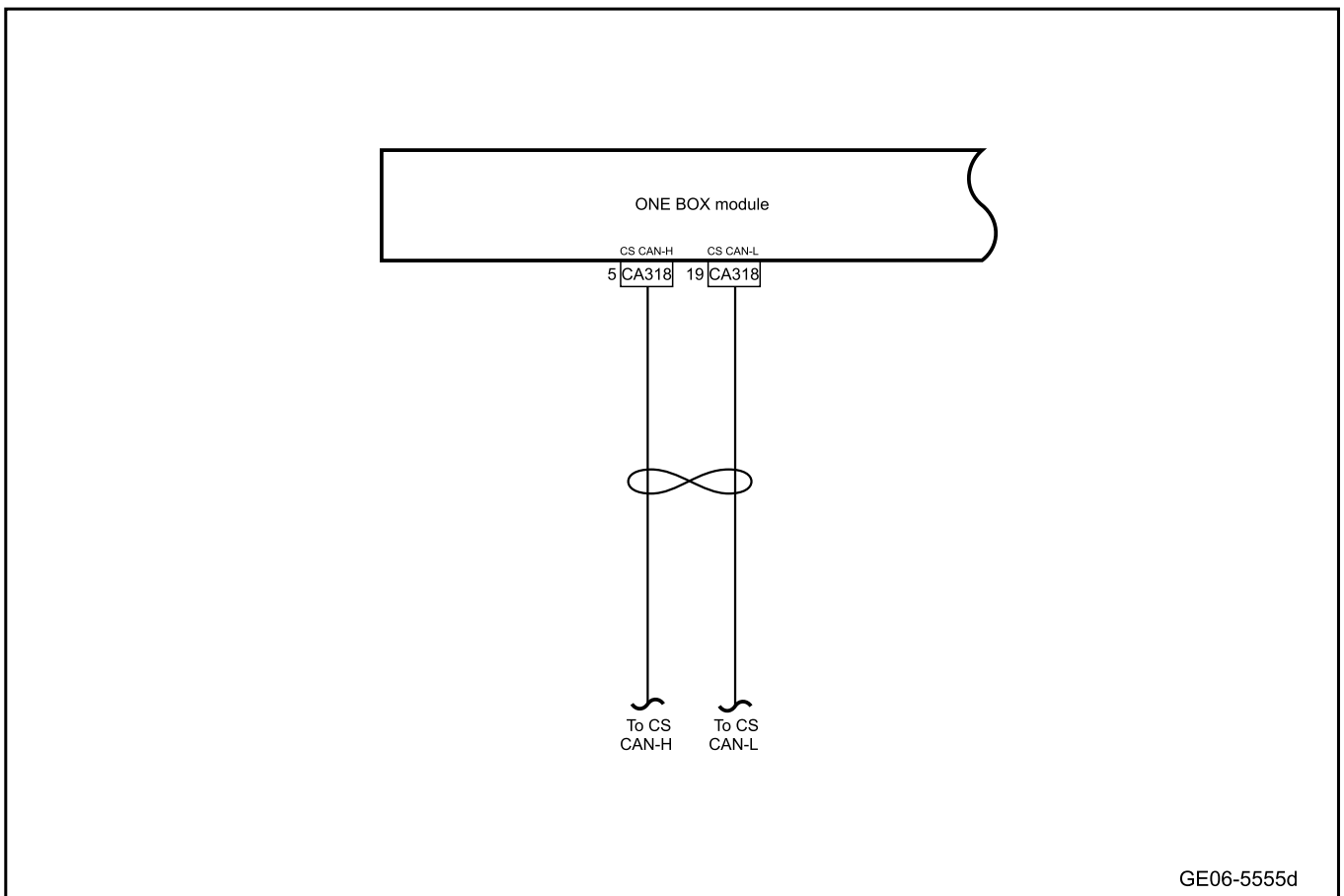
DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U014087	The message (0x285) from the BCM node is missing 500ms		
U015187	The message (0x380) from the ACU node is missing 1000ms Any messages from ACU node are lost for 0x131 (100 milliseconds)		
U015587	Message (0x3F1) from IPK node is lost for 5000 milliseconds		
U015687	The message (0x2A4) from the MMI node is missing 500ms		
U031800	<ol style="list-style-type: none"> 1. Unmatched configuration of the system status management unit 2. Wrong hex file flashed in accessory ECU 3. The data communication between application software and hardware-related software does not match. 	<ol style="list-style-type: none"> 1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 	
U041181	<p>Any of the following faults last for 250ms (0x0A8).</p> <ol style="list-style-type: none"> 1. CRC error 2. Activity counter error 3. Invalid signal (IPU_lsgSpdActSgn) is received for 250 milliseconds 	<ol style="list-style-type: none"> 1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 4. Communication is normal 	
U042881	<p>Any of the following faults lasted 100ms (0x0E0).</p> <ol style="list-style-type: none"> 1. Data length code error 2. CRC error 3. Activity counter error 4. The signal is invalid (SteerWheelAngle is invalid, TrimmingSts is invalid, FailureSts is invalid) 		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U045281	Any of the following faults lasts for 1000ms (0x380) or 100ms(0x130, 0x131). 1. Data length code error 2. CRC error 3. Activity counter error 4. Invalid signal reception time is 1000 ms		
U111487	1. Public CAN: Any message from the VCU node (0x1A4, 0x1A5, 0X165) are missing 240ms 2. Private CAN: Message (0x0A4) from VCU node is lost for 250 milliseconds		
U111587	Message (0x0A6) from VCU node is lost for 250 milliseconds		
U130055	The variable code in EEPROM is not correct	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140481	250 ms (0x0A6) or 240 ms (0x1A4, 0x1A5, 0x165) private CAN: Any of the following faults last for 250ms (0x0A4). 1. Data length code error 2. CRC error 3. Activity counter error 4. Invalid signals Public CAN: An invalid signal is received within 240 ms (VCU_ModeGearDisplaySts, VCU_MaxPTTorqueAllowed, VCU_MinPTTorqueAllowed, VCU_RegenTrqal[Qualifier, VCU_RegenTrqActQualifier, VCU_RegenTrqal[VCU_RegenTrqal[Valfier, lasting for 250 ms private CAN: Invalid signals are received (VCU drive and torque. The VCU drive program and torque are invalid, VCU actual pedal position VCU actual pedal position is valid, VCU accelerator pedal position VCU_acelectedalpositioninvalid) for 250 ms	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V) 4. Communication is normal	
C100764	The value of the adjacent two cycles of the lateral acceleration sensor signal exceeds 16 m/s ²	1. Vehicle mode: ignition on 2. ECU mode: system initialization 3. Working voltage: normal working voltage (9V-16V)	
C100864	The value of the adjacent two cycles of the longitudinal acceleration sensor signal exceeds 16 m/s ²		
C100A64	The value of two adjacent cycles of the yaw rate sensor signal exceeds 15 °/s		
C106D00	During the driving process of 3 km, the sensor signal fails to pass		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U010587	PEPS message (0 x1E2) cannot be received on the bus within 250 ms		
U015987	AC message cannot be received on the bus within 5 message cycles (0 x 135,0 x 136,0 x 191)		
U016487	C cannot receive AC message on the bus within 5 message cycles (0 x2F1)		
U040681	If a signal with an invalid value is received, or the identifier of the signal is invalid for 10 consecutive times (0 x1E2)		
U045A81	If the received signal has an invalid value or the identifier of the signal is continuously invalid for 10 times (0 x 135,0 x 136,0 x 191)		
U120387	FCS message cannot be received on the bus within 250 ms (0 x1A1, 0 x1A2)		
U143381	If the received signal value is invalid or the signal identifier is continuously invalid for 10 times (0 x1A1, 0 x1A2)		

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the ONE BOX harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 | Check the integrity of the CS-CAN bus.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm that the CS-CAN network is functioning properly.

No

Check or repair CS-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4 | Replace ONE BOX

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Power Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module](#)

Next step

Step 5 | Reprogram and reset the ONE BOX.

- A. Reprogram and reset the ONE BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

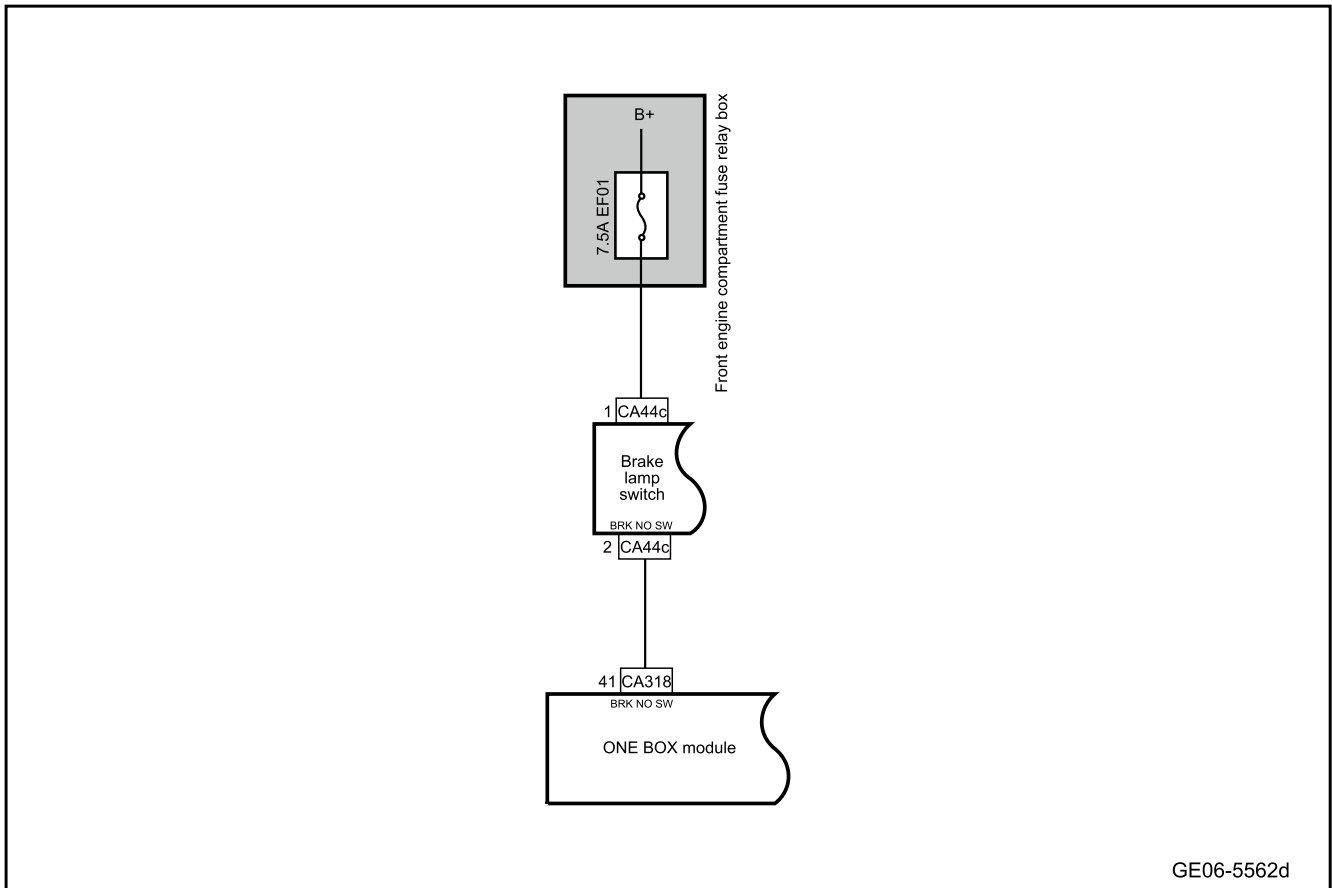
Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

6.6.6.19 Brake lamp switch fault

1. Schematic circuit diagram:



2. Diagnosis steps:

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the brake lamp switch and ONE BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the brake lamp switch and ONE BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the brake lamp switch insurance.
--------	--

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove fuse EF01 and check if it is blown.

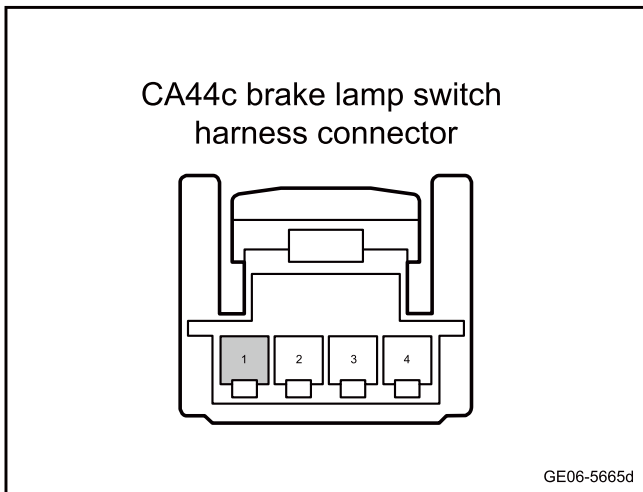
Rated capacity of fuse: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the power harness of the brake lamp switch.
--------	---



- a. Multimedia settings from vehicle power supply to OFF.
- b. Disconnect the brake lamp switch harness connector CA44c.
- c. The key activates the power supply of the vehicle to ON.
- d. Use a multimeter to measure the voltage between terminal 1 of the brake lamp switch harness connector CA44c and body grounding.
Standard voltage: 11-14V
- e. Confirm whether the voltage value meets the standard.

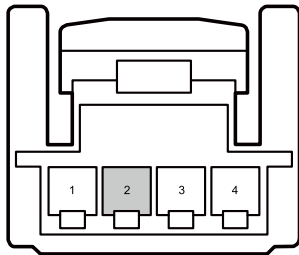
No

Repair or replace the harness.

Yes

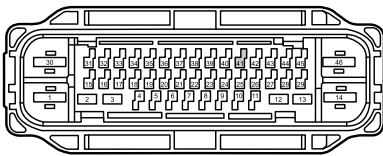
Step 5	Check the circuit between the brake lamp switch and ONE BOX.
--------	--

CA44c brake lamp switch harness connector



GE06-5666d

CA318 ONEBOX module harness connector



GE06-5667d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ONE BOX harness connector CA318.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	CA318(41)	Standard resistance: less than 1Ω
CA44c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the brake lamp switch.

- A. Replace the brake lamp switch. Refer to [Replacement of Brake Lamp Switch](#)
- B. Check whether the system is normal

Yes

System is normal.

No

Step 7 Replace ONE BOX

- A. Check whether ONE BOX power supply and grounding harness are normal. Refer to [ONE BOX Module Power Supply Failure](#)
- B. Replace the ONE BOX. Refer to [Replacement of Brake Control Module](#)

Next step

Step 8 Reprogram and reset the ONE BOX.

- A. Reprogram and reset the ONE BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

6.6.6.20 Brake fluid level sensor circuit fault

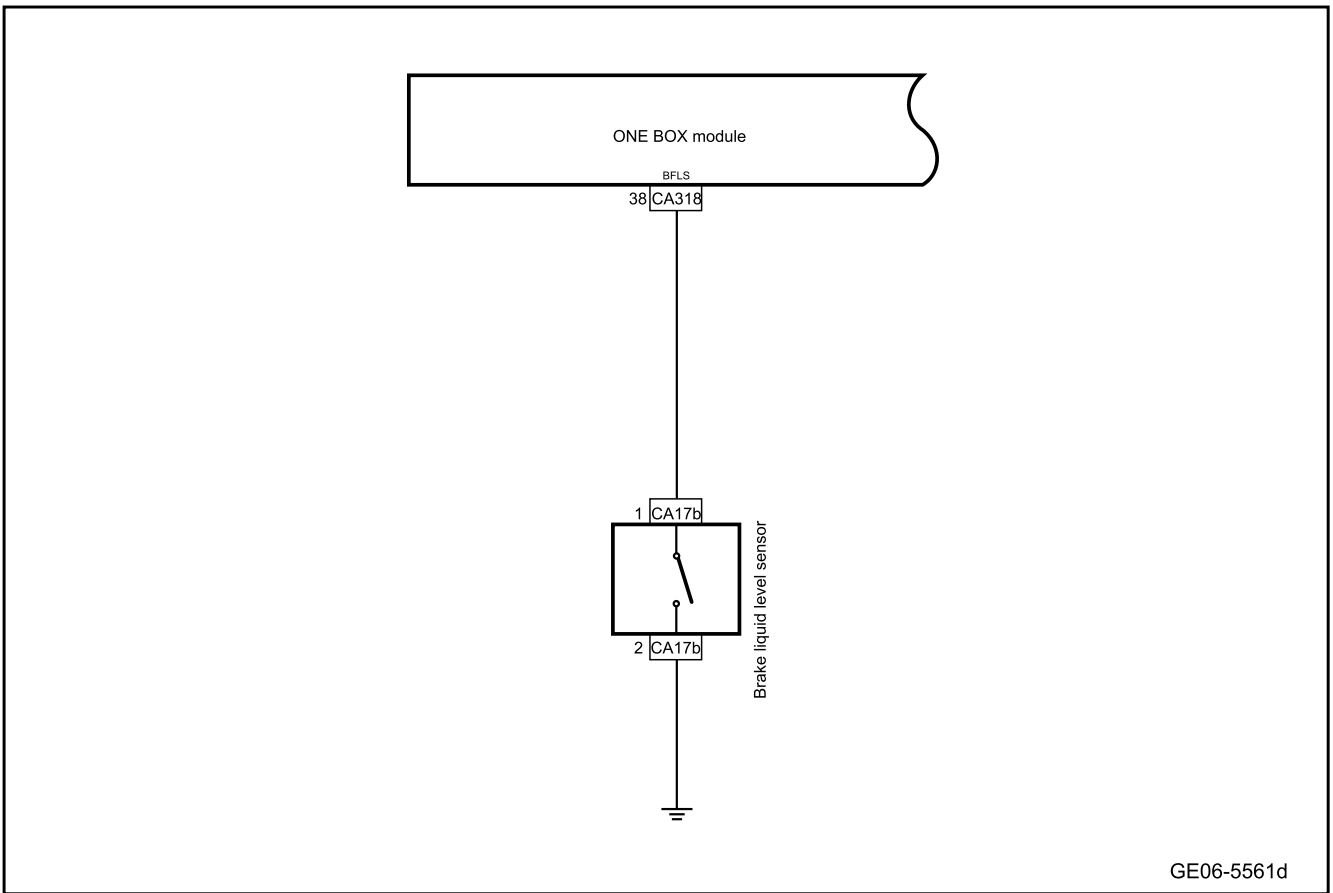
1. DTC description:

Diagnostic Trouble Code	Description
C004914	Brake fluid level sensor fault
C00497B	Brake fluid level is low.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C004914	Brake fluid level sensor is open circuit or short circuit	1. Vehicle mode: ignition on 2. ECU mode: system initialization	1. Circuit
C00497B	Too little brake fluid in fluid reservoir	3. Working voltage: normal working voltage (9V-16V)	2. ONE BOX 3. Brake fluid level sensor

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of braking fluid sensor for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

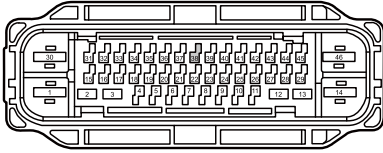
No

Repair or replace the faulty part.

Yes

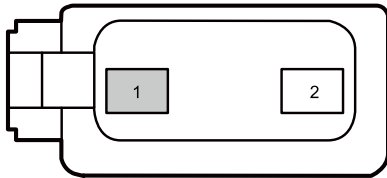
Step 2	Check whether the harness between ONE BOX module and braking fluid sensor is opened.
--------	--

CA318 ONEBOX module harness connector



GE06-5662d

CA17b brake liquid level sensor harness connector



GE06-5663d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA17b of braking fluid level sensor
- C. Disconnect the ONE BOX module harness connector CA318.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(38)	CA17b(1)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(38)	Vehicle body is grounded.	Standard voltage: 0V

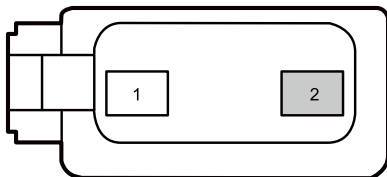
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 3 Check whether the grounding harness of braking fluid sensor is normal.

CA17b brake liquid level sensor harness connector



GE06-5664d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA17b of braking fluid level sensor
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA17b(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Replace braking fluid sensor.

- A. Replace braking fluid sensor, refer to replacement of braking fluid sensor
- B. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Replace the ONE BOX module.

- A. Check the ONE BOX module power supply and grounding harness. Refer to [ONE BOX Module Power Supply Failure](#)
- B. To replace the ONE BOX module, please refer to [Replacement of ONE BOX module](#)

Next step

Step 6 Reprogram and reset the ONE BOX module.

- A. Reprogram and reset the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 7 System is normal.

6.6.6.21 EPB caliper is released (entering and exiting maintenance mode)

1. Diagnosis steps

Step 1 Connect the diagnostic instrument to the OBD diagnostic interface.

Next step

Step 2 The key activates the power supply of the vehicle to ON.

Next step

Step 3 Start the diagnostic instrument and enter brand selection, vehicle identification.

Next step

Step 4 Enter the first level menu "special routine".

Next step

Step 5 Enter Maintenance mode

Next step

Step 6 Start diagnosis.

Next step

Step 7 Enter the extended mode.

Next step

Step 8 Safety certification.

Next step

Step 9 Enter maintenance mode-start to release the friction plate.

- A. 01 =The friction plate is successfully released.
- B. 02 =Failed to release the friction plate.
- C. 03 =The friction disc is being released.

Caution

Enter the maintenance mode, the EPB fault lamp turns on.

Next step

Step 10 Check the EPB release results.

- A. The friction disc has been successfully released.
- B. Perform related maintenance.

Next step

Step 11 After the repair is completed, exit the repair mode.

Next step

Step 12 Start the diagnostic instrument.

Next step

Step 13	Enter the extended mode.
------------	--------------------------

Next step

Step 14	Safety certification.
------------	-----------------------

Next step

Step 15	Exit Maintenance mode
------------	-----------------------

- A. 01 =Exiting the maintenance mode is successful.
- B. 02 =Exiting the maintenance mode failed.
- C. 03 =Exit from the maintenance mode being executed.

Next step

Step 16	Check the "Exit maintenance Mode" results.
------------	--

Next step

Step 17	According to the query status, the diagnostic instrument prompts that Exit maintenance Mode is successful or failed.
------------	--

It prompts that "Exiting maintenance Mode" is successful.

Next step

Step 18	Clear the trouble code.
------------	-------------------------

Next step

Step 19	ECU restarts.
------------	---------------

Caution

Exit maintenance mode, the EPB fault lamp will go out.

6.6.6.22 EPB initialization setting

1. Diagnosis steps

Step 1 | Connect the diagnostic instrument to the OBD diagnostic interface.

Next step

Step 2 | The key activates the power supply of the vehicle to ON.

Next step

Step 3 | Start the diagnostic instrument and enter brand selection, vehicle identification.

Next step

Step 4 | Enter the first level menu "special routine" to scan the complete vehicle.

Next step

Step 5 | Start the diagnostic instrument.

Next step

Step 6 | Enter the extended mode.

Next step

Step 7 | Safety certification.

Next step

Step 8 | EPB initial settings.

- A. 01 means successful initialization.
- B. 02 means failed initialization.
- C. 03 means initialization is being executed.

Next step

Step 9 | Check the initial setting result of EPB.

There are three kinds of EPB initial setting results:

- A. EPB initial settings succeeded.
- B. EPB initial settings failed.
- C. EPB initial setting timeout.

Next step

Step 10	According to the query status, the diagnostic instrument prompts that EPB initialization is successful or failed.
------------	---

If initialization times out or fails, you need to reset initialization.

Next step

Step 11	Clear the trouble code.
---------	-------------------------

Next step

Step 12	ECU restarts (EPB fault lamp goes out at this time).
------------	--

6.6.6.23 Calibration of steering angle sensor (ESC)

1. Diagnosis steps

Step 1	Connect the diagnostic instrument to the OBD diagnostic interface.
--------	--

Next step

Step 2	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 3	Start the diagnostic instrument and enter brand selection, vehicle identification.
--------	--

Next step

Step 4	Enter extended diagnostic session mode.
--------	---

Next step

Step 5	Level 1 safety certification.
--------	-------------------------------

Next step

Step 6	Start the calibration of the steering angle sensor.
--------	---

After the calibration is completed, there will be the following three prompts:

- A. 01=The calibration of the steering angle sensor is successful.
- B. 02=The calibration of the steering angle sensor fails.
- C. 03=The calibration of the steering angle sensor is being executed.

Next step

Step 7	Read the calibration state of the steering angle sensor.
--------	--

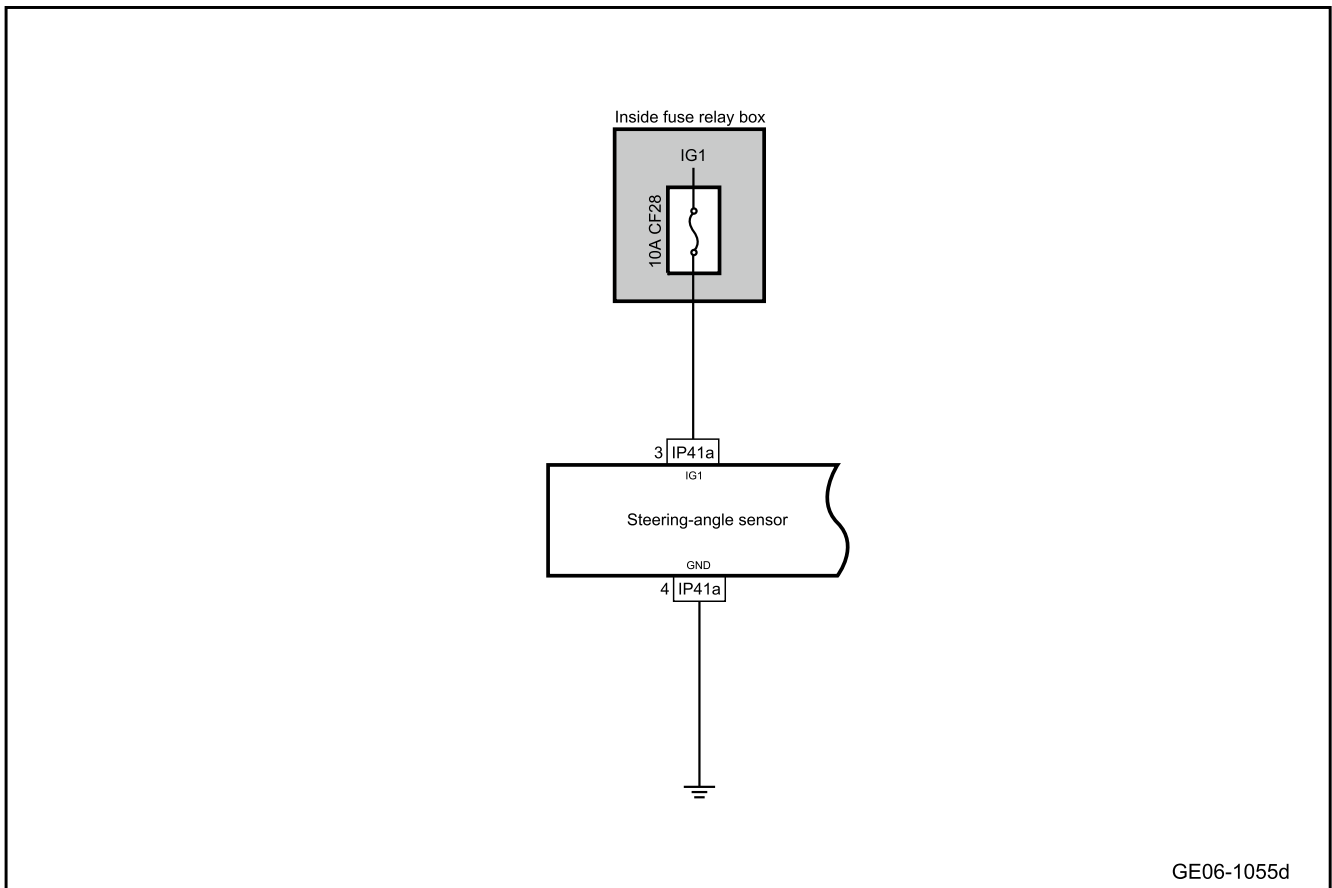
After it is displayed that the calibration is successful, you can go to the next step; otherwise, you need to re-calibrate.

Next step

Step 8	After calibration is completed, exit and return to the main interface.
--------	--

6.6.6.24 Steering Wheel Angle Sensor Does Not Work

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the steering wheel angle sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the steering wheel angle sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the fuse CF28.
--------	----------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove fuse CF29 and check if it is blown.

Rated capacity of fuse: 10A

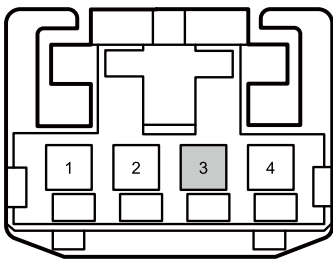
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3	Check whether the working voltage of the steering wheel angle sensor is normal.
--------	---

IP41a steering wheel angle sensor harness connector



GE06-5670d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the steering wheel angle sensor harness connector IP41a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between terminal 3 of the steering wheel angle sensor harness connector IP41a and body grounding.

Standard voltage: 11-14V

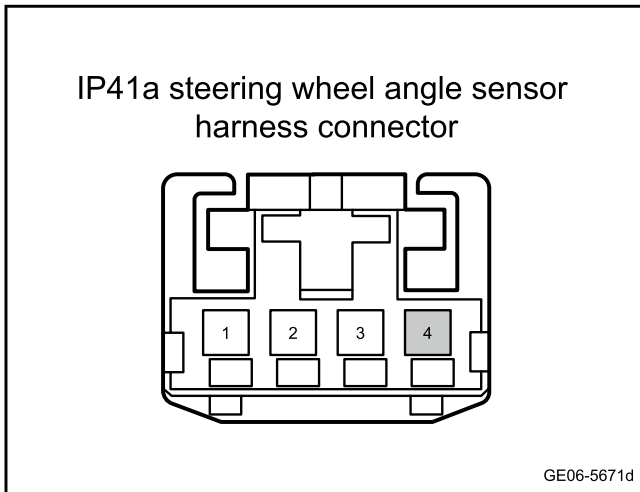
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Check whether the grounding harness of the steering wheel angle sensor is normal.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the steering wheel angle sensor harness connector IP41a.
- C. Use a multimeter to measure the resistance between terminal 4 of the steering wheel angle sensor harness connector IP41a and body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the steering wheel angle sensor.

- A. Replace the steering wheel angle sensor. Refer to [Replacement of Steering Wheel Angle Sensor](#)

Next step

Step 6 System is normal.

6.6.6.25 Speed Signal Failure

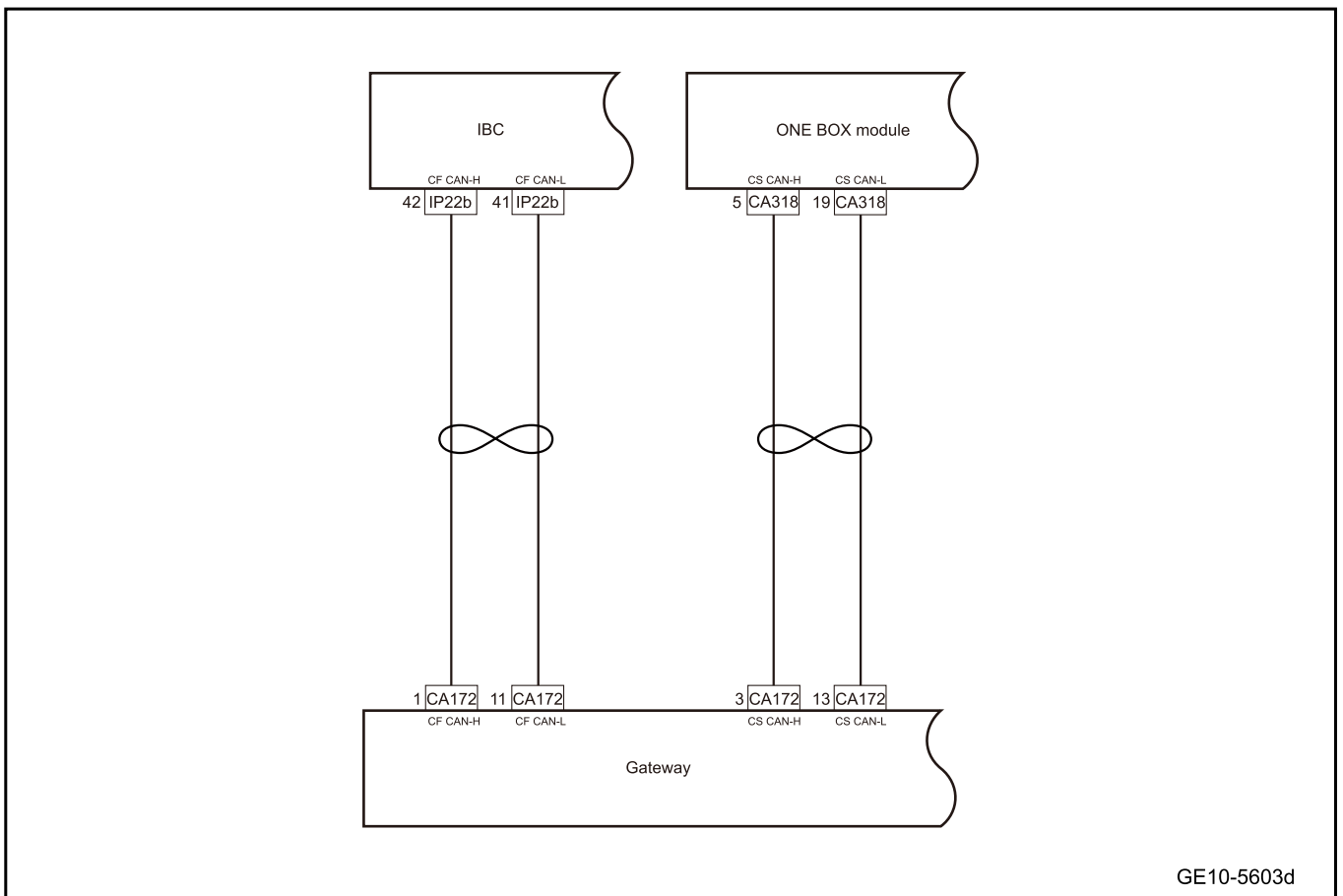
1. DTC description:

Diagnostic Trouble Code	Trouble description
C161529	Receive invalid gear pulse signal
C161531	Fail to receive gear pulse signal
C161E29	Invalid speed signal received
C161E31	No speed signal received

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C161529	Receive invalid gear pulse signal	IBC supply voltage is within the range of 9V-16V	1. Circuit 2. ONE BOX module 3. IBC
C161531	Fail to receive gear pulse signal		
C161E29	Invalid speed signal received		
C161E31	No speed signal received		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the IBC, ONEBOX module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check CF-CAN bus communication line.
--------	--------------------------------------

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 3	Check CS-CAN bus communication line.
--------	--------------------------------------

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Replace the ONE BOX module.
--------	-----------------------------

- A. Replace the ONE BOX module. Refer to [Replacement of ONE BOX Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Yes

System is normal.

No

Step 6	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Use diagnostic scanner to confirm the trouble.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

6.6.7 Removing and installing

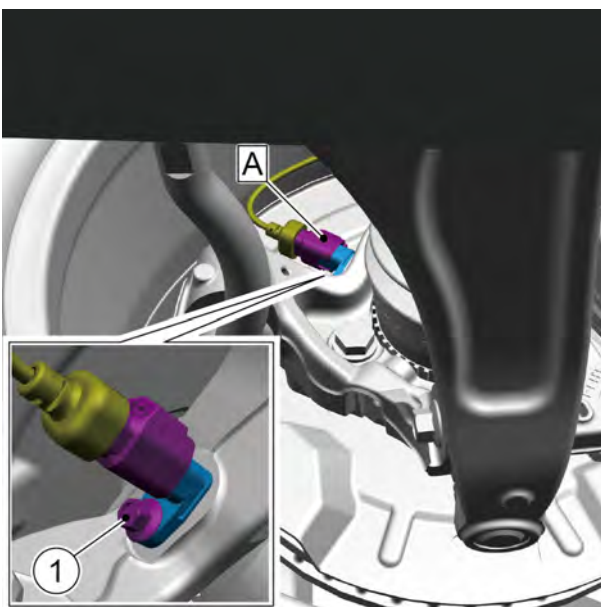
6.6.7.1 Replacement of Left Front Wheel Speed Sensor

Removal procedure

Caution

Left and right front wheel speed sensors are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect harness connector A connecting the front wheel speed sensor and front engine compartment harness.
- 4 Remove the 1 fixing bolt 1 of the left front wheel speed sensor and the left front steering knuckle.
- 5 Take off the left front wheel speed sensor.



Installation procedure

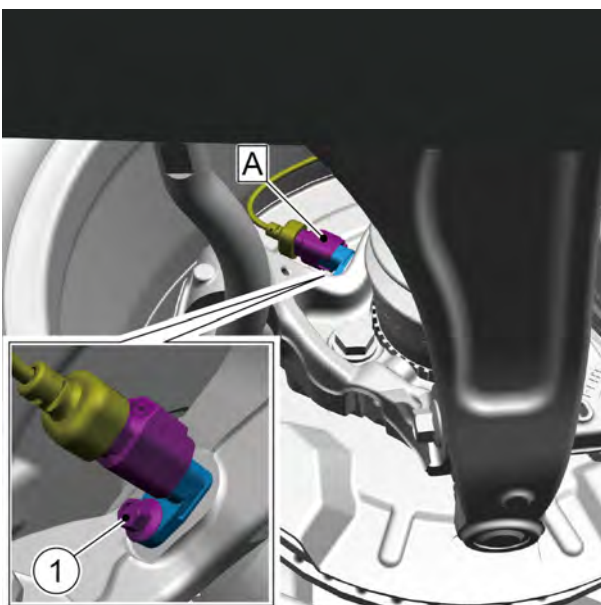
- 1 Move the left front wheel speed sensor to the installation position.

Caution

Before installing the left front speed sensor assembly, use the compressed air to blow out the dust in the mounting holes of the left front speed sensor assembly.

- 2 Install the 1 fixing bolt 1 of the left front wheel speed sensor and the steering knuckle.

Torque: 10N·m



- 3 Connect the 1 harness connector A connecting the left front wheel speed sensor and the front engine compartment harness.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

6.6.7.2 Replacement of rear wheel speed sensor

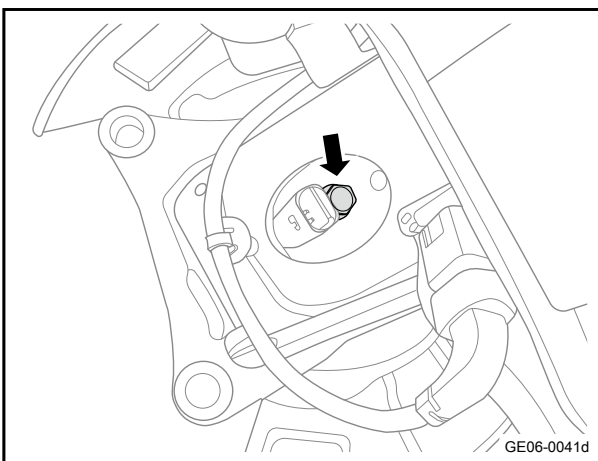
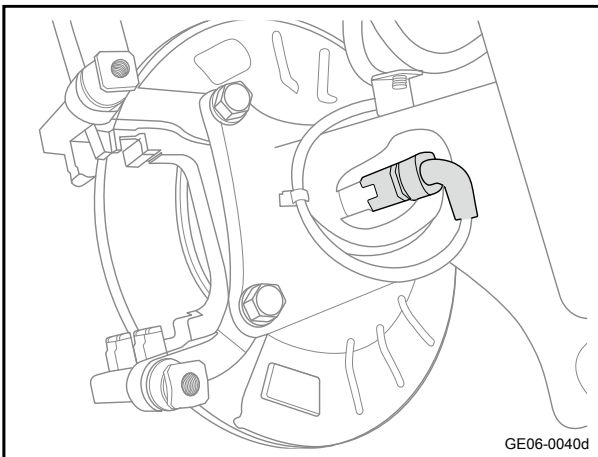
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

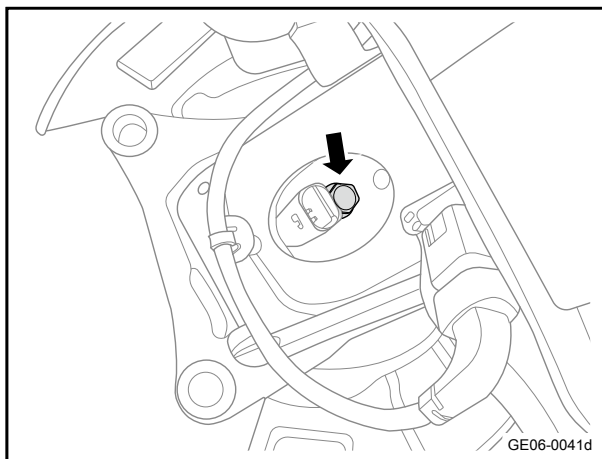
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Disconnect the rear wheel speed sensor wire harness connector.

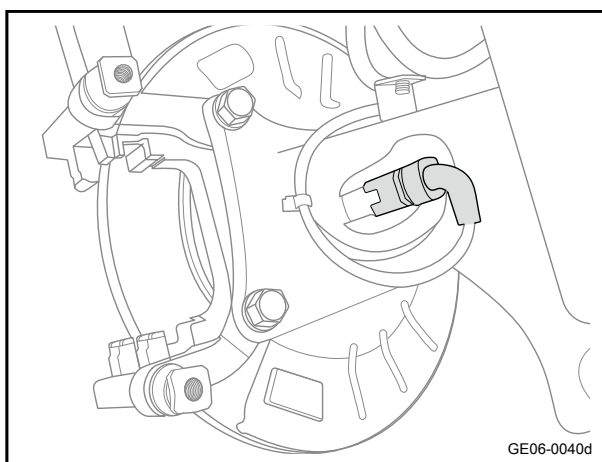


- 4 Remove the 1 fixing bolt of the rear wheel speed sensor.
- 5 Remove the rear wheel speed sensor.

Installation procedure



- 1 Move the rear wheel speed sensor to the installation position.
- 2 Install the 1 fixing bolt of the rear wheel speed sensor.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 3 Connect the rear wheel speed sensor wire harness connector.

- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

6.6.7.3 Replacement of Steering Wheel Angle Sensor

Refer to [Replacement of Clock Spring](#)

6.7 TPMS

6.7.1 Specification

6.7.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
TPMS	-	3-5

6.7.2 Instructions and operations

6.7.2.1 Description and Operations

The tire pressure monitoring system (TPMS) detects real-time tire pressure and temperature through radio waves and sensing technology. The tire pressure monitoring system detects the air pressure and temperature of the vehicle tires through sensors installed on each wheel, and transmits tire pressure and temperature signals to the TPMS. According to the tire pressure and temperature signals sent by TPMS, the instrument displays the corresponding pressure value and informs the driver of each tire pressure. When the tire pressure is normal, it displays black, and when it is abnormal, it displays red for the corresponding tire. When more than one tire triggers the high tire temperature/low tire pressure alarm, the TPMS error warning lamp turns on, and the tire that triggered the alarm is displayed in red to remind the driver to check the tire pressure. Each tire should be inflated to the vehicle manufacturer's recommended inflation pressure (indicated on the tire pressure label) while it is cold, and the tires should be inspected regularly. If the abnormal tire pressure indicator is on, it indicates that one or more tires are abnormally inflated. Please immediately reduce the speed and avoid sudden steering and braking operations, and immediately stop nearby to check the tire and its inflation pressure.

6.7.2.2 Composition of tire pressure monitoring system

The TPMS system consists of the following components

- TPMS sensor
- RFR RF receiver module
- BCM central processing unit

Caution

Tire pressure monitoring system receiver can provide excellent installation flexibility to meet a wide range of installation requirements. This flexibility of installation can be achieved by using specific metal brackets connected to the housing. The connection between the bracket and the housing is locked by sliding the bracket into the protrusion on the side of the housing without the use of additional fixing devices.

Every vehicle tire is equipped with a TPMS connected to the tire valve. The TPMS is a battery-powered unit that periodically measures tire pressure, temperature, and acceleration information. Pressure, temperature and acceleration information is converted into digital form by the MCU within the TPMS. Acceleration information is used to

determine whether the vehicle is stationary or in motion.

TPMS is equipped with an RF transmission circuit for periodically transmitting information within the tire. The TPMS is also equipped with a low frequency (LF) receiving circuit. The low frequency receiving circuit enables TPMS to be diagnosed and enter different modes through externally triggered low frequency electromagnetic fields.

RFR RF receiver module

When the vehicle ignition circuit is connected, the MCU and RF receiving circuit of the TPMS receiver start. The receiver unit continuously monitors the wireless signals sent by the nearby TPMS unit. The TPMS receiver unit can memorize the ID code of the TPMS loaded in a specific vehicle. When the TPMS receiver unit receives a message, it checks whether the ID code contained in the message matches the stored ID code. If so, the TPMS receiver unit will input the information into the TPMS alarm algorithm. The algorithm evaluates the changing pressure and temperature of each tire over time and makes a decision in the event of a potentially dangerous under-pressure situation, then continuously alerts the driver through the tire pressure alarm lamp. In addition to processing information, the TPMS receiver can also perform self-inspection on its own circuit and working status. If a serious fault is detected, the TPMS receiver will continuously turn on the TPMS warning lamp to alert the driver.

6.7.3 System working principles

6.7.3.1 System Working Principles

Description of TPMS function status

a. Reset status

When initial voltage is below the reset threshold, the TPMS control unit will be in a non-operational service state, in a reset state. Once the voltage reaches an acceptable value, the TPMS control unit will be released from the reset state and enter the normal state.

b. Starting status

When in the starting state, TPMS supports the normal operation of the system:

1. When in the starting state, the head unit will receive and process the tire pressure and temperature values generated by TPMS in real time, and send the information to the receiver through radio frequency and finally display it on the display screen.
2. When the TPMS internal sensing chip senses the tire pressure change, it converts the air pressure signal into an electrical signal, transmits the signal to the receiver through the wireless transmitter, and turns on the tire pressure alarm lamp (TREAD).

c. Diagnosis status

The TOPS system enters diagnostic mode when the diagnostic instrument is connected and communicated through the K-bus.

d. Sleep status

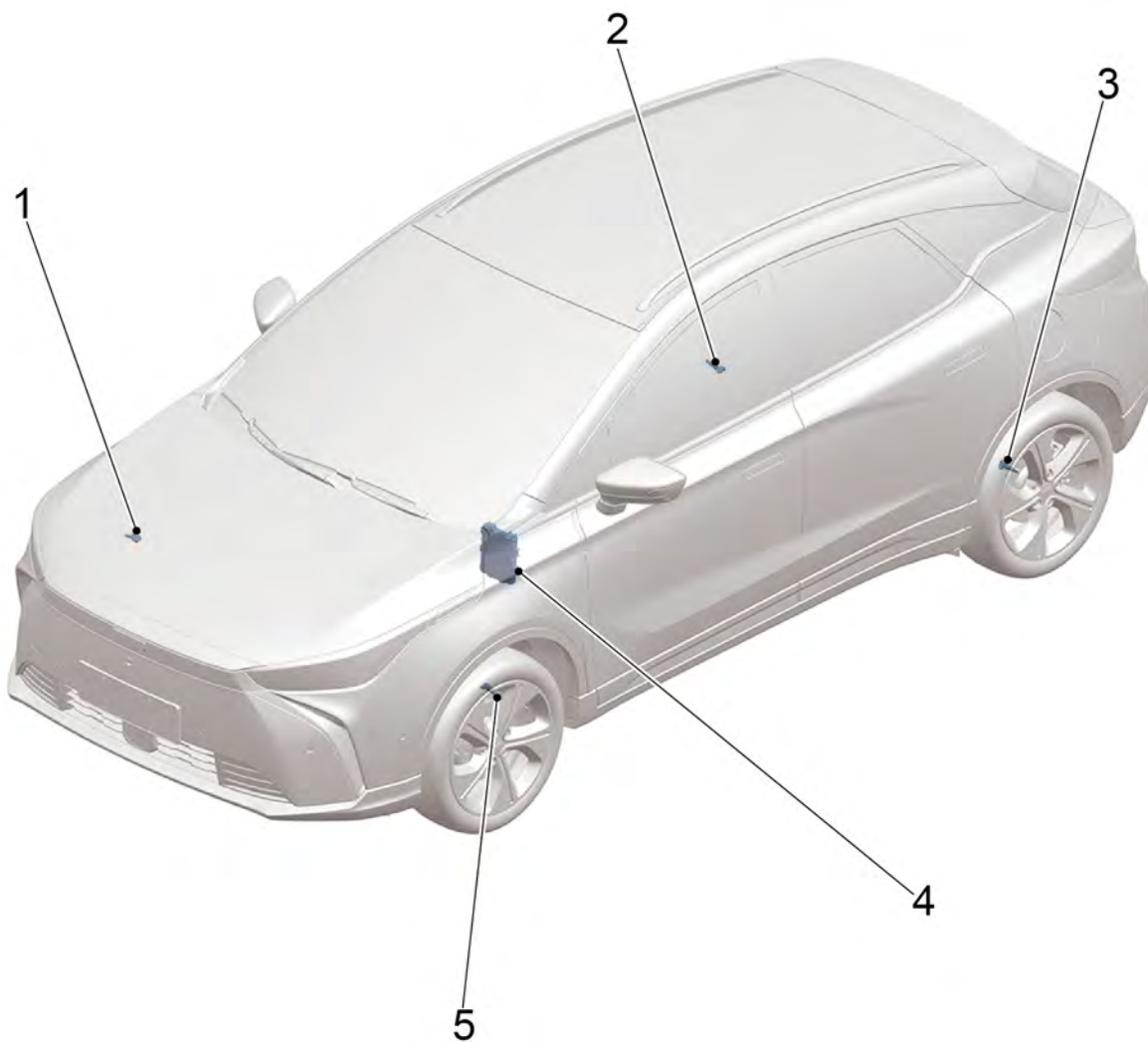
After entering the sleep mode, the system will enter the low power consumption state, without receiving and processing sensor messages or diagnostic commands.

- Wakeup conditions

When the power supply mode input signal changes from the state OFF to the state ON, the TPMS control unit exits the sleep state.

6.7.4 Part position

6.7.4.1 Part Position

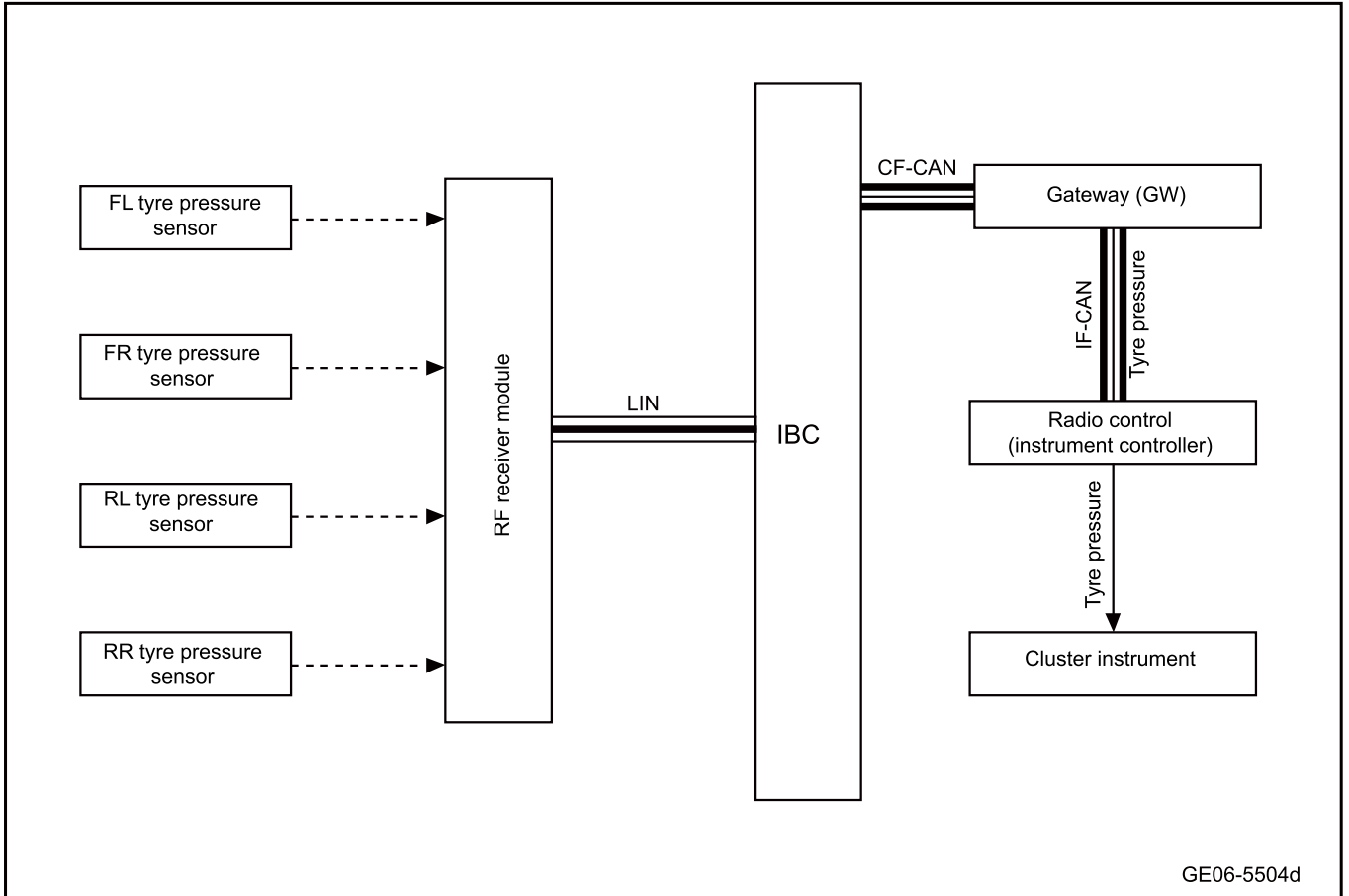


1. Front right tire pressure sensor
2. Rear right tire pressure sensor
3. Rear left tire pressure sensor

4. Body control module
5. Front left tire pressure sensor

6.7.5 Electrical block diagram

6.7.5.1 Electrical Schematic Diagram of TPMS



6.7.6 Diagnostic information and procedures

6.7.6.1 Diagnosis Description

Before diagnosing TPMS faults, refer to Description and Operation.

6.7.6.2 Routine inspection

- Confirm customer's fault before repair.
- Check easily accessible or visible system components for obvious damage or conditions that could lead to failure.
 - Check whether tire pressure is normal.
 - Check the tires and wheels, and visually check whether the tires and wheels are the same model
 - Whether there are obvious mechanical or electrical damage signs.

Repair or replace the component if any faults are found.

- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

6.7.6.3 List of Diagnostic Trouble Codes (DTC)

TPMS module

Diagnostic Trouble Code	Description	Fault location/elimination method
C160098	Left front tire temperature is high	Refer to High Tire Temperature
C160198	Right front tire temperature is high	
C160298	Left rear tire temperature is high	
C160398	Right rear tire temperature is high	
C160416	The supply voltage of the front left tire pressure sensor is low	Refer to TPMS Power Failure
C160516	The supply voltage of the right front tire pressure sensor is low	
C160616	The supply voltage of the rear left tire pressure sensor is low	
C160716	The supply voltage of the rear right tire pressure sensor is low	
C160C8F	Front left tire pressure sensor is lost	Refer to Tire Position Error
C160D8F	Front right tire pressure sensor is lost	
C160E8F	Rear left tire pressure sensor is lost	
C160F8F	Rear right tire pressure sensor is lost	
C161755	Tire ID not programmed	
C161021	Left front tire pressure is low	Refer to Low Tire Pressure Fault
C161121	Right front tire pressure is low	
C161221	Left rear tire pressure is low	
C161321	Right rear tire pressure is low	
C161A27	Front left tire pressure leaks quickly.	
C161B27	Front right tire pressure leaks quickly.	
C161C27	Rear left tire pressure leaks quickly.	
C161D27	Rear right tire pressure leaks quickly.	

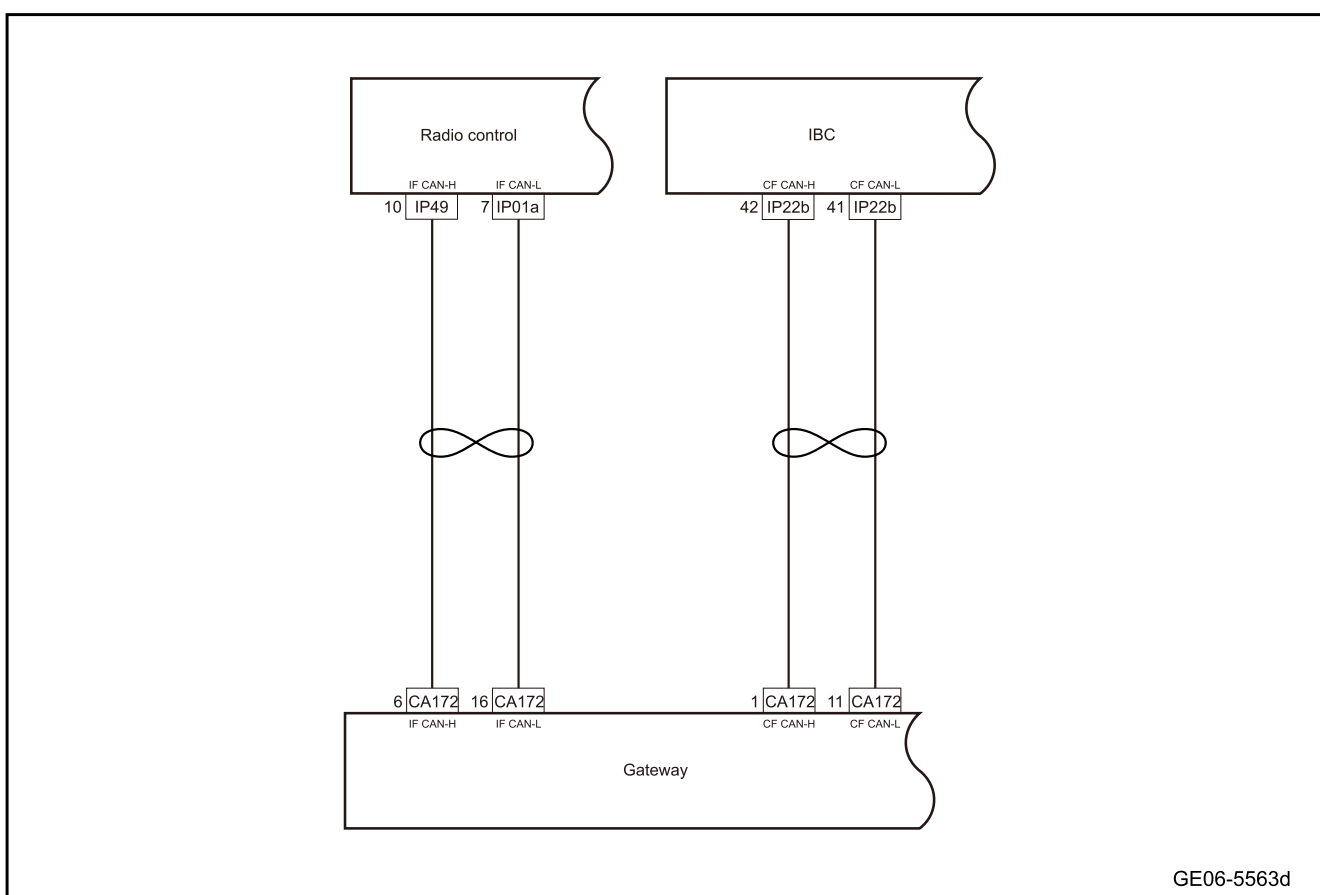
6.7.6.4 Learning of sensor

The automatic learning function can automatically recognize and confirm the TPMS of the vehicle without external intervention.

1. The automatic learning function will compare the vehicle speed signal with the acceleration signal.
2. The automatic learning function gives priority to confirming its own sensors;
3. The speed required for starting the automatic learning function is 25km/h;
4. When the vehicle is parked for more than 19 minutes and the IGN-ON is restarted, the automatic learning function will be activated. When the vehicle speed reaches 25kph, the automatic positioning function and the automatic learning function will be activated together and will end within 10 minutes. After the successful automatic learning function, automatic positioning function will go into effect. ECU automatically judges the installation position of each sensor in the tire and records the position information in ECU.

6.7.6.5 Tire pressure monitoring system (TPMS) indicator light is always on

1. Schematic circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the head unit, gateway and IBC for signs of damage, deformation, stain, loosening, etc.
- B. Check the head unit, gateway and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2 | The active test of tire pressure monitoring warning lamp is carried out with diagnostic instrument.

- A. Connect the diagnostic instrument, and activate the vehicle power supply with the key.
- B. Select “Active test” on function tests.

Active test: tire pressure monitoring warning lamp

Diagnostic instrument display	Test components
Tire Pressure Monitoring Warning	Tire pressure monitoring warning lamp is on or off (ON/OFF)

- C. Check whether the tire pressure monitoring warning lamp is working properly.

Yes System is normal.

No

Step 3 | Check the IF-CAN network integrity.

- A. To check the integrity of the IF CAN, please refer to [IF CAN Integrity Check](#)
- B. Whether CAN integrity is normal.

No Repair CAN bus faults.

Yes

Step 4 | Check the CF-CAN network integrity.

- A. To check the integrity of the CF CAN, please refer to [CF CAN Integrity Check](#)
- B. Whether CAN integrity is normal.

No Repair CAN bus faults.

Yes

Step 5 | Change the head unit.

- A. Check whether the head unit power supply or grounding harness of the head unit is normal. Refer to [Head unit power supply failure](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Reprogram and reset the head unit.
--------	------------------------------------

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 8	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 9	System is normal.
--------	-------------------

6.7.6.6 When wheel tire pressure is significantly insufficient, tire pressure monitoring system (TPMS) indicator light is off

When wheel tire pressure is significantly insufficient, diagnose tire pressure monitoring system (TPMS) indicator light is off

Refer to [Tire pressure monitoring system \(TPMS\) indicator light is always on](#)

6.7.6.7 High Tire Temperature

1. DTC description:

Diagnostic Trouble Code	Description
C160098	Left front tire temperature is high
C160198	Right front tire temperature is high
C160298	Left rear tire temperature is high
C160398	Right rear tire temperature is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C160098	The ECU receives two consecutive bursts of radio frequency information from the sensor, showing that the FL temperature is > 85°C, and then sets the fault diagnosis code	1. Ion on 2. Power supply voltage is 9V - 16V	1. Tyre pressure monitoring sensor 2. IBC
C160198	The ECU receives the RF information of two consecutive pulses from the sensor and displays the RF temperature > 85°C		
C160298	The ECU receives the RF information of two consecutive pulses from the sensor and displays the RL temperature > 85°C		
C160398	The ECU receives the RF information of two consecutive bursts from the sensor and displays the RR temperature > 85°C		

3. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Measure tyre pressure with a tyre pressure gauge.
- B. Confirm whether the pressure value is in line with the standard value.

No

Fill with gas to make the air pressure reach the standard value.

Yes

Step 3 Check the mechanical part of the tyre.

- A. Check the brake caliper for sticking.

Yes

To replace the brake caliper, please refer to [Front Brake Assembly](#)

No

Step 4 Replace the tire pressure monitoring sensor.

- A. To replace the tire pressure monitoring sensor, please refer to [Replacement of Tire Pressure Monitoring Sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 8 System is normal.

6.7.6.8 TPMS power supply fault

1. DTC description:

Diagnostic Trouble Code	Description
C160416	The supply voltage of the front left tire pressure sensor is low
C160516	The supply voltage of the right front tire pressure sensor is low
C160616	The supply voltage of the rear left tire pressure sensor is low
C160716	The supply voltage of the rear right tire pressure sensor is low

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C160416	-	IBC supply voltage is within the range of 9V-16V	1. Circuit 2.TPMS
C160516	-		
C160616	-		
C160716	-		

3. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Remove the TPMS.
- B. Check whether the button cell built in the tester has electricity.

No

Replace the built-in button cell.

Yes

Step 3 Replace the tire pressure monitoring sensor.

- A. To replace the tire pressure monitoring sensor, please refer to [Replacement of Tire Pressure Monitoring Sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 5 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 6 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 7 System is normal.

6.7.6.9 Tire Position Error

1. DTC description:

Diagnostic Trouble Code	Description
C160C8F	Front left tire pressure sensor is lost
C160D8F	Front right tire pressure sensor is lost
C160E8F	Rear left tire pressure sensor is lost
C160F8F	Rear right tire pressure sensor is lost
C161755	Tire ID not programmed

2. Trouble code setting and trouble locations:

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
C160C8F	Left front TPMS lost	1. The power supply voltage is within the range of 9-16V 2. TPMS is set to	1.IBC 2. TPMS sensor
C160D8F	Right front TPMS lost		
C160E8F	Left rear TPMS lost		
C160F8F	Right rear TPMS lost		
C161755	The sensor ID is the default value of 0xFFFFFFFF or 0x00000000	1. Power supply mode is ON 1. The power supply voltage is within the range of 9-16V 2. TPMS is set to	

3. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check whether the tire pressure sensor is missing.

Yes

Install TPMS sensor

No

Step 3 Replace the tire pressure monitoring sensor.

- A. To replace the tire pressure monitoring sensor, please refer to [Replacement of Tire Pressure Monitoring Sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 5 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

6.7.6.10 Low Tire Pressure

1. DTC description:

Diagnostic Trouble Code	Description
C161021	Left front tire pressure is low
C161121	Right front tire pressure is low
C161221	Left rear tire pressure is low
C161321	Right rear tire pressure is low
C161A27	Front left tire pressure leaks quickly.
C161B27	Front right tire pressure leaks quickly.
C161C27	Rear left tire pressure leaks quickly.
C161D27	Rear right tire pressure leaks quickly.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C161021	Left front tire pressure is low	1. Power supply mode is ON 2. Power supply voltage is 9V - 16V	1. Tyre pressure monitoring sensor 2.IBC
C161121	Right front tire pressure is low		
C161221	Left rear tire pressure is low		
C161321	Right rear tire pressure is low		
C161A27	Five consecutive signals greater than 30kPa/min received from the left front tire pressure sensor		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C161B27	Five consecutive signals greater than 30kPa/min received from the right front tire pressure sensor		
C161C27	Five consecutive signals greater than 30kPa/min received from the left rear tire pressure sensor		
C161D27	Five consecutive signals greater than 30kPa/min received from the right rear tire pressure sensor		

3. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Measure tyre pressure with a tyre pressure gauge.
- B. Confirm whether the pressure value is in line with the standard value.

No Fill with gas to make the air pressure reach the standard value.

Yes

Step 3	Check the mechanical part of the tyre.
--------	--

- A. Check the brake caliper for sticking.

Yes

Replace the brake caliper. Refer to [Replacement of Left Brake Caliper Assembly](#)

No

Step 4 Replace the tire pressure monitoring sensor.

- A. To replace the tire pressure monitoring sensor, please refer to [Replacement of Tire Pressure Monitoring Sensor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

6.7.6.11 TPMS ID write-in and self-check (TPMS is integrated within BCM)

1. Diagnosis steps

Step 1 Connect the diagnostic instrument to the OBD diagnostic interface.

Next step

Step 2 The key activates the power supply of the vehicle to ON.

Next step

Step 3 Start the diagnostic instrument and enter brand selection, vehicle identification.

Next step

Step 4 Enter the first level menu.

A. Click "TPMS ID Write and Self-Test" to enter the first prompt interface.

B. Click OK.

Next step

Step 5 Activate the sensor with the device.

Next step

Step 6 Enter the left front wheel ID.

Please enter the left front wheel sensor ID, 8-character numbers and capital letters.

Caution

The entry pops up twice. If the entries are consistent, continue to the next step. If the entries is inconsistent, you will be prompted that the entry is incorrect.

Next step

Step 7 Enter the right front ID.

Please enter the right front wheel sensor ID, 8-character numbers and capital letters.

Caution

The entry pops up twice. If the entries are consistent, continue to the next step. If the entries is inconsistent, you will be prompted that the entry is incorrect.

Next step

Step 8 Enter the right rear wheel ID.

Please enter the right rear wheel sensor ID, 8-character numbers and capital letters.

Caution

The entry pops up twice. If the entries are consistent, continue to the next step. If the entries is inconsistent, you will be prompted that the entry is incorrect.

Next step

Step 9 Enter the left rear wheel ID.

Please enter the left rear wheel sensor ID, 8-character numbers and capital letters.

Caution

The entry pops up twice. If the entries are consistent, continue to the next step. If the entries is inconsistent, you will be prompted that the entry is incorrect.

Next step

Step 10 Click "Next" to start self-check.

Next step

Step 11 Enter the extended mode.

Next step

Step 12 Safety certification.

Next step

Step 13 Write the sensor ID.

Caution

After writing, the delay is 5s (otherwise, the old value before writing is read out).

Next step

Step 14 Read the sensor ID and compare.

- A. If the read ID is inconsistent with the write ID, it will prompt that the write is unsuccessful and exit.
- B. If the read ID is consistent with the write ID, proceed to the next step.

Next step

Step 15	During self-check.
------------	--------------------

- A. When XX is 01, the self-check is successful and continue to the next step.
- B. When XX is 02, it prompts that self-check failed and exits the process.

Next step

Step 16	Click Next to prompt that the TPMS self-check is over.
------------	--

TPMS ID write-in and self-check succeeded.

Next step

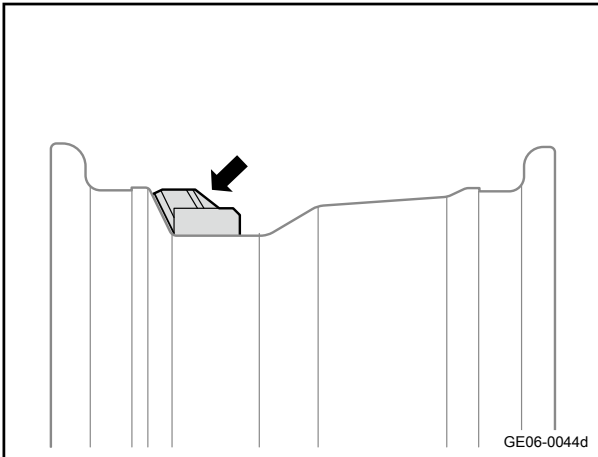
Step 17	Exit TPMS self-check and return to the main interface.
------------	--

6.7.7 Removing and installing

6.7.7.1 Replacement of TPMS

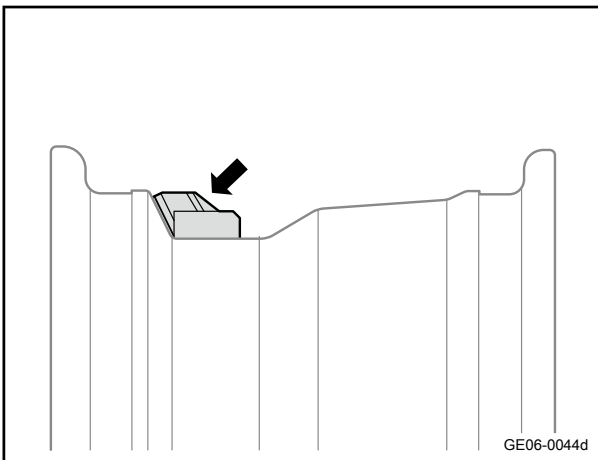
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)
- 3 Use a tire prying machine to remove rubber tires.
- 4 Remove the TPMS.



Installation procedure

- 1 Install the TPMS.
Torque: 4N·m (metric system) 3lb-ft (Imperial system)



- 2 Use a tire prying machine to install rubber tires.
- 3 Install the wheel.
- 4 Lower the vehicle.

Operation of steering system

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7.1 Warnings and precautions

7.1.1 Warnings and precautions

7.1.1.1 Warnings and Precautions

Notices for electric-assisted fault diagnosis

Caution

When two or more faults are generated, the DTC is always displayed in turn from the lowest code.

Since the diagnostic trouble code (DTC) is stored in the backup memory of the control module, after maintenance, be sure to clear the code in the memory. The cleaning method is to ground the diagnostic trouble line and display the trouble code three times.

Refer to the DTC List and write down the displayed DTC to troubleshoot.

7.2 Electric power steering system

7.2.1 Specification

7.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Steering tie rod and the ball joint adjustment nut	M14	70-80
Steering tie rod and ball joint fixing nut	M12	50-60
Steering tie rod assembly fixing nut and bolt assembly	-	130
Fixing nut connecting the electric-assisted steering column and the upper part of the cross beam of instrument panel	-	25
Electric-assisted steering column intermediate shaft universal joint fixing bolt	-	39
Fixing bolt connecting the electric-assisted steering column and the cross beam of instrument panel	-	25

7.2.2 Instructions and operations

7.2.2.1 Operations and Description

Electric steering system is a power steering system that uses a motor to provide power directly, and the power is controlled by an electronic control unit. When the driver turns the steering wheel, the steering control unit generates auxiliary power according to the detected torque and voltage signals, rotation direction and vehicle speed signals. The vehicle speed determines the boosting effect of the motor, so as to ensure that the vehicle is light to drive at low speed and stable and reliable at high speed. The motor does not work when the vehicle is not running.

Caution

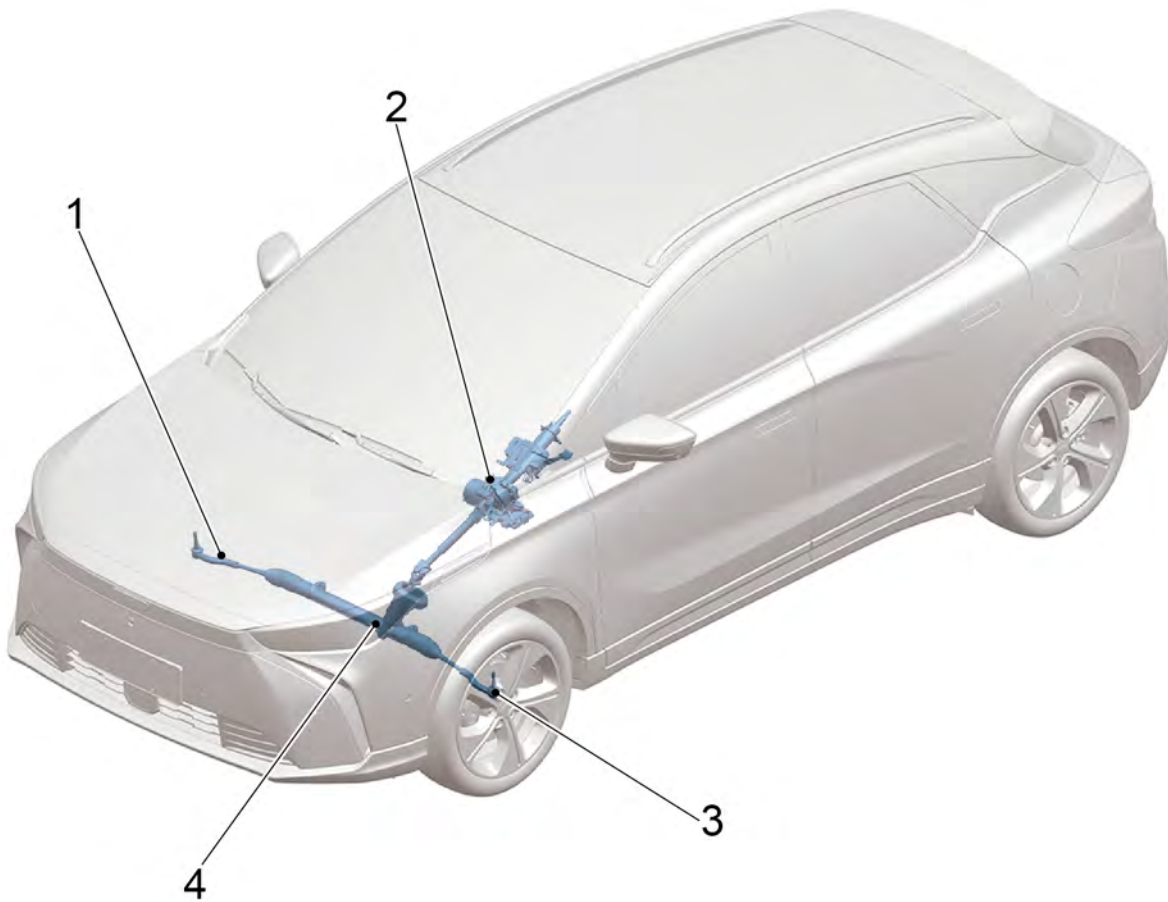
Before the steering column assembly and assembly box c/w track rod of steering gear are disconnected, the wheels should be maintained at the front side direction and the steering column should be located on the locked position. When the above components are disconnected, front wheel tires and wheels should not be moved and the steering wheel should not be rotated. Otherwise, some components may be oriented in mistake during installation and the airbag clock spring will be deviated from the central position, thus causing the damage of the airbag clock spring.

Caution

The steering column has not only a steering function, but also a safety protection function. To ensure the energy absorption function of the steering column, specified screws, bolts and nuts should be used and tightened to the specified torque. When the vehicle suffers from front collision, energy absorption column will collapse and reduce the driver injury odds.

7.2.3 Part position

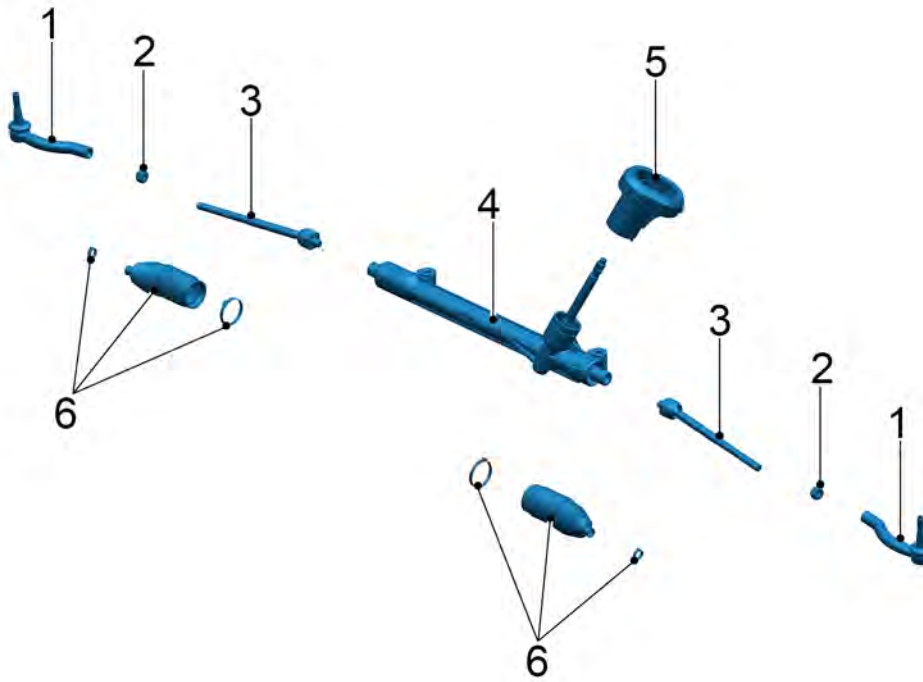
7.2.3.1 Part Position



- | | |
|--|--|
| 1. Front right tie rod c/w ball head assembly | 3. Front left tie rod c/w ball head assembly |
| 2. Electric-assisted steering column c/w intermediate shaft assembly | 4. Mechanical steering gear c/w tie rod assembly |

7.2.4 Breakdown drawing

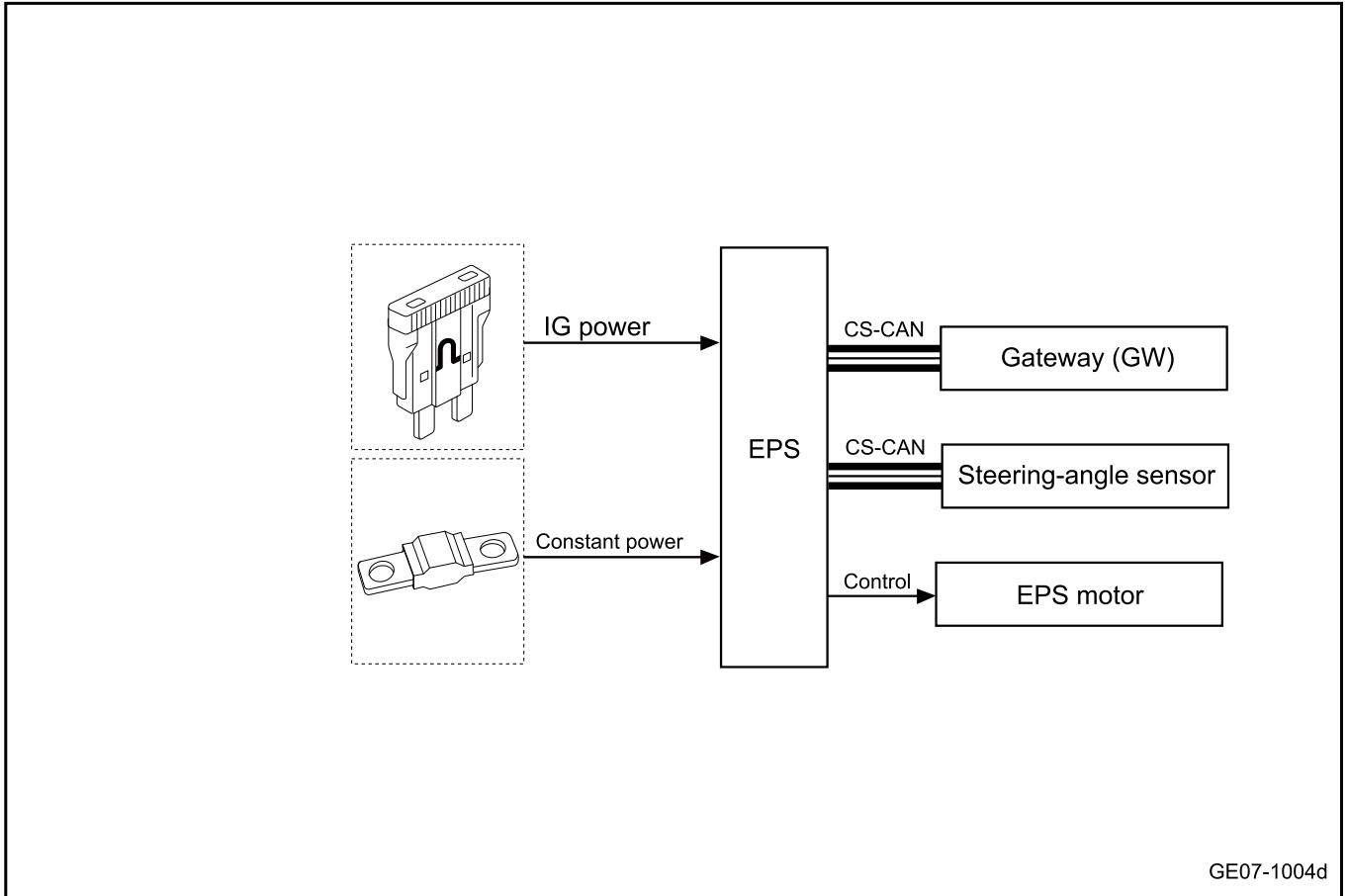
7.2.4.1 Breakdown Drawing



- | | |
|---|-----------------------------|
| 1. Steering gear outer track rod | 4. Mechanical steering gear |
| 2. Tighten nut of the steering gear inside and outside track rods | 5. Steering gear dust cover |
| 3. Steering gear inner track rod | 6. Steering gear bellows |

7.2.5 Electrical block diagram

7.2.5.1 Electrical Schematic Diagram of Electric-assisted Steering System



7.2.6 Diagnostic information and procedures

7.2.6.1 Diagnosis Description

Before diagnosing the fault of the electric-assisted steering system, refer to the description and operation and system working principle.

7.2.6.2 Routine inspection

- Confirm customer's fault before repair.
- Check easily accessible or visible system components for obvious damage or conditions that could lead to failure.
 - Check the tire for eccentric wear.
 - Check the steering gear for signs of collision and damage.
 - Check the suspension component for collision deformation.
 - Check whether the tightening bolts of the movable coupling head of the electric-assisted steering column assembly shaft are loose, whether the fixing bolts on the mounting bracket of the electric-assisted steering column assembly are loose, and confirm whether there are disassembly marks on the torque mark and nut surface.

Repair or replace the component if any faults are found.

- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

7.2.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
No power or small power assistance of the steering wheel	1. Electric-assisted steering column is distorted or stuck	Check the appearance of the steering column and replace the steering column if necessary.
	2. The steering gear is distorted or stuck	Check whether the appearance of the steering gear is damaged, check whether the steering gear enters water and replace it if necessary.
	3. EPS fault	Refer to EPS Power Failure
	4. EPS motor fault	Refer to Replacement of electric-assisted steering column for EPS motor replacement.

7.2.6.4 Data stream list

Serial No.	DID description	Normal value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Steering angle	-780-5573.5	degree
4	ECU temperature	-40-214	°C
5	Torque output ratio	0-100	%
6	Steering rate	0-6553.5	°/s
7	Steering wheel torque	-328-327	Nm
8	Output torque of drive motor	-328-327	Nm
9	Motor position	0-5759.91	degree
10	Motor speed	-32768-32767	rpm

Serial No.	DID description	Normal value range	Unit
11	Soft limit status	00-0F	/
12	System status	0-255	/

7.2.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

7.2.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

7.2.6.7 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Controller voltage is low.	Refer to EPS Power Failure
U300617	Controller voltage is high.	
U007300	CAN bus switch-off fault	Refer to EPS Communication Failure
U012187	Loss of communication with ABS/ESC node	
U015587	Loss of communication at IPK node	
U111487	Communication with VCU is lost	
U120387	Loss of communication at FCS node	
U015987	Loss of communication at PAS node	

Diagnostic Trouble Code	Description	Fault location/elimination method
U041681	Invalid ESC node signal	Refer to Internal Faults of EPS
U042381	Invalid IPK node signal	
U100044	ECU RAM error	
U100246	ECU eeprom error	
U100347	External watchdog error	
C110004	ECU hardware error	
C110154	Abnormal ECU shutdown/ECU software failure	
C110E16	Power invalidation due to too low voltage.	
C110E17	Power invalidation due to too high voltage.	
C110F97	Torque sensor signal channel combination fault	
C110F49	Torque sensor internal fault	
C110F02	Torque sensor index signal fault	
C111061	Overflow in software calculation or calibrated data check error of torque sensor	
C111129	Steering wheel angle signal is invalid	
C111125	Steering wheel angle signal is not true	
C111146	Calibration error of the steering wheel angle	
C111104	Initialization error of the steering wheel angle	
C111500	The hardware executes accidental restart	
C111602	Error in communication with SPI	
C111707	Due to excessive machine noise, there is an excessive power density or a reduction in power caused by excessive friction compensation.	
C111801	Fault for related circuit module of internal power of ECU	
C111941	ECU flashing check error	
C111A42	ECU eeprom layout or check error	
C111B61	ECU calculation fault	
C111C98	Power reduction due to too high temperature of ECU	

Diagnostic Trouble Code	Description	Fault location/elimination method
C111228	Fault of position sensor of the motor rotor	Refer to EPS Motor Fault
C111307	Fault of motor or motor-related drive circuit	
C111403	Motor control goes wrong	

7.2.6.8 Internal fault of EPS

1. DTC description:

DTC	Trouble description
U100044	ECU RAM error
U100246	ECU eeprom error
U100347	External watchdog error
C110004	ECU hardware error
C110154	Abnormal ECU shutdown/ECU software failure
C110E16	Power invalidation due to too low voltage.
C110E17	Power invalidation due to too high voltage.
C110F97	Torque sensor signal channel combination fault
C110F49	Torque sensor internal fault
C110F02	Torque sensor index signal fault
C111061	Overflow in software calculation or calibrated data check error of torque sensor
C111129	Steering wheel angle signal is invalid
C111125	Steering wheel angle signal is not true
C111146	Calibration error of the steering wheel angle
C111104	Initialization error of the steering wheel angle
C111500	The hardware executes accidental restart
C111602	Error in communication with SPI
C111707	Due to excessive machine noise, there is an excessive power density or a reduction in power caused by excessive friction compensation.
C111801	Fault for related circuit module of internal power of ECU
C111941	ECU flashing check error
C111A42	ECU eeprom layout or check error
C111B61	ECU calculation fault
C111C98	Power reduction due to too high temperature of ECU

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100044	RAM inspection invalidation	1.DTCs is enabled 2.IGN ON	EPS
U100246	eeprom configuration or reading or writing error		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100347	Watchdog test is failed		
C110004	Error in ECU self-check, module transfer ADC and integrated circuit ASIC or register		
C110154	Ignition line is switched off abnormally, battery voltage is shut off, etc.		
C110E16	The battery voltage has been lower than 6.5V for 20ms.	1. Ignition lasts for 1 seconds 2. Fault diagnosis is enabled	
C110E17	The battery voltage has been higher than 18V for 20ms.		
C110F97	Torque sensor is damaged. Signals A, B are out of range (0.15 V-4.85 V). Or the difference between the two signals is too large (greater than 100Nm).	1.DTCs is enabled 2.IGN ON	
C110F49	The torque sensor data is not true when the equipment is starting. The torque sensor signal value is less than 3% (0.15V) of the power supply value.		
C110F02	1. Combined with the internal error of torque sensor 2. If not, then too high or too low index signal voltage, or short circuit, or open circuit is detected		
C111061	1. There is overflow in software calculation process 2. The check value stored in torque sensor does not match with the check value in actual calculation		
C111129	Internal angle accuracy test is failed		
C111125	Internal angle is not true and steering angle signal is overrun		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C111146	Calibrated angle is lost or incorrect. Correct value (-7°, 7°). Out of the range is incorrect. (This data is only for reference)		
C111104	Angle initialization value is lost or incorrect		
C111500	1. External RESET signal is reset 2. Watchdog is overflowed; overflow value 65535 (this data is only for reference) 3. Time monitoring is reset 4. Low voltage indication is reset 5. Software is reset 6. Safety guard is reset		
C111602	1. SPI communication is time-out or invalid 2. Synchronization is incorrect		
C111707	Excessive machine noise, excessive power density or friction compensation		
C111801	Internal voltage of monitor is incorrect. The voltage is 3.3V (this data is only for reference)		
C111941	Wrong storage area is detected in flashing test		
C111A42	EEPROM has incorrect layout, or invalid data in Nvshare		
C111B61	Internal calculation fault		
C111C98	PCB or power output circuit temperature is out of range. Temperature is out of range: > 85°C (this data is only for reference)		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPS module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the EPS module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the EPS module.
--------	-------------------------------------

- A. Reprogram and reset the EPS module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace the EPS.
--------	------------------

- A. Check the EPS power supply and grounding harness. Refer to [EPS Power Failure](#)
- B. Replace the EPS Refer to [Replacement of EPS](#)

Next step

Step 5	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6	System is normal.
--------	-------------------

7.2.6.9 EPS power failure

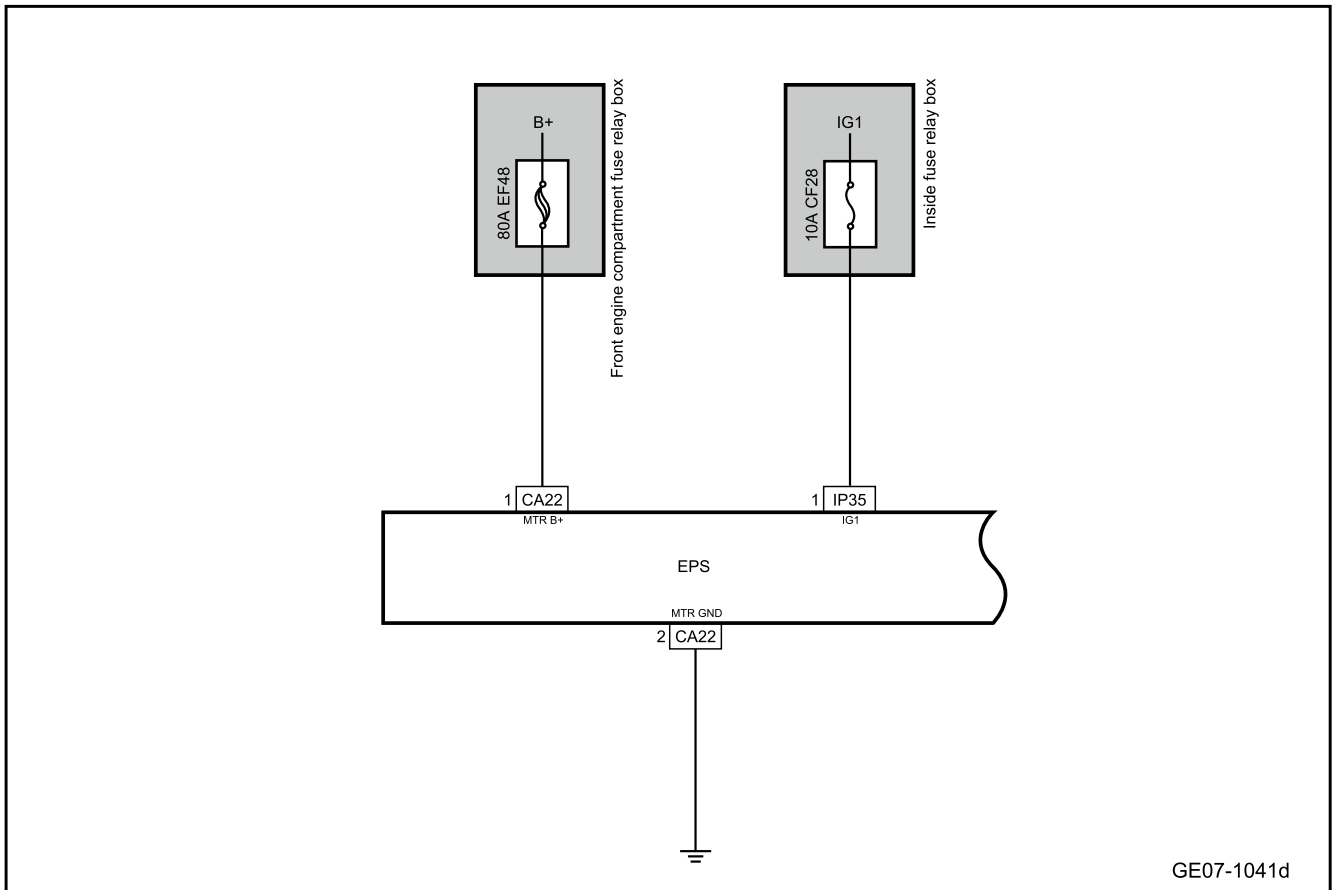
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller voltage is low.
U300617	Controller voltage is high.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage has been lower than 9V for 1s.	1. Ignition lasts for 1 seconds 2. Fault diagnosis is enabled	1. Battery 2. Circuit 3. Fuse 4. EPS
U300617	The battery voltage has been higher than 16V for 1s.		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 | Check whether other modules have power failure codes.

- A. Read the fault code and confirm whether other modules have output power failure code.

No → To Step 4.

Yes

Step 2 | Primary check.

- A. Check the EPS for signs of damage, deformation, stain, loosening, etc.
- B. Check the EPS module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

Yes → Repair or replace the faulty part.

No

Step 3 | Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.

Standard voltage: 9-16V

- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.

- B. Unplug the indoor fuse CF28 and check whether the fuse is blown.

Rated capacity of fuse: 10A

- C. Pull out the fuse EF48 of the front engine compartment. Check whether the fuse EF48 is blown.

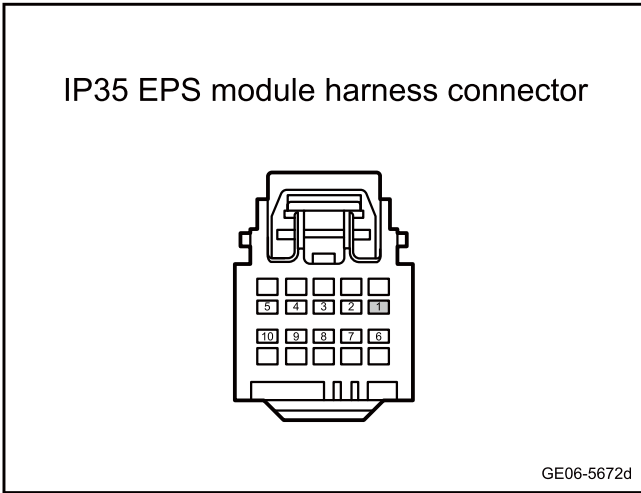
Rated capacity of fuse: 80A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

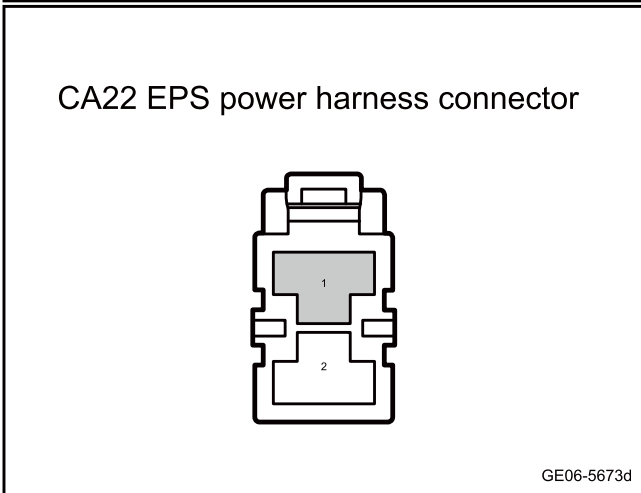
Step 5 | Check whether the EPS module voltage is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the EPS module harness connector IP35.
- C. Disconnect the EPS module harness connector CA22.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP35(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA22(1)		

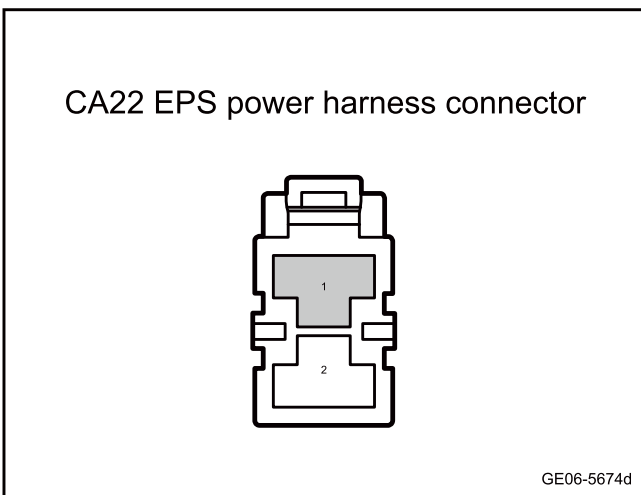
- F. Confirm whether the measured value meets the standard.



No → Repair or replace the harness.

Yes

Step 6 | Check whether the grounding harness of EPS module is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the EPS module harness connector CA22.
- C. Use a multimeter to measure the resistance between terminal 1 of the EPS module harness connector CA22 and body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace the EPS

- A. Replace the EPS Refer to [Replacement of electric-assisted steering column assembly](#)

Next step

Step 8 Reprogram and set the EPS.

- A. To reprogram and reset the EPS, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

7.2.6.10 EPS communication fault

1. DTC description:

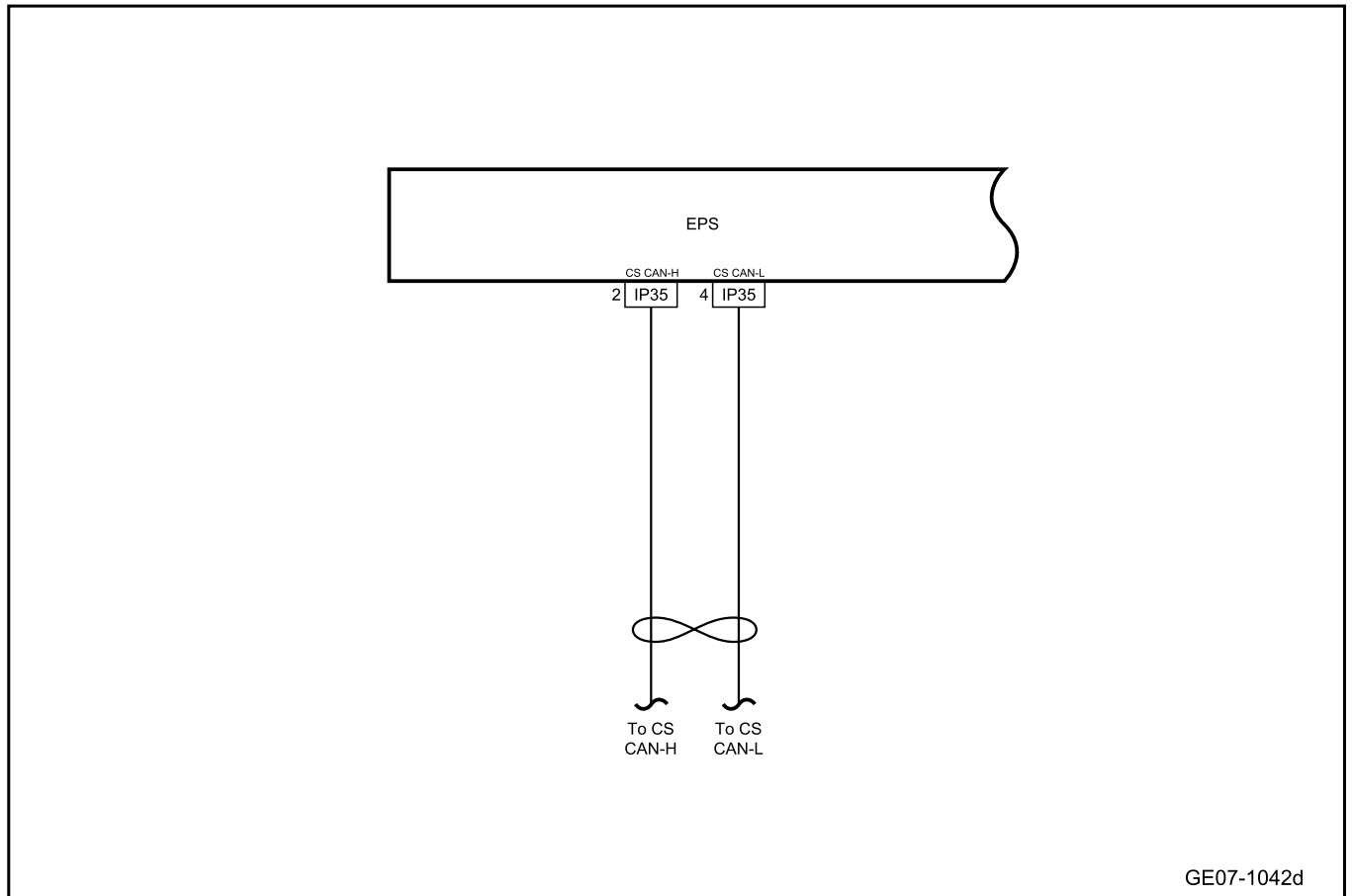
Diagnostic Trouble Code	Description
U007300	CAN bus switch-off fault
U012187	Loss of communication with ABS/ESC node
U015587	Loss of communication at IPK node
U111487	Communication with VCU is lost
U120387	Loss of communication at FCS node
U015987	Loss of communication at PAS node
U041681	Invalid ESC node signal
U042381	Invalid IPK node signal

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus off for 1s	1. CAN bus is waken up 2.IGN ON 3. The voltage is within 9V-16V 4.DTCs is enabled	1. Circuit 2. EPS 3. Diagnostic interface
U012187	Message ESC_ status (0 x 125) not received for 250 ms (range:225 ms-275 ms)		
U015587	Message IPK_STS(0 x 26D) is not received for 500 ms (range:450 ms-550 ms)		
U111487	Message VCU_ModeControl (0 x 165) is not received for 250 ms (range:225 ms-275 ms)		
U120387	Message "Future Operations System" alarm status (0 x1B0) is not received for 250 ms (range:225 ms-275 ms)		
U015987	Message PAS_APA_Status (0 x 191) not received for 250 ms (range:225 ms-275 ms)	1. Ignition lasts for 1 seconds 2. The power supply voltage is 9V-16V	
U041681	ESCRWheelSpeedInvalid is equal to invalid(0 x 1) or ESC_front wheel speed kPh_AliveCounter value is equal to the value in the previous cycle or ESC_rear wheel speed skph_AliveCounter value is equal to the value in the previous cycle or ESC_front wheel speed skph_checksum value is incorrect or ESC_flwheelspeedkph value is equal to invalid (0 x1FFF) or ESC_frWheelSpeedkThis value is invalid (0 x1FF) or ESCrWheelSpeedkThis value is invalid (0 x1FF)	3. No bus off 4. DTC is enabled	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042381	The signal IPK_IPKt is the absolute value, which is equal to invalid within 500 milliseconds. IPK_Ipkt air tachometer is invalid for more than 5000 ms or the value of signal IPK_Fail is equal to the error (0 x 1) for a duration of 500 ms. Signal IPK_Fail error exceeds 500 ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the EPS module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the EPS module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check the integrity of the CS-CAN bus.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm that the CS-CAN network is functioning properly.

No Check or repair CS-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4 Replace the EPS

- A. Check the EPS power supply and grounding harness. Refer to [EPS Power Failure](#)
- B. To replace the EPS, please refer to [Replacement of EPS](#)

Next step

Step 5 Reprogram and set the EPS.

- A. Reprogram and set the EPS. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

7.2.6.11 EPS motor fault

1. DTC description:

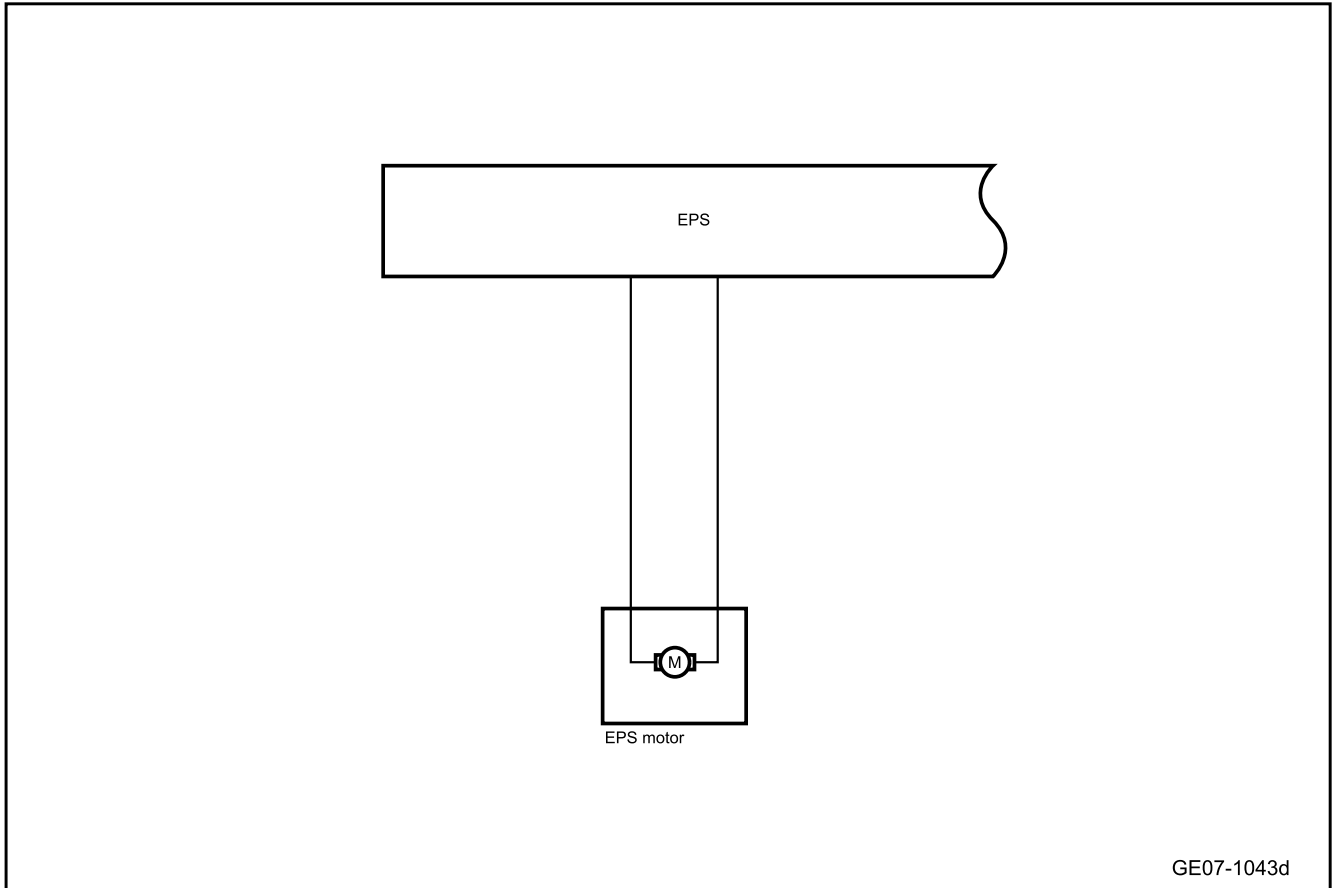
Diagnostic Trouble Code	Description
C111228	Fault of position sensor of the motor rotor
C111307	Fault of motor or motor-related drive circuit
C111403	Motor control goes wrong

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C111228	1. Rotor position sensor signal goes wrong or exceeds the range 2. Calculated rotor position value is untruthful. Normal range value: 0.15V-4.85V (data for reference only)	1.DTCs is enabled 2.IGN ON	1. Circuit 2. EPS motor 3.EPS
C111307	1. Power output circuit or FET drive circuit breaks down 2.Motor power line is interrupted 3. Motor phase current deviation exceeds the range. The value of motor phase current limit is 200A (data for reference only)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C111403	PWM signal goes wrong		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the EPS and EPS motor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the EPS and EPS motor harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check whether the harness between EPS motor and EPS is open circuit.
--------	--

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the EPS harness connector.
- C. Disconnect the harness connector of the EPS motor.
- D. Use a multimeter to measure the resistance between the EPS harness connector terminal and the EPS motor harness connector terminal.

Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Check whether the harness between EPS motor and EPS is short-circuited to power supply.
--------	---

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the EPS harness connector.
- C. Disconnect the harness connector of the EPS motor.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between the EPS harness connector terminal and the body grounding.

Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Check whether the harness between EPS motor and EPS is short-circuited to the ground.
--------	---

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the EPS harness connector.
- C. Disconnect the harness connector of the EPS motor.
- D. Use a multimeter to measure the resistance between the EPS harness connector terminal and the body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the EPS motor.
--------	------------------------

- A. Replace the EPS motor. Refer to [Replacement of EPS Motor](#)
- B. Confirm whether the EPS motor is in normal operation.

Yes

System is normal.

No

Step 7	Replace the EPS
--------	-----------------

- A. Check the EPS power supply and grounding harness. Refer to [EPS Power Failure](#)
- B. Replace the EPS Refer to [Replacement of EPS](#)

Next step

Step 8	Reprogram and set the EPS.
--------	----------------------------

- A. Reprogram and set the EPS. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

7.2.6.12 EPS angle calibration

1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next step

Step 2	Enter the first level menu "diagnostic" to scan the complete vehicle.
--------	---

Next step

Step 3	Enter the secondary menu "special routine control".
--------	---

Next step

Step 4	Enter the three-level menu "EPS angle calibration".
--------	---

Next step

Step 5	Start diagnosis.
--------	------------------

Next step

Step 6	Enter the extended mode.
--------	--------------------------

Next step

Step 7	Safety certification.
--------	-----------------------

Next step

Step 8	Send the command to start angle calibration.
--------	--

Angle calibration starts.

Caution

Turn the steering wheel at least $\pm 25^\circ$ at a speed of less than $200^\circ/\text{s}$, and then return the steering wheel to the upright position.

Next step

Step 9	Operate the steering wheel.
--------	-----------------------------

Caution

The reserved time for turning the steering wheel is 10 seconds.

Next step

Step 10	Check the angle calibration results.
------------	--------------------------------------

- A. XX is 03, and the diagnostic instrument displays "Angle calibration is being executed"
- B. XX is 04, and the diagnostic instrument displays "Angle calibration is completed and successful".
- C. XX is 05, and the diagnostic instrument displays "angle calibration is completed but unsuccessful".

Next step

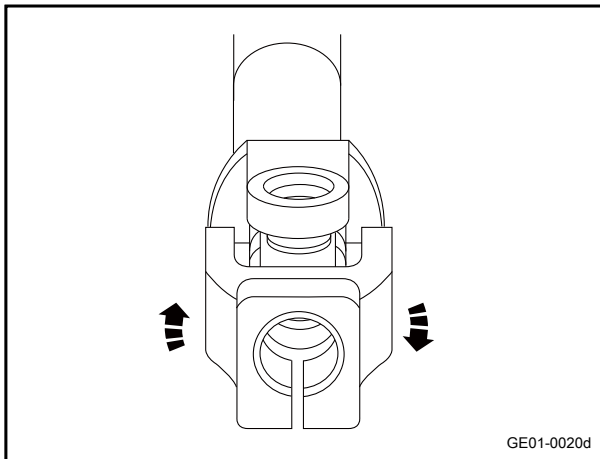
Step 11	Exit the extended mode.
---------	-------------------------

7.2.7 Removing and installing

7.2.7.1 Intermediate Shaft Universal Joints Inspection

Inspection procedure

- 1 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 2 Fix one end of the intermediate shaft universal joint and twist the other end of the upper and lower intermediate shaft universal joints clockwise and counterclockwise.
- 3 Check where there is any movement, and if so, replace the intermediate shaft.



- 4 Install left lower shield of the dashboard.

7.2.7.2 Steering force check

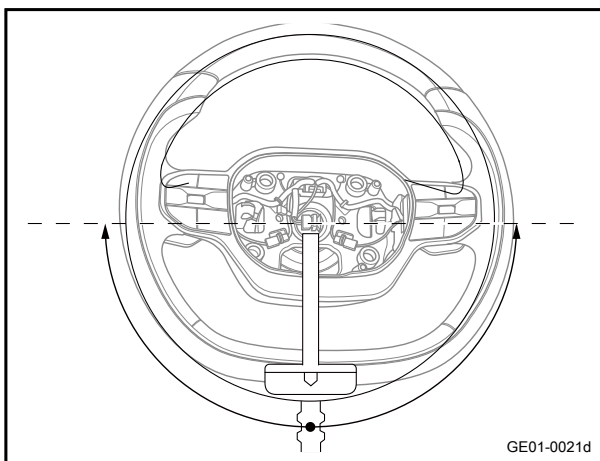
Inspection procedure

- 1 Stop the vehicle on a level road with the wheels straight ahead.
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Remove the driver's airbag. Refer to [Replacement of Driver's Airbag](#)
- 4 Connect the negative cable of battery.
- 5 Use a torque wrench to check whether the torque on the steering wheel fixing nut is correct.
- 6 Set the power supply to ON.
- 7 Use a torque wrench to turn the steering wheel 90 degrees to the left and right respectively, and check the steering force torque when turning left and right. Steering force (reference): 5.5 N·m (metric system) 4.5 lb-ft (Imperial system)

Caution

Tire type, tire pressure and contact surface must be considered before inspection.

- 8 Disconnect the negative cable of battery.



- 9 Re-check steering wheel retaining nut torque.
Torque: 45 N·m (metric system) 33.2 lb-ft (Imperial system)
- 10 Install the driver's airbag.
- 11 Connect the negative cable of battery.

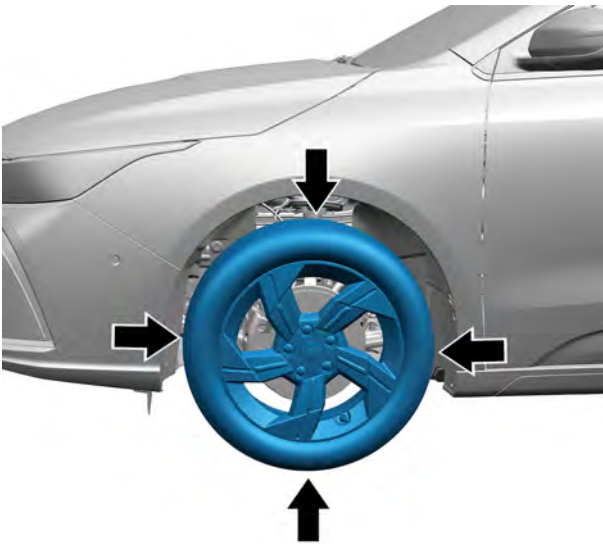
7.2.7.3 Inspection of Steering Tie Rod Ball Joint

Inspection procedure

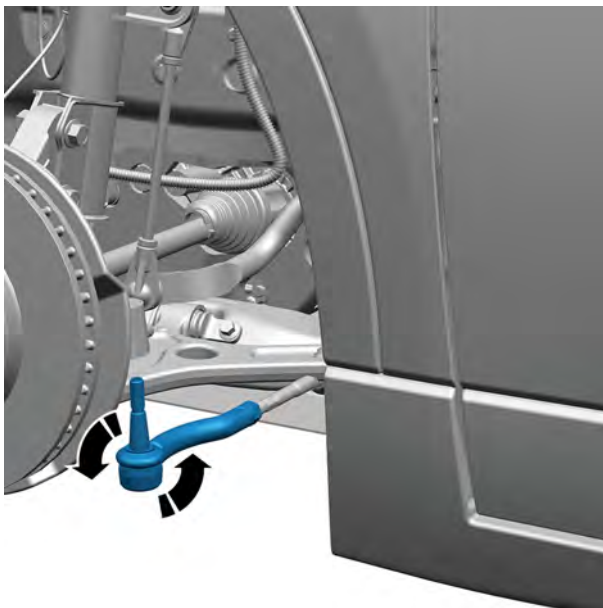
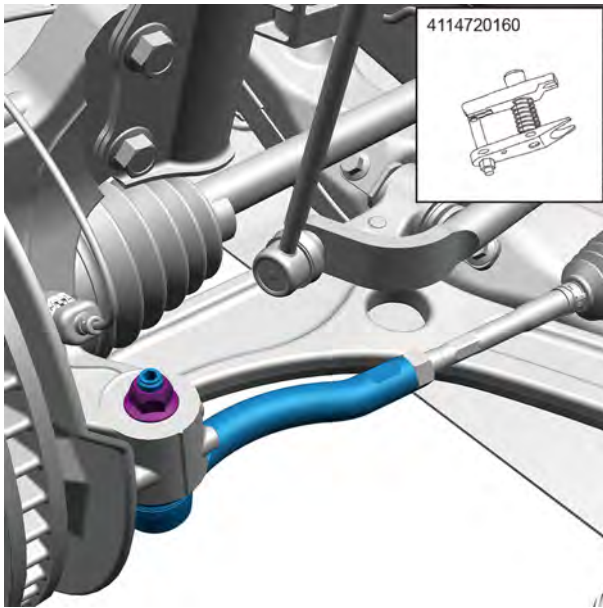
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle Caution](#)

Make sure the steering wheel is unlocked before lifting the vehicle.

- 2 Hold the tire with hand, shake the tire up and down and left and right back and forth frequently, and feel whether there is a gap between the vehicle ball joints.



- 3 Shake the steering gear tie rod ball joint frequently with hands to feel whether the lower ball joint is loose.



- 4 Remove the wheel assembly. Refer to [Wheel Replacement](#)
- 5 Remove 1 fixing nut of the steering gear left outer pull rod and the front steering knuckle
- 6 Disconnect the steering gear tie rod ball joint from the steering knuckle with a special tool.
Special tool: 4114720160

- 7 Use your hand to rotate frequently or press the steering gear tie rod ball joint to feel whether it is loose.

- 8 Combined with the above operations, it is judged whether the steering tie rod ball joint is loose.

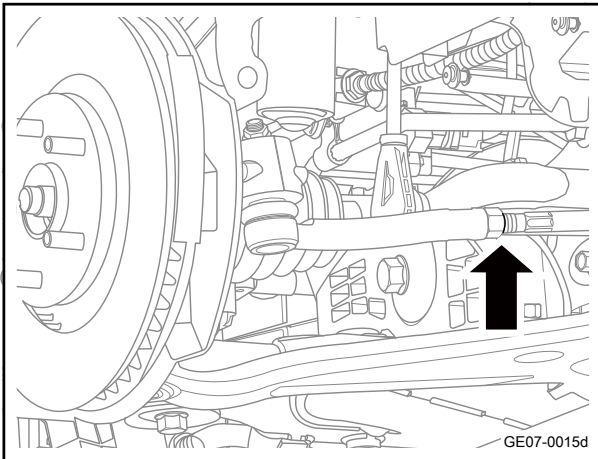
- 9 Install the steering gear tie rod. Refer to [Replacement of Steering Tie Rod and Ball Joint](#)

- 11 Lower the vehicle.

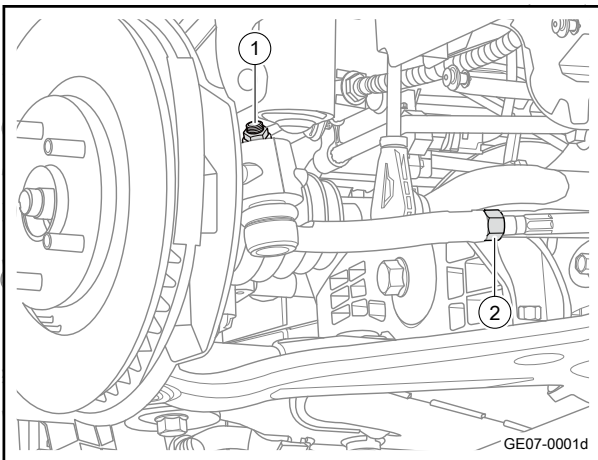
7.2.7.4 Replacement of steering tie rod and ball joint

Removal procedure

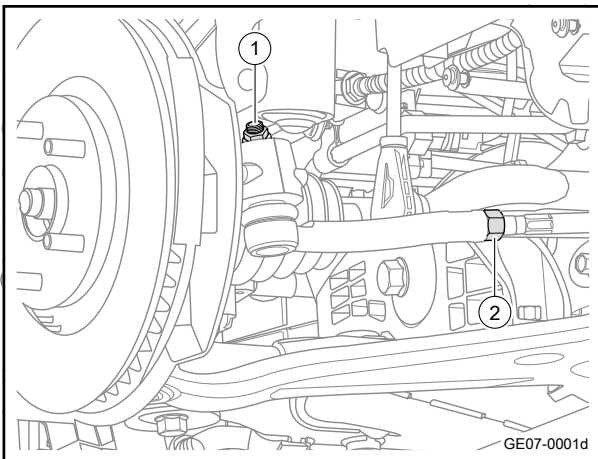
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove wheels. Refer to [Wheel Replacement](#)



- 3 Mark the thread position on the steering tie rod so that the nut can be reinstalled.



- 4 Remove the steering tie rod and ball joint fixing nut 1 to disconnect the steering tie rod and ball joint from steering knuckle.
- 5 Remove the steering tie rod adjusting nut 2 and unscrew the tie rod and ball joint.



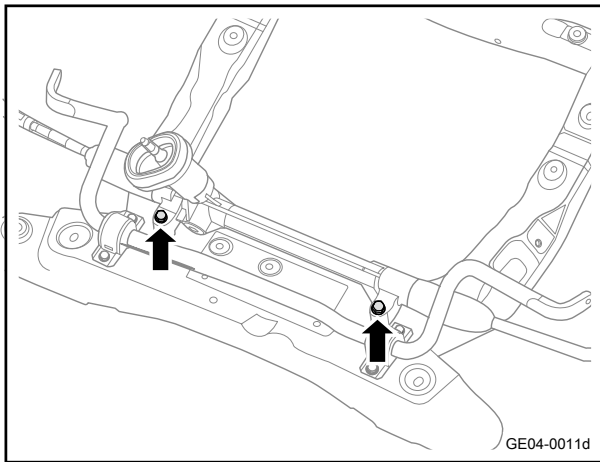
Installation procedure

- 1 Move the steering gear tie rod and ball joint to the installation positions.
- 2 Install the tie rod and ball joint adjusting nut 2 on the tie rod and adjust them to the marked position.
Torque: 55 N·m (metric system) 40.6lb-ft (Imperial system)
- 3 Install the fixing nut 1 of the steering tie rod and ball joint.
Torque: 55 N·m (metric system) 40.6lb-ft (Imperial system)

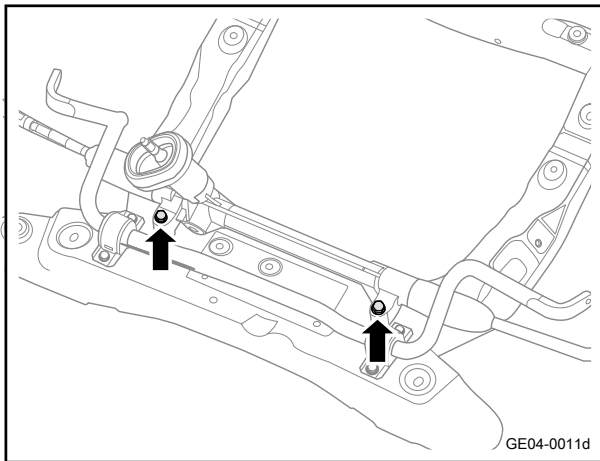
- 4 Install the wheel.
- 5 Lower the vehicle.
- 6 Regulate the toe-in of front wheel Refer to [Adjustment of Front Wheel Toe-in](#)

7.2.7.5 Replacement of Steering Gear c/w Tie Rod Assembly

Removal procedure



- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the front subframe assembly. Refer to [Replacement of Front Subframe Assembly](#)
- 3 Remove the 2 fixing bolt and nut assemblies of the steering gear c/w tie rod assembly.
- 4 Take off the steering gear c/w tie rod assembly.



Installation procedure

- 1 Move the steering gear c/w tie rod assembly to the installation positions.
- 2 Install the 2 fixing nut and nut assemblies of the steering gear c/w tie rod assembly.
Torque: 130N·m (metric system) 96.0lb·ft (Imperial system)
- 3 Install the front subframe assembly.
- 4 Lower the vehicle.
- 5 Vehicle for road test.

7.2.7.6 Replacement of electric-assisted steering column assembly

Removal procedure

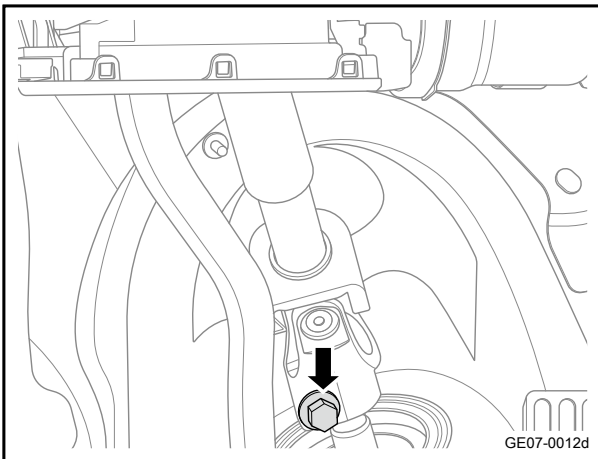
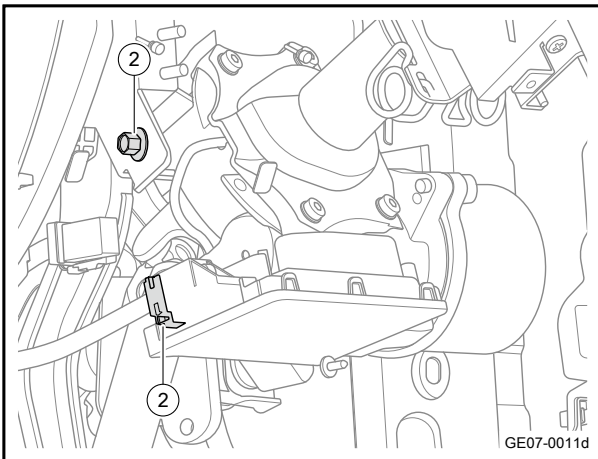
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

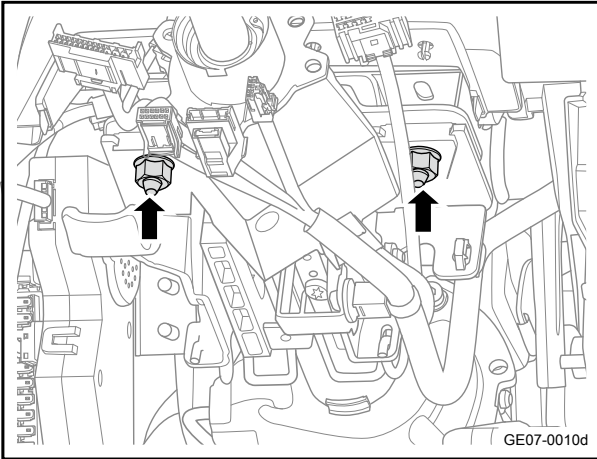
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the lower cowl of the steering column. Refer to [Replacement of Steering Column Lower Cowl Assembly](#)

- 3 Remove the clock spring. Refer to [Replacement of Clock Spring](#)
- 4 Remove the combination switch. Refer to [Replacement of Combination Switch](#)
- 5 Remove the left trim panel assembly at the left side of the dashboard. Refer to [Replacement of Left Trim Panel Assembly of Dashboard](#)
- 6 Remove the left lower shield of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 7 Disconnect the harness connector 1 of the electric-assisted steering column.
- 8 Remove the fixing bolt 2 connecting the electric-assisted steering column and the cross beam of instrument panel.

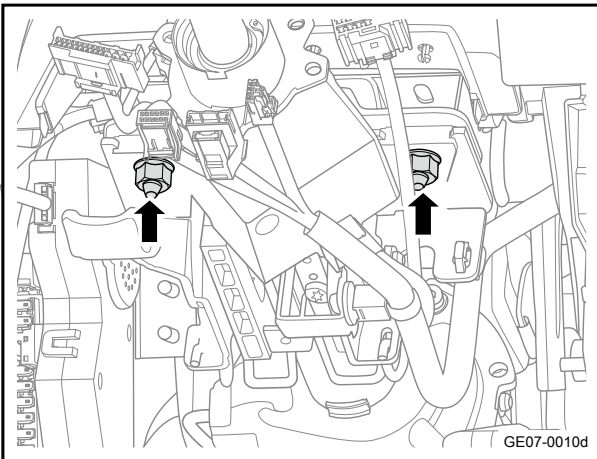


- 9 Remove electric-assisted steering column intermediate shaft universal joint fixing bolt

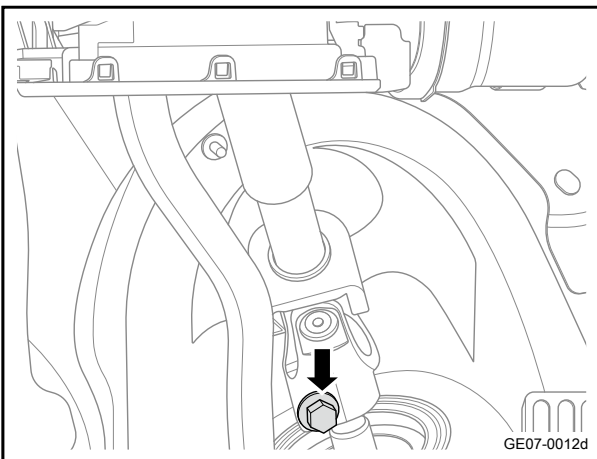


- 10 Remove the 2 fixing nuts connecting the electric-assisted steering column and the upper part of cross beam of instrument panel.
- 11 Remove electric-assisted steering column assembly

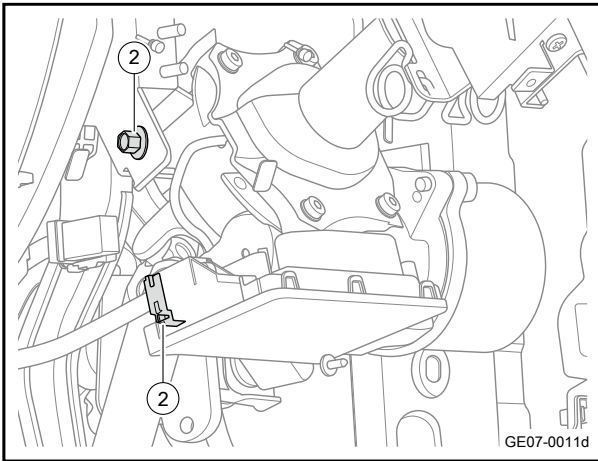
Installation procedure



- 1 Move the electric-assisted steering column c/w intermediate shaft assembly to the installation position.
- 2 Install 2 fixing nuts connecting the electric-assisted steering column and the upper part of the cross beam of instrument panel
Torque: 25N·m (metric system) 18.4lb-ft (Imperial system)



- 3 Install electric-assisted steering column intermediate shaft universal joint fixing bolt
Torque: 39N·m (metric system) 28.8lb-ft (Imperial system)



- 4 Install the fixing bolt 2 connecting the electric-assisted steering column and the cross beam of instrument panel.
Torque: 25N·m (metric system) 18.4lb-ft (Imperial system)
- 5 Connect the electric-assisted steering column harness connector 1.
- 6 Install left lower shield of the dashboard.
- 7 Install the left trim panel assembly at the left side of the dashboard.
- 8 Install the combination switch.
- 9 Install the clock spring.
- 10 Install the lower cowl of the steering column.
- 11 Connect the negative cable of battery.

7.3 Steering wheel and the steering column

7.3.1 Specification

7.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Install fixing screw connecting the lower cover of steering column and the electric-assisted steering column c/w intermediate shaft assembly.	ST4.2×16	22-28
Fixing screws for connecting the lower cowl of the steering column and the main body of the combination switch	ST4.2×16	1.3-1.7
Fixing nuts connecting the steering wheel assembly with the electric-assisted steering column c/w intermediate shaft assembly	M12	40-50

7.3.2 Instructions and operations

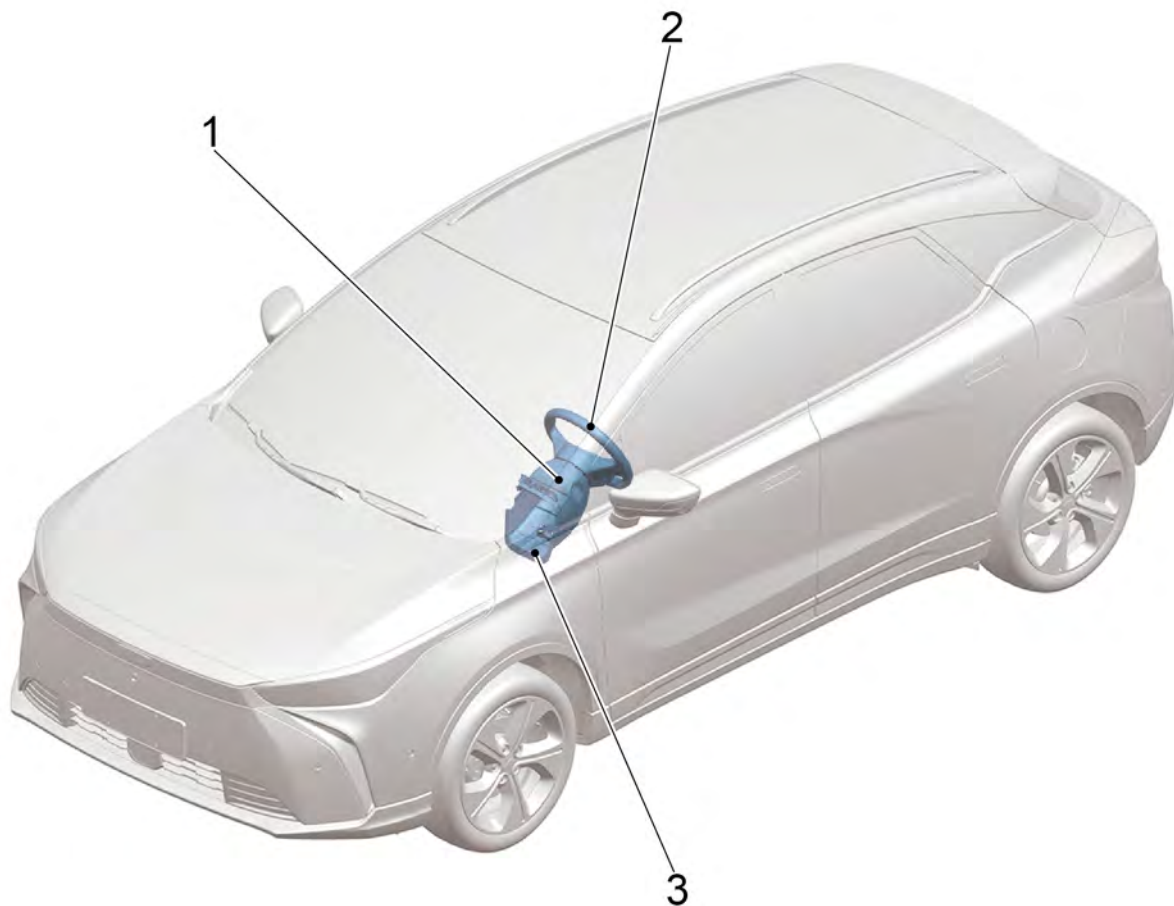
7.3.2.1 Description and Operations

The steering wheel is an important component of the vehicle. By controlling the rotation direction and angle, the driver can control the driving direction of the vehicle through the steering wheel. In most parts of China, the steering wheel is generally in the left front seat. Steering wheels of some vehicles are installed in the FR seat in places such as Hong Kong and Macao.

The vehicle is equipped with a multi-function steering wheel, which is installed on the steering column and provides the installation position for other parts, such as horn switch, driver airbag, cruise control switch, multimedia control switch, etc. The steering wheel, steering column, steering gear, combination switch and other parts form a complete steering system.

7.3.3 Part position

7.3.3.1 Part Position



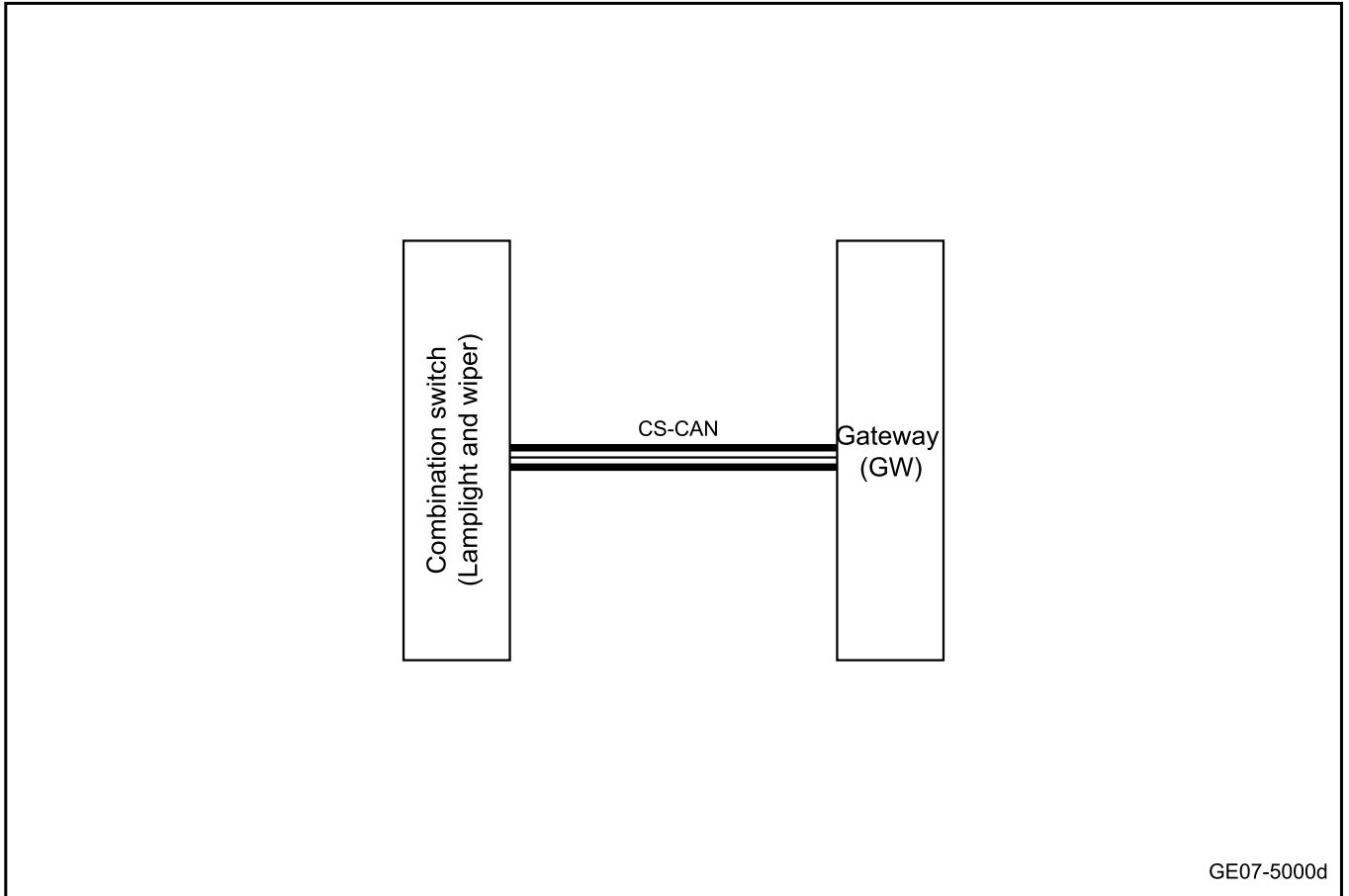
1. Steering column upper cowl

2. Steering wheel assembly

3. Steering column lower cowl

7.3.4 Electrical block diagram

7.3.4.1 Electrical Schematic Diagram of Steering Wheel and Steering Column



7.3.5 Diagnostic information and procedures

7.3.5.1 Diagnosis Description

Before diagnosing the steering wheel fault, refer to the Description and operation and the System working principle.

7.3.5.2 Routine inspection

- Confirm customer's fault before repair.
 - Check easily accessible or visible steering column system components for obvious damage or conditions that could lead to failure.

Repair or replace the component if any faults are found.

- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

7.3.5.3 Fault symptom table

Fault Symptom	Suspected fault location	Maintenance plan
Lighting system all fails	1. combination switch (Light) failure	Refer to Combination Switch Power Supply Failure
	2. Combination switch (lamplight) CAN communication fault	Refer to Combination Switch Communication Failure
All wiper system fails	1. combination switch(wiper) failure	Refer to Combination Switch Power Supply Failure
	2. CAN communication fault of combination switch (wiper)	Refer to Combination Switch Communication Failure

7.3.5.4 Data stream list

Combination switch(light and wiper)

Serial No.	DID description	Normal value range	Unit
1	ECU system continuous working time	00-0F	h
2	TCM indicates the state of the rear washer	Close status/injection state	/
3	TCM indicates front washer status	Close status/injection state	/
4	TCM indicates Low beam lamp switch on/off status	Close status/Open status	/
5	TCM indicates high beam lamp switch on/off status	Close status/Open status	/
6	TCM prompts front wiper function mode	OFF/low-speed mode/high-speed mode/front defogging mode/automatic mode/reserved status/invalid status	/
7	The TCM displays the overtaking lamp switch status	Close status/Open status	/
8	TCM indicates turn signal lamp switch on/off status	Default status/left turn status/right turn status/invalid status	/

Serial No.	DID description	Normal value range	Unit
9	Indicate the rear wiper mode	OFF status/uniform status/ intermittent status/invalid status	/
10	Display the rear fog lamp on/ off status	Close status/Open status	/
11	Display the position lamp on/ off status	Close status/Open status	/
12	Display automatic lamp on/off status	Close status/Open status	/
13	Wakeup state	Unwaken/waken up	/
14	Wakeup reason	Position lamp wakeup/ MistWiping wakeup/NM wakeup	/
15	Network message indication status	Repeat status/normal operation state	/

Combination switch (column shift)

Serial No.	DID description	Normal value range	Unit
1	Number of successful flashes	0-255	/
2	Number of flash attempts	0-255	/
3	ECU system continuous working time	00-0F	hour
4	EGSM sensor position	0020-0180	/
5	ECU supply voltage	0-25.4	V

7.3.5.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

7.3.5.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

7.3.5.7 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	ECU power supply/system voltage is too low	Refer to Combination Switch Power Supply Failure
U300617	ECU power supply/system voltage is too high	
U007300	PT CAN bus off	Refer to Combination Switch Communication Failure
U012287	ESP message is not received	
U111487	VCU message is not received	
U120200	CAN error passive	
U300044	The data memory fault of the control module	Refer to Internal fault of Combination Switch
U300045	The program memory fault of the control module	
U300046	Control module calibration/parameter fault	
B190314	Fog lamp switch is short circuited to ground or has open circuit	
B190414	Wiper switch is short circuited to ground or has open circuit	
U100044	The data memory fault of the control module	
U100145	The program memory fault of the control module	
U100246	Control module calibration/parameter fault	

7.3.5.8 Power supply fault of combination switch

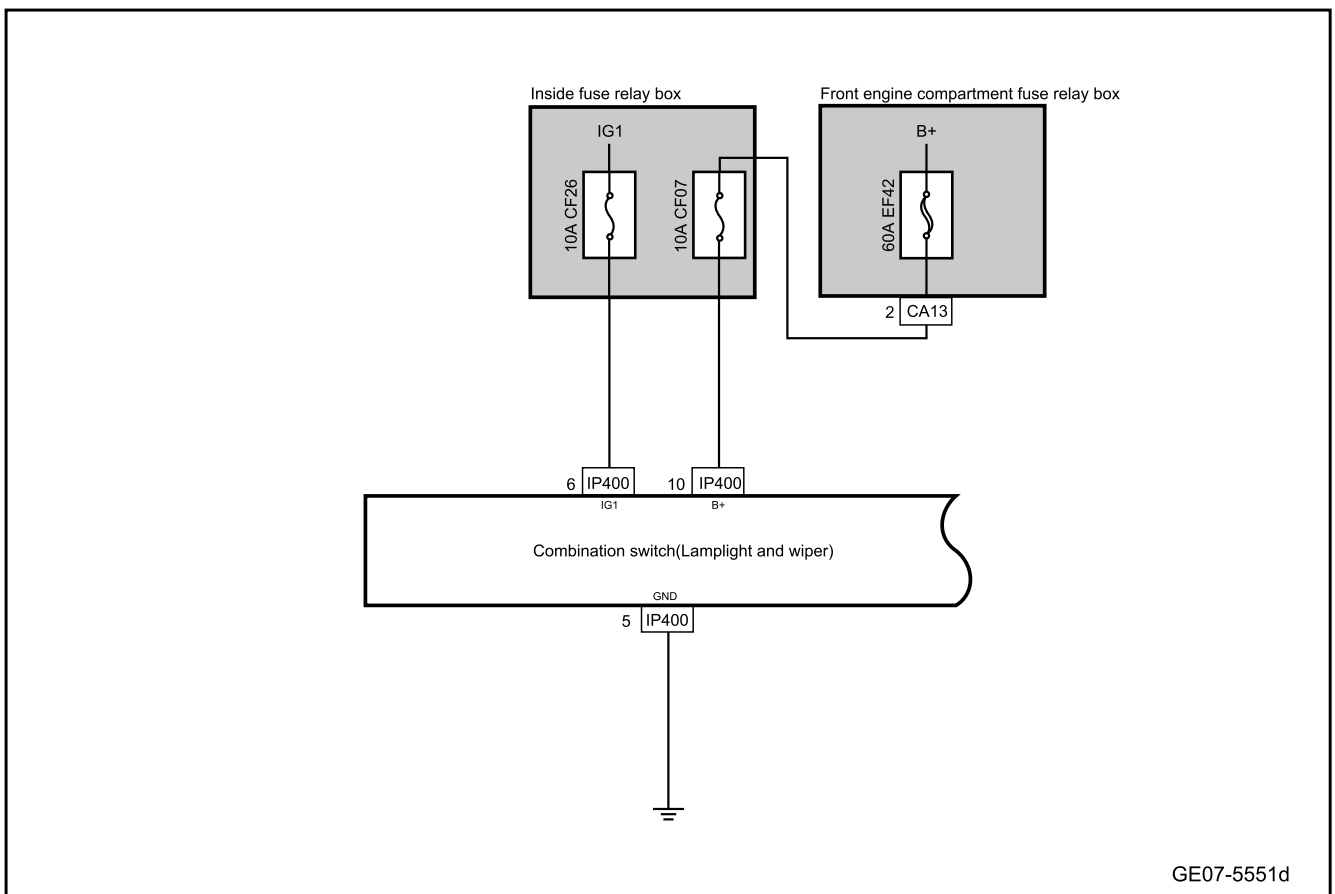
1. DTC description:

Diagnostic Trouble Code	Description
U300616	ECU power supply/system voltage is too low
U300617	ECU power supply/system voltage is too high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The voltage is lower than 9V.	Tester ECU communication is normal	1. Battery 2. Circuit 3. Fuse 4. Combination switch
U300617	The voltage is higher than 16V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

- A. Check combination switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the combination switch fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out fuse CF07 of the interior fuse relay box. Check whether fuse CF07 is blown.

Rated capacity of fuse: 10A

- C. Pull out fuse CF26 of the interior fuse relay box. Check whether fuse CF26 is blown.

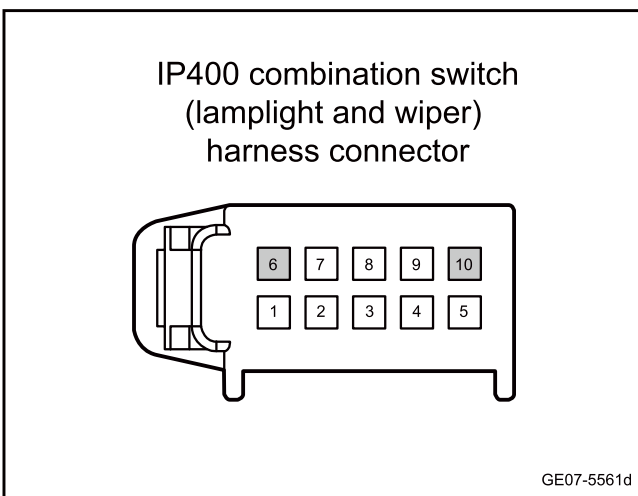
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check whether the combination switch power supply circuit is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the combination switch harness connector IP400.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP400(6)	Vehicle body is grounded.	Standard voltage: 11-14V

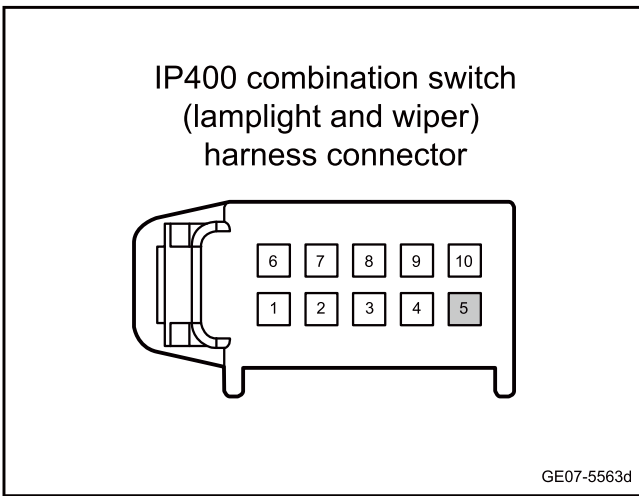
Measure terminal 1	Measure terminal 2	Standard value
IP400(10)	Vehicle body is grounded.	

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the combination switch grounding circuit is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the combination switch harness connector IP400.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP400(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the combination switch

- A. To replace the combination switch, please refer to [Replacement of Combination Switch](#)

Yes System is normal.

No

Step 7 Reprogram and reset the combination switch.

- A. Reprogram and reset the combination switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

7.3.5.9 Communication fault of combination switch

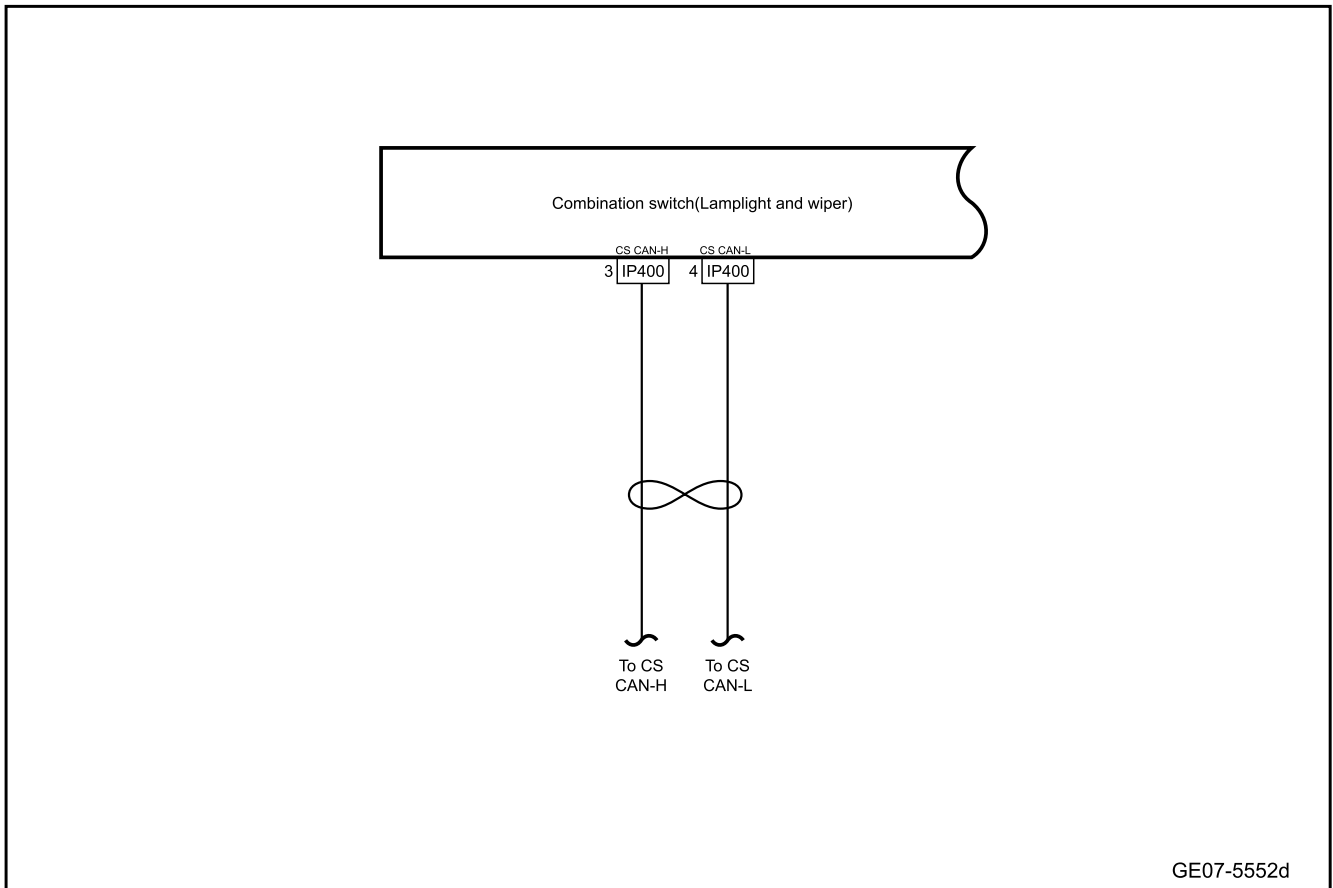
1. DTC description:

Diagnostic Trouble Code	Description
U007300	PT CAN bus off
U012287	ESP message is not received
U111487	VCU message is not received
U120200	CAN error passive

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus fault	1. Tester ECU communication is normal 2. Normal working voltage 3. Communication is normal 4. No overvoltage or undervoltage	1. Circuit 2. Combination switch 3. Diagnostic interface
U012287	No received from ESP (0 x 125)		
U111487	No received from VCU (0 x 165)		
U120200	CAN bus fault		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

- A. Check the combination switch for signs of damage, deformation, stain, loosening, etc.
- B. Check combination switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CS-CAN network integrity.

- A. To check the instrument communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the combination switch

- A. Check the instrument cluster power supply and grounding harness, please refer to [Power Supply Failure of the Combination Switch](#)
- B. To replace the combination switch, please refer to [Replacement of Combination Switch](#)

Next step

Step 5 Reprogram and reset the combination switch.

- A. Reprogram and reset the combination switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

7.3.5.10 Internal fault of combination switch

1. DTC description:

DTC	Trouble description
U300044	The data memory fault of the control module
U300045	The program memory fault of the control module
U300046	Control module calibration/parameter fault
B190314	Fog lamp switch is short circuited to ground or has open circuit
B190414	Wind wiper switch is short circuited to ground or has open circuit
U100044	The data memory fault of the control module
U100145	The program memory fault of the control module
U100246	Control module calibration/parameter fault

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300044	RAM hardware fault	1.ECU communication is normal 2. Working voltage: normal 3. No overvoltage or undervoltage	Combination switch
U300045	Flash hardware failure		
U300046	EEP hardware fault		
B190314	Continuous signal reception failure		
B190414	Continuous signal reception failure		
U100044	RAM hardware fault		
U100145	Flash hardware failure		
U100246	EEP hardware fault		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

- A. Check combination switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the combination switch.

- A. Reprogram and reset the combination switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the combination switch

- A. Check whether the combination switch power and grounding wire are normal. Refer to [Combination Switch Power Supply Failure](#)
- B. Replace the combination switch Refer to [Replacement of Combination Switch](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Reprogram and reset the combination switch.

- A. Reprogram and reset the combination switch. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

7.3.6 Removing and installing

7.3.6.1 Steering wheel free clearance check

Inspection procedure

- 1 Check that the tire pressure meets the specification requirements of the complete vehicle.
- 2 Place the vehicle on a level ground. Make two front wheels in the straight line driving position.
- 3 Install the steering angle+torque tester on the steering wheel.
- 4 When the power mode is in the OFF position, turn the steering wheel left and right to relieve stress, and finally restore the straight driving position of the two front wheels.
- 5 Turn the steering wheel to left and right respectively, stop when the torque reaches $1\text{N}\cdot\text{m}$ through the torque detector, and record the steering angle of the steering wheel.



7.3.6.2 Replacement of the upper cowl on the steering column(Type I)

Removal procedure

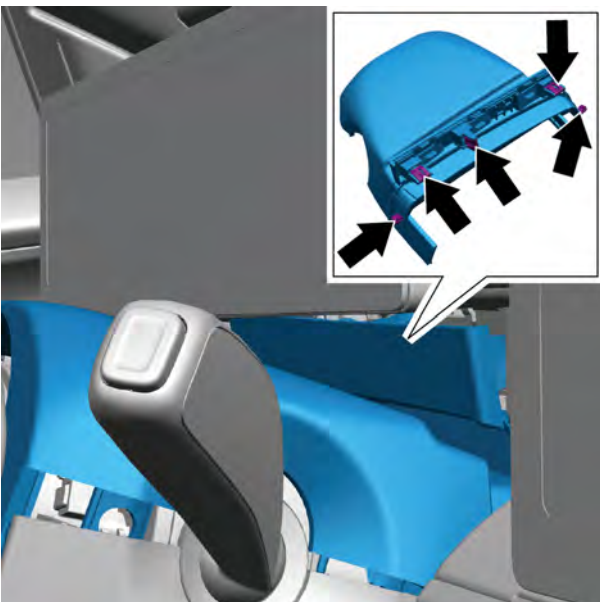
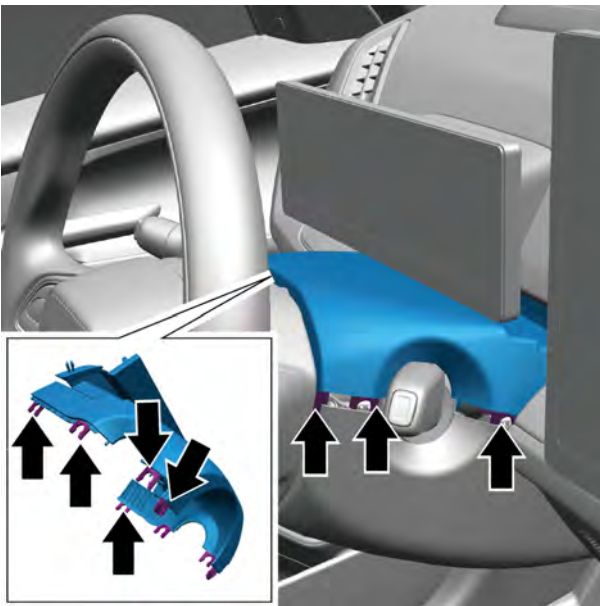
Caution

Please use special tools for vehicle body repair when removing the trim panel; otherwise, or the edges of the trim panel will be scratched.

- 1 Move the steering column lower cowl to the lowest position.
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Use the plastic prying plate to pry the upper cowl of the steering column from the upper cowl of the steering column.

Caution

Disconnect the 8 fixing clips connecting the upper cowl of the steering column and the lower cowl of the steering column, and do not damage the fixing clips.



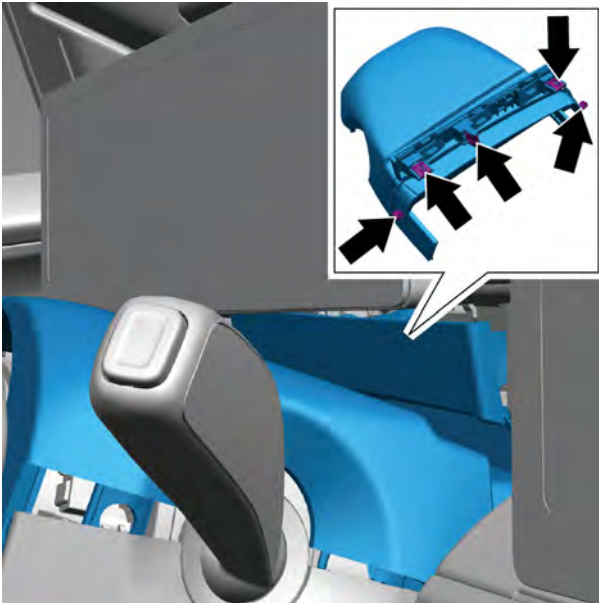
- 4 Use the plastic prying plate to pry off the upper trim strip of the upper cowl of the steering column from the instrument panel body assembly.

Caution

Disconnect the 5 fixing clips connecting the upper trim strip of the upper cowl of the steering column and the instrument panel body assembly. Do not damage the fixing clips.

- 5 Take down the upper cowl of the steering column.

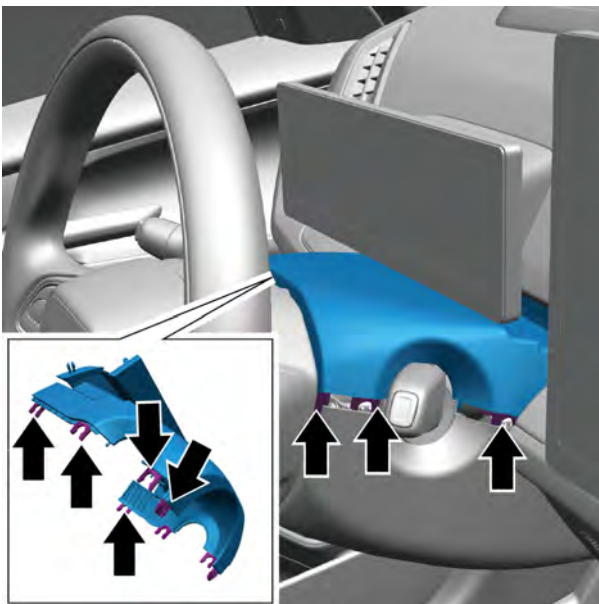
Installation procedure



- 1 Move the steering column upper cowl assembly to the installation position.
- 2 Install the upper trim strip of the upper cowl of the steering column into the upper trim strip on the left side of the instrument panel.

Caution

After installation, check the surface flatness between the upper trim strip of the upper cowl of the steering column and the upper trim strip on the left side of instrument panel.



- 3 Install the steering column upper cowl into the lower cowl assembly of the steering column.

Caution

After installation, check the surface flatness between the upper cowl of the steering column connecting the upper cowl of the steering column.

- 4 Connect the negative cable of battery.
- 5 Move the steering column to the original position.

7.3.6.3 Replacement of the upper cowl on the steering column(Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the instrument cluster display screen. Refer to [Replacement of the Instrument Cluster Display Screen](#)



- 3 Use a plastic prying plate to pry off the connection between the upper cowl of the steering column and the lower cowl of the steering column and the subassembly of the instrument panel upper body.
- 4 Take down the upper cowl of the steering column.



Installation procedure

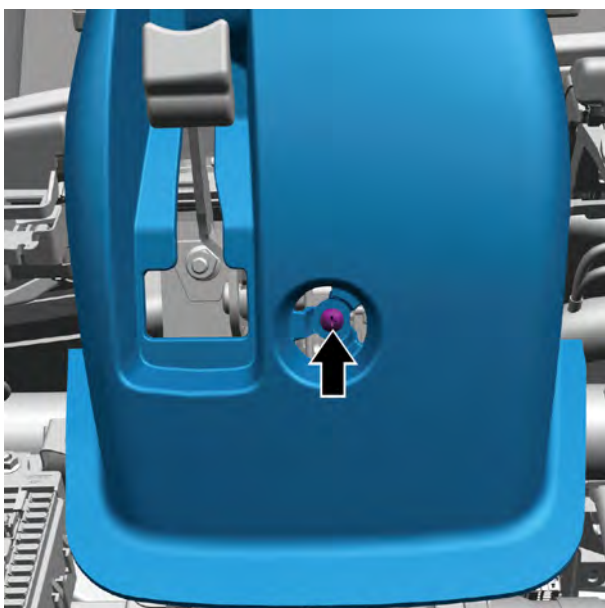
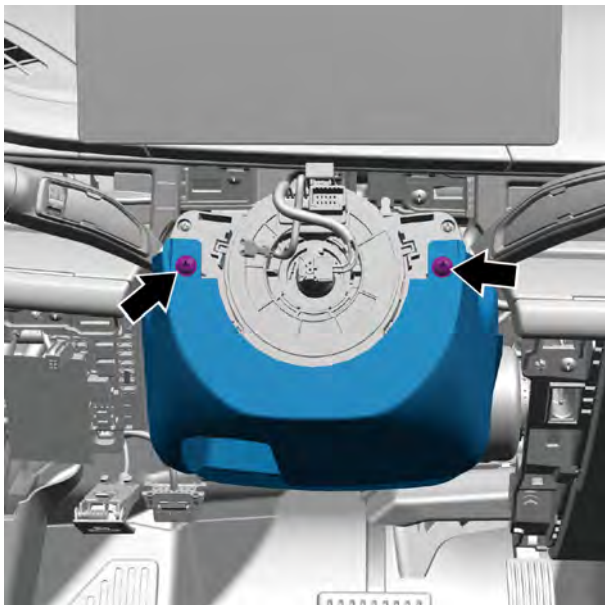
- 1 Move the steering column upper cowl to the installation position.
- 2 Press the upper cowl of the steering column to ensure that it is installed and fastened with the lower cowl of the steering column and the sub-assembly of the instrument panel upper body.

- 3 Install the instrument cluster display screen.
- 4 Connect the negative cable of battery.

7.3.6.4 Replacement of steering column lower cowl(Type I)

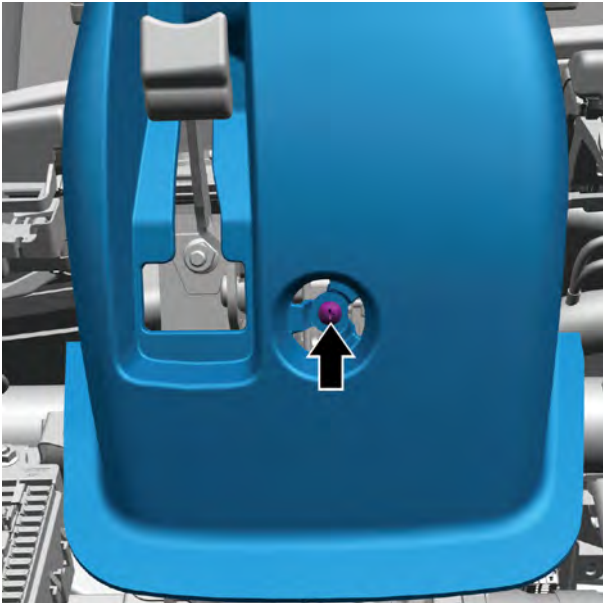
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the upper cowl of the steering column. Refer to [Replacement of Steering Column Upper Cowl Assembly](#)

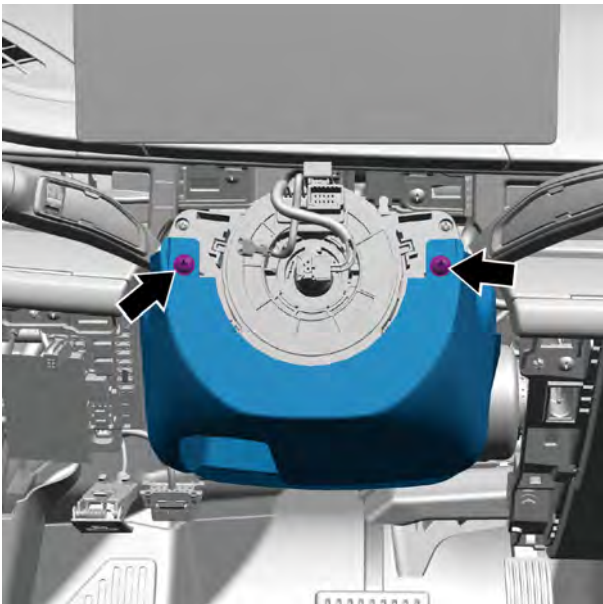


- 3 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 4 Remove the steering wheel assembly. Refer to [Replacement of Steering Wheel Assembly](#)
- 5 Remove 2 fixing screws of the steering column lower cowl and combination switch.
- 6 Remove one fixing screw connecting the lower cowl of steering column and the electric-assisted steering column c/w intermediate shaft assembly.
- 7 Take down the lower cowl of the steering column.

Installation procedure



- 1 Move the steering column lower cowl to the installation position.
- 2 Install one fixing screw connecting the lower cowl of steering column and the electric-assisted steering column c/w intermediate shaft assembly.
Torque: 25N·m



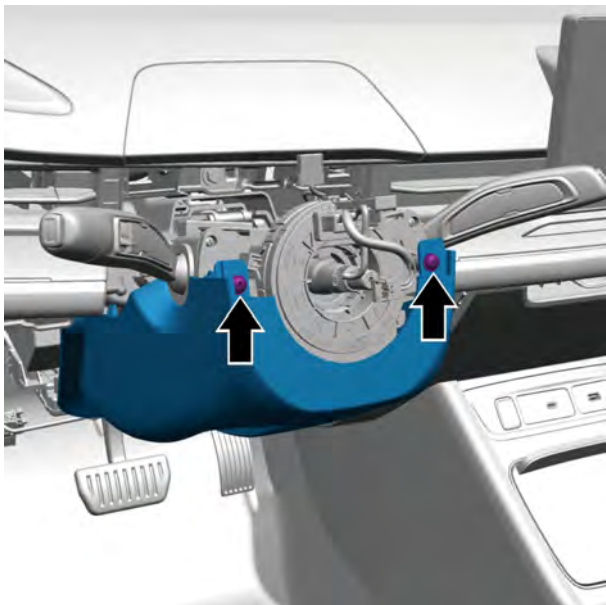
- 3 Install the 2 fixing screws of the steering column lower cowl and combination switch body.
Torque: 1.5N·m

- 4 Install the steering wheel assembly.
- 5 Install the left lower shield assembly of the dashboard.
- 6 Install the upper cowl of the steering column.
- 7 Connect the negative cable of battery.

7.3.6.5 Replacement of steering column lower cowl(Type II)

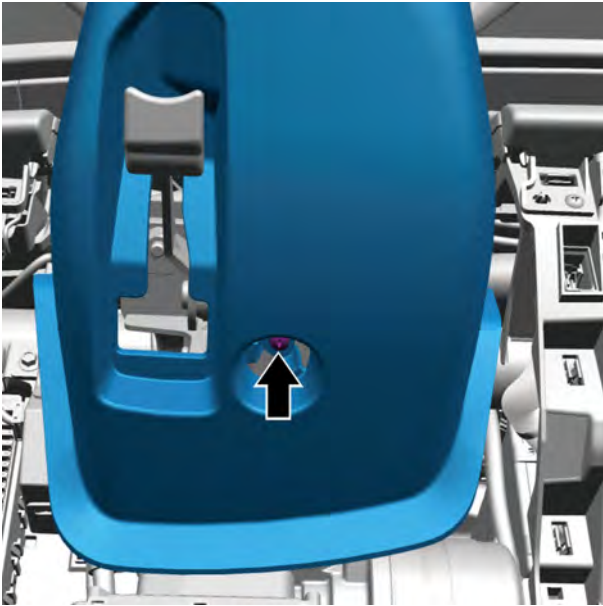
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the steering wheel assembly. Refer to [Replacement of Steering Wheel Assembly](#)

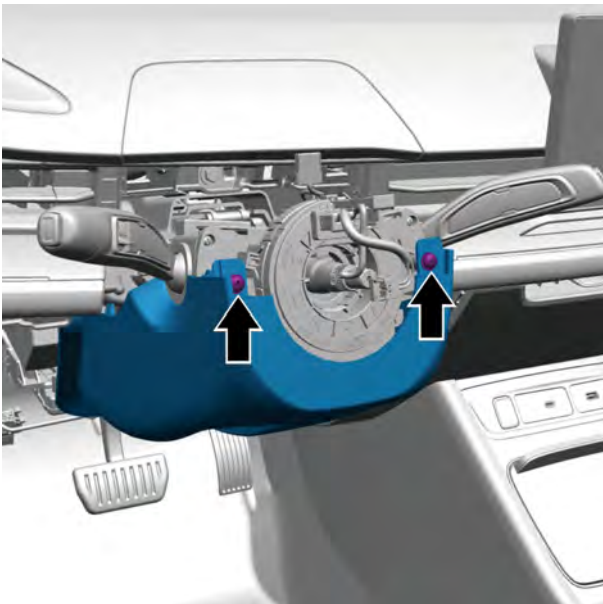


- 3 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 4 Remove the upper cowl of the steering column. Refer to [Replacement of Steering Column Upper Cowl Assembly](#)
- 5 Remove 2 fixing screws connecting the steering column lower cowl and combination switch.
- 6 Remove 1 fixing screw connecting the lower cowl of steering column and the electric-assisted steering column c/w intermediate shaft assembly.
- 7 Take down the lower cowl of the steering column.

Installation procedure



- 1 Move the steering column lower cowl assembly to the installation position.
- 2 Install 1 fixing screw connecting the lower cowl of steering column and the electric-assisted steering column c/w intermediate shaft assembly.



- 3 Install the 2 fixing screws of the steering column lower cowl and combination switch.

- 4 Install the upper cowl of the steering column.
- 5 Install the left lower shield assembly of the dashboard.
- 6 Install the steering wheel assembly.
- 7 Connect the negative cable of battery.

7.3.6.6 Replacement of Steering Wheel Assembly

Removal procedure



Caution

When the steering wheel assembly is removed and installed, the front wheels must be always ahead and the steering wheel assembly must be locked.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the driver's airbag. Refer to [Replacement of Driver's Airbag](#)
- 3 Disconnect the 1 harness connectors A connecting the steering wheel assembly and clock spring.
- 4 Remove the 1 fixing nut 1 connecting the steering wheel assembly with the electric-assisted steering column c/w intermediate shaft assembly.

Caution

Put the steering wheel assembly straight ahead, and use a marker to mark the connection between the steering wheel assembly and the electric-assisted steering column c/w intermediate shaft assembly.

- 5 Take off the steering wheel assembly.

Caution

After the steering wheel assembly is removed, do not turn the clock spring to prevent damage to the clock spring.

Installation procedure

- 1 Move the steering wheel assembly to the installation position.

Caution

Insert the steering wheel assembly into the electric-assisted steering column c/w intermediate shaft assembly, and align the mounting marks made with a marking pen.

- 2 Install the 1 fixing nut 1 connecting the steering wheel assembly with the electric-assisted steering column c/w intermediate shaft assembly.

Torque: 45N·m

Caution

Fixing nut is disposable, and it needs to be replaced with a new one after disassembly.



- 3 Connect the 1 harness connectors A connecting the steering wheel assembly and clock spring.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 4 Install the driver's front airbag.
- 5 Connect the negative cable of battery.

Heating, Ventilation and Air Conditioning System

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8.1 Warnings and precautions

8.1.1 Warnings and precautions

8.1.1.1 Warnings and Precautions

Warning

Refrigerant related work should be carried out in a well-ventilated environment, and refrigerant vapor should not be inhaled. Avoid inhaling refrigerant R-134a and lubricating oil vapor or fog. The contact with them can irritate the eyes, nose and throat. Work in a well-ventilated area. When removing R-134a from air conditioning systems, please use certified repair equipment (R-134a regeneration equipment) that meets the requirements. In case of accidental emission of the system, the working area must be ventilated before continuing the maintenance. Other health and safety information is available from refrigerant and lubrication oil manufacturers.

Warning

Before repairing the electrical system, the negative cable of the battery must be disconnected, and the DC bus connector on the high and low voltage charging system side must be disconnected. It is forbidden to carry out welding or steam cleaning operation on or near the vehicle equipped with air-conditioning pipes or components.

Notes on air conditioning refrigerant

Warning

1. Skin contact can cause frostbite.
2. The instructions provided by the manufacturer must be followed. Fasten proper goggles and protective gloves during the operation.

Operation to be avoided for air conditioning refrigerant

Warning

1. Do not store refrigerants in the places with sunlight or heat sources.
2. When filling, it is improper to keep the refrigerant bottles upright and keep their valves downward.
3. It is forbidden to expose the refrigerant bottle to frost and snow.
4. Do not drop the refrigerant bottle.
5. Do not discharge the refrigerant directly into the atmosphere under any circumstances.
6. Do not mix refrigerants, such as R134a and R12.

Notices for lubricating oil in air conditioning system

Warning

The type and nameplate of lubrication oil specified by the compressor manufacturer must be used. Lubrication oil of different types and nameplates must not be mixed for use; otherwise, the compressor will be damaged. Lubrication oil is easy to absorb water, so the contact time between lubrication oil and air should be reduced as much as possible.

Warning

It is forbidden to use water, corrosive solvents or flammable and explosive solvents to clean the A/C system. It is recommended to use R-141b, heptane and other cleaner.

Fill the oil in strict accordance with the specified filling amount. Note that lubricating oil hinders heat exchange, and excessive filling will seriously reduce the effect of air conditioning; under normal circumstances, there is no need to add lubricating oil, and the lubricating oil has been filled by the compressor manufacturer.

Lubricating oil is extremely absorbent, and the contact time between lubricating oil and air should be minimized.

Before filling, check the quality of the lubricating oil in the pipeline. If serious blackening or carbon particle precipitation is found, the entire air conditioning system should be thoroughly cleaned and all lubricating oil should be replaced.

Lubricating oil should be filled from the compressor outlet before vacuumizing.

8.2 Automatic A/C

8.2.1 Specification

8.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Thermal management control module fixing screw	-	1.2
Motor compressor air intake hose and compressor fixing bolt	M8×20	20-26
Motor compressor outlet hose and compressor fixing bolt	M8×20	20-26
Fixing nut connecting the compressor inlet hose and the integrated heat pump module	M6	8.5-11.5
Motor compressor assembly fixing bolt	M8×95	20-28
PTC Heat controller bracket front fixing bolt	M6×25	8 -10
PTC heat controller bracket rear fixing bolt	M6×25	8 -10
PTC heat controller fixing screw	ST4.8	2.5-3.5
PTC heat controller ground wire fixing nut	M6	8-10
Heat exchanger assembly fixing bolt	M6×30	8 -10
Heat exchanger assembly fixing nut	M6	8.5-11.5
Evaporator inlet and outlet pipe assembly and air conditioner assembly fixing bolt	M6×20	8 -10
Fixing bolt connecting the heat exchanger high-pressure pipe assembly and the heat exchanger assembly	M6×35	8 -10
Heat exchanger high-pressure pipe assembly fixing nut	M6	8.5-11.5
Fixing bolt connecting the heat exchanger high-figuration low-pressure hos and the heat exchanger assembly	M6×25	8 -10
Fixing bolt connecting the evaporator inlet and outlet pipe assembly and the evaporator high and low-pressure pipes	M6×25	8 -10
Evaporator inlet and outlet pipe assembly bracket fixing nut	M6×25	8 -10

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing bolt connecting the evaporator high and low-pressure pipe	M6×25	8 -10
Fixing nut connecting the integrated heat pump module and the evaporator high and low-pressure pipes.	M6	8.5-11.5
Fixing bolt connecting the high and low-pressure pipe assembly of the integrated heat pump module and the integrated heat pump module	M6×25	8 -10
Fixing bolt connecting the high and low-pressure pipe assembly of the integrated heat pump module and the heat pump high and low-pressure pipe bracket	M6×16	8 -10
Fixing bolts connecting the A/C inlet and outlet pipe assembly to the front wall panel	M6×25	8 -10
Rear air-conditioning control unit inlet and outlet pipe assembly fixing bolt	M6×25	8 -10
Front bracket fixing bolt of A/C inlet and outlet pipe assembly	M6	8.5-11.5
Fixing nut connecting the front A/C inlet and outlet pipe assembly with the compressor exhaust hose.	M6	8.5-11.5
Fixing bolt connecting the condenser inlet pipe and the integrated heat pump module	M6×25	8 -10
Fixing bolt connecting the condenser inlet pipe and the condenser	M6×25	8 -10
Fixing bolt between the battery water pump bracket and the driving motor	M6×16	35-45
Four-way valve and solenoid valve bracket fixing nut	M6	8.5-11.5
A/C master device fixing bolt	M6×25	5-7
Blower speed control module fixing screw	M4×14	0.9-1.5
Blower speed control module fixing screw	ST4.8×13	1.2-1.8
Foot blowing air duct fixing screw	M4×14	0.9-1.5
Evaporator housing fixing screw	M4×14	0.9-1.5

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing nut of heating water pump	M6	8.5-11.5
Integrated heat pump module fixing nut	M6	8.5-11.5
Nut connecting the integrated heat pump module and the liquid outlet pipe of the condenser	M6	8.5-11.5
Fixing bolt connecting the PM2.5 module and the vehicle body	-	5-7
Fixing nut connecting the PM2.5 module and the vehicle body	-	5-7
A/C low pressure switch	-	9.8-11.8
A/C high pressure switch	-	9.8-11.8

8.2.1.2 Cooling system parameters

1. Air conditioning system performance

Components	Parameter	Item
Heater core	7500	Heating capacity/w
	300	Air flow m ³ /h
	-10	Inlet air temperature °C
Evaporator core	5000	Heating capacity/w
	450	Air flow m ³ /h
	26.7	Inlet air temperature °C

2. Air conditioning system specification

Components	Parameter	Item
Heater core	DC aluminum	Type
	/	Size W (width) × H (height) × L (length) mm (in)
	/	Number of tube rows
Blower	with brush(GBM-M motor)	Type
	470	Maximum air volume (m ³ /h)
	280	Motor power consumption/w
	-40~60	Operation temperature range
Heater	7000	Rated power W
Evaporator	Parallel flow	Type
	5	Cooling capacity KW
	/	Number of tube rows
Condenser	Parallel flow	Type
	605.7*398*16	Condenser Size W (width) × H (height) × L (length) mm (in)

	589*403*22	Condenser Size W (width) × H (height) × L (length) mm (in)
	13000	Heat exchange capacity/w
	3	Fin pitch mm
Refrigerant	R134a	Model
	800/550	Filling amount (g)
Compressor	scroll type	Type
	33	Displacement CC
Compressor lubricating oil	POE	Model
	Non-heat pump system: 130	Filling amount (g)
	Heat pump:200	

8.2.1.3 System capacity

Mode	Parameter	Effect
HVAC refrigeration	HVAC mode: all cold/face blowing/ internal circulation	At 12V, the cooling capacity is $\geq 5000W$
	Air dry bulb temperature at inlet side:(27 ± 1)°C	
	Air wet bulb temperature at inlet side: (19.5 ± 0.5)°C	
	Degree of under-cooling at the inlet of expansion valve:(5 ± 1)°C	
	Refrigerant pressure at the inlet of expansion valve:(1.58 ± 0.01) MPa	
	Refrigerant pressure at the evaporator outlet: (0.193 ± 0.01)MPa	
	Blower Voltage: 12 $\pm 0.1V$	
HVAC heating	HVAC mode: full heat/foot blowing/ external circulation	At 12V, the heat capacity is greater than or equal to 7500W
	Ambient temperature:(20 ± 1)°C	
	Relative humidity:(50 ± 5)%	
	Coolant composition: Water 50%, ethylene glycol 50%	
	Coolant temperature at inlet:(85 ± 1) °C	
	Volume rate of flow of coolant:6L/min	
	Blower voltage(12 $\pm 0.1V$)	

8.2.1.4 Electrical resistance property of evaporator temperature sensor

Electrical resistance property of evaporator temperature sensor

Temperature (°C)	Resistance (Ω)		
	Rmax	Rmid (t) Normal	Rmin
-40	60964	63651	66394
-35	44485	46295	48140
-30	32819	34048	35298
-25	24464	25303	26156
-20	18413	18990	19574
-15	13987	14384	14786
-10	10716	10991	11268
-5	8277	8467	8658
0	6470	6600	6734
5	5027	5142	5258
10	3941	4041	4142
15	3115	3201	3289
20	2481	2556	2632
25	1992	2056	2122
30	1610	1665	1722
35	1310	1358	1407
40	1072	1114	1156
45	883	919	956
50	731	763	795
55	609	636	664

8.2.1.5 Resistance property of indoor and outdoor temperature sensors

Components	Parameter	Numerical value	Operating temperature range °C
Outdoor temperature sensor	R0°C	92.06-98.21kΩ	-40°C-100°C
	R25°C	29.55-30.45kΩ	
	B0/25	3758±1.5%k	
Indoor temperature sensor	R0°C	94.91-99.12kΩ	-40°C-85°C
	R25°C	29.70-30.3kΩ	
	B0/50	3887±1.0%k	

8.2.2 Description and operation

8.2.2.1 General

The automatic air conditioning system is designed to provide a comfortable environment for the passenger compartment regardless of the weather conditions outside the vehicle. The system is composed of the following main components:

- Cooling system
- Heating system
- Air distribution system
- Mode/temperature control system

8.2.2.2 Description and operation

Compressor

The compressor is an electric scroll compressor. The compressor controller is integrated with the compressor, and the rotation of the motor drives the scroll to compress, completes the suction and discharge of the refrigerant, and provides power for the refrigeration cycle.

The speed adjustment by the drive controller can realize the stepless adjustment of the cooling volume, which is easy to realize the automatic control of the air conditioning temperature of the complete vehicle

Condenser, fluid reservoir dryer

The high temperature and high pressure refrigerant vapor from the A/C compressor flows into the condenser, which is made of aluminum tube and cooling fin that can carry out rapid heat transfer. The cooling fin condenses the high temperature and high pressure refrigerant vapor into medium temperature and high pressure liquid through heat dissipation.

Fluid reservoir dryer is located on the left side of the condenser and welded into one with the condenser. The internal structure of the fluid reservoir dryer is designed to ensure that the medium temperature and high pressure gas-liquid mixing refrigerant enters and the medium temperature and high pressure liquid refrigerant comes out of the fluid reservoir dryer. There is desiccant that absorbs the moisture of the cooling system inside the fluid reservoir dryer, and the desiccant cannot be reused. When leakage occurs due to the following reasons, the fluid reservoir dryer core cannot be maintained and can only be replaced.

1. Piercing
2. Containment damage
3. The outside air has been in the system for a long time

Indoor and outdoor temperature sensors

Outdoor and indoor temperature sensors affect the automatic control of the inside air temperature: these sensors are all temperature sensitive thermistors, and the resistance of the sensors is inversely proportional to the temperature. A/C control module sets internal and external circulation motor, cooling and heating temperature wind direction motor, and blower speed control module to control A/C temperature according to resistance value information.

Indoor temperature sensor housing is connected to the aspirator through a hose pipe. The air flow out of the main air-conditioning assembly forms a small vacuum at the end of the aspirator hose. The vacuum makes the air flow through the indoor temperature sensor, which improves the accuracy of the temperature detected by the sensor.

The outdoor temperature sensor is located in the front grille area under the front bumper of the vehicle. A/C control module uses this sensor to acquire the surrounding air temperature information. The A/C control module will display the external temperature on the instrument when the information is used.

Ambient light and sunlight sensor

Ambient light and sunlight sensor is located on top of the instrument panel and near window glass. Ambient and sun light sensor is a light energy sensor, which can measure the heat generated by the sunlight hitting the vehicle and provide more compensation parameters for the A/C control module. The A/C control module can automatically adjust the air volume and the mixing ratio of cold/hot air in real time according to the illumination intensity outside the vehicle and the working condition demand of air conditioning inside the vehicle, so that all passengers can get the most comfortable feeling.

Inside A/C master device

The inside air-conditioning assembly is in the instrument panel, which is composed of blower motor, blower speed control module, air conditioning filter, heater core, evaporator core, expansion valve, temperature and wind direction control motor, air deflectors and ventilation ducts.

1. Blower motor

Caution

When the blower motor is placed, the fan of the blower motor should not be used as the supporting

surface. It is forbidden to touch the fan to prevent damaging the fan blade.

Blower is composed of permanent magnet motor and mouse-cage fan. The change of the speed of the blower depends on the speed control module of the blower. If the user chooses the maximum air conditioning mode, most of the air entering the blower comes from the passenger compartment (internal circulation).

2. Warm air core

Warm air core is the main component of heater system. Heater core is inside the A/C master device. The coolant heated by PTC is pumped into the heater core body, and the heater core body transfers the heat of the coolant to the air flowing through the heater core body. The heater core body has special inlet and outlet warm air pipes. When removal, the warm air pipes of warm air core must be completely discharged. When maintenance, the warm air core that is equipped with independent warm air pipes must already be installed.

3. Evaporator and expansion valve

The evaporator is located to the left of the air-conditioning unit. When the air-conditioning unit is installed on the vehicle, it needs to be removed to install the evaporator core and expansion valve. When removal, the refrigerant pipeline of the evaporator core must be completely discharged. When maintenance, the evaporator core equipped with separate refrigerant lines must already be installed. The expansion valve is connected with the evaporator core and installed at one end of the evaporator core and located at the evaporator inlet. One side of the expansion valve is connected with the air inlet and outlet pipes of the A/C compressor, and the other side is connected with the air inlet and outlet pipes of the evaporator core, which restricts the high-pressure liquid refrigerant in the liquid pipeline and makes the refrigerant flow to the evaporator as low-pressure liquid.

The expansion valve changes its position from large to small according to the lower and upper limit of air conditioning pressure. The evaporator core cools and dehumidifies the air before it enters the passenger compartment. The refrigerant evaporates in the evaporator core, absorbing heat from the air flow through the evaporator. When the heat from the air is transferred to the evaporator core, the moisture in the air condenses on the outer surface of the evaporator core to form water and flow out.

The evaporator is equipped with a temperature sensor to prevent it from freezing. The sensor measures the surface temperature of the fins on the evaporator core. The evaporator core temperature less than 1 degree will turn off the compressor, and the compressor will be turned on after it is higher than 5 degrees.

Refrigerant R-134a and lubricating oil

Refrigerant has the function of absorbing heat, carrying heat and releasing heat in A/C system. The R-134a refrigerant is used on the vehicle, which is non-toxic, flame retardant, transparent, colorless liquefied gas.

Before carrying out maintenance work that requires opening refrigeration system pipelines or components, please refer to the instructions for the disposal of refrigerant pipelines and pipe joints and the maintenance of chemical stability. The R-134a system is filled with special lubricating oil HAF68 and POE synthetic refrigerant oil. The refrigerant may absorb water and needs to be stored in a closed container. Only HAF68, POE synthetic refrigerant lubricating oil can be used in the internal circulation of R-134a air conditioning system. Use only mineral-based 525 viscosity refrigerant oil on the mounting threads and O-rings. Use of other lubricants may cause compressor or accessory failure.

Caution

The type and nameplate of lubrication oil specified by the compressor manufacturer must be used.

Lubrication oil of different types and nameplates must not be mixed for use; otherwise, the compressor will be damaged. Lubrication oil is easy to absorb water, so the contact time between lubrication oil and air should be reduced as much as possible.

When replacing the components of the air conditioning system, a certain amount of lubricating oil of the same model should be added or poured out appropriately. In general, the following recommended data can be implemented:

A/C lubricating oil filling amount:

R-e-m-ov-al/in-st-all-ite-ms	Filling volume of heat pump	Filling volume of non-heat pump	U-nit	Note
C-on-de-n-s-er	30	30	ml	-
C-o-m-pr-ess-or-ex-ha-ust-pi-pe	10	10	ml	-
Hi-gh-an-d-lo-w-pr-ess-u-re-pi-pe-s	10	10	ml	-

R-e-m-ov-al/in-st-all-ite-ms	Filling volume of heat pump	Filling volume of non-heat pump	U-nit	Note
In-te-gr-at-ed-heat-pu-mp-mo-d-ule	80	-	ml	-
C-o-m-pr-ess-or	-	-	ml	When the compressor is delivered from the manufacturer, it will carry a large amount of lubricating oil (more than the amount of lubricating oil in the whole air conditioning system), so it is not necessary to add lubricating oil after replacing the compressor, but a proper amount of lubricating oil needs to be discharged from the compressor before installation.

A/C high pressure pipe, A/C low pressure pipe, A/C pressure sensors and PT sensor

The A/C cooling system is connected as a closed system with A/C high and low pressure pipe (A/C hard pipe and/or hose), in which refrigerant and lubrication oil flow to complete the working cycle process of refrigerant. The A/C hard pipe is

composed of aluminum pipe and corresponding joints, and A/C hose is composed of rubber hose and corresponding joints.

A/C pressure sensors send different fan duty cycles by collecting pressure signals. Meanwhile, limit the pressure range to protect the compressor.

The refrigeration pipeline solenoid valve is an on-off valve, which closes the refrigerant circuit entering the passenger compartment when only the battery is cooled as required.

PT sensor(with high-configuration heat management controller) is at the compressor outlet. When the air conditioner realizes the refrigeration/heat pump heating functions, it collects pressure signals, sends different fan duty ratios. Meanwhile, limit the pressure range, protect the compressor,

Heater

The heater is composed of a resistance film and heat dissipation components. Within a certain voltage range, the heating power changes with the current. The resistance of the resistance film has less influence with the temperature. Therefore, the electric heater can output stable power and provide a stable heat source for the heating system.

AQS Air quality sensor

The air quality sensor can sensitive the turbine of the air outside the vehicle and immediately switch the internal and external circulation mode of the air. For example, if the air quality is poor, the air conditioning system will automatically switch to the internal circulation state, which can prevent the contaminated air from entering the vehicle to a large extent.

Insert type temperature sensor

The sensor is mainly used for cooler cooling and passenger compartment refrigeration electronic expansion valve opening control.

Pressure switch: low-fitting models (non-heat pump).

Pressure sensor: Model with high configuration (optional heat pump).

Electronic expansion valve 1, electronic expansion valve 2, electronic expansion valve 3 (heat pump model)

Electronic expansion valve 1

The electronic expansion valve 1 is the under-cooling degree control component for the internal cooling target of the heat pump heating. When the system is cooled, it is closed, and communicates with the heat management controller through the LIN bus.

Electronic expansion valve 2

The electronic expansion valve 2 is the control component of the cooler battery cooling refrigeration circuit. When the single passenger compartment is cooled, it is closed, and communicates with the thermal management controller through the LIN bus.

Electronic expansion valve 3

The electronic expansion valve 3 is the control component of the refrigeration circuit of the passenger compartment at the evaporator end of the heat pump. When the single cooler cell is cooled, it is closed, and communicates with the thermal management controller through the LIN bus.

PM2.5 sensor

The PM2.5 sensor can detect the dust concentration in the air around us, that is, the PM2.5 value. Its principle is based on the principle of light dissipation. In addition, it absorbs part of the energy of illuminated light. When a single beam of parallel light is incident on the field to be measured, it will be affected by the scattering and absorption around the particles and the light intensity will be attenuated. In this way, the relative degradation rate of incident light through the concentration field to be measured can be calculated. The relative degradation rate can basically reflect the relative concentration of dust in the field to be measured. The light intensity is directly proportional to the strength of the converted electrical signals. The relative attenuation rate can be obtained by measuring the electrical signal, and then the concentration of dust in the field to be measured.

The breather hole in the PM2.5 sensor is located on the lower trim panel of the front pillar in the vehicle. The breather hole should be protected and cleaned and should not be blocked to avoid affecting the normal function of the sensor.

Negative ion generator

The negative ion generator can convert the DC to AC high voltage through a series of power conversion circuits, and then get the pure DC negative high voltage after rectifying and filtering of special level electronic materials. This DC negative high voltage is connected to the release tip made of metal or carbon element. The high-voltage at the nib DC is used to generate high corona, and a large amount of electrons (e-) are released at high speed. These electrons (e-) are immediately trapped by the oxygen molecular (O₂) in the air to generate air negative ions. The ecological-grade small grain-size negative oxygen ions are more likely to pass through the human brain-related barrier, playing the role of medical care.

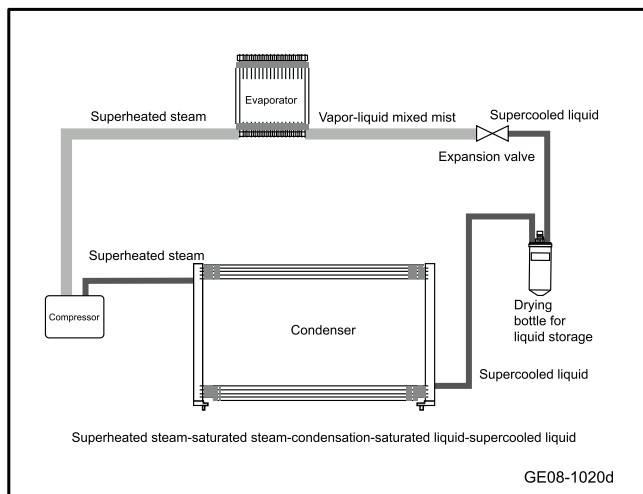
8.2.3 System working principles

8.2.3.1 Working principles of the automatic A/C (Type I)

System diagnosis

Through the diagnostic interface, the air conditioning control module can send corresponding diagnostic information to the special diagnostic instrument, which can read the manufacturer number and software version number and other information from the air conditioning control module.

Working principles of the cooling system



Driven by high-voltage electricity, the compressor draws gaseous refrigerant from the evaporator and compresses it, which increases the temperature and pressure of the refrigerant.

The high-temperature and high-pressure refrigerant is transferred to the condenser. The high-temperature and high-pressure refrigerant gas enters the condenser. Due to the reduction of pressure and temperature, the refrigerant gas condenses into liquid and discharges a large amount of heat.

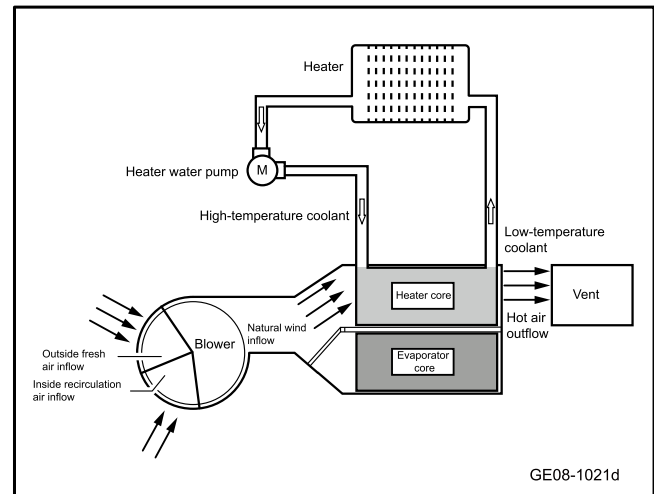
The refrigerant is sent to the fluid reservoir dryer under pressure, which serves as a storage intermediary to filter all water entrapped in the refrigerant.

Dried refrigerant is sent to the inlet of the expansion valve. The refrigerant liquid with higher temperature and pressure passes through the expansion device to increase in volume, and the pressure and temperature drop sharply, and it is discharged from the expansion device in a mist state.

The mist refrigerant liquid enters the evaporator, and the boiling point of the refrigerant is far lower than the temperature in the evaporator, so the refrigerant liquid evaporates into a gas and absorbs a lot of heat. Blower sends the cold air passing the evaporator surface to the passenger compartment through each air outlet.

At last, the low-pressure refrigerant air flows back to the compressor for another compression; at this point, the A/C refrigerant completes a working cycle.

Working principles of the heating system

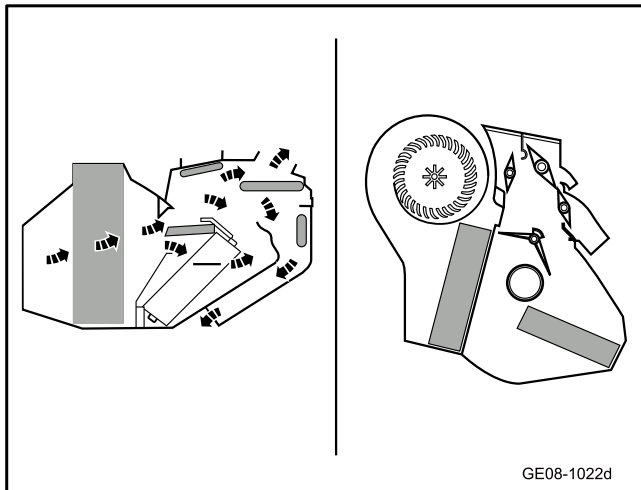


The heating system includes a blower, a PTC heating controller, an electric heater water pump, and a heater core.

When the automatic A/C system is in the heating mode, the PTC heating controller heats the coolant under the action of high-voltage electricity, and the high-temperature coolant is pumped into the heater core by the heater water pump. At the same time, the cooling and heating temperature control motor turns the temperature control device to the heating mode, and part or all of the airflow is bypassed to the heater core under the action of the blower to realize heat transfer. Any unheated air will be mixed with the heated air before entering the passenger compartment to obtain the corresponding mixed air of the right temperature.

The heating working principle of the heat distribution pump is opposite to that of the warm air conditioning system. When the high-temperature and high-pressure refrigerant flows through the condenser, the released heat energy is directly discharged into the atmosphere. When the high-temperature and high-pressure refrigerant flows through the built-in condenser core, the heat energy released by the refrigerant is used to heat the passenger compartment.

Working principle of the ventilation control system



Various positions on the ventilation control system allow the mode valve to mix or introduce cold, hot, and outside air through the A/C system, and the air flow is transmitted to the passenger compartment by the air duct system and the air outlet.

In the "AUTO" mode, the corresponding mode state will be automatically selected, and the "air outlet mode" button can be used to change the air supply mode of the vehicle. If an air supply mode is currently displayed, press the "outlet mode" button to select the next air supply mode.

There are some 5 modes of air flow:

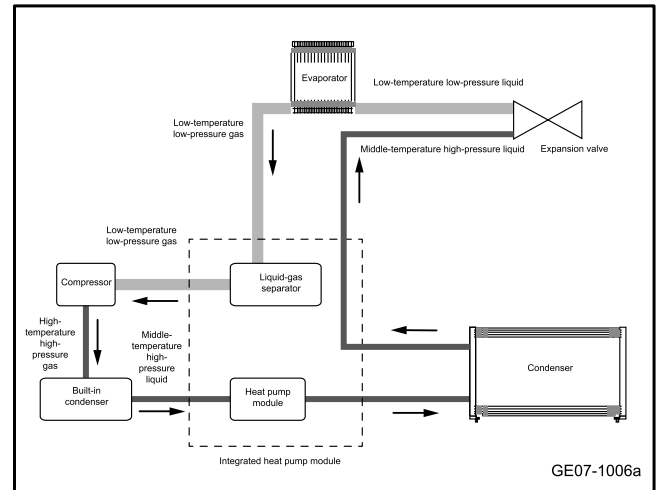
- Face blowing - air supply through the air outlets of the instrument panel
- Feet blowing - air supply through the air outlets of the floor
- Defrosting - air supply through the air outlets of the front windshield
- Two ways of blowing - air supply through the air outlets of the instrument panel and floor
- Mixed - air supply through the air outlets of the floor and front windshield

8.2.3.2 Working principles of the automatic A/C (Type II)

System diagnosis

Through the diagnostic interface, the air conditioning control module can send corresponding diagnostic information to the special diagnostic instrument, which can read the manufacturer number and software version number and other information from the air conditioning control module.

Working principles of the cooling system



Driven by high-voltage electricity, the compressor draws gaseous refrigerant from the evaporator and compresses it. The temperature of refrigerant rises to 50-120°C and the pressure reaches 2500kpa (A).

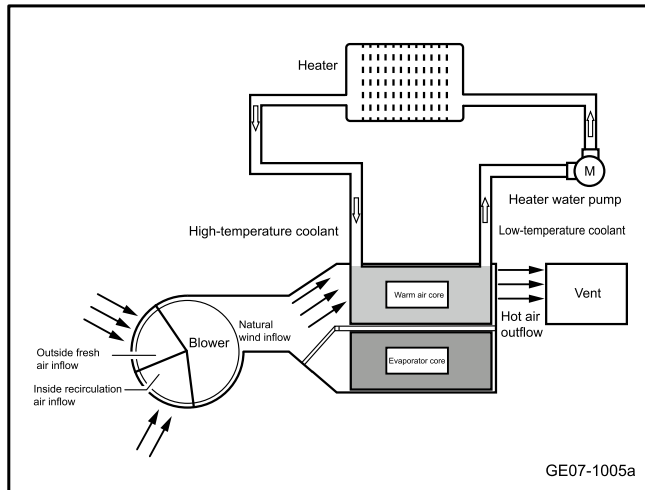
The high-pressure overheated refrigerant is transferred to the condenser. At this time, the heat in the refrigerant is carried away by the air transferred to the condenser. Because of the loss of heat, the refrigerant is cooled and the temperature drops to 40 - 80 °C.

The refrigerant is transmitted to the entrance of the expansion valve which controls the flow of refrigerant into the evaporator by throttling and reducing pressure, to reduce the temperature and pressure to form low-temperature and low-pressure liquid refrigerant.

The liquid refrigerant is heated to evaporate in the evaporator. At last, the blower blows the air through the surface of the evaporator machine towards each air outlet. Because of the evaporation and heat absorption of the refrigerant inside the evaporator, the heat in the air passing the evaporator machine surface is absorbed, so the temperature of the air outlets is far lower than the ambient temperature. Evaporated low-pressure refrigerant flow from the evaporator to the gas-liquid separator.

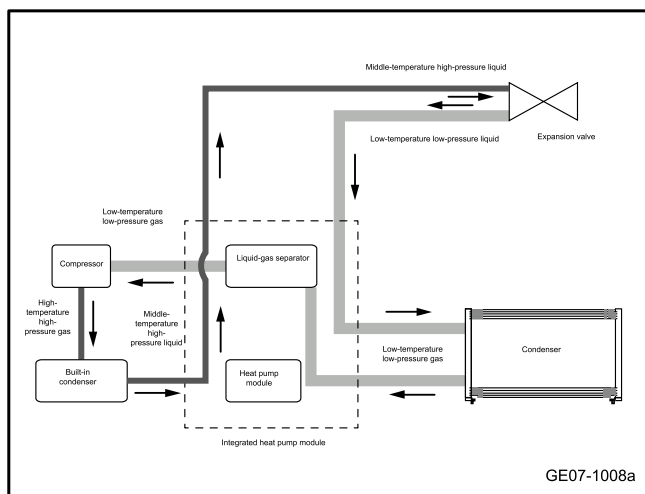
The gas-liquid separator processes the gas containing a small amount of condensate, and the condensate is recovered. At last, the low-pressure refrigerant air flows back from the gas-liquid separator to the compressor for another compression; at this point, the A/C refrigerant completes a working cycle.

Working principles of the heating system



The heating system includes a blower, an electric heater (PTC), a heater water pump, and a heater core.

When the automatic A/C system is in the heating mode, the heater water pump pumps the coolant from the heater core into the heater, the heater heats the coolant under the action of high-voltage electricity, and the high-temperature coolant is pumped into the heater core. At the same time, the cooling and heating temperature control motor turns the temperature control device to the heating mode, and part or all of the airflow is bypassed to the heater core under the action of the blower to realize heat transfer. Any unheated air will be mixed with the heated air before entering the passenger compartment to obtain the corresponding mixed air of the right temperature.

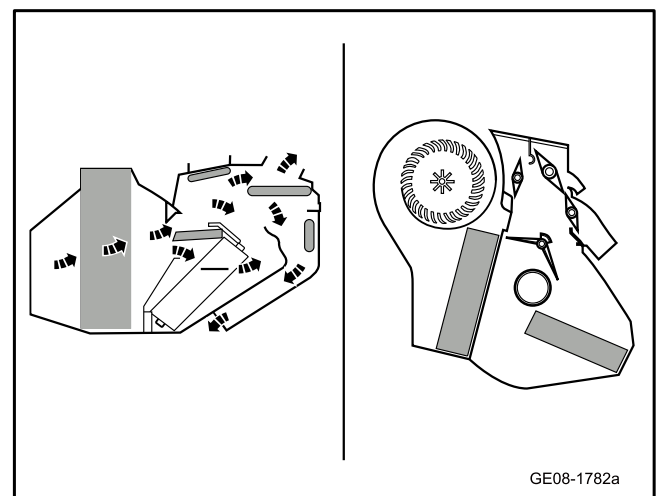


The refrigerant also takes part in the heating process.

When the automatic A/C system is in heating mode, the compressor draws the gaseous refrigerant from the evaporator and compresses it to form a gaseous refrigerant with high temperature and high pressure. The high-temperature refrigerant enters the built-in condenser for heat

exchange. The refrigerant is taken away and enters the expansion valve. The expansion valve controls the flow of the refrigerant by throttling and pressure reduction to reduce temperature and pressure, thereby forming a low-temperature and low-pressure liquid refrigerant. After the refrigerant wet vapor enters the condenser after being throttled by the expansion valve, it absorbs heat and boils and becomes a saturated vapor. The saturated vapor flows into the gas-liquid separator, and the refrigerant gas flows back to the compressor for further compression after the condensate recovery.

Working principle of the ventilation control system



Various positions on the ventilation control system allow the mode valve to mix or introduce cold, hot, and outside air through the A/C system, and the air flow is transmitted to the passenger compartment by the air duct system and the air outlet.

In the "AUTO" mode, the corresponding mode state will be automatically selected, and the "air outlet mode" button on the multimedia large-screen air conditioning interface can be used to change the air supply mode of the vehicle.

The air flow direction is changed according to the following modes:

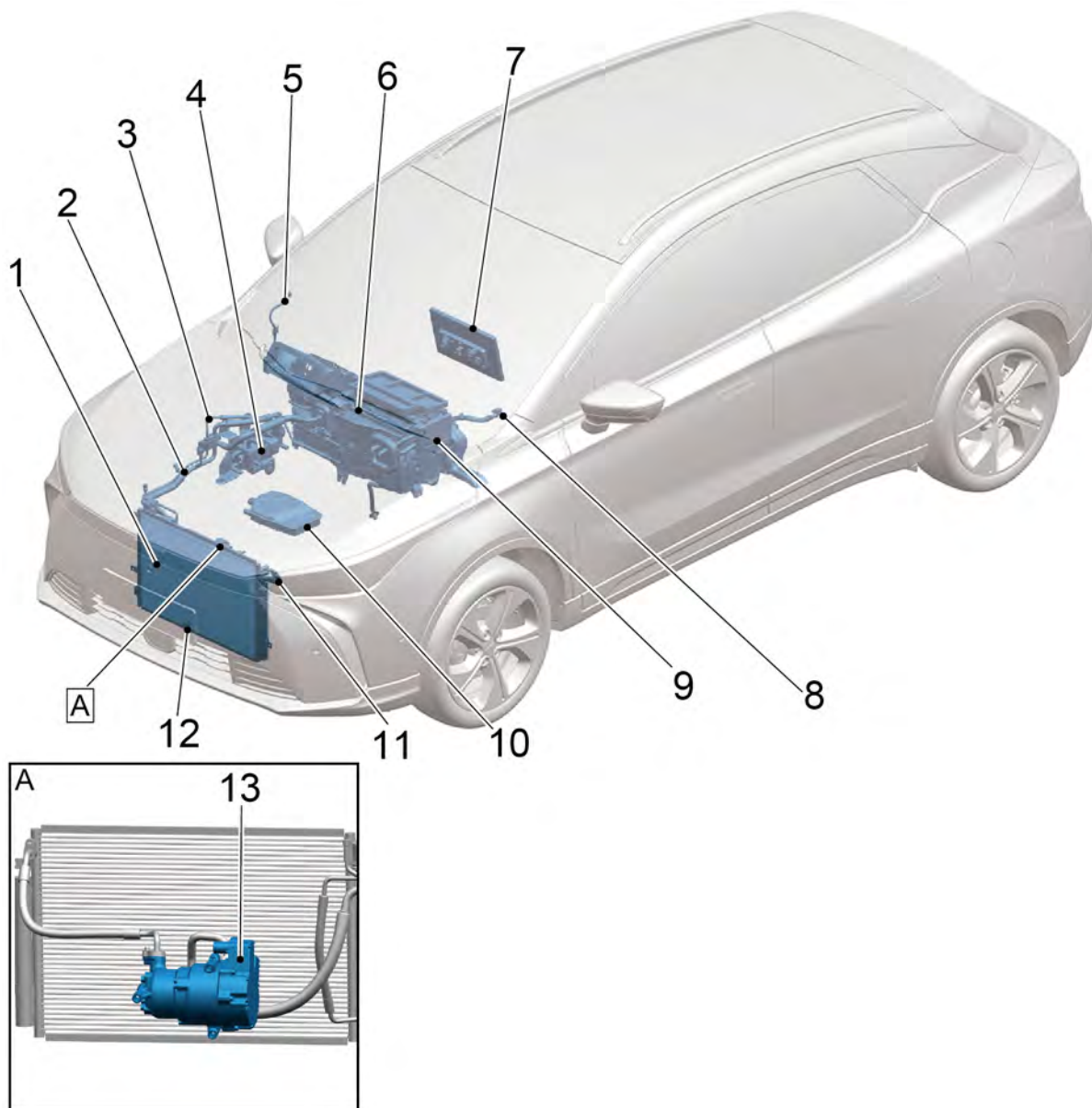
- Face blowing - The air is supplied through the dashboard outlet in the front row, and through the auxiliary dashboard outlet in the back row.
- Face blowing and feet blowing - The front row supplies air through the air outlets of the instrument panel and the air duct of the air conditioner main engine. The back row supplies air through the auxiliary dashboard and the floor outlet.
- Feet blowing - The front row supplies air through the main air duct of the air conditioner. The back row supplies air through the floor outlet.

- Foot blowing and window blowing - supplies air through the air duct of the air conditioner, the floor and front windshield outlets.
- Window blowing - supplies air through the air outlets of the front windshield.

8.2.4 Part position

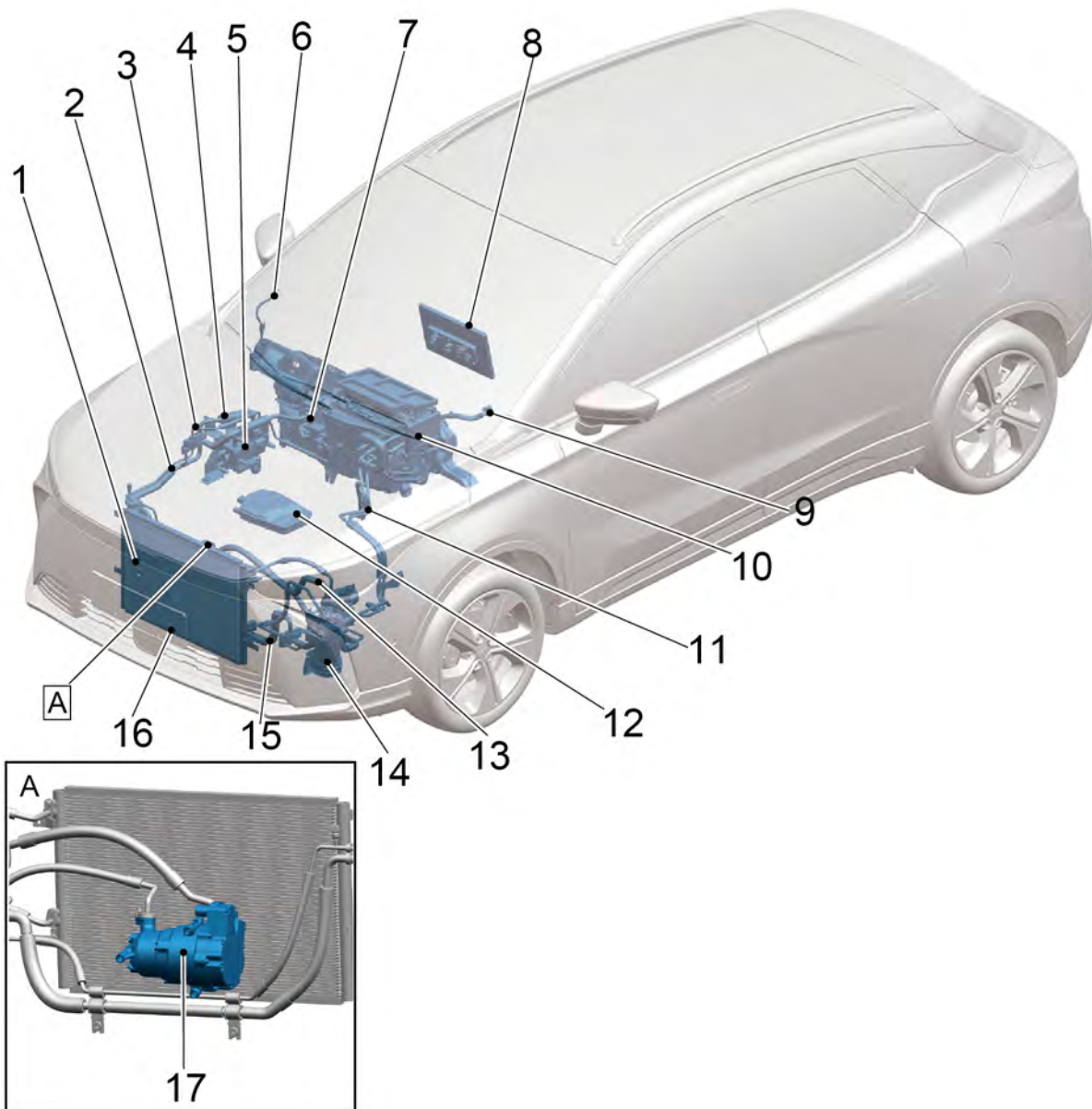
8.2.4.1 Part Position

Non-heat pump



- | | |
|--|--------------------------------|
| 1. Condenser | 8. Indoor temperature sensor |
| 2. High and low-pressure pipes of the evaporator | 9. Thermal management module |
| 3. Evaporator inlet and outlet pipe assembly | 10. PTC heat controller |
| 4. Heat exchanger assembly | 11. Compressor exhaust hose |
| 5. PM2.5 sensor | 12. Outdoor temperature sensor |
| 6. Air-conditioning unit assembly | 13. Motor compressor assembly |
| 7. Multimedia screen | |

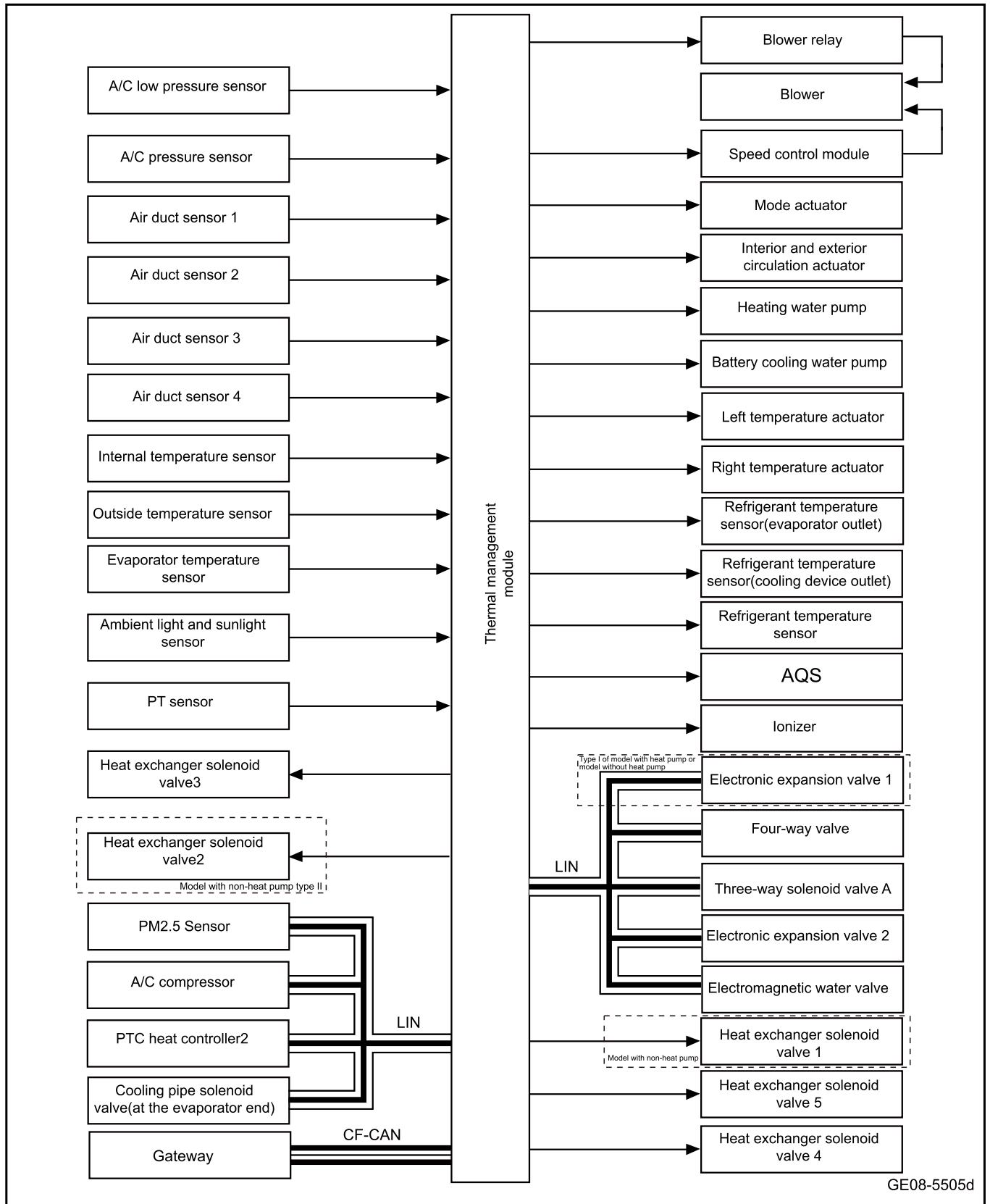
Optional heat pump



- | | |
|---|---|
| 1. Condenser | 10. Thermal management module |
| 2. Evaporator inlet and outlet pipe assembly | 11. Air-conditioning inlet and outlet pipe assembly |
| 3. Heat exchanger high-pressure pipe assembly | 12. PTC heat controller |
| 4. High and low-pressure hose of the heat exchanger | 13. Compressor inlet hose |
| 5. Heat exchanger assembly | 14. Integrated heat pump module |
| 6. PM2.5 sensor | 15. High and low-pressure pipes of the evaporator |
| 7. Air-conditioning unit assembly | 16. Outdoor temperature sensor |
| 8. Multimedia screen | 17. Motor compressor assembly |
| 9. Indoor temperature sensor | |

8.2.5 Electrical block diagram

8.2.5.1 Electrical Schematic Diagram of A/C System



8.2.6 Diagnostic information and procedures

8.2.6.1 Diagnosis Description

Refer to description and operation.

8.2.6.2 Routine inspection

- Check after-sales installations that may affect the performance of the A/C system.
- Check A/C system components and lines that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a fault.
- Check the A/C system pipeline that is easy to be seen or can be seen to find out whether there is A/C system leakage.

8.2.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
A/C blower has no air outlet or small air volume or cannot be adjusted	1. Air conditioning filter element plug	Refer to Replacement of A/C Filter Element for replacement
	2. Faults of A/C Blower	Refer to Faults of A/C Blower
	3. Thermal management control module fault	Refer to Power Supply Failure of Thermal Management Control Module
Insufficient refrigerating capacity of A/C system	1. Air conditioning filter element plug	Refer to Replacement of A/C Filter Element for replacement
	2. There is too much or too little refrigerant	Check the A/C system refrigerant for leakage and add it if necessary.
	3. Condenser heat dissipation performance is bad	Check whether the condenser is blocked and whether it is covered with foreign matters.
	4. Evaporator plug or foreign matter cover	Check whether the evaporator is blocked and whether it is covered with foreign matters.
	5. Evaporator freezes	Refer to Fault of Evaporator Temperature Sensor
	6. Faults of A/C compressor	Refer to Faults of A/C Compressor
	7. A/C pressure sensor fault	Refer to Fault of A/C pressure sensor (type I without heat pump) Refer to Fault of A/C pressure sensor (type II without heat pump)
	8. Fault of internal and external circulation actuator	Refer to Faults of Internal/External Circulation Actuator
	9. Fault of outdoor temperature sensor	Refer to Outdoor Temperature Sensor Failure
	10. Fault of indoor temperature sensor	Refer to Indoor Temperature Sensor Failure
	11. Thermal management control module	Refer to Power Supply Failure of Thermal Management Control Module

Symptom	Possibility and cause	Measures
No heating or Insufficient Heating Capacity of Air Conditioning System	1. A/C filter element plug	Refer to Replacement of A/C Filter Element for replacement
	2. Fault of left temperature actuator	Refer to Faults of Left Temperature Actuator
	3. Fault of right temperature actuator	Refer to Faults of Right Temperature Actuator
	4. Fault of indoor temperature sensor	Refer to Indoor Temperature Sensor Failure
	5. Thermal management control module	Refer to Power Supply Failure of Thermal Management Control Module
Air outlet mode of A/C is mixed	1. The flap of Mode actuator is damaged and stuck	Mode actuator flap is examined
	2. Fault of mode actuator	Refer to Faults of Mode Actuator
	3. Thermal management control module	Refer to Power Supply Failure of Thermal Management Control Module

8.2.6.4 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

8.2.6.5 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.

c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

8.2.6.6 Data stream list

Serial No.	DID description	Normal value range	Unit
1	A/C heat pipe ECU supply voltage	0-25.4	V
2	Inside temperature	-40-87°C	°C
3	Ambient temperature	-40-87°C	°C
4	Evaporator temperature	-40-87°C	°C
5	Temperature damper position at driver side	0-100%	/
6	Temperature damper position at front passenger side	0- 100	/
7	Air intake damper position	0- 100	/
8	Lighting intensity at driver side	0-2000KW	W/m2
9	Lighting intensity at front passenger side	0-2000KW	W/m2
10	High-voltage electric heater state	0- 7	/
11	High voltage current consumption overview	0- 15	mA
12	Low-voltage power supply	0- 15	mV
13	Instantaneous power consumption exceeds the high-voltage power grid	0- 15	W
14	Blower feedback	0-25.4	V
15	Heat exchanger water pump status	/	/
16	Battery-powered water pump status	/	/
17	Blower relay state	/	/
18	Duty cycle of blower	0- 100	%
19	A/C relay control state	/	/
20	Target air outlet temperature at driver side	-40-87°C	°C
21	Actual face blowing air outlet temperature at driver side	-40-87°C	°C
22	Actual feet-blowing air outlet temperature at driver side	-40-87°C	°C
23	Target air outlet temperature at front passenger side	-40-87°C	°C

Serial No.	DID description	Normal value range	Unit
24	Actual face blowing air outlet temperature at front passenger side	-40-87°C	°C
25	Actual feet blowing air outlet temperature at front passenger side	-40-87°C	°C
26	High pressure side system pressure (non-heat pump scheme)	0-50	Bar
27	On-off state of the solenoid valve 1(evaporator end)	/	/
28	Enabling signal of plate replaceable end electronic expansion valve	/	/
29	Operating status of plate replaceable electronic expansion valve	/	/
30	Position of plate replaceable electronic expansion valve	0-576	/
31	Three-way valve water valve 1 enabling signal (heating three-way water valve)	/	/
32	Three-way water valve 1 running status	/	/
33	Three-way water valve 1 control position	/	%
34	Three-way water valve 2 enabling signal	/	/
35	Three-way water valve 2 running status	/	/
36	Three-way water valve 2 position	/	%
37	Enable signal of the four-way water valve	/	/
38	Four-way water valve running status	/	/
39	Four-way water valve position control	/	/
40	A/C cooling fan request state	0- 100	%
41	Cooling fan status actually controlled by VCU	0- 100	%

Serial No.	DID description	Normal value range	Unit
42	A/C power request	0-25.5	Kw
43	VCU allowed power of air conditioner	0-25.5	Kw
44	Actual power of air conditioner	0-25.5	Kw
45	Battery thermal management demand	/	/
46	Battery thermal management target water temperature	-40-87°C	°C
47	Battery thermal management actual water temperature	-40-87°C	°C
48	Compressor target speed	0-10000	rpm
49	Actual speed of the compressor	0-10000	Xx
50	Compressor power	0-25.5	Kw
51	Actual bus voltage of the compressor	0- 1020	V
52	Actual bus current of the compressor	0- 51	A
53	Compressor power protection status	/	/
54	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature protection speed control state	/	/
55	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature	-40-215°C	°C
56	compressor basic temperature	-40-215°C	°C
57	Heating signal of heater	/	/
58	Target power of the heater	0-20000w	W
59	Water temperature expected for heater	0-100°C	°C
60	Heater coolant inlet temperature	-40-87°C	°C
61	Heater coolant outlet temperature	-40-87°C	°C

Serial No.	DID description	Normal value range	Unit
62	Refrigerant pressure at the compressor outlet (heat pump configuration)	0- 50	Bar
63	Compressor outlet refrigerant temperature (heat pump configuration)	-40-150°C	°C
64	Refrigerant pressure at compressor suction port(heat pump configuration)	0- 30	Bar
65	Inlet and outlet refrigerant temperature (heat pump configuration)	-40-150°C	°C
66	Refrigerant temperature at the outlet of plate replacement (heat pump configuration)	-40-150°C	°C
67	On-off state of the solenoid valve 3	/	/
68	On-off state of the solenoid valve 4	/	/
69	On-off state of the solenoid valve 5	/	/
70	Enable signal of electronic expansion valve at the outer cooling terminal	/	/
71	Operation state of the outer cooling terminal electronic expansion valve	/	/
72	Position of electronic expansion valve at the outer cooling terminal	0- 576	/

8.2.6.7 Self-check of the controller

1. During the operation of the self-check function, the data display area is assumed temperature display part and other parts are in the “OFF” status.
2. During the operation of the self-check function, the air conditioning control is in the “OFF” status.
3. During the operation of the self-check function, the assumed temperature display part displays the fault code after flashing at an interval of 0.5s.
4. During the operation of the self-check function, keep the MODE character the present status but not operate it.
5. During the operation of the self-check function, in case of the IGN2 OFF ON, the system switch off status will be restored.
6. Continuous operation is displayed as follows:

Normal or one fault:

More than one fault:

7. Step action is displayed as follows

In case of normal status or 1 fault, the same as continuous actions

More than one fault:

8.2.6.8 Electrical component failure protection

Serial No.	Item	is unavailable	Fault protection
1	Internal temperature sensor	Short circuit or open	Default temperature 22°C
2	Outdoor temperature sensor	Short circuit or open	Memorized previous valid values (if the power failure is at 22°C by default)
3	Evaporation temperature sensor	Short circuit or open	Default temperature 0°C
4	Temperature damper motor	Short circuit or open	Damper position remains unchanged
5	Mode damper motor	Short circuit or open	Damper position remains unchanged
6	Internal and external circulation regulation motor	Short circuit or open	Damper position remains unchanged
7	Sunlight sensor	Short circuit or open	Default illumination 0 W/m ²
8	A/C signal	Fail to receive the signal	A/COFF

8.2.6.9 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Control module input voltage is low	Refer to Power Supply Failure of Thermal Management Control Module
U300617	Control module input voltage is high	
B118096	Blower fault	Refer to Faults of A/C Blower
B118017	There is a big difference between blower voltage feedback and target value.	
B118171	Temperature damper motor rotor at driver side is blocked	Refer to Faults of Left Temperature Actuator
B118111	Driver side temperature adjustment motor is shorted to GND	
B118115	Driver side temperature adjustment motor is shorted or opened to the power supply	
B118271	Temperature damper motor rotor at front passenger side is blocked	Refer to Faults of Right Temperature Actuator
B118211	Front passenger side temperature adjustment motor is shorted to GND.	

Diagnostic Trouble Code	Description	Fault location/elimination method
B118215	The temperature adjustment motor on the front passenger side is shorted or opened to the power supply.	
B118371	Rotor of air outlet mode motor is blocked	Refer to Faults of Mode Actuator
B118311	Adjustment motor of air outlet mode is shorted to GND	
B118315	Adjustment motor of air outlet mode is shorted or opened to the power supply	
B118471	Circulation damper motor stalling	Refer to Faults of Internal/External Circulation Actuator
B118411	The circulation damper motor is shorted to GND	
B118415	The circulation damper motor is shorted or opened to power supply.	
B118511	The inside temperature sensor is short to GND	Refer to Indoor Temperature Sensor Failure
B118515	The inside temperature sensor is shot to power supply or its circuit is open	
B118611	Evaporator temperature sensor shorted to GND	Refer to Fault of Evaporator Temperature Sensor
B118615	Evaporator temperature sensor is shorted or opened to the power supply	
B118711	Outside temperature sensor is shorted to GND	Refer to Outdoor Temperature Sensor Failure
B118715	Outside temperature sensor is shorted or opened to the power supply.	
B118A15	Sunlight sensor of driver side is short or open to the power supply	Refer to Faults of Ambient Light and Sunlight Sensor
B118A11	Sunlight sensor at the driver side is short-circuited to the ground.	
B118B15	Sunlight sensor of front passenger side is short or open to power supply	
B118B11	Sunlight sensor at the front passenger side is short-circuited to the ground	
B118B13	Sunlight sensor of front passenger side is short or open to power supply	
B11917B	No-load electric heating water pump	Refer to Fault of Heating Water Pump
B119197	Electric heating water pump stalling/ overcurrent	
B119198	Electric heating water pump fault	

Diagnostic Trouble Code	Description	Fault location/elimination method
B119117	Overvoltage protection of electric heating water pump	
B119121	The speed of electric heating water pump is too low	
B119113	Open circuit of electric heating water pump	
B11927B	No-load battery coolant electric water pump	Refer to Battery Cooling Water Pump Fault
B119297	Battery coolant electric water pump stalling/overcurrent	
B119298	Battery coolant electric water pump fault	
B119217	Overvoltage protection of battery coolant electric water pump	
B119221	Battery coolant electric water pump's speed is too low	
B119213	Open circuit of battery coolant electric water pump	
B119817	Repair Request	
B119919	Over current at high-voltage end of the heater	Refer to PTC Heating Controller 2 Faults
B119A15	Heater IGBT short circuit/circuit break	
B119B41	Heater memory error	
B119C98	Heater cooling temperature is too high	
B119D16	High and low-voltage alarm of heater hardware interface	
B119E16	Undervoltage alarm of the heater	
B119E17	Overvoltage alarm at high-voltage end of the heater	
B119F02	Heater LIN communication	
B11A098	Heater hardware overheating	
B11A009	Heater hardware protection	
B11A109	Heater coolant inlet temperature sensor error	Refer to PT Sensor Faults
B11A209	Heater coolant outlet temperature sensor error	
B11A309	Heater core temperature sensor error	
B11A912	Short circuit of water valve 1 coil	Refer to Faults of three-way solenoid valve A
B11A913	Open circuit of water valve 1 coil	
B11A916	Water valve 1 undervoltage	
B11A917	Water valve 1 overvoltage	

Diagnostic Trouble Code	Description	Fault location/elimination method
B11A997	Water valve 1 is shutdown due to over temperature	
B11A998	Water valve 1 over temperature alarm	
B11A900	Water valve 1 is undetermined	
B11EC15	Electronic expansion valve 1 short circuit or open circuit	Refer to Electronic Expansion Valve 1 Failure
B11EC98	Electronic expansion valve 1 over temperature protection or over temperature alarm	
B11EC16	Electronic expansion valve 1 working power supply undervoltage	
B11EC17	Electronic expansion valve 1 working power supply overvoltage	
U022B87	Thermal management controller lost communication with electronic expansion valve 1	
B11AA12	Short circuit of water valve 2 coil	Refer to Faults of refrigerant tube solenoid valve
B11AA13	Open circuit of water valve 2 coil	
B11AA16	Water valve 2 undervoltage	
B11AA17	Water valve 2 overvoltage	
B11AA97	Water valve 2 is shutdown due to over temperature	
B11AA98	Water valve 2 over temperature alarm	Refer to Electronic Expansion Valve 2 Failure
B11ED15	Electronic expansion valve 2 short circuit or open circuit	
B11ED98	Electronic expansion valve 2 over temperature protection or over temperature alarm	
B11ED16	Electronic expansion valve 2 working power supply undervoltage	
B11ED17	Electronic expansion valve 2 working power supply overvoltage	
U022C87	Thermal management controller lost communication with electronic expansion valve 2	Refer to Fault of Four-way Valve
B11AB13	Open circuit of water valve 3 coil	
B11AB16	Water valve 3 undervoltage	
B11AB17	Water valve 3 overvoltage	
B11AB97	Water valve 3 is shutdown due to over temperature	

Diagnostic Trouble Code	Description	Fault location/elimination method
B11AB98	Water valve 3 over temperature alarm	
B11A417	Compressor standby overvoltage fault	Refer to Faults of A/C Compressor
B11A416	Compressor standby undervoltage fault	
B118F19	Overcurrent protection of the compressor	
B118F16	Compressor undervoltage	
B118F17	Compressor overvoltage	
B118F44	RAM fault of the compressor	
B118F45	ROM fault of the compressor	
B118F46	EEPROM fault of the compressor	
B11DA01	High voltage detection circuit fault of the compressor	
B11DB01	Current detection circuit fault of the compressor	
B11DC01	Current detection circuit fault of the compressor motor	
B11DC19	Abnormal current protection of compressor motor	
B11DD01	Basic temperature sensor failure of the compressor	
B11DD98	Low temperature protection of compressor basic temperature	
B11DE01	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature sensor failure	
B11DE98	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature overheating protection	
B11DF01	Compressor drive circuit failure	
B118F96	Compressor failure	
B11E096	Compressor rotor abnormal action protection	
B11C417	Input voltage fluctuation of compressor high voltage	
B11E211	The refrigerant temperature sensor at the compressor outlet is short-circuited to the ground	Refer to Fault of Refrigerant Temperature Sensor(Evaporator Outlet)
B11E215	The refrigerant temperature sensor at the compressor outlet is short-circuited to power supply or open circuit	

Diagnostic Trouble Code	Description	Fault location/elimination method
B11E314	The refrigerant pressure & temperature sensor at the compressor outlet is opened or short-circuited to the ground	
B11E312	The refrigerant pressure sensor at the compressor outlet is short-circuited to power supply	
B11E414	The refrigerant pressure sensor at the compressor suction port is opened or short-circuited to the ground	
B11E412	The refrigerant pressure sensor at the compressor suction port is short-circuited to power supply	
B11E511	Inlet and outlet refrigerant temperature sensor is short circuited to the ground	Refer to Fault of Refrigerant Temperature Sensor
B11E515	Inlet and outlet refrigerant temperature sensor is short circuited to power supply or open circuit	
B11E711	Plate heat exchange outlet refrigerant temperature sensor is short circuited to the ground	Refer to Fault of Refrigerant Temperature Sensor(at cooling device outlet)
B11E715	Plate heat exchange outlet refrigerant temperature sensor is short circuited to power supply or open circuit	
B11E811	Temperature sensor for driver's face blowing is short to GND	Refer to Air Duct Sensor 1 Faults
B11E815	Temperature sensor for driver's face blowing is shorted or opened to the power supply.	
B11E911	Temperature sensor for driver's feet blowing is short to GND	Refer to Air Duct Sensor 2 Faults
B11E915	Temperature sensor for driver's feet blowing is shorted or opened to the power supply.	
B11EA11	Temperature sensor for front passenger's face blowing is short to GND	Refer to Air Duct Sensor 3 Faults
B11EA15	Temperature sensor for front passenger's face blowing is shorted or opened to the power supply.	

Diagnostic Trouble Code	Description	Fault location/elimination method
B11EB11	Temperature sensor for front passenger's feet blowing is short to GND	Refer to Air Duct Sensor 4 Faults
B11EB15	Temperature sensor for front passenger's feet blowing is shorted or opened to the power supply.	
B11EE96	Solenoid valve 1 control circuit failure	Refer to Faults of Heat Exchanger Solenoid Valve 1
B11EF96	Solenoid valve 2 control circuit failure	Refer to Faults of Heat Exchanger Solenoid Valve 2
B11F096	Solenoid valve 3 control circuit failure	Refer to Faults of Heat Exchanger Solenoid Valve 3
B11F196	Solenoid valve 4 control circuit failure	Refer to Faults of Heat Exchanger Solenoid Valve 4
B11F296	Solenoid valve 5 control circuit failure	Refer to Faults of Heat Exchanger Solenoid Valve 5
U015687	Communication with MMI is lost	Refer to Communication Failure of Thermal Management Control Module
U016B87	Communication with ACCM is lost	
U111F87	Communication with PTC is lost	
U111C87	Communication with WV1 is lost	
U111D87	Communication with WV2 is lost	
U111E87	Communication with WV3 is lost	
U016687	Communication with FCP is lost	
U014087	Communication with BCM is lost	
U111487	Communication with VCU is lost	
U012287	Communication with ESC is lost	
U015587	Communication with IPK is lost	
U019887	Communication with T-BOX is lost	
U007300	CAN bus off	
U02A387	Communication with PM2.5 (AQM) is lost	
B118D00	Communication with PM2.5 is lost	
B118D96	PM2.5 hardware fault	
B118896	AQS sensor fault	Refer to AQS Fault
B118C96	ION hardware fault	Refer to Ion Generator Fault
U025987	Communication with VCU is lost (LIN bus)	Refer to VCU LIN Communication Failure

8.2.6.10 Fault of evaporator temperature sensor

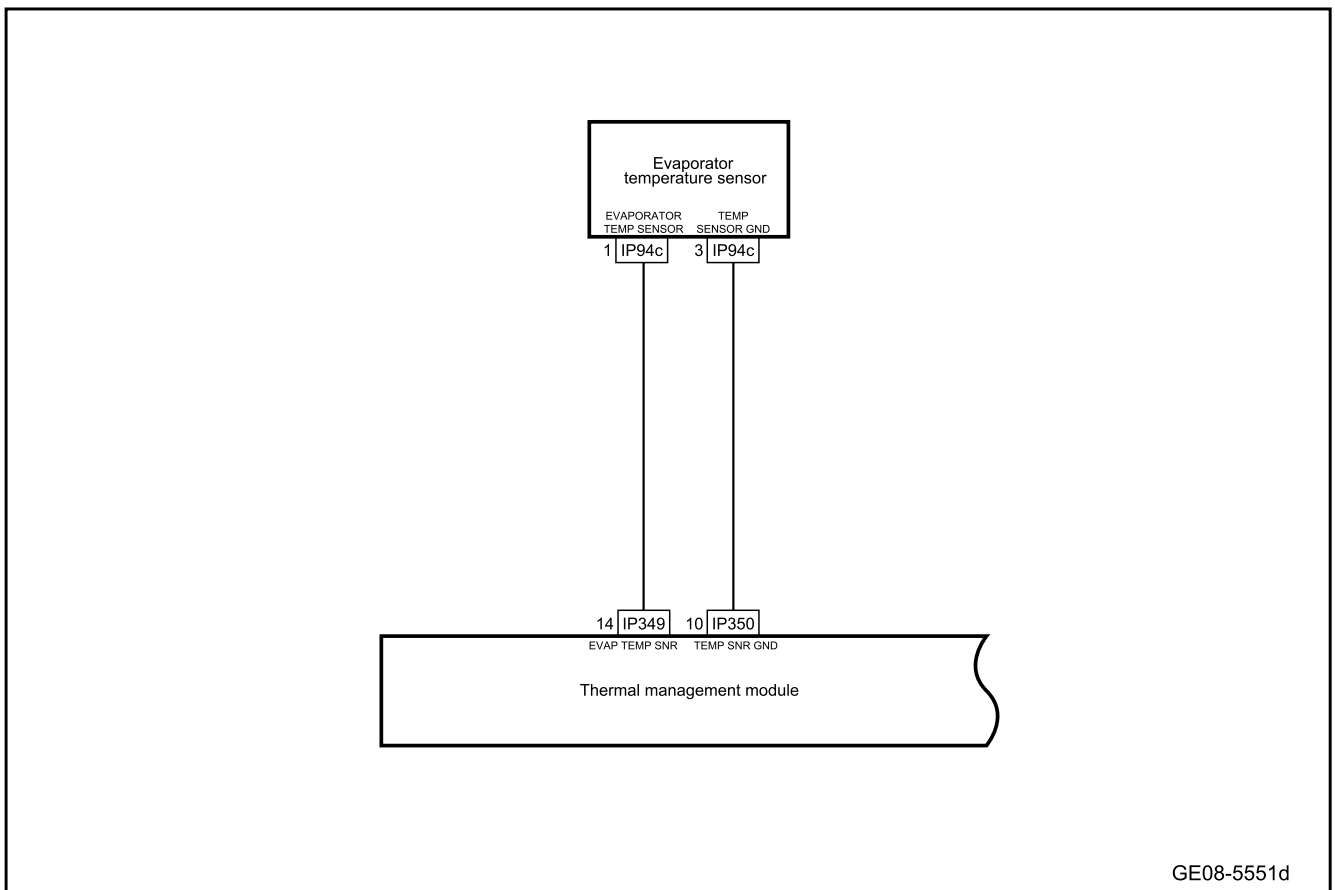
1. DTC description:

Diagnostic Trouble Code	Description
B118611	Evaporator temperature sensor shorted to GND
B118615	Evaporator temperature sensor is shorted or opened to the power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118611	The voltage value detected by the evaporator outlet sensor is smaller than 0.1V for 500ms	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Evaporator temperature sensor
B118615	The voltage value detected by the evaporator outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, evaporator temperature sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, evaporator temperature sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

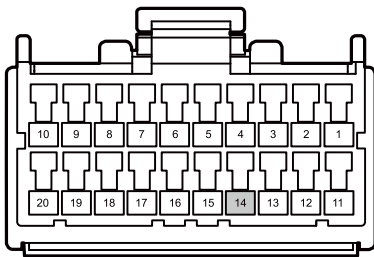
No

Repair or replace the faulty part.

Yes

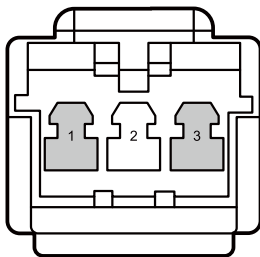
Step 3	Check the harness between the thermal management control module and the evaporator temperature sensor for an open circuit.
--------	--

IP349 thermal management control module harness connector 3



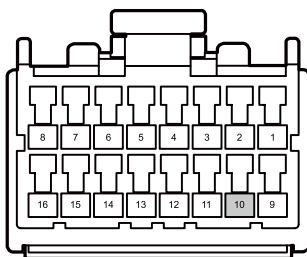
GE08-5620d

IP94c evaporator temperature sensor harness connector



GE08-5621d

IP350 thermal management control module harness connector 4



GE08-5622d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect evaporation temperature sensor harness connector IP94c.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(14)	IP94c(1)	Standard resistance: less than 1Ω
IP350(10)	IP94c(3)	

- F. Confirm whether the measured value meets the standard.

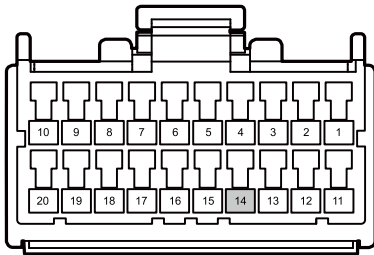
No

Repair or replace the harness.

Yes

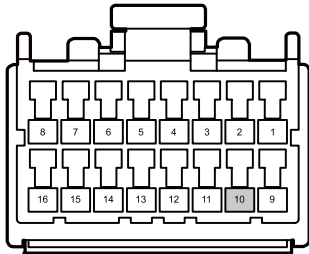
Step 4 Check the harness between the thermal management control module and the evaporator temperature sensor for a short circuit to power supply.

IP349 thermal management control module harness connector 3



GE08-5623d

IP350 thermal management control module harness connector 4



GE08-5624d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect evaporation temperature sensor harness connector IP94c.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(14)	Vehicle body is grounded.	Standard voltage: 0V
IP350(10)		

- G. Confirm whether the measured value meets the standard.

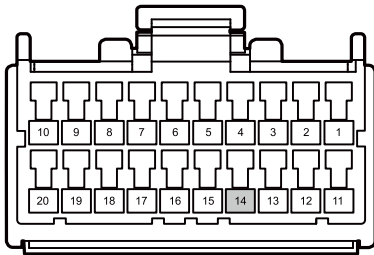
No

Repair or replace the harness.

Yes

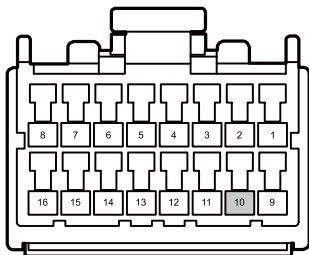
Step 5 Check the harness between the thermal management control module and the evaporator temperature sensor for a short circuit to ground.

IP349 thermal management control module harness connector 3



GE08-5625d

IP350 thermal management control module harness connector 4



GE08-5626d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect evaporation temperature sensor harness connector IP94c.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(14)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(10)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Evaporator temperature sensor replacement.

- A. Evaporator temperature sensor replacement. Refer to Evaporator temperature sensor replacement
- B. Confirm whether the evaporator temperature sensor is working normally.

Yes → System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

8.2.6.11 Fault of outdoor temperature sensor

1. DTC description:

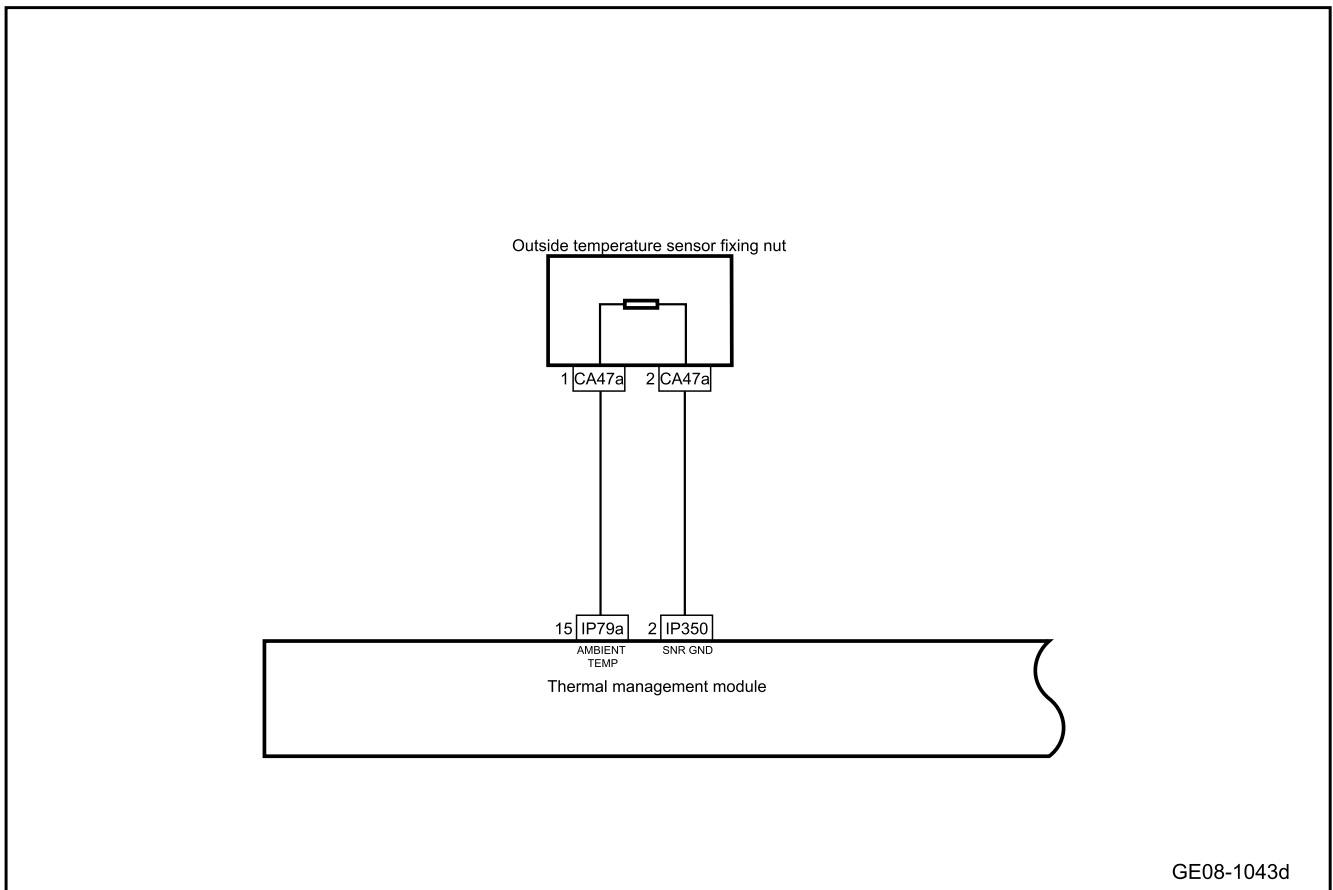
Diagnostic Trouble Code	Description
B118711	Outside temperature sensor is shorted to GND
B118715	Outside temperature sensor is shorted or opened to the power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118711	The voltage value detected by the outside outlet sensor is smaller than 0.1V for 500ms	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. External temperature sensor

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118715	The voltage value detected by the outside outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, outdoor temperature sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, outdoor temperature sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

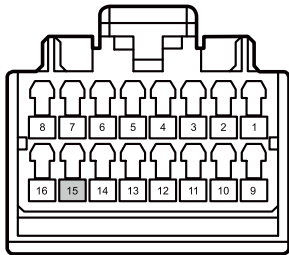
No

Repair or replace the faulty part.

Yes

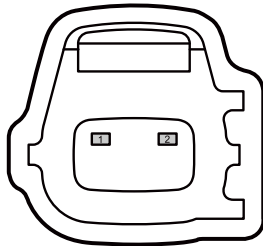
Step 3	Check the harness between the thermal management control module and the outdoor temperature sensor for an open circuit.
--------	---

IP79a thermal management control module harness connector 1



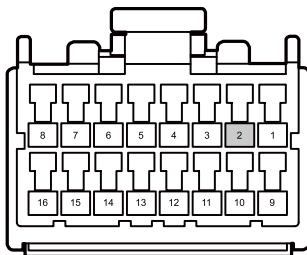
GE08-5627d

CA47a outside temperature sensor harness connector



GE08-5628d

IP350 thermal management control module harness connector 4



GE08-5629d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the harness connector CA47a of outdoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(15)	CA47a(2)	Standard resistance: less than 1Ω
IP350(2)	CA47a(1)	

- F. Confirm whether the measured value meets the standard.

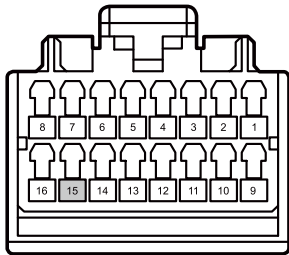
No

Repair or replace the harness.

Yes

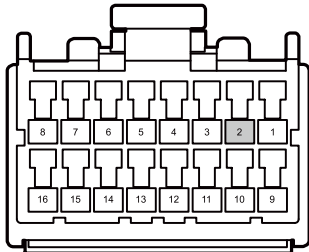
Step 4 Check the harness between the thermal management control module and the outdoor temperature sensor for a short circuit to power supply.

IP79a thermal management control module harness connector 1



GE08-5630d

IP350 thermal management control module harness connector 4



GE08-5631d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the harness connector CA47a of outdoor temperature sensor.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(15)	Vehicle body is grounded.	Standard voltage: 0V
IP350(2)		

- G. Confirm whether the measured value meets the standard.

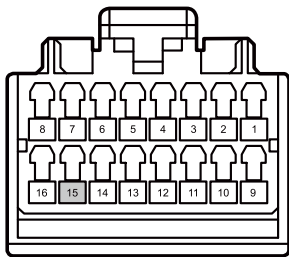
No

Repair or replace the harness.

Yes

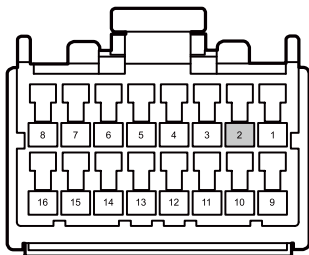
Step 5 Check the harness between the thermal management control module and the outdoor temperature sensor for a short circuit to ground.

IP79a thermal management control module harness connector 1



GE08-5632d

IP350 thermal management control module harness connector 4



GE08-5633d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the harness connector CA47a of outdoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(15)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace outdoor temperature sensor.

- A. Replace outdoor temperature sensor. Refer to [Replacement of Outdoor Temperature Sensor](#)
- B. Confirm whether the outdoor temperature sensor works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

8.2.6.12 Fault of left temperature actuator

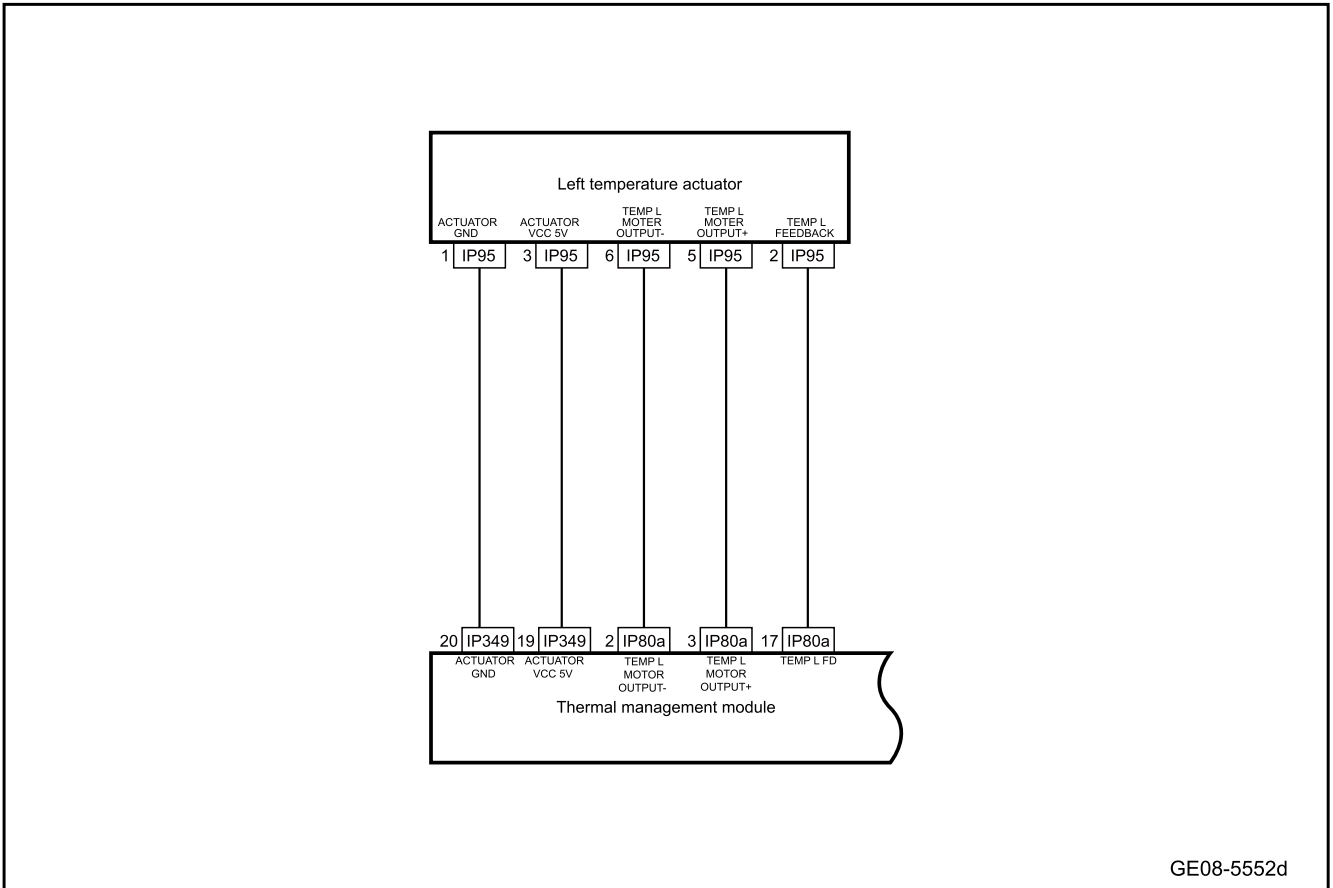
1. DTC description:

Diagnostic Trouble Code	Description
B118171	Temperature damper motor rotor at driver side is blocked
B118111	Driver side temperature adjustment motor is shorted to GND
B118115	Driver side temperature adjustment motor is shorted or opened to the power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118171	<ol style="list-style-type: none"> 1. The driver temperature motor must meet the requirements in the continuous running state 2. The driver temperature motor cannot operate at an angle that meets the requirements per unit time 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 		
B118111	<ol style="list-style-type: none"> 1. Driver's temperature motor is always running 2. The time for the driver temperature motor control pin to return short circuit to ground is more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 	<ol style="list-style-type: none"> 1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode 	<ol style="list-style-type: none"> 1. Circuit 2. Thermal management control module 3. Left temperature actuator
B118115	<ol style="list-style-type: none"> 1. Driver's temperature motor is always running 2. The time for the driver temperature motor control pin to return open circuit or short to power supply is more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, left temperature actuator for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, left temperature actuator harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

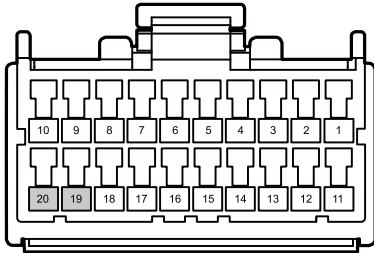
No

Repair or replace the faulty part.

Yes

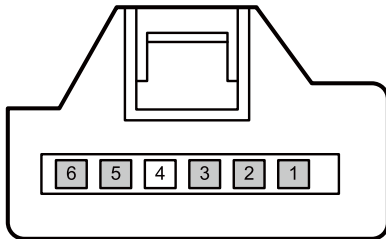
Step 3	Check the harness between the thermal management control module and the left temperature actuator for an open circuit.
--------	--

IP349 thermal management control module harness connector 3



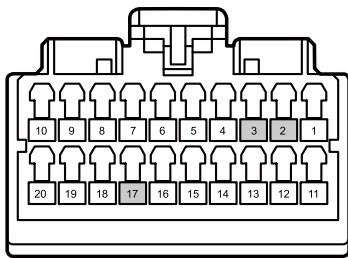
GE08-5634d

IP95 left temperature actuator harness connector



GE08-5635d

IP80a thermal management control module harness connector 2



GE08-5636d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. Disconnect the left temperature actuator harness connector IP95.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP95(1)	Standard resistance: less than 1Ω
IP80a(17)	IP95(2)	
IP349(19)	IP95(3)	
IP80a(3)	IP95(5)	
IP80a(2)	IP95(6)	

- F. Confirm whether the measured value meets the standard.

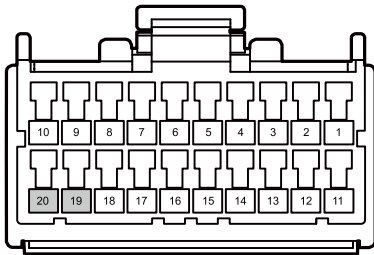
No

Repair or replace the harness.

Yes

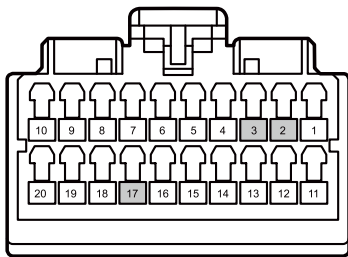
Step 4	Check the harness between the thermal management control module and the left temperature actuator for a short circuit to power supply.
--------	--

IP349 thermal management control module harness connector 3



GE08-5637d

IP80a thermal management control module harness connector 2



GE08-5638d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. Disconnect the left temperature actuator harness connector IP95.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(17)		
IP349(19)		
IP80a(3)		
IP80a(2)		

- G. Confirm whether the measured value meets the standard.

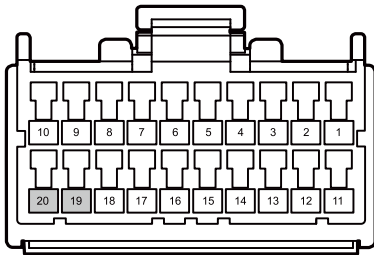
No

Repair or replace the harness.

Yes

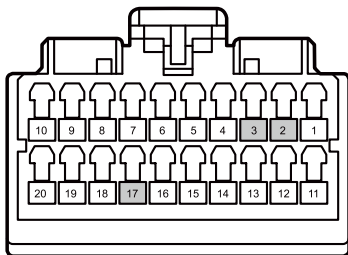
Step 5 Check the harness between the thermal management control module and the left temperature actuator for a short circuit to ground.

IP349 thermal management control module harness connector 3



GE08-5639d

IP80a thermal management control module harness connector 2



GE08-5640d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. Disconnect the left temperature actuator harness connector IP95.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(17)		
IP349(19)		
IP80a(3)		
IP80a(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the left temperature actuator.

- A. Replace the left temperature actuator. Refer to replacement of left temperature actuator
- B. Check whether the left temperature actuator operates normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

8.2.6.13 Fault of mode actuator

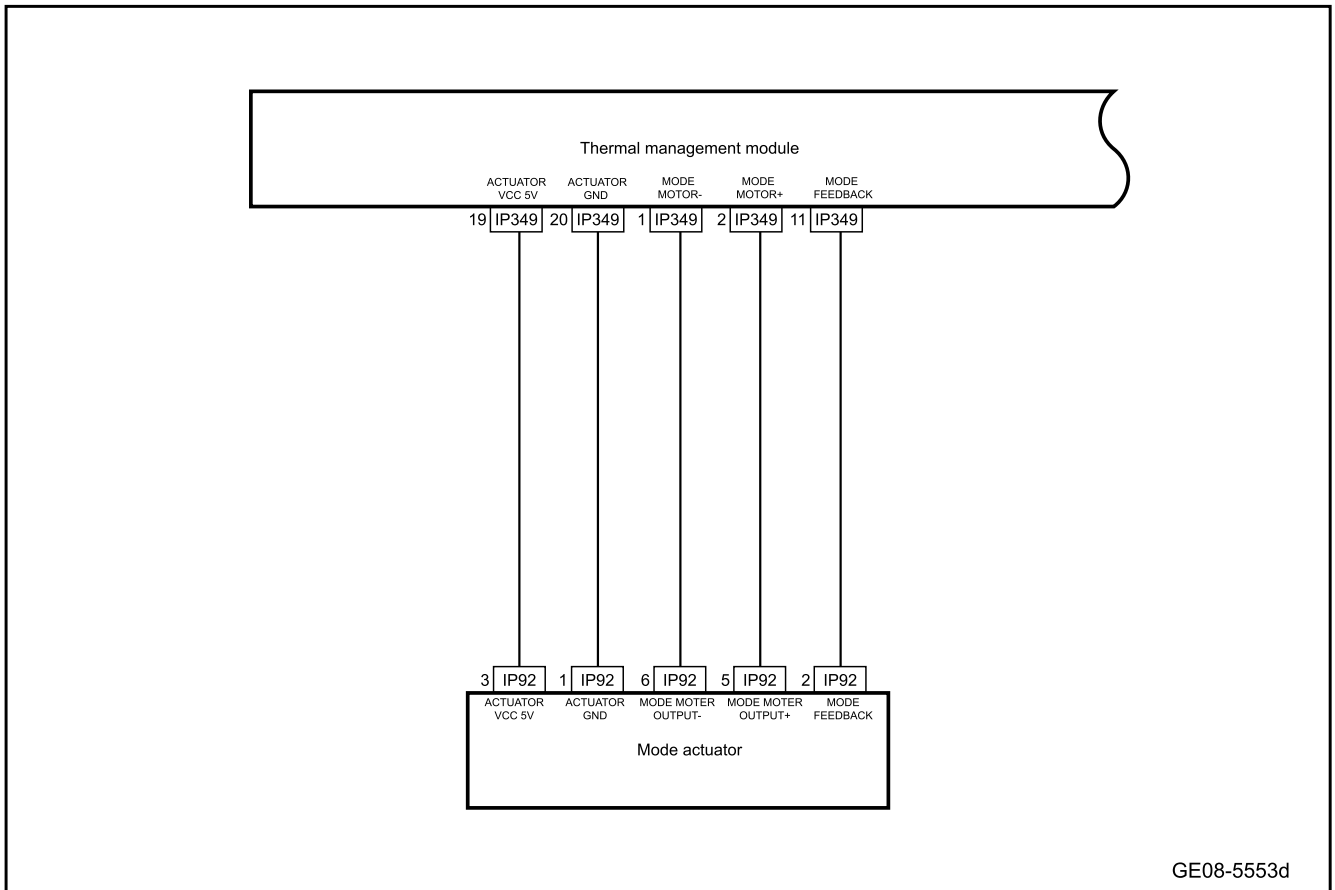
1. DTC description:

Diagnostic Trouble Code	Description
B118371	Rotor of air outlet mode motor is blocked
B118311	Adjustment motor of air outlet mode is shorted to GND
B118315	Adjustment motor of air outlet mode is shorted or opened to the power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118371	1. Mode motor keeps running 2. The mode motor cannot run within the unit time at an angle that meets the requirements 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again.		
B118311	1. Mode motor keeps running 2. The mode motor control pin returns to short circuit to ground for more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again.	1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Mode actuator
B118315	1. Mode motor keeps running 2. The mode motor control pin returns to open circuit or short circuit for more than 500 milliseconds 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again.		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

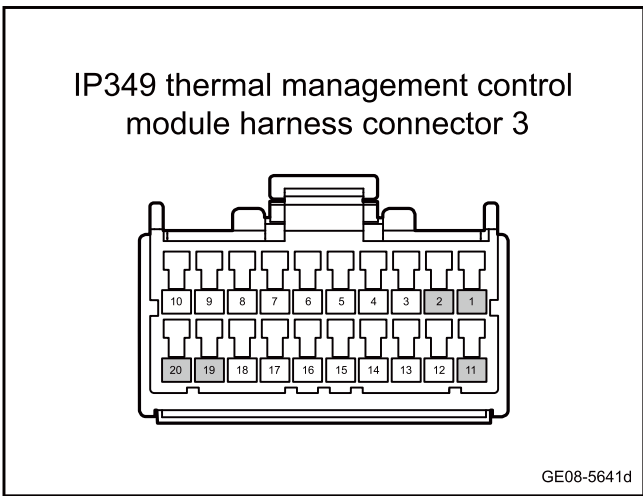
- A. Check the thermal management control module, mode actuator for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, mode actuator harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the thermal management control module and the mode actuator for an open circuit.



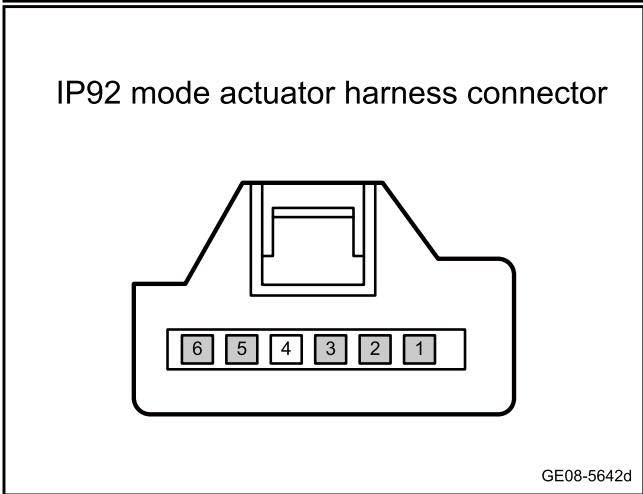
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect mode actuator harness connector IP92.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP92(1)	Standard resistance: less than 1Ω
IP349(11)	IP92(2)	
IP349(19)	IP92(3)	
IP349(2)	IP92(5)	
IP349(1)	IP92(6)	

- E. Confirm whether the measured value meets the standard.

No

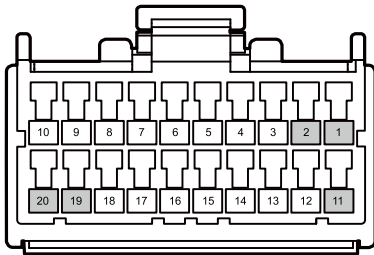
Repair or replace the harness.



Yes

Step 4 Check the harness between the thermal management control module and the mode actuator for a short circuit to power supply.

IP349 thermal management control module harness connector 3



GE08-5643d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect mode actuator harness connector IP92.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard voltage: 0V
IP349(11)		
IP349(19)		
IP349(2)		
IP349(1)		

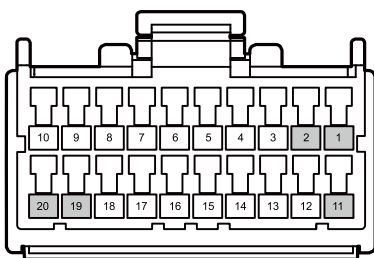
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check the harness between the thermal management control module and the mode actuator for a short circuit to ground.

IP349 thermal management control module harness connector 3



GE08-5644d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect mode actuator harness connector IP92.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP349(11)		
IP349(19)		
IP349(2)		
IP349(1)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6	Replace mode actuator.
--------	------------------------

- A. Replace mode actuator. Refer to replacement of mode actuator
- B. Confirm whether the mode actuator works normally.

Yes	System is normal.
-----	-------------------

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

8.2.6.14 Fault of internal and external circulation actuator

1. DTC description:

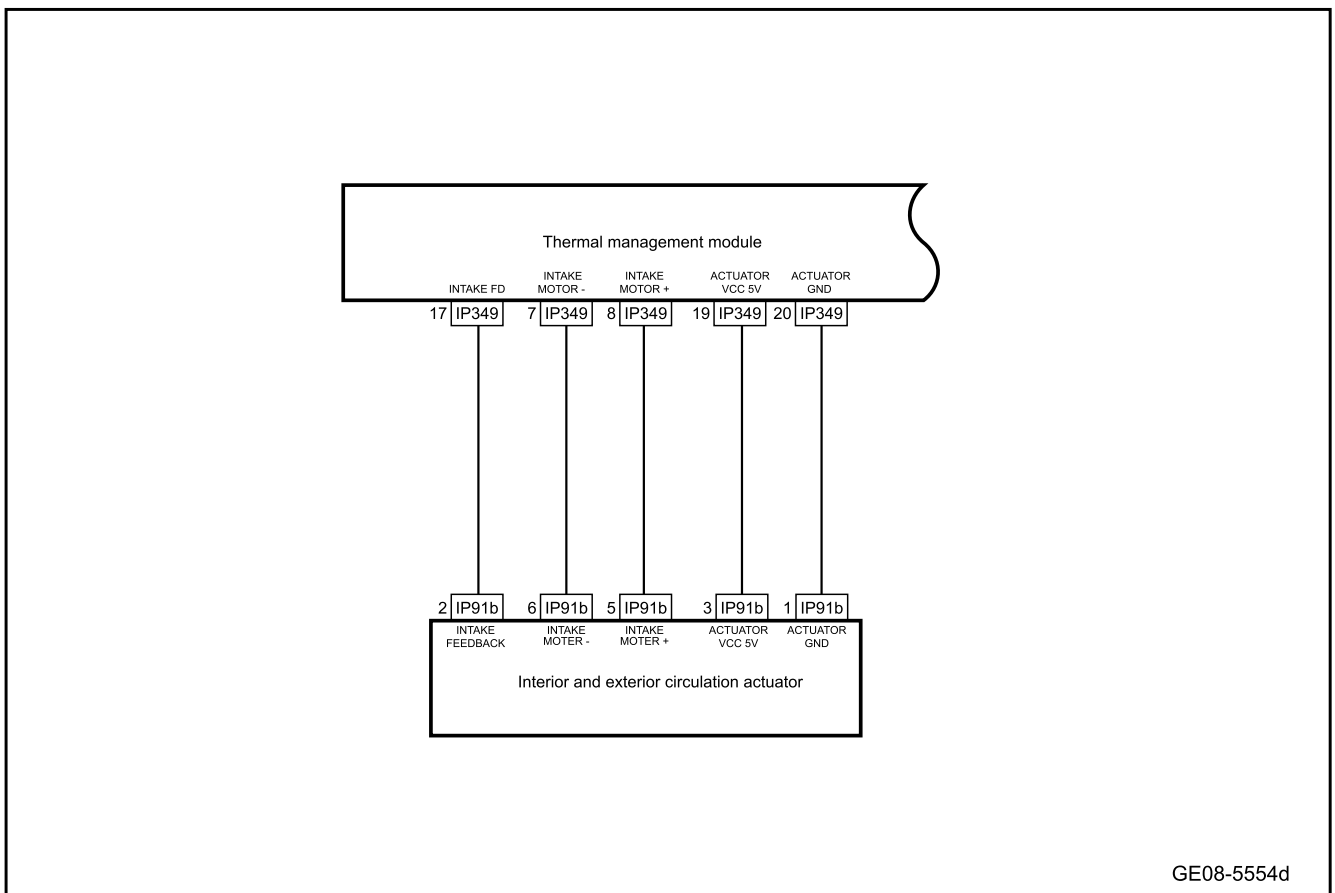
Diagnostic Trouble Code	Description
B118471	Circulation damper motor stalling
B118411	The circulation damper motor is shorted to GND
B118415	The circulation damper motor is shorted or opened to power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118471	<ol style="list-style-type: none"> 1. Internal/external circulation motor keeps running 2. The internal and external circulation motors cannot operate within a unit time at an angle that meets the requirements 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 	<ol style="list-style-type: none"> 1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode 	<ol style="list-style-type: none"> 1. Circuit 2. Thermal management control module 3. Internal and external circulation actuator
B118411	<ol style="list-style-type: none"> 1. Circulation damper motor keeps running 2. The circulation damper motor control pin returns to short circuit to ground for more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118415	1. Circulation damper motor keeps running 2. The circulation damper motor control pin returns to open circuit or short circuit to power supply for more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again.		

3. Schematic circuit diagram:



GE08-5554d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, internal/external circulation actuator for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, internal/external circulation actuator harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

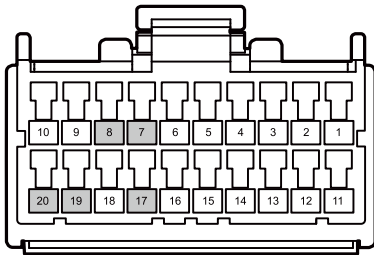
No

Repair or replace the faulty part.

Yes

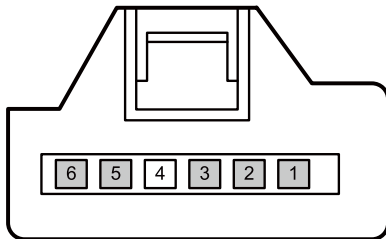
Step 3	Check the harness between the thermal management control module and the internal/external circulation actuator for an open circuit.
--------	---

IP349 thermal management control module harness connector 3



GE08-5645d

IP91b recirculation and circulation actuator harness connector



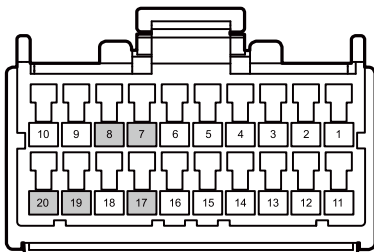
GE08-5646d

Yes

Step 4

Check the harness between the thermal management control module and the internal/external circulation actuator for a short circuit to power supply.

IP349 thermal management control module harness connector 3



GE08-5647d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the internal and external circulation actuator harness connector IP91b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP91b(1)	Standard resistance: less than 1Ω
IP349(17)	IP91b(2)	
IP349(19)	IP91b(3)	
IP349(8)	IP91b(5)	
IP349(7)	IP91b(6)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the internal and external circulation actuator harness connector IP91b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard voltage: 0V
IP349(17)		
IP349(19)		
IP349(8)		

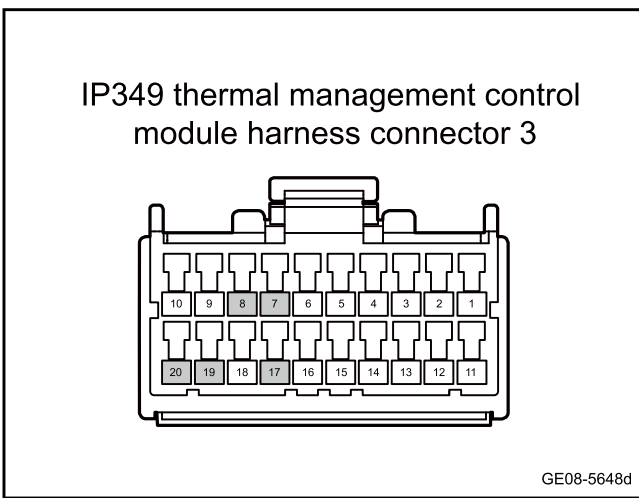
Measure terminal 1	Measure terminal 2	Standard value
IP349(7)		

F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check the harness between the thermal management control module and the internal/external circulation actuator for a short circuit to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the internal and external circulation actuator harness connector IP91b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP349(17)		
IP349(19)		
IP349(8)		
IP349(7)		

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the internal and external circulation actuators.

- A. Replace the internal and external circulation actuators. Refer to replacement of the internal and external circulation actuators
- B. Confirm whether the internal and external circulation actuators work normally.

Yes System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

8.2.6.15 Fault of indoor temperature sensor

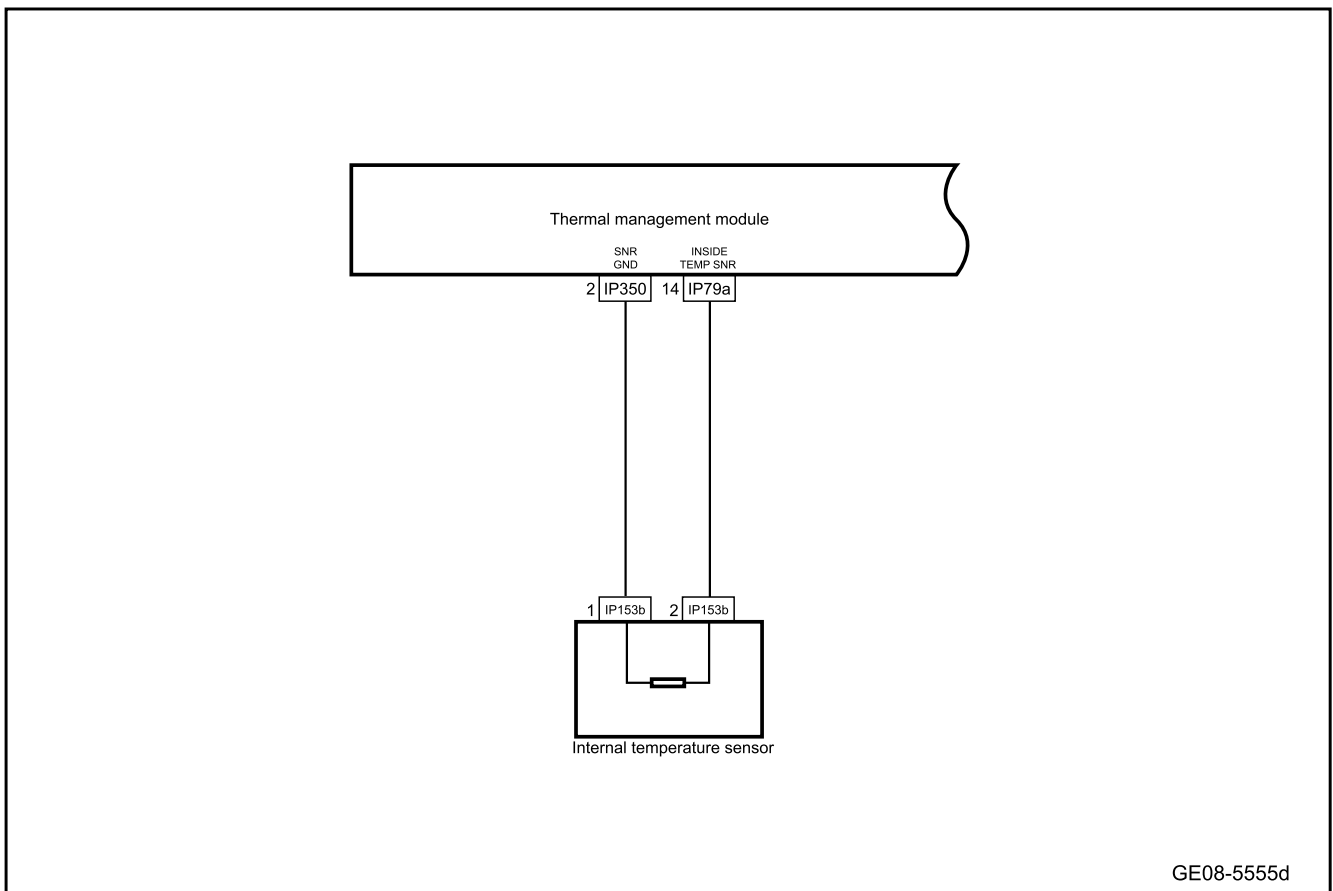
1. DTC description:

Diagnostic Trouble Code	Description
B118511	The inside temperature sensor is short to GND
B118515	The inside temperature sensor is shot to power supply or its circuit is open

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118511	The voltage value detected by the inside outlet sensor is smaller than 0.1V for 500ms	1. Power supply within the range of 9V-16V 2. IG ON 3S after enabling	1. Circuit 2. Thermal management control module 3. Internal temperature sensor
B118515	The voltage value detected by the inside outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, indoor temperature sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, indoor temperature sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

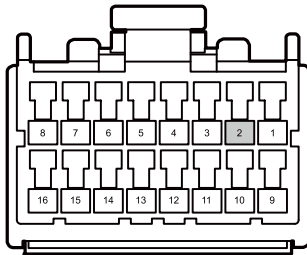
No

Repair or replace the faulty part.

Yes

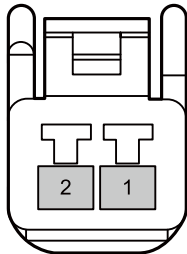
Step 3	Check the harness between the thermal management control module and the indoor temperature sensor for an open circuit.
--------	--

IP350 thermal management control module harness connector 4



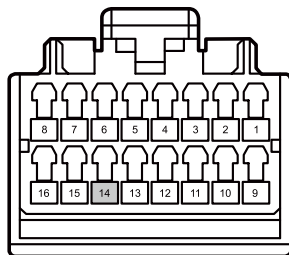
GE08-5649d

IP153b inside temperature sensor harness connector



GE08-5650d

IP79a thermal management control module harness connector 1



GE08-5651d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the harness connector IP153b of the indoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(2)	IP153b(1)	Standard resistance: less than 1Ω
IP79a(14)	IP153b(2)	

- F. Confirm whether the measured value meets the standard.

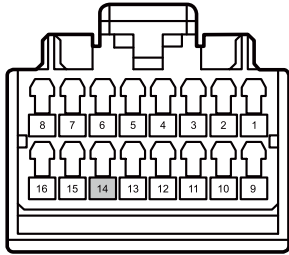
No

Repair or replace the harness.

Yes

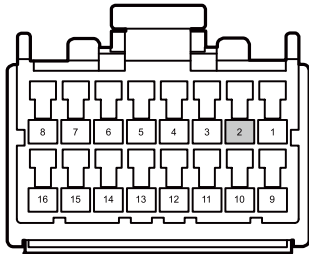
Step 4 Check the harness between the thermal management control module and the indoor temperature sensor for a short circuit to power supply.

IP79a thermal management control module harness connector 1



GE08-5652d

IP350 thermal management control module harness connector 4



GE08-5653d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the harness connector IP153b of the indoor temperature sensor.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(14)	Vehicle body is grounded.	Standard voltage: 0V
IP350(2)		

- G. Confirm whether the measured value meets the standard.

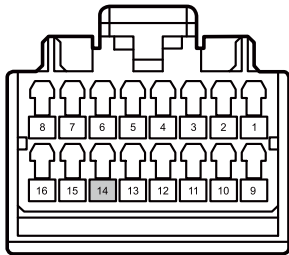
No

Repair or replace the harness.

Yes

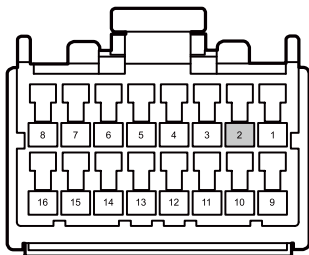
Step 5 Check the harness between the thermal management control module and the indoor temperature sensor for a short circuit to ground.

IP79a thermal management control module harness connector 1



GE08-5654d

IP350 thermal management control module harness connector 4



GE08-5655d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the harness connector IP153b of the indoor temperature sensor.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(14)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the indoor temperature sensor.

- A. Replace the indoor temperature sensor. Refer to [Replacement of indoor temperature sensor](#)
- B. Confirm whether the indoor temperature sensor works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

8.2.6.16 Faults of ambient light and sunlight sensor

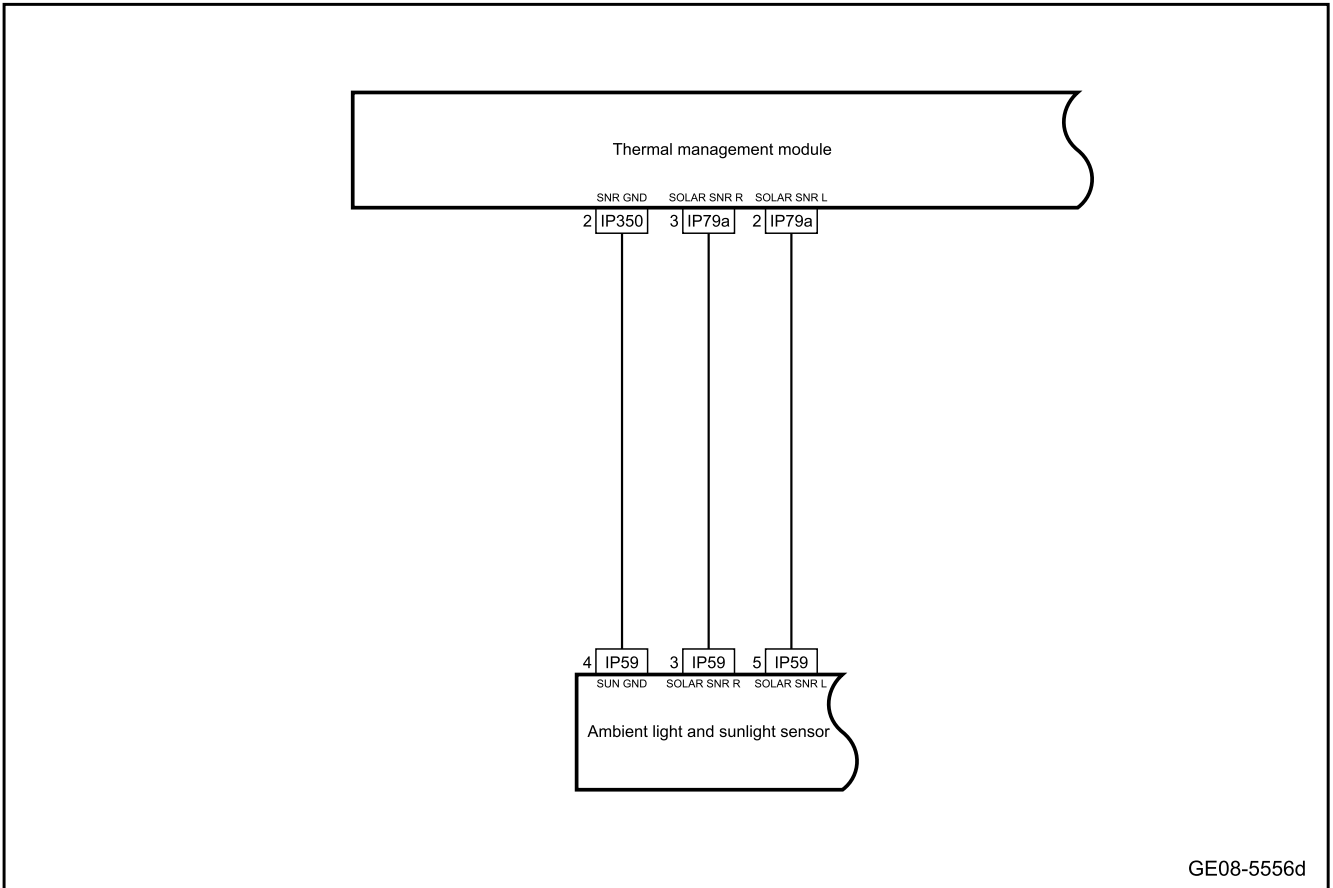
1. DTC description:

Diagnostic Trouble Code	Description
B118A15	Sunlight sensor of driver side is short or open to the power supply
B118A11	Sunlight sensor at the driver side is short-circuited to the ground.
B118B15	Sunlight sensor of front passenger side is short or open to power supply
B118B11	Sunlight sensor at the front passenger side is short-circuited to the ground
B118B13	Sunlight sensor of front passenger side is short or open to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118A15	The voltage value detected by the driver's sunlight outlet sensor is greater than 4.9V for 500ms	1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Ambient light and sunlight sensor
B118A11	The voltage value detected by the driver's sunlight outlet sensor is smaller than 0.1V for 10s		
B118B15	The voltage value detected by the front passenger's sunlight outlet sensor is greater than 4.9V for 500ms		
B118B11	The voltage value detected by the front passenger's sunlight outlet sensor is smaller than 0.1V for 500ms		
B118B13	The feedback voltage exceeds 4.9V for more than 2s continuously.		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, ambient light and sunlight sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, ambient light and sunlight sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

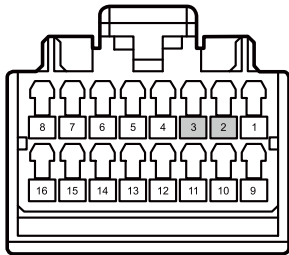
No

Repair or replace the faulty part.

Yes

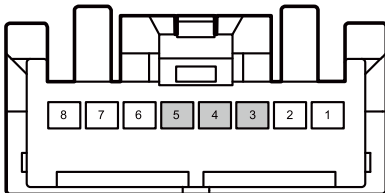
Step 3	Check the harness between the thermal management control module and the ambient light and sunlight sensor for an open circuit.
--------	--

IP79a thermal management control module harness connector 1



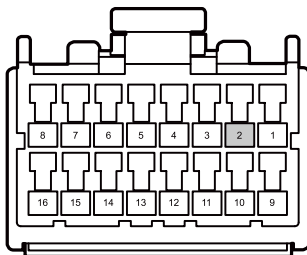
GE08-5656d

IP59 ambient light and sunlight sensor harness connector



GE08-5657d

IP350 thermal management control module harness connector 4



GE08-5658d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the ambient light and sunlight sensor IP59.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(2)	IP59(5)	Standard resistance: less than 1Ω
IP79a(3)	IP59(3)	
IP350(2)	IP59(4)	

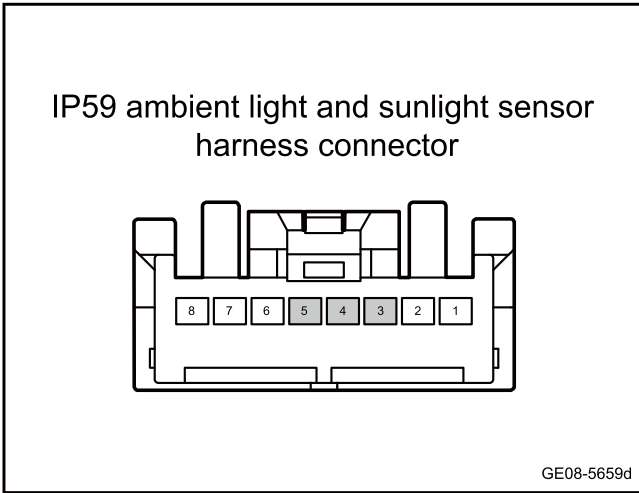
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the thermal management control module and the ambient light and sunlight sensor for a short circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the ambient light and sunlight sensor IP59.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

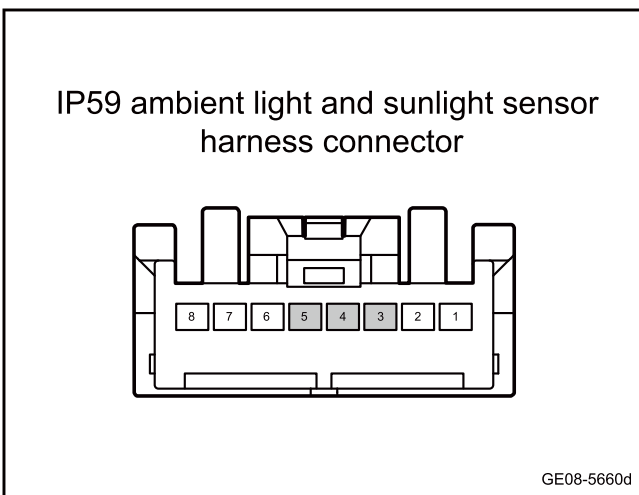
Measure terminal 1	Measure terminal 2	Standard value
IP59(5)	Vehicle body is grounded.	Standard voltage: 0V
IP59(3)		
IP59(4)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5	Check the harness between the thermal management control module and the ambient light and sunlight sensor for a short circuit to ground.
---------------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the ambient light and sunlight sensor IP59.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP59(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP59(3)		
IP59(4)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6	Replace the ambient light and sunlight sensor.
---------------	--

- A. Replace the ambient light and sunlight sensor. Refer to [Replacement of Ambient Light and Sunlight Sensor](#)
- B. Confirm whether the ambient light and sunlight sensor works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

8.2.6.17 Heating water pump fault

1. DTC description:

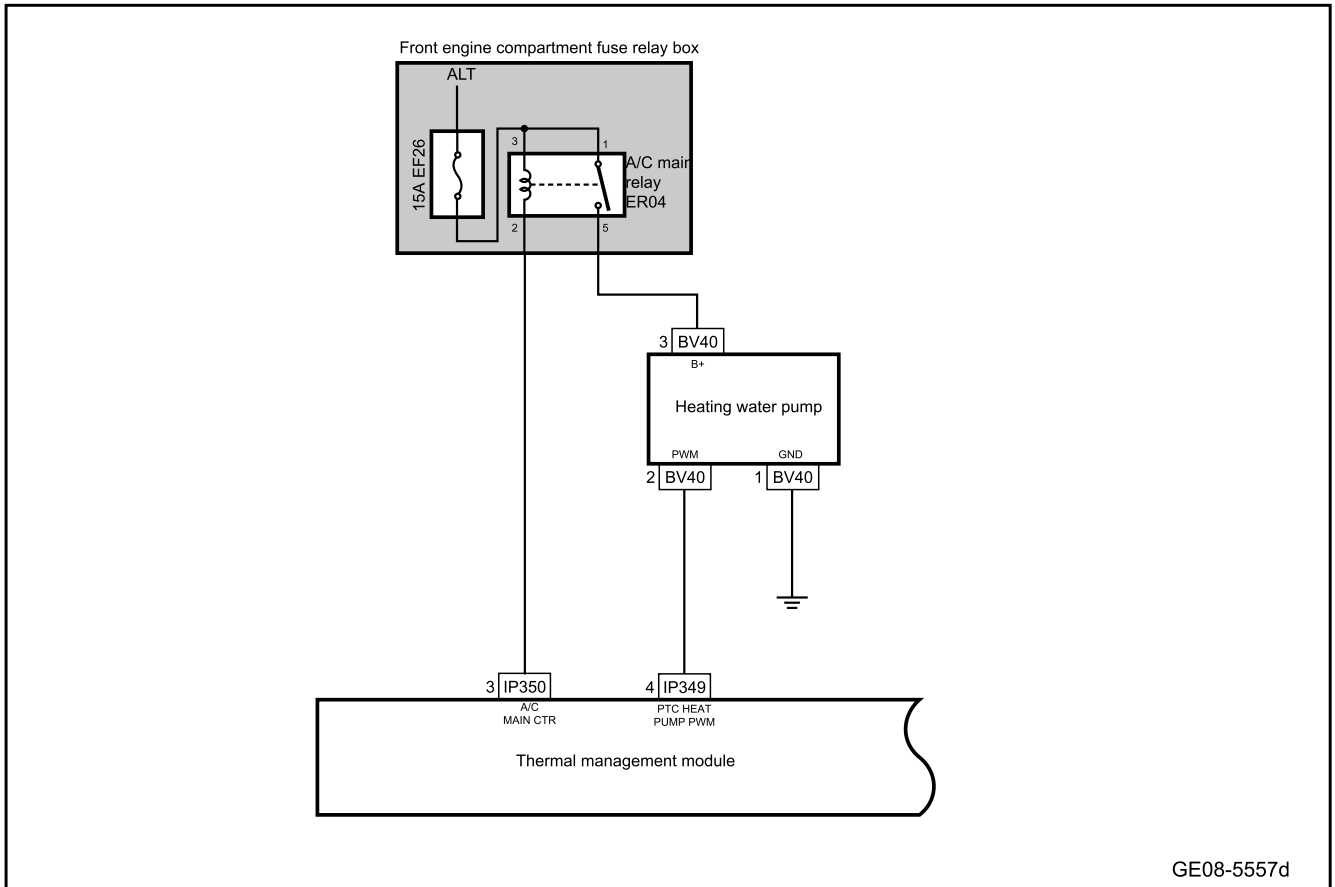
Diagnostic Trouble Code	Description
B11917B	No-load electric heating water pump
B119197	Electric heating water pump stalling/overcurrent
B119198	Electric Heating water pump fault
B119117	Overvoltage protection of electric heating water pump
B119121	The speed of electric heating water pump is too low
B119113	Open circuit of electric heating water pump

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11917B	AC receives no-load PWM signal of electric water pump for heating	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heating water pump
B119197	AC receives the locked-rotor/over-voltage protection PWM signal of electric water pump for heating		
B119198	AC receives the over-temperature shutdown PWM signal of the electric water pump for heating for at least 20 s, or receives the PWM for at least 20 s, or continuously detects the low level for at least 20 s (the waveform is always sent before the diagnostic condition of the water pump is released)		
B119117	AC receives the over-voltage protection PWM signal of electric water pump for heating		
B119121	Detect that the TLow is 2500ms (type value), , and the low level is lower than 2.5V. If the speed is less than the minimum speed, nMin exceeds 4s	1. Voltage range is 9V-16V. 2. After IG is switched on, it is enabled in 3 s	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B119113	Detect the TLow is more than 5000ms,the Low level is below 2.5V	1. Voltage range is 9V-16V. 2. After IG is switched on, it is enabled in 3 s	

3. Schematic circuit diagram:



GE08-5557d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes → Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.

Standard voltage: 9-16V

- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the air conditioner main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

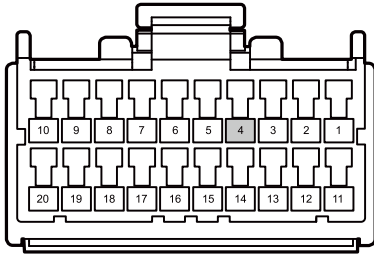
Yes

System is normal.

No

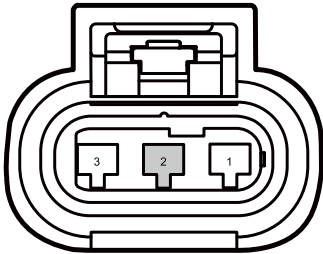
Step 5 | Check whether the harness between the thermal management control module and the heating water pump is normal.

IP349 thermal management control module harness connector 3



GE08-5661d

BV40 Heating water pump harness connector



GE08-5662d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the heating water pump harness connector BV40.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(4)	BV40(2)	Standard resistance: less than 1Ω
IP349(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 4 of harness connector IP349 of thermal management control module and body grounding.

Standard voltage: 0V

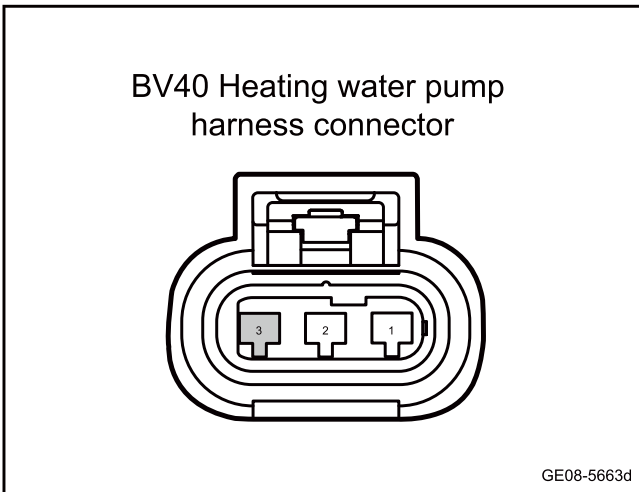
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between the heating water pump and the air conditioner relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the air conditioner main relay ER04.
- C. Disconnect the heating water pump harness connector BV40.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV40(3)	ER04(5)	Standard resistance: less than 1Ω
BV40(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

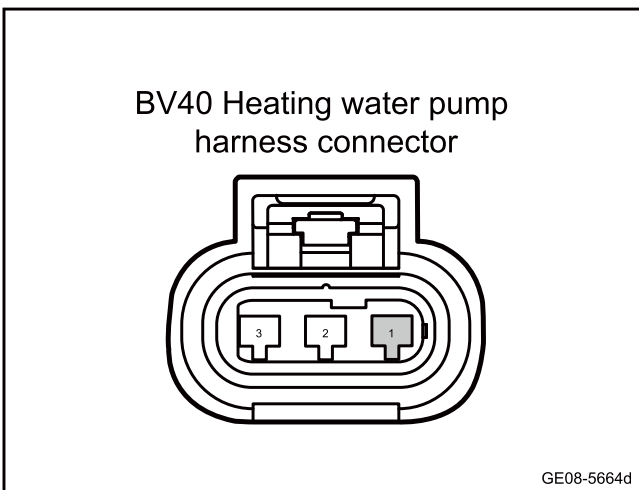
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 3 of heating pump harness connector BV40 and body grounding.

Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Check whether the heating water pump grounding harness is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the heating water pump harness connector BV40.
- C. Use a multimeter to measure the resistance between the terminal 1 of heating pump harness connector BV40 and body grounding

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 | Replace the heating water pump.

- A. Replace the heating water pump. Refer to [Replacement of Heating Water Pump](#)
- B. Confirm whether the heating water pump works normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10	Reprogram and reset the thermal management control module.
---------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

8.2.6.18 Battery cooling water pump fault

1. DTC description:

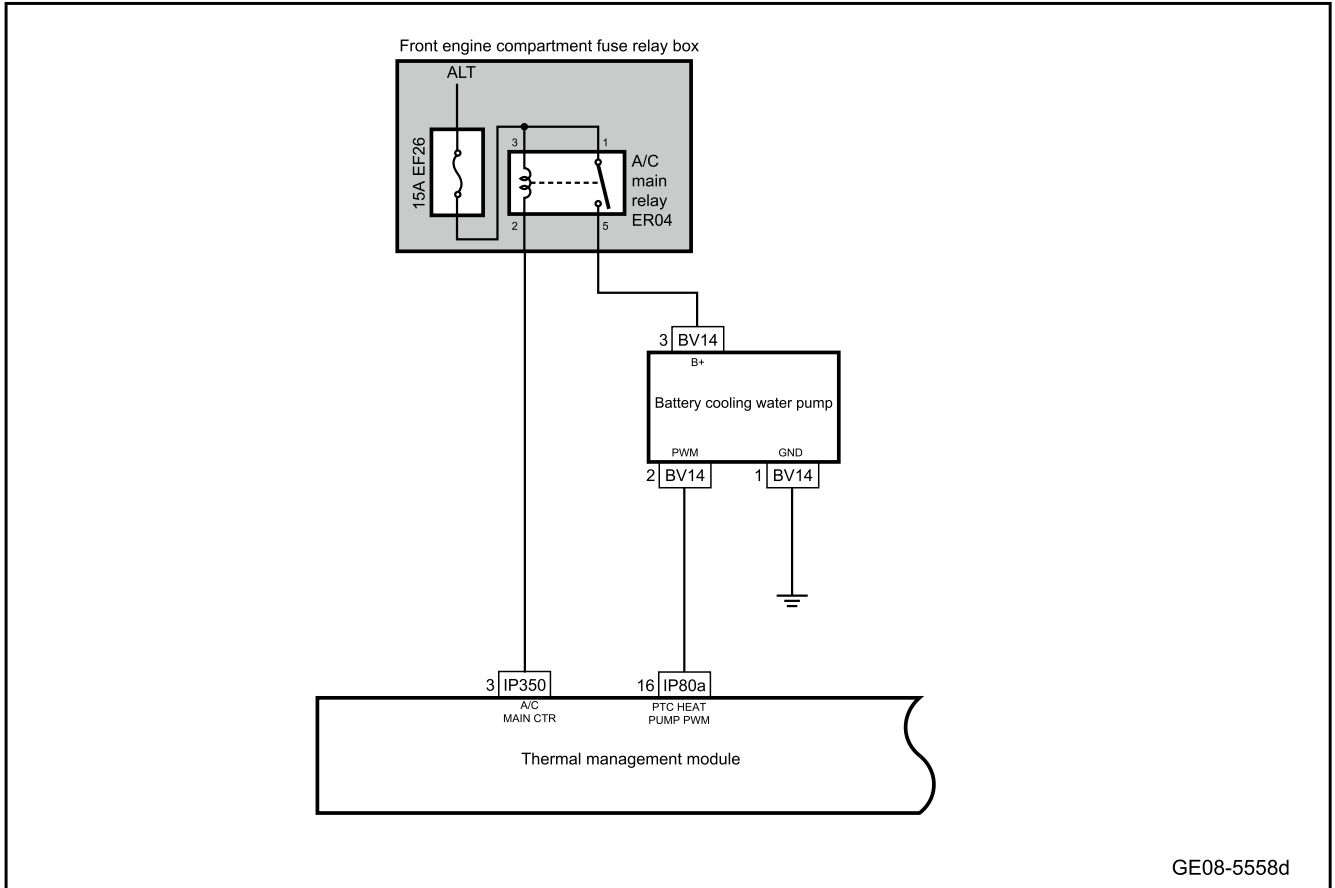
Diagnostic Trouble Code	Description
B11927B	No-load battery coolant electric water pump
B119297	Battery coolant electric water pump stalling/overcurrent
B119298	Battery coolant electric water pump fault
B119217	Overvoltage protection of battery coolant electric water pump
B119221	Battery coolant electric water pump's speed is too low
B119213	Open circuit of battery coolant electric water pump

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11927B	The AC receives the no-load PWM signal of battery cooling electric water pump	1. Ignition status is ignition ON 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Battery cooling water pump
B119297	The AC receives the locked-rotor/overcurrent PWM signal of battery cooling electric water pump		
B119298	AC receives the battery cooling electric water pump over-temperature shutdown PWM signal for at least 30 s continuously, or receives the PWM for at least 20 s, or continuously detects the low level for at least 20 s (this waveform is always sent before the water pump diagnostic condition is not released)		
B119217	The AC receives the PWM signal of overvoltage protection of battery cooling electric water pump		
B119221	Detect that the TLow is 2500ms (type value), , and the low level is lower than 2.5V. If the speed is less than the minimum speed, nMin exceeds 4s		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B119213	Detect TLOW for more than 5000ms, and the low level is lower than 2.5V.		

3. Schematic circuit diagram:



GE08-5558d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment.
Check whether the fuse EF26 is blown.
Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the air conditioner main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

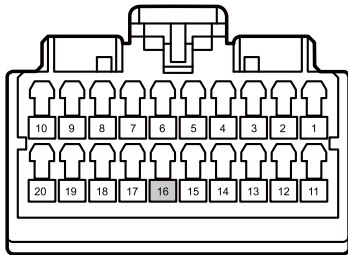
Yes

System is normal.

No

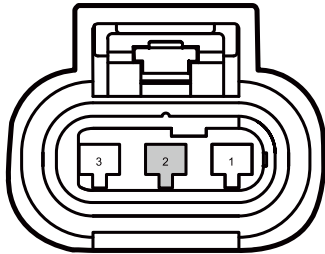
Step 5 | Check whether the harness between the thermal management control module and the battery cooling water pump is normal.

IP80a thermal management control module harness connector 2



GE08-5665d

BV14 battery cooling water pump harness connector



GE08-5666d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(16)	BV14(2)	Standard resistance: less than 1Ω
IP80a(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

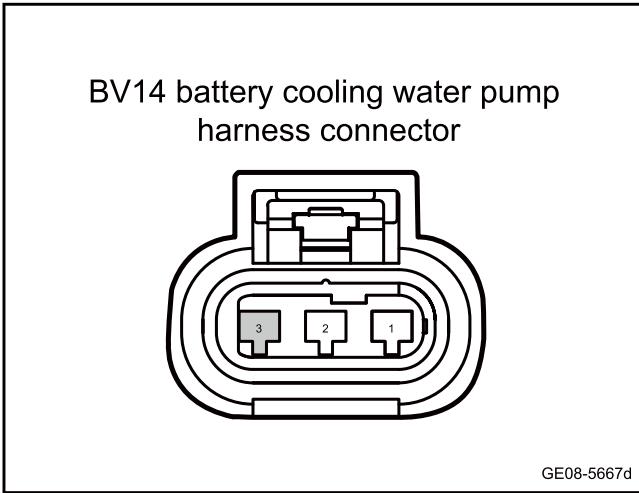
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 16 of harness connector IP80a of thermal management control module and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

Yes

No

Repair or replace the harness.

Step 6 | Check whether the harness between the battery cooling water pump and the air conditioner main relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the air conditioner main relay ER04.
- C. Disconnect the battery cooling water pump harness connector BV14.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV14(3)	ER04(5)	Standard resistance: less than 1Ω
BV14(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

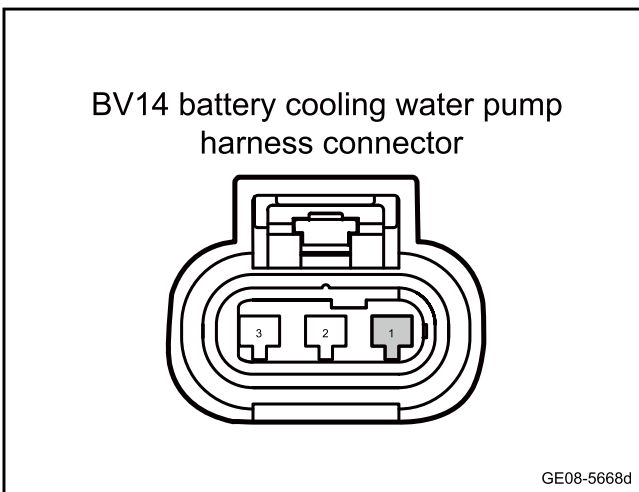
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 3 of battery cooling water pump harness connector BV14 and body grounding.

Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Check whether the battery cooling water pump grounding harness is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the battery cooling water pump harness connector BV14.
- C. Use a multimeter to measure the resistance between terminal 1 of battery cooling water pump harness connector BV14 and body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 | Replace the battery cooling water pump.

- A. Replace the battery cooling water pump. Refer to [Replacement of Battery Cooling Water Pump](#)
- B. Confirm whether the battery cooling water pump works normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10	Reprogram and reset the thermal management control module.
---------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

8.2.6.19 PTC heating controller 2 faults

1. DTC description:

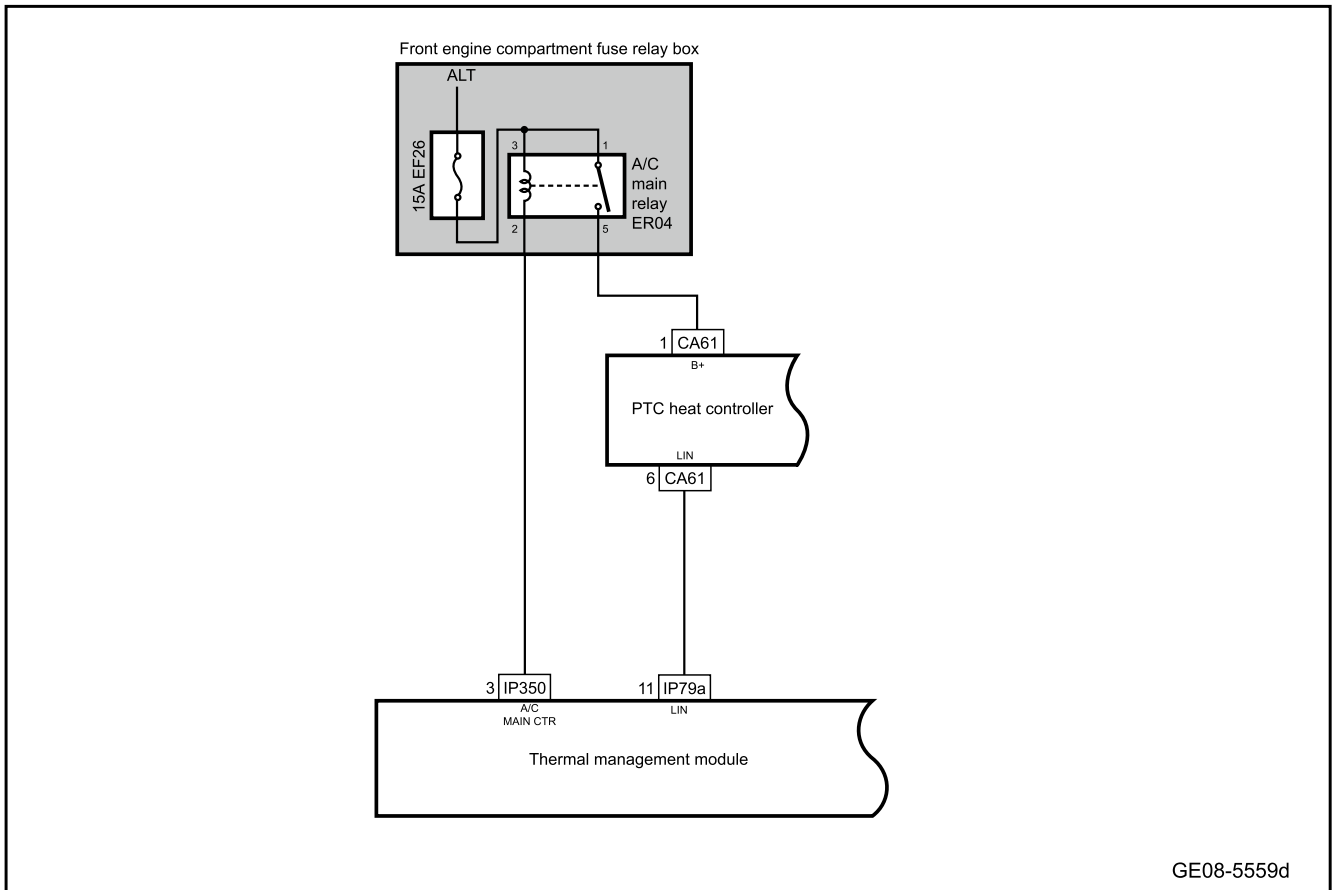
Diagnostic Trouble Code	Description
B119817	Repair Request
B119919	Over current at high-voltage end of the heater
B119A15	Heater IGBT short circuit/circuit break
B119B41	Heater memory error
B119C98	Heater cooling temperature is too high
B119D16	High and low-voltage alarm of heater hardware interface
B119E16	Undervoltage alarm of the heater
B119E17	Overvoltage alarm at high-voltage end of the heater
B119F02	Heater LIN communication
B11A098	Heater hardware overheating
B11A009	Heater hardware protection

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B119817	AC received the overvoltage signal (ID: 0x27, 0.3=1) from the DC/DC low-voltage terminal of the heater for 3s as abnormal	1. Ignition status is ignition ON 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. PTC heating controller 2
B119919	AC received the overcurrent signal (ID: 0x27, 0.1=1) from the high-voltage side of the heater for 2s as abnormal		
B119A15	AC received the short circuit/open circuit signal (ID: 0x27, 0.0=1) for 2s as abnormal		
B119B41	AC received the heater storage fault signal (ID: 0x27, 0.2=1) for 2s as abnormal		
B119C98	AC received the heater cooling over-temperature signal (ID: 0x27, 5.0=1) for 2s as abnormal		
B119D16	AC received the heater hardware interface high and low-voltage alarm signal (ID: 0x27, 5.1=1) for 2s as abnormal		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B119E16	AC received the heater under-voltage alarm signal (ID: 0x27, 5.5=1) for 2s as abnormal		
B119E17	AC received the heater high-voltage end over-voltage alarm signal (ID: 0x27, 5.4=1) for 2s as abnormal		
B119F02	AC received the heater LIN communication signal (ID: 0x27, 5.7=1) for 2s as abnormal		
B11A098	AC received the heater hardware overheat signal (ID: 0x27, 6.1=1) for 2s as abnormal		
B11A009	AC received the heater hardware protection signal (ID: 0x27, 6.0=1) for 2s as abnormal		

3. Schematic circuit diagram:



GE08-5559d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the air conditioner main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

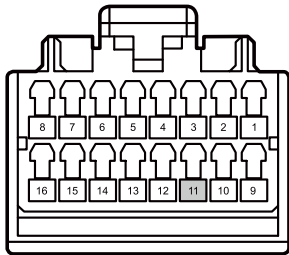
Yes

System is normal.

No

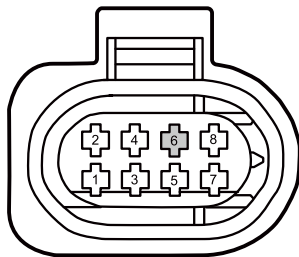
Step 5 | Check whether the harness between the thermal management control module and the PTC heating controller 2 is normal.

IP79a thermal management control module harness connector 1



GE08-5669d

CA61 connection to PTC heating controller harness connector 2



GE08-5670d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the PTC heat controller 2 harness connector CA61.
- D. Disconnect the harness connector of the thermal management LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA61(6)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

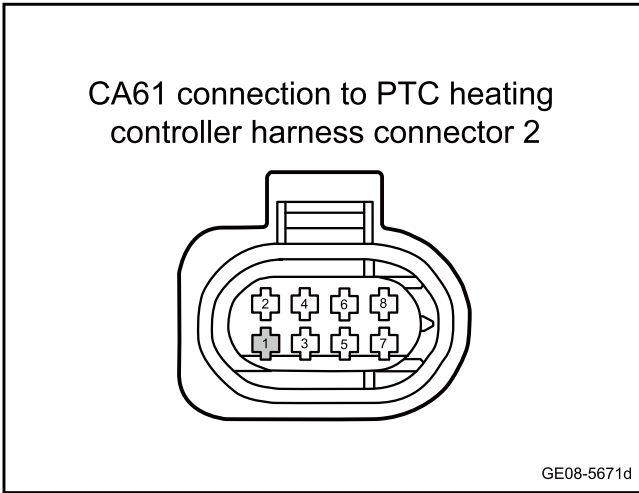
- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the voltage between terminal 11 of harness connector IP79a of thermal management control module and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between the PTC heating controller 2 and the air conditioner relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the air conditioner main relay ER04.
- C. Disconnect the PTC heat controller 2 harness connector CA61.
- D. Use a multimeter to measure each terminal according to the table below:

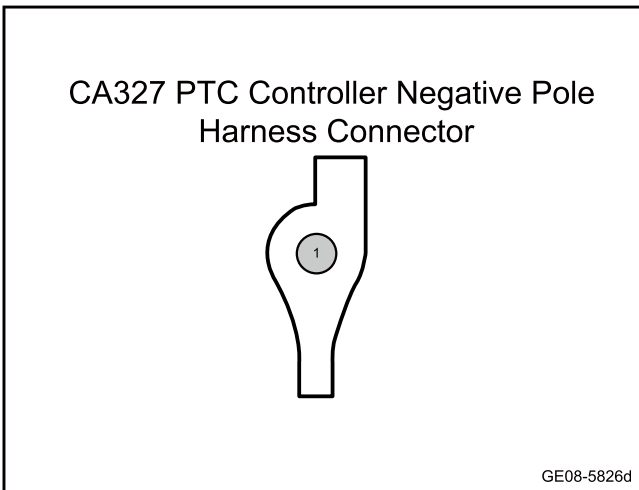
Measure terminal 1	Measure terminal 2	Standard value
CA61(1)	ER04(5)	Standard resistance: less than 1Ω
CA61(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between PTC heat controller 2 harness connector CA61 terminal 1 and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check the PTC heat controller 2 grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PTC heat controller 2 harness connector CA327.
- C. Use a multimeter to measure the resistance between the LF combination lamp harness connector CA327 terminal 1 and the body grounding.
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace the PTC heat controller 2.

- A. Replace the PTC heat controller 2. Refer to Replacement of PTC Heating Controller 2
- B. Confirm whether the PTC heating controller 2 works normally.

Yes

System is normal.

No

Step 9 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12 System is normal.

8.2.6.20 PT sensor fault

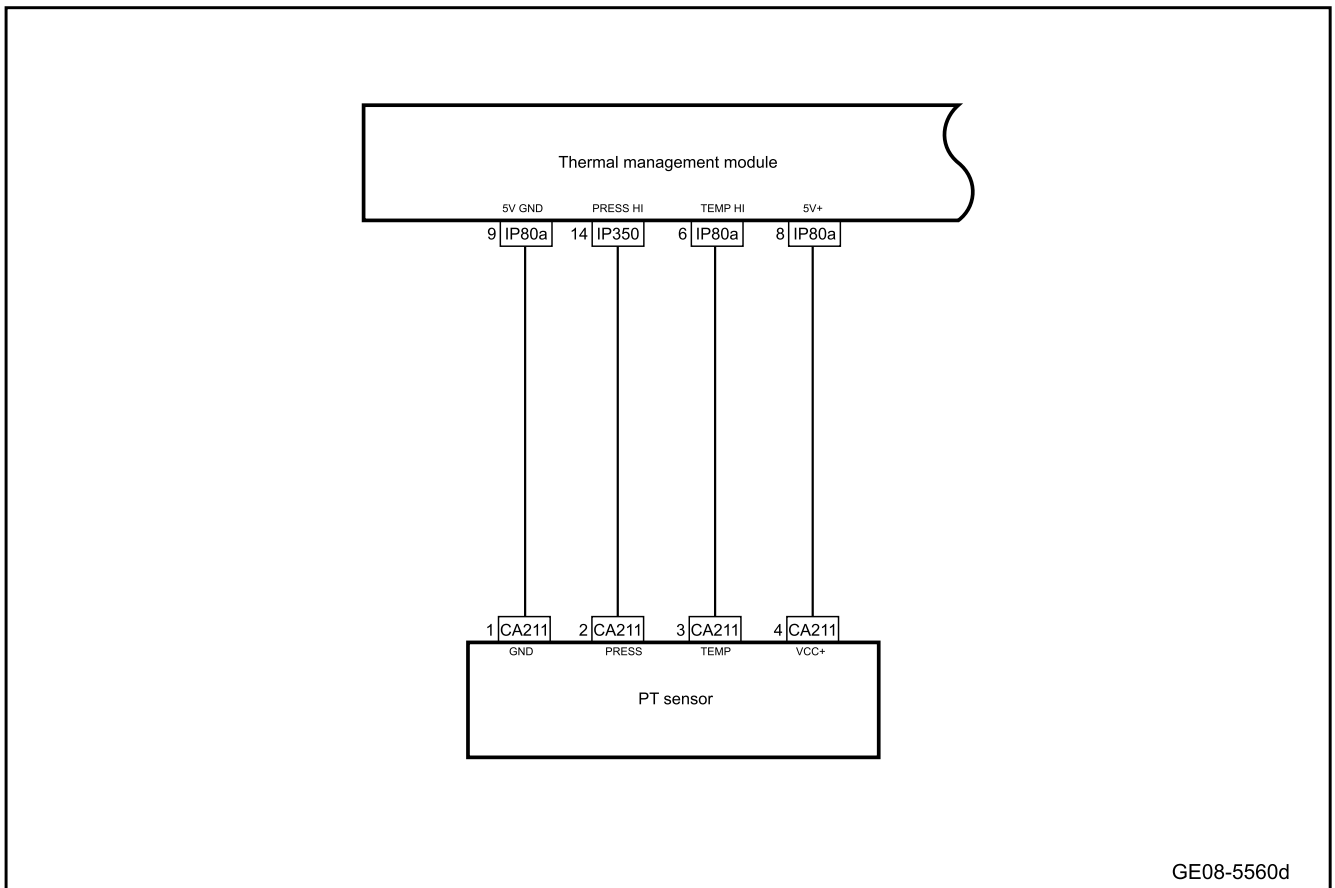
1. DTC description:

Diagnostic Trouble Code	Description
B11A109	Heater coolant inlet temperature sensor error
B11A209	Heater coolant outlet temperature sensor error
B11A309	Heater core temperature sensor error

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A109	AC received the heater coolant inlet temperature sensor error signal (ID: 0x27, 6.4=1) for 2s as abnormal	1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. PT sensor
B11A209	AC received the heater coolant outlet temperature sensor error signal (ID: 0x27, 6.5=1) for 2s as abnormal		
B11A309	AC received the heater core temperature sensor fault signal (ID: 0x27, 6.7=1) for 2s as abnormal		

3. Schematic circuit diagram:



GE08-5560d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and PT sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and PT sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

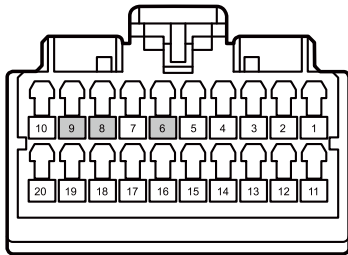
No

Repair or replace the faulty part.

Yes

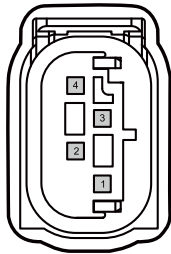
Step 3	Check the harness between the thermal management control module and the and PT sensor for an open circuit.
--------	--

IP80a thermal management control module harness connector 2



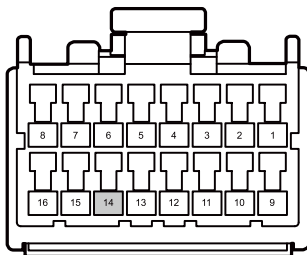
GE08-5672d

CA211 PT sensor harness connector



GE08-5673d

IP350 thermal management control module harness connector 4



GE08-5674d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the PT harness connector CA211.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	CA211(1)	Standard resistance: less than 1Ω
IP350(14)	CA211(2)	
IP80a(6)	CA211(3)	
IP80a(8)	CA211(4)	

- F. Confirm whether the measured value meets the standard.

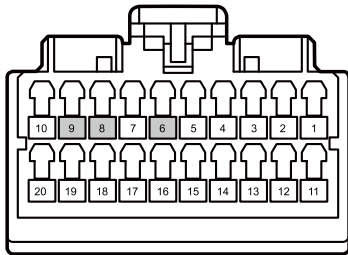
No

Repair or replace the harness.

Yes

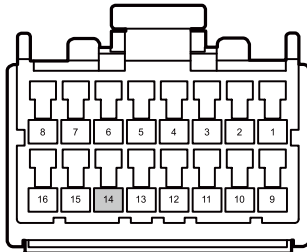
Step 4	Check the harness between the thermal management control module and the and PT sensor for a short circuit to power supply.
--------	--

IP80a thermal management control module harness connector 2



GE08-5675d

IP350 thermal management control module harness connector 4



GE08-5676d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the PT harness connector CA211.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard voltage: 0V
IP350(14)		
IP80a(6)		
IP80a(8)		

- G. Confirm whether the measured value meets the standard.

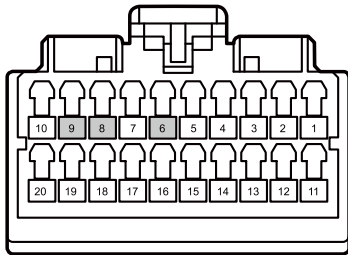
No

Repair or replace the harness.

Yes

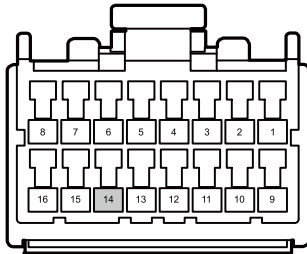
Step 5 Check the harness between the thermal management control module and the and PT sensor for a short circuit to ground.

IP350 thermal management control module harness connector 4



GE08-5677d

IP350 thermal management control module harness connector 4

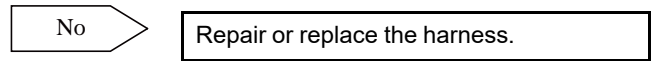


GE08-5678d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the PT harness connector CA211.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(14)		
IP80a(6)		
IP80a(8)		

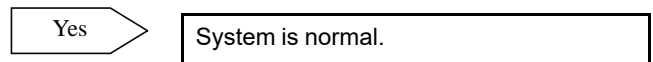
- F. Confirm whether the measured value meets the standard.



Yes

Step 6 Replace the PT sensor.

- A. Replace the PT sensor. Refer to replacement of PT sensor
- B. Confirm whether the PT sensor works normally.



No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

8.2.6.21 Faults of three-way solenoid valve A

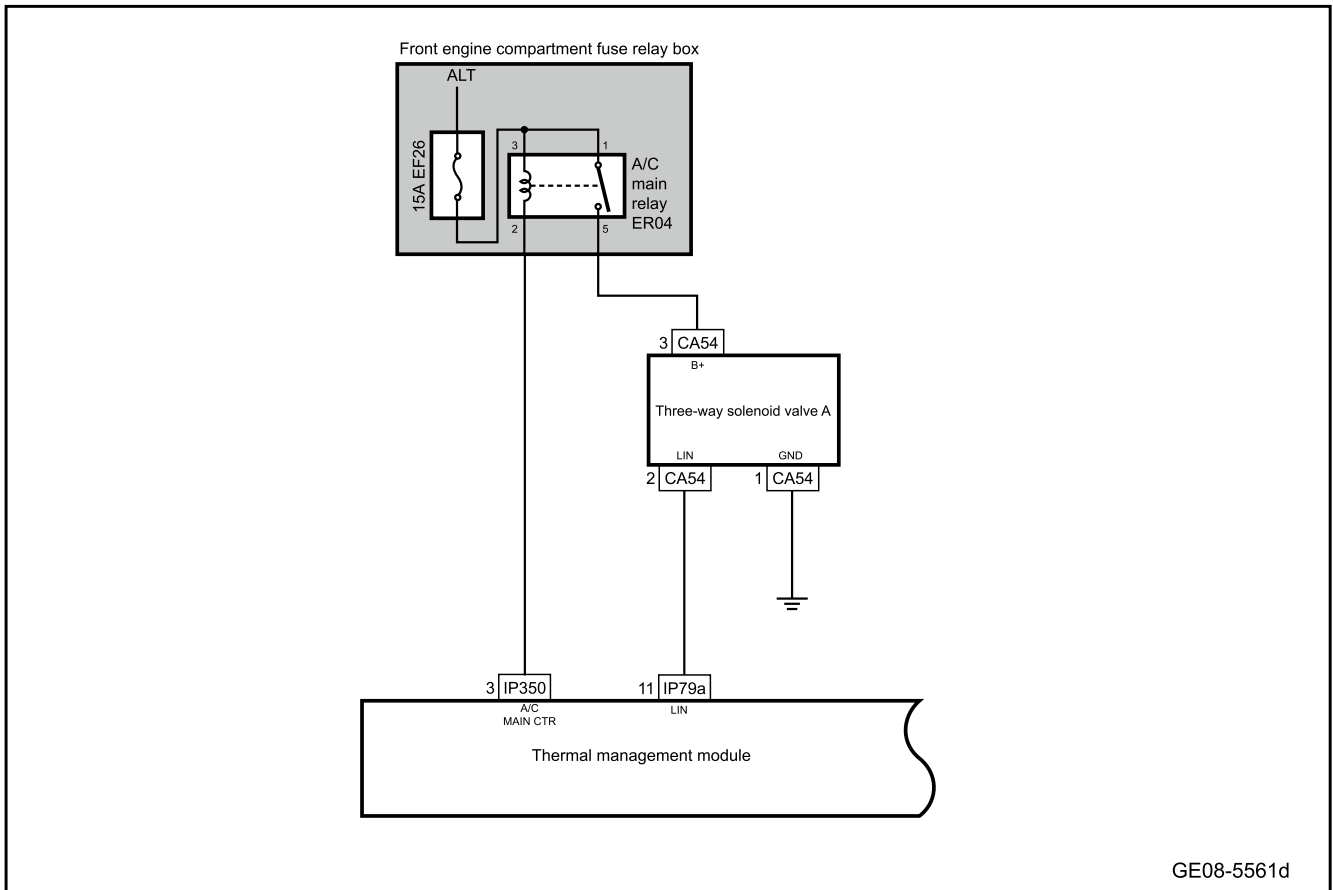
1. DTC description:

Diagnostic Trouble Code	Description
B11A912	Short circuit of water valve 1 coil
B11A913	Open circuit of water valve 1 coil
B11A916	Water valve 1 undervoltage
B11A917	Water valve 1 overvoltage
B11A997	Water valve 1 is shutdown due to over temperature
B11A998	Water valve 1 over temperature alarm
B11A900	Water valve 1 fault is undetermined

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A912	AC keeps the fault signal of water valve 1 feedback for at least 10 s as "coil short circuit" (ID 0 x 09,0.1-0.3=1)	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Three-way Solenoid valve A
B11A913	AC received the fault signal from water valve 1 as "open circuit" for 2s (ID: 0x09, 0.1 ~ 0.3=2)		
B11A916	AC received the fault signal from water valve 1 as "under voltage" for 2s (ID: 0x09, 0.6-0.7= 2)		
B11A917	AC received the fault signal from water valve 1 as "over voltage" for 2s (ID: 0x09, 0.6 ~ 0.7=1)		
B11A997	AC received the fault signal fed back from water valve 1 for 2 s as "over temperature shut off" (ID: 0x09, 0.1-0.3=3)		
B11A998	AC receives the fault signal fed back from water valve 1 as "over temperature alarm" for 2 s (ID: 0x09 0.4 0.5 1)		
B11A900	The received signal L_WV1_AC_FaultState is equal to the fault state uncertainty from the WV1 LIN message	1. Voltage range is 9V-16V. 2. IG is ON, and in 3s it is enabled. 3. LIN bus communication is normal	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the air conditioner main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

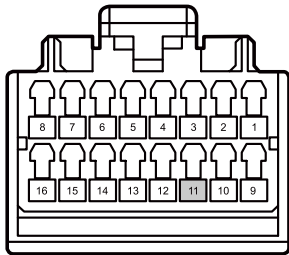
Yes

System is normal.

No

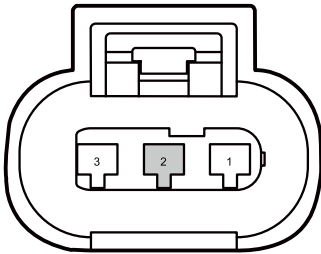
Step 5 Check whether the harness between the thermal management control module and the three-way solenoid valve A is normal.

IP79a thermal management control module harness connector 1



GE08-5679d

CA54 three-way solenoid valve harness connector A



GE08-5680d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the three-way solenoid valve A harness connector CA54.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA54(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

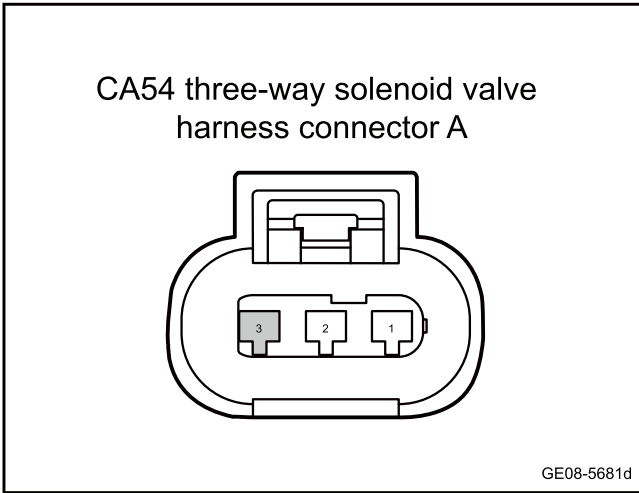
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 11 of harness connector IP79a of thermal management control module and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

Yes

No

Repair or replace the harness.

Step 6 | Check whether the harness between three-way solenoid valve A and the air conditioner main relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the air conditioner main relay ER04.
- C. Disconnect the three-way solenoid valve A harness connector CA54.
- D. Disconnect the harness connector of the thermal management LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

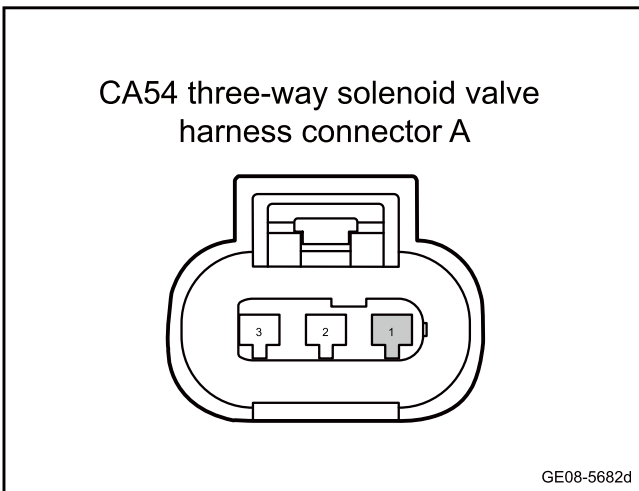
Measure terminal 1	Measure terminal 2	Standard value
CA54(3)	ER04(5)	Standard resistance: less than 1Ω
CA54(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. The key activates the vehicle power supply to the mode ON
- G. Use a multimeter to measure the voltage between terminal 3 of three-way solenoid valve A harness connector CA54 and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Check whether the grounding circuit of the three-way solenoid valve is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the three-way solenoid valve A harness connector CA54.
- C. Use a multimeter to measure the resistance between terminal 1 of the three-way solenoid valve A harness connector CA54 and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8	Replace the three-way solenoid valve A.
--------	---

- A. Replace the three-way solenoid valve A. Refer to [Replacement of three-way solenoid valve A](#)
- B. Confirm whether the three-way solenoid valve A is working normally.

Yes	System is normal.
-----	-------------------

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10	Reprogram and reset the thermal management control module.
---------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 12	System is normal.
---------	-------------------

8.2.6.22 Electronic expansion valve 1 fault

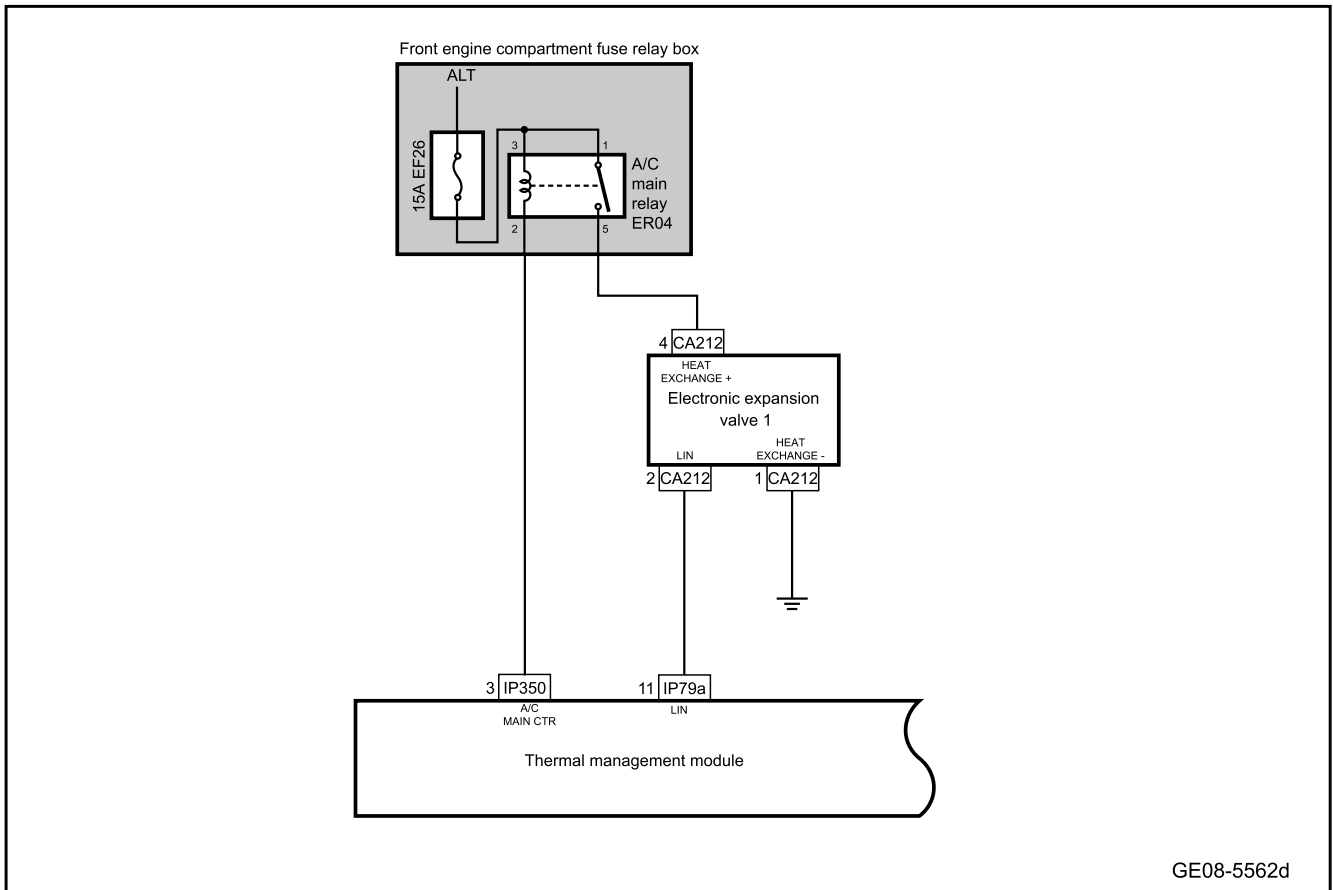
1. DTC description:

Diagnostic Trouble Code	Description
B11EC15	Electronic expansion valve 1 short circuit or open circuit
B11EC98	Electronic expansion valve 1 over temperature protection or over temperature alarm
B11EC16	Electronic expansion valve 1 working power supply undervoltage
B11EC17	Electronic expansion valve 1 working power supply overvoltage
U022B87	Thermal management controller lost communication with electronic expansion valve 1

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EC15	AC received the electronic expansion valve 1 fault signal as “short circuit or open circuit” for 2s (ID: 0x18, 2.3 ~ 2.5=2 or 1)	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Electronic expansion valve 1
B11EC98	AC received the electronic expansion valve 1 fault signal as “over temperature protection” for 2s (ID: 0x18, 2.3-2.5= 3)		
B11EC16	AC received the electronic expansion valve 1 fault signal as “under voltage” for 2s (ID: 0x18, 2.0-2.1= 1)		
B11EC17	AC received the electronic expansion valve 1 fault signal as “over voltage” for 2s (ID: 0x18, 2.0 ~ 2.1=2)		
U022B87	Loss of EXV1(ID=0x18) information lasts for 5T (T is the message period)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the air conditioner main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

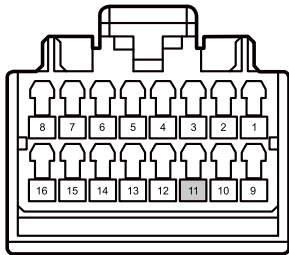
Yes

System is normal.

No

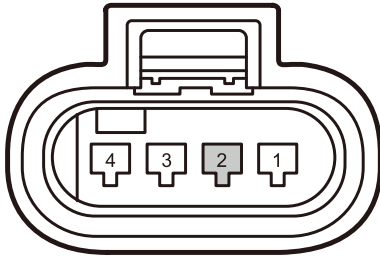
Step 5 Check whether the harness between the thermal management control module and the electronic expansion valve 1 is normal.

IP79a thermal management control module harness connector 1



GE08-5683d

CA212 electronic expansion valve harness connector 1



GE08-5684d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the harness connector CA212 of the electronic expansion valve 1.
- D. Disconnect the harness connector of the thermal management LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA212(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

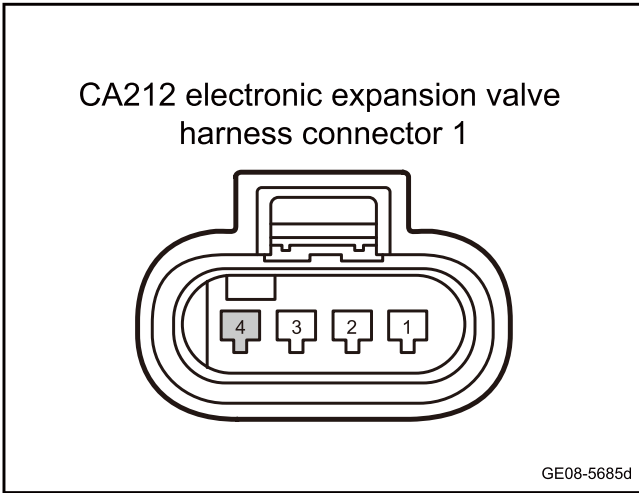
- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the voltage between terminal 11 of harness connector IP79a of thermal management control module and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Check whether the harness between the electronic expansion valve 1 and the air conditioner main relay is normal.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the air conditioner main relay ER04.
- C. Disconnect the harness connector CA212 of the electronic expansion valve 1.
- D. Use a multimeter to measure each terminal according to the table below:

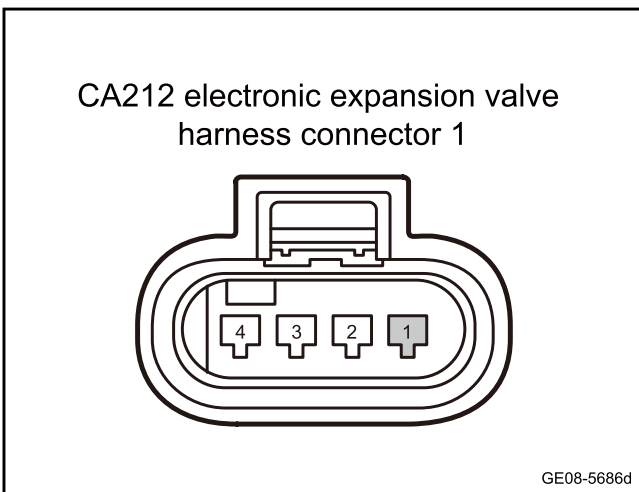
Measure terminal 1	Measure terminal 2	Standard value
CA212(4)	ER04(5)	Standard resistance: less than 1Ω
CA212(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 4 of electronic expansion valve 1 harness connector CA212 and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the grounding circuit of the evaporator electronic expansion valve 1 is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA212 of the electronic expansion valve 1.
- C. Use a multimeter to measure the resistance between terminal 1 of the electronic expansion valve 1 harness connector CA212 of BSG and the body grounding.
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace Electronic expansion valve 1

- A. Replace Electronic expansion valve 1 Replacement of Electronic Expansion Valve 1
- B. Confirm whether the electronic expansion valve 1 works normally.

Yes

System is normal.

No

Step 9 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12 System is normal.

8.2.6.23 Faults of refrigerant tube solenoid valve

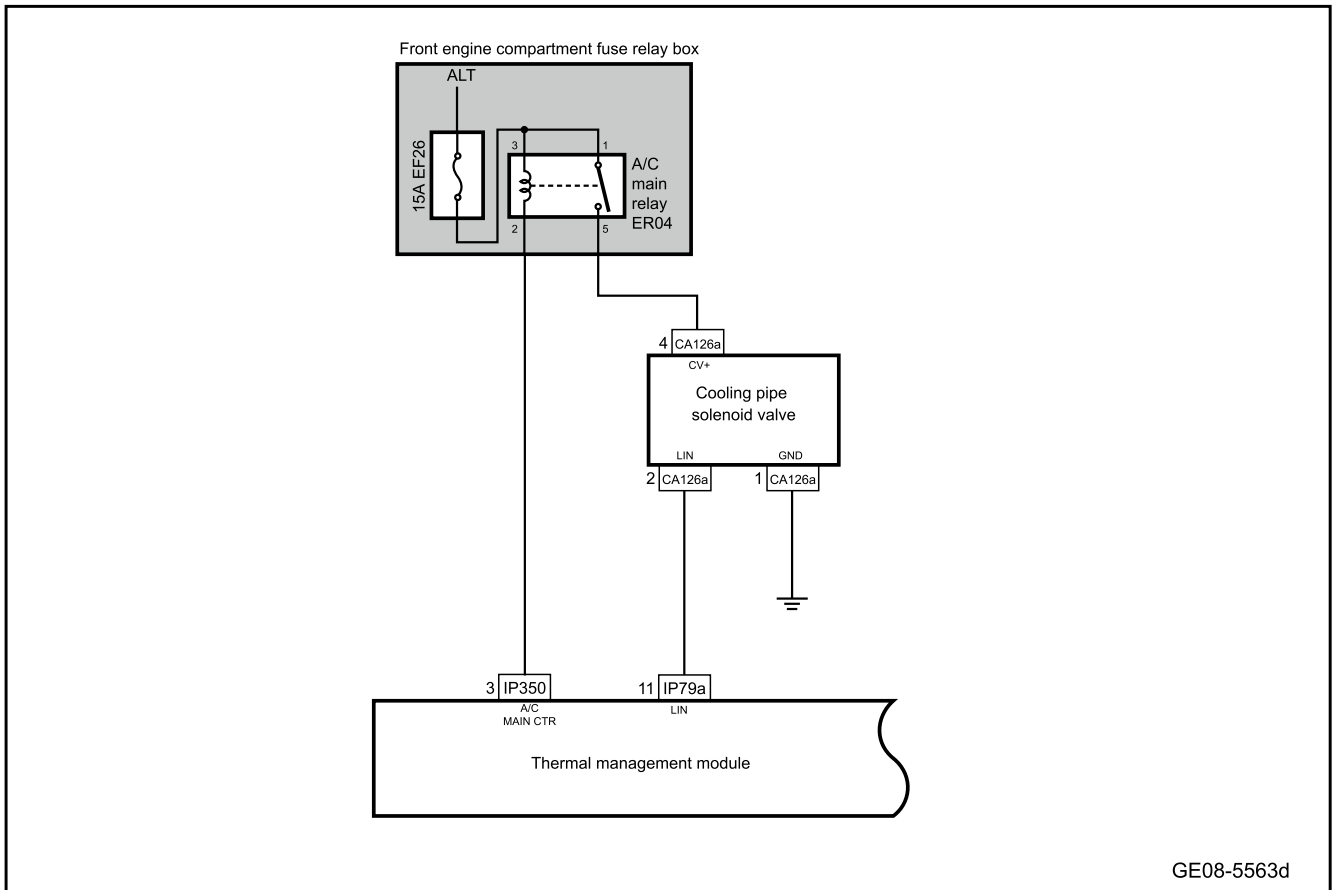
1. DTC description:

Diagnostic Trouble Code	Description
B11AA12	Short circuit of water valve 2 coil
B11AA13	Open circuit of water valve 2 coil
B11AA16	Water valve 2 undervoltage
B11AA17	Water valve 2 overvoltage
B11AA97	Water valve 2 is shutdown due to over temperature
B11AA98	Water valve 2 over temperature alarm

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11AA12	AC received the water valve 2 fault signal as "open circuit" for 2s (ID: 0x0A, 0.1-0.3= 1)	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Refrigerant tube solenoid valve
B11AA13	AC received the water valve 2 fault signal as "open circuit" for 2s (ID: 0x0A, 0.1-0.3=2)		
B11AA16	AC received the water valve 2 fault signal as "under voltage" for 2s (ID: 0x0A, 0.6-0.7= 2)		
B11AA17	AC received the water valve 2 fault signal as "over voltage" for 2s (ID: 0x0A, 0.6-0.7=1)		
B11AA97	AC receives the fault signal fed back from water valve 2 for 2 s as "over temperature shut off" (ID: 0x0A 0.1-0.3=3)		
B11AA98	AC received the fault signal fed back from water valve 2 for 2 s as "over temperature alarm" (ID: 0x0A 0.4 0.5 1)		

3. Schematic circuit diagram:



GE08-5563d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the air conditioner main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

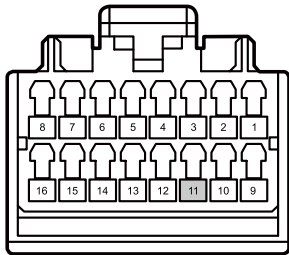
Yes

System is normal.

No

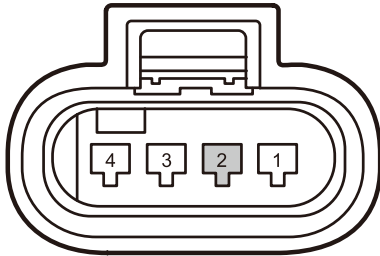
Step 5 Check the harness between the thermal management control module and the refrigerant tube solenoid valve for an open circuit.

IP79a thermal management control module harness connector 1



GE08-5687d

CA126a refrigerant pipe solenoid valve harness connector



GE08-5688d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the refrigerant tube solenoid valve harness connector CA126a.
- D. Disconnect the thermal management harness connector of the LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA126a(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

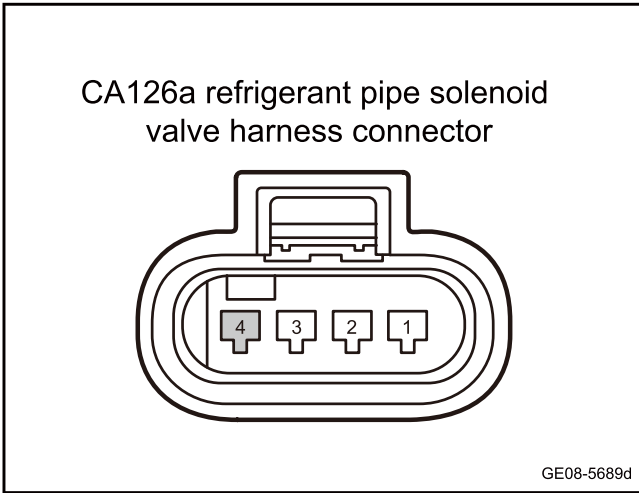
- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the voltage between terminal 11 of thermal management control module harness connector IP79a and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between the refrigerant tube solenoid valve and the main relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the A/C main relay ER04.
- C. Disconnect the refrigerant tube solenoid valve harness connector CA126a.
- D. Use a multimeter to measure each terminal according to the table below:

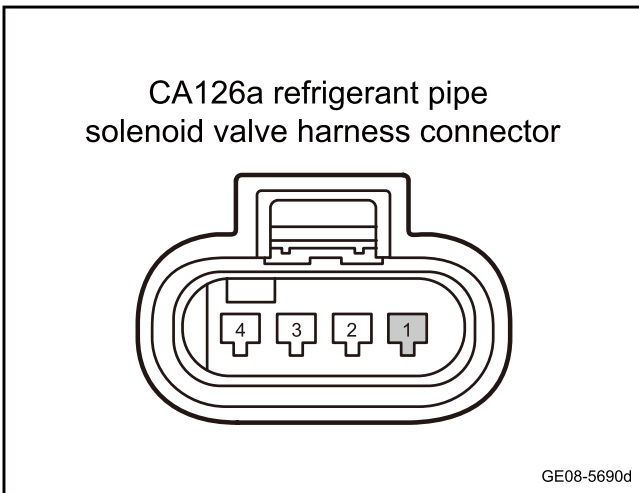
Measure terminal 1	Measure terminal 2	Standard value
CA126a(4)	ER04(5)	Standard resistance: less than 1Ω
CA126a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 4 of refrigerant tube solenoid valve harness connector CA126a and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the grounding circuit of the refrigerant tube solenoid valve is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the refrigerant tube solenoid valve harness connector CA126a.
- C. Use a multimeter to measure the resistance between terminal 1 of the refrigerant tube solenoid valve harness connector CA126a and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace the refrigerant tube solenoid valve.

- A. Replace the refrigerant tube solenoid valve. Refer to [Replacement of Refrigerant tube Solenoid Valve](#)
- B. Confirm whether the refrigerant tube solenoid valve is working normally.

Yes

System is normal.

No

Step 9 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12 System is normal.

8.2.6.24 Power Supply Failure of Thermal Management Module

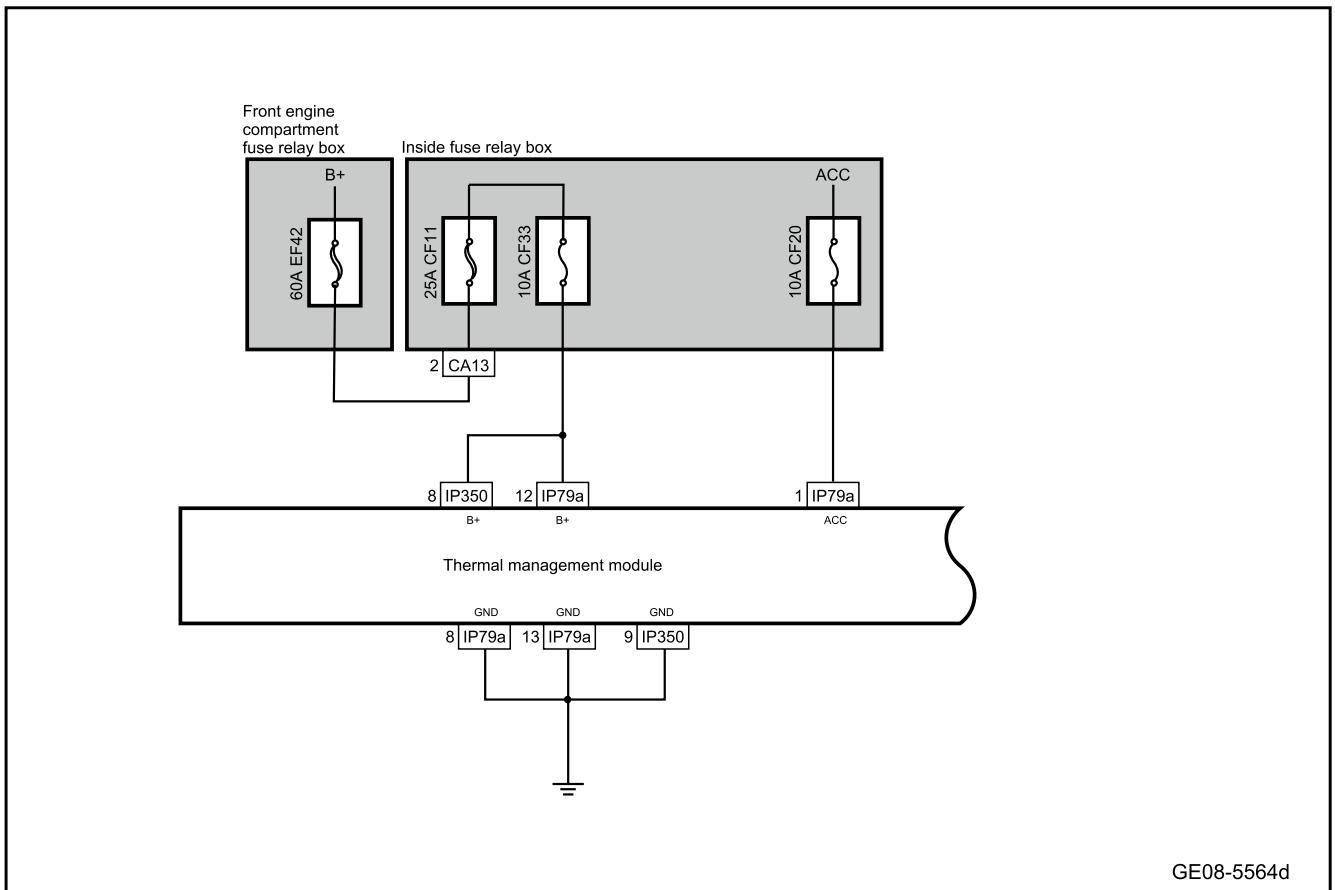
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage is $\leq 9V$, lasting for at least 1s Note: service life	1. Ignition status is ignition ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module
U300617	Battery voltage $\geq 16V$, lasting for more than 1s Note: Applicable to 16.25V and 16 V.		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 4.

Yes

Step 2 Primary check.

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 3 Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 Inspect the fuse.

A. Multimedia settings from vehicle power supply to OFF gear.

B. Unplug the indoor fuse CF20 and check whether the fuse is blown.

Rated capacity of fuse: 10A

C. Unplug the interior fuse CF33 and check whether the fuse is blown.

Rated capacity of fuse: 10A

D. Unplug the indoor fuse CF11 and check whether the fuse is blown.

Rated capacity of fuse: 25A

E. Pull out the fuse EF42 of the front engine compartment. Check whether the fuse EF42 is blown.

Rated capacity of fuse: 60A

Yes

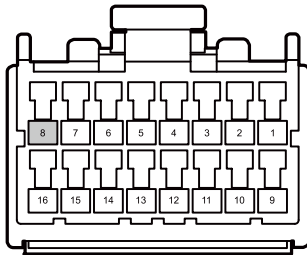
Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5

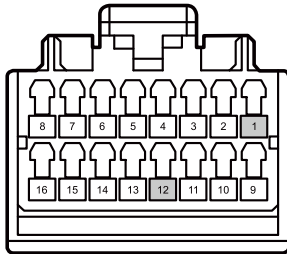
Check whether the working voltage of the thermal management control module is normal.

IP350 thermal management control module harness connector 4



GE08-5691d

IP79a thermal management control module harness connector 1



GE08-5692d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(8)	Vehicle body is grounded.	Standard voltage: 11-14V
IP79a(1)		
IP79a(12)		

- F. Confirm whether the measured value meets the standard.

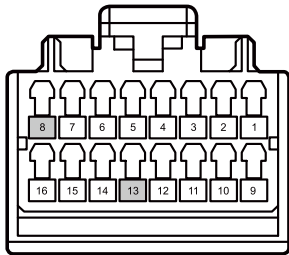
No

Repair or replace the harness.

Yes

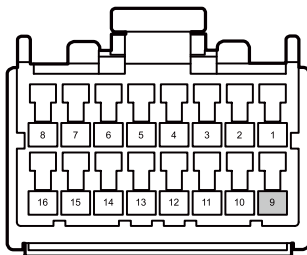
Step 6 Check whether the thermal management control module grounding harness is normal.

IP79a thermal management control module harness connector 1



GE08-5693d

IP350 thermal management control module harness connector 4



GE08-5694d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350, IP79a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP79a(13)		
IP350(9)		

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

8.2.6.25 Electronic expansion valve 2 fault

1. DTC description:

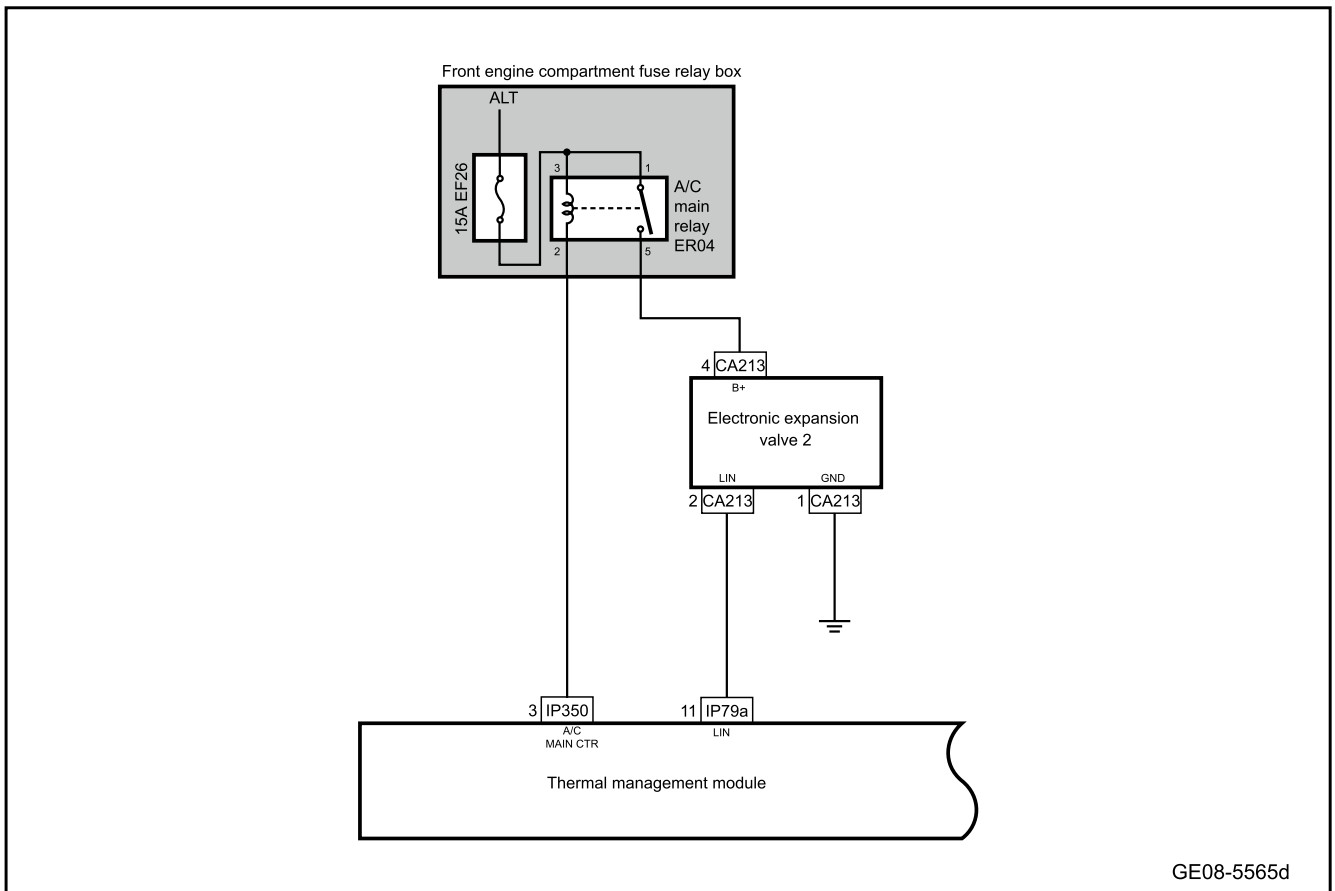
Diagnostic Trouble Code	Description
B11ED15	Electronic expansion valve 2 short circuit or open circuit
B11ED98	Electronic expansion valve 2 over temperature protection or over temperature alarm
B11ED16	Electronic expansion valve 2 working power supply undervoltage
B11ED17	Electronic expansion valve 2 working power supply overvoltage
U022C87	Thermal management controller lost communication with electronic expansion valve 2

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11ED15	AC received the electronic expansion valve 2 fault signal as “short circuit or open circuit” for 2s (ID: 0x19, 2.3-2.5=2 or 1)	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Electronic expansion valve 2
B11ED98	AC received the electronic expansion valve 2 fault signal as “over temperature protection” for 2s (ID: 0x19, 2.3-2.5= 3)		
B11ED16	AC received the electronic expansion valve 2 fault signal as “under voltage” for 2s (ID: 0x19, 2.0-2.1= 1)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11ED17	AC received the electronic expansion valve 2 fault signal as “over voltage” for 2s (ID: 0x19, 2.0-2.1=2)		
U022C87	Loss of EXV2(ID=0x19) information lasts for 5T (T is the message period)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes
Repair or replace the faulty part.

No

Step 2 Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment.
Check whether the fuse EF26 is blown.
Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the A/C main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug A/C main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

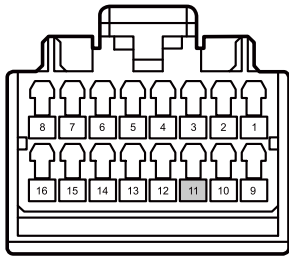
Yes

System is normal.

No

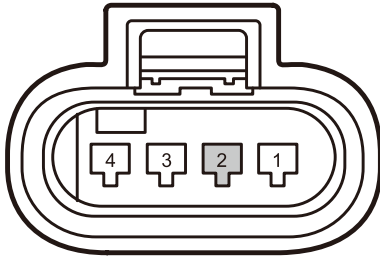
Step 5 Check whether the harness between the thermal management control module and the electronic expansion valve 2 is normal.

IP79a thermal management control module harness connector 1



GE08-5695d

CA213 electronic expansion valve harness connector 2



GE08-5696d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the harness connector CA213 of the electronic expansion valve 2.
- D. Disconnect the thermal management harness connector of the LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA213(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

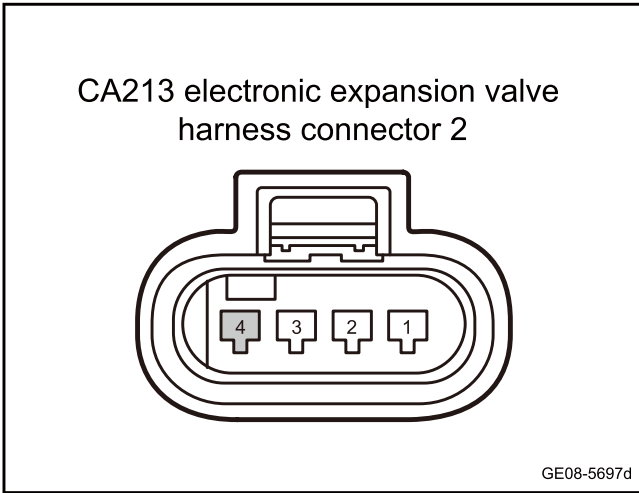
- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the voltage between terminal 11 of harness connector IP79a of thermal management control module and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Check whether the harness between the electronic expansion valve 2 and the main relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the main relay ER04.
- C. Disconnect the harness connector CA213 of the electronic expansion valve 2.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA213(4)	ER04(5)	Standard resistance: less than 1Ω
CA213(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 4 of electronic expansion valve 2 harness connector CA213 and body grounding.

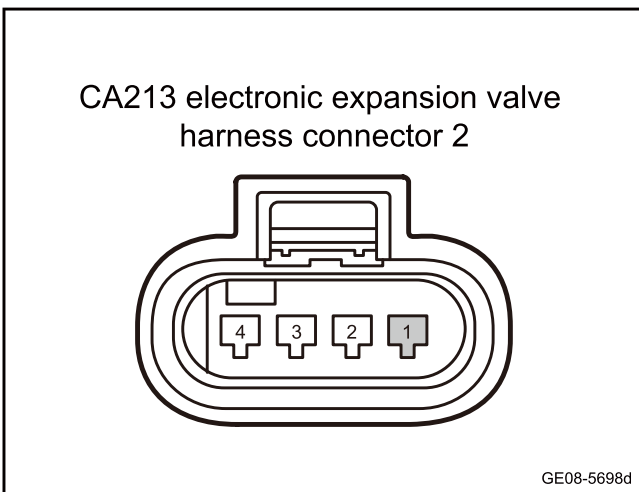
Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the grounding circuit of the electronic expansion valve 2 is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA213 of the electronic expansion valve 2.
- C. Use a multimeter to measure the resistance between terminal 1 of the electronic expansion valve 2 harness connector CA213 of BSG and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace Electronic expansion valve 2

- A. Replace Electronic expansion valve 2 Refer to Replacement of Electronic Expansion Valve 2
- B. Confirm whether the electronic expansion valve 2 works normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10	Reprogram and reset the thermal management control module.
---------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

8.2.6.26 Fault of Four-way Valve

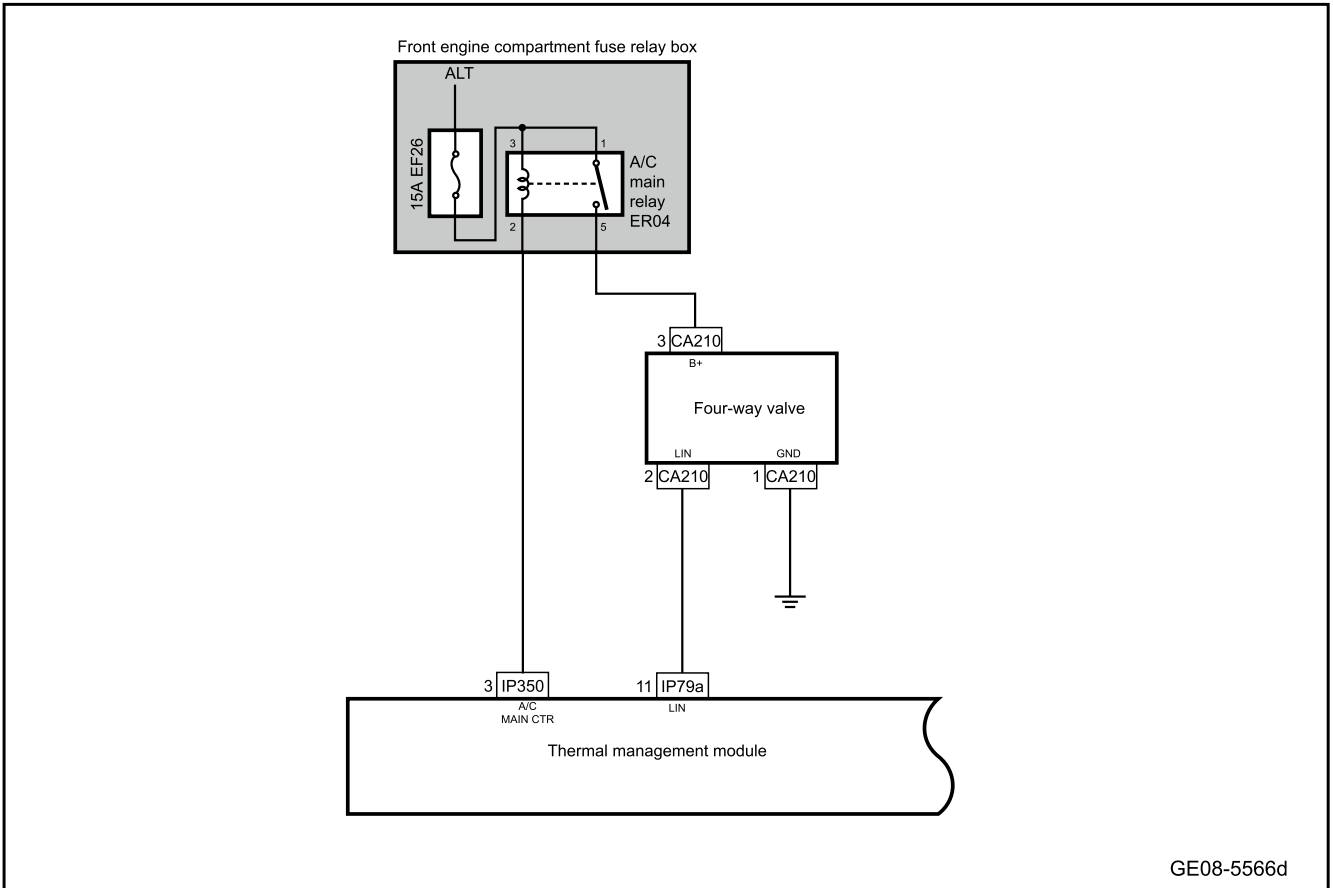
1. DTC description:

Diagnostic Trouble Code	Description
B11AB13	Open circuit of water valve 3 coil
B11AB16	Water valve 3 undervoltage
B11AB17	Water valve 3 overvoltage
B11AB97	Water valve 3 is shutdown due to over temperature
B11AB98	Water valve 3 over temperature alarm

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11AB13	AC received the water valve 3 fault signal as "open circuit" for 2s (ID: 0x10, 0.2-0.5=1)	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Four-way valve
B11AB16	AC received the water valve 3 fault signal as "under voltage" for 2s (ID: 0x10, 1.4-1.5= 2)		
B11AB17	AC received the water valve 2 fault signal as "over voltage" for 2s (ID: 0x10, 1.4-1.5=1)		
B11AB97	AC received the water valve 3 fault signal as "over temperature shutdown" for 2s (ID: 0x10, 0.2-0.5= 3)		
B11AB98	AC receives the water valve 3 fault signal as "over-temperature alarm" for 2s (ID 0x10, 1.6 = 1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes
Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No → Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the air conditioner main relay ER04.

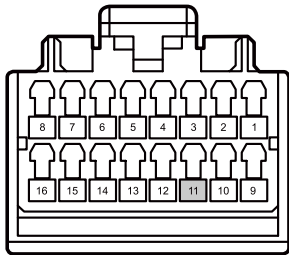
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug air conditioner main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes → System is normal.

No

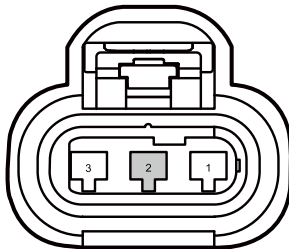
Step 5 | Check whether the harness between the thermal management control module and the four-way valve is normal.

IP79a thermal management control module harness connector 1



GE08-5699d

CA210 four-way valve harness connector



GE08-5700d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the four-way solenoid valve harness connector CA210.
- D. Disconnect the thermal management harness connector of the LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA210(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

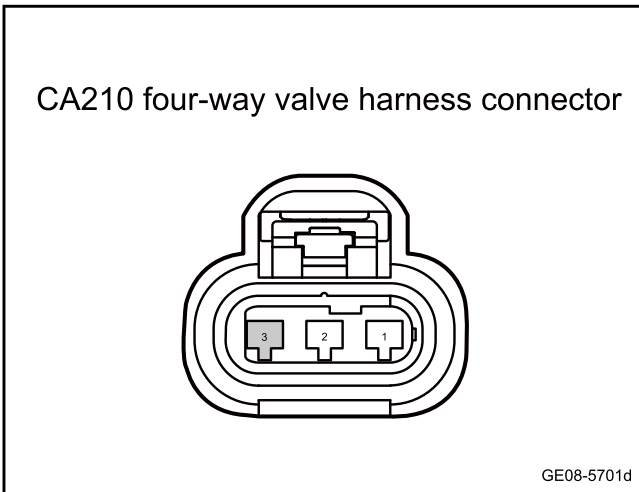
- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the voltage between terminal 11 of thermal management harness connector IP79a of body control module and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between the four-way valve and the thermal management relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the main relay ER04.
- C. Disconnect the four-way solenoid valve harness connector CA210.
- D. Use a multimeter to measure each terminal according to the table below:

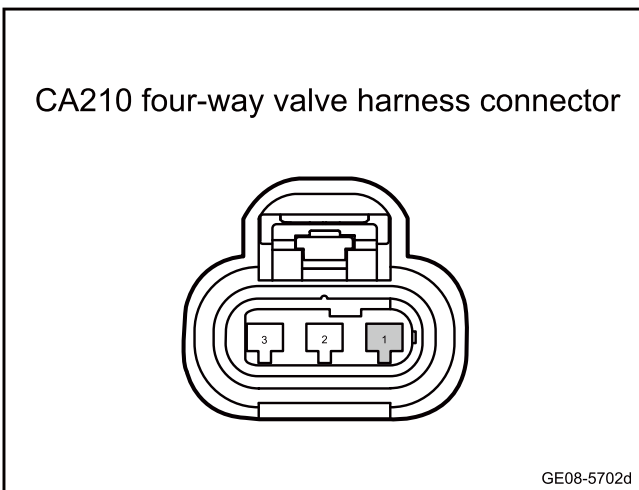
Measure terminal 1	Measure terminal 2	Standard value
CA210(3)	ER04(5)	Standard resistance: less than 1Ω
CA210(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 3 of four-way valve harness connector CA210 and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the grounding circuit of the four-way solenoid valve is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the four-way solenoid valve harness connector CA210.
- C. Use a multimeter to measure the resistance between terminal 1 of the four-way valve harness connector CA210 of BSG and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace the four-way solenoid valve.

- A. Replace the four-way solenoid valve. Refer to [Replacement of Four-way Valve](#)
- B. Confirm whether the four-way valve works normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10	Reprogram and reset the thermal management control module.
---------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

8.2.6.27 Faults of A/C Blower

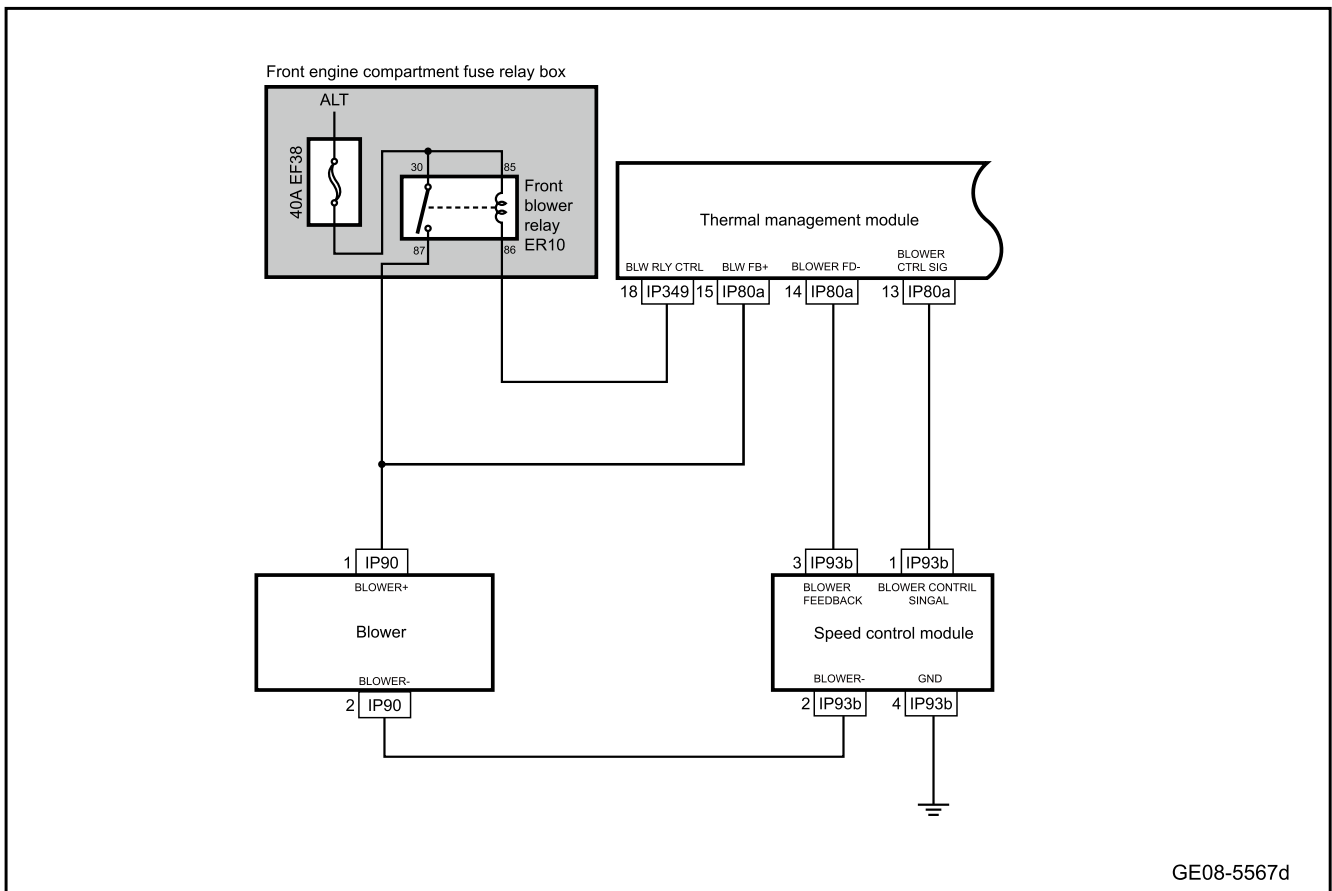
1. DTC description:

DTC	Trouble description
B118096	Blower fault
B118017	There is a big difference between blower voltage feedback and target value.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118096	The difference between the target terminal voltage of the blower and the actual feedback voltage is greater than 1V and the acquisition time is greater than 5s	1. Power supply within the range of 9V-16V 2. igon2s is started	1. Harness 2. Battery 3. Blower
B118017	The feedback voltage is abnormal for more than 3s continuously (when the blower speed target is not stopped, the feedback voltage is less than 2.5V)	1. Voltage range is 9V-16V. 2. IG is ON and enabled after 3s	4. Thermal management control module 5. Speed control module

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, blower and speed control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, blower and speed control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Check the blower fuse.
--------	------------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove front engine compartment fuse EF38 and check if it is blown.

Rated capacity of fuse: 40A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check the blower relay.

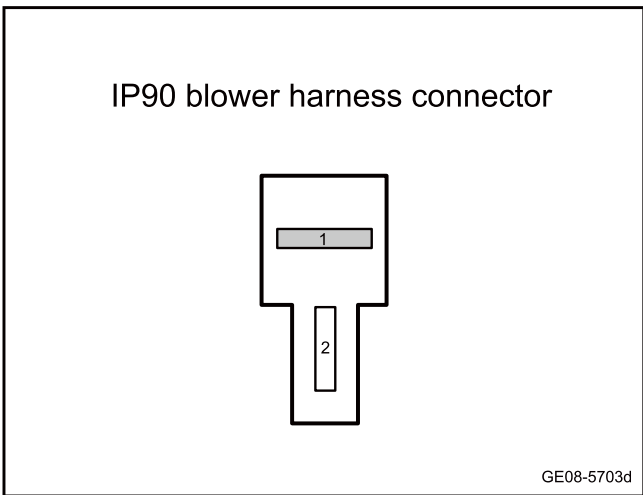
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the blower relay ER10 and replace the blower relay with a new one of the same specification.
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Check the harness between the blower relay and the blower for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove blower relay ER10.
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	ER10(87)	Standard resistance: less than 1Ω

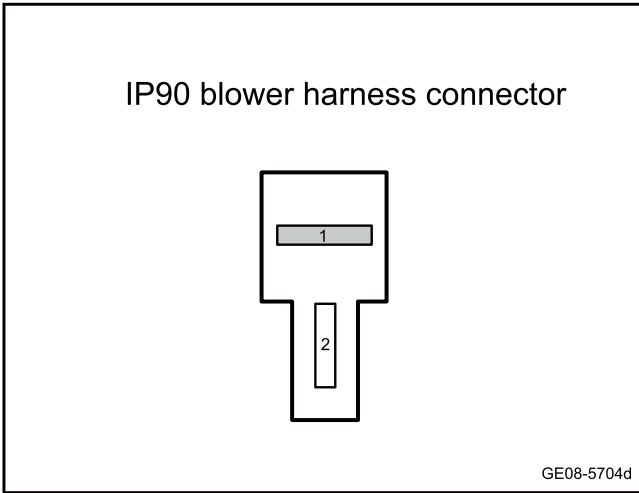
- E. Confirm whether the resistance value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the harness between the blower relay and the blower is short circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove blower relay ER10.
- C. Disconnect blower harness connector IP90.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

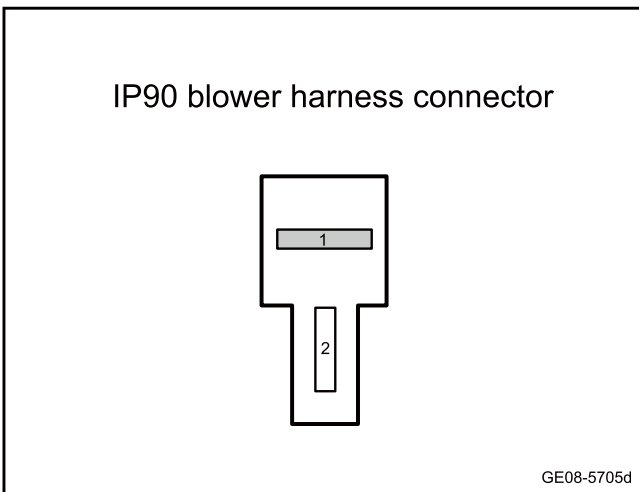
Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the resistance value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Check whether the harness between the blower relay and the blower is short circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove blower relay ER10.
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure the terminals according to the table below:

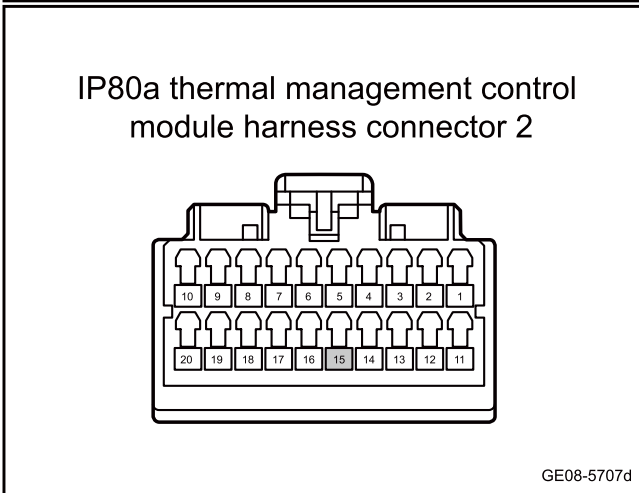
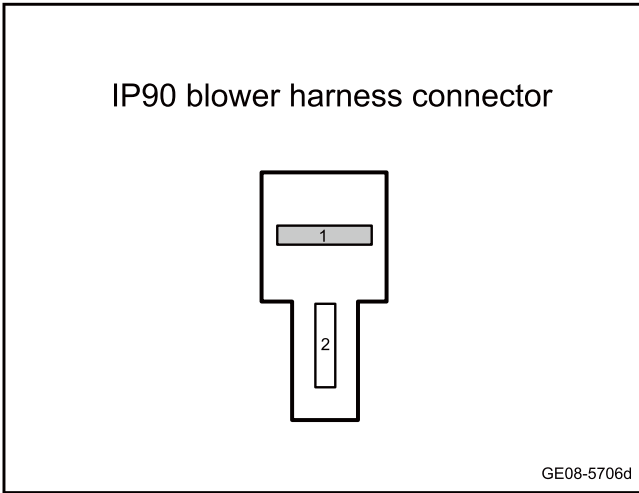
Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the resistance value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 | Check whether the harness between the thermal management control module and the blower is open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect blower harness connector IP90.
- C. Disconnect the thermal management control module harness connectors IP80a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP90(1)	IP80a(15)	Standard resistance: less than 1Ω

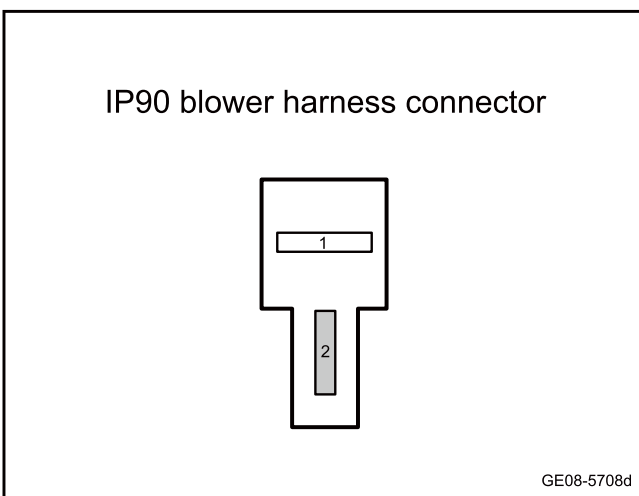
- E. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

Step 10	Check whether the harness between thermal management control module and blower is short to power supply.
---------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect blower harness connector IP90.
- C. Disconnect the thermal management control module harness connectors IP80a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP90(2)	Vehicle body is grounded.	Standard voltage: 0V

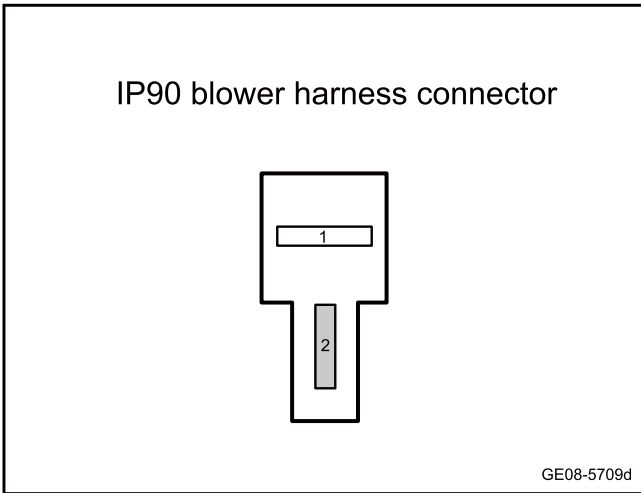
- F. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

Step 11 Check whether the harness between the thermal management control module and blower is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect blower harness connector IP90.
- C. Disconnect the thermal management control module harness connectors IP80a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP90(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

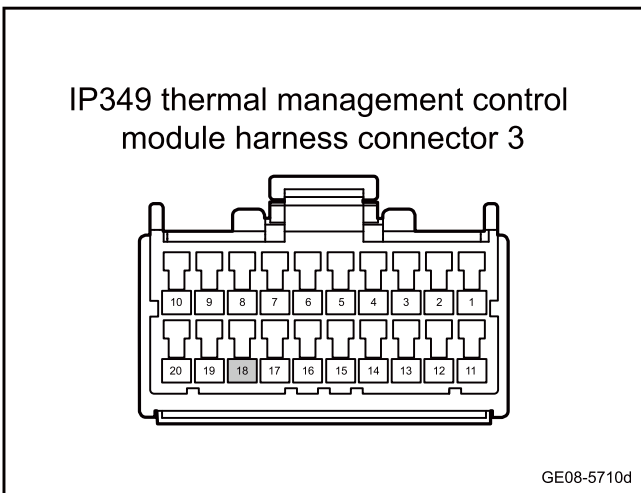
- E. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

Step 12 Check the harness between the blower relay and the thermal management control module for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove blower relay ER10.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(18)	ER10(86)	Standard resistance: less than 1Ω

- E. Whether does the measured value meet the standard.

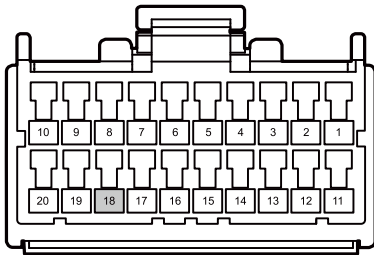
No

Repair or replace the harness.

Yes

Step 13 Check whether the harness between the blower relay and the thermal management control module is short-circuited to power supply.

IP349 thermal management control module harness connector 3



GE08-5711d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove blower relay ER10.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(18)	Vehicle body is grounded.	Standard voltage: 0V

- F. Whether does the value meet the standard.

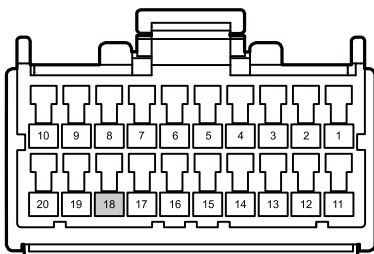
No

Repair or replace the harness.

Yes

Step 14	Check whether the harness between the blower relay and the thermal management control module is short-circuited to ground.
---------	--

IP349 thermal management control module harness connector 3



GE08-5712d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove blower relay ER10.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(18)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

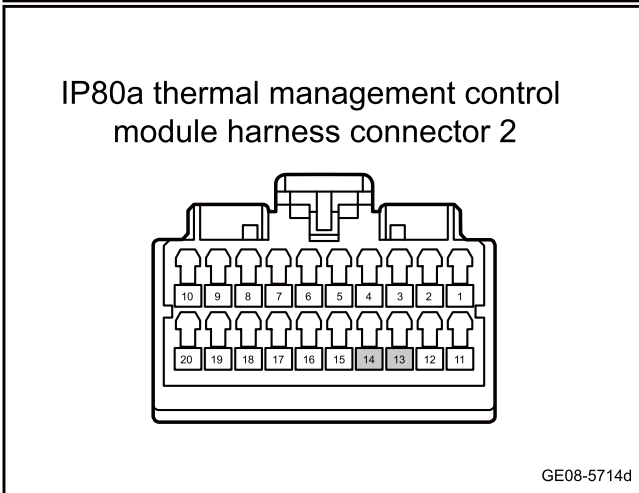
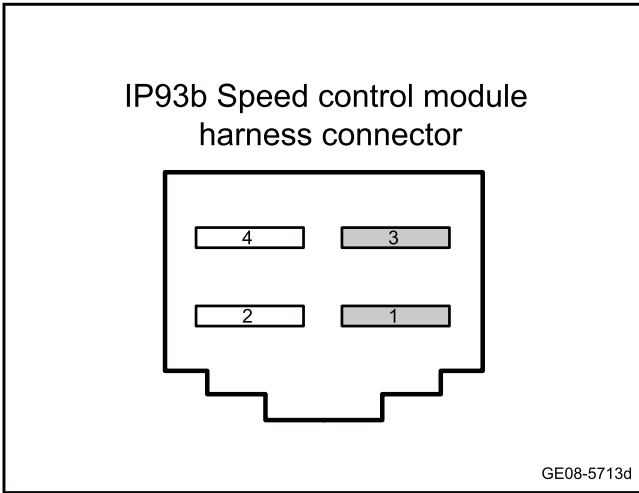
- E. Whether does the value meet the standard.

No

Repair or replace the harness.

Yes

Step 15	Check the harness between the speed control module and the thermal management control module for an open circuit.
---------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect the thermal management control module harness connectors IP80a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(1)	IP80a(13)	Standard resistance: less than 1Ω
IP93b(3)	IP80a(14)	

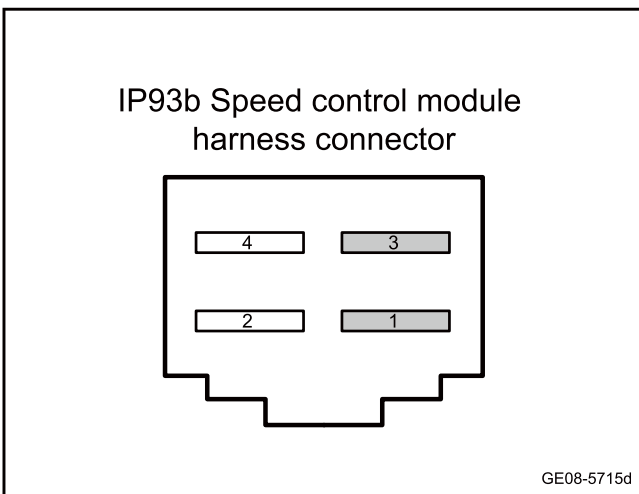
- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 16	Check whether the harness between the speed control module and the thermal management control module is short-circuited to power supply.
---------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect the thermal management control module harness connectors IP80a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP93b(3)		

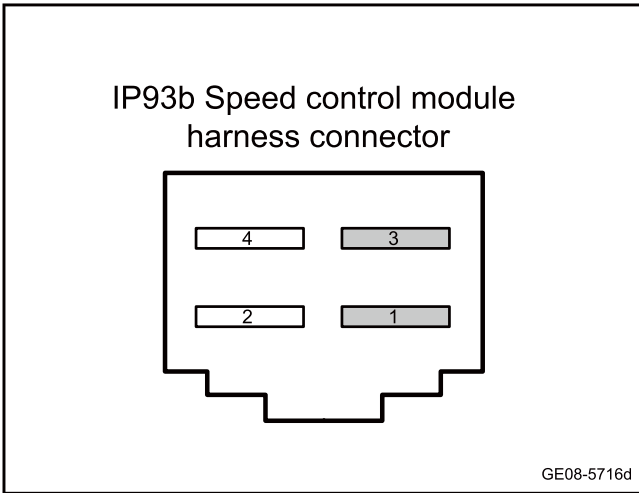
- F. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 17 Check whether the harness between the speed control module and the thermal management control module is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect the thermal management control module harness connectors IP80a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP93b(3)		

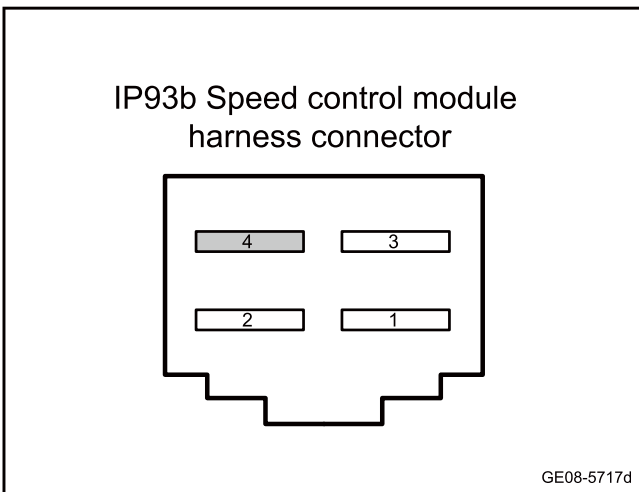
- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 18 Check whether the speed control module grounding harness is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Use a multimeter to measure the resistance between terminal 4 of the speed control module harness connector IP93b and body grounding.

Standard resistance: less than 1Ω

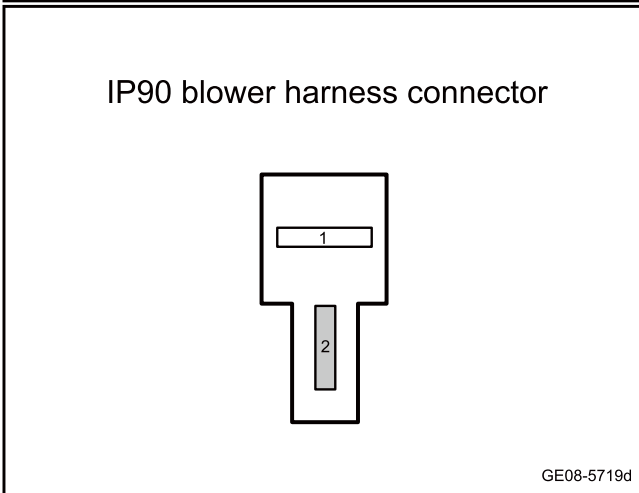
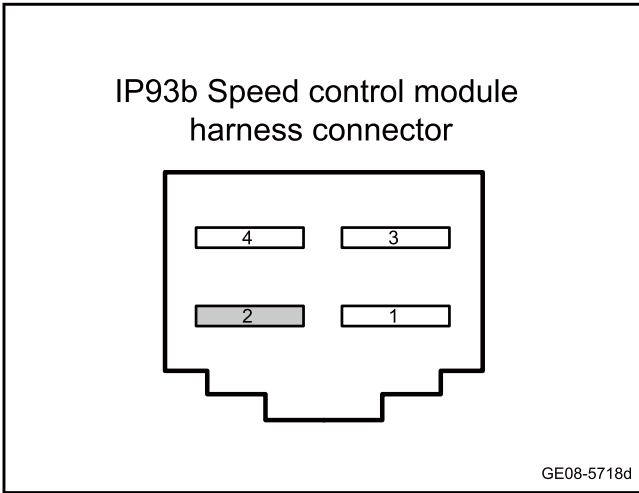
- D. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 19 Check whether the harness between speed control module and blower is open.



Yes

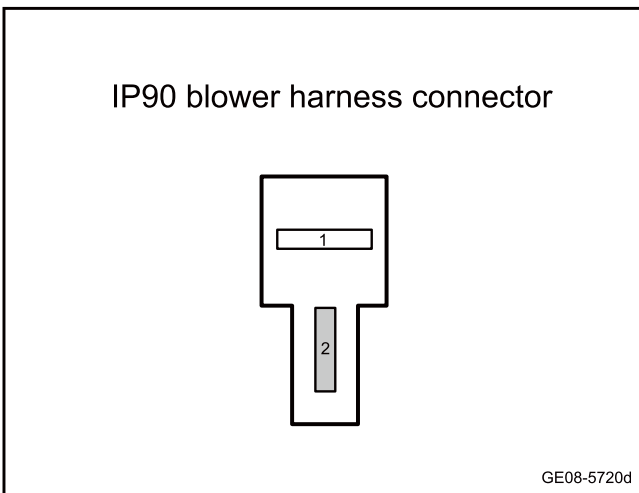
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP93b(2)	IP90(2)	Standard resistance: less than 1Ω

- E. Whether does the measured value meet the standard.

No → Repair or replace the harness.

Step 20	Check whether the harness between speed control module and blower is short to power supply.
---------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect blower harness connector IP90.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

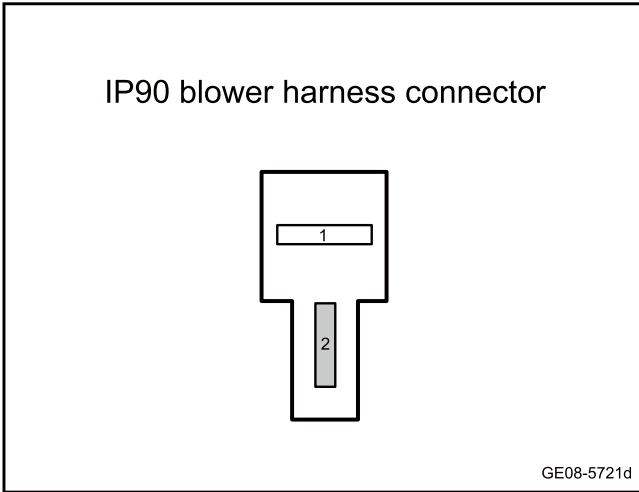
Measure terminal 1	Measure terminal 2	Standard value
IP90(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Whether does the measured value meet the standard.

No → Repair or replace the harness.

Yes

Step 21 Check whether the harness between the speed control module and blower is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect speed control module harness connector IP93b
- C. Disconnect blower harness connector IP90.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP90(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Whether does the measured value meet the standard.

No

Repair or replace the harness.

Yes

Step 22 Replace speed control module.

- A. Replace speed control module. Refer to Replacement of speed control module
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 23 Replace blower

- A. Replace blower Refer to Replacement of blower
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 24 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 25	Reprogram and reset the thermal management control module.
------------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 26	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 27	System is normal.
------------	-------------------

8.2.6.28 Faults of A/C compressor

1. DTC description:

Diagnostic Trouble Code	Description
B11A417	Compressor standby overvoltage fault
B11A416	Compressor standby undervoltage fault
B118F19	Overcurrent protection of the compressor
B118F16	Compressor undervoltage

Diagnostic Trouble Code	Description
B118F17	Compressor overvoltage
B118F44	RAM fault of the compressor
B118F45	ROM fault of the compressor
B118F46	EEPROM fault of the compressor
B11DA01	High voltage detection circuit fault of the compressor
B11DB01	Current detection circuit fault of the compressor
B11DC01	Current detection circuit fault of the compressor motor
B11DC19	Abnormal current protection of compressor motor
B11DD01	Basic temperature sensor failure of the compressor
B11DD98	Low temperature protection of compressor basic temperature
B11DE01	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature sensor failure
B11DE98	Compressor IGBT (Insulated Gate Bipolar Transistor) temperature overheating protection
B11DF01	Compressor drive circuit failure
B118F96	Compressor failure
B11E096	Compressor rotor abnormal action protection
B11C417	Input voltage fluctuation of compressor high voltage

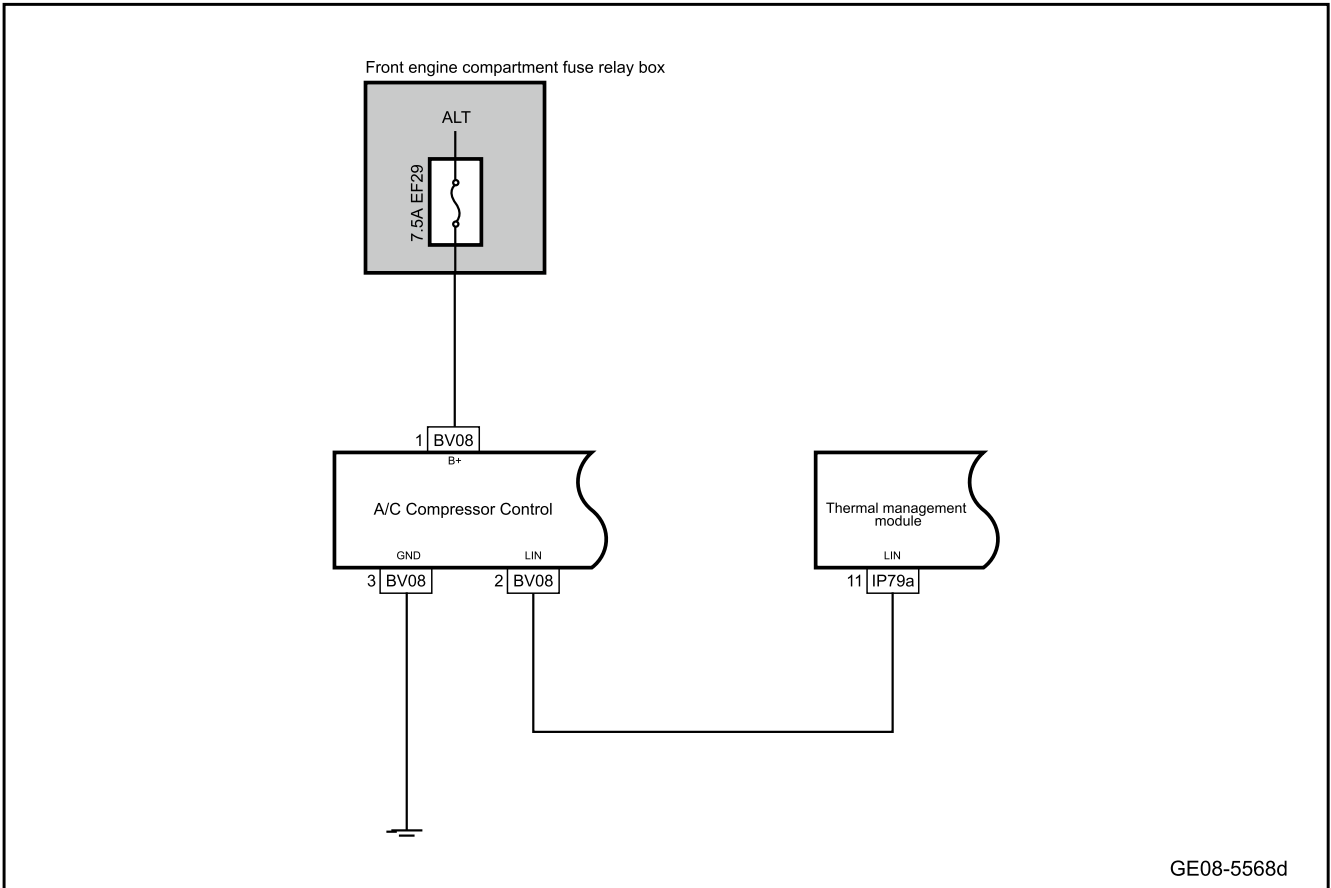
2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11A417	AC receives the compressor fault signal as "standby overvoltage fault" for 2s (ID 0x0D, 6.2-6.3 = 2)	1. The power supply voltage is in the effective range 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. A/C compressor
B11A416	AC receives the compressor fault signal as "standby undervoltage" for 2s (ID 0x0D, 6.2-6.3 = 1)		
B118F19	AC receives the compressor fault signal as "over-current protection" for 2s (ID 0x0D, 6.5 = 1)		
B118F16	AC receives the compressor fault signal as "undervoltage fault" for 2s (ID 0x0D, 6.0-6.1 = 1)		
B118F17	AC receives the compressor fault signal as "overvoltage fault" for 2s (ID 0x0D, 6.0-6.1=2)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118F44	AC receives the compressor fault signal as "RAM fault" for 2s (ID 0x0D, 5.0 = 1)		
B118F45	AC receives the compressor fault signal as "ROM fault" for 2s (ID 0x0D, 5.1 = 1)		
B118F46	AC receives the compressor fault signal as "EEPROM fault" for 2s (ID 0x0D, 5.2 = 1)		
B11DA01	AC receives the compressor fault signal as "high-voltage detection circuit fault" for 2s (ID 0x0D, 4.0 = 1)		
B11DB01	AC receives the compressor fault signal as "current detection circuit fault" for 2s (ID 0x0D, 4.1 = 1)		
B11DC01	AC receives the compressor fault signal as "motor current detection circuit fault" for 2s (ID 0x0D, 4.2 = 1)		
B11DC19	AC receives the compressor fault signal as "abnormal motor current protection" for 2s (ID 0x0D, 6.4 = 1)		
B11DD01	AC receives the compressor fault signal as "compressor basic temperature sensor fault" for 2s (ID 0x0D, 4.3 = 1)		
B11DD98	AC receives the compressor fault signal as "low basic temperature protection" for 2s (ID 0x0D, 6.6 = 1)		
B11DE01	AC receives the compressor fault signal as "IGBT temperature sensor fault" for 10s (ID 0x0D, 4.4 = 1)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11DE98	AC receives the compressor fault signal as "IGBT over-temperature protection" for 10s (ID 0x0D, 6.7 = 1)		
B11DF01	AC receives the compressor fault signal as "drive circuit fault" for 2s (ID 0x0D, 4.5 = 1)		
B118F96	A/C receives the compressor fault signal receives "L_ACCM_CompFitSta" for 2 consecutive seconds		
B11E096	AC receives the compressor fault signal as "abnormal rotor action protection" for 2s (ID 0x0D, 5.4 = 1)		
B11C417	The received Comp _ faultCode is equal to the overcurrent for more than 2 seconds. (High voltage resonance state failure)	Power supply within the range of 1.9V-16V 2. The vehicle is in IGN ON mode 3. LIN bus communication is normal. 4. LIN signal BMSH_stMode= 5/6/7/8 5. BMSH_HvBus Volt \geq 300V is collected by AC for 3s.	

3. Schematic circuit diagram:



4. Diagnosis steps

This manual is only used to diagnose the fault of Mitsubishi electric compressor. The diagnosis of Haili electric compressor (second rail) is the same as that of Mitsubishi electric compressor.

Step 1	Primary check.
--------	----------------

- A. Check the A/C compressor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the A/C compressor harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes
Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

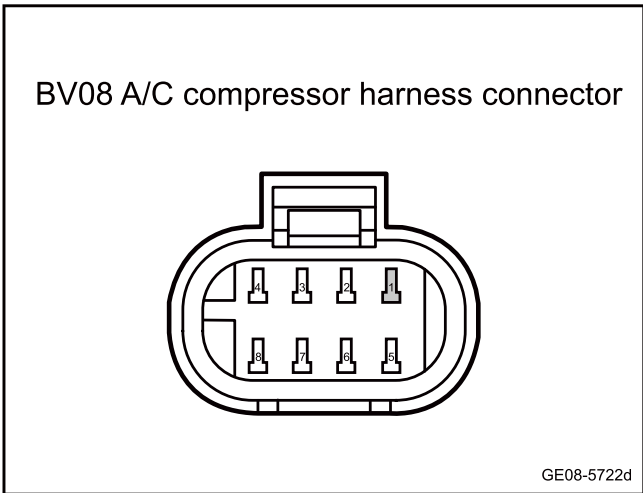
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF29 of the front engine compartment. Check whether the fuse EF29 is blown.
Rated capacity of fuse: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check whether the working voltage of A/C compressor is normal.



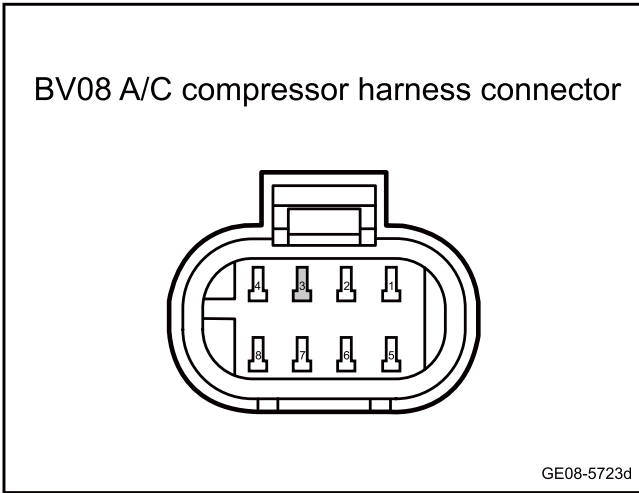
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the A/C compressor harness connector BV08.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between the terminal 1 of the harness connector BV08 of the A/C compressor and the body grounding.
Standard voltage: 11-14V
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check whether the grounding harness of A/C compressor is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the A/C compressor harness connector BV08.
- C. Use a multimeter to measure the resistance between the terminal 3 of the harness connector BV08 of the A/C compressor and the body grounding.

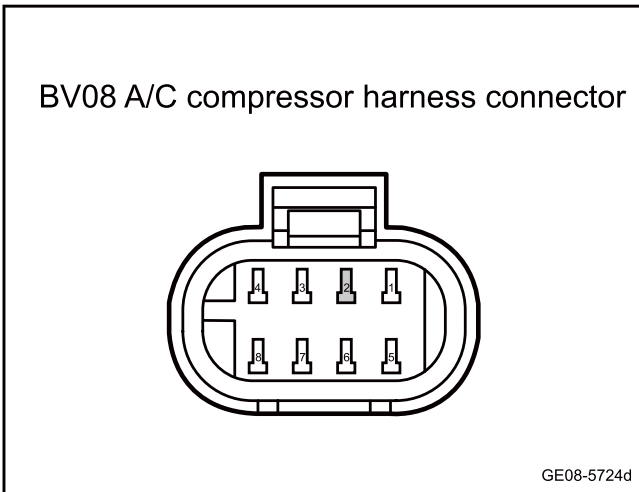
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the LIN communication of A/C compressor is normal.



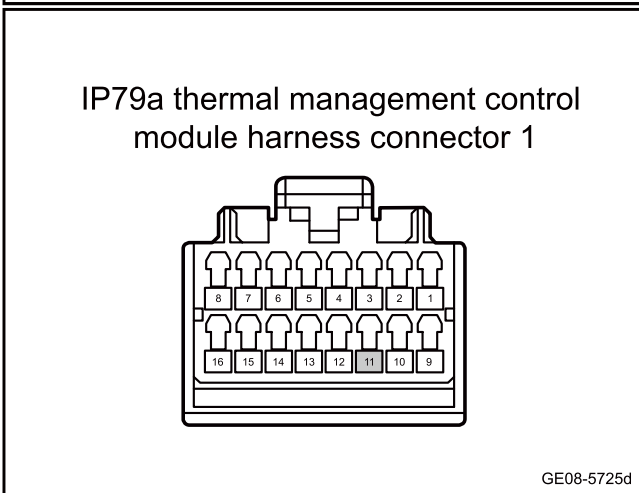
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. Disconnect the harness connector of the thermal management LIN module.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV08(2)	IP79a(11)	Standard resistance: less than 1Ω
BV08(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.



Yes

Step 7 Replace the A/C compressor.

- A. Replace the A/C compressor. Refer to [Replacement of A/C Compressor](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11 System is normal.

8.2.6.29 Fault of refrigerant temperature sensor(evaporator outlet)

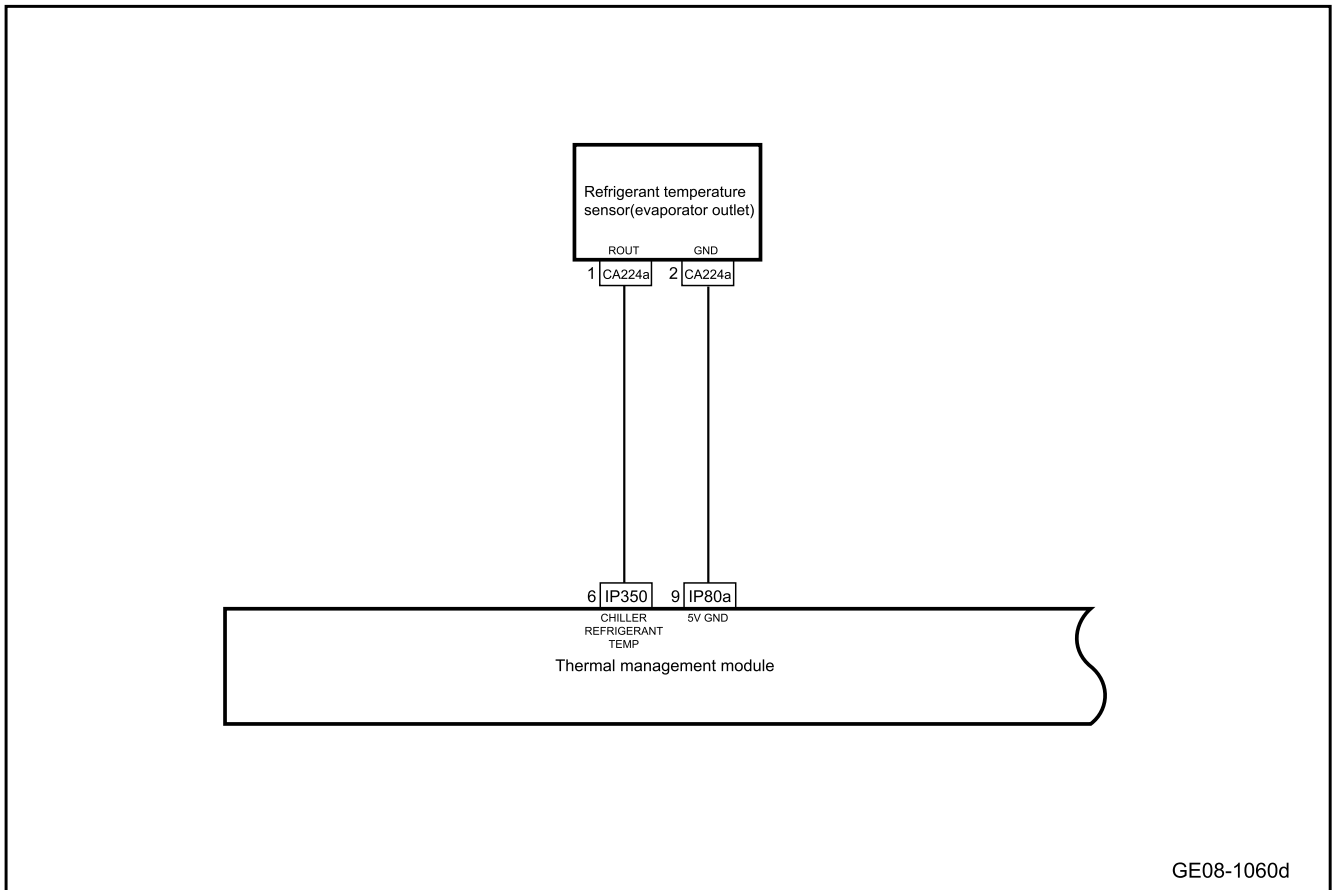
1. DTC description:

Diagnostic Trouble Code	Description
B11E211	The refrigerant temperature sensor at the compressor outlet is short-circuited to the ground
B11E215	The refrigerant temperature sensor at the compressor outlet is short-circuited to power supply or open circuit
B11E314	The refrigerant pressure & temperature sensor at the compressor outlet is opened or short-circuited to the ground
B11E312	The refrigerant pressure sensor at the compressor outlet is short-circuited to power supply
B11E414	The refrigerant pressure sensor at the compressor suction port is opened or short-circuited to the ground
B11E412	The refrigerant pressure sensor at the compressor suction port is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E211	The voltage value detected by the temperature sensor of PT1 for 500ms is less than 0.1V	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Refrigerant temperature sensor (evaporator outlet)
B11E215	The voltage value detected by the temperature sensor of PT1 for 500ms is greater than 4.9V		
B11E314	The PT1 pressure sensor detects a voltage less than 0.1V for 500ms		
B11E312	The PT1 pressure sensor detects a voltage greater than 4.9V for 500ms		
B11E414	The pressure sensor of refrigerant at the suction port of compressor detects the voltage value less than 0.1V for 500ms		
B11E412	The pressure sensor of refrigerant at the suction port of compressor detects the voltage value greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, refrigerant temperature sensor(evaporator outlet) for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, refrigerant temperature sensor(evaporator outlet) harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

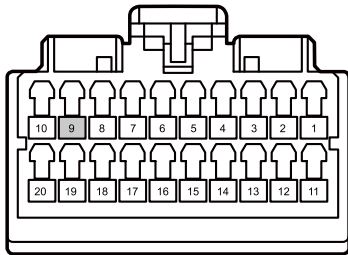
No

Repair or replace the faulty part.

Yes

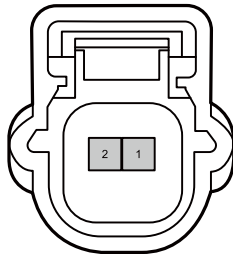
Step 3	Check the harness between the thermal management control module and the refrigerant temperature sensor (evaporator outlet) for an open circuit.
--------	---

IP80a thermal management control module harness connector 2



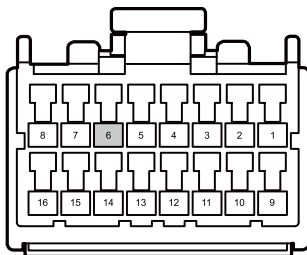
GE08-5726d

CA224a refrigerant temperature sensor harness connector(evaporator outlet)



GE08-5727d

IP350 thermal management control module harness connector 4



GE08-5728d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect refrigerant temperature sensor (evaporator outlet) harness connector CA224a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	CA224a(2)	Standard resistance: less than 1Ω
IP350(6)	CA224a(1)	

- F. Confirm whether the measured value meets the standard.

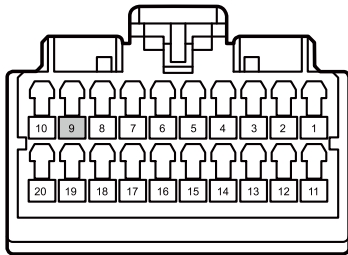
No

Repair or replace the harness.

Yes

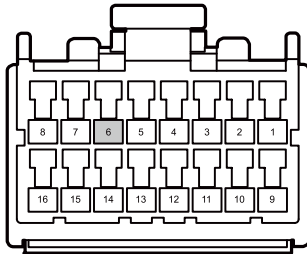
Step 4 Check the harness between the thermal management control module and the refrigerant temperature sensor (evaporator outlet) for a short circuit to power supply.

IP80a thermal management control module harness connector 2



GE08-5729d

IP350 thermal management control module harness connector 4



GE08-5730d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect refrigerant temperature sensor(evaporator outlet) harness connector CA224a.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard voltage: 0V
IP350(6)		

- G. Confirm whether the measured value meets the standard.

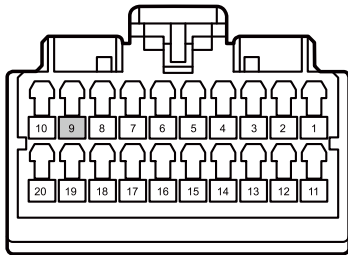
No

Repair or replace the harness.

Yes

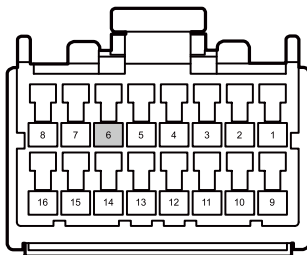
Step 5 Check the harness between the thermal management control module and the refrigerant temperature sensor (evaporator outlet) for a short circuit to ground.

IP80a thermal management control module harness connector 2



GE08-5731d

IP350 thermal management control module harness connector 4



GE08-5732d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect refrigerant temperature sensor(evaporator outlet) harness connector CA224a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(6)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the refrigerant temperature sensor(evaporator outlet).

- A. Replace the refrigerant temperature sensor(evaporator outlet). Refer to refrigerant temperature sensor (evaporator outlet) replacement
- B. Confirm whether the refrigerant temperature sensor (evaporator outlet) works normally.

Yes → System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

8.2.6.30 Fault of refrigerant temperature sensor

1. DTC description:

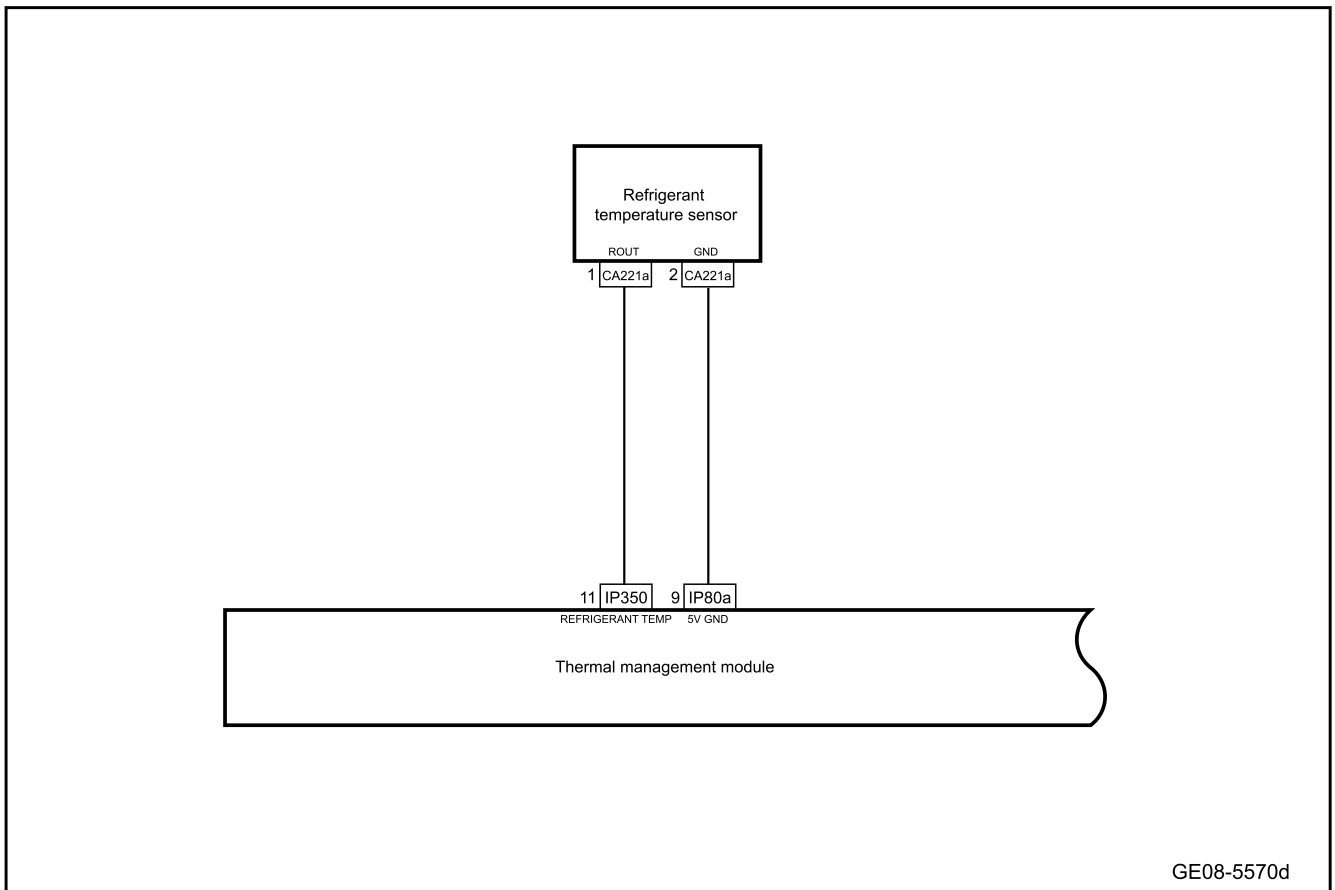
Diagnostic Trouble Code	Description
B11E511	Inlet and outlet refrigerant temperature sensor is short circuited to the ground
B11E515	Inlet and outlet refrigerant temperature sensor is short circuited to power supply or open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E511	The voltage value detected by the temperature sensor of PT1 for 500ms is less than 0.1V	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Refrigerant temperature sensor

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E515	The voltage value detected by the temperature sensor of PT1 for 500ms is greater than 4.9V		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module, outside temperature sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, outside temperature sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

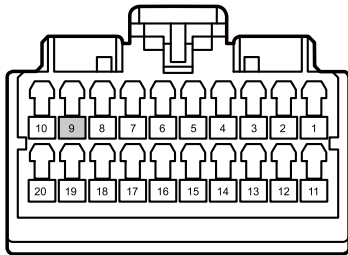
No

Repair or replace the faulty part.

Yes

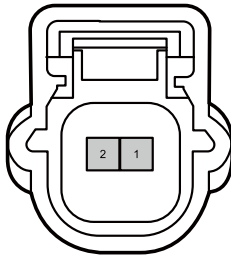
Step 3	Check the harness between the thermal management control module and the outside temperature sensor for an open circuit.
--------	---

IP80a thermal management control module harness connector 2



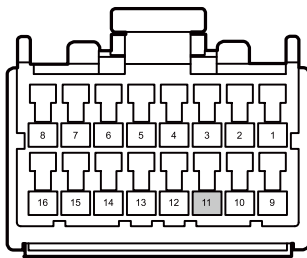
GE08-5733d

CA221a refrigerant temperature sensor harness connector



GE08-5734d

IP350 thermal management control module harness connector 4



GE08-5735d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the refrigerant temperature sensor harness connector CA221a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	CA221a(2)	Standard resistance: less than 1Ω
IP350(11)	CA221a(1)	

- F. Confirm whether the measured value meets the standard.

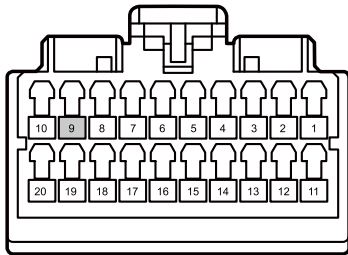
No

Repair or replace the harness.

Yes

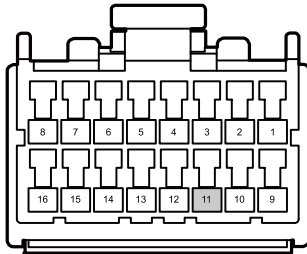
Step 4 Check the harness between the thermal management control module and the refrigerant temperature sensor for a short circuit to power supply.

IP80a thermal management control module harness connector 2



GE08-5736d

IP350 thermal management control module harness connector 4



GE08-5737d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the refrigerant temperature sensor harness connector CA221a.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard voltage: 0V
IP350(11)		

- G. Confirm whether the measured value meets the standard.

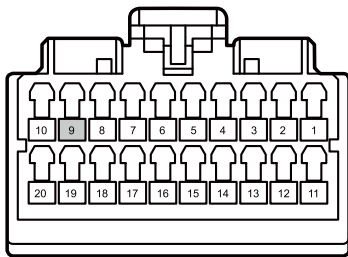
No

Repair or replace the harness.

Yes

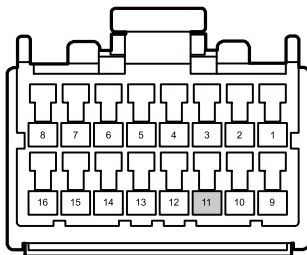
Step 5 Check the harness between the thermal management control module and the refrigerant temperature sensor for a short circuit to ground.

IP80a thermal management control module harness connector 2



GE08-5738d

IP350 thermal management control module harness connector 4



GE08-5739d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the refrigerant temperature sensor harness connector CA221a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(11)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the refrigerant temperature sensor.

- A. Replace the refrigerant temperature sensor. Refer to replacement of refrigerant temperature sensor
- B. Confirm whether the refrigerant temperature sensor works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

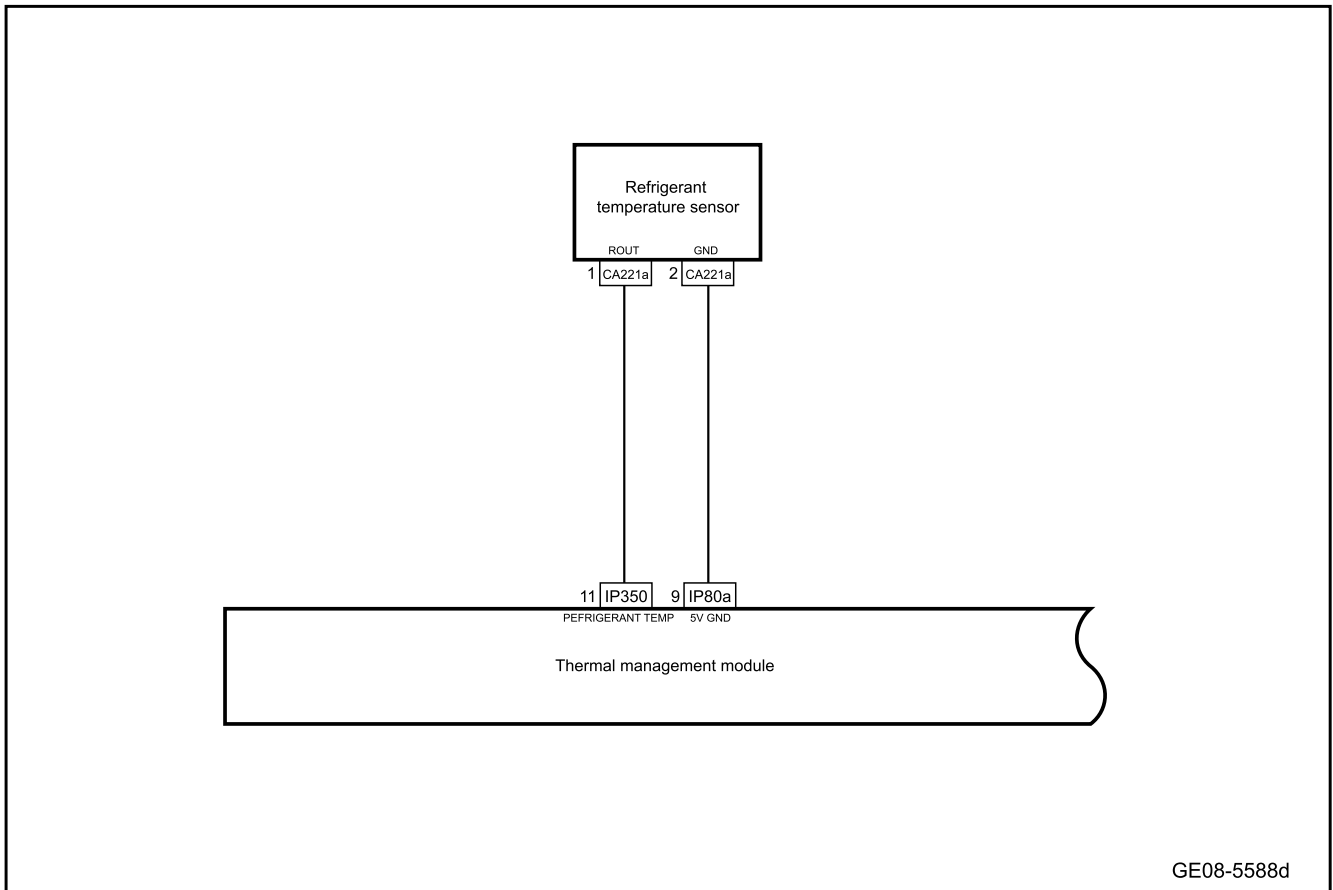
Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

8.2.6.31 Fault of Refrigerant Temperature Sensor (Type I with Non-heat Pump)

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module, refrigerant temperature sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, refrigerant temperature sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

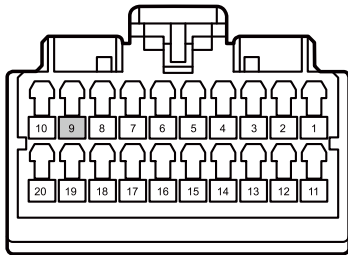
No

Repair or replace the faulty part.

Yes

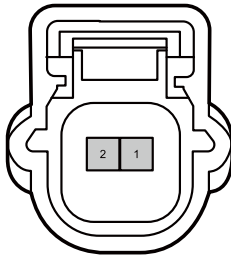
Step 2	Check the harness between the thermal management control module and the refrigerant temperature sensor for an open circuit.
--------	---

IP80a thermal management control module harness connector 2



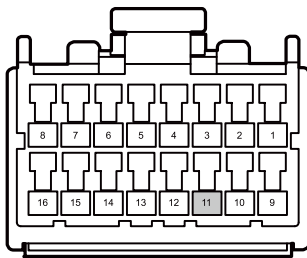
GE08-5740d

CA221a refrigerant temperature sensor harness connector



GE08-5741d

IP350 thermal management control module harness connector 4



GE08-5742d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a, IP350.
- C. Disconnect the refrigerant temperature sensor harness connector CA221a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	CA221a(2)	Standard resistance: less than 1Ω
IP350(11)	CA221a(1)	

- E. Confirm whether the measured value meets the standard.

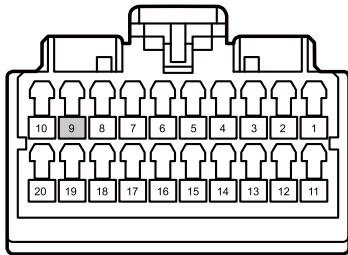
No

Repair or replace the harness.

Yes

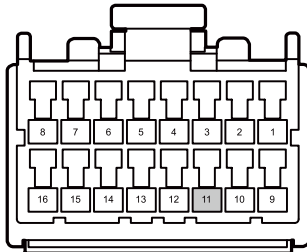
Step 3 Check the harness between the thermal management control module and the refrigerant temperature sensor for a short circuit to power supply.

IP80a thermal management control module harness connector 2



GE08-5743d

IP350 thermal management control module harness connector 4



GE08-5744d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP80a, IP350.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard voltage: 0V
IP350(11)		

- F. Confirm whether the measured value meets the standard.

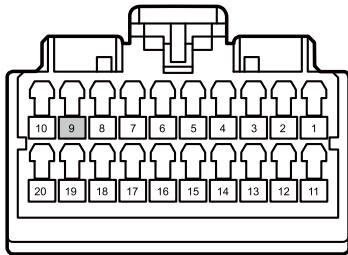
No

Repair or replace the harness.

Yes

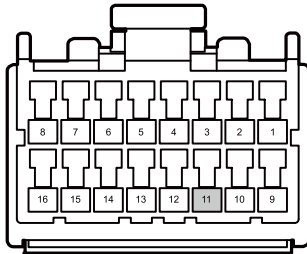
Step 4 Check the harness between the thermal management control module and the refrigerant temperature sensor for a short circuit to ground.

IP80a thermal management control module harness connector 2



GE08-5745d

IP350 thermal management control module harness connector 4



GE08-5746d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a, IP350.
- C. Disconnect the refrigerant temperature sensor harness connector CA221a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP350(11)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Replace the refrigerant temperature sensor.

- A. Replace the refrigerant temperature sensor. Refer to replacement of refrigerant temperature sensor
- B. Confirm whether the refrigerant temperature sensor works normally.

Yes → System is normal.

No

Step 6 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 7 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

8.2.6.32 Fault of refrigerant temperature sensor(outlet of cooling device)

1. DTC description:

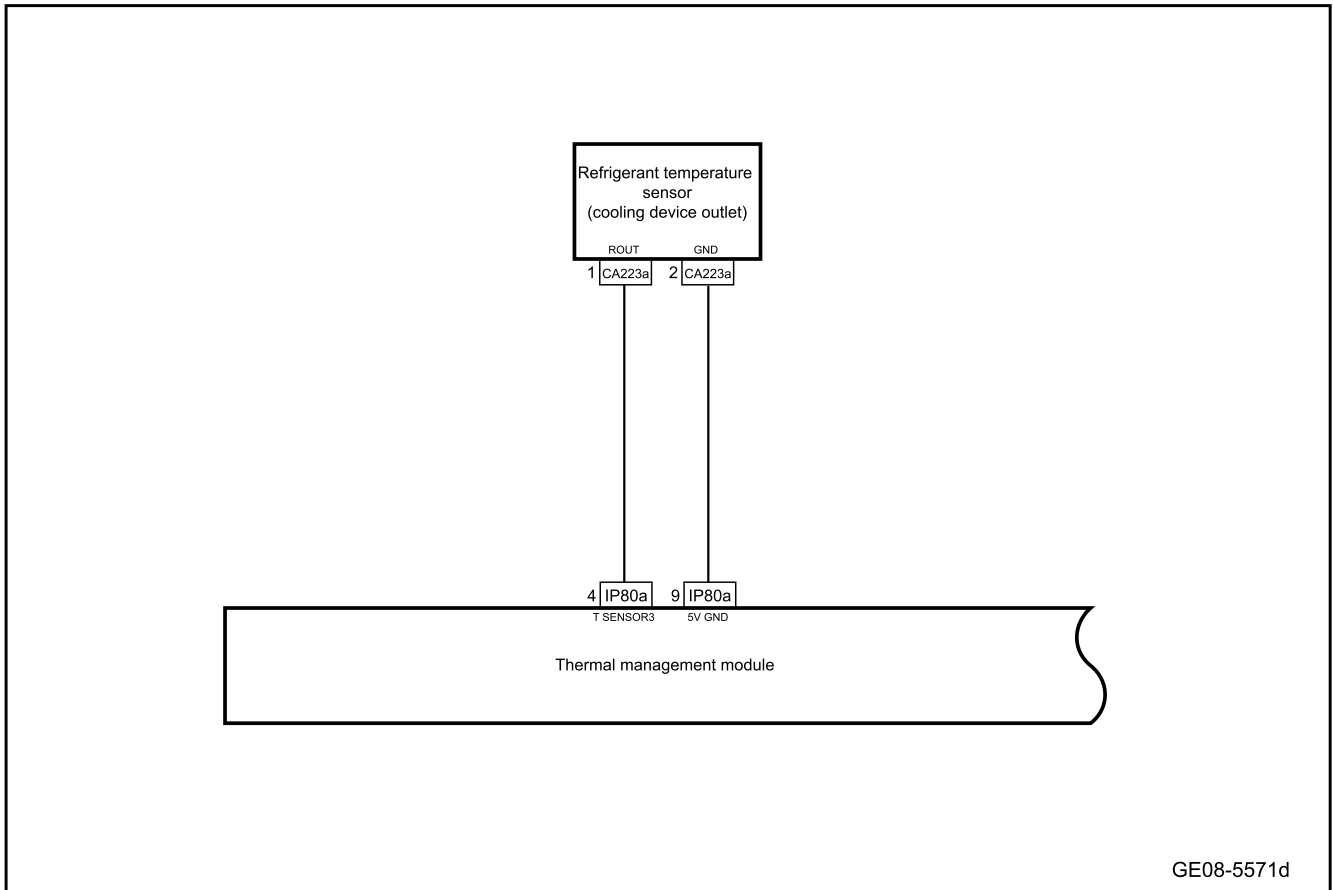
Diagnostic Trouble Code	Description
B11E711	Plate heat exchange outlet refrigerant temperature sensor is short circuited to the ground
B11E715	Plate heat exchange outlet refrigerant temperature sensor is short circuited to power supply or open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E711	The voltage value detected by the temperature sensor of T3 for 500ms is less than 0.1V	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Refrigerant temperature sensor(outlet of cooling device)

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E715	The voltage value detected by the temperature sensor of T3 for 500ms is greater than 4.9V		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the thermal management control module, refrigerant temperature sensor(outlet of cooling device) for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, refrigerant temperature sensor(outlet of cooling device) harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

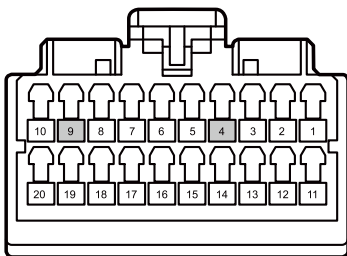
No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the thermal management control module and the refrigerant temperature sensor (outlet of cooling device) for an open circuit.

IP80a thermal management control module harness connector 2



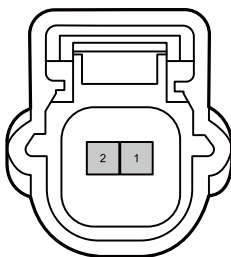
GE08-5747d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect refrigerant temperature sensor(outlet of cooling device) harness connector CA223a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	CA223a(2)	Standard resistance: less than 1Ω
IP80a(4)	CA223a(1)	

- E. Confirm whether the measured value meets the standard.

CA223a External condenser outlet refrigerant temperature sensor harness connector



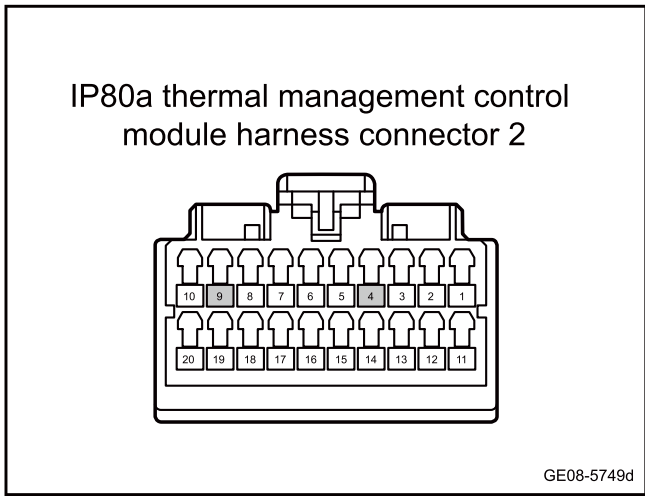
GE08-5748d

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the thermal management control module and the refrigerant temperature sensor (outlet of cooling device) for a short circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect refrigerant temperature sensor(outlet of cooling device) harness connector CA223a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

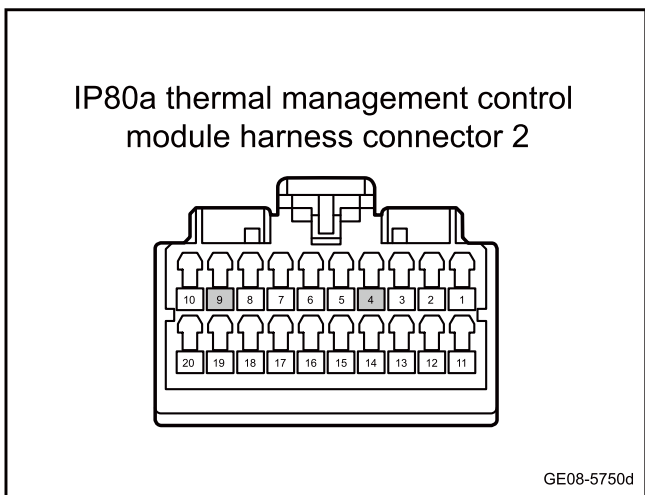
Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(4)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check the harness between the thermal management control module and the refrigerant temperature sensor (outlet of cooling device) for a short circuit to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect refrigerant temperature sensor(outlet of cooling device) harness connector CA223a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(4)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the refrigerant temperature sensor(outlet of cooling device).

- A. Replace the refrigerant temperature sensor(outlet of cooling device). Refer to Replacement of Refrigerant Temperature Sensor(outlet of cooling device)
- B. Confirm whether the refrigerant temperature sensor (outlet of cooling device) works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

8.2.6.33 Air duct sensor 1 fault

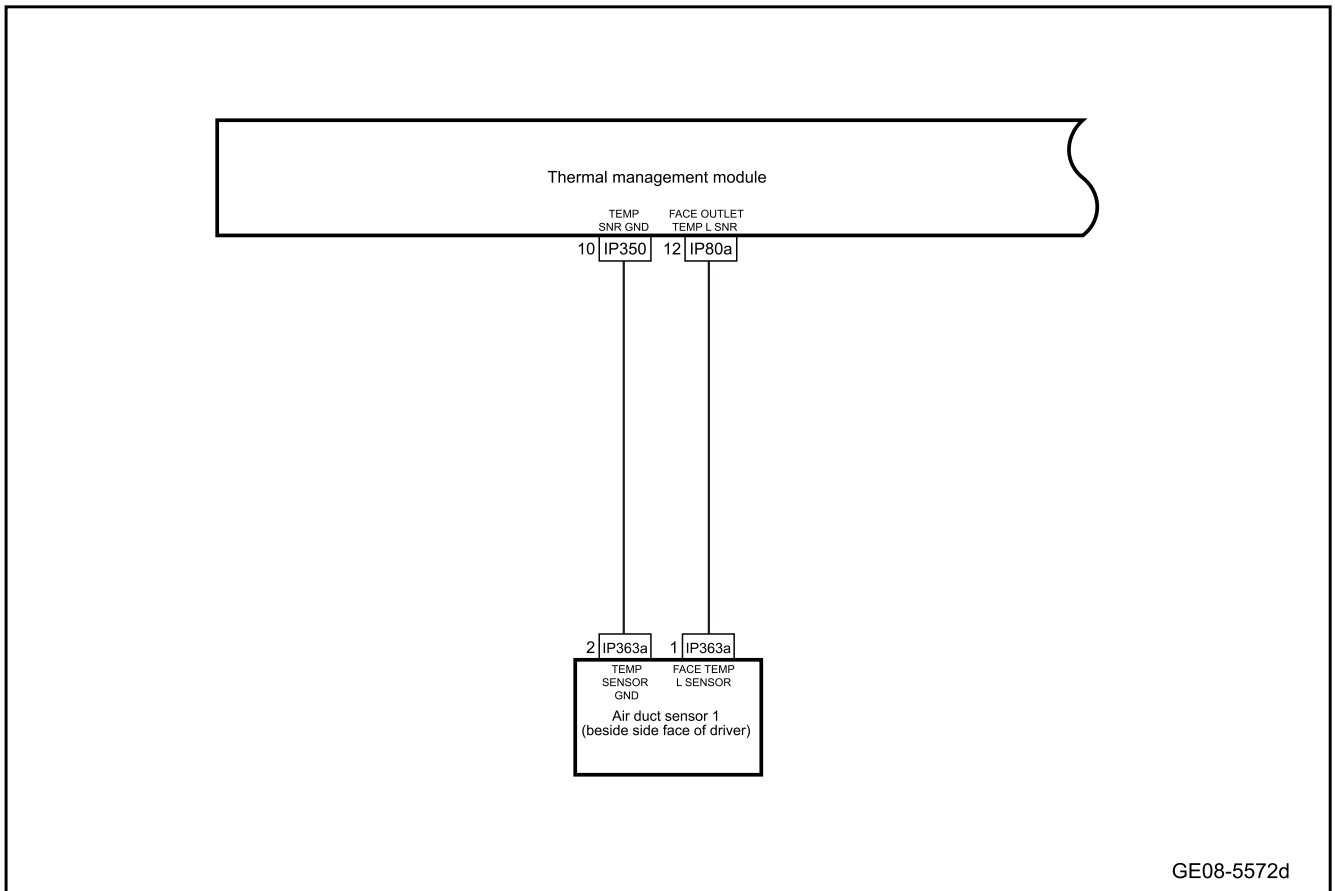
1. DTC description:

Diagnostic Trouble Code	Description
B11E811	Temperature sensor of the driver's face blowing is short to GND
B11E815	Driver's face blowing temperature sensor is shorted or opened to the power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E811	The voltage value detected by the driver's face blowing outlet sensor is less than 0.1V for 500ms	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct Sensor 1
B11E815	The voltage value detected by the driver's face blowing outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and air duct sensor 1 for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and air duct sensor 1 harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

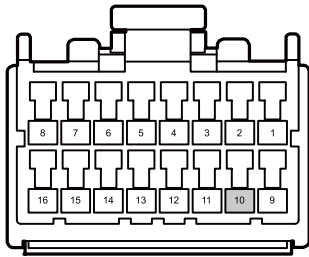
No

Repair or replace the faulty part.

Yes

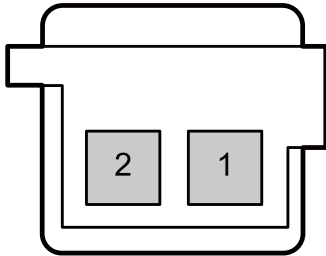
Step 3	Check the harness between the thermal management control module and the and air duct sensor 1 for an open circuit.
--------	--

IP350 thermal management control module harness connector 4



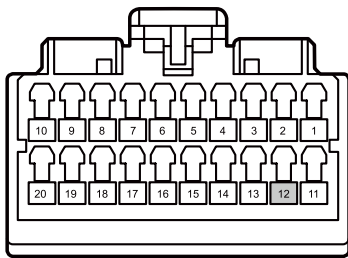
GE08-5751d

IP363a air duct sensor harness connector 1



GE08-5752d

IP80a thermal management control module harness connector 2



GE08-5753d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the and air duct sensor 1 harness connector IP363a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP363a(2)	Standard resistance: less than 1Ω
IP80a(12)	IP363a(1)	

- F. Confirm whether the measured value meets the standard.

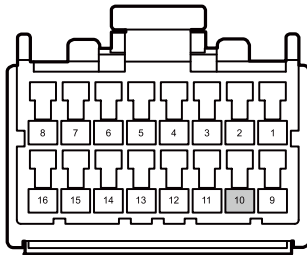
No

Repair or replace the harness.

Yes

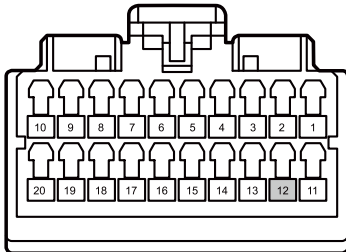
Step 4 Check the harness between the thermal management control module and the and air duct sensor 1 for a short circuit to power supply.

IP350 thermal management control module harness connector 4



GE08-5754d

IP80a thermal management control module harness connector 2



GE08-5755d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the and air duct sensor 1 harness connector IP363a.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(12)		

- G. Confirm whether the measured value meets the standard.

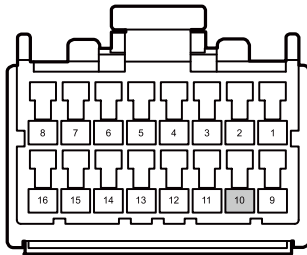
No

Repair or replace the harness.

Yes

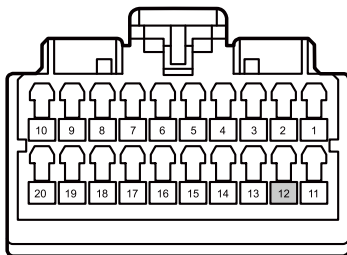
Step 5 Check the harness between the thermal management control module and the air duct sensor 1 for a short circuit to ground.

IP350 thermal management control module harness connector 4



GE08-5756d

IP80a thermal management control module harness connector 2



GE08-5757d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the and air duct sensor 1 harness connector IP363a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(12)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace air duct Sensor 1

- A. Replace air duct Sensor 1 Refer to [Replacement of Air Duct Sensor 1](#)
- B. Confirm whether the air duct sensor 1 works normally.

Yes → System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

8.2.6.34 Air duct sensor 2 fault

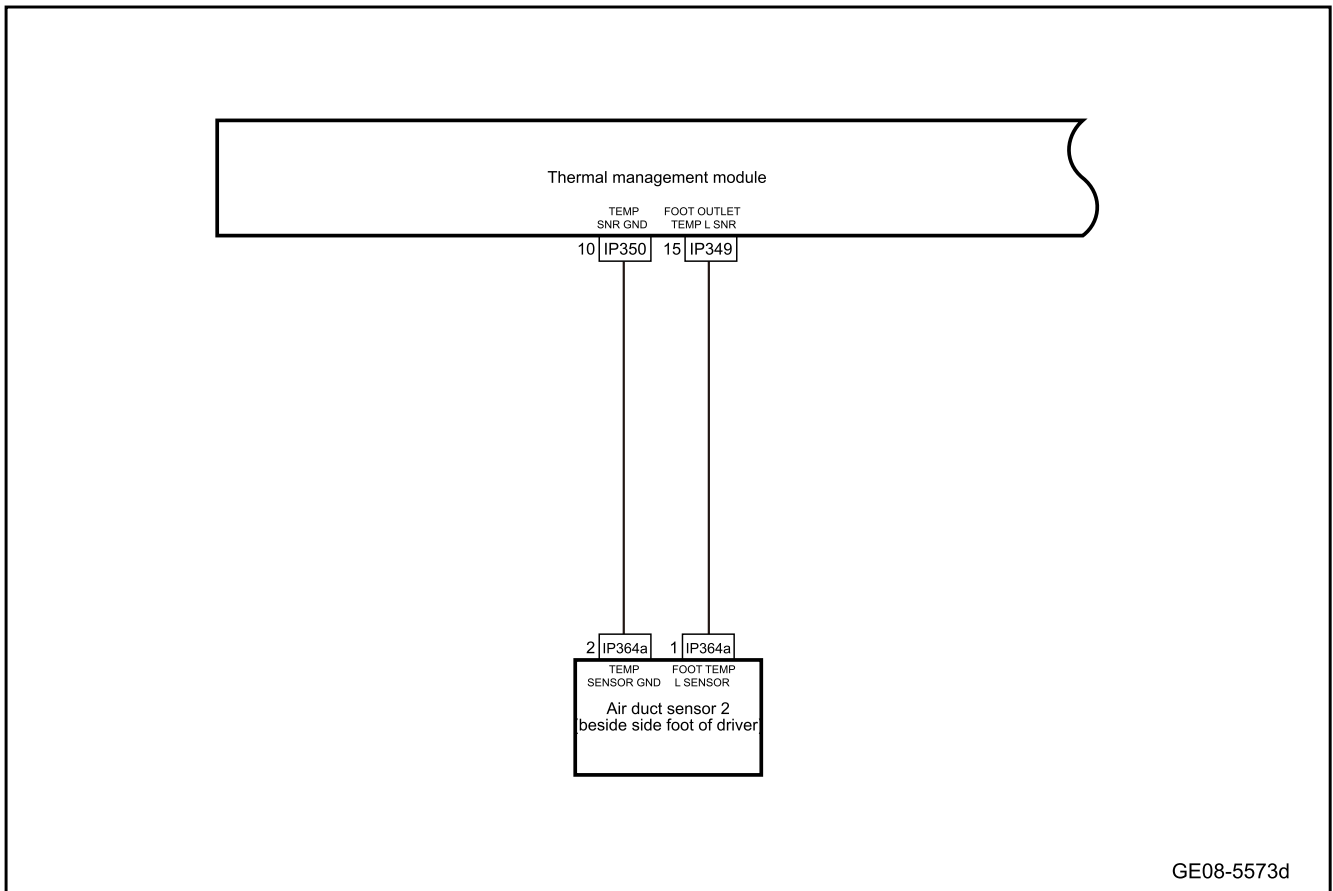
1. DTC description:

Diagnostic Trouble Code	Description
B11E911	Temperature sensor of the driver's feet blowing is short to GND
B11E915	Temperature sensor of the driver's feet blowing is shorted or opened to the power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11E811	The voltage value detected by the driver's feet blowing outlet sensor is less than 0.1V for 500ms	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct sensor 2
B11E815	The voltage value detected by the driver's feet blowing outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and air duct sensor 2 for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and air duct sensor 2 harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

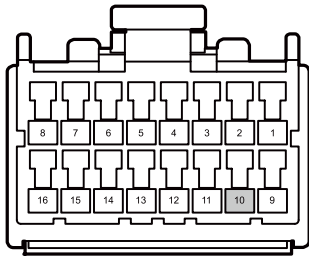
No

Repair or replace the faulty part.

Yes

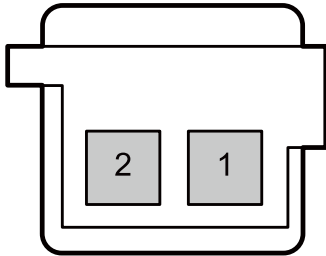
Step 3	Check the harness between the thermal management control module and the air duct sensor 2 for an open circuit.
--------	--

IP350 thermal management control module harness connector 4



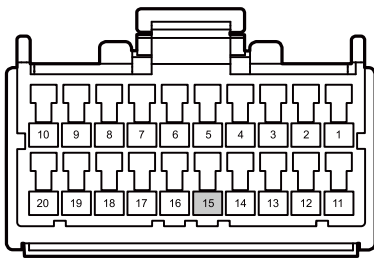
GE08-5758d

IP364a air duct sensor harness connector 2



GE08-5759d

IP349 thermal management control module harness connector 3



GE08-5760d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 2 harness connector IP364a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP364a(2)	Standard resistance: less than 1Ω
IP349(15)	IP364a(1)	

- F. Confirm whether the measured value meets the standard.

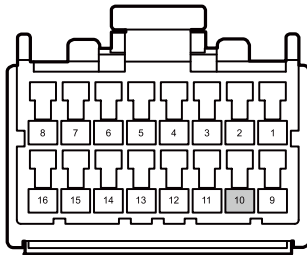
No

Repair or replace the harness.

Yes

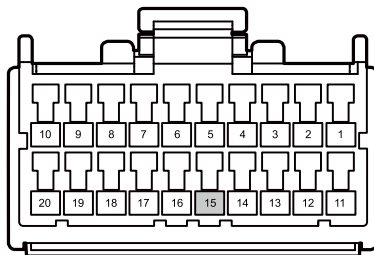
Step 4 Check the harness between the thermal management control module and the air duct sensor 2 for a short circuit to power supply.

IP350 thermal management control module harness connector 4



GE08-5761d

IP349 thermal management control module harness connector 3



GE08-5762d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 2 harness connector IP364a.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard voltage: 0V
IP349(15)		

- G. Confirm whether the measured value meets the standard.

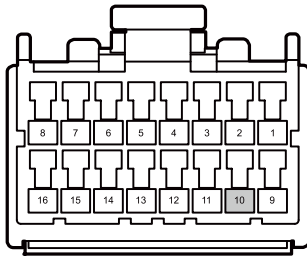
No

Repair or replace the harness.

Yes

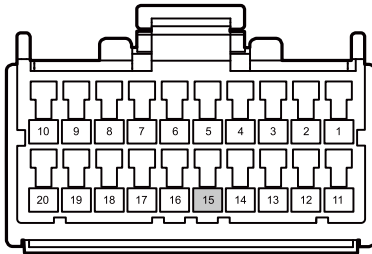
Step 5 Check the harness between the thermal management control module and the air duct sensor 2 for a short circuit to ground.

IP350 thermal management control module harness connector 4



GE08-5763d

IP349 thermal management control module harness connector 3



GE08-5764d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 2 harness connector IP364a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP349(15)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace air duct Sensor 2

- A. Replace air duct Sensor 2 Refer to [Replacement of air duct sensor 2](#)
- B. Confirm whether the air duct sensor 2 works normally.

Yes → System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

8.2.6.35 Air duct sensor 3 fault

1. DTC description:

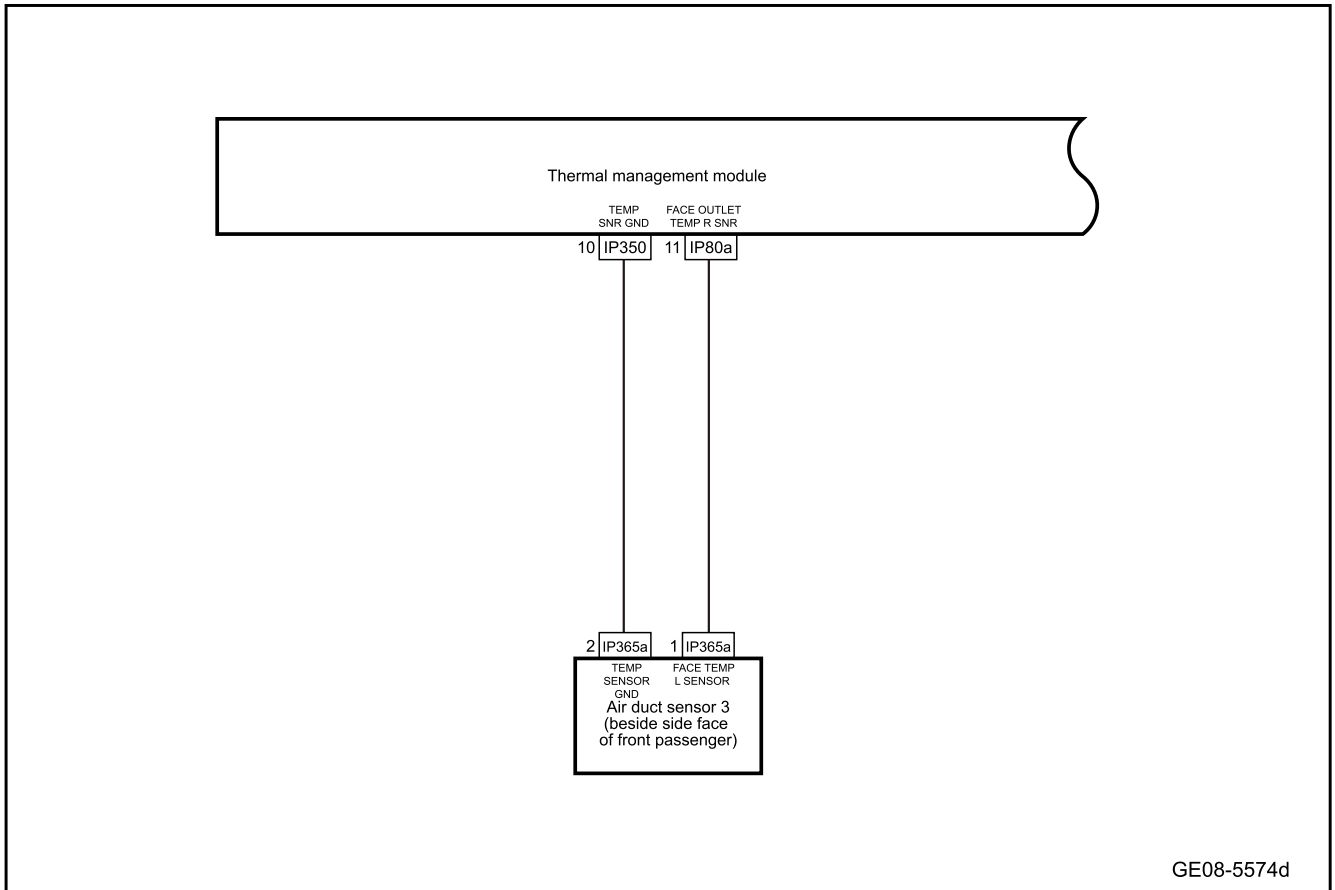
Diagnostic Trouble Code	Description
B11EA11	Front passenger's face blowing temperature sensor is short to GND
B11EA15	Front passenger's face blowing temperature sensor is shorted or opened to the power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EA11	The voltage value detected by the front passenger's face blowing outlet sensor is less than 0.1V for 10s	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct sensor 3

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EA15	The voltage value detected by the front passenger's face blowing outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and air duct sensor 3 for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and air duct sensor 3 harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

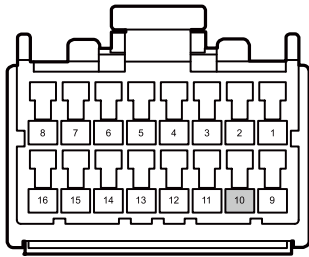
No

Repair or replace the faulty part.

Yes

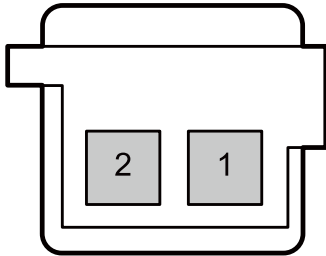
Step 3	Check the harness between the thermal management control module and the air duct sensor 3 for an open circuit.
--------	--

IP350 thermal management control module harness connector 4



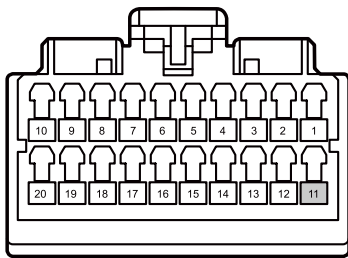
GE08-5765d

IP365a air duct sensor harness connector 3



GE08-5766d

IP80a thermal management control module harness connector 2



GE08-5767d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 3 harness connector IP365a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP365a(2)	Standard resistance: less than 1Ω
IP80a(11)	IP365a(1)	

- F. Confirm whether the measured value meets the standard.

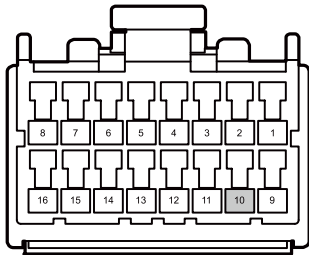
No

Repair or replace the harness.

Yes

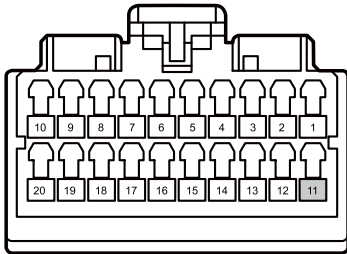
Step 4 Check the harness between the thermal management control module and the air duct sensor 3 for a short circuit to power supply.

IP350 thermal management control module harness connector 4



GE08-5768d

IP80a thermal management control module harness connector 2



GE08-5769d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 3 harness connector IP365a.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(11)		

- G. Confirm whether the measured value meets the standard.

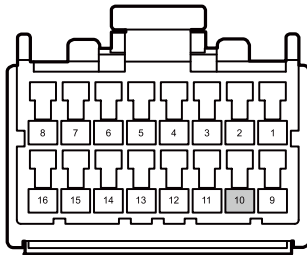
No

Repair or replace the harness.

Yes

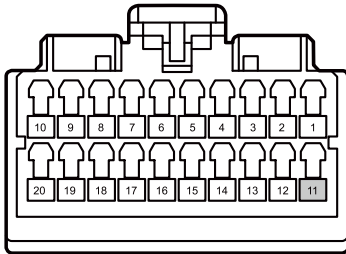
Step 5 Check the harness between the thermal management control module and the air duct sensor 3 for a short circuit to ground.

IP350 thermal management control module harness connector 4



GE08-5770d

IP80a thermal management control module harness connector 2



GE08-5771d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 3 harness connector IP365a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(11)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 6 Replace air duct Sensor 3

- A. Replace air duct Sensor 3 Refer to [Replacement of Air Duct Sensor 3](#)
- B. Confirm whether the air duct sensor 3 works normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes ➤

System is normal.

No ➤

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes ➤

Diagnose according to the output trouble code.

No ➤

Step 10	System is normal.
---------	-------------------

8.2.6.36 Air duct sensor 4 fault

1. DTC description:

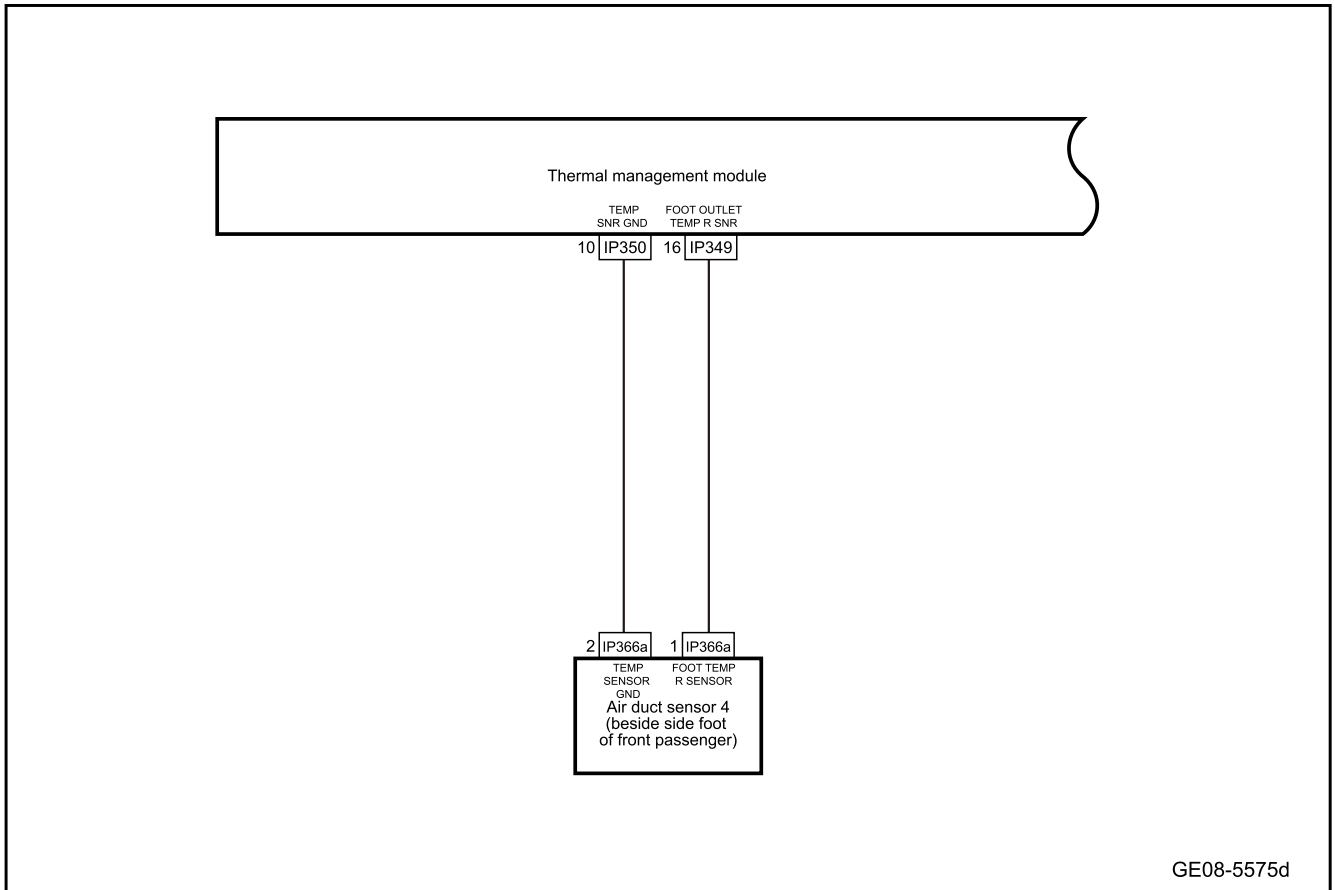
Diagnostic Trouble Code	Description
B11EB11	Front passenger's feet blowing temperature sensor is short to GND
B11EB15	Front passenger's feet blowing temperature sensor is shorted or opened to the power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EB11	The voltage value detected by the front passenger's feet blowing outlet sensor is greater than 0.1V for 500ms	1. The power supply voltage is in the effective range 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Air duct Sensor 4

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EB15	The voltage value detected by the front passenger's feet blowing outlet sensor is greater than 4.9V for 500ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module and air duct sensor 4 for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and air duct sensor 4 harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

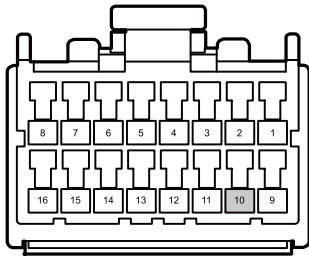
No

Repair or replace the faulty part.

Yes

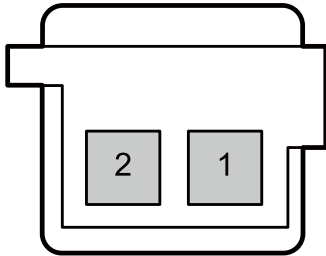
Step 3	Check the harness between the thermal management control module and the and air duct sensor 4 for an open circuit.
--------	--

IP350 thermal management control module harness connector 4



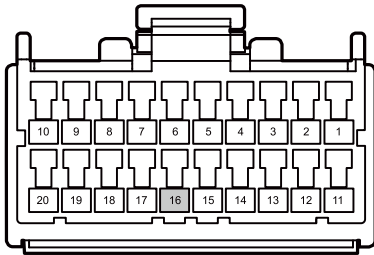
GE08-5772d

IP366a air duct sensor harness connector 4



GE08-5773d

IP349 thermal management control module harness connector 3



GE08-5774d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 4 harness connector IP366a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	IP366a(2)	Standard resistance: less than 1Ω
IP349(16)	IP366a(1)	

- F. Confirm whether the measured value meets the standard.

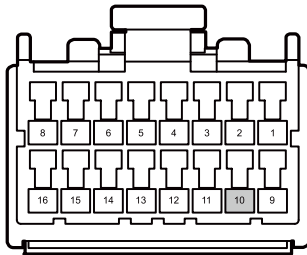
No

Repair or replace the harness.

Yes

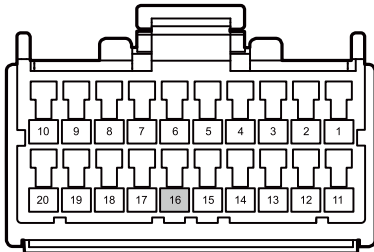
Step 4 Check the harness between the thermal management control module and the air duct sensor 4 for a short circuit to power supply.

IP350 thermal management control module harness connector 4



GE08-5775d

IP349 thermal management control module harness connector 3



GE08-5776d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 4 harness connector IP366a.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard voltage: 0V
IP349(16)		

- G. Confirm whether the measured value meets the standard.

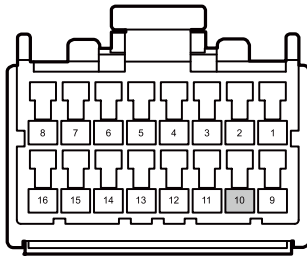
No

Repair or replace the harness.

Yes

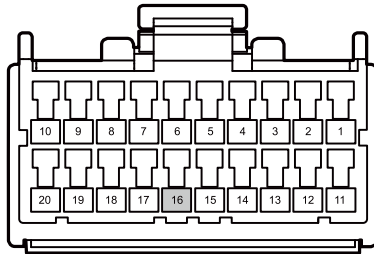
Step 5 Check the harness between the thermal management control module and the air duct sensor 4 for a short circuit to ground.

IP350 thermal management control module harness connector 4



GE08-5777d

IP349 thermal management control module harness connector 3



GE08-5778d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect the air duct sensor 4 harness connector IP366a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP349(16)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace air duct sensor 4

- A. Replace air duct sensor 4 Refer to [Replacement of Air Duct Sensor 4](#)
- B. Confirm whether the air duct sensor 4 works normally.

Yes → System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

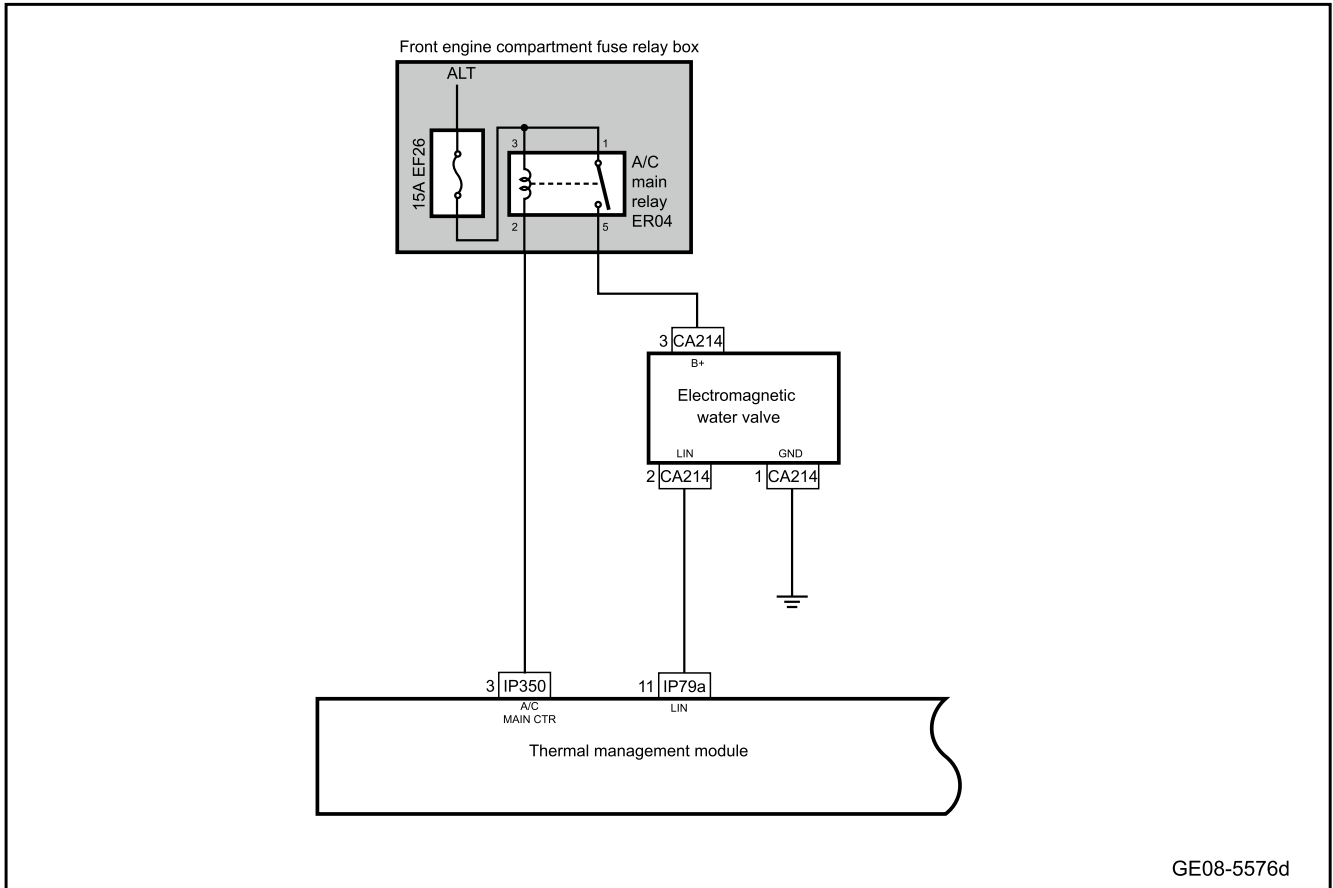
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

8.2.6.37 Solenoid water valve fault

1. Schematic circuit diagram:



GE08-5576d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the A/C main relay ER04.

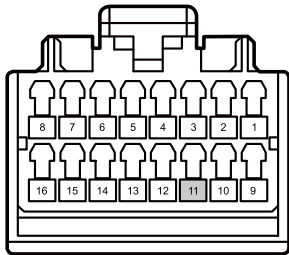
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug A/C main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

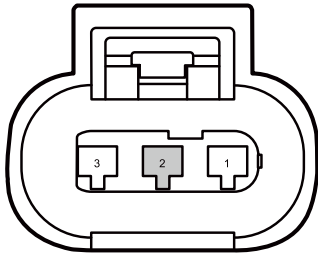
Step 5 | Check whether the harness between the thermal management control module and the battery cooling water pump is normal.

IP79a thermal management control module harness connector 1



GE08-5779d

CA214 solenoid water valve harness connector



GE08-5780d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the solenoid water valve wiring harness connector CA214.
- D. Disconnect the thermal management harness connector of the LIN module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA214(2)	Standard resistance: less than 1Ω
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

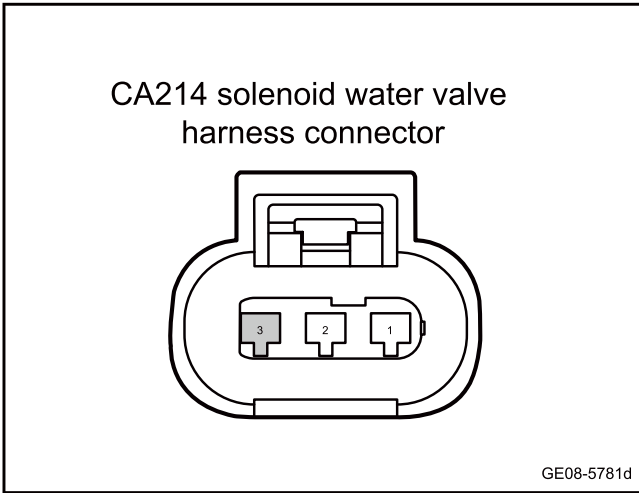
- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the voltage between terminal 11 of thermal management harness connector IP79a of body control module and body grounding.
Standard voltage: 0V
- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between the solenoid water valve and the main relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the A/C main relay ER04.
- C. Disconnect the solenoid water valve wiring harness connector CA214.
- D. Use a multimeter to measure each terminal according to the table below:

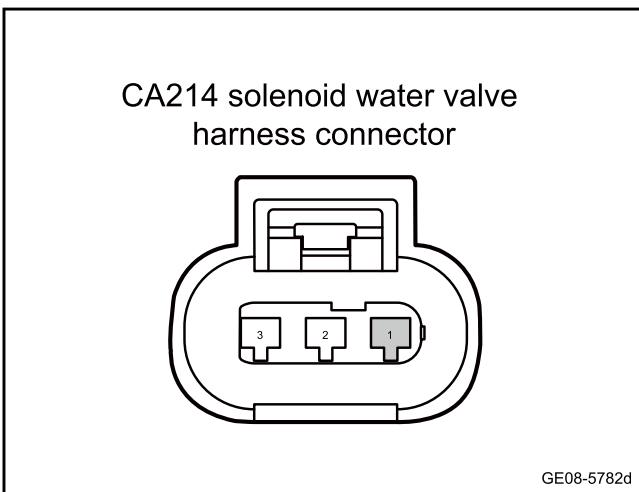
Measure terminal 1	Measure terminal 2	Standard value
CA214(3)	ER04(5)	Standard resistance: less than 1Ω
CA214(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between terminal 3 of solenoid water valve harness connector CA214 and body grounding.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Check whether the grounding circuit of the solenoid water valve is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the solenoid water valve wiring harness connector CA214.
- C. Use a multimeter to measure the resistance between terminal 1 of the solenoid water valve harness connector CA214 of BSG and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 | Replace the solenoid water valve.

- A. Replace the solenoid water valve. Refer to [Replacement of Solenoid Water Valve](#)
- B. Confirm whether the solenoid valve is working normally.

Yes

System is normal.

No

Step 9	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 10	Reprogram and reset the thermal management control module.
---------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

8.2.6.38 Faults of Heat exchanger solenoid valve 2

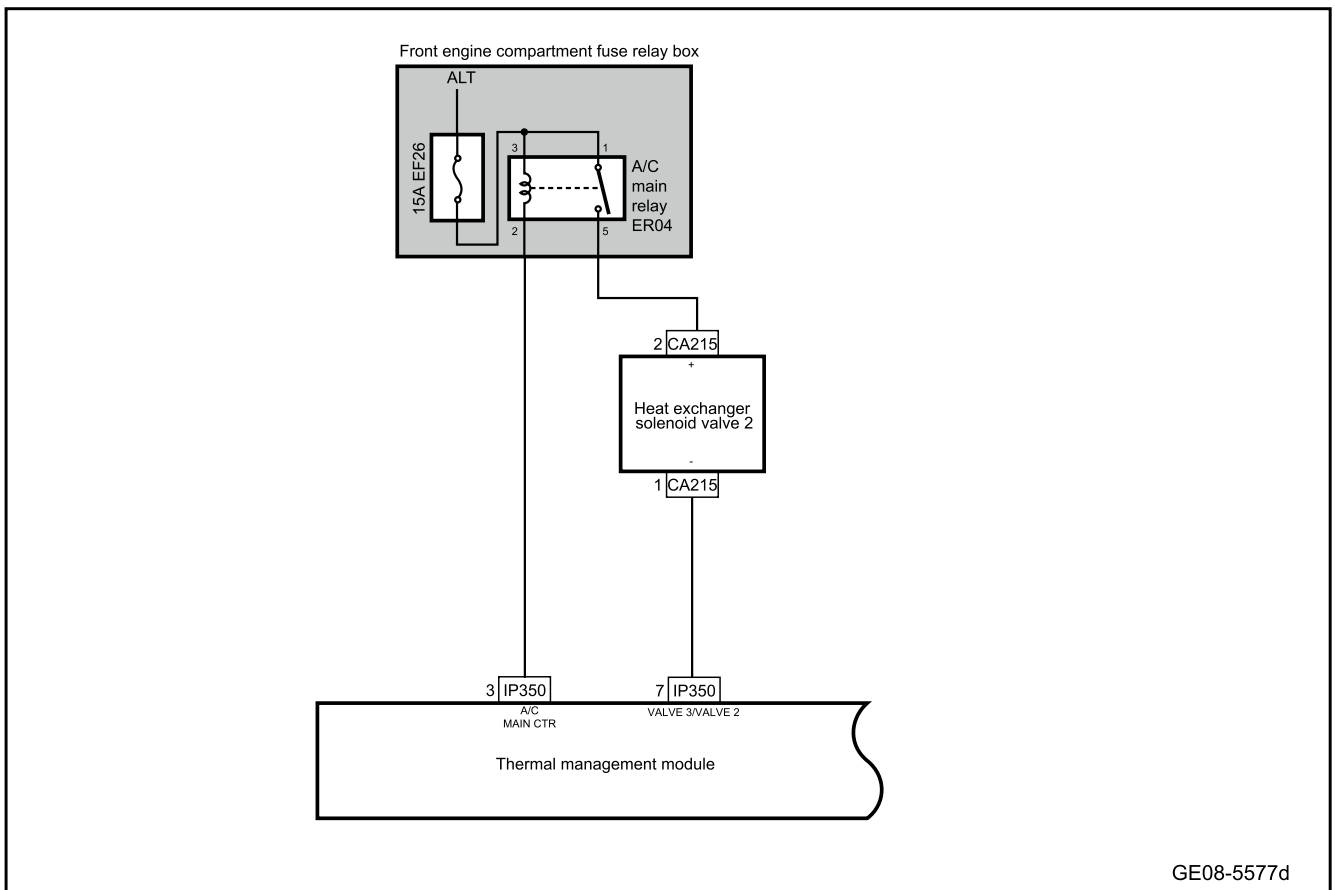
1. DTC description:

Diagnostic Trouble Code	Description
B11EF96	Solenoid valve 2 control circuit failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EF96	AC received the heater hardware overheat signal (ID: 0x27, 6.1=72) for 2s as abnormal	1. Ignition status is ignition ON 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heat exchanger solenoid valve 2

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.
Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the AC main relay ER04.
--------	-------------------------------

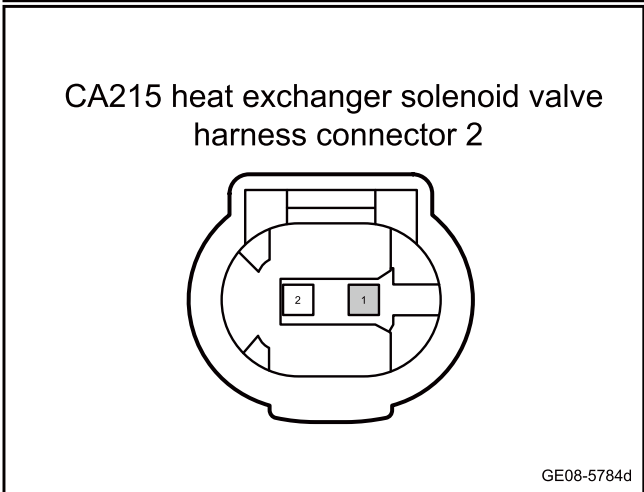
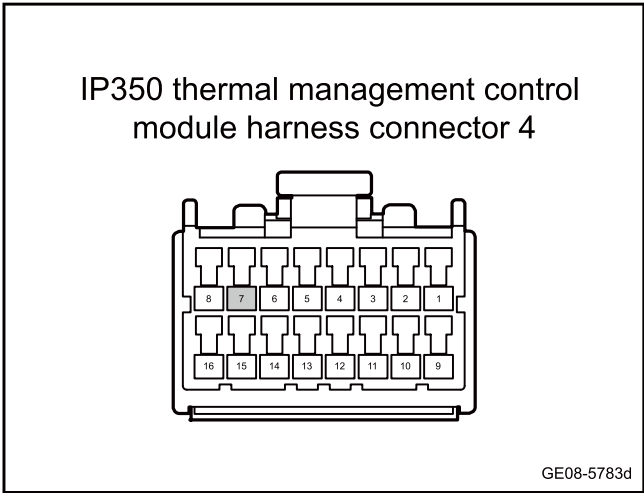
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug AC main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Check the harness between the thermal management control module and the heat exchanger solenoid valve 2 for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350.
- C. Disconnect the heat exchanger solenoid valve 2 harness connector CA215.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(7)	CA215(1)	Standard resistance: less than 1Ω
IP350(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(7)	Vehicle body is grounded.	Standard voltage: 0V

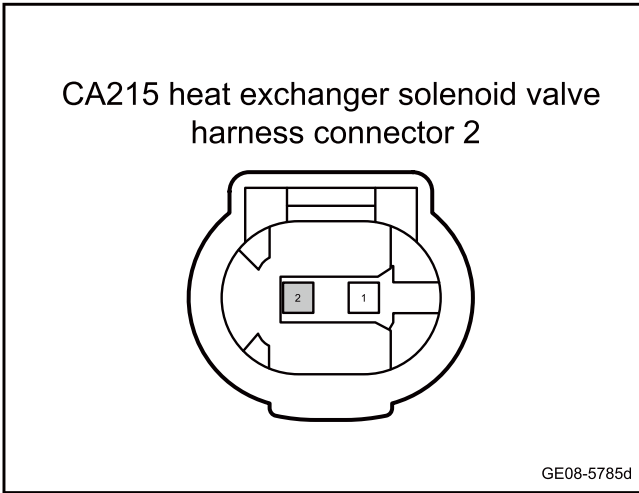
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between heat exchanger solenoid valve 2 and the A/C relay is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the AC main relay ER04.
- C. Disconnect the heat exchanger solenoid valve 2 harness connector CA215.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA215(2)	ER04(5)	Standard resistance: less than 1Ω
CA215(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA215(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace the heat exchanger solenoid valve 2.

- A. Replace the heat exchanger solenoid valve 2. Refer to [Replacement of heat exchanger solenoid valve 2](#)
- B. Confirm whether the heat exchanger solenoid valve 2 is working normally.

Yes → System is normal.

No

Step 8 | Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

8.2.6.39 Faults of Heat exchanger solenoid valve 3

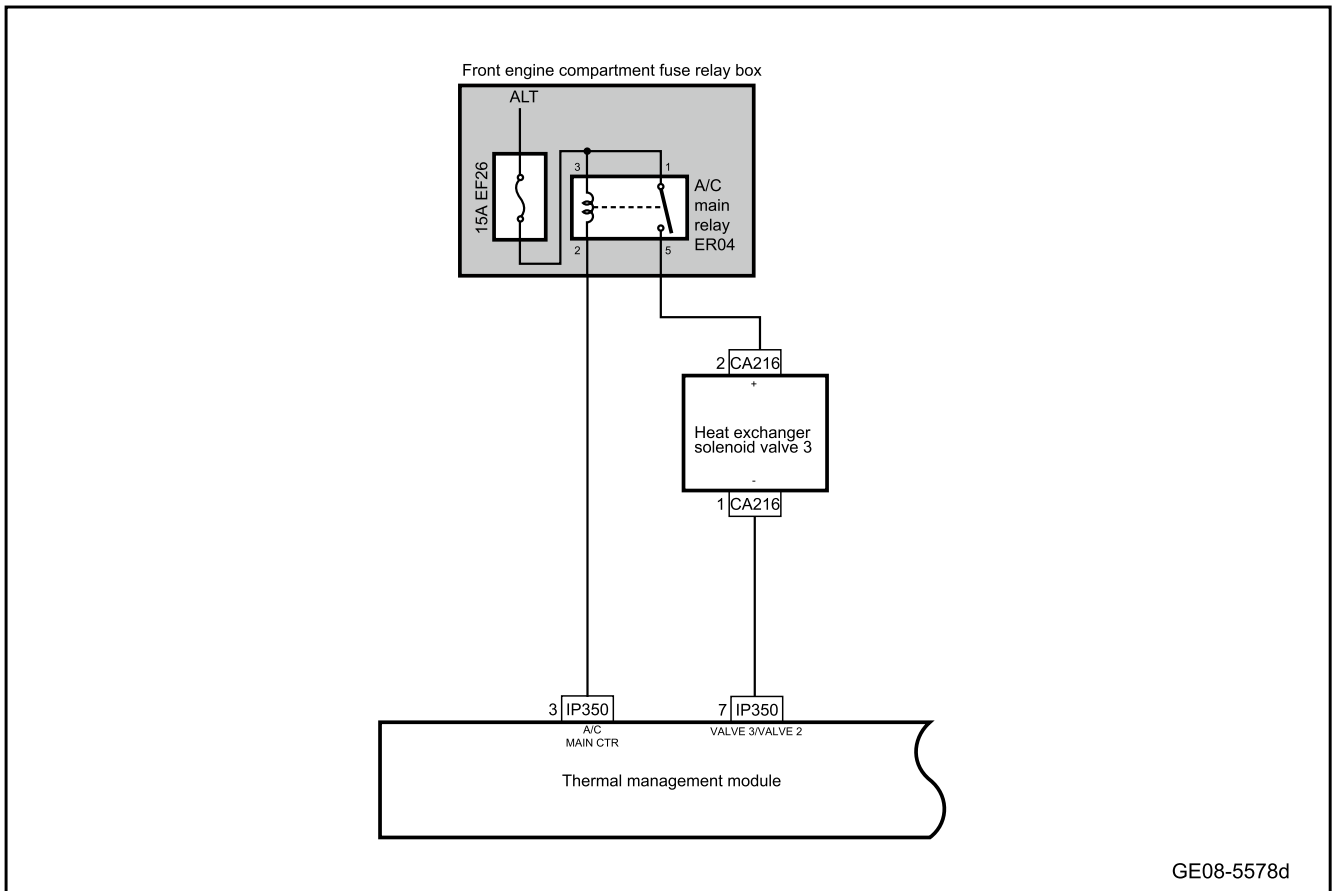
1. DTC description:

Diagnostic Trouble Code	Description
B11F096	Solenoid valve 3 control circuit failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11F096	AC received the heater hardware overheat signal (ID: 0x27, 6.1=73) for 2s as abnormal	1. Ignition status is ignition ON 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heat exchanger solenoid valve 3

3. Schematic circuit diagram:



GE08-5578d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the A/C main relay ER04.

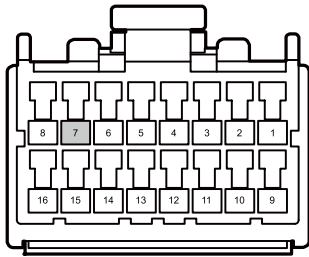
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug A/C main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

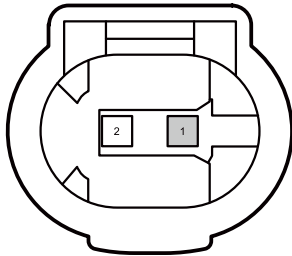
Step 5 | Check the harness between the thermal management control module and the heat exchanger solenoid valve 3 for an open circuit.

IP350 thermal management control module harness connector 4



GE08-5786d

CA216 heat exchanger solenoid valve harness connector 3



GE08-5787d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350.
- C. Disconnect the heat exchanger solenoid valve 3 harness connector CA216.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(7)	CA216(1)	Standard resistance: less than 1Ω
IP350(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(7)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

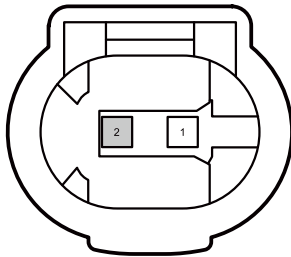
No

Repair or replace the harness.

Yes

Step 6	Check whether the harness between the heat exchanger solenoid valve 3 and the A/C relay is normal.
--------	--

CA216 heat exchanger solenoid valve harness connector 3



GE08-5788d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the AC main relay ER04.
- C. Disconnect the heat exchanger solenoid valve 3 harness connector CA216.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA216(2)	ER04(5)	Standard resistance: less than 1Ω
CA216(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA216(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the heat exchanger solenoid valve 3.

- A. Replace the heat exchanger solenoid valve 3. Refer to [Replacement of heat exchanger solenoid valve 3](#)
- B. Confirm whether the heat exchanger solenoid valve 3 is working normally.

Yes

System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11 System is normal.

8.2.6.40 Faults of heat exchanger solenoid valve 4

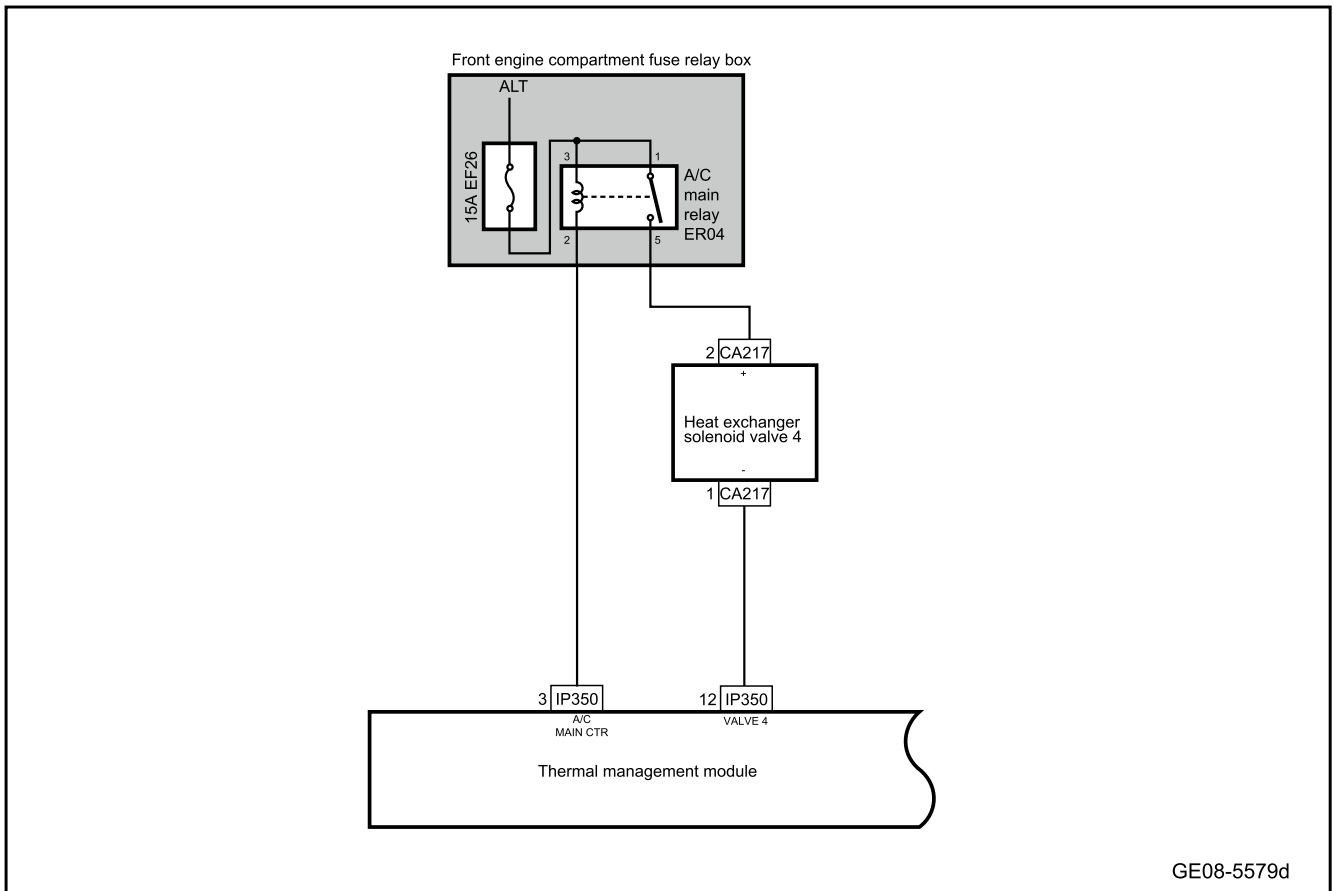
1. DTC description:

Diagnostic Trouble Code	Description
B11F196	Solenoid valve 4 control circuit failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11F196	AC received the heater hardware overheat signal (ID: 0x27, 6.1=74) for 2s as abnormal	1. Ignition status is ignition ON 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heat exchanger solenoid valve 4

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the AC main relay ER04.

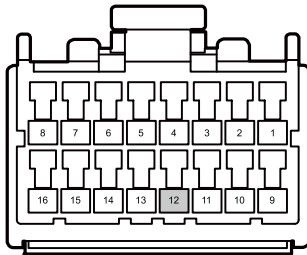
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

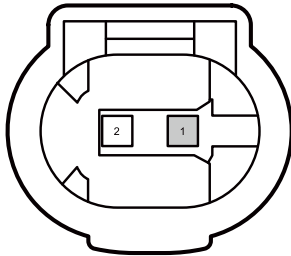
Step 5 | Check the harness between the thermal management control module and the heat exchanger solenoid valve 4 for an open circuit.

IP350 thermal management control module harness connector 4



GE08-5789d

CA217 Heat exchanger solenoid valve harness connector 4



GE08-5790d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350.
- C. Disconnect the heat exchanger solenoid valve 4 harness connector CA217.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(12)	CA217(1)	Standard resistance: less than 1Ω
IP350(12)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(12)	Vehicle body is grounded.	Standard voltage: 0V

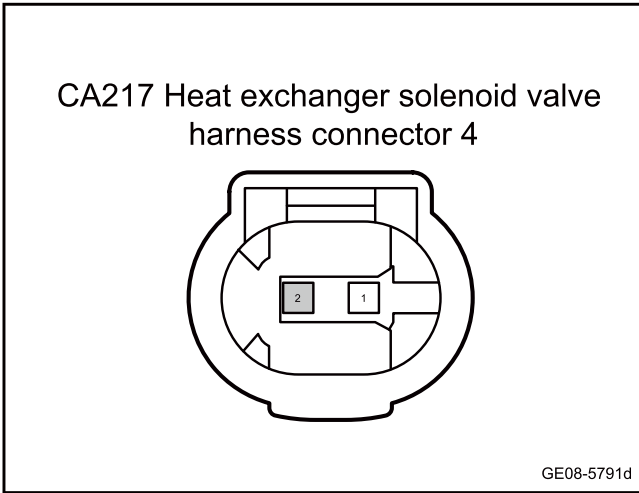
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between heat exchanger solenoid valve 4 and the A/C relay is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the AC main relay ER04.
- C. Disconnect the heat exchanger solenoid valve 4 harness connector CA217.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA217(2)	ER04(5)	Standard resistance: less than 1Ω
CA217(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA217(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace the heat exchanger solenoid valve 4.

- A. Replace the heat exchanger solenoid valve 4. Refer to [Replacement of heat exchanger solenoid valve 4](#)
- B. Confirm whether the heat exchanger solenoid valve 4 is working normally.

Yes → System is normal.

No

Step 8 | Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11 System is normal.

8.2.6.41 Faults of heat exchanger solenoid valve 5

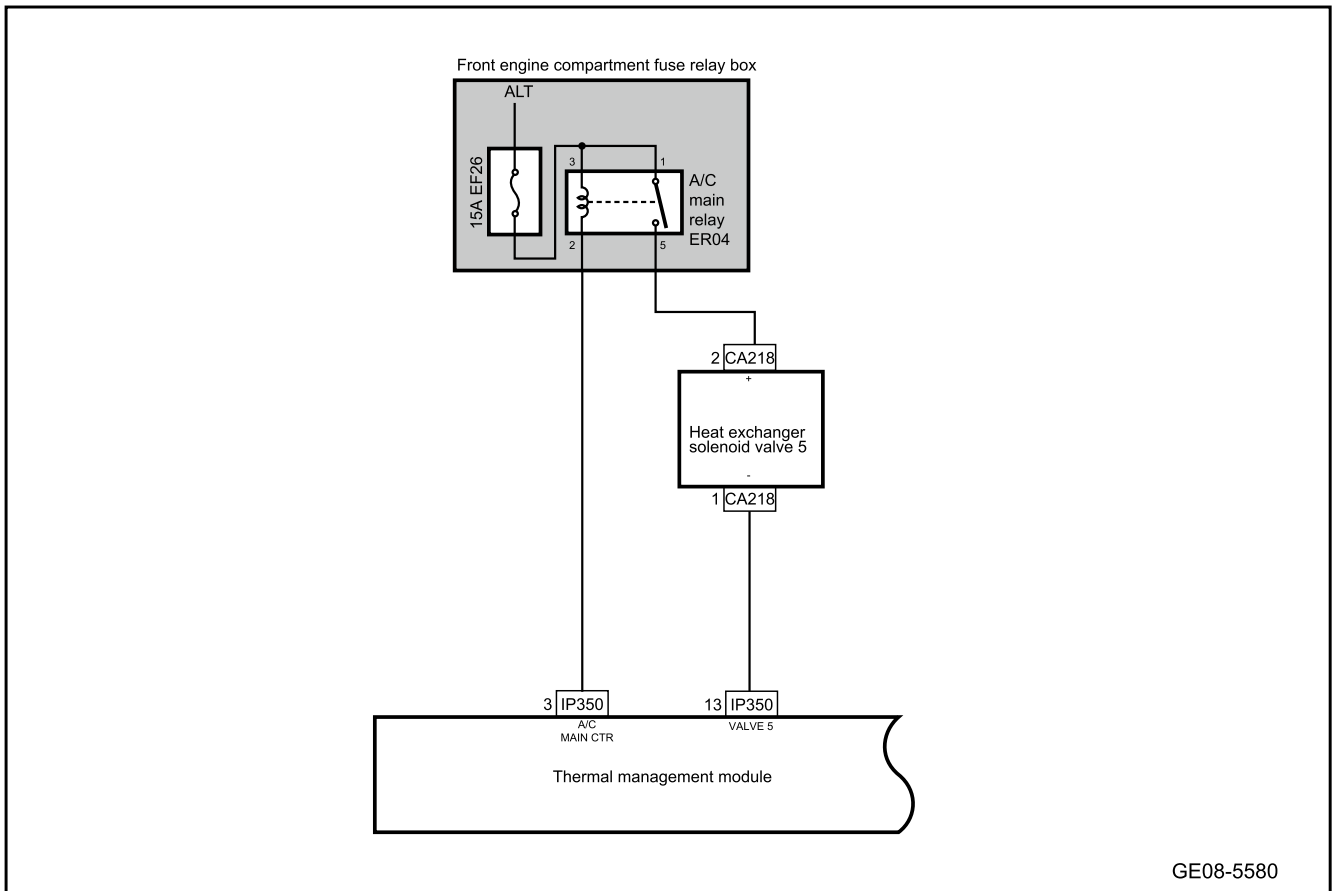
1. DTC description:

Diagnostic Trouble Code	Description
B11F296	Solenoid valve 5 control circuit failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11F296	AC received the heater hardware overheat signal (ID: 0x27, 6.1=75) for 2s as abnormal	1. Ignition status is ignition ON 2. AC power relay ON	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heat exchanger solenoid valve 5

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the AC main relay ER04.

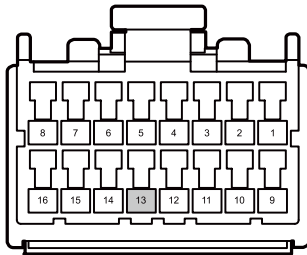
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug AC main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

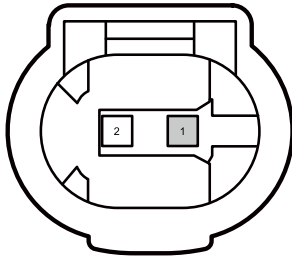
Step 5 | Check the harness between the thermal management control module and the heat exchanger solenoid valve 5 for an open circuit.

IP350 thermal management control module harness connector 4



GE08-5792d

CA218 Heat exchanger solenoid valve harness connector 5



GE08-5793d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350.
- C. Disconnect the heat exchanger solenoid valve 5 harness connector CA218.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(13)	CA218(1)	Standard resistance: less than 1Ω
IP350(13)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(13)	Vehicle body is grounded.	Standard voltage: 0V

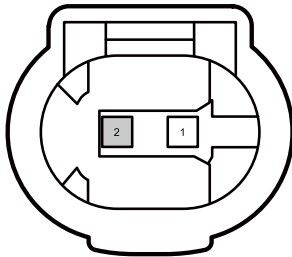
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Check whether the harness between heat exchanger solenoid valve 5 and the A/C relay is normal.

CA218 Heat exchanger solenoid valve harness connector 5



GE08-5794d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the AC main relay ER04.
- C. Disconnect the heat exchanger solenoid valve 5 harness connector CA218.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA218(2)	ER04(5)	Standard resistance: less than 1Ω
CA218(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA218(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the heat exchanger solenoid valve 5.

- A. Replace the heat exchanger solenoid valve 5. Refer to [Replacement of heat exchanger solenoid valve 5](#)
- B. Confirm whether the heat exchanger solenoid valve 5 is working normally.

Yes

System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 11 System is normal.

8.2.6.42 Faults of heat exchanger solenoid valve 1

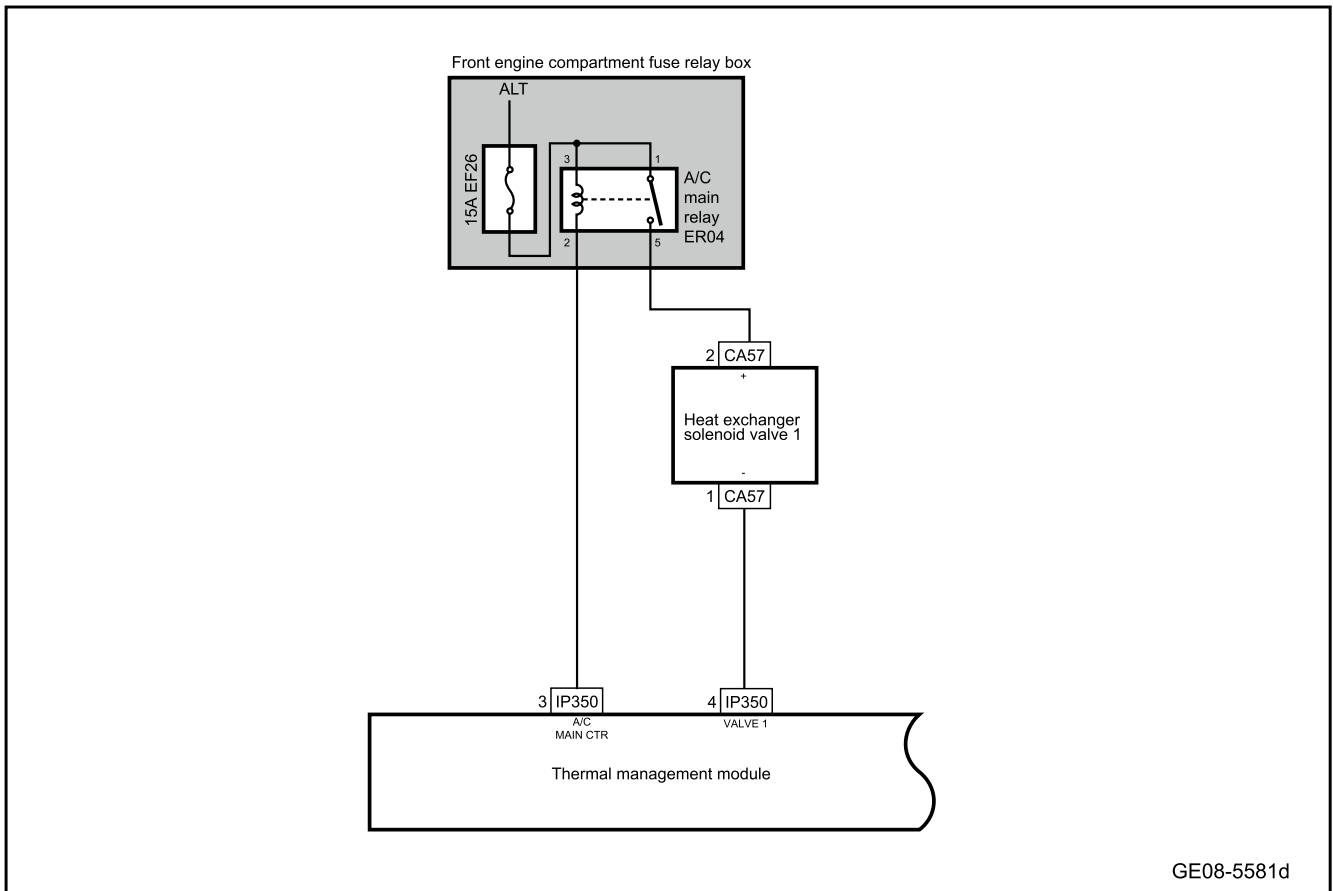
1. DTC description:

Diagnostic Trouble Code	Description
B11EE96	Solenoid valve 1 control circuit failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B11EE96	AC received the heater hardware overheat signal (ID: 0x27, 6.1=71) for 2s as abnormal	1. Ignition status is ignition ON 2. AC power relay ON 3. The A/C system in AC_F101 is a non heat pump system	1. Battery 2. Circuit 3. Fuse 4. Thermal management control module 5. Heat exchanger solenoid valve 1

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Pull out the fuse EF26 of the front engine compartment. Check whether the fuse EF26 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the AC main relay ER04.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug main relay ER04 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

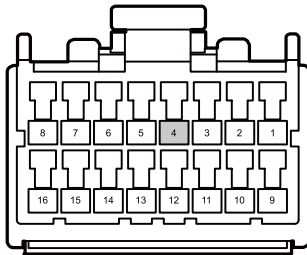
Yes

System is normal.

No

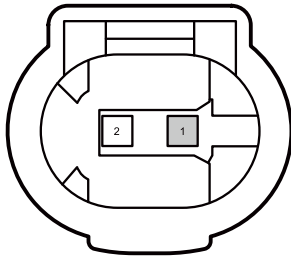
Step 5 Check the harness between the thermal management control module and the heat exchanger solenoid valve 1 for an open circuit.

IP350 thermal management control module harness connector 4



GE08-5795d

CA57 Heat exchanger solenoid valve harness connector 1



GE08-5796d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the thermal management control module harness connectors IP350.
- C. Disconnect the heat exchanger solenoid valve 1 harness connector CA57.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(4)	CA57(1)	Standard resistance: less than 1Ω
IP350(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP350(4)	Vehicle body is grounded.	Standard voltage: 0V

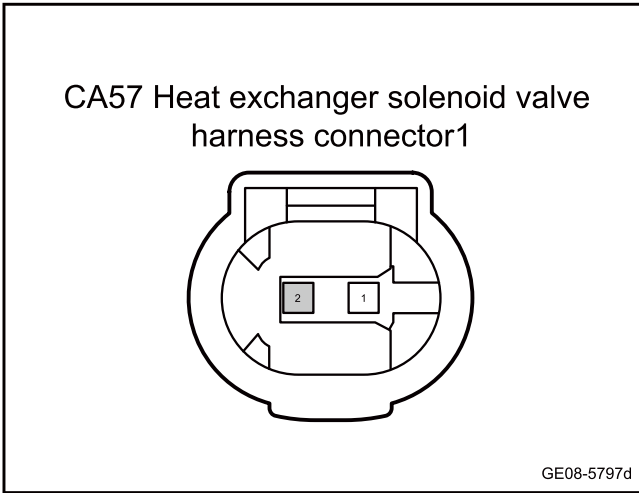
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the harness between heat exchanger solenoid valve 1 and the A/C relay is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the AC main relay ER04.
- C. Disconnect the heat exchanger solenoid valve 1 harness connector CA57.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA57(2)	ER04(5)	Standard resistance: less than 1Ω
CA57(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA57(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the heat exchanger solenoid valve 1.

- A. Replace the heat exchanger solenoid valve 1. Refer to [Replacement of heat exchanger solenoid valve 1](#)
- B. Confirm whether the heat exchanger solenoid valve 1 is working normally.

Yes System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9	Reprogram and reset the thermal management control module.
--------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 11	System is normal.
---------	-------------------

8.2.6.43 Communication Failure of Thermal Management Control Module

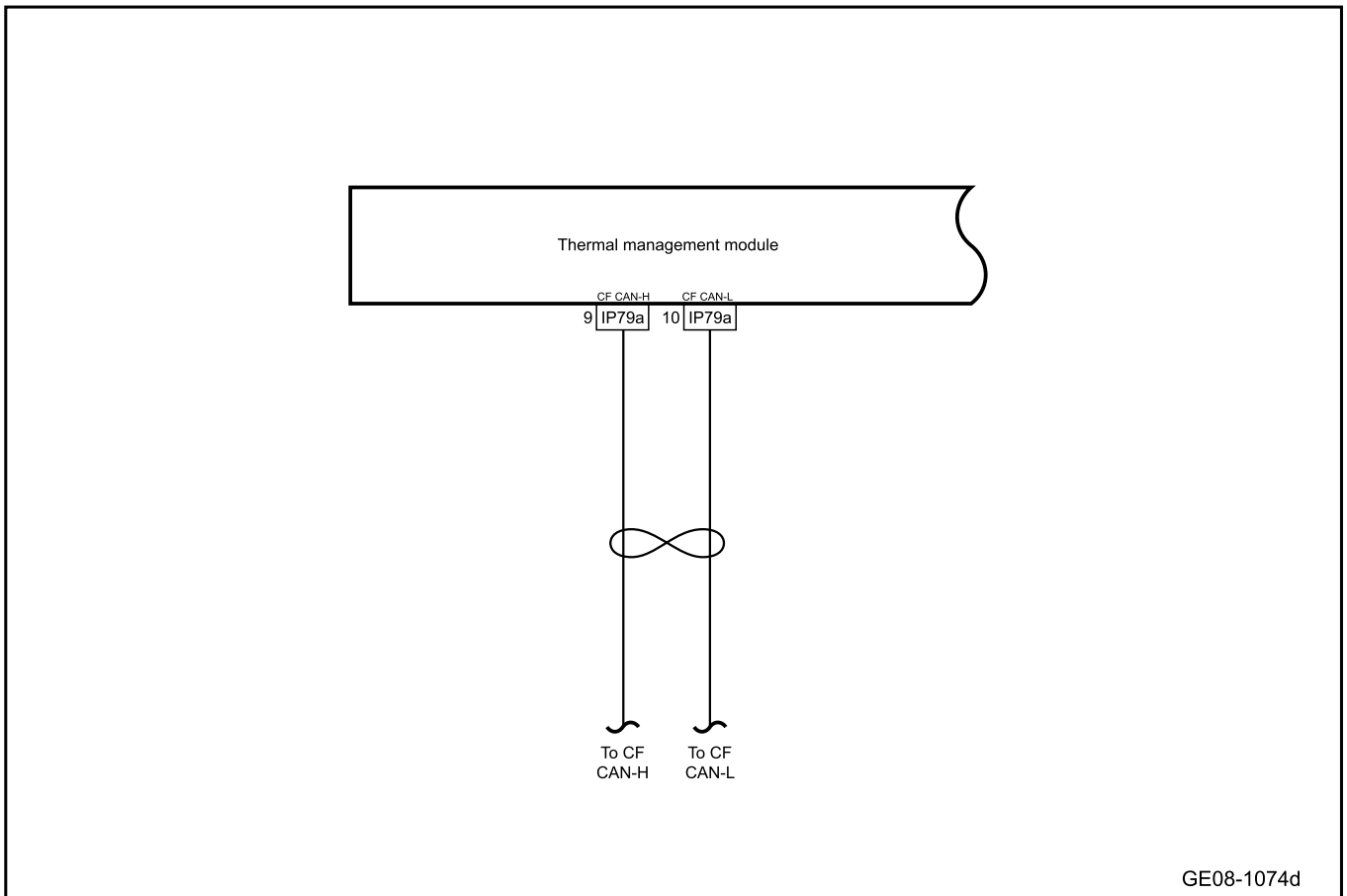
1. DTC description:

Diagnostic Trouble Code	Description
U015687	Communication with MMI is lost
U016B87	Communication with ACCM is lost
U111F87	Communication with PTC is lost
U111C87	Communication with WV1 is lost
U111D87	Communication with WV2 is lost
U111E87	Communication with WV3 is lost
U016687	Communication with FCP is lost
U014087	Communication with BCM is lost
U111487	Communication with VCU is lost
U012287	Communication with ESC is lost
U015587	Communication with IPK is lost
U019887	Communication with T-BOX is lost
U007300	CAN bus off

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	5T lost MMI (ID=0x2A5) message	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON	1. Circuit 2. Thermal management control module 3. Diagnostic interface
U016B87	5T(T analysis) Lost account (ID=0x0C) message		
U111F87	5T PTC (ID=0x27) message is lost		
U111C87	WV1 (ID= 0 x 09) message for 5T (T is the message period) is lost		
U111D87	5T lost WV2(ID=0x0A) message		
U111E87	5T lost WV3(ID=0x0B) message		
U016687	5T (T analysis text) lost FCP (ID=0x11) message		
U014087	5T lost body control module (ID= 0 x 285) information		
U111487	VCU_HBCAN (ID=0x162) message is lost for 250ms		
U012287	ESC(ID=0x125) message is lost for 250 milliseconds		
U015587	5T (T analysis text) lost IPK (ID=0x3F1) message		
U019887	TBOX (ID= 0 x 292) message for 5T (T is the message period) is lost		
U007300	The bus switching off counter cL1ToL2 equals to 10.		

3. Circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 4 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Automatic Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 5 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 | System is normal.

8.2.6.44 Insufficient Heating of Air Conditioning System

Fault symptom table

Symptom	Suspected fault location	Maintenance plan
Air leakage in warm and cold air dampers	<ol style="list-style-type: none"> 1. Mechanical failure of the warm and cold air dampers 2. Cold and warm air damper motor failure 3. Air leakage in the air outlet duct 4. A/C control module failure 	<ol style="list-style-type: none"> 1. Adjust the warm and cold air dampers 2. Replace the warm and cold air regulating motor 3. Replace the mechanism of cold and warm air dampers 4. Repair the air leakage duct 5. Replace the air leakage duct 6. Replace the air conditioning control module
Air leakage of internal and external circulation dampers	<ol style="list-style-type: none"> 1. Be switched to the external circulation 2. The external circulation damper is stuck and not closed tightly 3. Internal/external circulation motor failure 4. A/C control module failure 	<ol style="list-style-type: none"> 1. Be switched to the internal circulation 2. Adjust the external circulation damper mechanism 3. Replace the internal and external circulation regulating motor 4. Replace the mechanism of internal/external circulation dampers 5. Replace the air conditioning control module

8.2.6.45 PM2.5 sensor fault

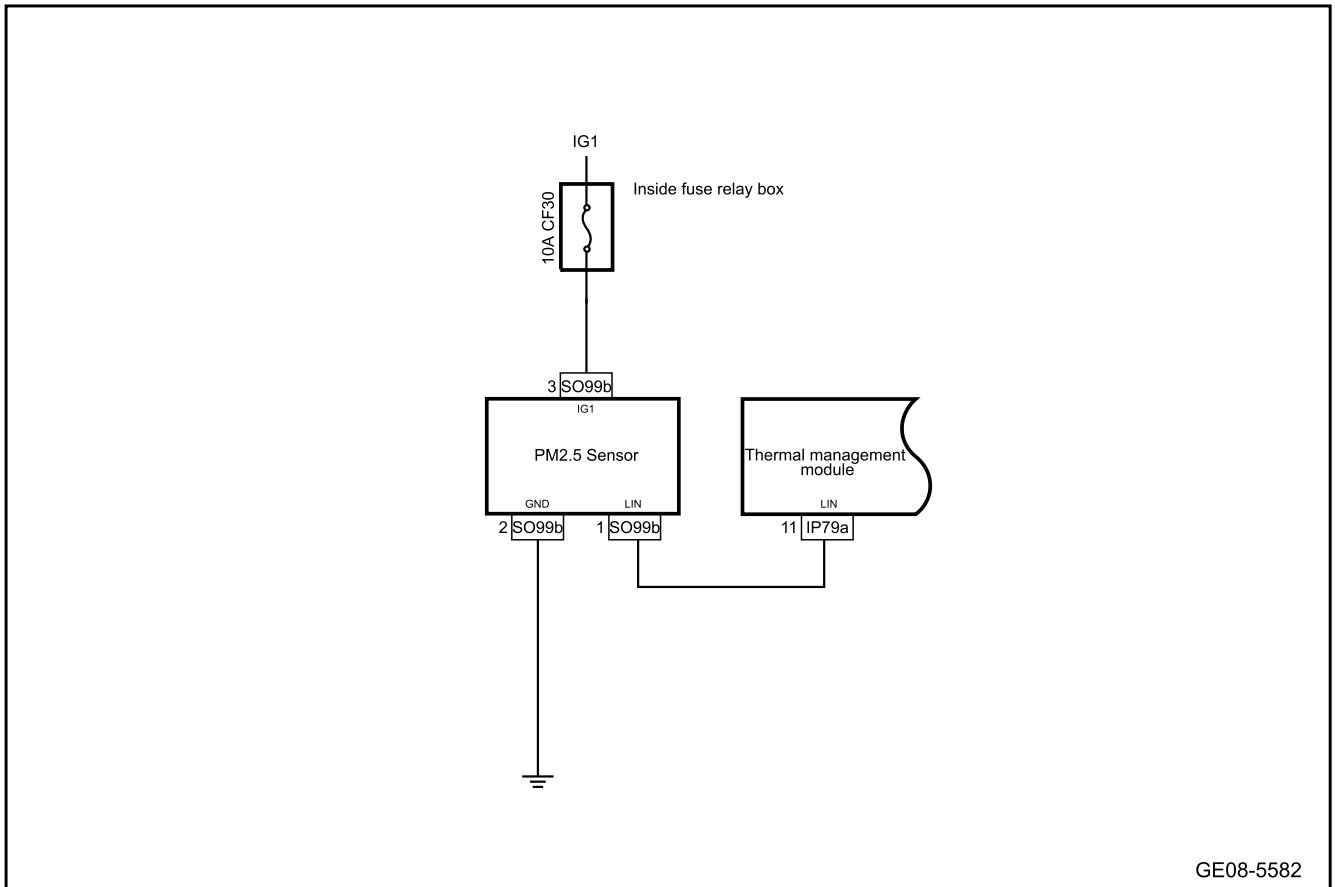
1. DTC description:

Diagnostic Trouble Code	Description
U02A387	Communication with PM2.5 (AQM) is lost
B118D00	Communication with PM2.5 is lost
B118D96	PM2.5 hardware fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U02A387	PM2.5 (ID=0x04) message is lost for 5T	<ol style="list-style-type: none"> 1. The power supply voltage of the host is within the range of 9-16V. 2. Meet the TDiagEnable condition. 3. The ignition status should be IGN ON 4. The PM2.5 module in AC_ F101 is configured with ro and AQM is configured with " 	<ol style="list-style-type: none"> 1. Battery 2. Circuit 3. Fuse 4. PM2.5 sensor
B118D00	Unable to communicate with this node over 2S	<ol style="list-style-type: none"> 1. Voltage range is 9V-16V. 2. After IG is switched on, it is enabled in 3 s 	
B118D96	Receive sensor error from PM25 LIN message over 2s. (the error state of signal PM25 is not equal to 0)	<ol style="list-style-type: none"> 1. Voltage range is 9V-16V. 2. After IG is switched on, it is enabled in 3 s 3. LIN bus communication is normal. 	

3. Schematic circuit diagram:



GE08-5582

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the PM2.5 sensor for damage, deformation, stain, loosening, etc.
- B. Check the PM2.5 sensor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

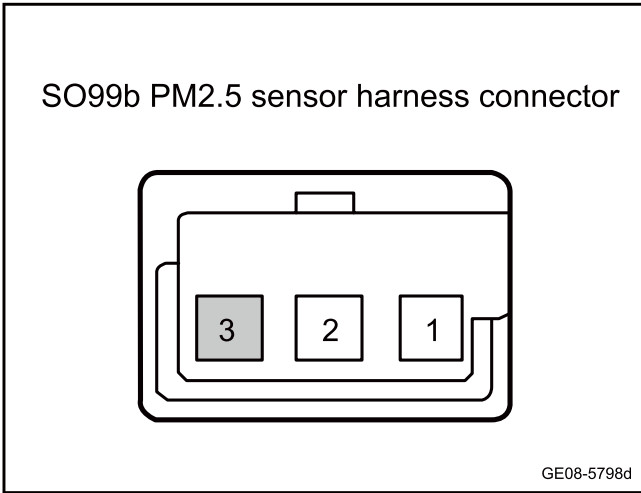
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the interior fuse CF30 and check whether the fuse is blown.
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the working voltage of the PM2.5 sensor is normal.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(3)	Vehicle body is grounded.	Standard voltage: 11-14V

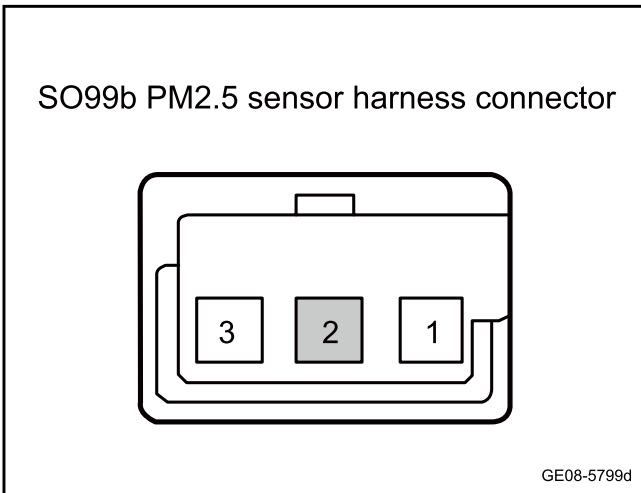
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check whether the grounding harness of PM2.5 sensor is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

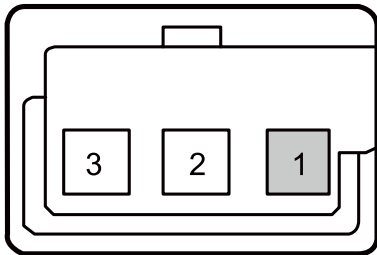
No

Repair or replace the harness.

Yes

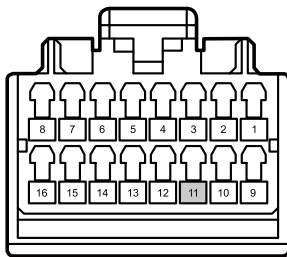
Step 6 | Check whether the LIN communication of PM2.5 sensor is normal.

SO99b PM2.5 sensor harness connector



GE08-5800d

IP79a thermal management control module harness connector 1



GE08-5801d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. Disconnect the harness connector of the thermal management LIN module.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(1)	IP79a(11)	Standard resistance: less than 1Ω
SO99b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO99b(1)	Vehicle body is grounded.	Standard voltage: 0V

- H. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Replace the PM2.5 sensor.

- A. Replace the PM2.5 sensor. Refer to [Replacement of PM2.5 Sensor](#)
- B. Confirm whether the system is working normally.

Yes → System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9	Reprogram and reset the thermal management control module.
--------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

8.2.6.46 Fault of right temperature actuator

1. DTC description:

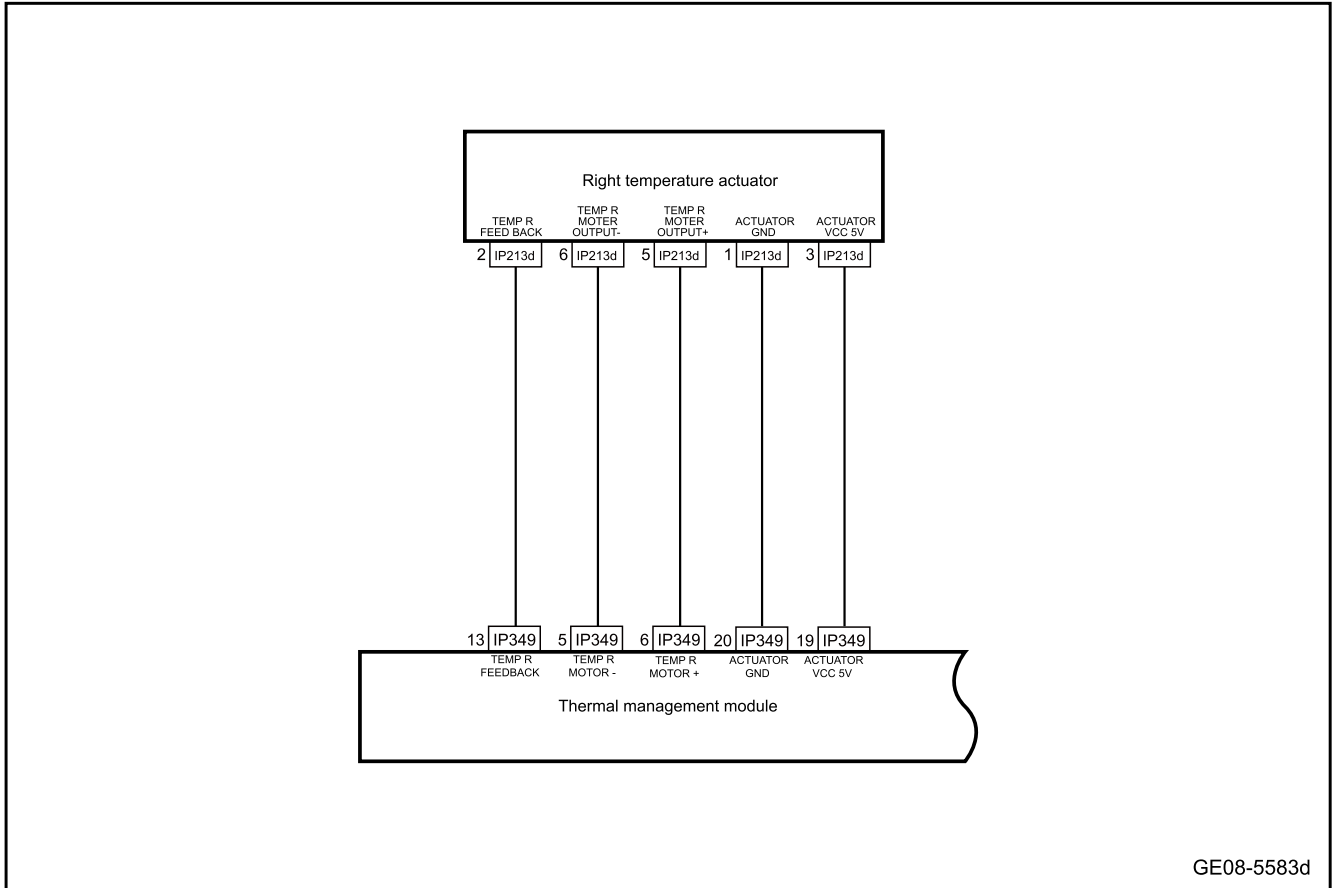
Diagnostic Trouble Code	Description
B118271	Temperature damper motor rotor at front passenger side is blocked
B118211	Front passenger side temperature adjustment motor is shorted to GND.
B118215	The temperature adjustment motor on the front passenger side is shorted or opened to the power supply.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118271	<ol style="list-style-type: none"> 1. The front passenger temperature motor must meet the requirements in the continuous running state 2. The front passenger temperature motor cannot operate at an angle that meets the requirements per unit time 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 		
B118211	<ol style="list-style-type: none"> 1. The front passenger temperature motor is always running 2. The return short circuit time of the front passenger temperature motor control pin to ground is more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from this limit to another limit, and read the DTC again. 	<ol style="list-style-type: none"> 1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode 	<ol style="list-style-type: none"> 1. Circuit 2. Thermal management control module 3. Right temperature actuator
B118215	<ol style="list-style-type: none"> 1. The front passenger temperature motor is always running 2. The return time of the front passenger temperature motor control pin to open circuit or short circuit to power supply is more than 500 ms 3. Turn the motor back and forth to read the DTC from one limit to another limit. If it cannot read it, it will shift from 		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
	this limit to another limit, and read the DTC again.		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

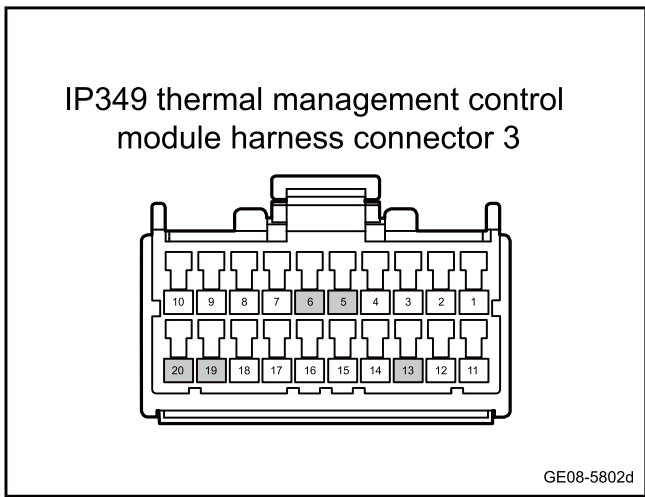
- A. Check the thermal management control module, right temperature actuator for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module, right temperature actuator harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the thermal management control module and the right temperature actuator for an open circuit.



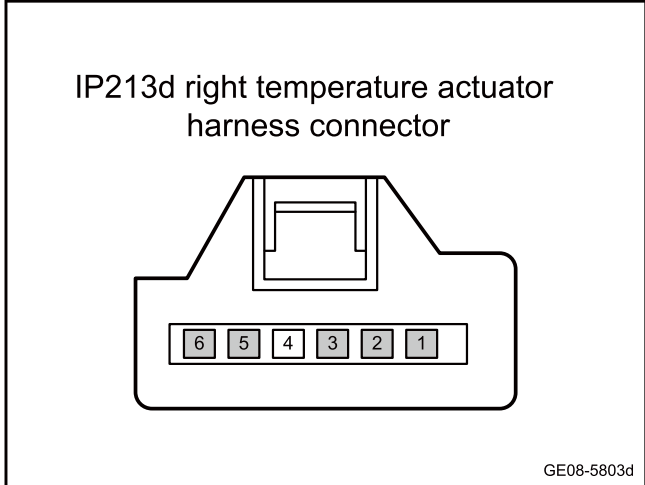
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the right temperature actuator harness connector IP213d.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP349(20)	IP213d(1)	Standard resistance: less than 1Ω
IP349(13)	IP213d(2)	
IP349(19)	IP213d(3)	
IP349(6)	IP213d(5)	
IP349(5)	IP213d(6)	

- E. Confirm whether the measured value meets the standard.

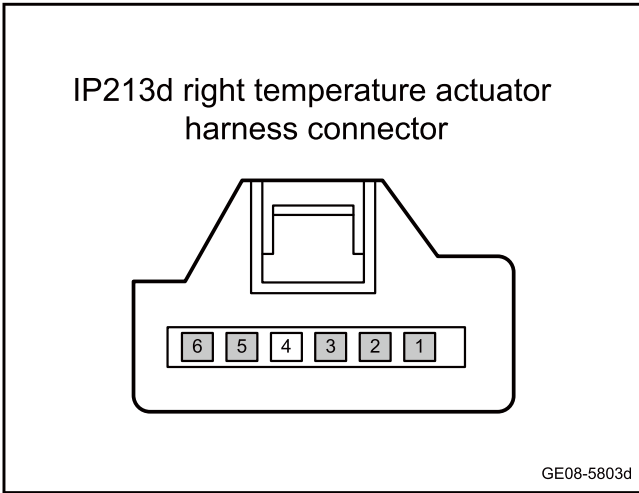
No

Repair or replace the harness.



Yes

Step 4 Check the harness between the thermal management control module and the right temperature actuator for a short circuit to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the right temperature actuator harness connector IP213d.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

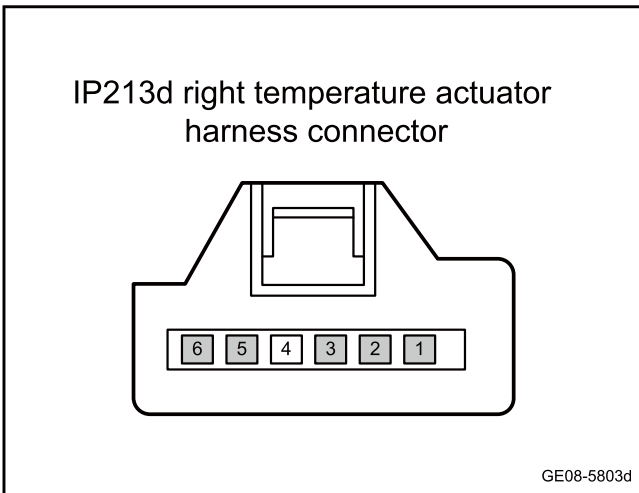
Measure terminal 1	Measure terminal 2	Standard value
IP213d(1)	Vehicle body is grounded.	Standard voltage: 0V
IP213d(2)		
IP213d(3)		
IP213d(5)		
IP213d(6)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check the harness between the thermal management control module and the right temperature actuator for a short circuit to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP349.
- C. Disconnect the right temperature actuator harness connector IP213d.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP213d(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP213d(2)		
IP213d(3)		
IP213d(5)		
IP213d(6)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the right temperature actuator.

- A. Replace the right temperature actuator. Refer to replacement of the right temperature actuator
- B. Confirm whether the right temperature actuator operates normally.

Yes

System is normal.

No

Step 7 Replace the thermal management control module.

- A. Check the thermal management control module power supply and grounding harness. Refer to [Power Supply Failure of Thermal Management Control Module](#)
- B. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

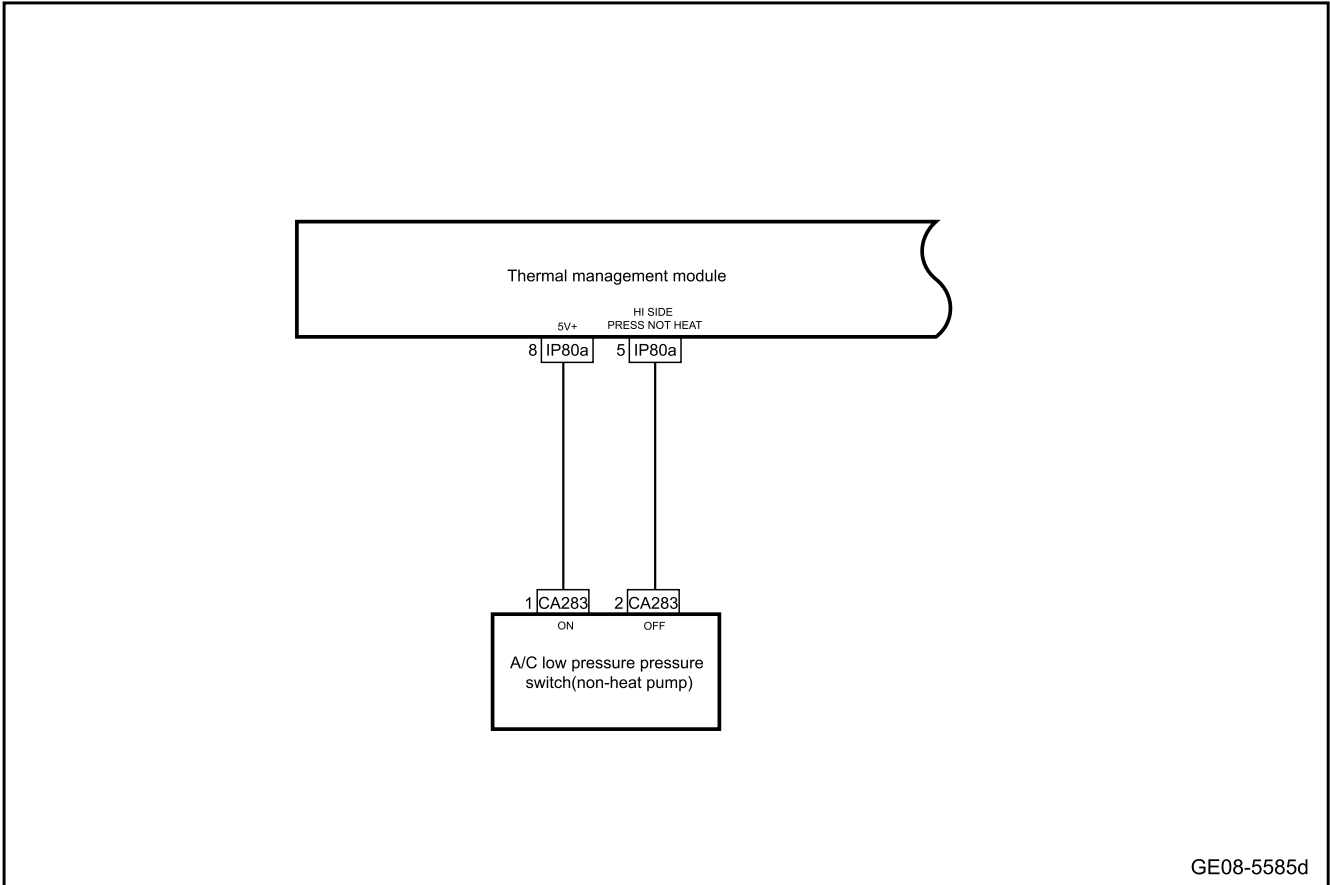
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

8.2.6.47 A/C low pressure sensor fault (non heat pump type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the thermal management control module and A/C low pressure switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and A/C low pressure switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

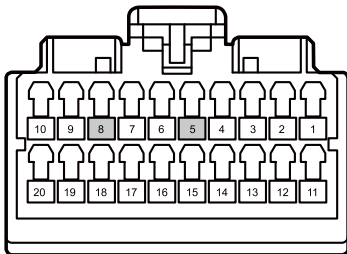
Yes

Repair or replace the faulty part.

No

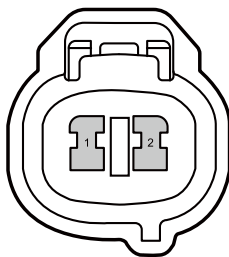
Step 2 Check the harness between the thermal management control module and the A/C low pressure switch for an open circuit.

IP80a thermal management control module harness connector 2



GE08-5806d

CA288 A/C low pressure switch harness connector (non-heat pump)



GE08-5807d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the A/C low pressure switch harness connector CA283.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(5)	CA283(2)	Standard resistance: less than 1Ω
IP80a(8)	CA283(1)	
IP80a(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(8)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(5)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(8)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 Replace the A/C low-pressure switch.

- A. Replace the A/C low-pressure switch. Refer to [Replacement of A/C Low-pressure Switch](#)
- B. Confirm whether the air conditioning low pressure switch works normally.

Yes System is normal.

No

Step 4 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 5 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

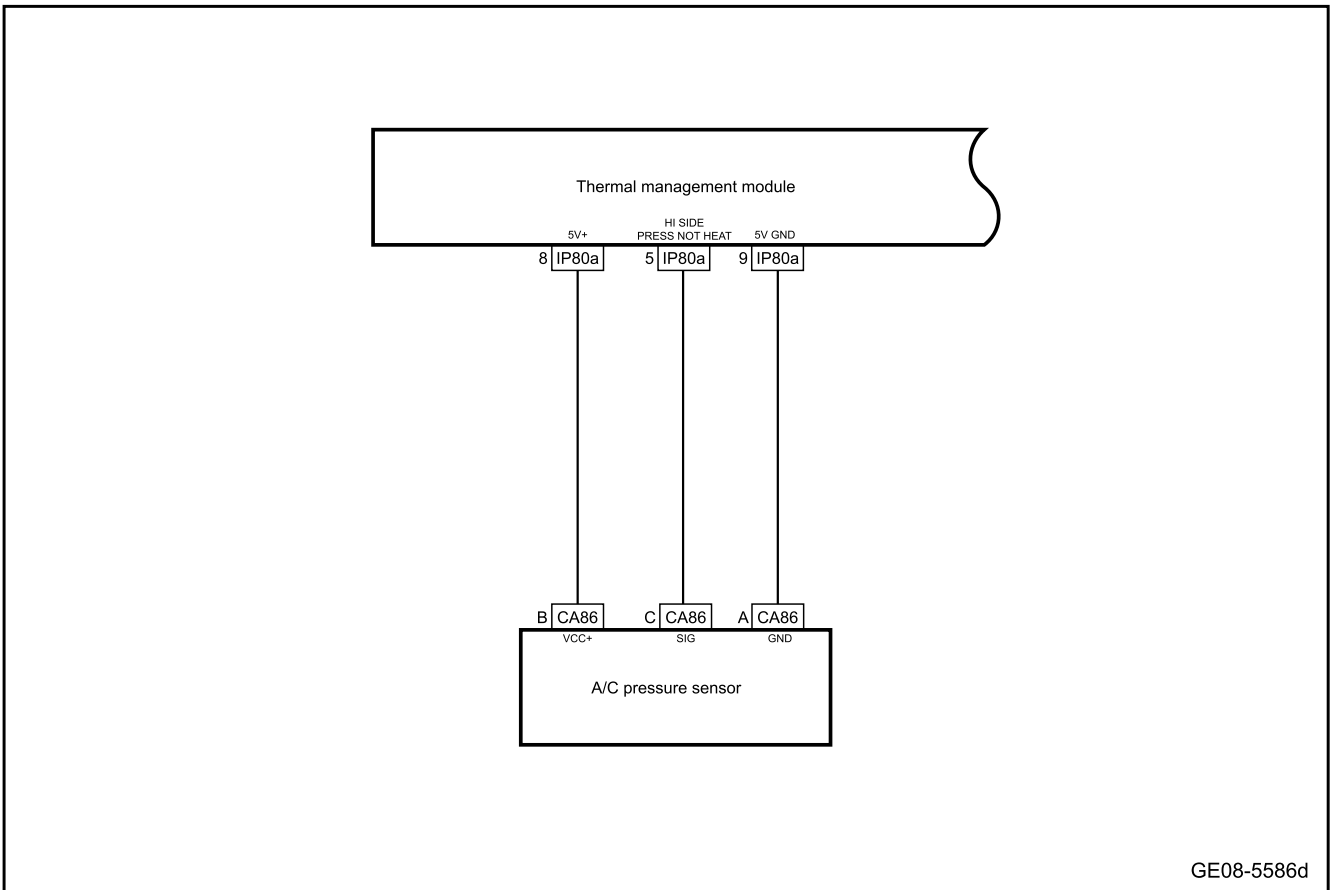
Diagnose according to the output trouble code.

No

Step 7 System is normal.

8.2.6.48 A/C pressure sensor fault (non-heat pump type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

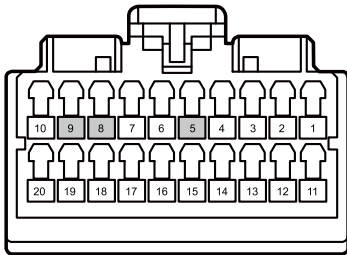
- A. Check the thermal management control module and A/C pressure sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and A/C pressure sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes ➤ Repair or replace the faulty part.

No ➤

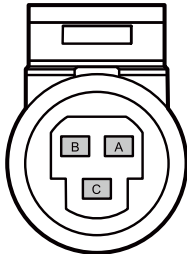
Step 2	Check whether the harness between the A/C pressure sensor and the thermal management control module is normal.
--------	--

IP80a thermal management control module harness connector 2



GE08-5808d

CA86 A/C pressure sensor harness connector



GE08-5809d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect A/C pressure sensor harness connector CA86.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(5)	CA86(C)	Standard resistance: less than 1Ω
IP80a(8)	CA86(B)	
IP80a(9)	CA86(A)	
IP80a(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP80a(8)		
IP80a(9)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(5)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(8)		
IP80a(9)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 3 | Replace A/C pressure sensor

- A. Replace A/C pressure sensor Refer to [Replacement of A/C pressure sensor](#)
- B. Determine whether vacuum pressure sensor operates normally.

Yes → System is normal.

No

Step 4 | Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 5 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 7 System is normal.

8.2.6.49 AQS fault

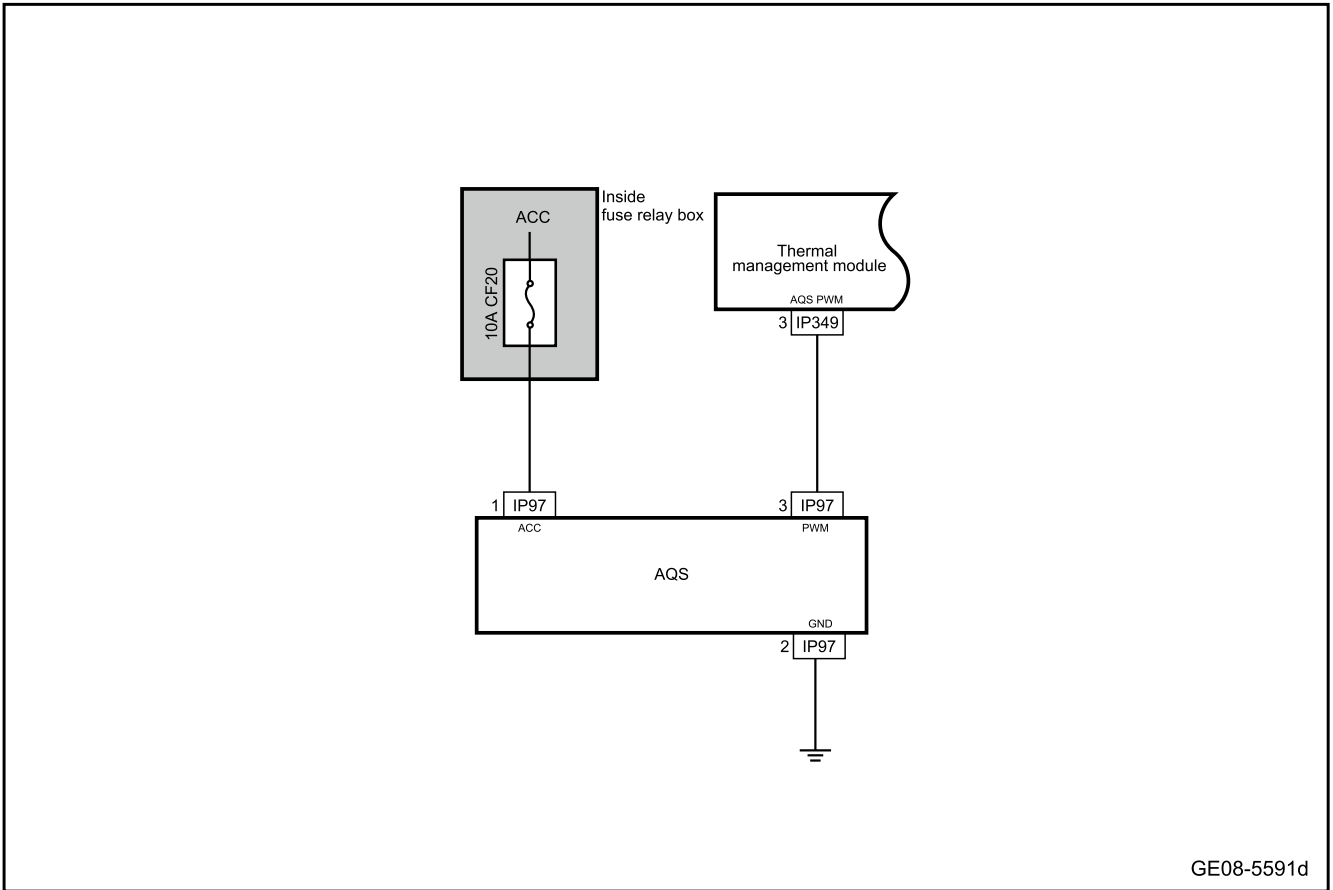
1. DTC description:

Diagnostic Trouble Code	Description
B118896	AQS sensor fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118896	PWM received from sensor is about 5%	1. Voltage range is 9V-16V. 2. Enabled after IG ON for 3s	1. Battery 2. Circuit 3. Fuse 4. AQS sensor

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the AQS for signs of damage, deformation, stain, loosening, etc.
- B. Check AQS harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

Yes Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the interior fuse CF20 and check whether the fuse is blown.

Rated capacity of fuse: 10A

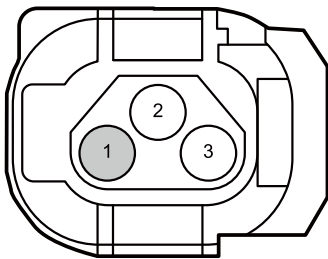
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check whether the AQS working voltage is normal.

IP97 AQS harness connector



GE08-5810d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AQS harness connector IP97.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP97(1)	Vehicle body is grounded.	Standard voltage: 11-14V

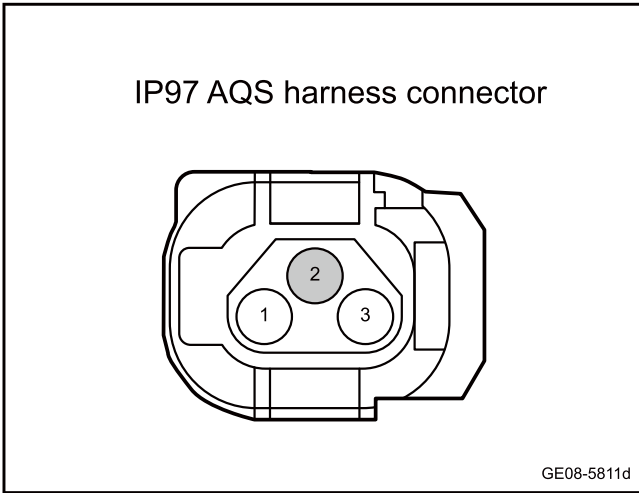
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check whether the AQS grounding harness is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AQS harness connector IP97.
- C. Use a multimeter to measure the terminals according to the table below:

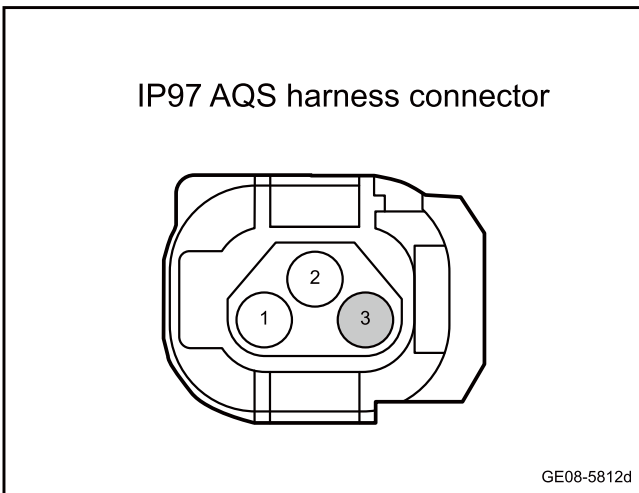
Measure terminal 1	Measure terminal 2	Standard value
IP97(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check whether the circuit between the AQS and the thermal management control module is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the AQS harness connector IP97.
- C. Disconnect the thermal management control module harness connectors IP349.
- D. Use a multimeter to measure the terminals according to the table below:

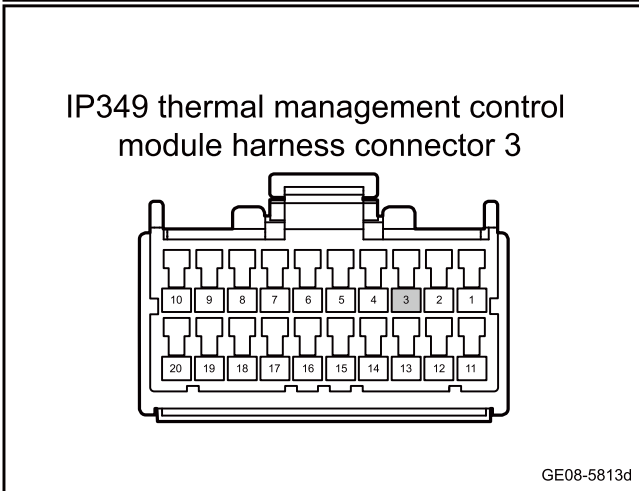
Measure terminal 1	Measure terminal 2	Standard value
IP97(3)	IP349(3)	Standard resistance: less than 1Ω
IP97(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP97(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.



Yes

Step 7 Replace the AQS

- A. Replace the AQS Refer to Replacement of AQS.
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9 Reprogram and reset the thermal management control module.

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

8.2.6.50 Negative ion generator fault

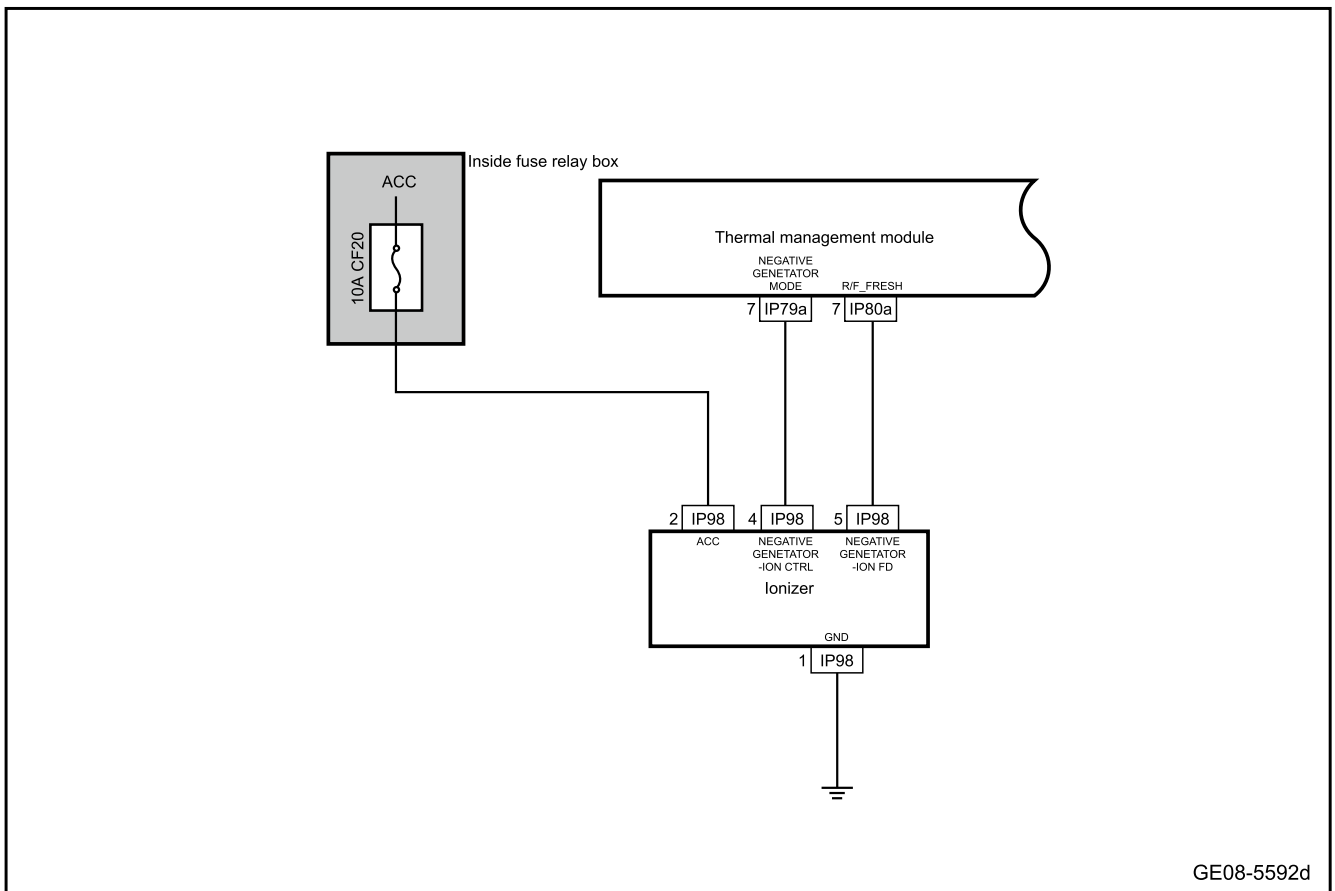
1. DTC description:

Diagnostic Trouble Code	Description
B118C96	ION hardware fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B118C96	(Take the LIN line) Receive the sensor error from the ion LIN message (signal L_ION_ErrSts is not equal to 0) within 2S; (take the hard wire) after switching on, if the ION feedback voltage is less than 3V, after 2 consecutive seconds.	1. Power supply within the range of 9V-16V 2. The vehicle is in IGN ON mode	1. Circuit 2. Thermal management control module 3. Negative ion generator

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the ion generator for signs of damage, deformation, smudges, looseness, etc.
- B. Check the ion generator for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

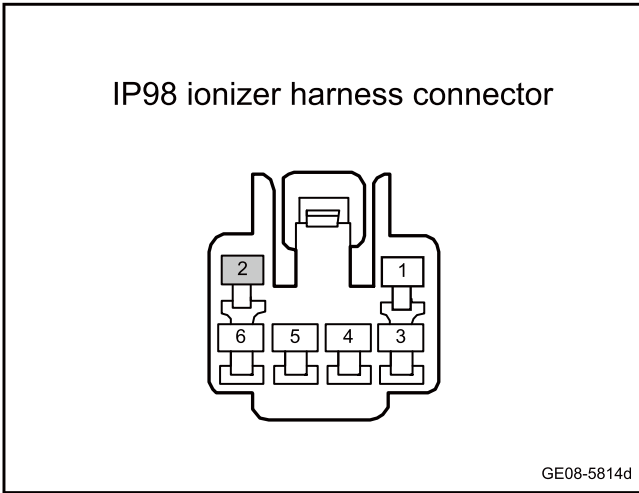
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the interior fuse CF20 and check whether the fuse is blown.
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the ion generator working voltage is normal.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ion generator harness connector IP98.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

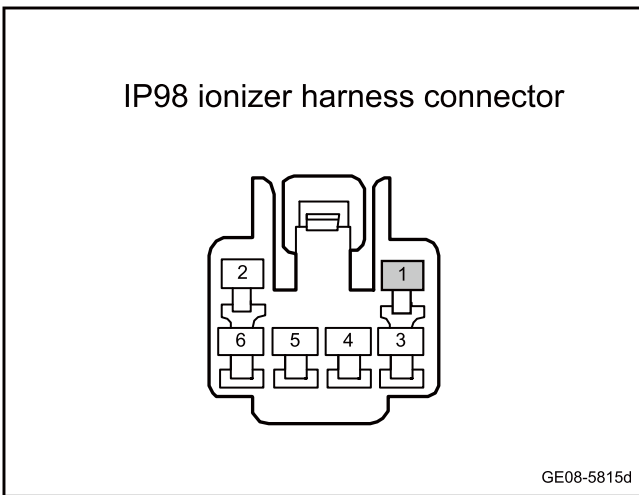
Measure terminal 1	Measure terminal 2	Standard value
IP98(2)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the ion generator grounding harness is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ion generator harness connector IP98.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP98(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

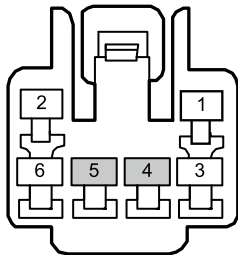
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

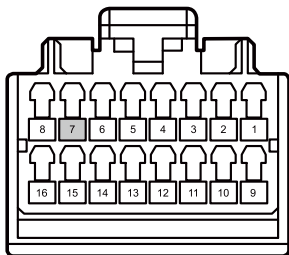
Step 6 | Check whether the harness between the ion generator and the thermal management module is normal.

IP98 ionizer harness connector



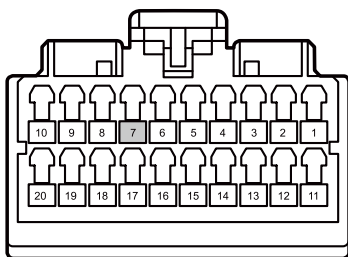
GE08-5816d

IP79a thermal management control module harness connector 1



GE08-5817d

IP80a thermal management control module harness connector 2



GE08-5818d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ion generator harness connector IP98.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. Disconnect the thermal management control module harness connectors IP80a.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP98(4)	IP79a(7)	Standard resistance: less than 1Ω
IP98(5)	IP80a(7)	
IP98(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP98(5)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP98(4)	Vehicle body is grounded.	Standard voltage: 0V
IP98(5)		

- H. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace ion generator

- A. Replace ion generator Refer to Replacement of Ion Generator
- B. Confirm whether the system is working normally.

Yes → System is normal.

No

Step 8	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 9	Reprogram and reset the thermal management control module.
--------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

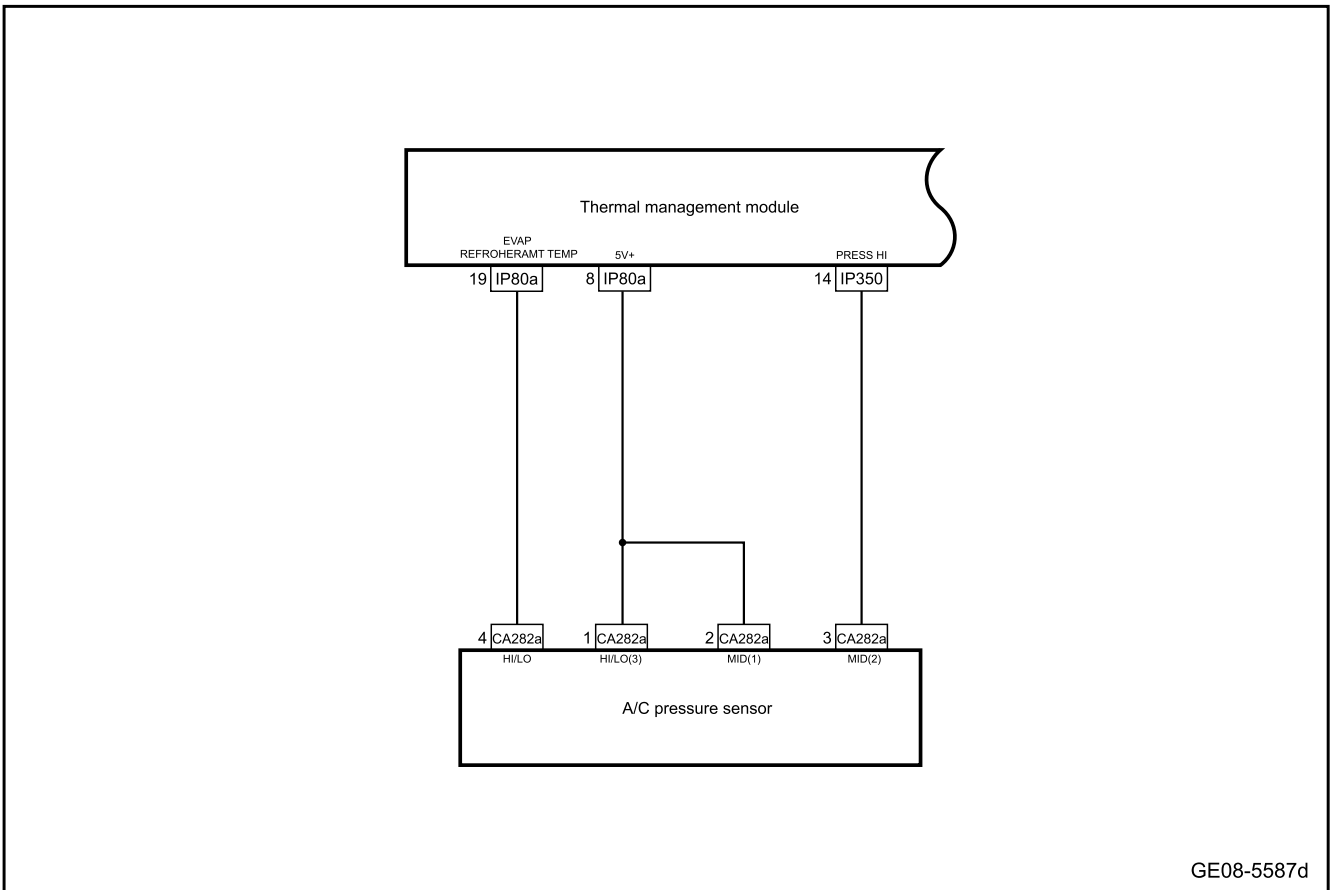
Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

8.2.6.51 A/C pressure sensor fault (non-heat pump type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

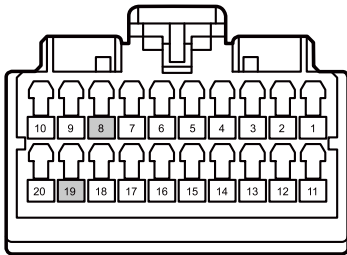
- A. Check the thermal management control module and A/C pressure sensor and A/C low pressure sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the thermal management control module and A/C pressure sensor and A/C low pressure sensor harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

Yes
Repair or replace the faulty part.

No

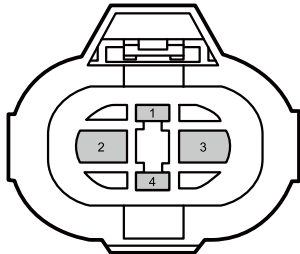
Step 2	Check whether the harness between the A/C pressure sensor and the thermal management control module is normal.
--------	--

IP80a thermal management control module harness connector 2



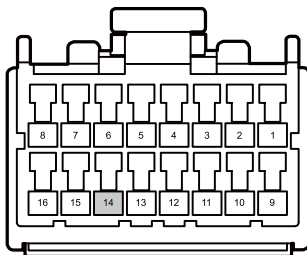
GE08-5819d

CA282a A/C pressure sensor harness connector



GE08-5820d

IP350 thermal management control module harness connector 4



GE08-5821d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP80a.
- C. Disconnect the thermal management control module harness connectors IP350.
- D. Disconnect A/C pressure sensor harness connector CA282a.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(8)	CA282a(1)	Standard resistance: less than 1Ω
IP350(14)	CA282a(3)	
IP80a(8)	CA282a(2)	
IP80a(19)	CA282a(4)	Standard resistance: 10KΩ or higher
IP80a(8)	Vehicle body is grounded.	
IP80a(19)		
IP350(14)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP80a(8)	Vehicle body is grounded.	Standard voltage: 0V
IP80a(19)		
IP350(14)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace A/C pressure sensor

- A. Replace A/C pressure sensor Refer to [Replacement of A/C pressure sensor](#)
- B. Confirm whether the system is back to normal.

Yes

System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)

Next step

Step 8	Reprogram and reset the thermal management control module.
--------	--

- A. To reprogram and reset the thermal management control module, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

8.2.6.52 Recovery and Filling of A/C Refrigerant

The operation efficiency and service life of air conditioning (A/C) system depend on the chemical stability of the cooling system. When the refrigeration system is contaminated by foreign matter (such as dust, air or moisture), the contamination will change the stability of refrigerant and compressor oil. It also affects the relationship between pressure and temperature, reduces work efficiency, and can lead to internal corrosion and abnormal worn of components. please operate as follows to ensure the chemical stability of the system:

1. Before the joint is opened, clean the oil at and around the joint to reduce the possibility of oil entering the system.
2. After the joint is disconnected, the two sides of joints are sealed by cap, plug or tape to prevent oil, foreign matter and moisture from entering.

3. Keep all tools clean and dry, including manifold pressure gauge components and all replacements.
4. Use clean, dry conveying devices and containers to add 100PG refrigerant oil, as far as possible to ensure that the refrigerant oil is not affected by moisture.
5. Minimize exposure time of A/C system interior to air during operation.
6. A/C system interior must be emptied and refilled after exposed to the air. All repair parts are dried and sealed before delivery. These sealed parts should only be opened when the installation is about to begin. Before unpacking, all parts should be kept at room temperature to prevent moisture in the air from condensing on the parts and entering the system, and resealed as soon as possible.

1. Procedures for discharge, adding of lubrication oil, emptying and filling of A/C system.

Warning

Refer to “Warning of inhaling R-134a” in the “Warnings and Notice”. Other health and safety information is available from refrigerant and lubrication oil manufacturers.

Warning

Refer to “Warning regarding goggles and gloves” in the “Warnings and Notice”

The discharge, adding of lubrication oil, emptying and filling of A/C system can be completed by one connection of filling machine. The refrigerant is filtered during both recovery and emptying to ensure that the refrigerant pumped into the A/C system is clean and dry.

1. R-12 filling machine is prohibited to fill R-134a system. The refrigerants and refrigerant oils of the two systems are not compatible and must not be mixed, even in small amounts, mixing in residual refrigerant will damage the equipment.
2. Reducing joints are prohibited to ensure internal sealing of the system.

2. Installation and maintenance of filling machine

There are many types of filling machine. All filling machines perform various tasks such as air conditioning system discharge, refrigerant recovery, system evacuation, quantitative addition of refrigerant oil and quantitative refilling of refrigerant. Refer to the operation manual of the filling machine to understand the initial installation procedure and maintenance procedure.

3. Function of control panel

The operator can control and monitor the operation process with the control button and indicator light on the filling machine. For details, please refer to the operation instrument of filling machine. Operation instrument should include:

1. Main power supply switch: The main power switch supplies power to the control panel.
2. Display screen: The display shows the programmed vacuuming time and the weight of the refilled refrigerant. Refer to the operation instrument of manufacturer and know the detailed program information
3. Low pressure side manifold pressure gauge: this gauge shows the pressure of system low pressure side.
4. High pressure side manifold pressure gauge: this gauge shows the pressure of system high pressure side.
5. Control panel: It includes control buttons to control various operation functions.
6. Low pressure side valve: this valve is used to connect the low pressure side of A/C system and filling machine.
7. Humidity indicator light: This indicator light indicates whether the refrigerant is moist or not.
8. High pressure side valve: this valve is used to connect the high pressure side of A/C system and filling machine.

4. Refrigerant recovery

Caution

Use only refrigerant tanks specially designed for filling machine. The anti-overcharge mechanism of filling machine is specifically calibrated for the use of this refrigerant tank. The tank valve of the refrigerant tank is also specially manufactured for the device.

1. Check the high pressure side and low pressure side gauges on the control panel of the filling machine to ensure that there is pressure in the A/C system. If there is no pressure, there is no recyclable refrigerant in the system.
2. Open high pressure side and low pressure side valves.
3. Open the gas and liquid valves on the refrigerant tank.
4. Drain the refrigerant oil from the oil-liquid separator.
5. Close the drain valve.
6. Connect the filling machine to an appropriate power outlet.
7. Switch on the main power supply switch.

Caution

It is forbidden to mix used refrigerant oil with new refrigerant oil. Aluminum or other foreign matter may be deposited in the used oil. Always use new refrigerant oil when refilling the air conditioning system. Properly discard used refrigerant oil.

Caution

Some of the 100PG lubrication oil in the A/C system may be recycled along with the refrigerant. The amount of recovered lubrication oil is variable. The filling machine can separate the lubrication oil from the refrigerant so that the amount of lubrication oil recovered can be determined. Add equal amount of lubrication oil when the system is refilled. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.

1. Start the recovery process. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.
2. Wait for 5 minutes, and then check the low pressure side pressure gauge on the control panel. If the A/C system maintains vacuum, the recovery is completed.

Caution

If the control panel indicator light indicates that the refrigerant tank is full during the recovery period. After the filling machine is closed, install an empty tank to store the refrigerant required for the subsequent steps. Do not use other types of refrigerant tanks.

1. If the number starts from zero on the low pressure side pressure gauge, there are still refrigerants in the system. Recycle the remaining refrigerant. Repeat this step until the system can maintain vacuum for 2 minutes.

5. Empty

The refrigerant tank of filling machine must be filled with adequate R-134a refrigerant for filling. Check the amount of refrigerant in the tank. If the refrigerant is less than 3.6kg (8lb), add a new refrigerant to the refrigerant tank. For details, please refer to the operation instrument of filling machine and know the method of adding refrigerant.

1. Check whether the high pressure side and low pressure side hoses are connected to the A/C system and open the high pressure side and low pressure side valves on the control panel of the filling machine.
2. Open the gas and liquid valves on the refrigerant tank.

Caution

Refer to the operation instrument of manufacturer and know the detailed method of filling machine. The system must be emptied before new refrigerants or recycled refrigerants can be refilled

3. Start the vacuum pump and begin the emptying procedure. During the recovery process, non-condensable gases (mostly air) are discharged automatically from the tank. You will hear the sound of pressure relief.

Caution

Replace vacuum pump oil frequently. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.

4. Check the system for leakage. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.

6. Lubrication oil filling and replenishment for A/C system

Lubrication oil discharged from the A/C system during recovery must be replenished.

1. Use graduated bottled 100PG lubrication oil specifically for the R-134a system.
2. Refer to the manufacturer's operating instructions for details on the use of the filling machine, and add appropriate 100PG lubricating oil to the system.
3. When the required amount of oil is filled, switch off the valve.

Caution

Keep the cap on the lubrication oil bottle tightly to prevent moisture or contaminants from entering the lubrication oil. This operation requires a certain degree of vacuum in the A/C system. Do not open the lubrication oil filling valve when there is positive pressure in the A/C system, otherwise it will cause the lubrication oil to flow back through the vent of the oil bottle. When filling or replenishing lubrication oil, the oil level should not be lower than the fluid pipe, otherwise air will enter the A/C system.

7. Filling

Caution

Empty the A/C system before filling.

1. Close the low pressure side valve on the control panel.
2. Close the high pressure side valve on the control panel.
3. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.
4. Fill the necessary refrigerant into the A/C system to ensure that the unit of measurement is correct (i.e., kilogram, kilogram or pound).
5. Start filling.

8. Refrigerant filling has been successfully completed

1. Close the high and low pressure side valves on the control panel of the filling machine. Both valves should be closed.
2. Start the vehicle and A/C system.
3. Keep the drive motor running until the readings on the high pressure side and low pressure side gauge are stable.
4. Compare readings with system specifications.
5. Check the evaporator outlet temperature to ensure that the operation of A/C system is in accordance with system specifications.
6. Keep A/C running.
7. Close the high pressure side quick joint valve.
8. Disconnect the high pressure side hose on the vehicle.

9. Open the high pressure side and low pressure side valves on the control panel. The system will quickly inhale the refrigerant in the two hoses through the low pressure side hoses.
10. Close the low pressure side quick joint valve.
11. Disconnect the low pressure side hose on the vehicle.

9. The refrigerant filling is unsuccessful

Sometimes the refrigerant entering the A/C system does not reach the total filling volume. There are two reasons:

1. The pressure of the refrigerant tank of the filling machine is similar to that of the A/C system, which will cause the filling process to be too slow. Refer to the operation instrument of manufacturer and know the detailed method of filling machine.
2. There is not enough refrigerant in the refrigerant tank to refill. it is necessary to recover some of filled refrigerant from the vehicle. empty the A/C system, add refrigerant to the refrigerant tank and refill it. Refer to the operation instrument of manufacture rand know the use of filling machine

8.2.6.53 VCU LIN communication fault

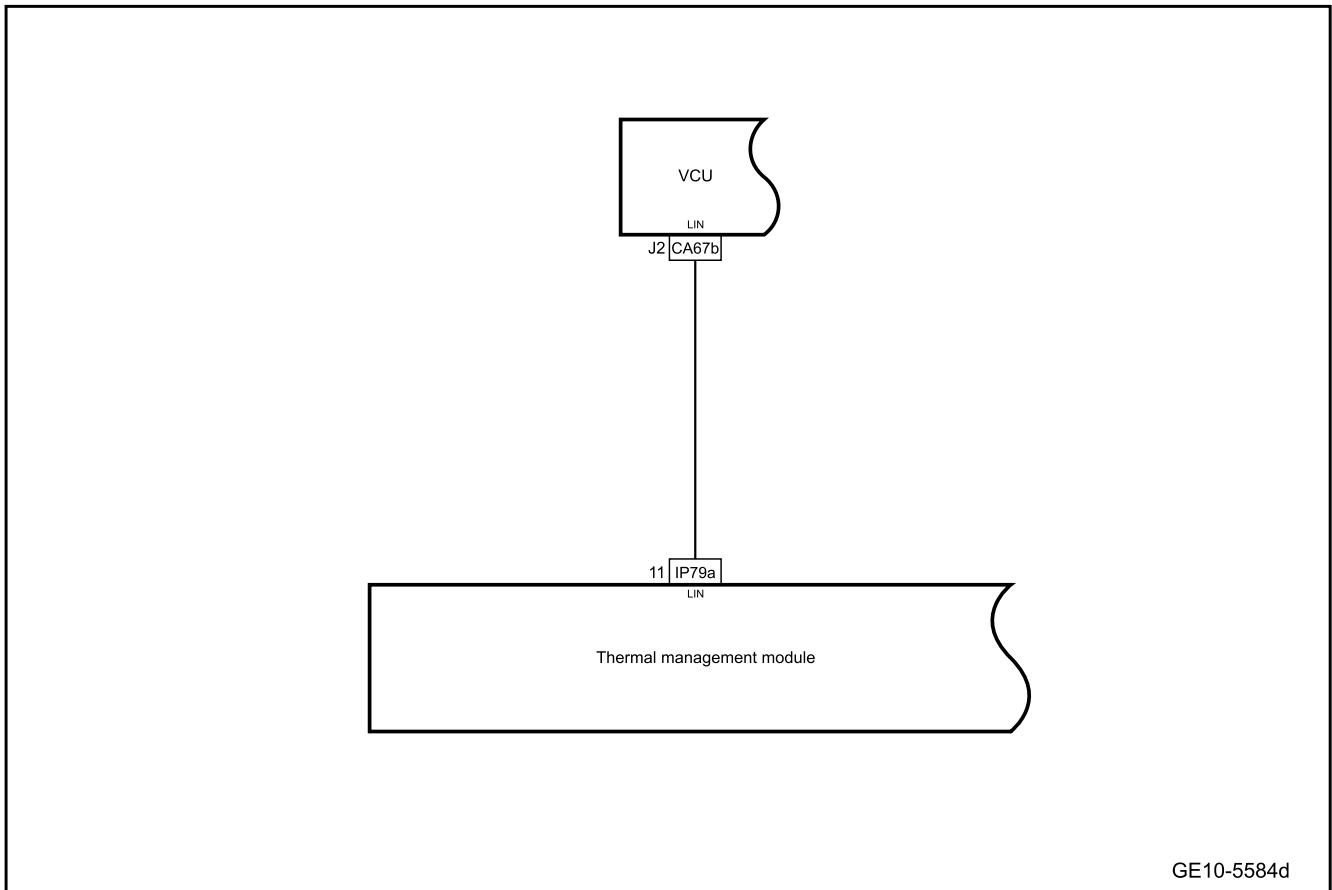
1. DTC description:

Diagnostic Trouble Code	Trouble description
U025987	Communication with VCU is lost (LIN bus)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U025987	Unable to communicate with this node over 2S	1. Voltage range is 9V-16V. 2. IG is ON and enabled after 3s	1. Circuit 2. Thermal management control module 3. VCU

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the thermal management control module harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

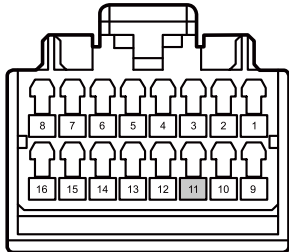
No

Repair or replace the faulty part.

Yes

Step 3 Check the LIN circuit between the thermal management control module and VCU for open circuit.

IP79a thermal management control module harness connector 1



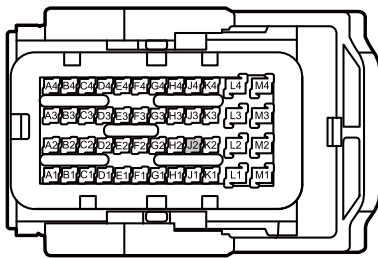
GE08-5822d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	CA67b(J2)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

CA67b VCU module harness connector A



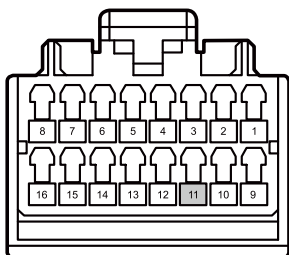
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No → Repair or replace the harness.

Yes

Step 4 Check whether the LIN line between thermal management control module and VCU is short to power supply.

IP79a thermal management control module harness connector 1



GE08-5824d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the VCU harness connector CA67b.
- D. Disconnect the harness connector of the LIN module.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

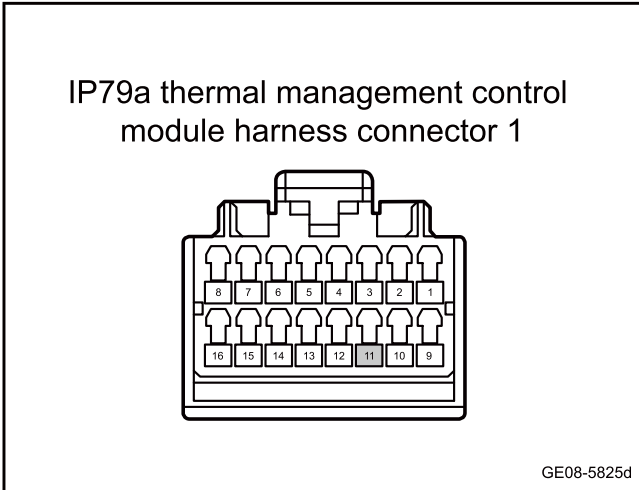
Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the LIN line between thermal management control module and VCU is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the thermal management control module harness connectors IP79a.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP79a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the thermal management control module.

- A. Replace the thermal management control module. Refer to [Replacement of Thermal Management Control Module](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Reprogram and reset the thermal management control module.

- A. Reprogram and reset the thermal management control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Replace the VCU
--------	-----------------

- A. Check whether VCU power supply and grounding harness are normal. Refer to [VCU Power Failure](#)
- B. Refer to [Replacement of Vehicle Control Unit](#) to replace the VCU

Next step

Step 9	Reprogram and reset the VCU.
--------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

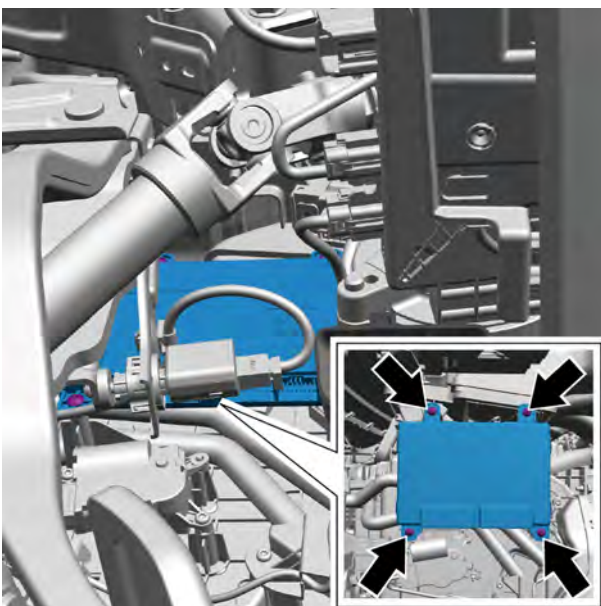
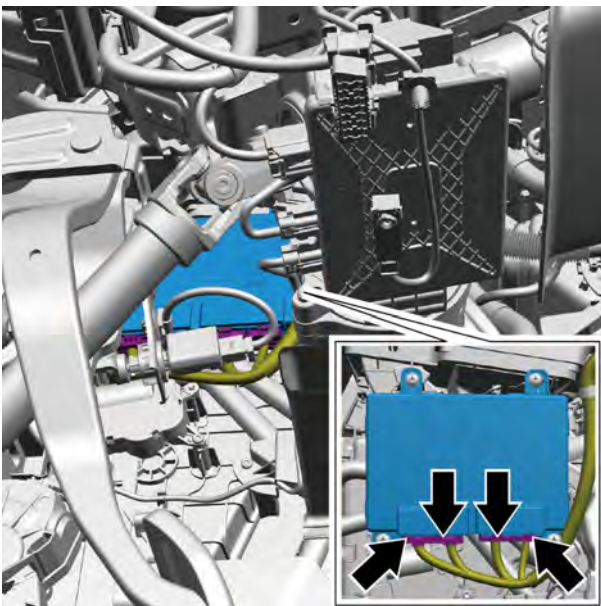
Step 11	System is normal.
---------	-------------------

8.2.7 Removing and installing

8.2.7.1 Replacement of Thermal Management
Control Module

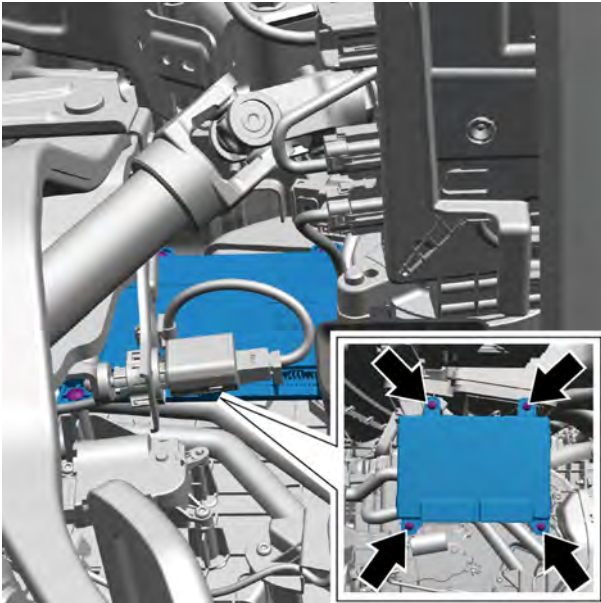
Removal procedure

- 1 Adjust Left front seat assembly to the rear.
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Remove the left lower fender apron assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 4 Disconnect 4 harness connectors connecting instrument harness and the thermal management control module .



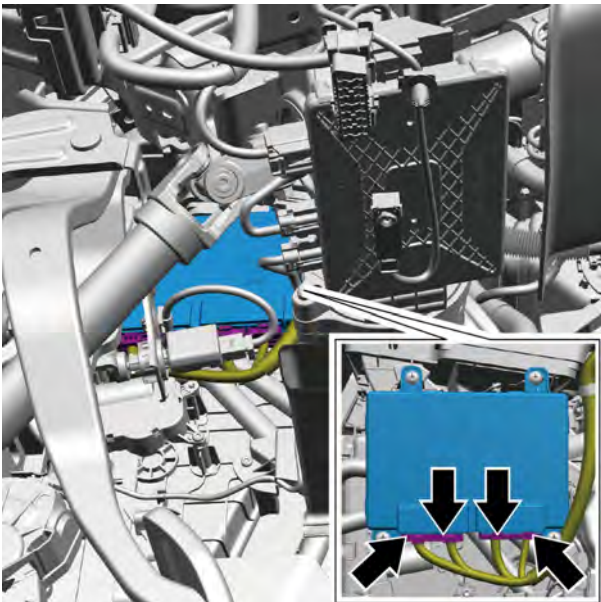
- 5 Remove the 4 fixing screws connecting the thermal management control module and the AC main unit assembly.
- 6 Remove the thermal management control module.

Installation procedure



- 1 Move the thermal management control module to the installation position.
- 2 Install and tighten the 4 fixing screws connecting thermal management control module and the AC main unit assembly.

Torque: 1.5N·m



- 3 Connect the 4 harness connectors connecting the instrument harness and the thermal management control module.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 4 Install the left lower shield assembly of the dashboard.
- 5 Connect the negative cable of battery.
- 6 Adjust the left front seat assembly to the initial position.

8.2.7.2 Replacement of A/C Warm Air Outlet Pipe

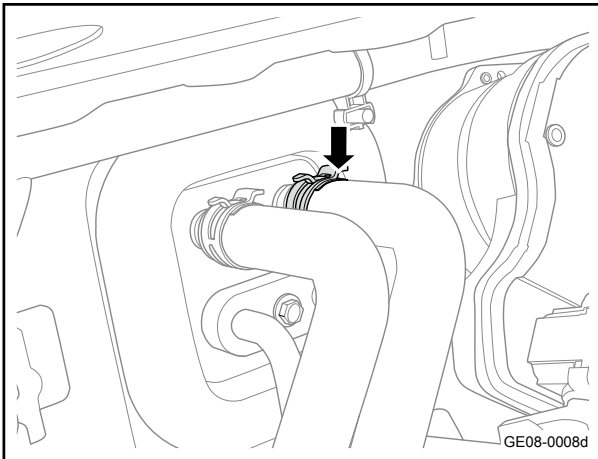
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

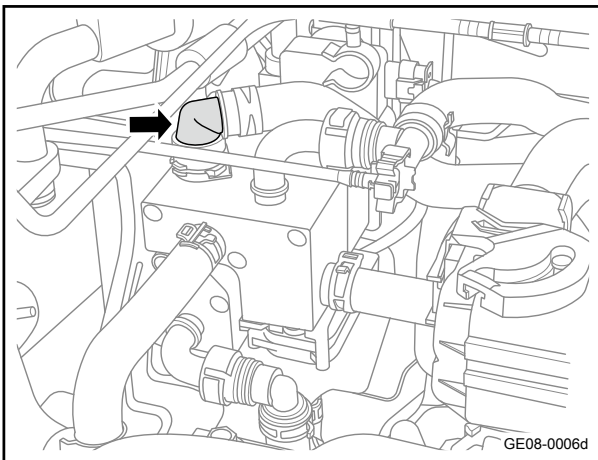
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

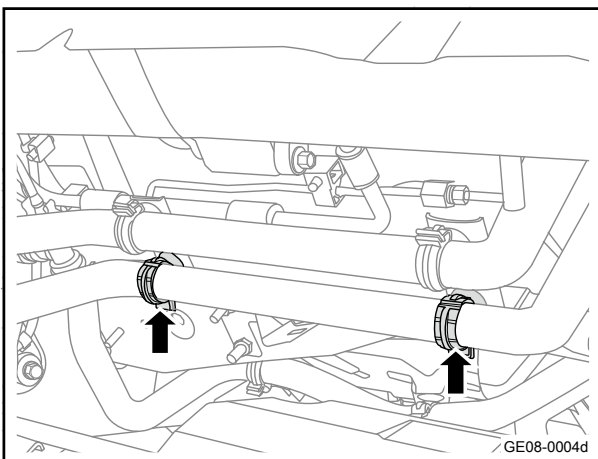
- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Remove the fixing clip of the A/C warm air outlet water pipe, disconnect the A/C warm air outlet water pipe.



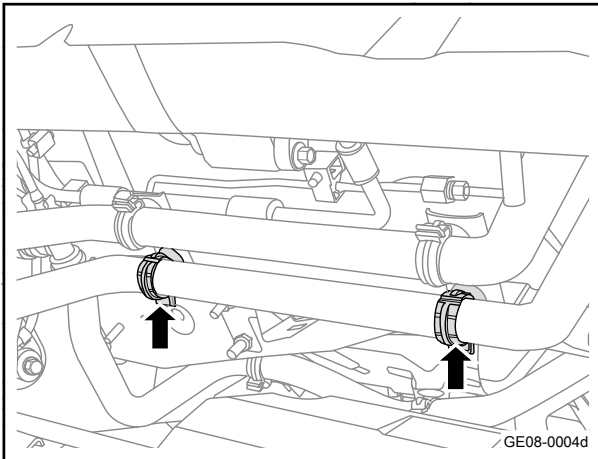
- 4 Disconnect the A/C warm air water outlet pipe from the heat exchanger assembly.



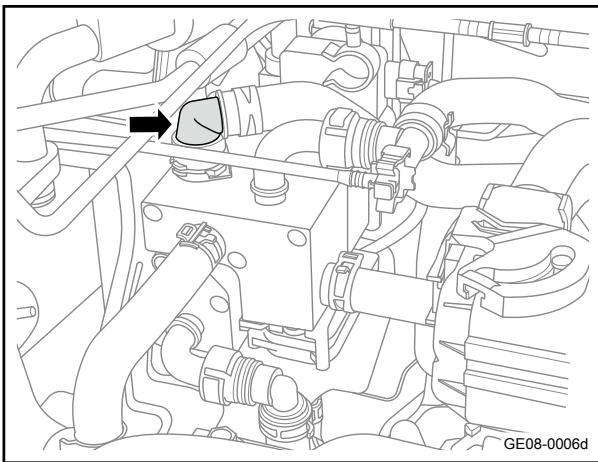
- 5 Remove Air conditioning warm air water outlet pipe fixing clip.
- 6 Take off the A/C warm air water outlet pipe.



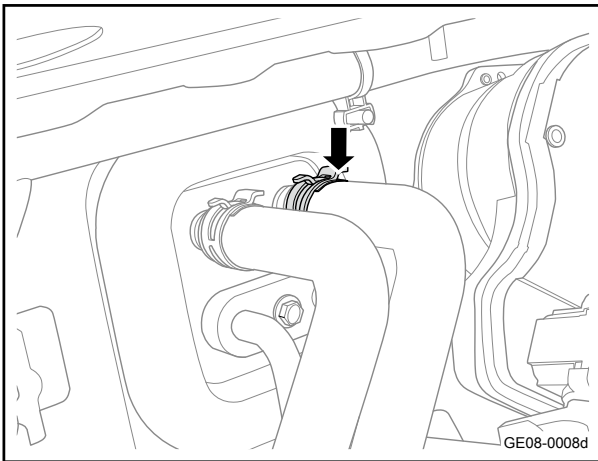
Installation procedure



- 1 Move the A/C warm air water pipe to the installation position.
- 2 Install the fixing clip of the A/C warm air water outlet pipe.



- 3 Connect the A/C warm air water inlet pipe with the heat exchanger assembly.



- 4 Install the clamp of the A/C warm air water outlet pipe and connect the A/C warm air water outlet pipe.

- 5 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

8.2.7.3 Replacement of A/C Warm Air Water Inlet Pipe

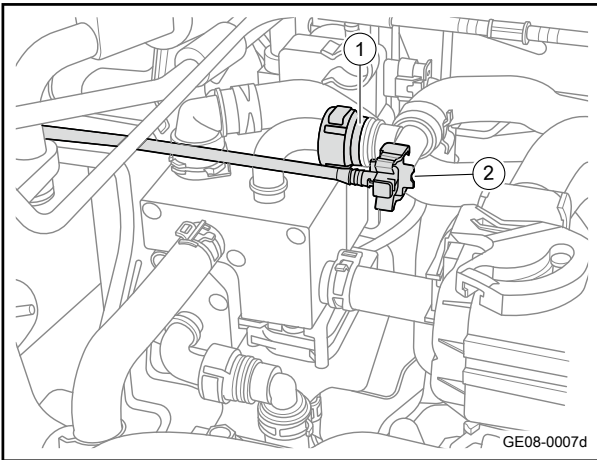
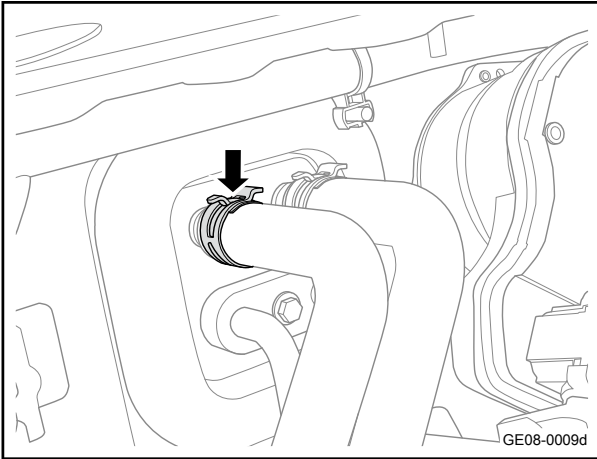
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

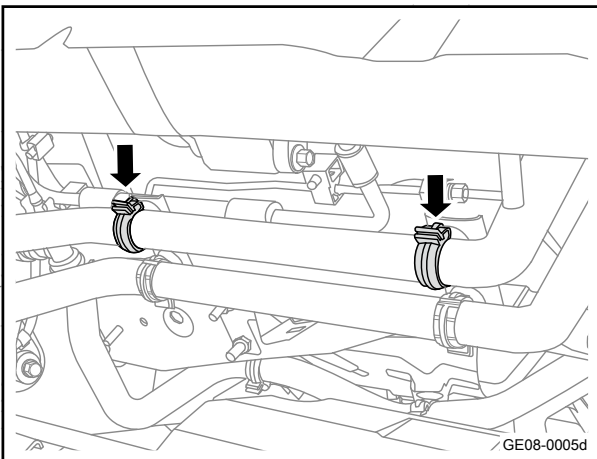
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Remove the clamp connecting the A/C warm air water inlet hose, and disconnect the A/C warm air water inlet hose.

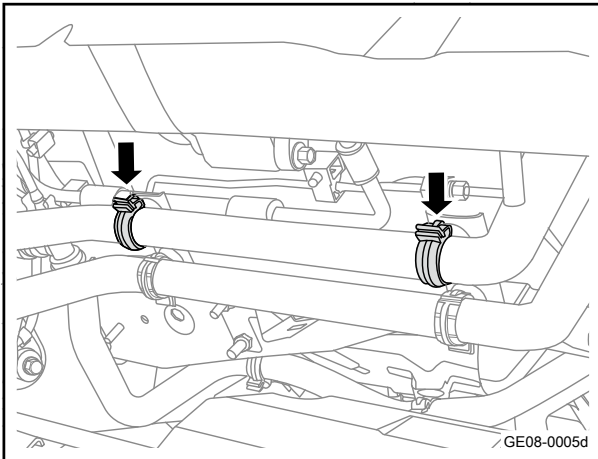


- 4 Disconnect the heat exchanger assembly and the A/C warm air inlet pipe 1.
- 5 Disconnect the A/C warm air water inlet pipe from the electric heating vent pipe ventilation hose 2.

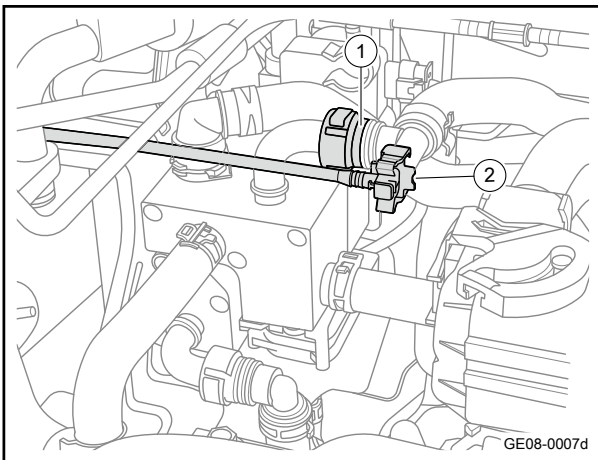


- 6 Disconnect A/C warm air water inlet pipe
- 7 Take off the A/C warm air water inlet pipe.

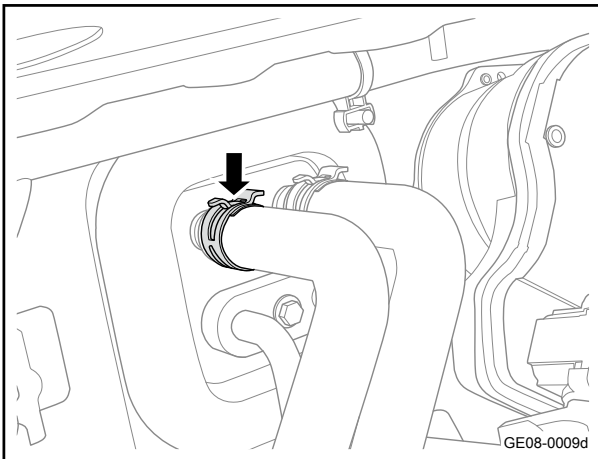
Installation procedure



- 1 Move the A/C warm air water inlet pipe to the installation position.
- 2 Install the fixing clip of the A/C warm air water inlet pipe.



- 3 Disconnect the A/C warm air water inlet pipe from the electric heating vent pipe 2.
- 4 Connect the heat exchanger assembly and the A/C warm air inlet pipe 1.



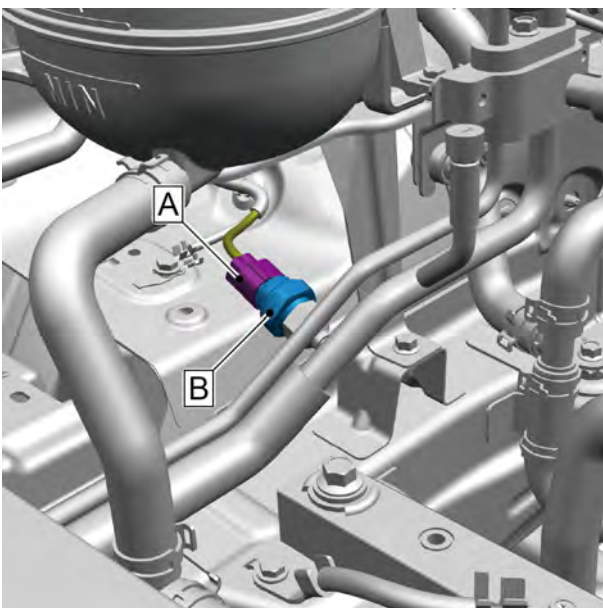
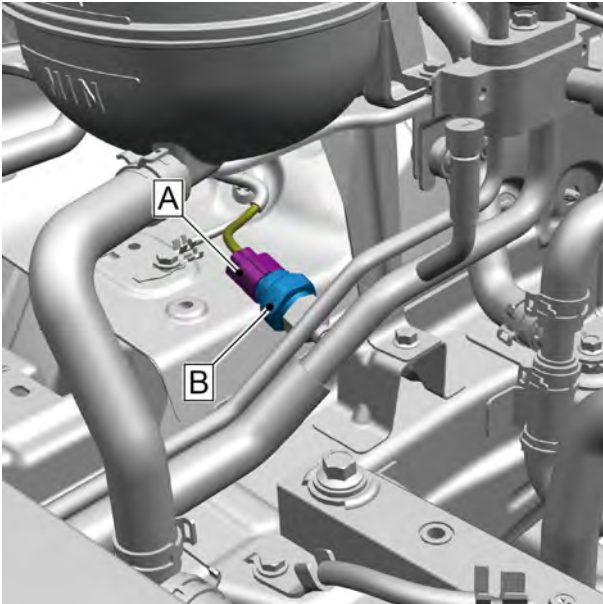
- 5 Install the hoop of the A/C warm air water inlet pipe and connect the hoop of the A/C warm air water inlet pipe.

- 6 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 7 Connect the negative cable of battery.

8.2.7.4 Replacement of A/C Low-pressure Pressure Switch(Type I)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Recycle air conditioner refrigerant. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the 1 harness connector A between the front bumper harness and the A/C low pressure switch.
- 4 Remove A/C low pressure switch B.
- 5 Take off the A/C low pressure switch.



Installation procedure

- 1 Move the A/C low pressure switch to the installation position.
- 2 Install the A/C low-pressure pressure switch B into the evaporator inlet and outlet pipe assembly, and tighten the A/C low-pressure pressure switch B.

Torque: 10.8N·m

Caution

Check whether the connection between the A/C low-pressure pressure switch and the evaporator high-low pressure pipe is fastened and reliable.

- 3 Connect the 1 harness connector A of the front bumper harness and the A/C low pressure switch.

Caution

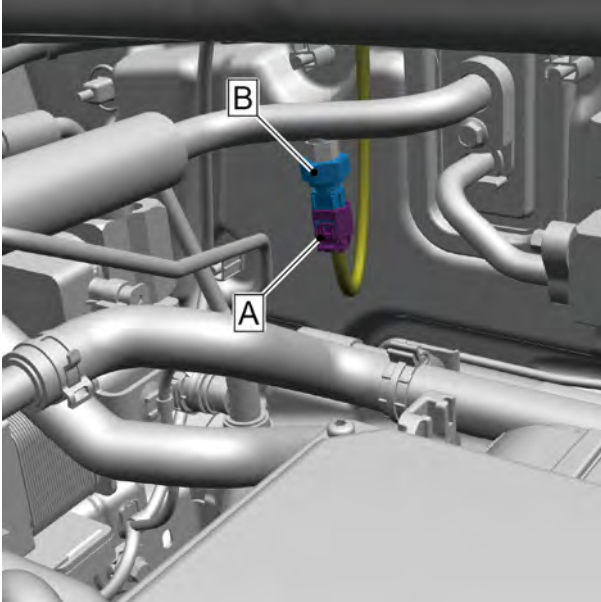
Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.5 Replacement of A/C Low-pressure Pressure Switch (Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Recycle air conditioner refrigerant. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the 1 harness connector A connecting the front compartment harness and the A/C low pressure switch.
- 4 Disconnect A/C low pressure switch B
- 5 Take off the A/C low pressure switch.



Installation procedure

- 1 Move the A/C low pressure switch to the installation position.
- 2 Install the A/C low-pressure pressure switch B into the evaporator inlet and outlet pipe assembly, and tighten the A/C low-pressure pressure switch B.

Torque: 10.8N·m

Caution

Check whether the connection between the A/C low-pressure pressure switch and the evaporator high-low pressure pipe is fastened and reliable.

- 3 Connect the 1 harness connector A connecting the front compartment harness and the A/C low-pressure switch.

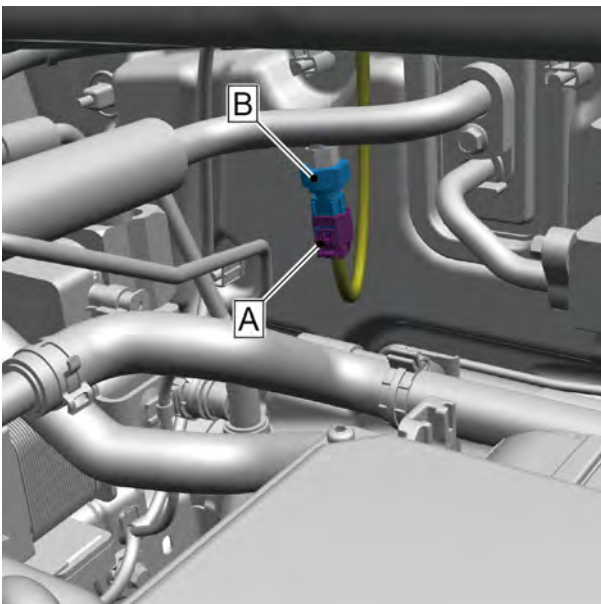
Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

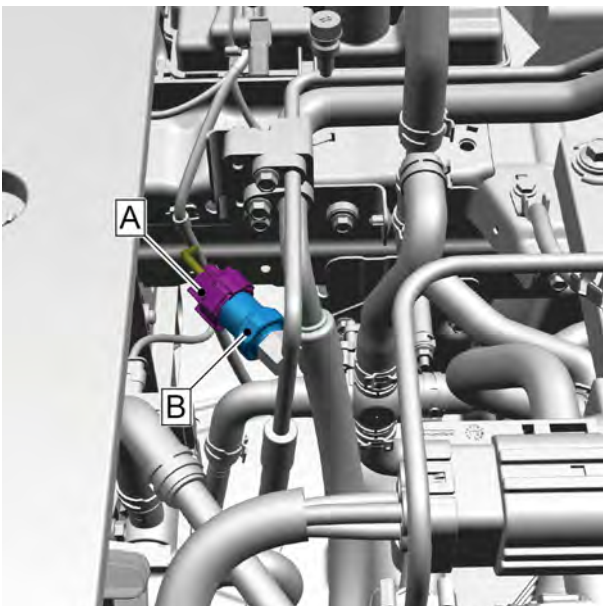
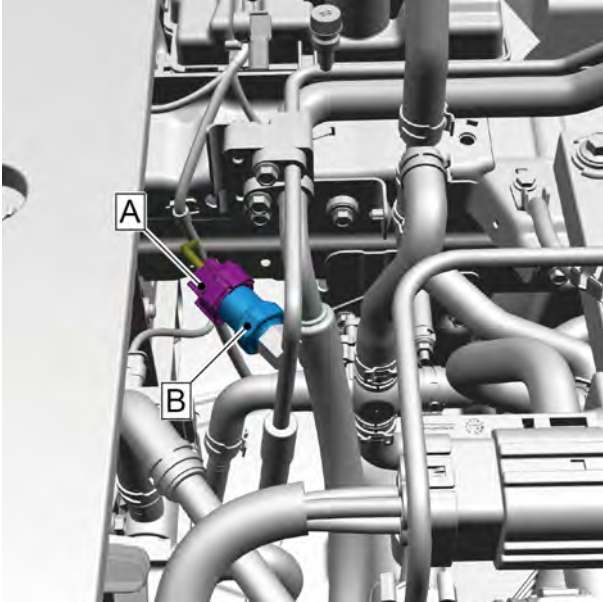
- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.6 Replacement of A/C High Pressure Switch(Type I)

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Recycle air conditioner refrigerant. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the 1 harness connector A between bumper harness and air conditioner high pressure switch.
- 4 Disconnect A/C high pressure switch
- 5 Take off the A/C high pressure switch.



Installation procedure

- 1 Move the A/C high pressure switch to the installation position.
- 2 Install the A/C high pressure switch B into the condenser liquid outlet pipe assembly, and tighten the A/C high pressure switch B.

Torque: 10.8N·m

Caution

Check whether the A/C high-pressure pressure switch and the condenser outlet pipe are firmly connected.

- 3 Connect the 1 harness connector A connecting bumper harness and the A/C high pressure switch.

Caution

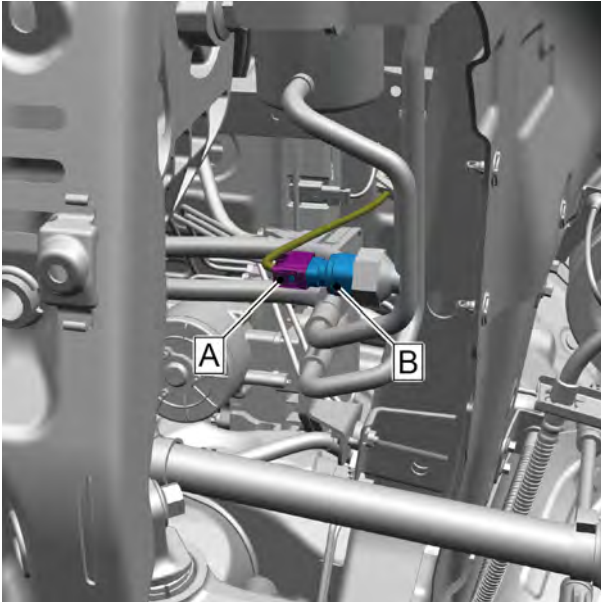
Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 4 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

8.2.7.7 Replacement of A/C High Pressure Switch(Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Recycle air conditioner refrigerant. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Bottom Shield](#)
- 4 Disconnect the 1 harness connector A connecting the front compartment harness and the A/C high pressure switch.
- 5 Disconnect A/C high pressure switch B
- 6 Take off the A/C high pressure switch.



Installation procedure

- 1 Move the A/C high pressure switch to the installation position.
- 2 Install the A/C high-pressure pressure switch B into the A/C inlet and outlet pipe assembly, and tighten the A/C high-pressure pressure switch B.
Torque: 10.8N·m

Caution

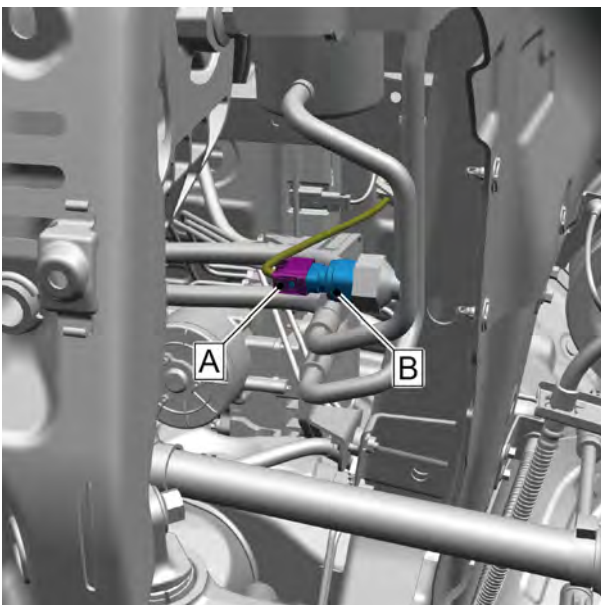
Check whether the A/C high-pressure pressure switch and the A/C inlet and outlet pipe assembly are firmly connected.

- 3 Connect the 1 harness connector A connecting the front compartment harness and the A/C pressure switch.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

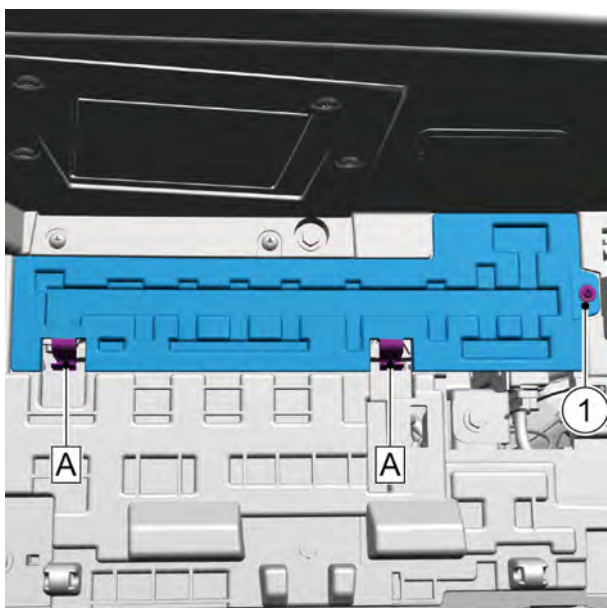
- 4 Install the front engine compartment bottom shield.
- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

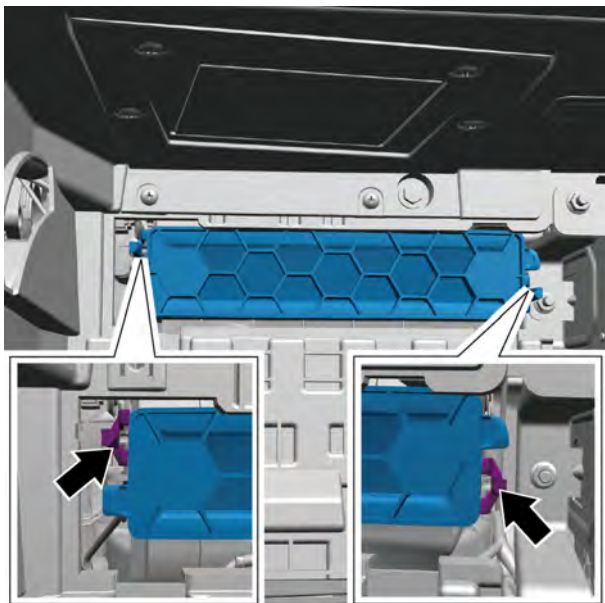


8.2.7.8 Replacement of A/C Filter Element (Type II)

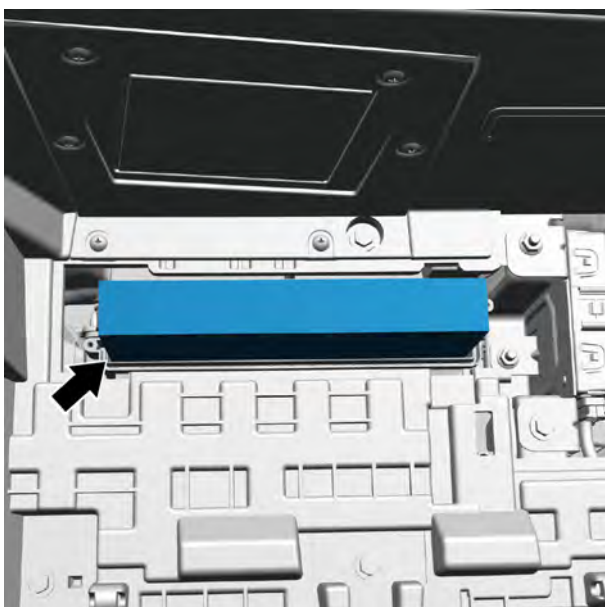
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the glove box . Refer to [Replacement of Glove Box](#)
- 3 Remove the 1 fixing bolt 1 connecting the A/C maintenance cover with the lower body of instrument panel cover.
- 4 Disconnect the 2 fixing clips A connecting the A/C maintenance cover and the instrument panel harness assembly.
- 5 Take off the A/C maintenance cover.



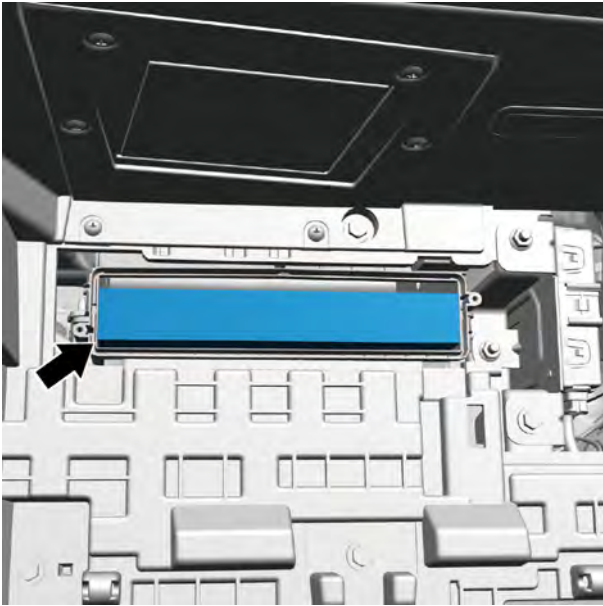


- 6 Disconnect the 2 fixing clips connecting the A/C filter element baffle and the A/C master unit.
- 7 Take out the A/C filter element baffle.

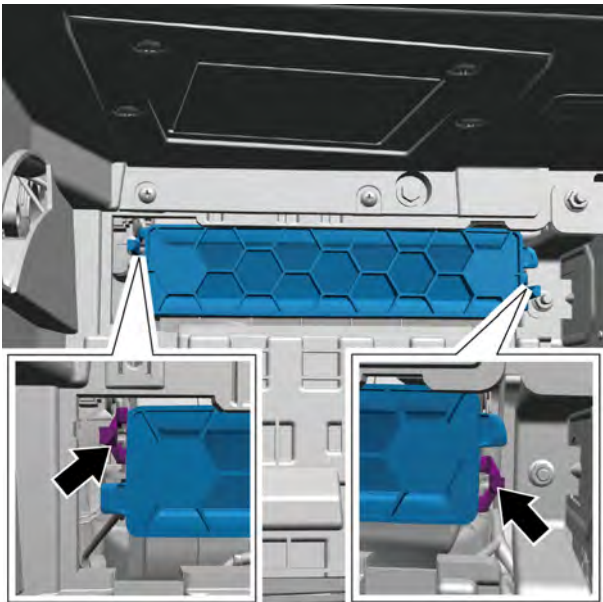


- 8 Remove the A/C filter element from the A/C master unit.

Installation procedure



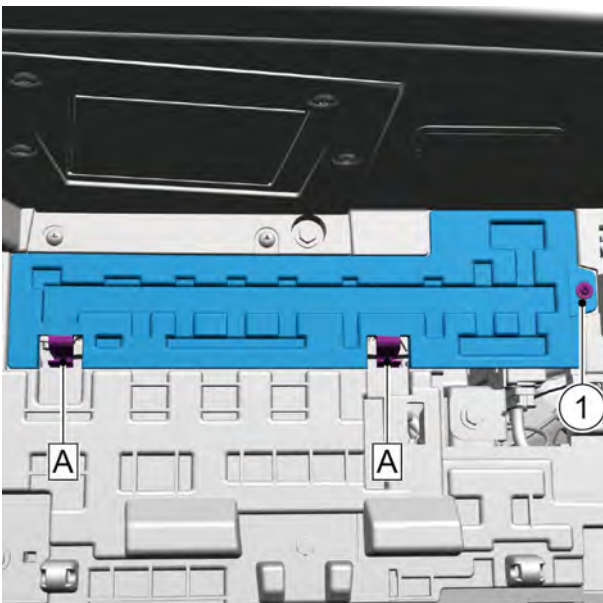
- 1 Install the A/C filter element into the air-conditioning assembly.



- 2 Move the A/C filter element baffle to the installation position.
- 3 Install the 2 fixing clips connecting the A/C filter element baffle and the A/C master unit.

Caution

Check whether the 2 fixing clips connecting the A/C filter element baffle and the A/C master unit are installed in place.



- 4 Move the A/C maintenance cover plate to the installation position.
- 5 Install the 2 fixing clips A connecting the A/C maintenance cover plate and the instrument panel lower body assembly.

Caution

Check whether the 2 fixing clips A connecting the cover plate and the lower body of the instrument panel are installed in place.

- 6 Install and tighten the 1 fixing bolt 1 connecting the A/C maintenance cover plate with the lower body of the instrument panel.

- 7 Install the glove box.
- 8 Connect the negative cable of battery.

8.2.7.9 Replacement of A/C Unit Assembly

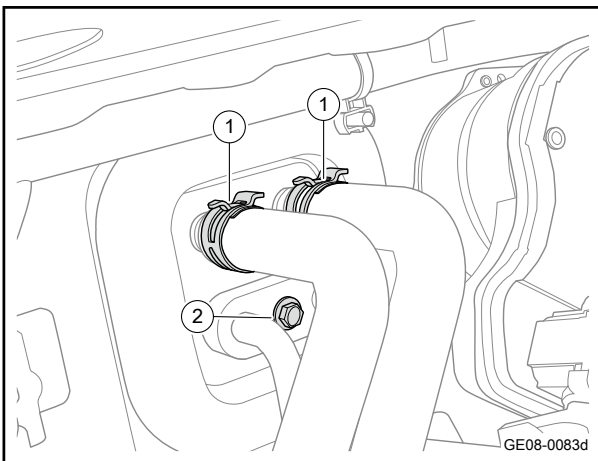
Removal procedure

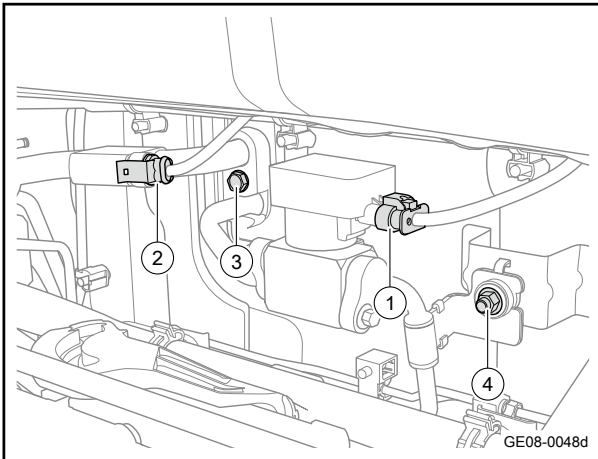
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

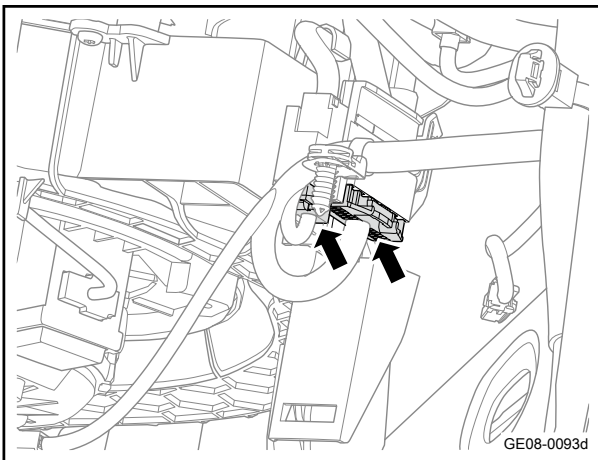
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the instrument panel body assembly. Refer to [Replacement of Instrument Panel Body Assembly](#)
- 5 Remove the instrument panel cross member. Refer to [Replacement of Instrument Panel Cross Member](#)
- 6 Remove thermal management control module Refer to [Replacement of Thermal Management Control Module](#)
- 7 Remove clamp 1 and disconnect the warm air water inlet pipe from the warm air water tank.
- 8 Remove the 1 fixing bolt 2 of the AC inlet and outlet pipe assembly, and disconnect the AC inlet and outlet pipe assembly.

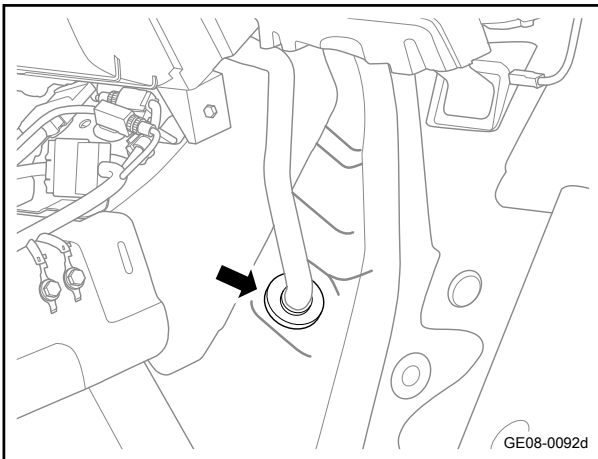




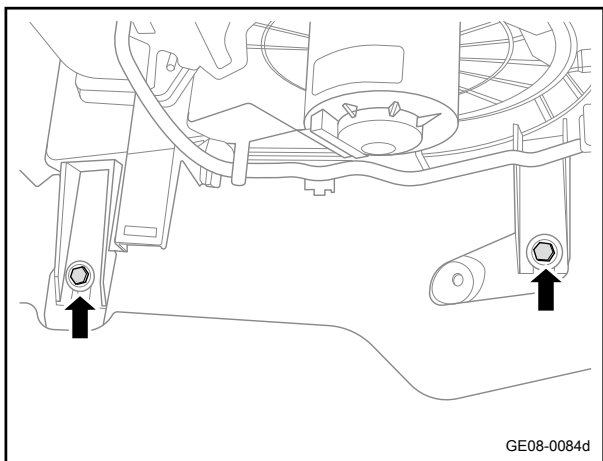
- 9 Disconnect the 1 harness connector 1 of the heat exchanger high-pressure pipe assembly.
- 10 Disconnect the 1 harness connector 2 of the evaporator inlet and outlet pipe assembly.
- 11 Remove the 1 fixing bolt 3 of the evaporator inlet and outlet pipe assembly, and disconnect the evaporator inlet and outlet pipe assembly.
- 12 Remove the 1 fixing nut 4 of the heat exchanger high-pressure pipe assembly bracket, and disconnect the evaporator high-pressure pipe assembly.



- 13 Disconnect the harness connector of air-conditioning unit assembly.

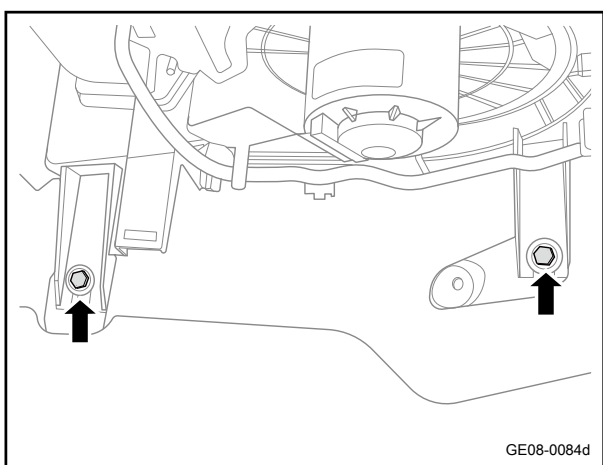


- 14 Take off the A/C drain pipe.

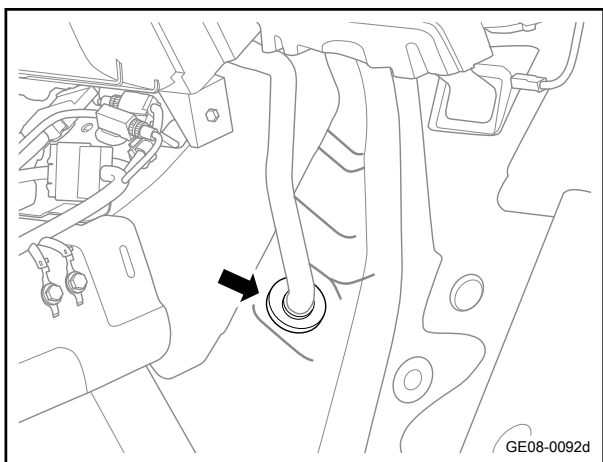


- 15 Remove 2 fixing bolts of air-conditioning unit assembly.
- 16 Take off the A/C unit assembly.

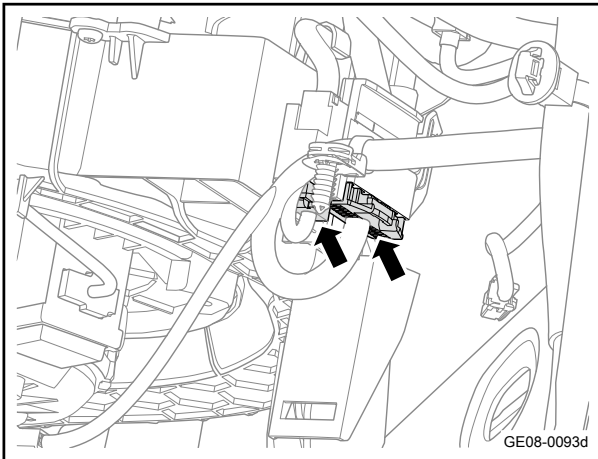
Installation procedure



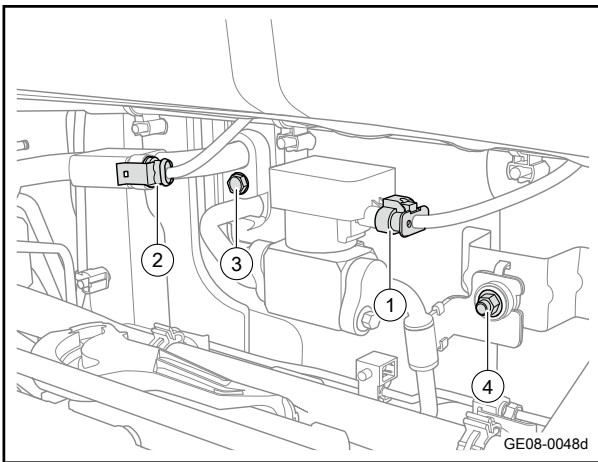
- 1 Move the A/C unit assembly to the installation position.
- 2 Install 2 fixing bolts at air-conditioning unit assembly.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)



- 3 Connect the A/C drain pipe.



- 4 Connect the harness connector of air-conditioning unit assembly.



- 5 Connect heat exchanger high-pressure pipe assembly. Install the 1 fixing nut 4 of the heat exchanger high-pressure pipe assembly bracket.

Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

- 6 Connect the evaporator inlet and outlet pipe assembly, and install the 1 fixing bolt 3 of the evaporator inlet and outlet pipe assembly.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

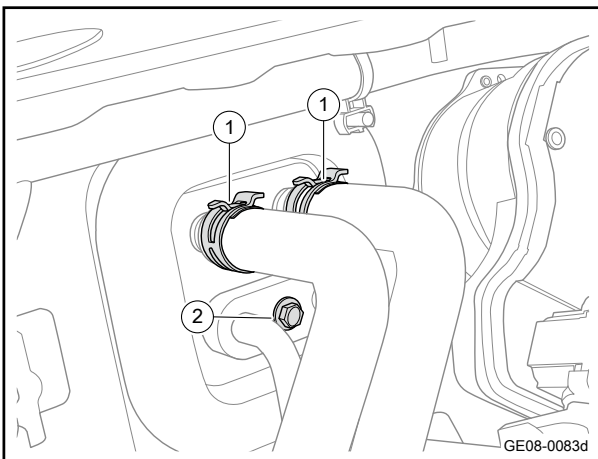
- 7 Connect the 1 harness connector 2 of the evaporator inlet and outlet pipe assembly.

- 8 Connect the 1 harness connector 1 of the heat exchanger high-pressure pipe assembly.

- 9 Connect AC inlet and outlet pipe assembly. Install the 1 fixing bolt 2 of the AC inlet and outlet pipe assembly.

Torque: 7N·m (metric system) 5.2lb-ft (Imperial system)

- 10 Connect the A/C warm air inlet and outlet pipe from the warm air water tank, and install the clamp 1.



- 11 Install thermal management control module
- 12 Install the instrument panel cross member assembly.
- 13 Install the instrument panel body assembly.
- 14 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 15 Refill air conditioner refrigerant.
- 16 Connect the negative cable of battery.

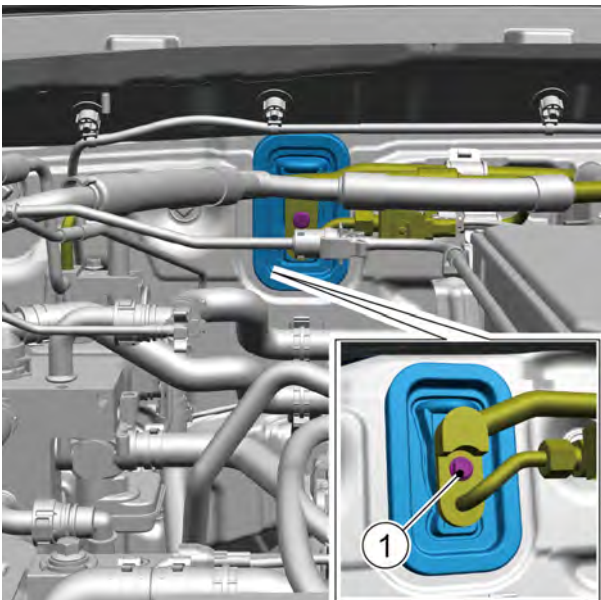
8.2.7.10 Replacement of A/C Unit Assembly (Type II)

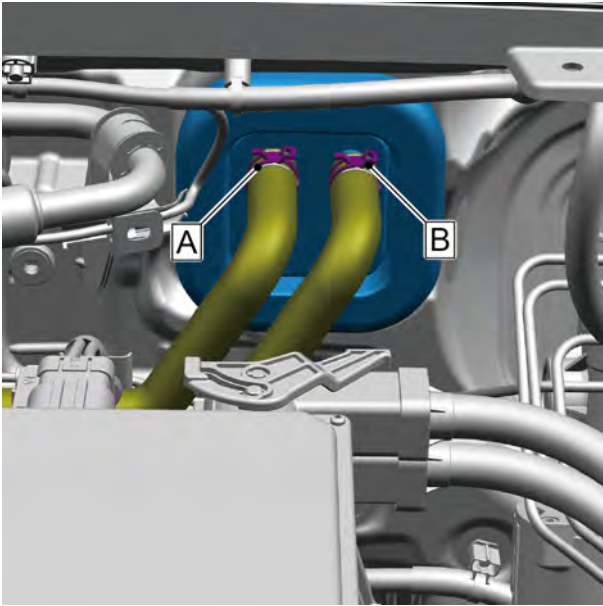
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Discharge AC warm air coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Recycle air conditioner refrigerant. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 5 Remove the auxiliary fascia console body assembly. Refer to [Replacement of Auxiliary Fascia Console Body Assembly](#)
- 6 Remove the dashboard body assembly. Refer to [Replacement of Dashboard Body Assembly](#)
- 7 Remove the electric power steering column c/w intermediate shaft assembly. Refer to [Replacement of electric-assisted steering column assembly](#)
- 8 Remove the instrument panel cross member. Refer to [Replacement of Instrument Panel Cross Member](#)
- 9 Remove Thermal management control module Refer to [Replacement of Thermal Management Control Module](#)
- 10 Remove the 1 fixing bolt 1 connecting the evaporator inlet and outlet pipe assembly and the A/C unit assembly.
- 11 Disconnect the evaporator inlet and outlet pipe from the A/C master device assembly.

Caution

After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.

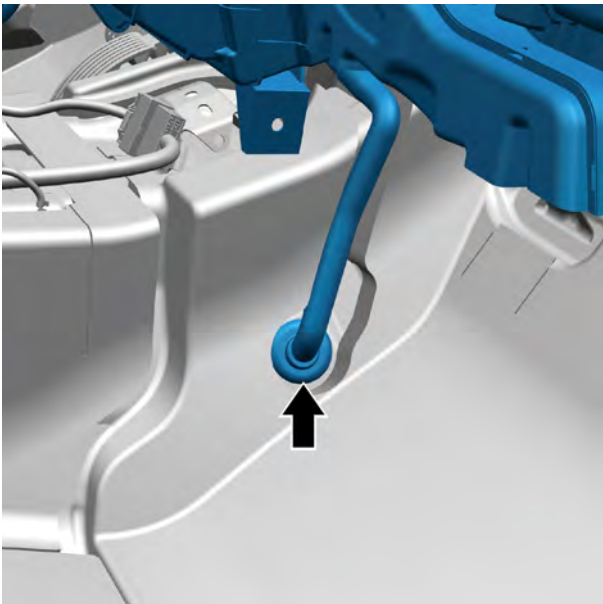




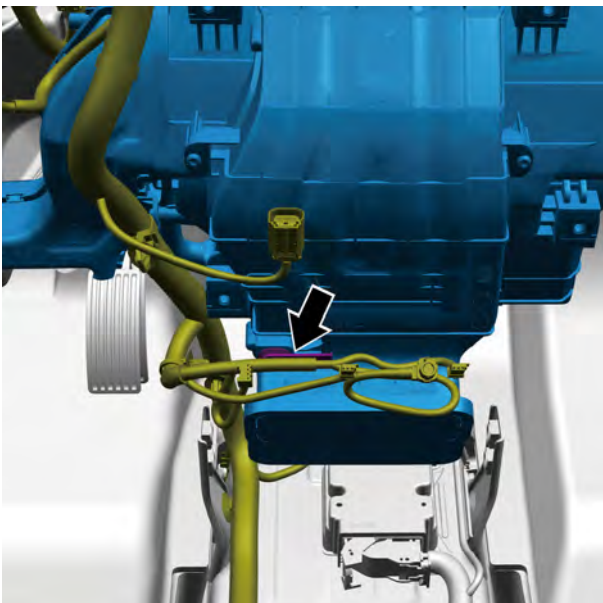
- 12 Remove the 1 fastening clamp A connecting the warm air water inlet pipes with the A/C unit assembly.
- 13 Disconnect the air conditioner warm air inlet pipe from the air conditioner unit assembly.
- 14 Remove the 1 fastening clamp B connecting the warm air water outlet pipes with the A/C unit assembly.
- 15 Disconnect the air conditioner warm air outlet pipe from the air conditioner unit assembly.

Caution

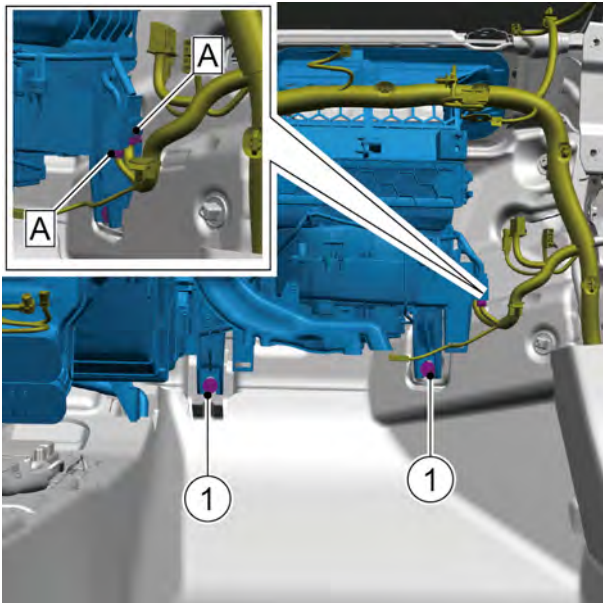
After the pipeline is disconnected, the pipeline should be wrapped in time to prevent foreign objects from entering the pipeline.



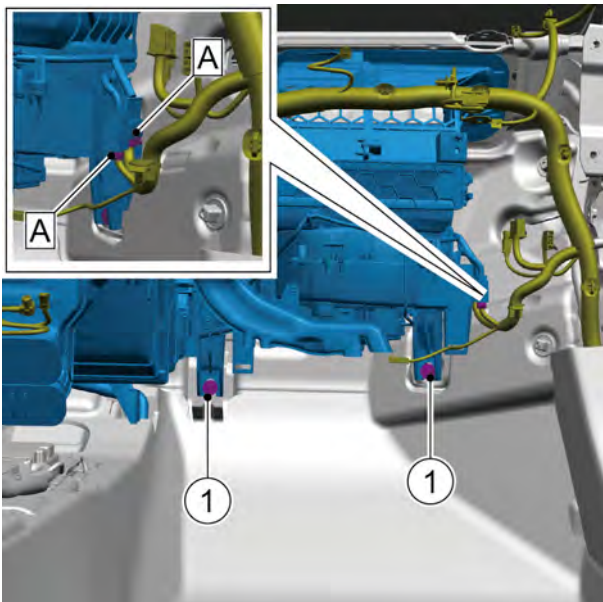
- 16 Open the upper right corner of the carpet and disconnect the A/C unit assembly drain pipe from the vehicle body.



- 17 Disconnect the 1 fixing clip connecting the instrument harness and conditioner unit assembly.



- 18 Disconnect the 2 harness connectors A connecting of the instrument harness and conditioner unit assembly.
- 19 Remove the 2 fixing bolts 1 connecting the A/C master unit assembly and the vehicle body.
- 20 Take off the A/C master device assembly.

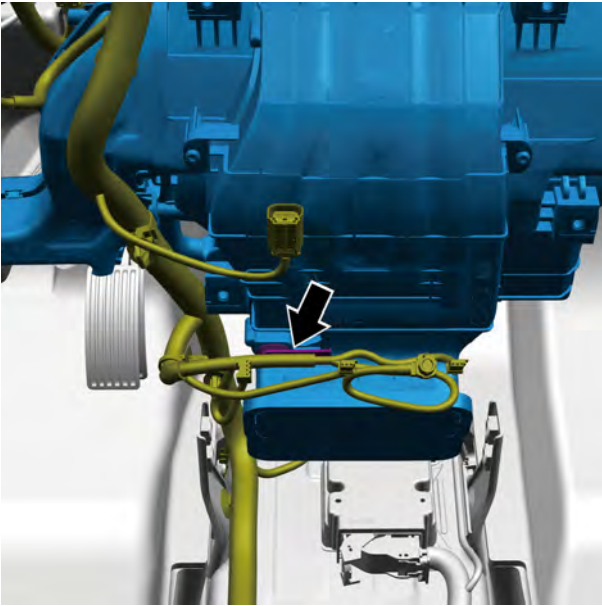


Installation procedure

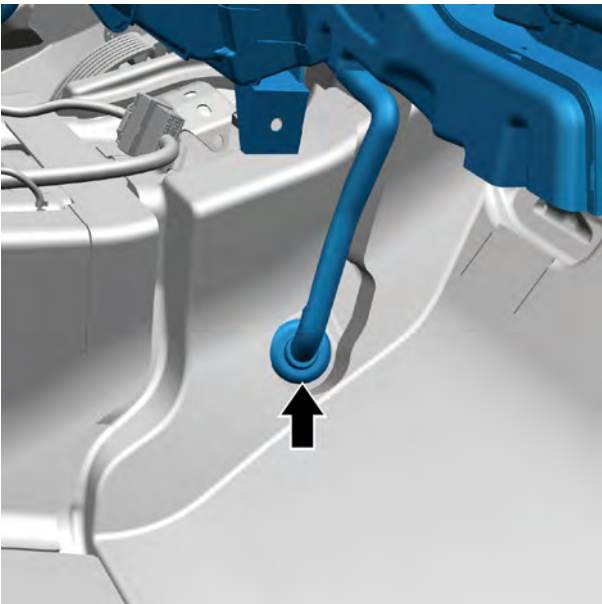
- 1 Move the A/C master device assembly to the installation position.
- 2 Install and tighten the 2 fixing bolts 1 connecting the A/C unit assembly and the vehicle body.
Torque: 6N·m
- 3 Connect 2 harness connectors A connecting the instrument harness and the A/C unit assembly.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



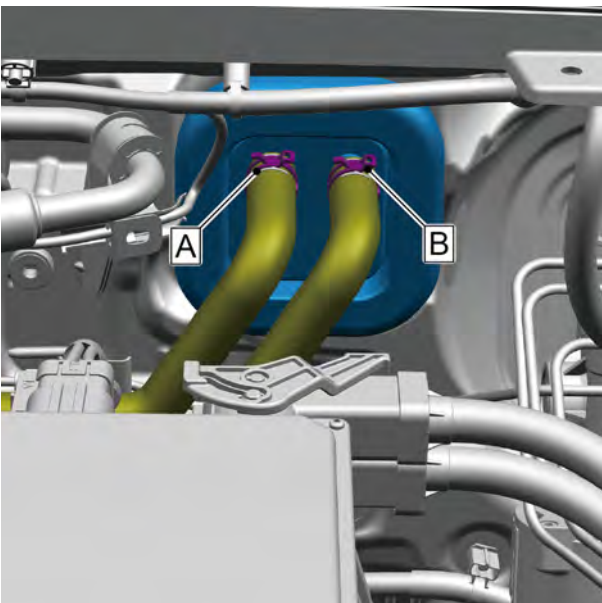
- 4 Install the 1 fixing clip of the instrument harness and the A/C unit assembly.



- 5 Clip the A/C master device assembly drain pipe into the vehicle body and restore the carpet to its original position.

Caution

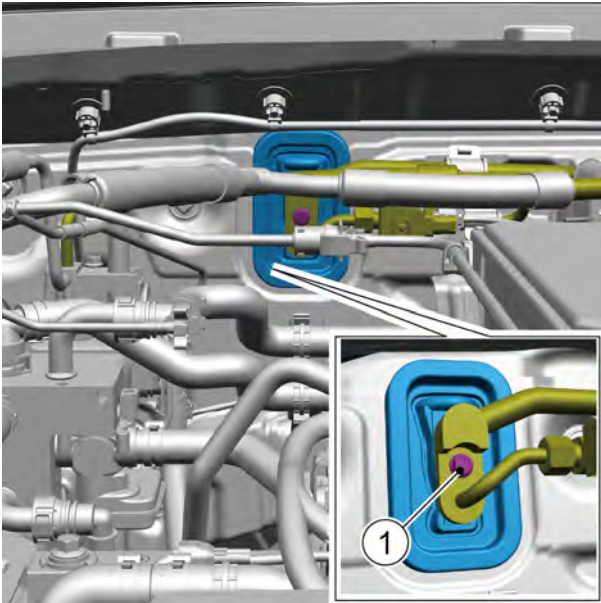
Check whether the A/C master device assembly drain pipe is connected with the vehicle body in place.



- 6 Connect the A/C warm air inlet water pipe to the A/C master unit.
- 7 Install the 1 clamp B connecting warm air water outlet pipe and air-conditioning unit assembly.
- 8 Connect the A/C warm air inlet water pipe to the A/C master unit assembly.
- 9 Install the 1 clamp A connecting A/C warm air water inlet pipe and air-conditioning unit assembly.

Caution

Check whether the fixing clip A connecting A/C unit assembly and the A/C warm air inlet water pipe is installed in place..



- 10 Install the evaporator inlet and outlet pipe assembly into the A/C master unit.

Caution

The joint of the evaporator inlet and outlet pipe assembly should be replaced with a new seal ring and coated with lubricating oil.

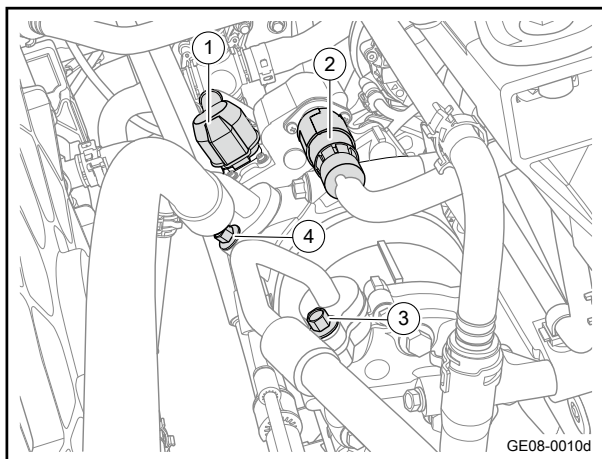
- 11 Install the 1 fixing bolt 1 connecting the evaporator inlet and outlet pipe assembly and the A/C unit assembly.
Torque: 10N·m

- 12 Install thermal management control module
- 13 Install the instrument panel cross member.
- 14 Install the electrically operated PAS steering column c/w intermediate shaft assembly.
- 15 Install the dashboard body assembly.
- 16 Install the auxiliary fascia console body assembly.
- 17 Refill air conditioner refrigerant.
- 18 Fill the AC warm air coolant.
- 19 Lower the vehicle.
- 20 Connect the negative cable of battery.

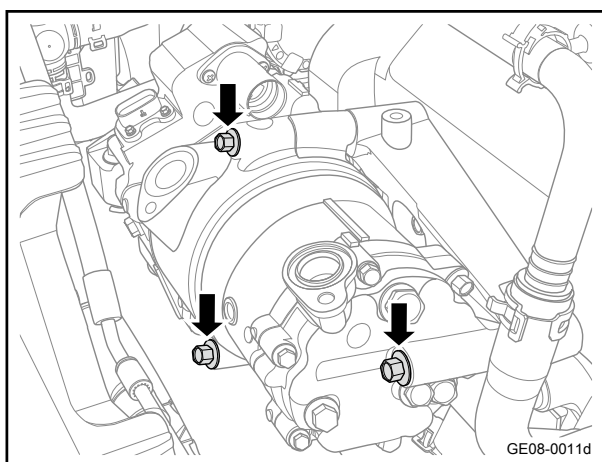
8.2.7.11 Replacement of Motor Compressor Assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the DC bus assembly (high and low voltage charging system side). Refer to [Replacement of DC Bus Assembly](#)



- 4 Disconnect the motor compressor assembly low-voltage harness connector 1.
- 5 Disconnect the motor compressor assembly high-voltage harness connector 2.
- 6 Remove 1 fixing bolt 3 of the compressor exhaust hose, and disconnect the compressor exhaust hose.
- 7 Remove 1 fixing bolt 4 of the compressor intake hose, and disconnect the compressor intake hose.



- 8 Remove the 3 fixing bolts of the motor compressor assembly.
- 9 Take off the motor compressor assembly.

Installation procedure

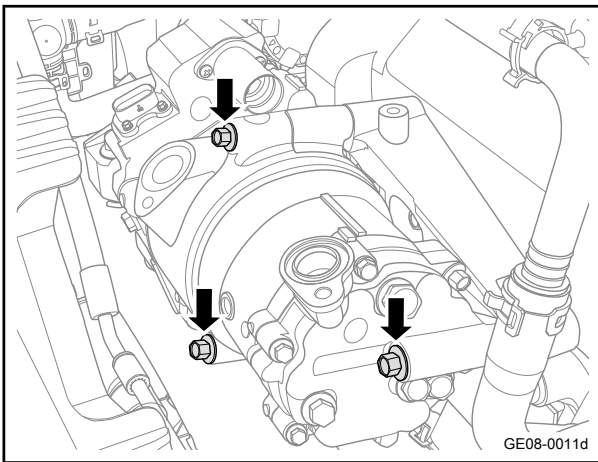
Caution

All O-rings involved in the installation process must be replaced with new ones.

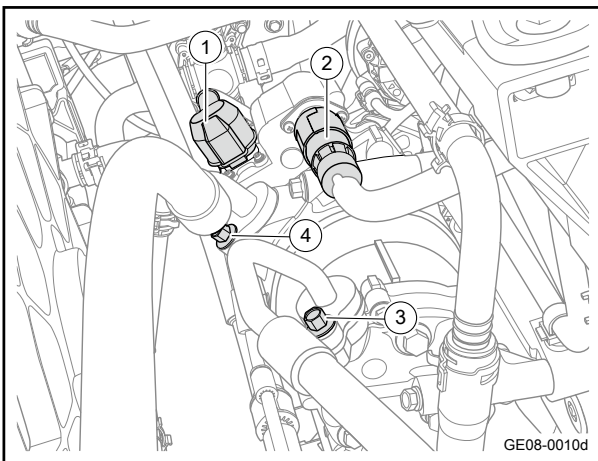
Caution

When replacing the pipelines of the air conditioning system:

- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the motor compressor assembly to the installation position.
- 2 Install the 3 fixing bolts of the motor compressor assembly.
Torque: 24N·m (metric system) 17.7lb-ft (Imperial system)



- 3 Connect the compressor intake hose and install the 1 fixing bolt 4 of the compressor intake hose.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Connect the compressor exhaust hose and install the 1 fixing bolt 3 of the compressor exhaust hose.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 5 Connect the motor compressor assembly high-voltage harness connector 2.
- 6 Connect the motor compressor assembly low-voltage harness connector 1.
- 7 Connect the DC bus assembly(at the high and low-voltage charging system side).

- 8 Refill air conditioner refrigerant.
- 9 Connect the negative cable of battery.

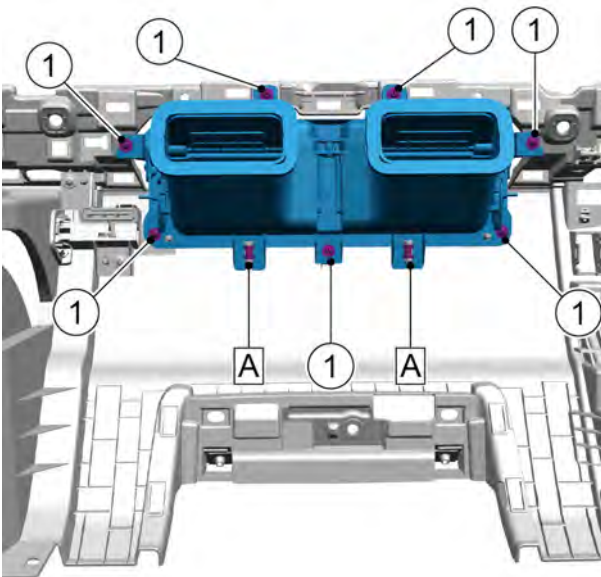
8.2.7.12 Replacement of Middle Air Outlet of the Instrument Panel

Removal procedure

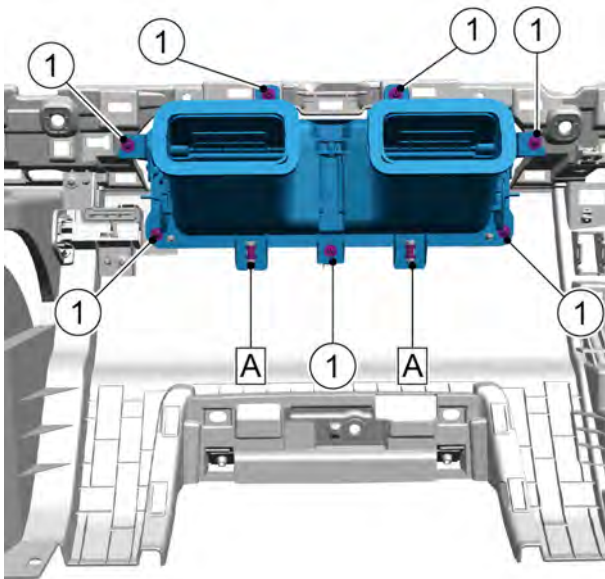
Caution

Please use interior trim removal tool to remove the trim panel, otherwise, the edges of the trim panel will be scratched.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the instrument panel lower body assembly. Refer to [Replacement of Instrument Panel Lower Body Assembly](#)
- 3 Remove the 7 fixing screws 1 connecting the left instrument panel middle air outlet and instrument panel lower body assembly.
- 4 Disconnect the 2 fixing clips A of the instrument panel middle air outlet and the instrument panel lower body assembly.
- 5 Remove the middle air outlet of the instrument panel.



Installation procedure



- 1 Move the middle trim panel of the instrument panel to the installation position.
- 2 Install the 2 fixing clips A connecting the instrument panel middle air outlet and the instrument panel lower body assembly.

Caution

Check whether the 2 fixing clips A connecting the instrument panel middle air outlet and the instrument panel lower body assembly are installed.

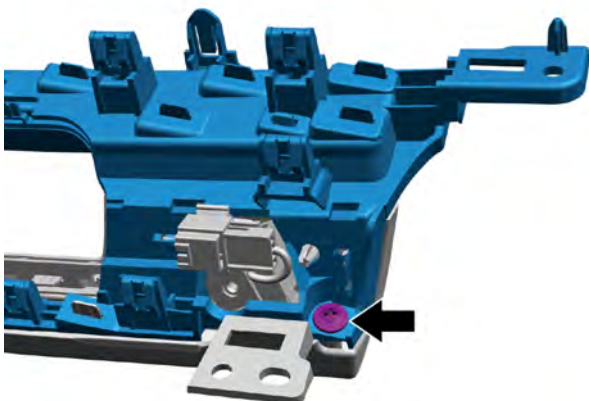
- 3 Install the 7 fixing screws 1 connecting the instrument panel middle air outlet with the lower body assembly of the instrument panel.

- 4 Install the instrument panel lower body assembly.
- 5 Connect the negative cable of battery.

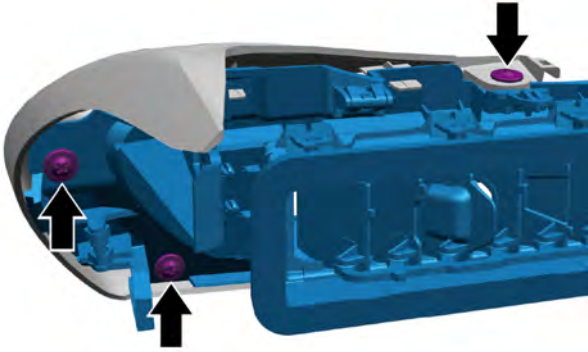
8.2.7.13 Replacement of Instrument Panel Right Air Outlet Assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the right trim plate assembly of the instrument panel. Refer to [Replacement of Right Trim Plate Assembly of Instrument Panel](#)
- 3 Remove the 1 screw connecting the instrument panel right air outlet assembly and the left side of right trim plate assembly of the instrument panel.



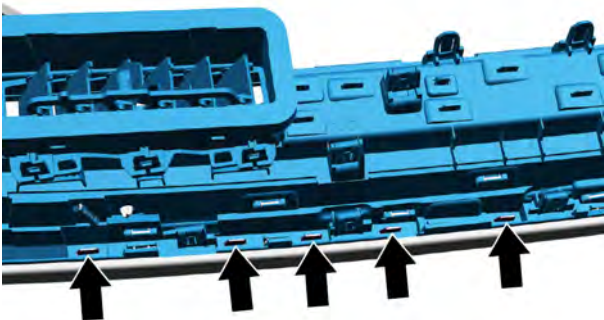
- 4 Remove the 3 screws connecting the instrument panel right air outlet assembly and the right side of right trim plate assembly of the instrument panel.

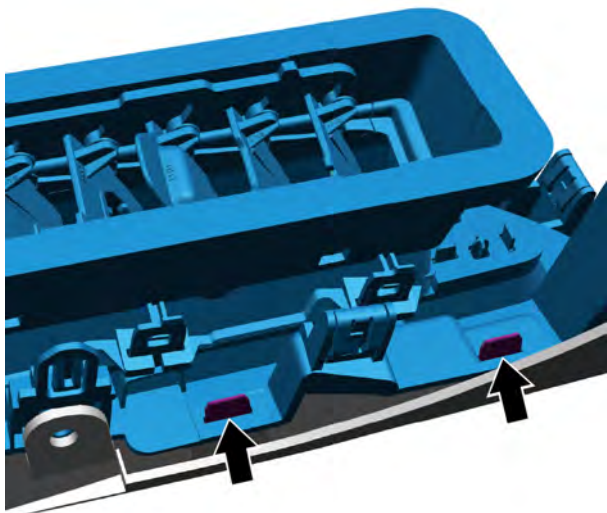


- 5 Disconnect the 9 fixing clips A of the instrument panel right air outlet assembly and the left side of right trim plate assembly of the instrument panel.

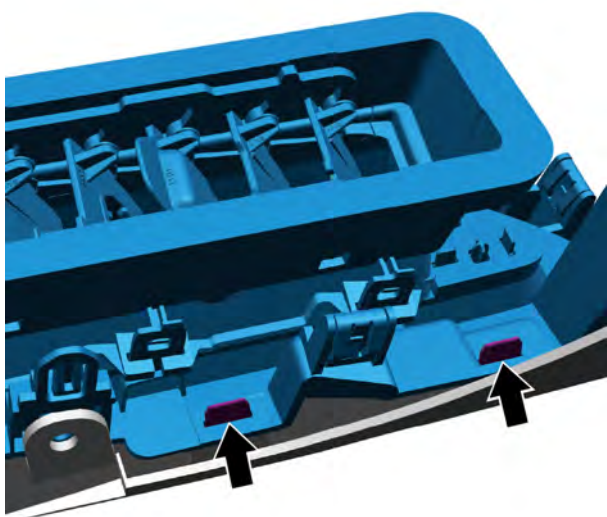


- 6 Disconnect the 5 fixing clips A of the instrument panel right air outlet assembly and the right side of right trim plate assembly of the instrument panel.





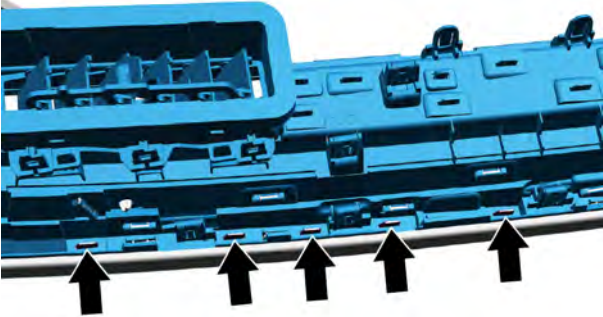
- 7 Disconnect the 2 fixing clips A of the instrument panel right air outlet assembly and the right side of right trim plate assembly of the instrument panel.
- 8 Take off instrument panel right air outlet assembly.



Installation procedure

- 1 Move the instrument panel right air outlet assembly to the installation position.
- 2 Install the right air outlet assembly of the instrument panel onto the right trim panel assembly of the instrument panel, and press the 2 fixing clips to ensure that the clamps are fastened.

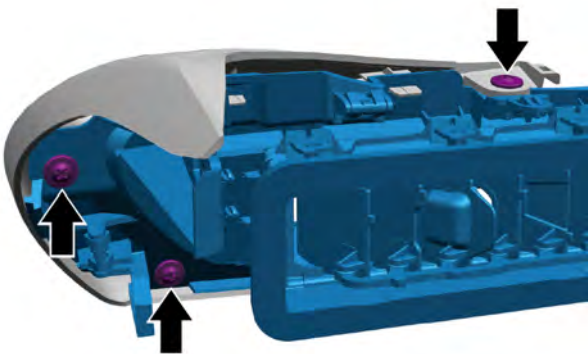
- 3 Install the right air outlet assembly of the instrument panel onto the right trim panel assembly of the instrument panel, and press the 5 fixing clips to ensure that the clamps are fastened.



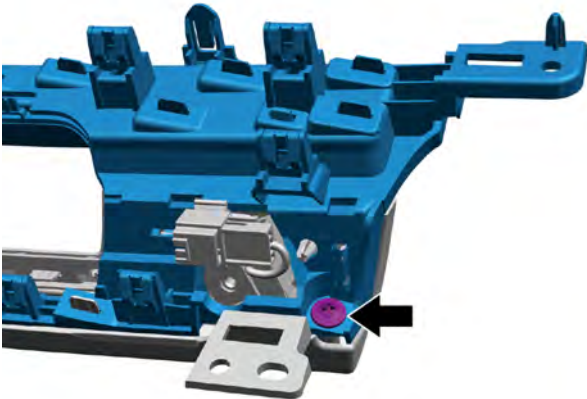
- 4 Install the right air outlet assembly of the instrument panel onto the right trim panel assembly of the instrument panel, and press the 9 fixing clips to ensure that the clamps are fastened.



- 5 Install the 3 screws connecting the instrument panel right air outlet assembly to the right side of right trim plate assembly of the instrument panel.



- 6 Install the 1 screw connecting the instrument panel right air outlet assembly to the left side of right trim plate assembly of the instrument panel.

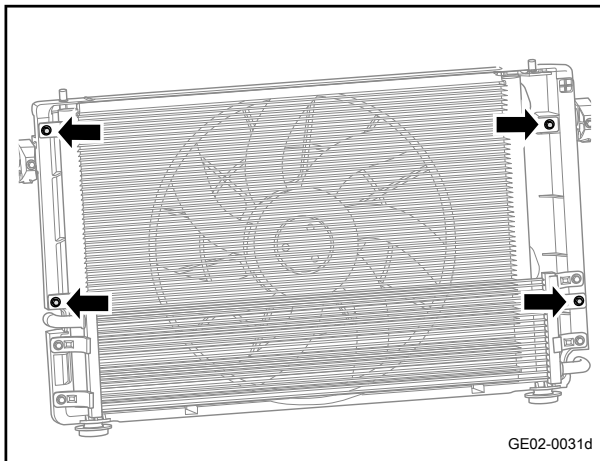


- 7 Install the right trim panel assembly of the instrument panel.
- 8 Connect the negative cable of battery.

8.2.7.14 Replacement of condenser

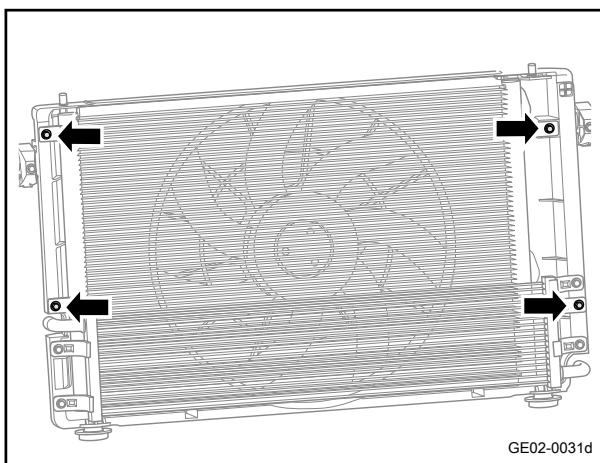
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Drain the power battery coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the radiator assembly. Refer to [Replacement of Radiator Assembly](#)



- 5 Remove the 4 fixing bolts of the condenser.
- 6 Disconnect condenser and cooling fan assembly

Installation procedure



- 1 Move the condenser to the installation position.
- 2 Install the 4 fixing bolts of the condenser.
Torque: 9N·m (metric system) 6.6 lb-ft (Imperial system)

- 3 Install the radiator assembly
- 4 Fill the power battery coolant.
- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

8.2.7.15 Replacement of outdoor temperature sensor

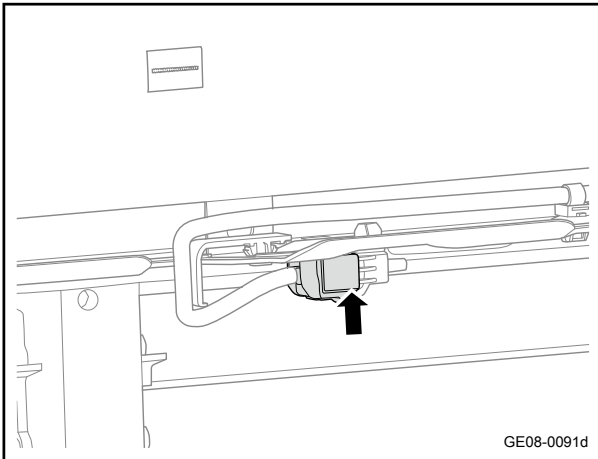
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

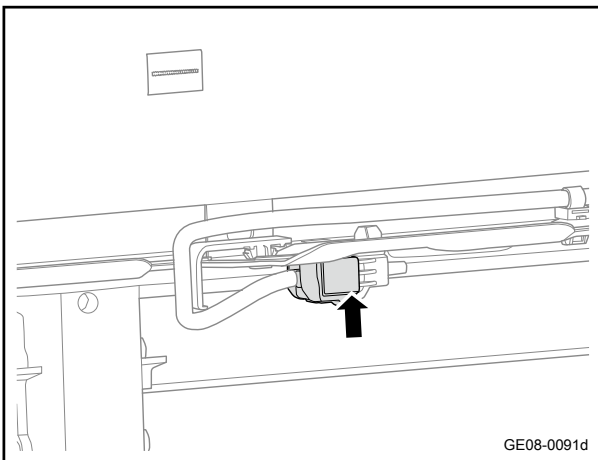
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)



- 3 Disconnect the outdoor temperature sensor harness connector.
- 4 Take off the outdoor temperature sensor.

Installation procedure



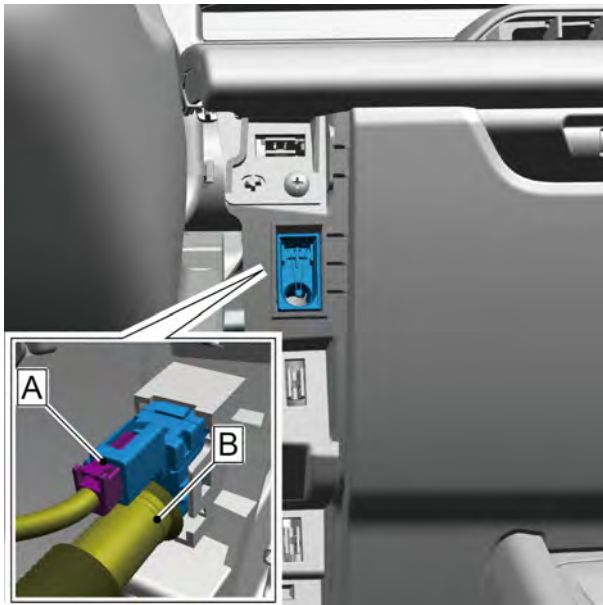
- 1 Move the outdoor temperature sensor to the installation position.
- 2 Connect the outdoor temperature sensor harness connector.

- 3 Install the front bumper assembly.
- 4 Connect the negative cable of battery.

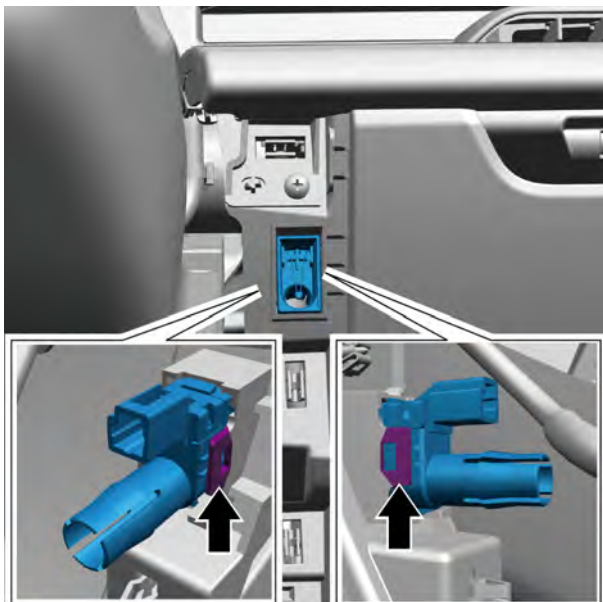
8.2.7.16 Replacement of indoor temperature sensor

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)

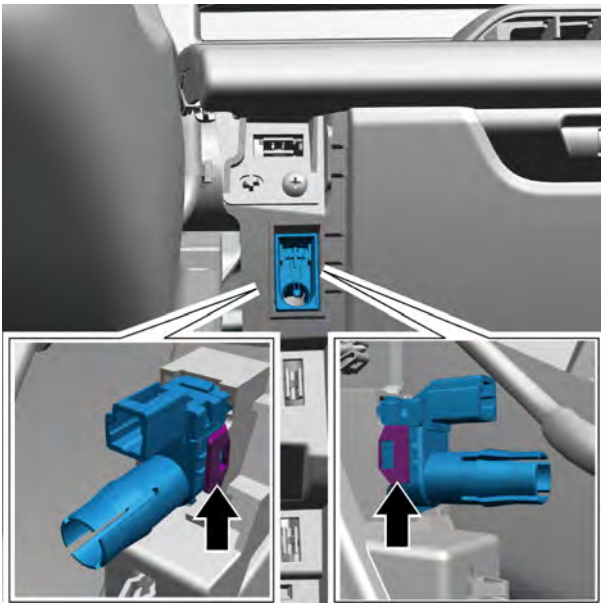


- 3 Disconnect the 1 harness connector A connecting instrument panel harness assembly with the indoor temperature sensor.
- 4 Disconnect vent pipe B from the indoor temperature sensor.



- 5 Disconnect the two fixing clips connecting the lower body of the instrument panel and the two sides of the indoor temperature sensor, and take out the outdoor temperature sensor 2.
- 6 Take off the indoor temperature sensor.

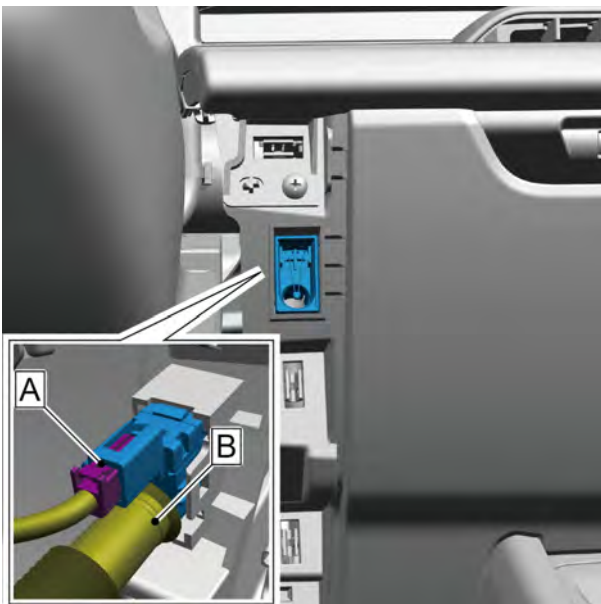
Installation procedure



- 1 Move the indoor temperature sensor to the installation position.
- 2 Install the 2 fixing clips connecting the lower body of the instrument panel with both sides of the indoor temperature sensor.

Caution

Check whether the fixing clips connecting the lower body of the instrument panel and both sides of the indoor temperature sensor are installed in place.



- 3 Install the vent pipe B on the indoor temperature sensor.
- 4 Connect the harness connector A connecting the instrument panel harness assembly and the indoor temperature sensor.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 5 Install the left lower shield assembly of the dashboard.
- 6 Connect the negative cable of battery.

8.2.7.17 Replacement of Heating Water Pump

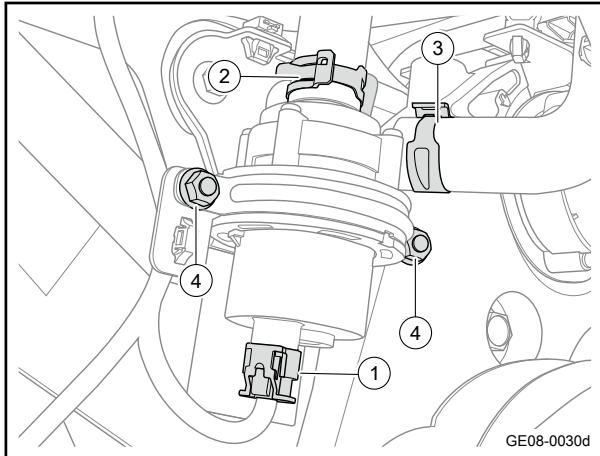
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

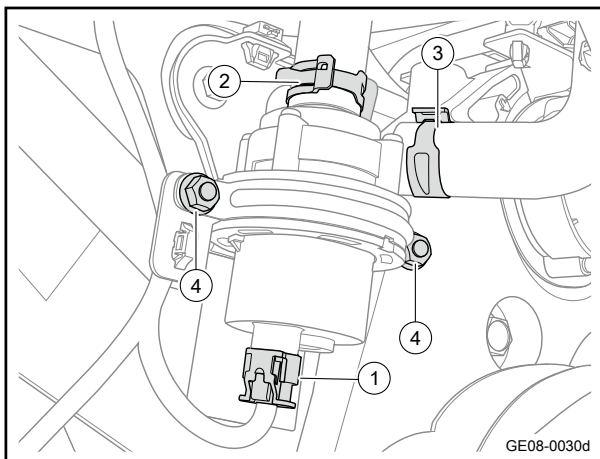
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)



- 4 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 5 Disconnect the heating water pump harness connector 1.
- 6 Remove the clamp 2 and disconnect the electric heating water pump from the rear water inlet hose of the electric heating water pump.
- 7 Remove the clamp 3 and disconnect the electric heating water pump from the water outlet pipe of the electric heating water pump.
- 8 Remove the 2 fixing nuts 4 of the heating water pump.
- 9 Take off the heating water pump.

Installation procedure



- 1 Move the heating water pump to the installation position.
- 2 Install the 2 fixing nuts 4 of the heating water pump.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect the heating water pump and the electric heating water pump outlet pipe, and tighten the clamp 3.
- 4 Connect the heating water pump and the electric heating water pump rear inlet hose, and tighten the clamp 2.
- 5 Connect the harness connector 1 of the electric heating water pump .
- 6 Install the right front fender liner.
- 7 Lower the vehicle.
- 8 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 9 Connect the negative cable of battery.

8.2.7.18 Replacement of Rear Inlet Hose of Electric Heating Water Pump

Removal procedure

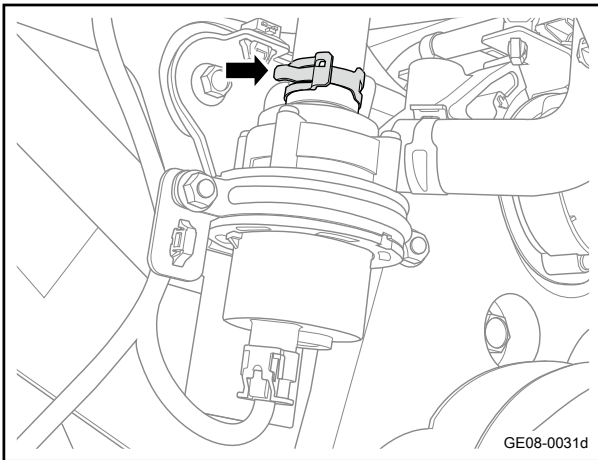
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

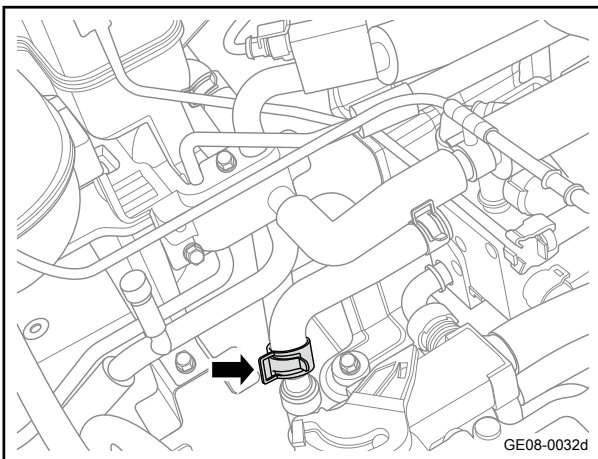
Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)

- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 5 Remove the fixing clamp of the rear inlet hose of the electric heating water pump(at heating water pump side).

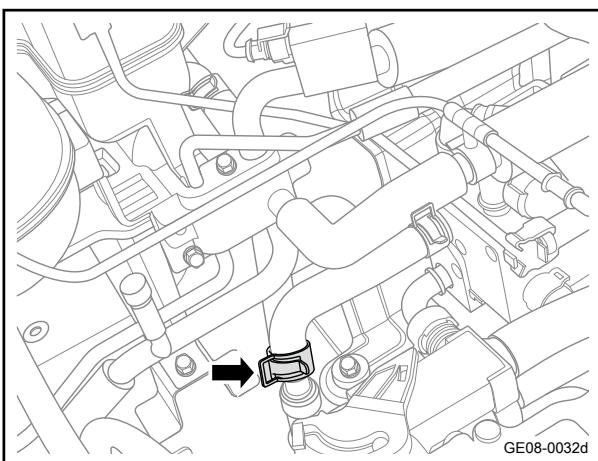


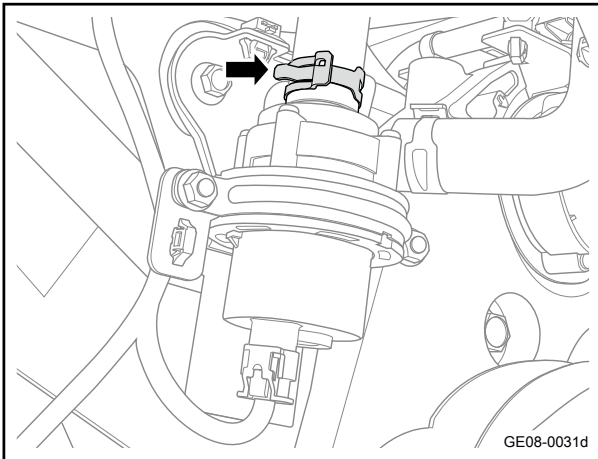
- 6 Disassemble the fastening clip for the rear water inlet hose of the electric heating water pump(at the front water inlet hose of the electric heating water pump side).
- 7 Take off the rear inlet hose of the electric heating water pump.



Installation procedure

- 1 Move the rear inlet hose of the electric heating water pump to the installation position.
- 2 Install the fixing clamp connecting the rear inlet hose of the electric heating water pump with the front inlet hose of the electric heating water pump.





- 3 Install the fixing clamp connecting the rear inlet hose of the electric heating water pump with the heating water pump.

- 4 Install the front fender liner RH.
- 5 Lower the vehicle.
- 6 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 7 Connect the negative cable of battery.

8.2.7.19 Replacement of Front Inlet Hose of Electric Heating Water Pump

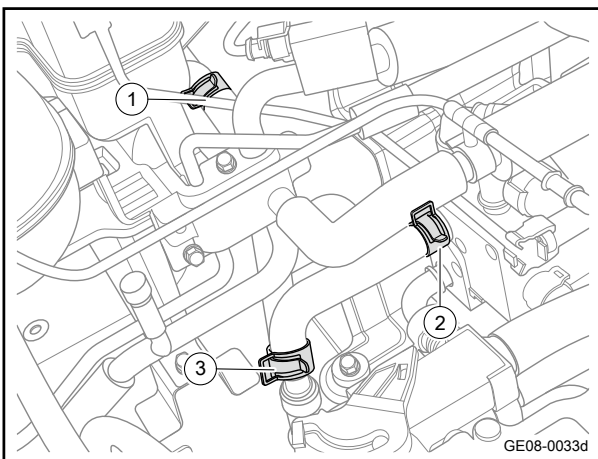
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

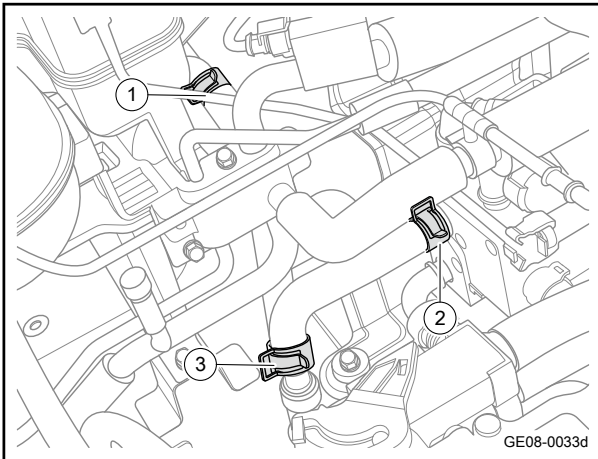
Warning

Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Remove clamp 1 and disconnect the electric heating water pump front inlet hose from the expansion tank assembly (battery cooling).
- 4 Remove clamp 2 and disconnect the electric heating water pump front inlet hose from the heat exchanger assembly.
- 5 Remove the clamp 3 and disconnect the electric heating water pump front inlet hose from the rear water inlet hose of the electric heating water pump.
- 6 Take off the rear inlet hose of the electric heating water pump.



Installation procedure



- 1 Move the rear inlet hose of the electric heating water pump to the installation position.
- 2 Install the fixing clamp 3 connecting the front inlet hose of the electric heating water pump with the rear inlet hose of the electric heating water pump.
- 3 Connect the electric heating water pump front water inlet hose with the heat exchanger assembly, and fasten the clamp 2.
- 4 Install the fixing clamp 1 connecting the front inlet hose of the electric heating water pump with the expansion tank assembly.
- 5 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

8.2.7.20 Replacement of Outlet Pipe of Electric Water Pump

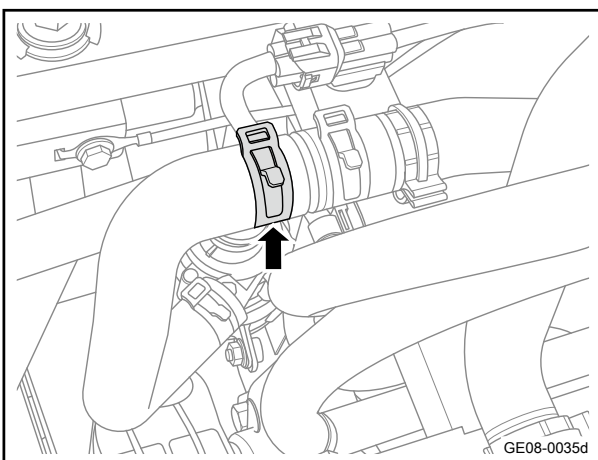
Removal procedure

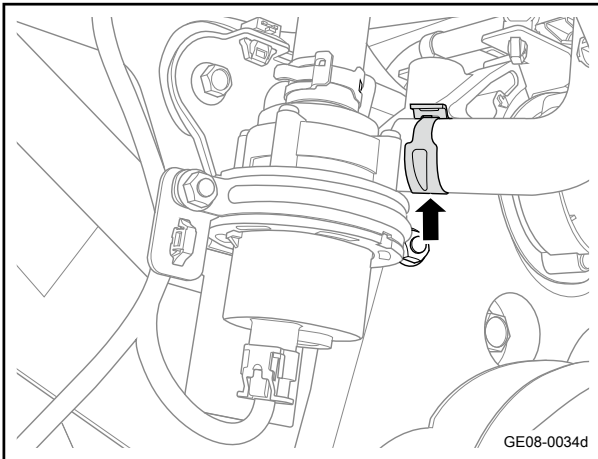
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

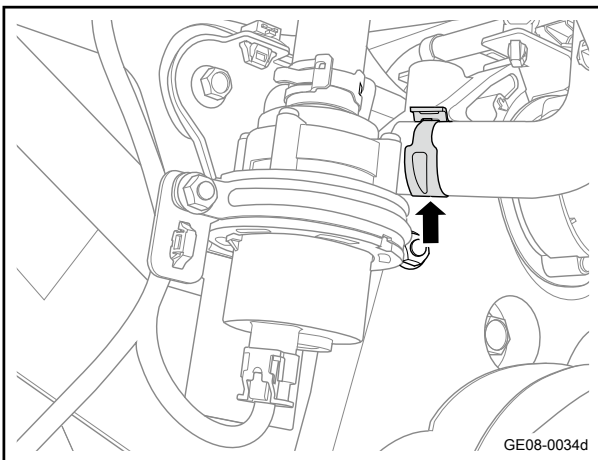
- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 5 Remove clamp and disconnect the electronic heating water pump outlet pipe from the water inlet pipe of the heater.



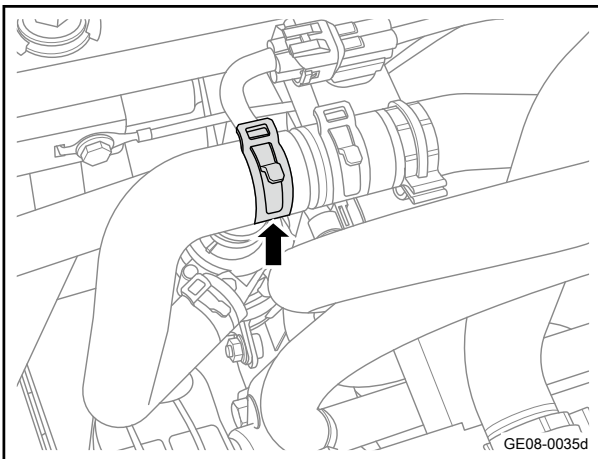


- 6 Remove the clamp and disconnect the electronic heating water pump outlet pipe from the heating water pump.
- 7 Take off the water outlet pipe of electronic heating water pump.

Installation procedure



- 1 Move the water outlet pipe of the electric heating water pump to the installation position.
- 2 Connect the water outlet pipe of the electronic heating water pump with heating water pump, and install the clamp.



- 3 Connect the water outlet pipe of the electronic heating water pump with heater water inlet pipe, and install the clamp.

- 4 Install the front wing liner RH.
- 5 Lower the vehicle.
- 6 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 7 Connect the negative cable of battery.

8.2.7.21 Replacement of Water Inlet Pipe of the Battery Pump

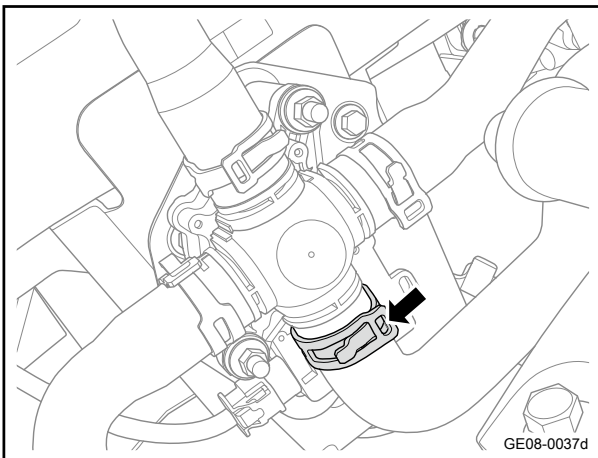
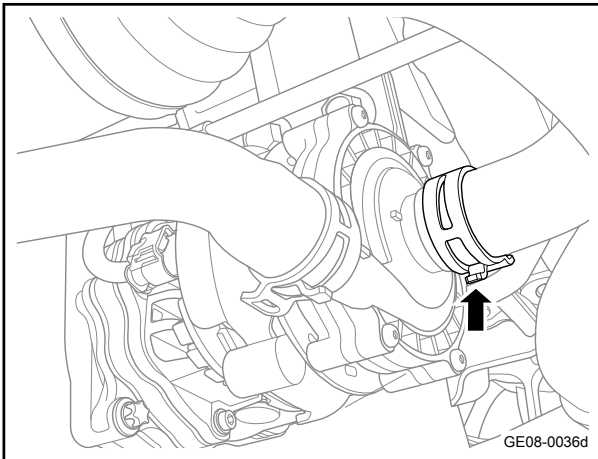
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

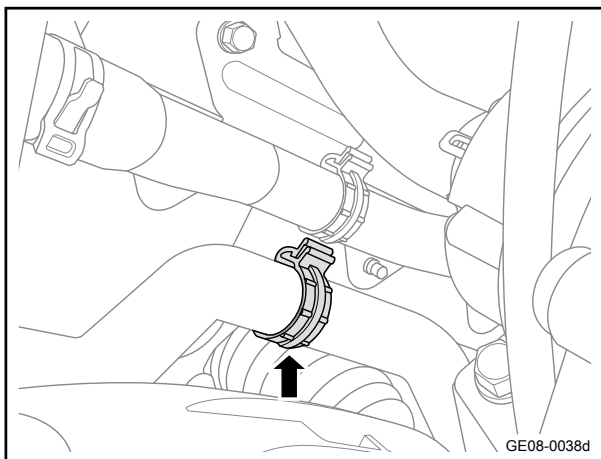
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 5 Remove the clamp and disconnect the battery water pump inlet pipe from the heating water pump.

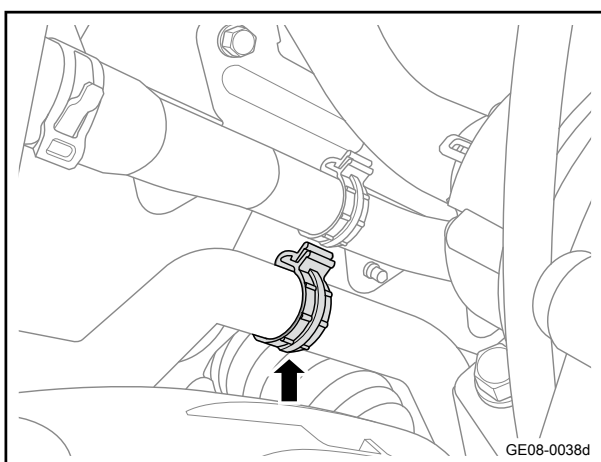


- 6 Remove the clamp and disconnect the battery water pump inlet pipe from the four-way valve.

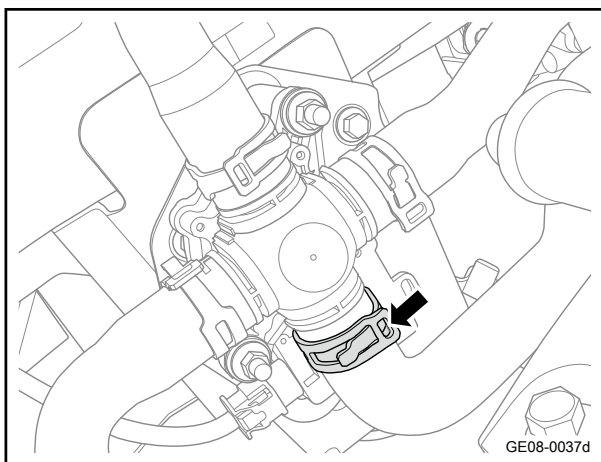


- 7 Remove the fastening clips of the water inlet pipe of the battery water pump.
- 8 Take off the water inlet pipe of the battery pump.

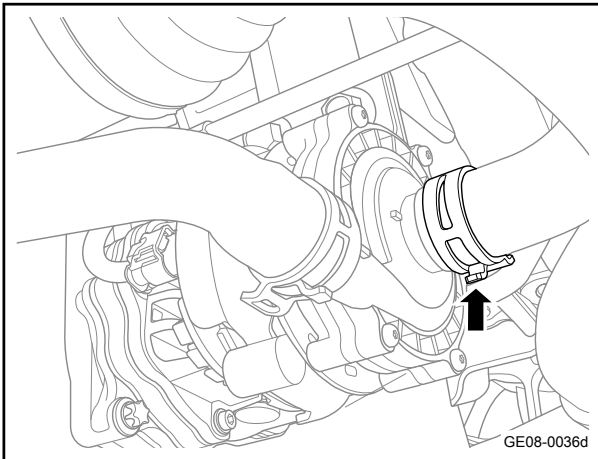
Installation procedure



- 1 Move the water inlet pipe of the battery pump to the installation position.
- 2 Install the fixing clip of the water inlet pipe of the battery pump.



- 3 Connect the fixing clamp connecting the water inlet pipe of the battery pump with the four-way valve.



- 4 Connect the water inlet pipe of the battery water pump and the heating water pump, and install the clamp.

- 5 Install the front engine compartment bottom shield.
- 6 Lower the vehicle.
- 7 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 8 Connect the negative cable of battery.

8.2.7.22 Replacement of Water Inlet Pipe of the Battery

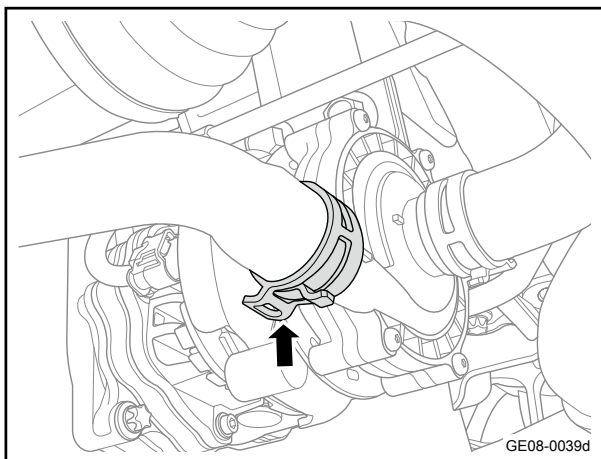
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

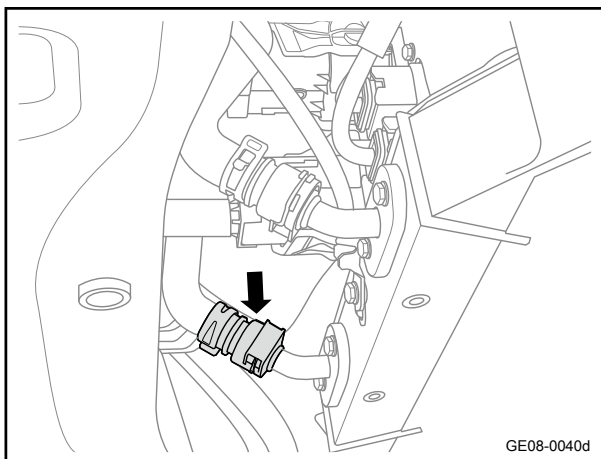
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

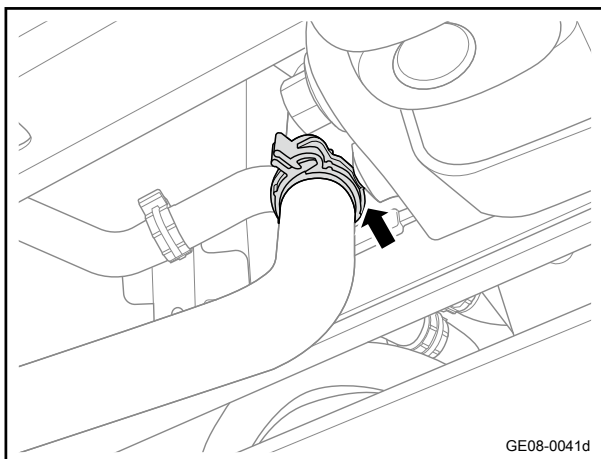
- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 5 Battery bottom shield mounting bracket Refer to [Replacement of Battery Bottom Shield Mounting Bracket](#)



- 6 Remove the fastening clips of the water inlet pipe of the battery water pump(at heating water pump side).

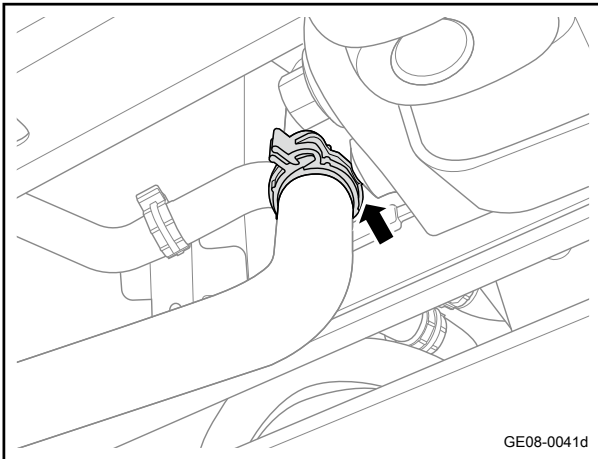


- 7 Remove the fixing clamp of the water inlet pipe of the battery(at power battery side).

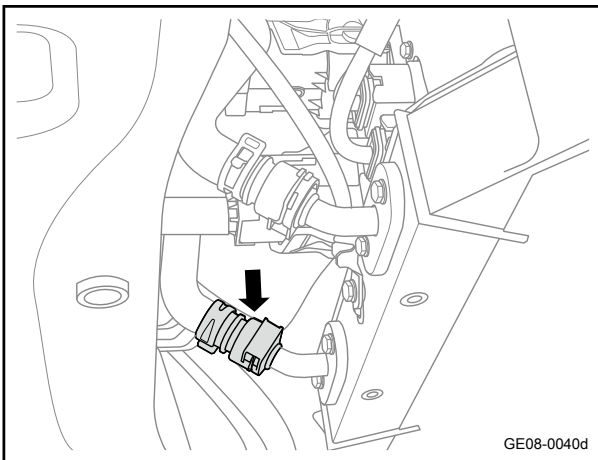


- 8 Remove the fixing clip of the water inlet pipe of the battery.
- 9 Take off the water inlet pipe of the battery.

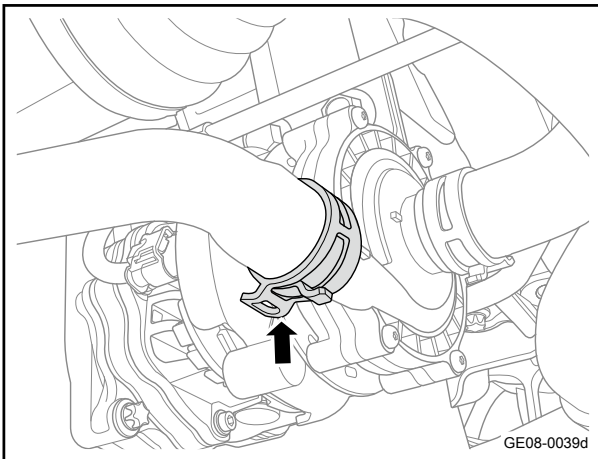
Installation procedure



- 1 Move the water inlet pipe of the battery to the installation position.
- 2 Install the fixing clip of the water inlet pipe of the battery.



- 3 Connect the water inlet pipe of the battery with the power battery and install the clamp.



- 4 Connect the battery inlet pipe and the heating water pump and install the clamp.

- 5 Install Battery bottom shield mounting bracket
- 6 Install the front engine compartment bottom shield.
- 7 Lower the vehicle.
- 8 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 9 Connect the negative cable of battery.

8.2.7.23 Replacement of Heater Water Outlet Hose

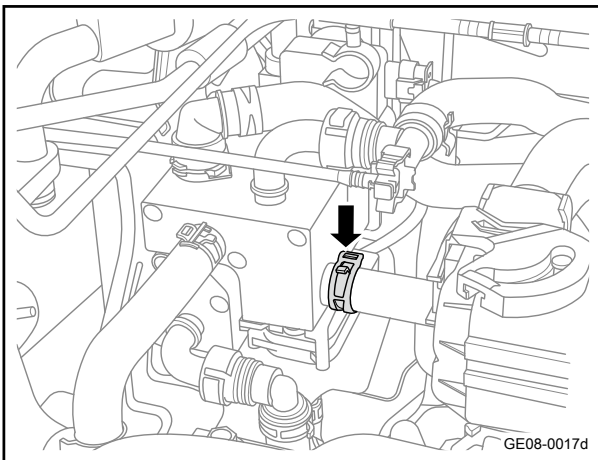
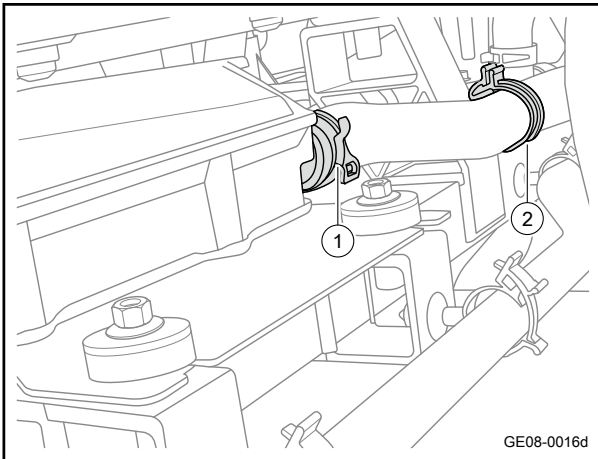
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

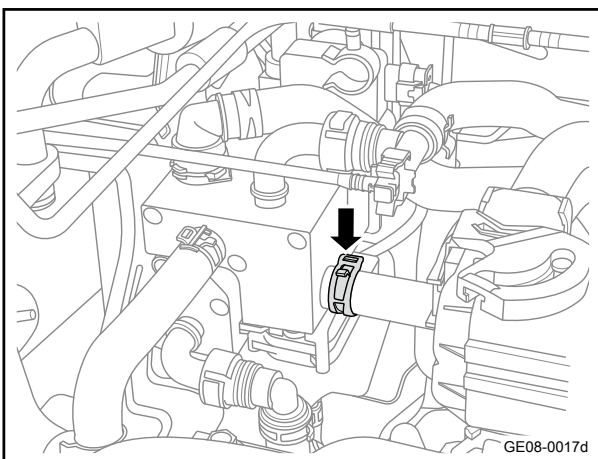
- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Remove the fixing clamp 1 of the water outlet hose of heater(at heater side).
- 4 Remove the fixing clamp 2 of outlet hose of the heater.

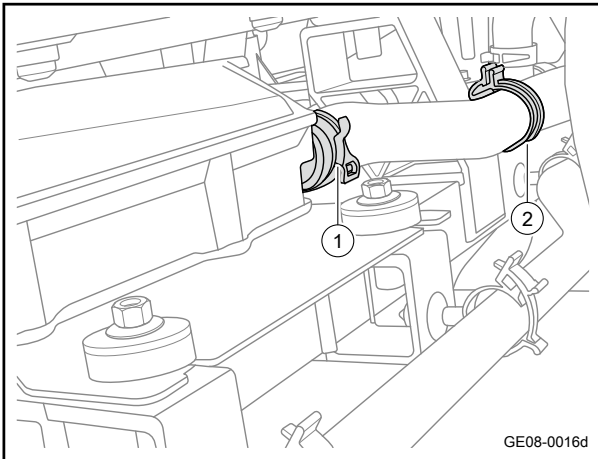


- 5 Remove clamp of the heater water outlet hose(atthe heat exchanger assembly side).
- 6 Take off the water outlet hose of the heater.

Installation procedure

- 1 Move the water outlet hose of heater to the installation position.
- 2 Connect the heater water outlet hose with the heat exchanger assembly, and fasten the clamp.





- 3 Install clamp 2 of outlet hose of the heater.
- 4 Connect the PTC heat controller with the water outlet hose of the heater and tighten the clamp 1.

- 5 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

8.2.7.24 Replacement of the Water Inlet Hose of the Heater

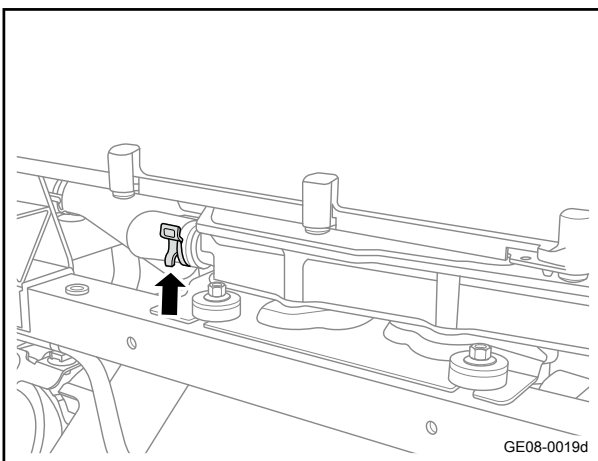
Removal procedure

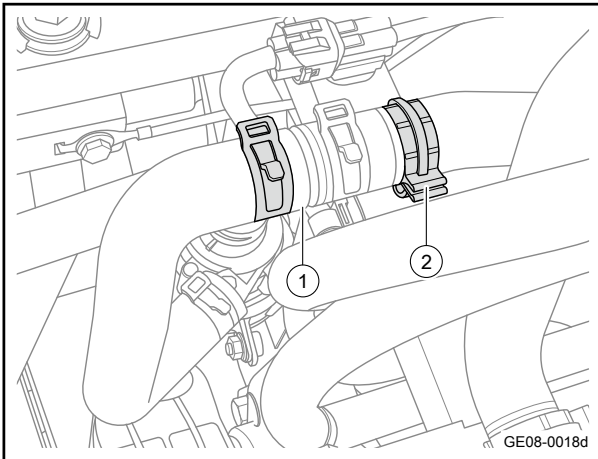
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

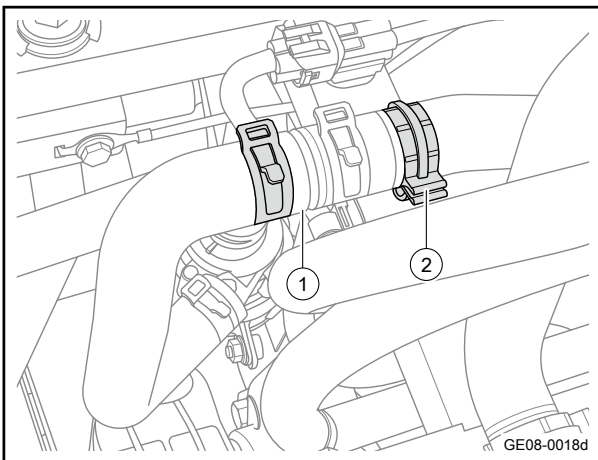
- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Remove clamp and disconnect the heater water inlet hose from the PTC heat controller.



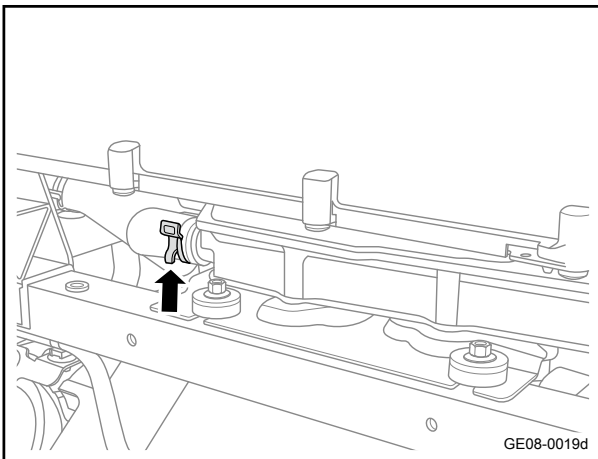


- 4 Remove the clip 1 and disconnect the heater water inlet hose from the electric heating water pump outlet pipe.
- 5 Remove the fixing clip 2 of the water inlet hose of the heater.
- 6 Take off the water inlet hose of the heater.

Installation procedure



- 1 Move the water inlet hose of the heater to the installation positions.
- 2 Install the fixing clip 2 of the water inlet hose of the heater.
- 3 Remove the clamp 1 connecting the water inlet hose of the heater and the water outlet pipe of the electric heating water pump.



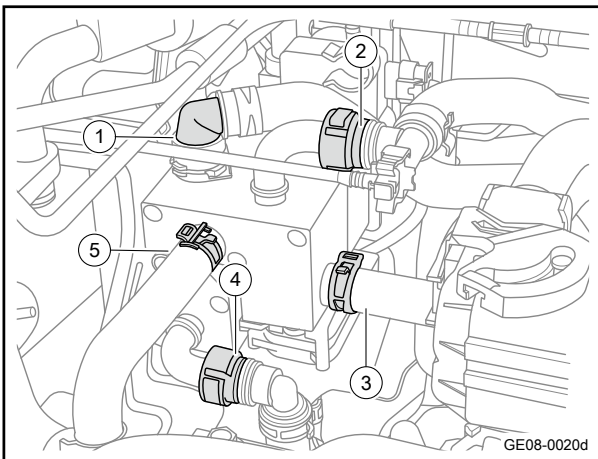
- 4 Connect the water inlet hose of the heater with the PTC heating controller and install the clamp.

- 5 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

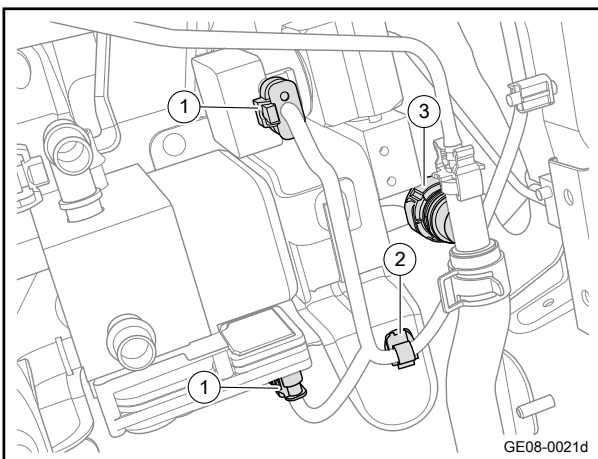
8.2.7.25 Replacement of Heat Exchanger Assembly

Removal procedure

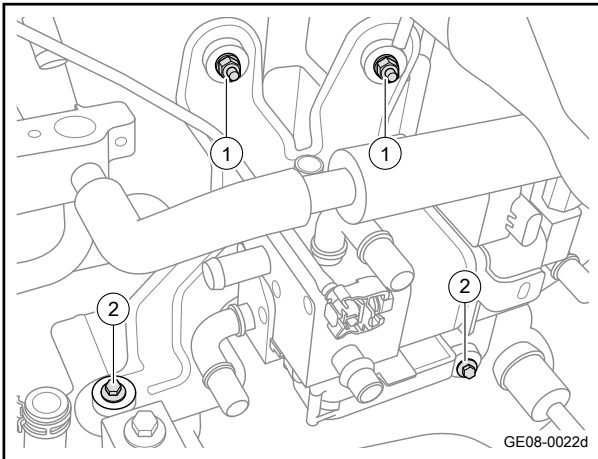
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 4 Remove the high and low-pressure hose of the heat exchanger. Refer to [Replacement of High and Low-pressure Hose of the Heat Exchanger](#)
- 5 Remove the heat exchanger high-pressure pipe assembly. Refer to [Replacement of Heat Exchanger High-pressure Pipe Assembly](#)



- 6 Disconnect the heat exchanger assembly and the A/C warm air water outlet pipe 1.
- 7 Disconnect the heat exchanger assembly and the A/C warm air inlet pipe 2.
- 8 Remove the fixing clamp 3 of the water outlet pipe of heater.
- 9 Disconnect the heat exchanger assembly with the heat exchanger water outlet hose 4.
- 10 Remove the fixing clamp 5 of the front water inlet hose.

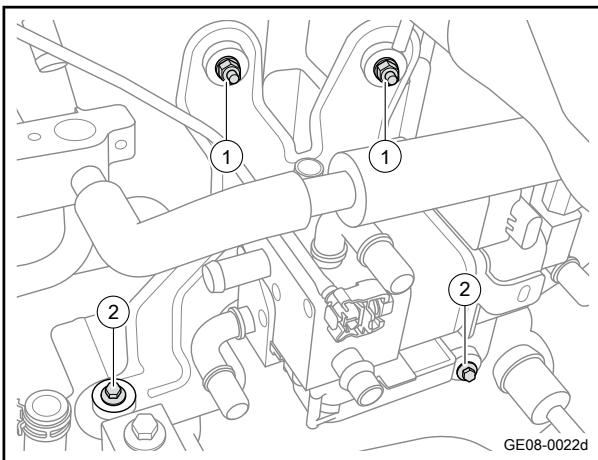


- 11 Disconnect the harness connector 1 of the heat exchanger assembly.
- 12 Remove the fixing clips 2 of the harness of heat exchanger assembly.
- 13 Disconnect the heat exchanger assembly with the heat exchanger water inlet hose 3.

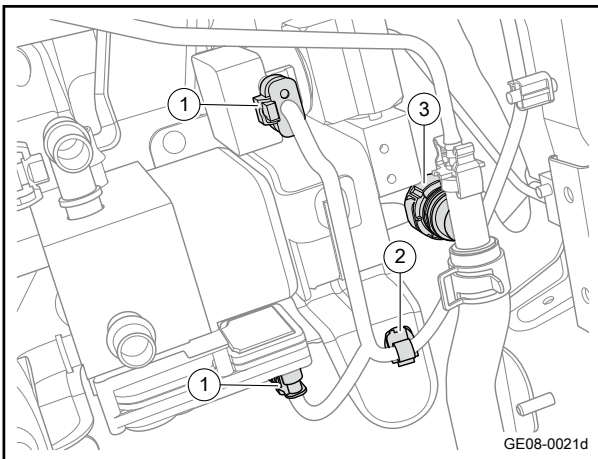


- 14 Remove the 2 fixing nuts 1 of the heat exchanger assembly.
- 15 Remove the 2 fixing bolts 2 of the heat exchanger assembly.
- 16 Take off the heat exchanger assembly.

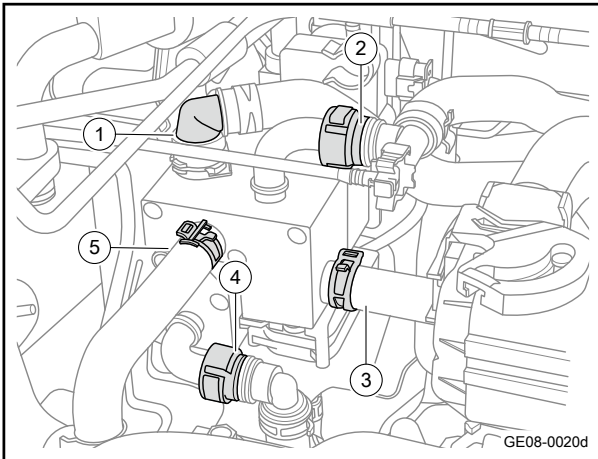
Installation procedure



- 1 Move the heat exchanger assembly to the installation positions.
- 2 Install the 2 fixing bolts 2 of the heat exchanger assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Install the 2 fixing nuts 1 of the heat exchanger assembly.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 4 Connect the heat exchanger assembly with the heat exchanger water inlet hose 3.
- 5 Install the fixing clips 2 of the harness of heat exchanger assembly.
- 6 Connect the harness connectors 1 of the heat exchanger assembly.



- 7 Install the fixing clamps 5 of the front inlet hose of the electric heating water pump.
- 8 Connect the heat exchanger assembly with the heat exchanger water outlet hose 4.
- 9 Install the fixing clamps 3 of the outlet hose of the heater.
- 10 Connect the heat exchanger assembly and the A/C warm air inlet pipe 2.
- 11 Connect the heat exchanger assembly and the A/C warm air outlet pipe 1.
- 12 Install the heat exchanger high-pressure pipe assembly.
- 13 Install high and low-pressure hose of the heat exchanger.
- 14 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 15 Refill air conditioner refrigerant.
- 16 Connect the negative cable of battery.

8.2.7.26 Replacement of Water Outlet Hose of Heat Exchanger

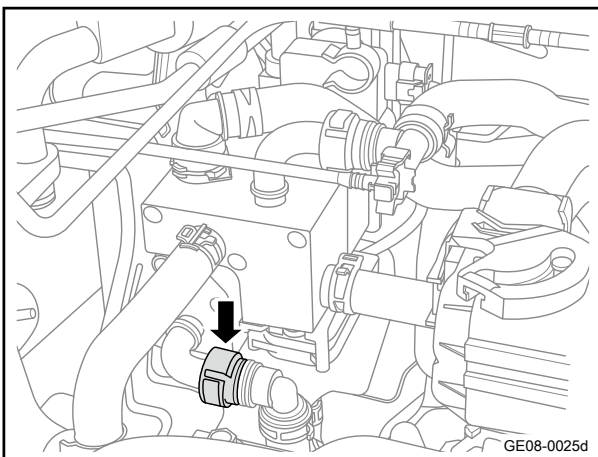
Removal procedure

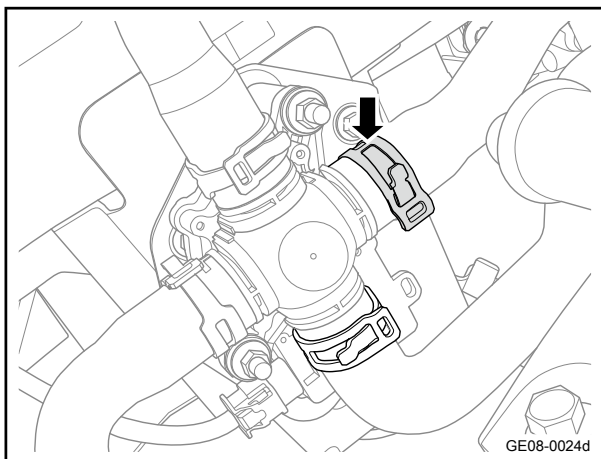
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

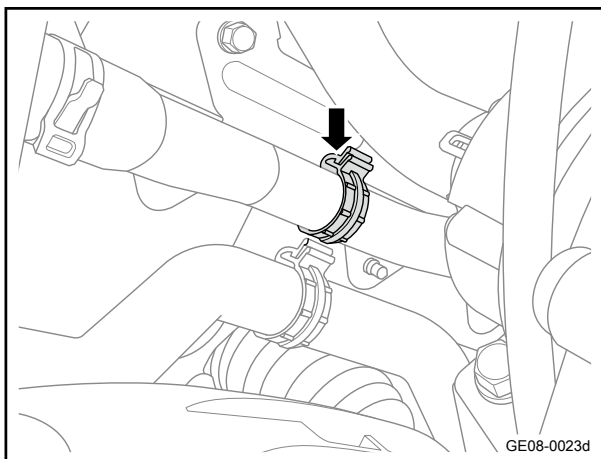
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Disconnect the heat exchanger water outlet hose and the heat exchanger.

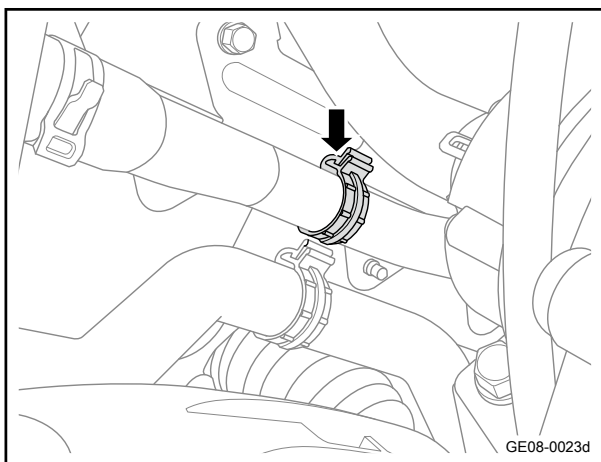




- 4 Remove the fixing clamp of the water outlet hose of the heat exchanger, and disconnect the water outlet hose of the heat exchanger.

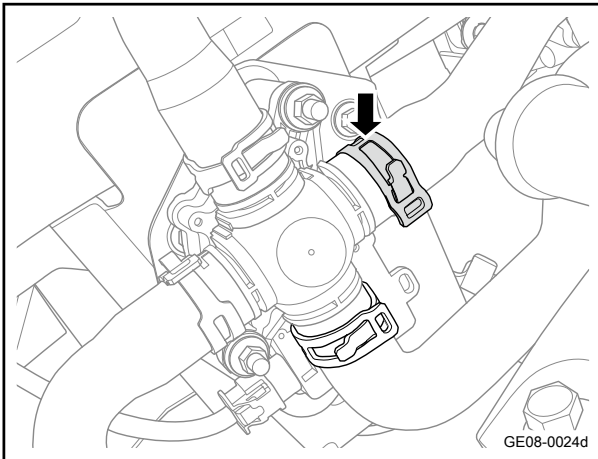


- 5 Remove the fixing clip of the water outlet hose of the heat exchanger.
- 6 Take off the water outlet hose of the heat exchanger.

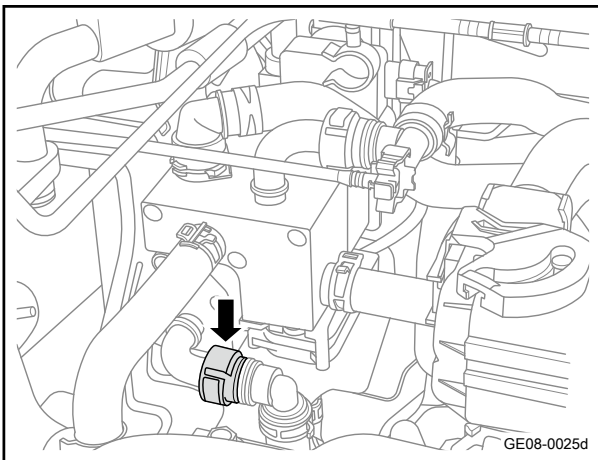


Installation procedure

- 1 Move the water outlet hose of the heat exchanger to the installation position.
- 2 Install the fixing clip of the water outlet hose of the heat exchanger.



- 3 Install the fixing clamp of the water outlet hose of the heat exchanger and connect the water outlet hose of the heat exchanger.



- 4 Connect the water outlet hose of the heat exchanger with the heat exchanger .

- 5 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)

- 6 Connect the negative cable of battery.

8.2.7.27 Replacement of Water Inlet Hose of Heat Exchanger

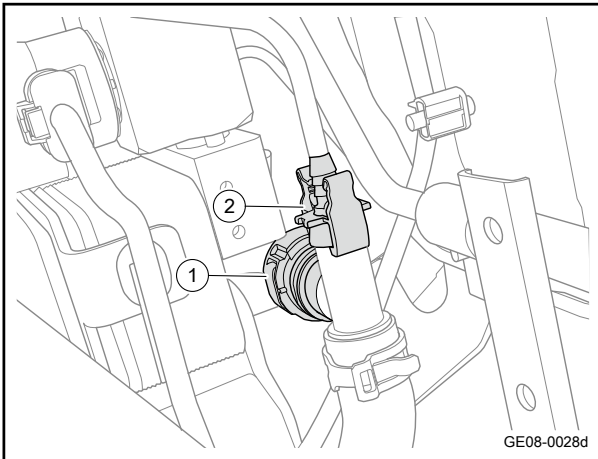
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

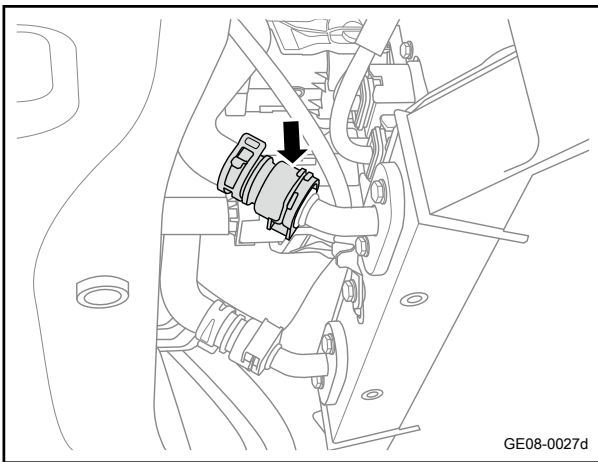
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

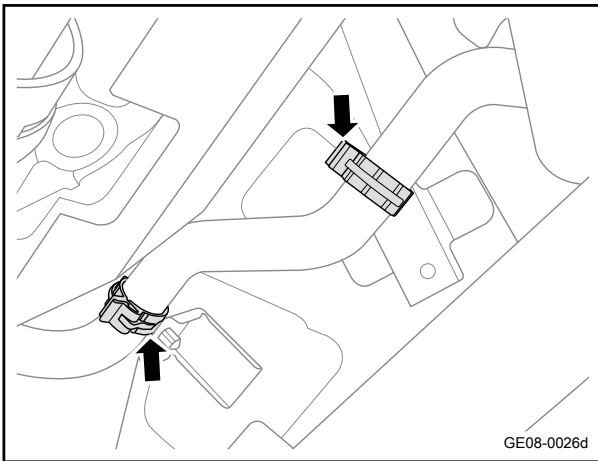
- 2 Drain the warm air system coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 5 Remove battery bottom shield mounting bracket Refer to [Replacement of Battery Bottom Shield Mounting Bracket](#)



- 6 Disconnect the heat exchanger assembly with the heat exchanger water inlet hose 1.
- 7 Disconnect the heat exchanger water inlet hose and the cooling ventilation hose 2 of the drive motor.

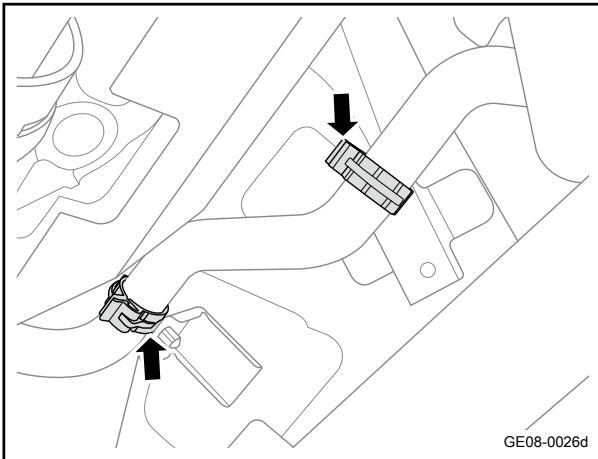


- 8 Disconnect the heat exchanger water inlet hose and the power battery.

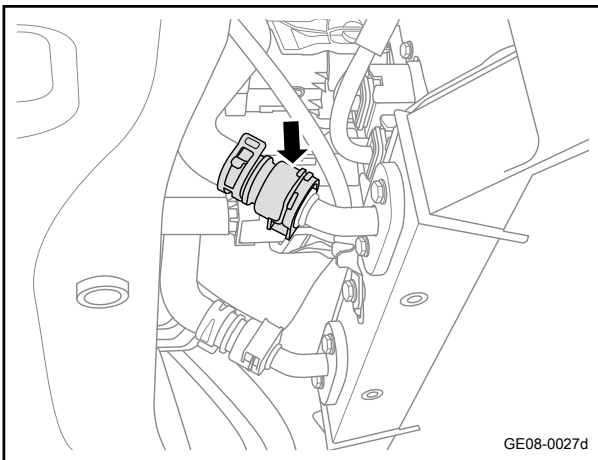


- 9 Remove the fixing clip of the water inlet hose of the heat exchanger.
- 10 Take off the water inlet hose of heat exchanger.

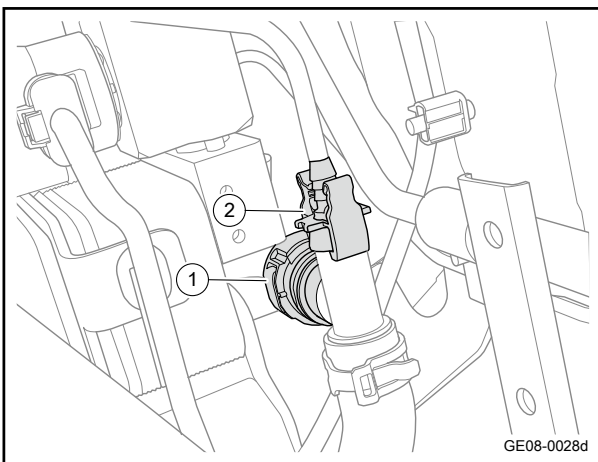
Installation procedure



- 1 Move the water inlet hose of the heat exchanger to the installation position.
- 2 Install the fixing clip of the water inlet hose of the heat exchanger.



- 3 Connect the heat exchanger water inlet hose and the power battery.



- 4 Connect the heat exchanger water inlet hose and the cooling ventilation hose 2 of the drive motor.
- 5 Connect the heat exchanger assembly with the heat exchanger water inlet hose 1.

- 6 Install Battery bottom shield mounting bracket
- 7 Install the front engine compartment bottom shield.
- 8 Lower the vehicle
- 9 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 10 Connect the negative cable of battery.

8.2.7.28 Replacement of Four-way Valve

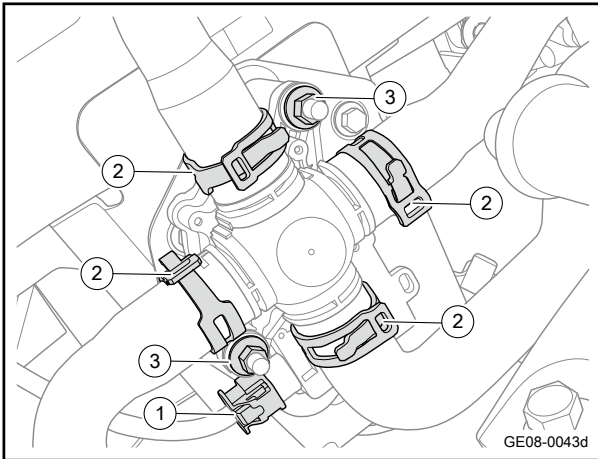
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

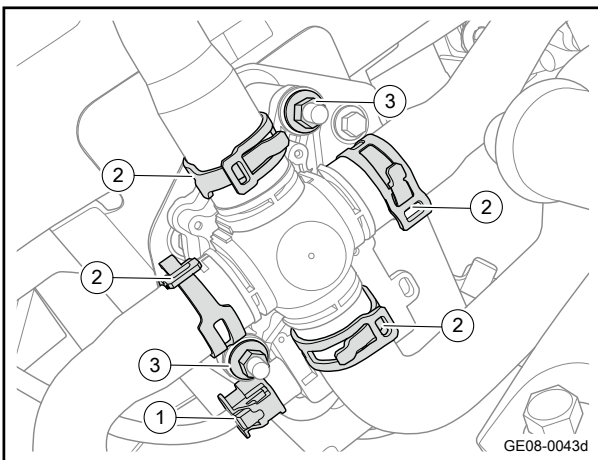
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Discharge coolant. Refer to [Coolant Replacement Procedure](#)
- 3 Disconnect the harness connector 1 of the four-way valve.
- 4 Remove the 4 fixing clamps 2 of the four-way valve connecting hose, and disconnect the hose.
- 5 Remove the 2 fixing nuts 3 of the four-way valve.
- 6 Take off the four-way valve.



Installation procedure

- 1 Move the four-way valve to the installation position.
- 2 Install the 2 fixing nuts 3 of the four-way valve.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Install the 4 hose clamps 2 of the four-way valve.
- 4 Connect the harness connector 1 of the four-way valve.

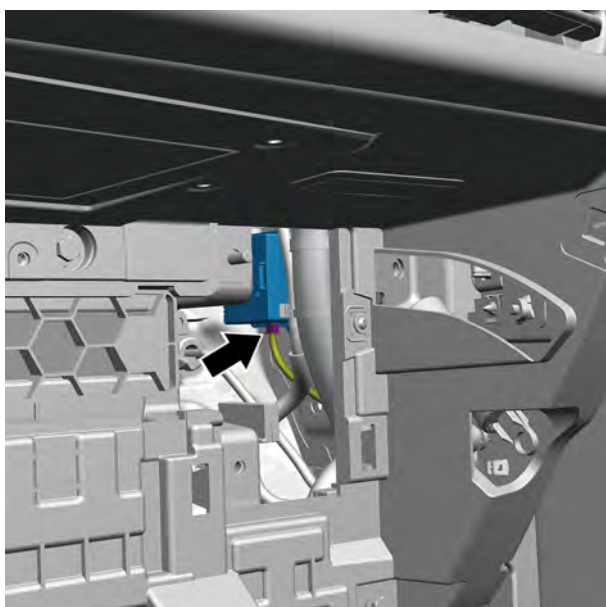
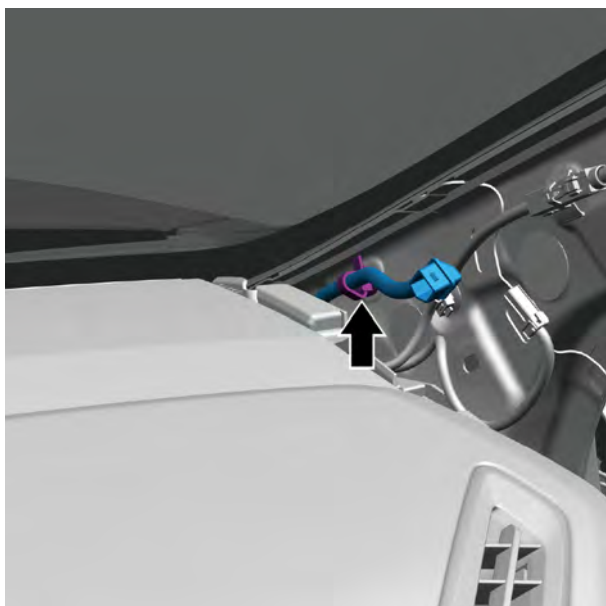


- 5 Add warm air system coolant and exhaust air. Refer to [Coolant Replacement Procedure](#)
- 6 Connect the negative cable of battery.

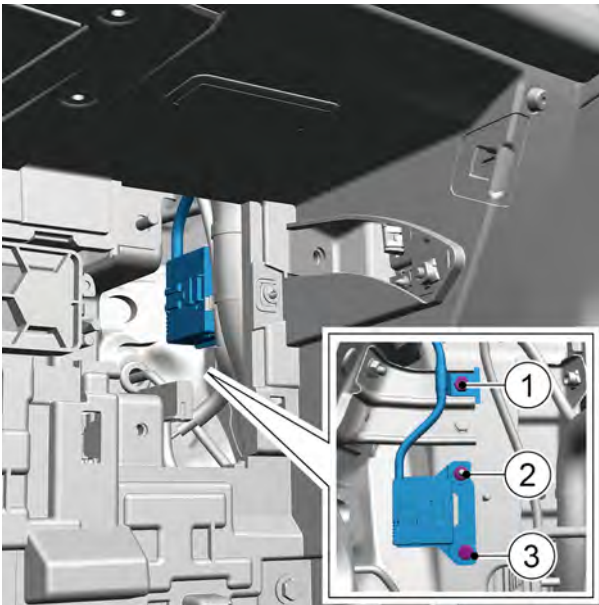
8.2.7.29 Replacement of PM2.5 sensor

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the right pillar A upper trim panel assembly. Refer to [Replacement of Left Pillar A Upper Trim Panel Assembly](#)
- 3 Remove the vehicle-mounted wireless control module. Refer to [Replacement of the Vehicle-Mounted Wireless Control Module](#)
- 4 Disconnect the 1 fixing clip connecting the PM2.5 sensor and the vehicle body.

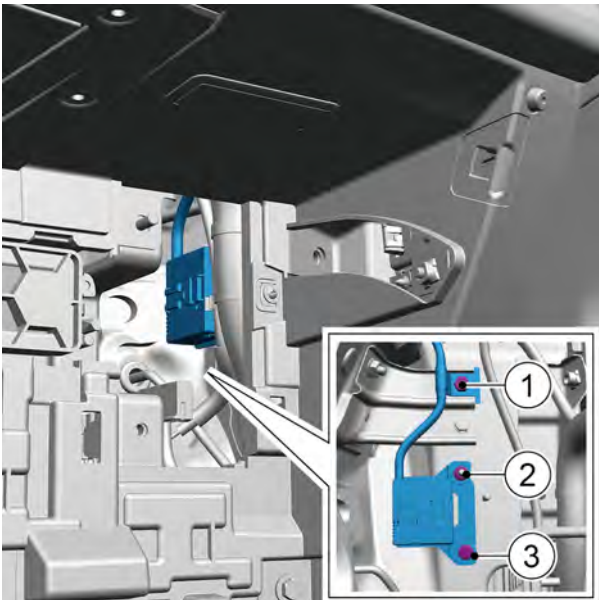


- 5 Disconnect the 1 harness connector connecting instrument harness and PM2.5 sensor.

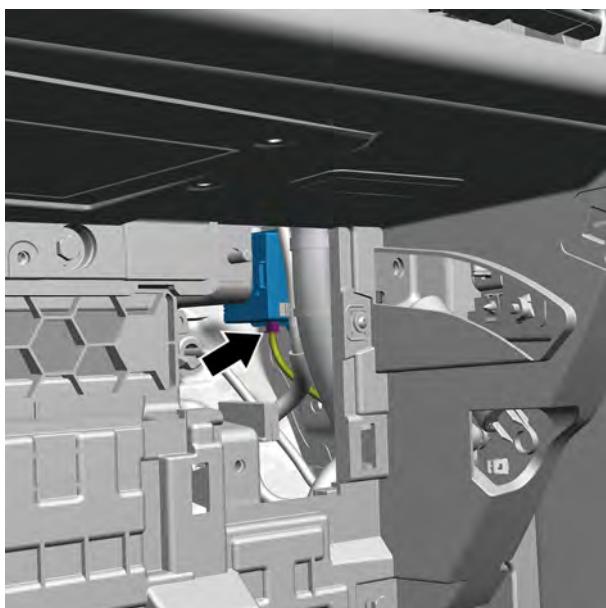


- 6 Remove the 1 fixing bolt 1 connecting the PM2.5 sensor and the vehicle body.
- 7 Remove the 1 fixing nut 2 of the PM2.5 sensor and the vehicle body.
- 8 Remove the 1 fixing bolt 3 connecting the PM2.5 sensor and the vehicle body.
- 9 Take off the PM2.5 sensor.

Installation procedure



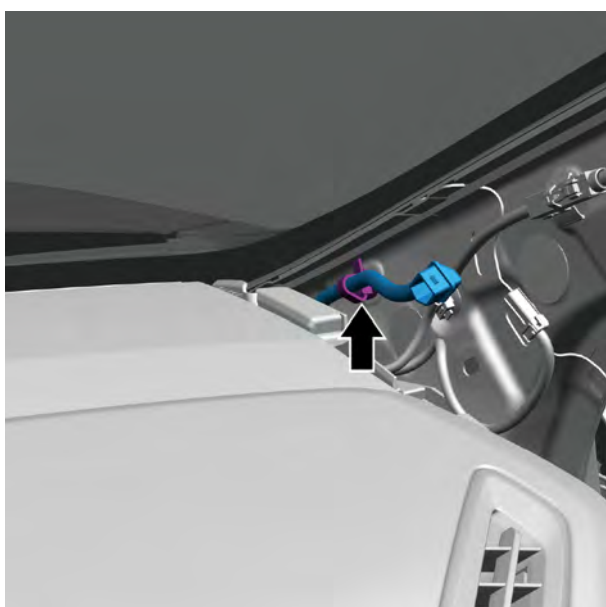
- 1 Move the PM2.5 sensor to the installation position.
- 2 Install and tighten the 1 fixing bolt 3 connecting the PM2.5 sensor and the vehicle body.
Torque: 6N·m
- 3 Install and fasten 1 fixing bolts 2 connecting the PM2.5 sensor to the body.
Torque: 6N·m
- 4 Install and fasten 1 fixing bolt 1 connecting the PM2.5 sensor to the body.
Torque: 6N·m



- 5 Connect the 1 harness connector connecting instrument harness and PM2.5 sensor.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 6 Install the 1 fixing clip connecting PM2.5 sensor and vehicle body.

- 7 Install the right A-pillar upper trim panel assembly.
- 8 Install the vehicle-mounted wireless control module.
- 9 Connect the negative cable of battery.

8.2.7.30 Replacement of High and Low-pressure Hose of the Heat Exchanger

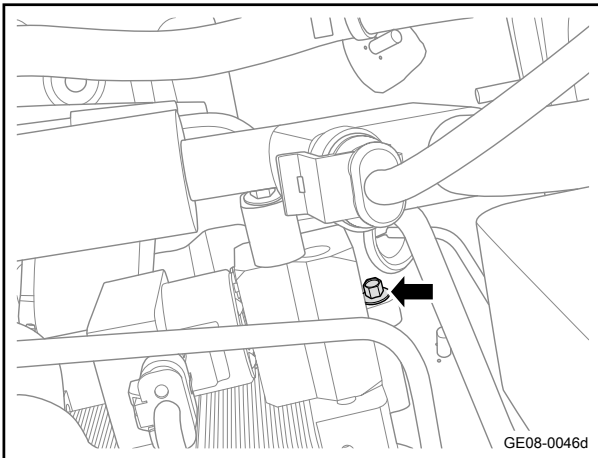
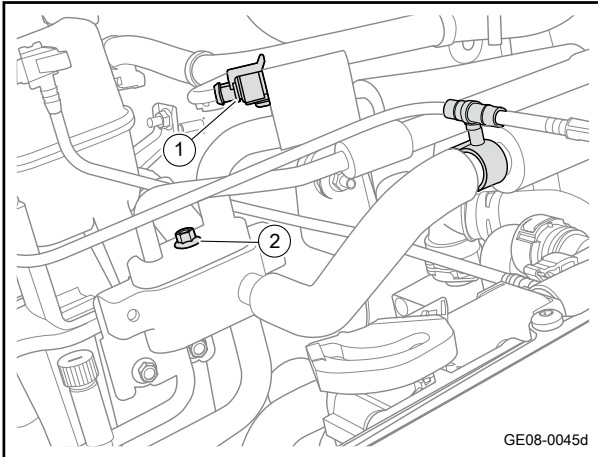
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect High and low-pressure hose harness connector 1 of the heat exchanger
- 4 Remove the high and low-pressure hose fixing bolt 2 of the heat exchanger.



- 5 Remove the 1 fixing bolt connecting the heat exchanger high and low-pressure pipe assembly and the heat exchanger assembly.
- 6 Take off High and low-pressure hose of the heat exchanger

Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.

Installation procedure

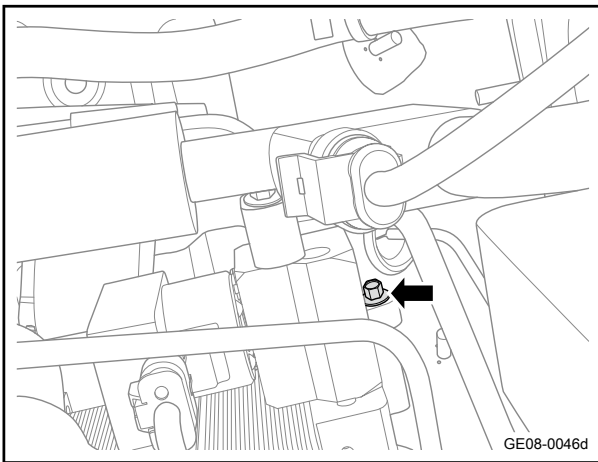
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

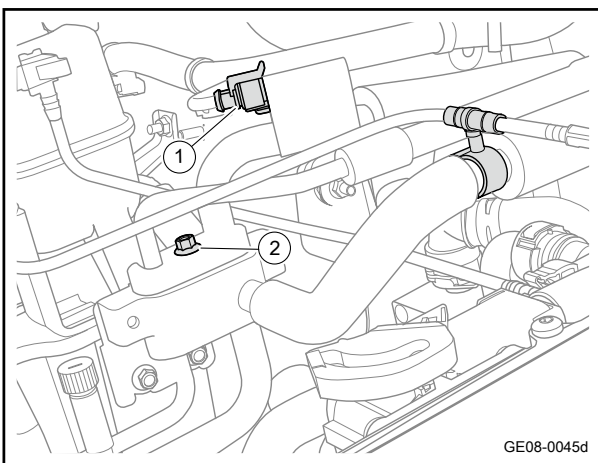
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the high and low-pressure hose of the heat exchanger to the installation position.
- 2 Install the 1 fixing bolt connecting the heat exchanger high and low-pressure hose and the heat exchanger assembly. Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Install high and low-pressure hose fixing bolt 2 of the heat exchanger. Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 4 Connect High and low-pressure hose harness connector 1 of the heat exchanger

- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

8.2.7.31 Replacement of Heat Exchanger High-Pressure Pipe Assembly

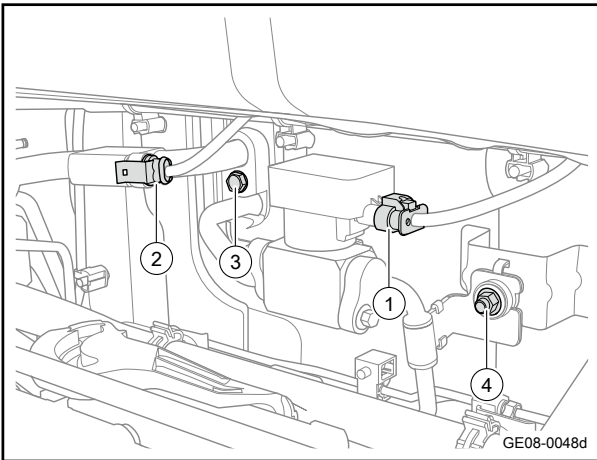
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

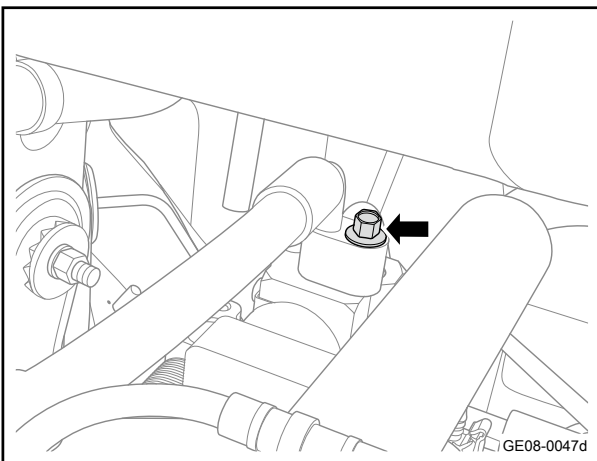
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove the high and low-pressure hose of the heat exchanger. Refer to [Replacement of High and Low-pressure Hose of the Heat Exchanger](#)
- 4 Disconnect the harness connector 1 of the heat exchanger high and low-pressure hose assembly.
- 5 Disconnect the harness connector 2 of the evaporator inlet and outlet pipe assembly.
- 6 Remove the 1 fixing bolt 3 of the evaporator inlet and outlet pipe assembly.
- 7 Remove the 1 fixing nut 4 of the heat exchanger high-pressure pipe assembly bracket.



- 8 Remove the 1 fixing bolt connecting the heat exchanger high-pressure pipe assembly and the heat exchanger assembly.
- 9 Take off the heat exchanger high-pressure pipe assembly.

Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.



Installation procedure

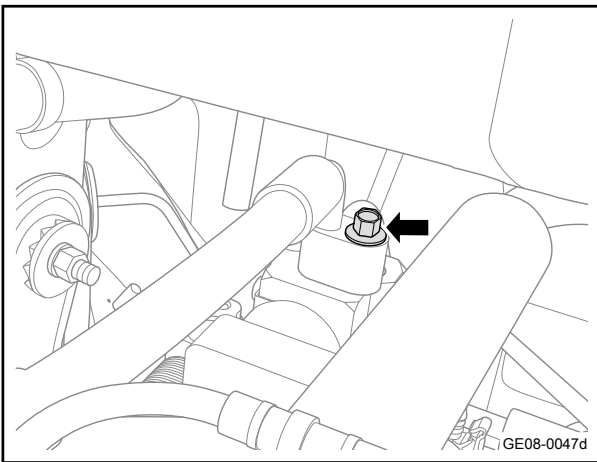
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

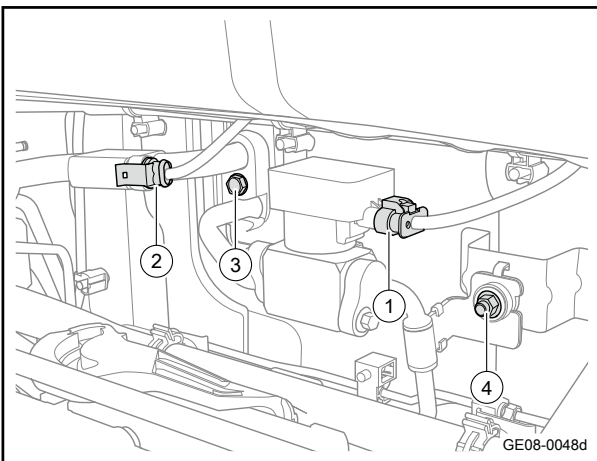
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the high and low-pressure hose of the heat exchanger to the installation position.
- 2 Install the 1 fixing bolt connecting the heat exchanger high-pressure pipe assembly and the heat exchanger assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Install the 1 fixing nut 4 of the heat exchanger high-pressure pipe assembly bracket.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 4 Install the 1 fixing bolt 3 of the evaporator inlet and outlet pipe assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 5 Connect the harness connector 2 of the evaporator inlet and outlet pipe assembly.
- 6 Connect the harness connector 1 of the heat exchanger high and low-pressure pipe assembly.
- 7 Install high and low-pressure hose of the heat exchanger.
- 8 Refill air conditioner refrigerant.
- 9 Connect the negative cable of battery.

8.2.7.32 Replacement of the High and Low-pressure Pipe Assembly of the Integrated Heat Pump Module

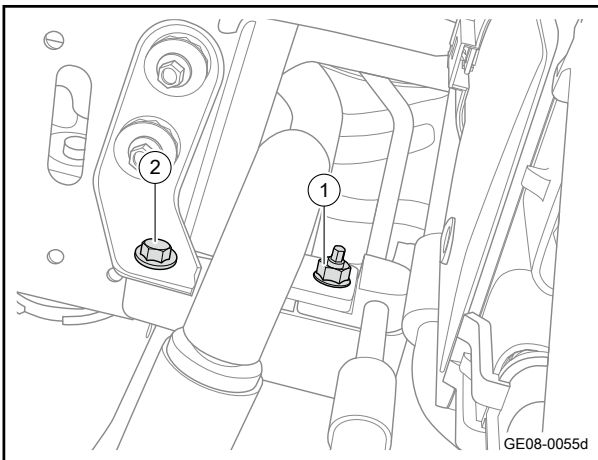
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the front fender liner. Refer to [Replacement of Left Front Fender Liner](#)



- 5 Remove 1 fixing nut 1 connecting the high and low-pressure pipe assembly of the integrated heat pump module and the evaporator high and low-pressure pipe assembly.

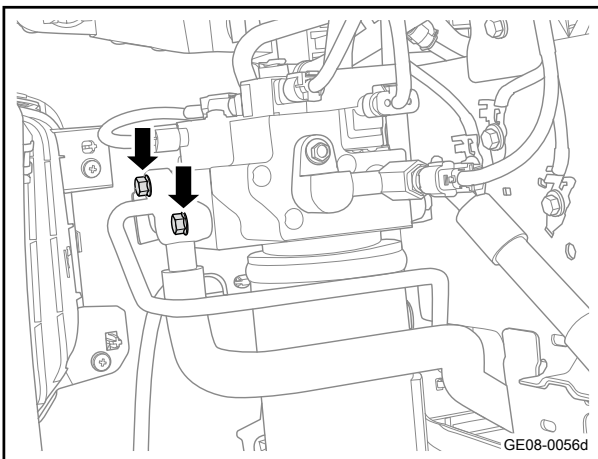
Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.

- 6 Remove the 1 fixing bolt 2 connecting the high and low-pressure pipe assembly of the integrated heat pump module and the bracket.
- 7 Remove the 2 fixing bolts connecting the high and low-pressure pipe assembly of the integrated heat pump module and the integrated heat pump module.

Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.



- 8 Take off the high and low-pressure pipe assembly of the integrated heat pump module.

Installation procedure

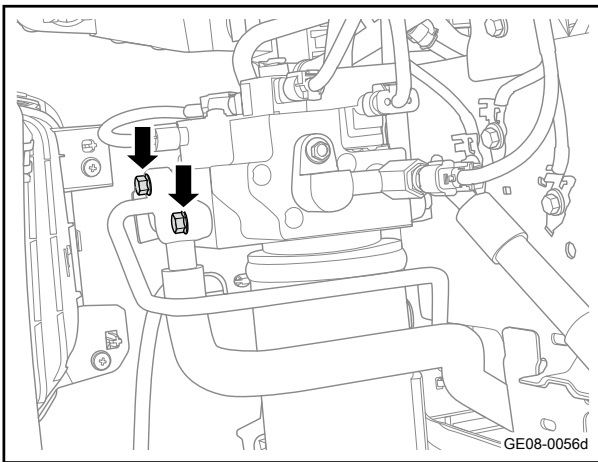
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

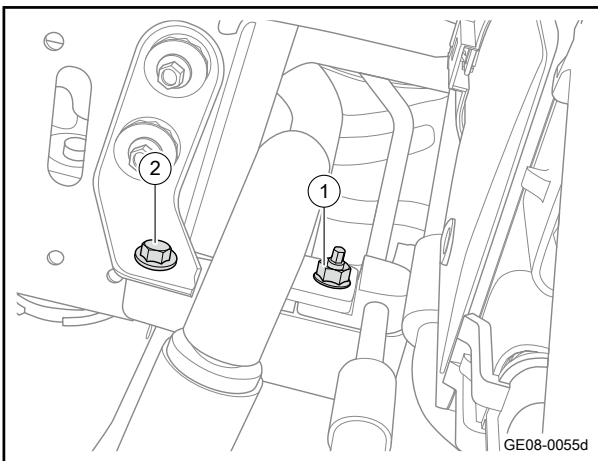
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the high and low-pressure pipe assembly of the integrated heat pump module to the installation position.
- 2 Install the 2 fixing bolts connecting the high and low-pressure pipe assembly of the integrated heat pump module and the integrated heat pump module.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Install the 1 fixing bolt 2 connecting the high and low-pressure pipe assembly of the integrated heat pump module and the bracket.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 4 Install 1 fixing nut 1 connecting the high and low-pressure pipe assembly of the integrated heat pump module and the evaporator high and low-pressure pipe assembly.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 5 Install the left front fender liner.
- 6 Lower the vehicle.
- 7 Refill air conditioner refrigerant.
- 8 Connect the negative cable of battery.

8.2.7.33 Replacement of Compressor Exhaust Hose

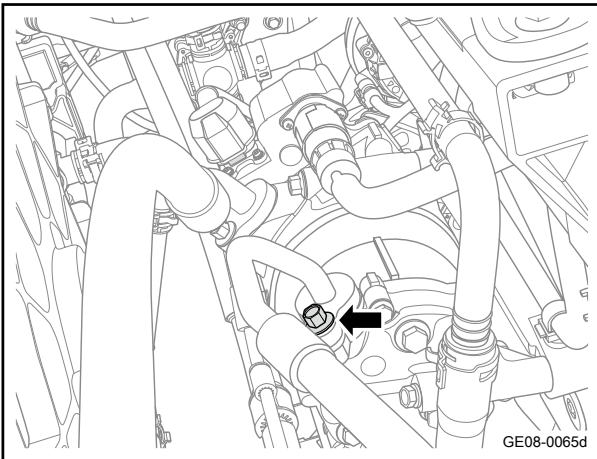
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

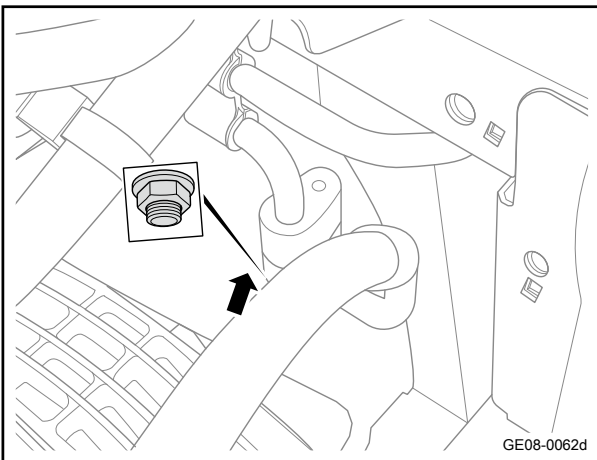
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove the fixing bolt connecting the compressor exhaust hose and the compressor



- 4 Remove the fixing nut 1 connecting the compressor exhaust hose and the A/C inlet and outlet pipe assembly.
- 5 Take off the compressor exhaust hose.



Installation procedure

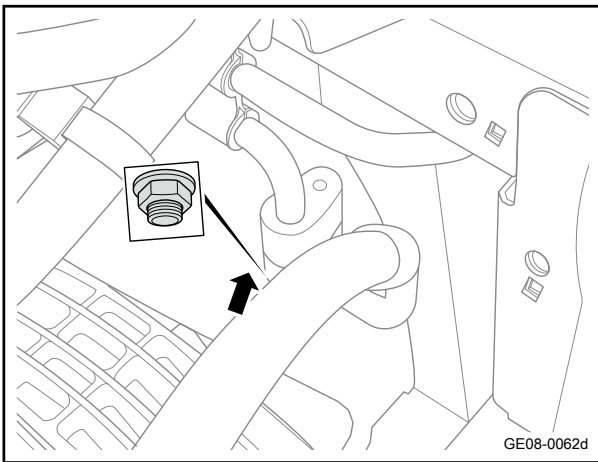
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

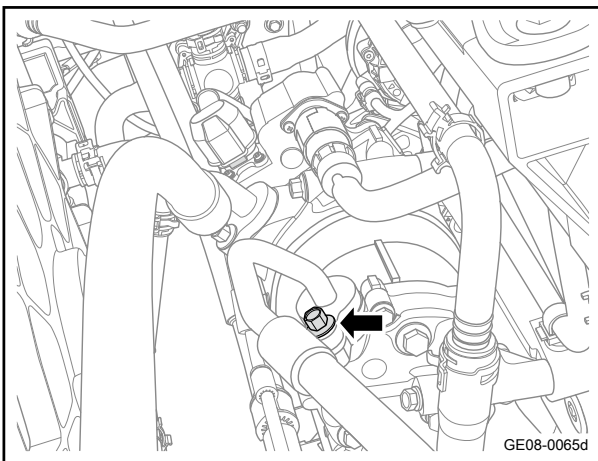
- If it is to replace with new compressor intake pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the compressor exhaust hose to the installation position.
- 2 Install the fixing nut 1 connecting the compressor exhaust hose and the A/C inlet and outlet pipe assembly.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Install the 1 fixing bolt connecting the compressor exhaust hose and the compressor.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.34 Replacement of compressor intake hose

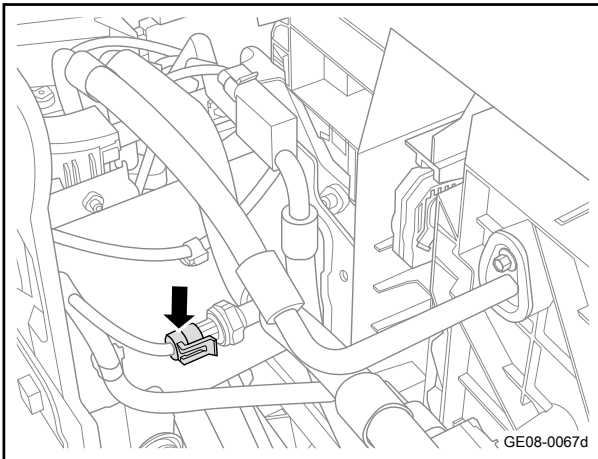
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

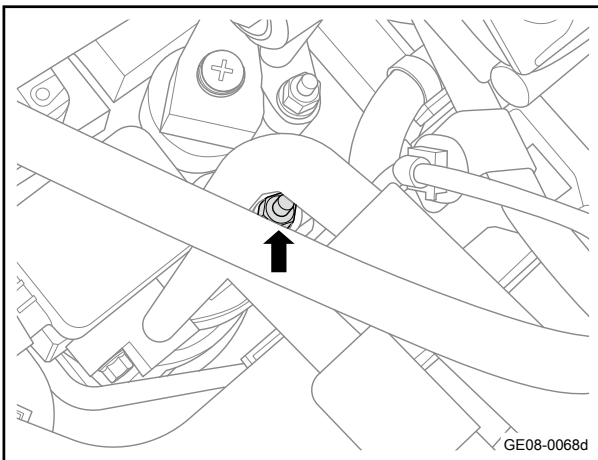
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

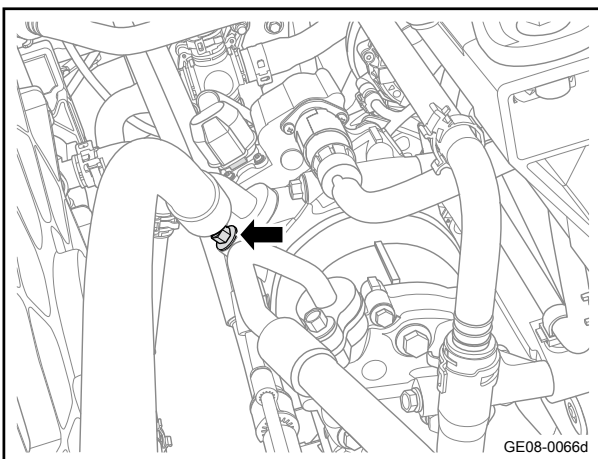
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the 1 harness connector 2 of the compressor inlet hose.



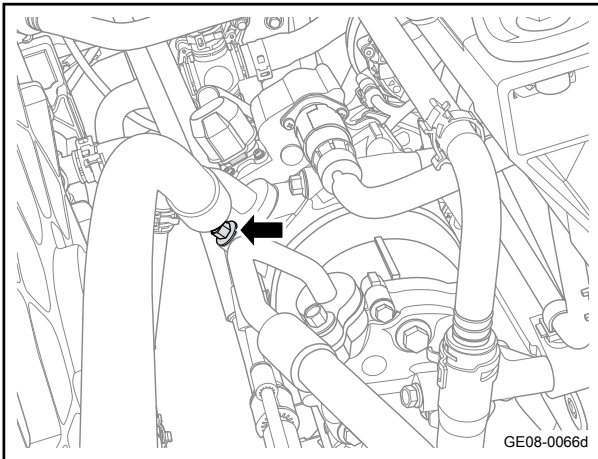
- 4 Remove 1 fixing nut of the compressor inlet hose and integrated heat pump module, and disconnect the compressor inlet hose.



- 5 Remove the fixing bolt connecting the compressor inlet hose and the motor compressor.
- 6 Take off the compressor intake hose.



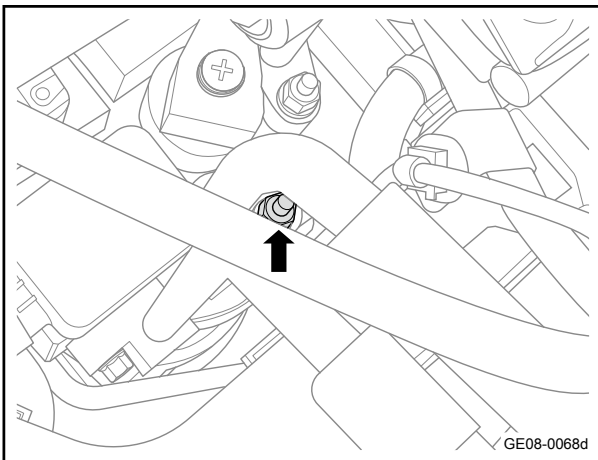
Installation procedure



- 1 Move the compressor intake hose to the installation position.
- 2 Install the 1 fixing bolt connecting the compressor intake hose and the motor compressor.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

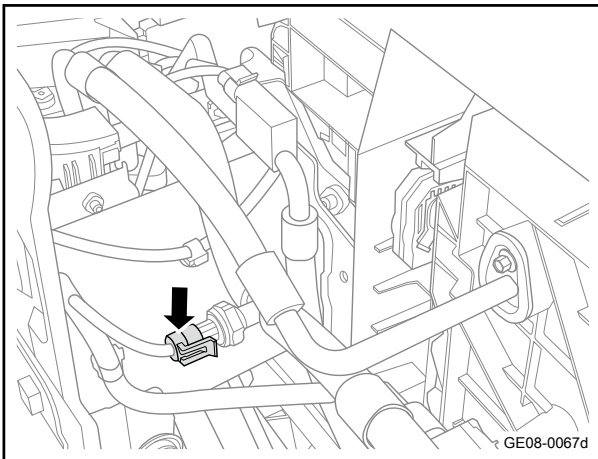
Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Connect the compressor intake hose and install the 1 fixing nut connecting the compressor intake hose with the integrated heat pump module.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



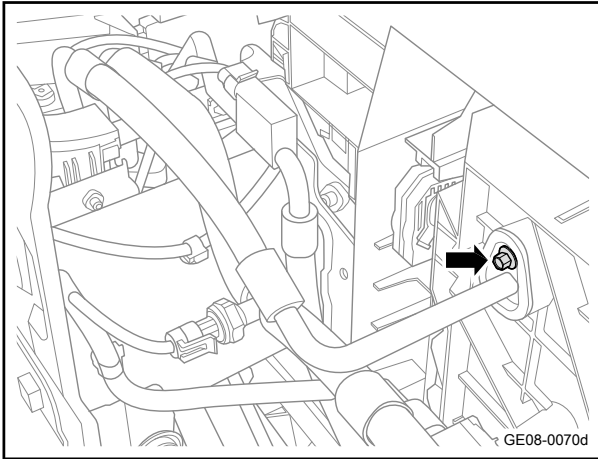
- 4 Connect the harness connector of the compressor intake hose.

- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

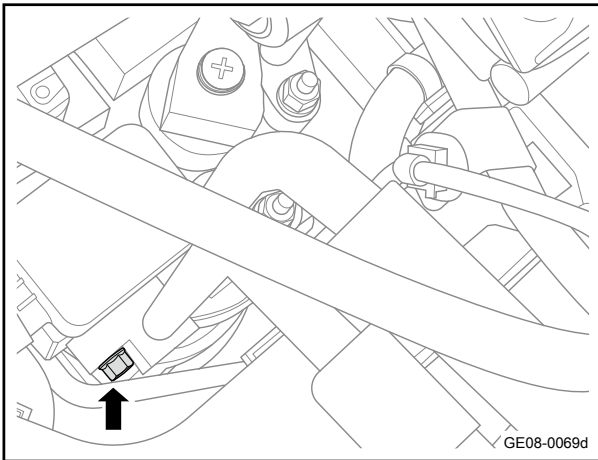
8.2.7.35 Replacement of Condenser Inlet Pipe

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove 1 fixing bolt connecting the condenser inlet pipe and the condenser



- 4 Remove the 1 fixing bolt connecting the condenser inlet pipe and the integrated heat pump module.
- 5 Take off the condenser inlet pipe.



Installation procedure

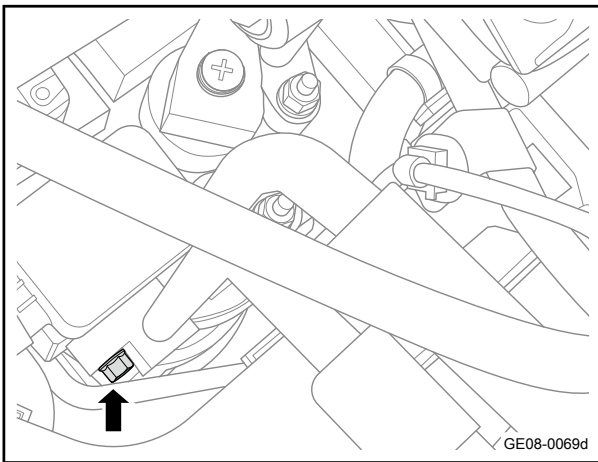
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.

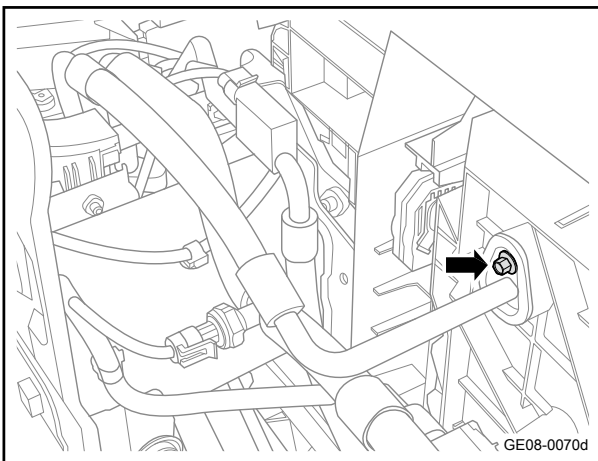


- 1 Move the condenser inlet pipe to the installation position.
- 2 Install the 1 fixing bolt connecting the condenser inlet pipe and the integrated heat pump module.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Install fixing bolt connecting the condenser inlet pipe and the condenser

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

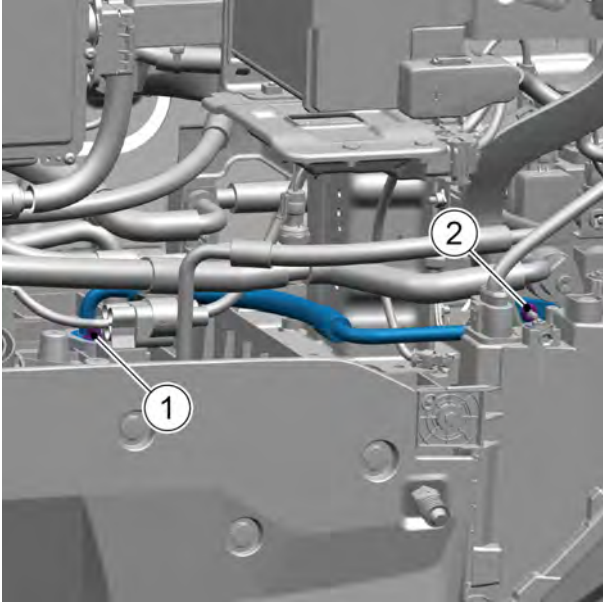
Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.36 Replacement of the Condenser Liquid Outlet Pipe

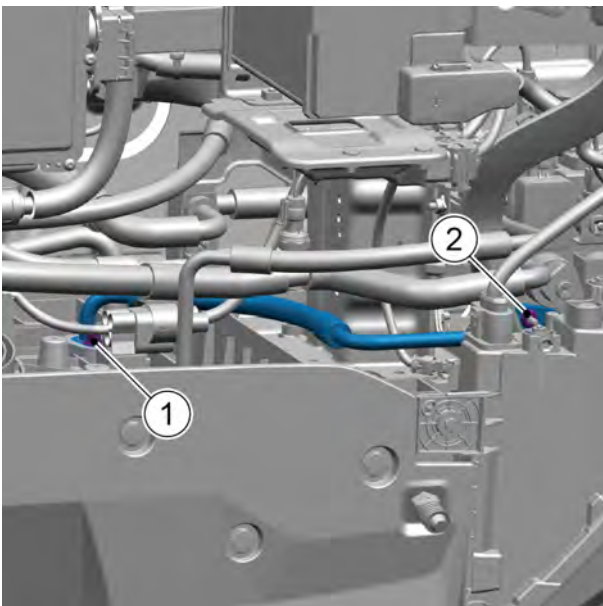
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Operate the A/C refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove 1 fixing bolt 1 connecting the condenser liquid outlet pipe and the condenser.
- 4 Remove the 1 fixing nut 2 connecting the condenser liquid outlet pipe and the integrated heat pump module.
- 5 Take off the condenser liquid outlet pipe.



Installation procedure

- 1 Move the condenser liquid outlet pipe assembly to the installation position.
- 2 Install and tighten the 1 fixing bolt 2 connecting the condenser liquid outlet pipe and the integrated heat pump module.
Torque: 10N·m
- 3 Install the 1 fixing bolt connecting the condenser liquid outlet pipe assembly with the condenser.
Torque: 10N·m



- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.37 Replacement of Evaporator Inlet and Outlet Pipe Assembly(low figuration)

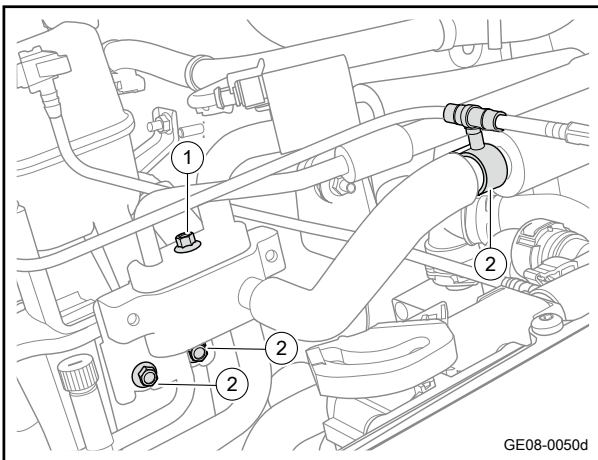
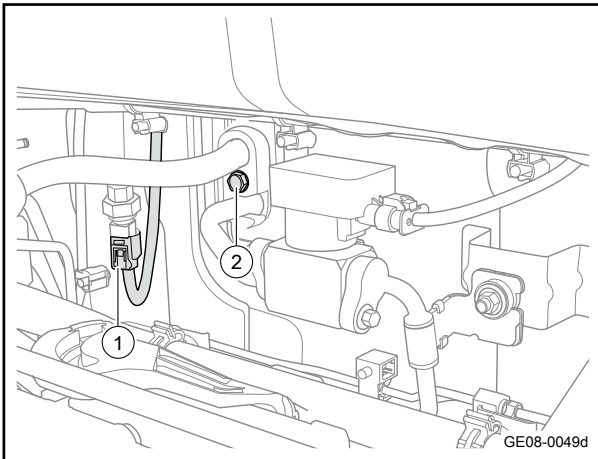
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the harness connector 1 of the evaporator inlet and outlet pipe assembly.
- 4 Remove the 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.

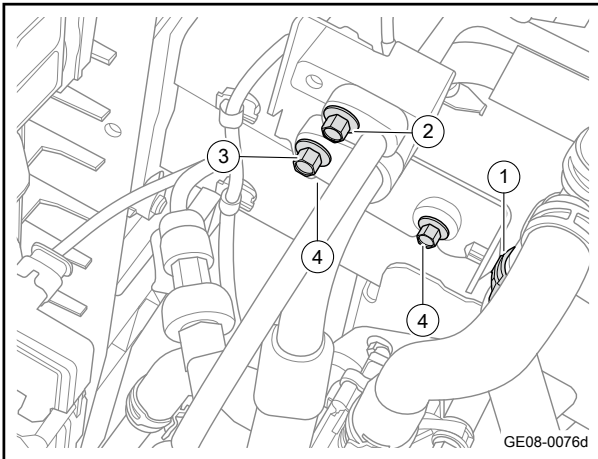


- 5 Remove the 1 fixing bolt 1 connecting the high and low-pressure hose of the heat exchanger and the evaporator inlet and outlet pipes, and disconnect the high and low-pressure hose of the heat exchanger.

Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.

- 6 Remove the 2 fixing bolts 2 of the evaporator inlet and outlet pipe assembly.
- 7 Remove the fastening clip 3 of the cooling and ventilation hose of the drive motor.



- 8 Remove the fixing clip 1 of the inlet hose of the heating water pump.
- 9 Remove the 1 fixing bolt 2 connecting the evaporator inlet and outlet pipes with the liquid outlet pipe of the condenser to disconnect the liquid outlet pipe assembly of the condenser.

Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.

- 10 Remove 1 fixing bolt 3 connecting the evaporator inlet and outlet pipes with the compressor intake hose, and disconnect the compressor intake hose.
- 11 Remove the 2 fixing bolts 4 of the evaporator inlet and outlet pipe assembly.
- 12 Take off the evaporator inlet and outlet pipe assembly.

Installation procedure

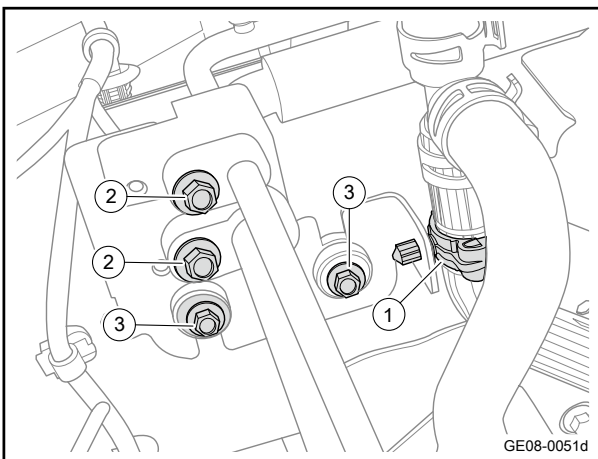
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the evaporator inlet and outlet pipe assembly to the installation positions.
- 2 Install the 2 fixing bolts 4 of the evaporator inlet and outlet pipe assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Connect the compressor intake hose and install the 1 fixing bolt 3 connecting the evaporator inlet and outlet pipes with the compressor intake hose.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Connect the liquid outlet pipe of the condenser and install the 1 fixing bolt 2 connecting the evaporator inlet and outlet pipe assembly with the liquid outlet pipe of the condenser.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 5 Install the fixing clip 1 of the inlet hose of the heating water pump.

- 6 Install the fastening clip 3 of the cooling and ventilation hose of the drive motor.

- 7 Install the 2 fixing bolts 2 of the evaporator inlet and outlet pipe assembly.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 8 Connect the high and low-pressure pipe of the heat exchanger and install the 1 fixing bolt 1 of the high and low-pressure pipe of the heat exchanger with the inlet and outlet pipe assembly of the evaporator.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 9 Install the 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

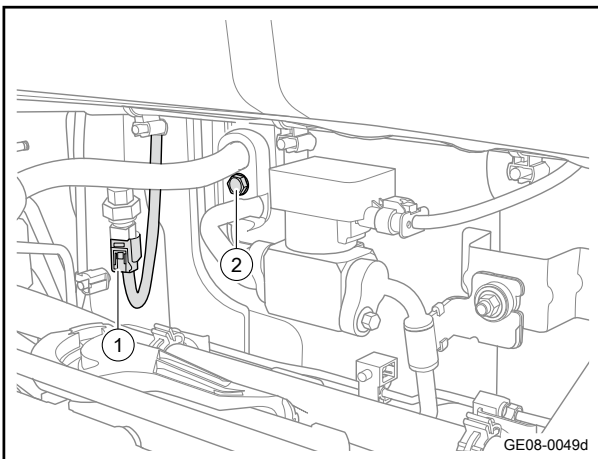
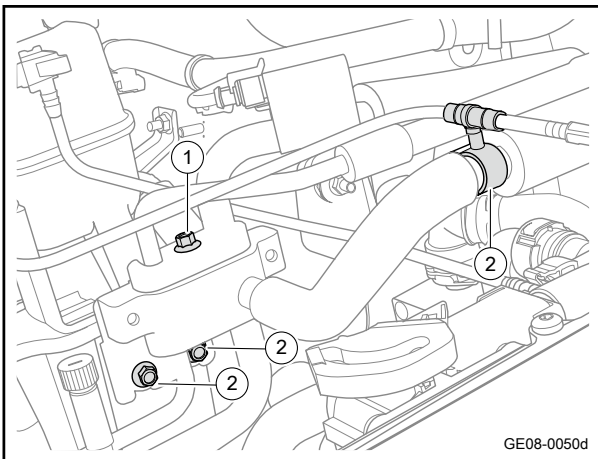
- 10 Connect the harness connector 1 of the evaporator inlet and outlet pipe assembly.

- 11 Refill air conditioner refrigerant.

- 12 Connect the negative cable of battery.

8.2.7.38 Replacement of Condenser Liquid Outlet Pipe Assembly(low figuration)

Removal procedure

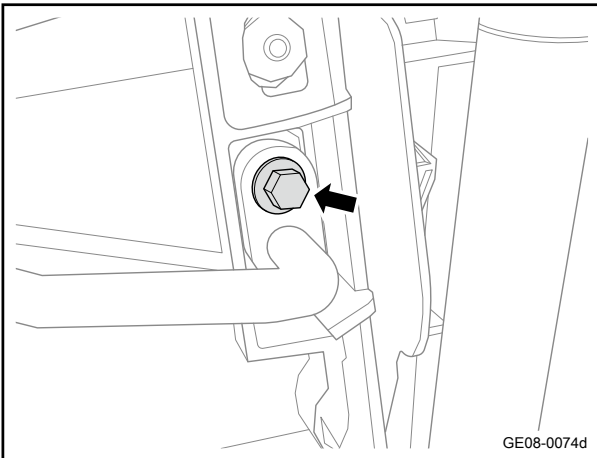
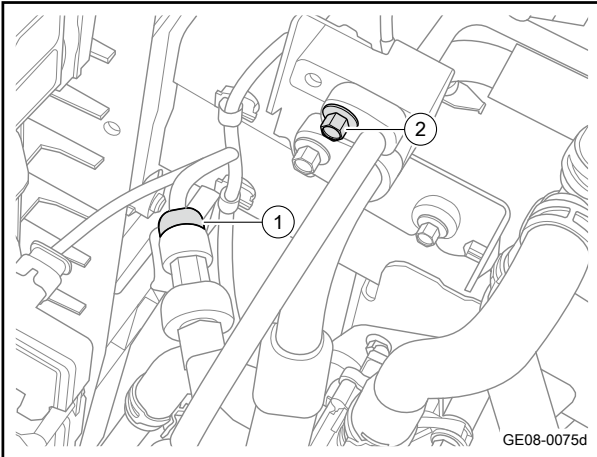


- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the harness connector 1 of the evaporator liquid outlet pipe assembly.
- 4 Remove the 1 fixing bolt 2 connecting the condenser liquid outlet pipe assembly with the evaporator inlet and outlet pipes, and disconnect the condenser outlet pipe assembly.



- 5 Remove the 1 fixing bolt connecting the condenser liquid outlet pipe assembly with the condenser.
- 6 Take off the condenser liquid outlet pipe assembly.

Installation procedure

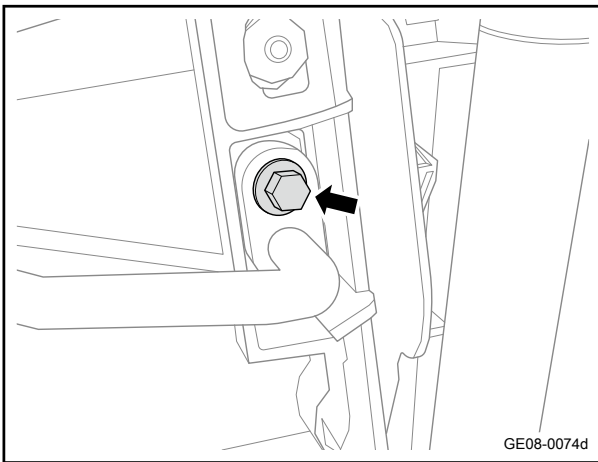
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

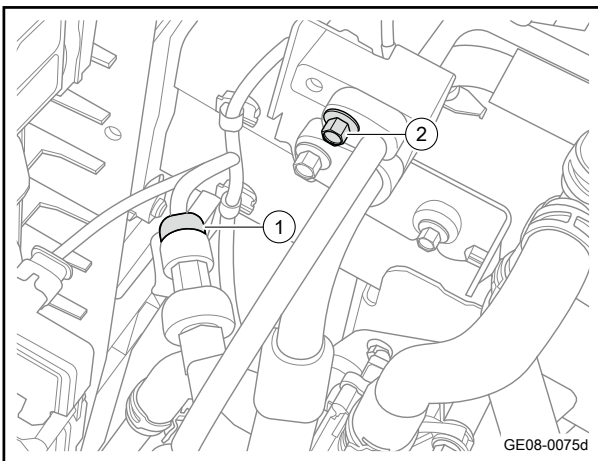
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the condenser liquid outlet pipe assembly to the installation position.
- 2 Install the 1 fixing bolt connecting the condenser liquid outlet pipe assembly with the condenser.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Connect the condenser liquid outlet pipe assembly and install the 1 fixing bolt 2 connecting the condenser liquid outlet pipe assembly with the evaporator inlet and outlet pipes.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Connect the harness connector 1 of the condenser liquid outlet pipe assembly.
- 5 Refill air conditioner refrigerant.
- 6 Connect the negative cable of battery.

8.2.7.39 Replacement of Compressor Exhaust Hose(low figuration)

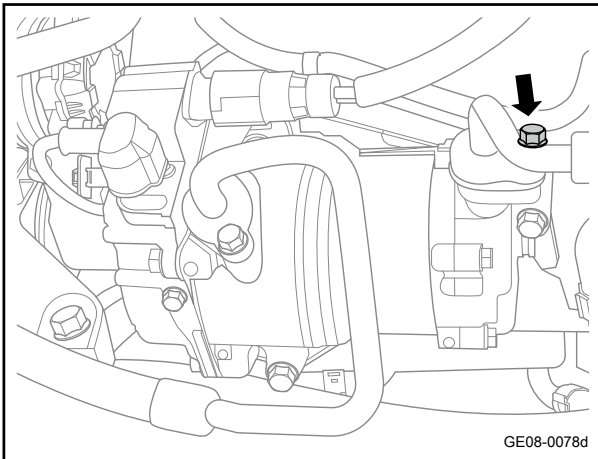
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

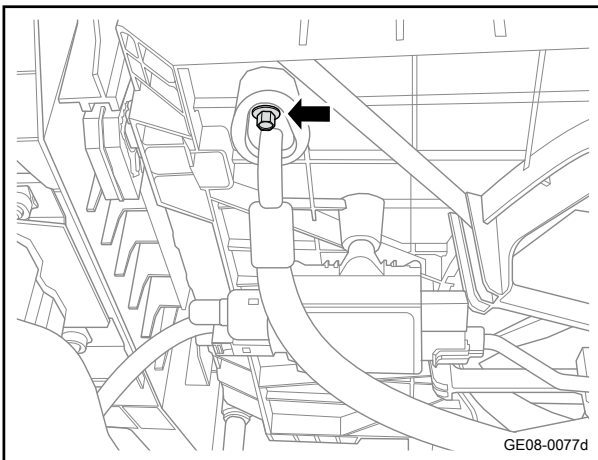
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove the 1 fixing bolt connecting the compressor exhaust hose and the motor compressor



- 4 Remove the 1 fixing bolt connecting the compressor exhaust hose and the condenser.
- 5 Take off the compressor exhaust hose.



Installation procedure

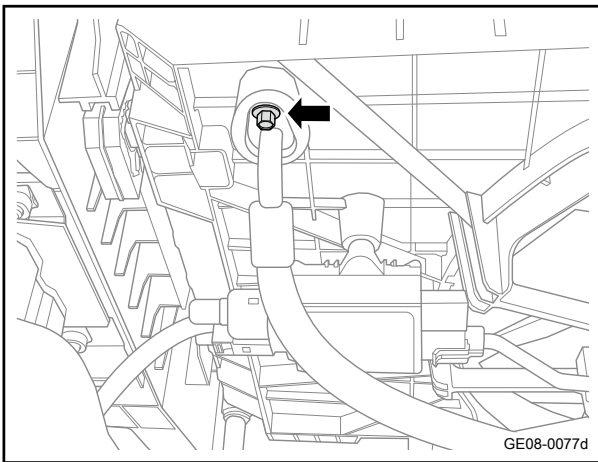
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

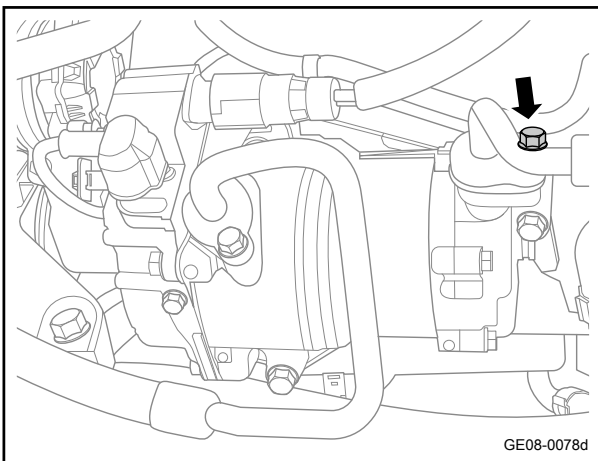
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the compressor exhaust hose to the installation position.
- 2 Install the 1 fixing bolt connecting the compressor exhaust hose and the condenser.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Install the 1 fixing bolt connecting the compressor exhaust hose and the compressor.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.40 Replacement of Compressor Intake Hose (low figuration)

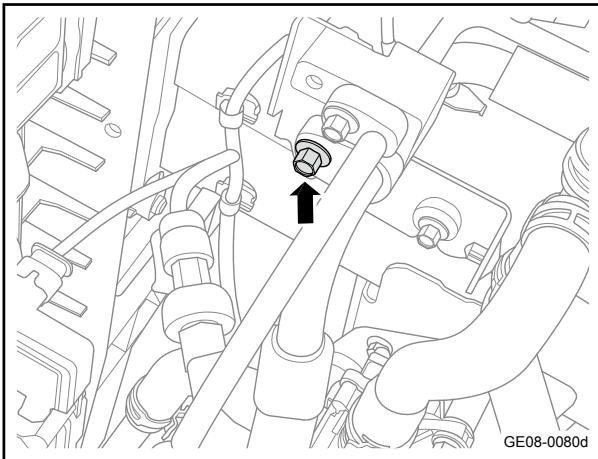
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

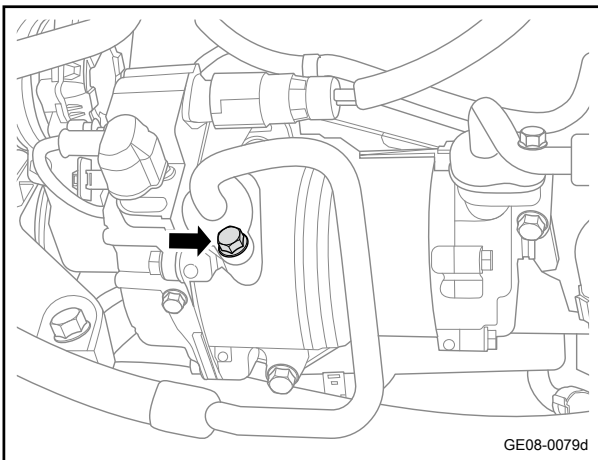
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove 1 fixing bolt connecting the compressor inlet hose with the compressor inlet and outlet pipe assembly, and disconnect the compressor inlet hose.



- 4 Remove the fixing bolt connecting the compressor inlet hose and the compressor
- 5 Take off the compressor intake hose.



Installation procedure

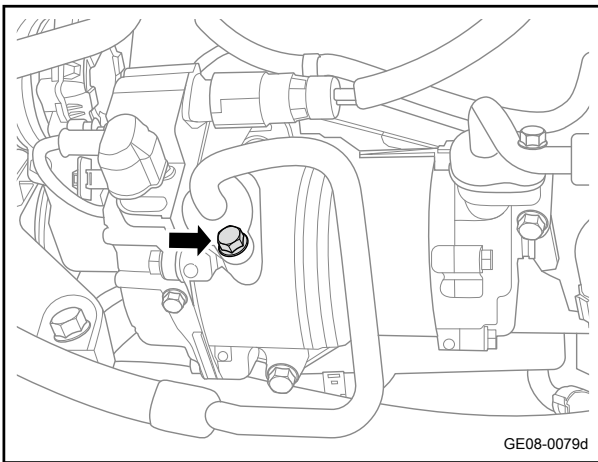
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

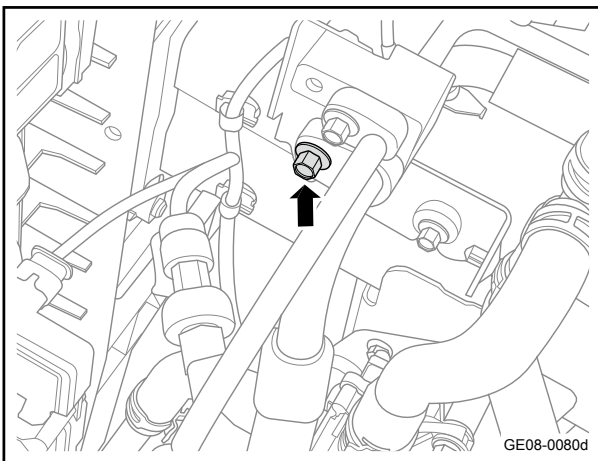
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the compressor intake hose to the installation position.
- 2 Install the 1 fixing bolt connecting the compressor intake hose and the motor compressor.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 3 Connect the compressor exhaust hose, and install the fixing bolt connecting the compressor inlet hose to the compressor inlet and outlet pipe assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Refill air conditioner refrigerant.
- 5 Connect the negative cable of battery.

8.2.7.41 Replacement of Evaporator Inlet and Outlet Pipe Assembly

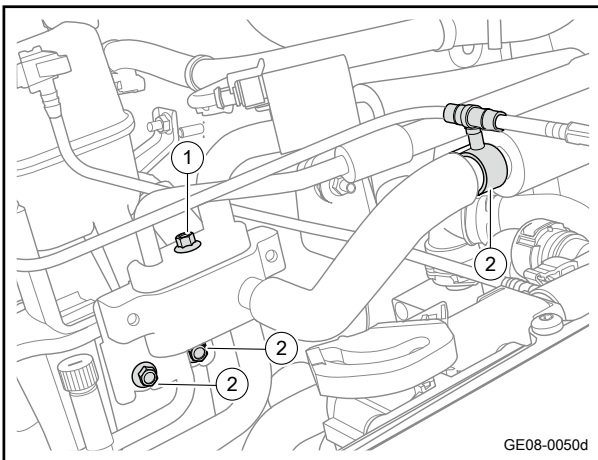
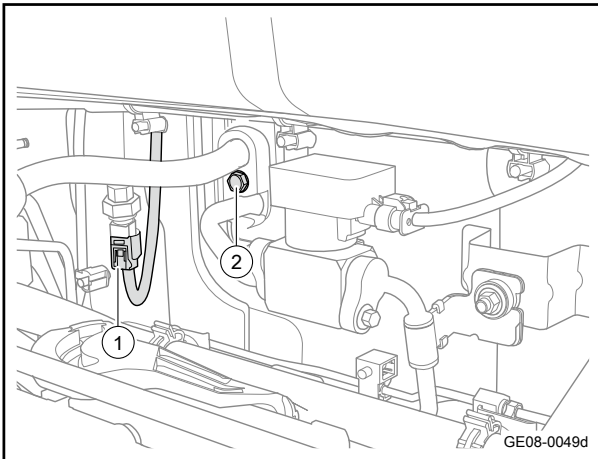
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

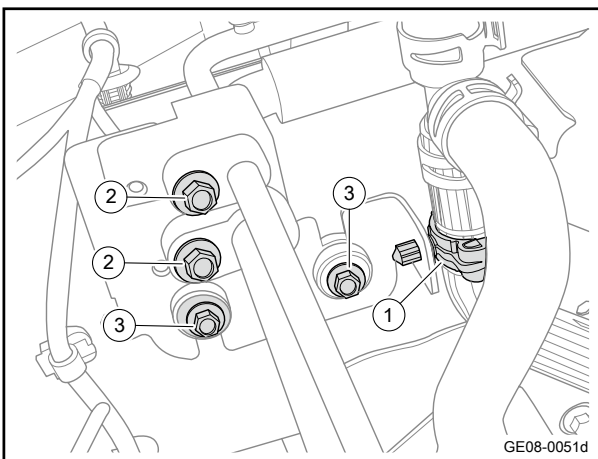
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Disconnect the harness connector 1 of the evaporator inlet and outlet pipe assembly.
- 4 Remove the 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.



- 5 Remove the 1 fixing bolt 1 connecting the high and low-pressure hose of the heat exchanger and the evaporator inlet and outlet pipes, and disconnect the high and low-pressure hose of the heat exchanger.
- 6 Remove the 2 fixing bolts 2 of the evaporator inlet and outlet pipe assembly.
- 7 Remove the fastening clips 3 of the cooling and ventilation hose of the drive motor.



- 8 Remove the fixing clip 1 of the inlet hose of the electric heating water pump.
- 9 Remove the 2 fixing bolts 2 connecting the evaporator inlet and outlet pipe assembly and the condenser high and low-pressure pipe, and disconnect the high and low-pressure pipe of the evaporator.
- 10 Remove the 2 fixing bolts 3 of the evaporator inlet and outlet pipe assembly.
- 11 Take off the evaporator inlet and outlet pipe assembly.

Installation procedure

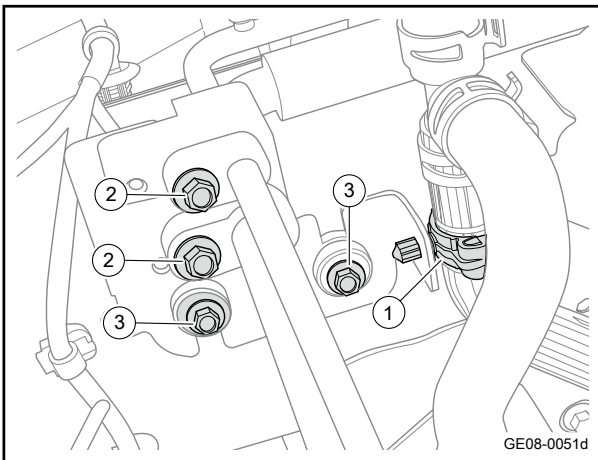
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

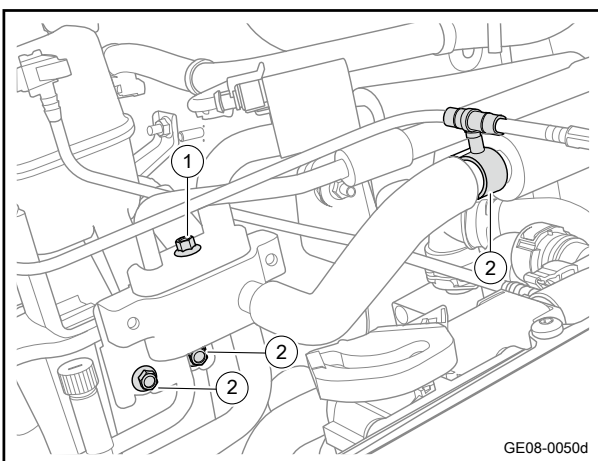
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the evaporator inlet and outlet pipe assembly to the installation positions.
- 2 Install the 2 fixing bolt 3 of the evaporator inlet and outlet pipe assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Connect evaporator inlet and outlet pipes, and install 2 fixing bolts 2 connecting the evaporator inlet and outlet pipe assembly and the evaporator high and low-pressure pipes
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

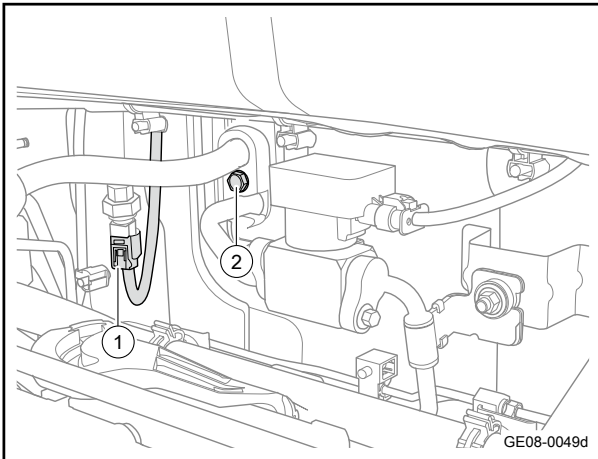
Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 4 Install the fixing clip 1 of the inlet hose of the heating water pump.
- 5 Install the fastening clips 3 of the cooling and ventilation hose of the drive motor.
- 6 Install the 2 fixing bolts 2 of the evaporator inlet and outlet pipe assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 7 Connect the high and low-pressure pipe of the heat exchanger, and install the 1 fixing bolt 1 of the high and low-pressure pipe of the heat exchanger with the inlet and outlet pipe assembly of the evaporator.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 8 Install the 1 fixing bolt 2 of the evaporator inlet and outlet pipe assembly.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 9 Connect the harness connector 1 of the evaporator inlet and outlet pipe assembly.

- 10 Refill air conditioner refrigerant.

- 11 Connect the negative cable of battery.

8.2.7.42 Replacement of the high and low-pressure pipes of the evaporator

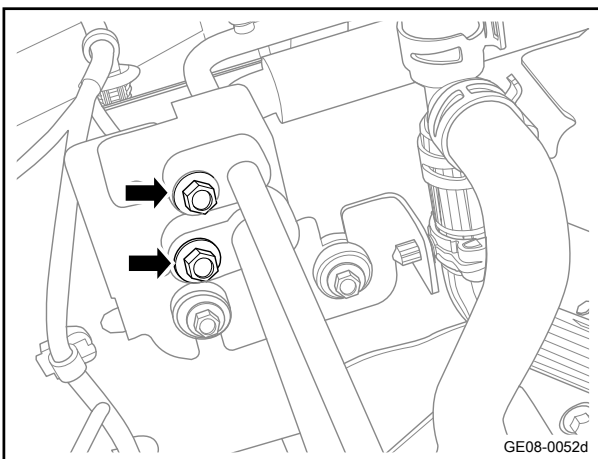
Removal procedure

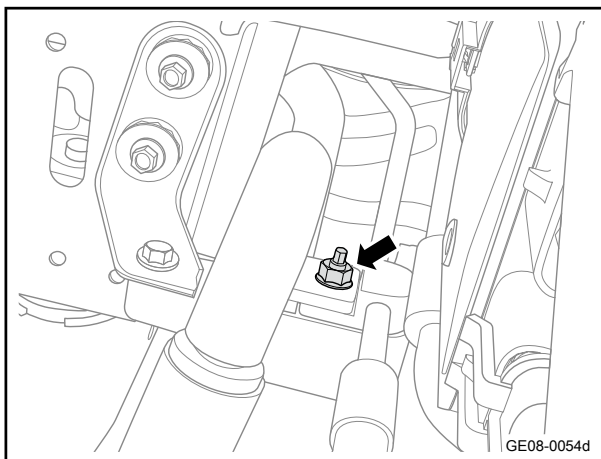
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

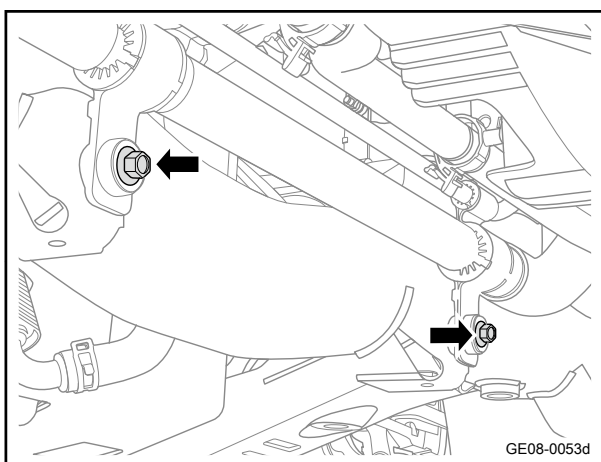
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Engine Compartment Bottom Shield](#)
- 5 Remove the 2 fixing bolts connecting the evaporator high and low-pressure pipes and the evaporator inlet and outlet pipe assembly, and disconnect the evaporator high and low-pressure pipes.





- 6 Remove the 1 fixing nut connecting the high and low-pressure pipe assembly and high and low-pressure pipes of the integrated heat pump module.



- 7 Remove the 2 fixing bolts of the evaporator high and low-pressure pipe support.
- 8 Take off the evaporator high and low-pressure pipes.

Installation procedure

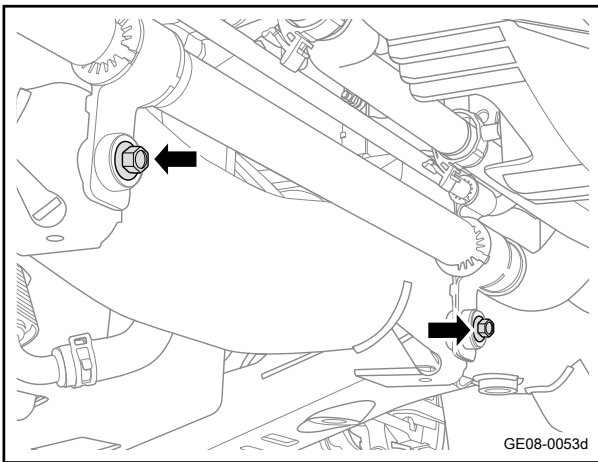
Caution

All O-rings involved in the installation process must be replaced with new ones.

Caution

When replacing the pipelines of the air conditioning system:

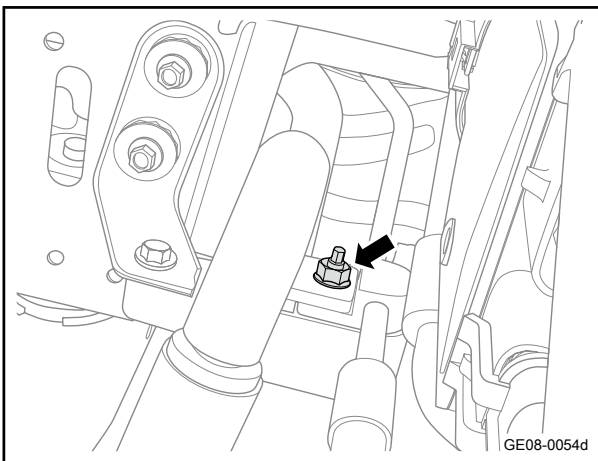
- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the evaporator high and low-pressure pipes to the installation position.

- 2 Install the 2 fixing bolts of the evaporator high and low-pressure pipe support.

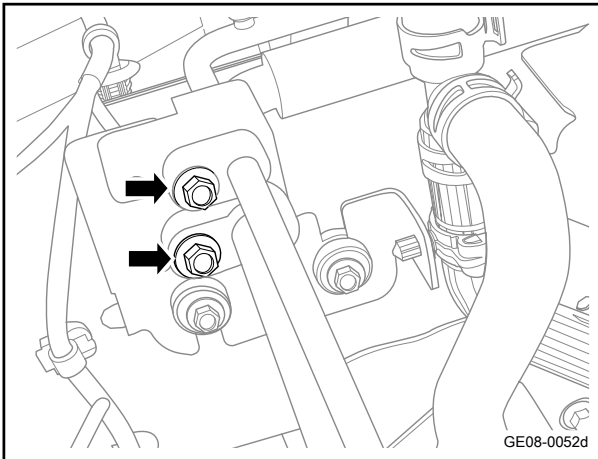
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



- 3 Install the 1 fixing nut connecting the high and low-pressure pipe assembly of the integrated heat pump module and the evaporator high and low-pressure pipes.
- Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 4 Connect the evaporator high and low pressure pipe, and install the 2 fixing bolts connecting the evaporator high and low-pressure pipes with the inlet and outlet pipe assembly of the evaporator.

Torque: 9N·m (metric system) 6.6lb·ft (Imperial system)

Caution

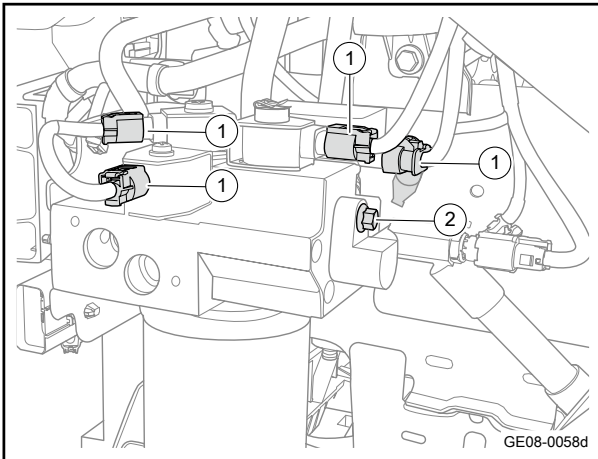
Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 5 Install the front engine compartment bottom shield.
- 6 Lower the vehicle.
- 7 Refill air conditioner refrigerant.
- 8 Connect the negative cable of battery.

8.2.7.43 Replacement of the Integrated Heat Pump Module

Removal procedure

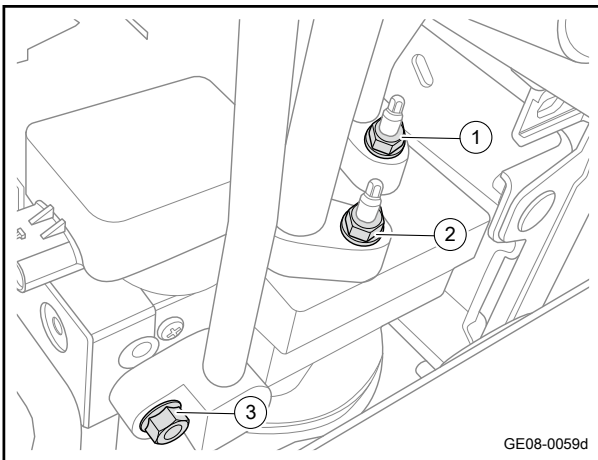
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 4 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 5 Remove the high and low-pressure pipe assembly of the integrated heat pump module. Refer to [Replacement of the High and Low-pressure Pipe Assembly of the Integrated Heat Pump Module](#)



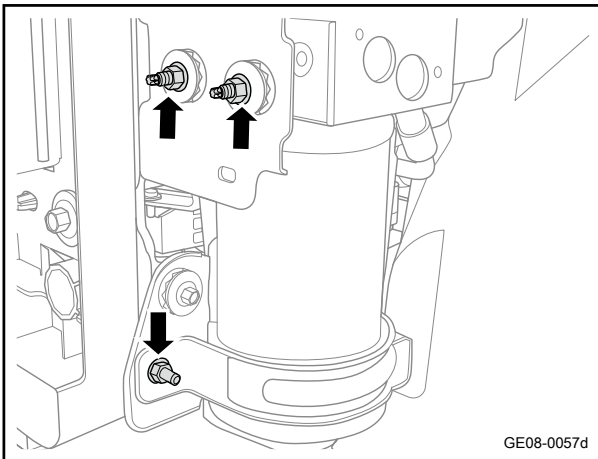
- 6 Disconnect the harness connectors 1 of the integrated heat pump module.
- 7 Remove the 1 fixing bolt 2 connecting integrated heat pump module and AC inlet and outlet pipe assembly, and disconnect the AC inlet and outlet pipe assembly.

Caution

The sealing ring of the refrigeration pipe is a quick-wear part, so the towing force and speed should not be excessive when disconnecting the refrigeration pipe.



- 8 Remove the 1 fixing nut 1 connecting integrated heat pump module and the liquid outlet pipe of the condenser to disconnect the liquid outlet pipe of the condenser.
- 9 Remove 1 fixing nut 2 connecting integrated heat pump module and the compressor inlet hose, and disconnect the compressor inlet hose.
- 10 Remove the 1 fixing bolt 3 connecting integrated heat pump module and the inlet pipe of the condenser to disconnect the inlet pipe of the condenser.



- 11 Remove the 3 fixing nuts of the integrated heat pump module.
- 12 Take off the integrated heat pump module.

Installation procedure

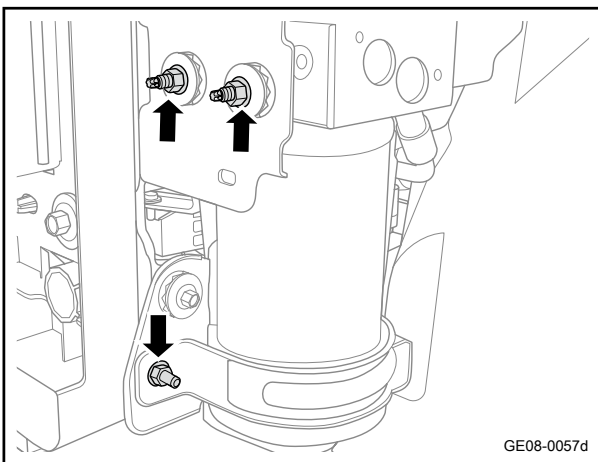
Caution

All O-rings involved in the installation process must be replaced with new ones.

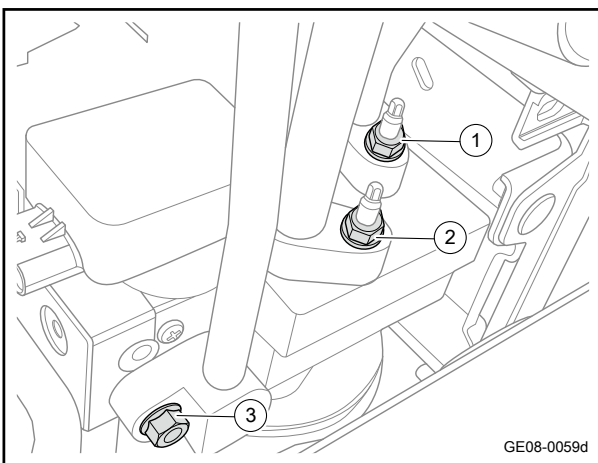
Caution

When replacing the pipelines of the air conditioning system:

- If it is to replace with new compressor suction pipes, it is necessary to add 10ml compressor lubricating oil to the air conditioning system;
- If you only replace other air-conditioning pipelines, you do not need to add additional compressor lubricating oil.



- 1 Move the integrated heat pump module to the installation position.
- 2 Install the 3 fixing nuts of the integrated heat pump module.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 3 Install the condenser inlet pipe, and install the 1 fixing bolt 3 connecting the condenser inlet pipe and the integrated heat pump module.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 4 Connect compressor inlet hose, and install fixing nut 2 connecting the compressor inlet hose and the integrated heat pump module.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

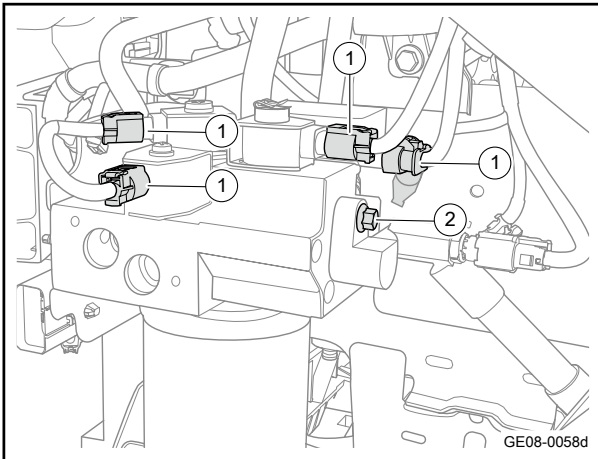
Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

- 5 Remove the 1 fixing nut 1 connecting the condenser liquid outlet pipe with the integrated heat pump module.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

Caution

Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.



- 6 Connect the A/C inlet and outlet pipe assembly, and install the 1 fixing bolt 2 between the integrated heat pump module and the A/C inlet and outlet pipe assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

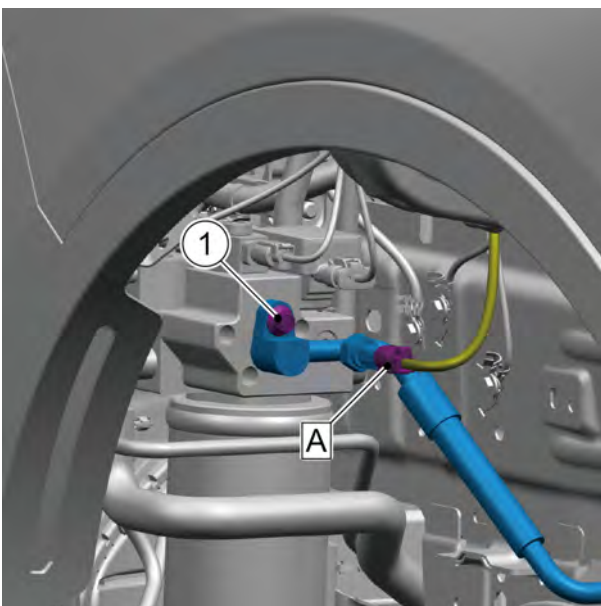
Ensure that the refrigeration pipe interface is "flat and straight" joint before installing the fixing bolts.

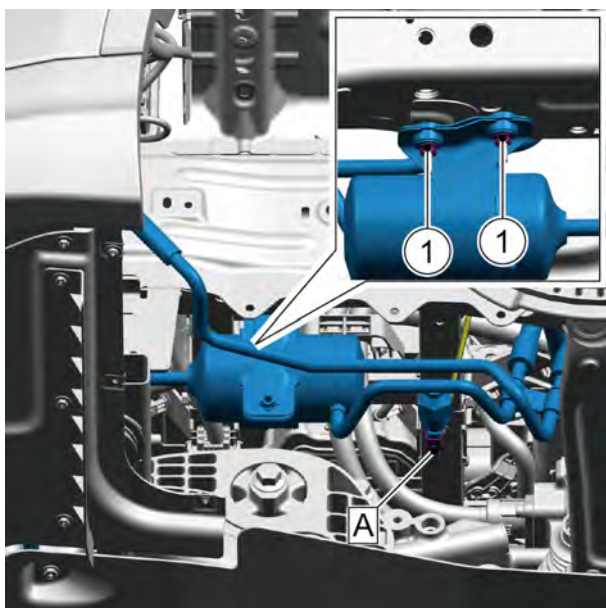
- 7 Connect the harness connectors 1 of the integrated heat pump module.
- 8 Install the high and low-pressure pipe assembly of the integrated heat pump module.
- 9 Install the front bumper assembly.
- 10 Lower the vehicle.
- 11 Refill air conditioner refrigerant.
- 12 Connect the negative cable of battery.

8.2.7.44 Replacement of A/C Inlet and Outlet Pipe Assembly

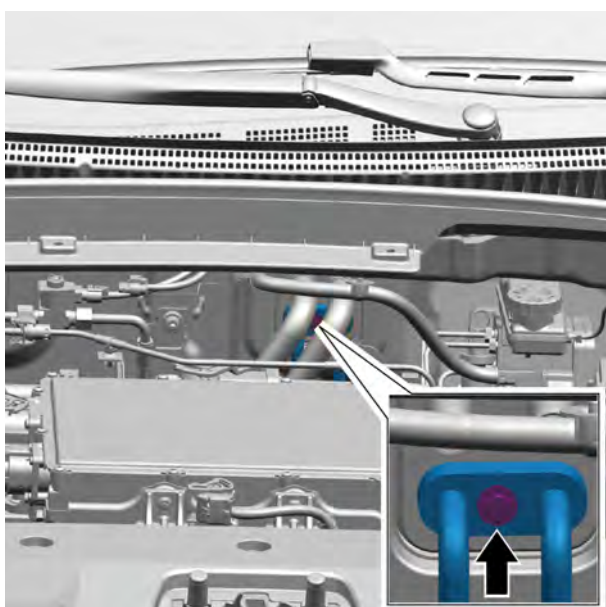
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Perform the refrigerant recovery procedure. Refer to [Recovery and Filling of A/C Refrigerant](#)
- 3 Remove the left front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 4 Disconnect the 1 harness connector A of the A/C inlet and outlet pipe assembly and front compartment harness assembly.
- 5 Remove the 1 fixing bolt 1 connecting the AC inlet and outlet pipe assembly and the integrated heat pump module.

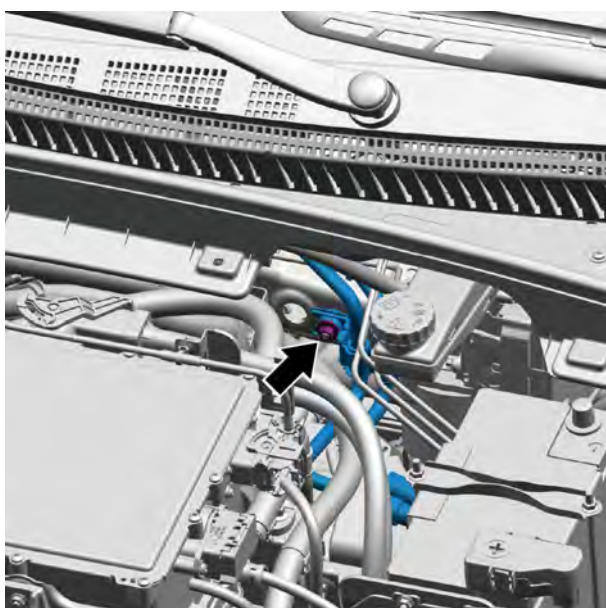




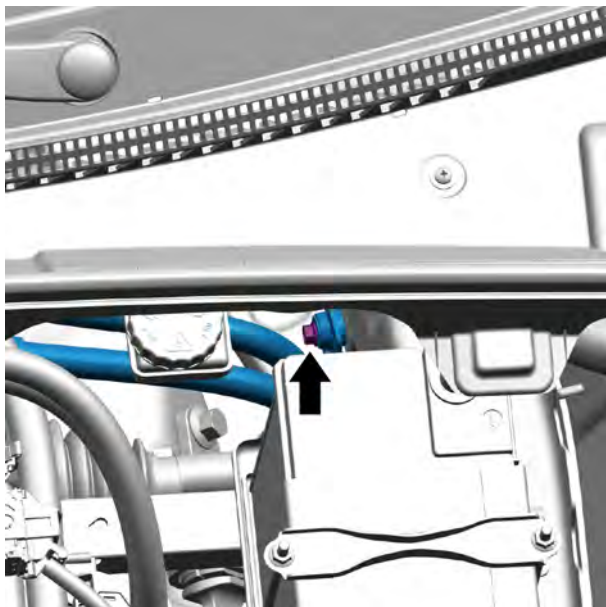
- 6 Disconnect the 1 harness connector A of the A/C inlet and outlet pipe assembly and front compartment harness assembly.
- 7 Remove the 2 fixing nuts 1 connecting the A/C inlet and outlet pipe assembly and the vehicle body.



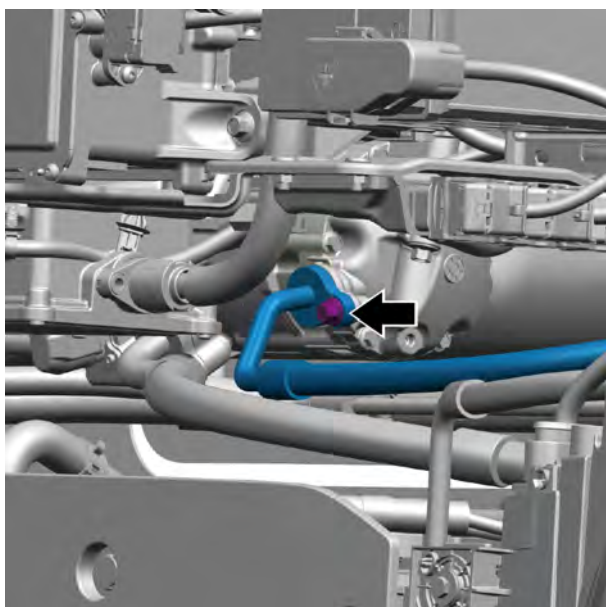
- 8 Remove the 1 fixing bolt connecting the AC inlet and outlet pipe assembly and the A/C unit assembly.



- 9 Remove the 1 fixing nut connecting the A/C inlet and outlet pipe assembly and the vehicle body.

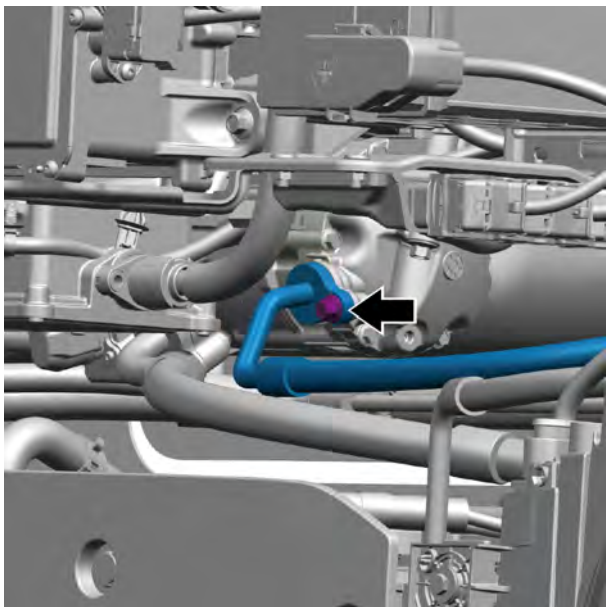


- 10 Remove the 1 fixing bolt connecting the A/C inlet and outlet pipe assembly and the vehicle body.

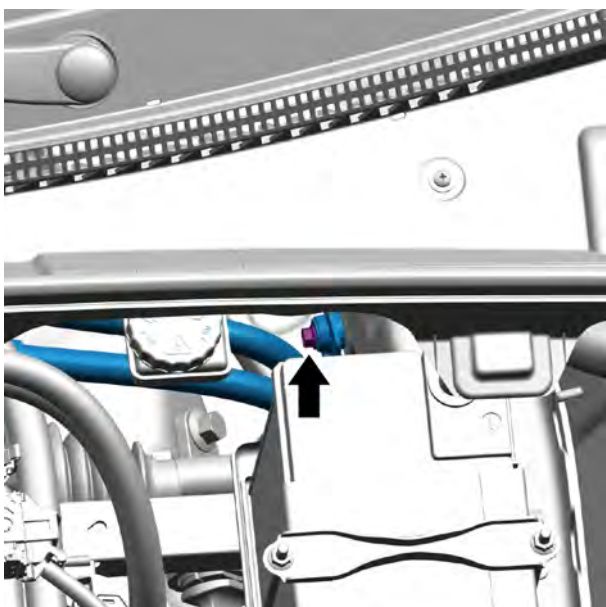


- 11 Remove the 1 fixing bolt connecting the A/C inlet and outlet pipe assembly and the motor compressor assembly.
- 12 Take off the AC inlet and outlet pipe assembly.

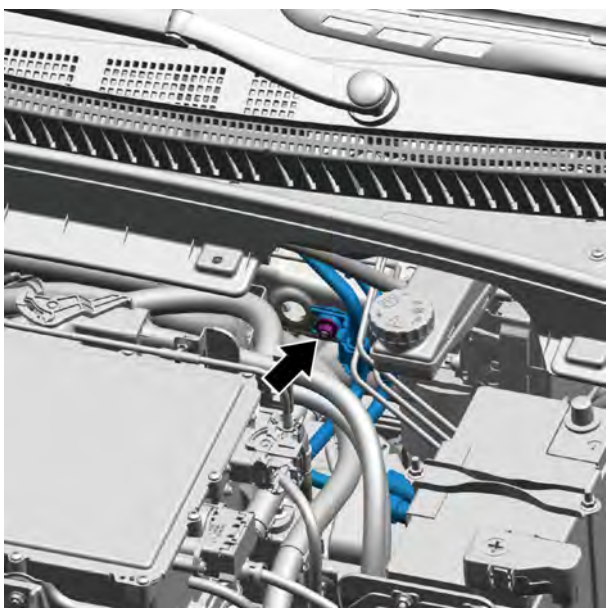
Installation procedure



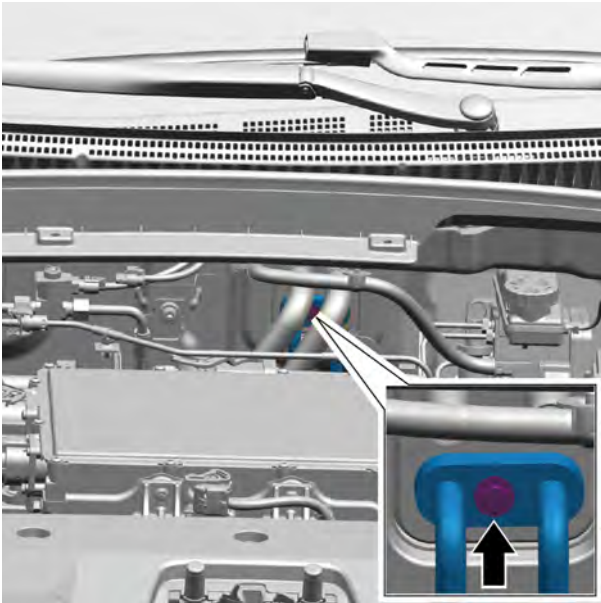
- 1 Move the AC inlet and outlet pipe assembly to the installation positions.
- 2 Install the 1 fixing bolt connecting the A/C inlet and outlet pipe assembly and the compressor assembly.
Torque: 10N·m



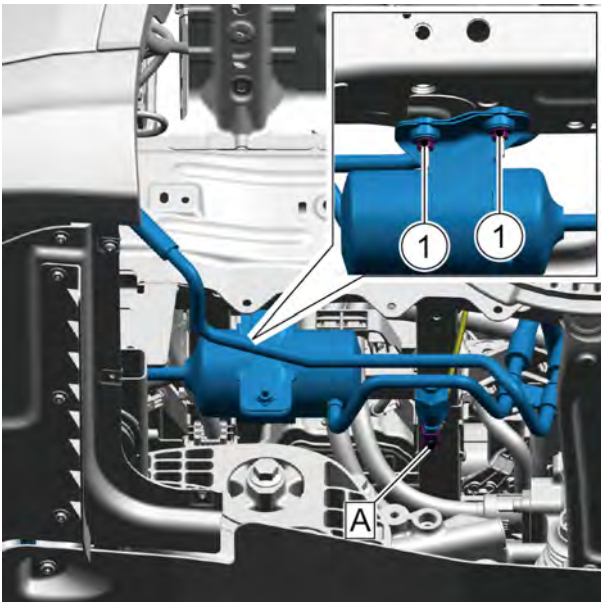
- 3 Install the 1 fixing bolt between the A/C inlet and outlet assembly and the vehicle body.
Torque: 10N·m



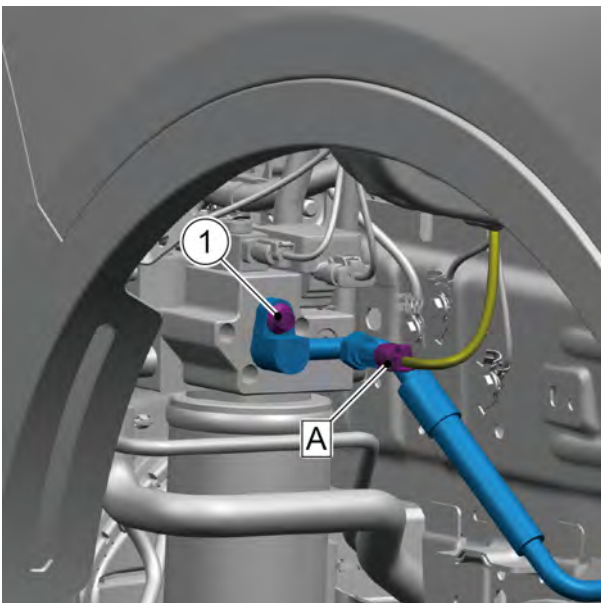
- 4 Install and tighten the 1 fixing nut connecting the AC inlet and outlet pipe assembly and vehicle body.
Torque: 10N·m



- 5 Install the 1 fixing bolt connecting the AC inlet and outlet pipe assembly and the A/C unit assembly.
Torque: 10N·m



- 6 Install the 2 fixing nuts 1 between the A/C inlet and outlet pipe assembly and the vehicle body.
Torque: 10N·m
- 7 Connect the harness connector A connecting the A/C inlet and outlet pipe assembly and the front compartment harness assembly.



- 8 Install the 1 fixing bolt 1 connecting the A/C inlet and outlet pipe assembly and the integrated heat pump module.
Torque: 10N·m
- 9 Connect the harness connector A connecting the A/C inlet and outlet pipe assembly and the front compartment harness assembly.

- 10 Install the left front fender liner.
- 11 Refill air conditioner refrigerant.
- 12 Connect the negative cable of battery.

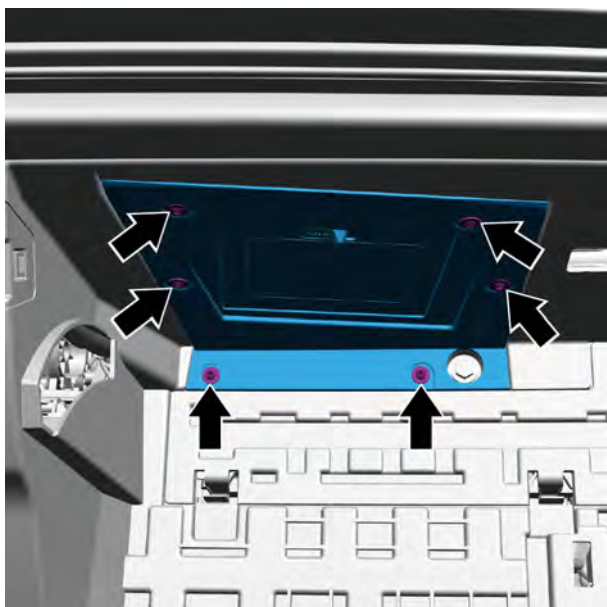
8.2.7.45 Replacement of High and Low-pressure Hose of the Heat Exchanger

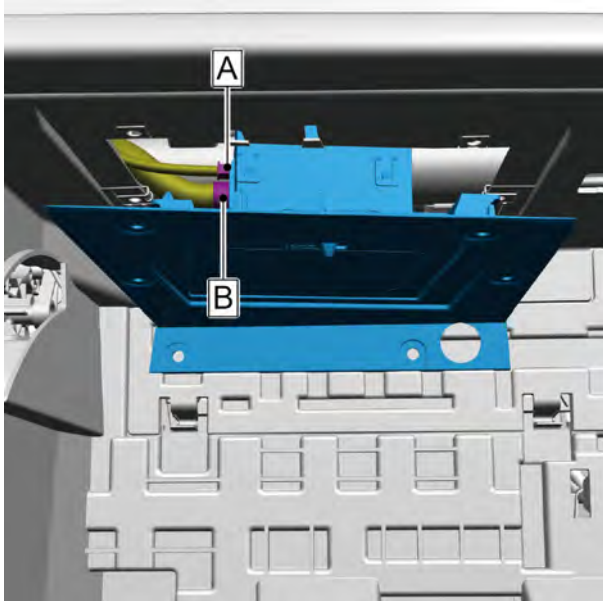
Refer to [Replacement of High and Low-pressure Hose of the Heat Exchanger](#)

8.2.7.46 Replacement of vehicle-mounted fragrance

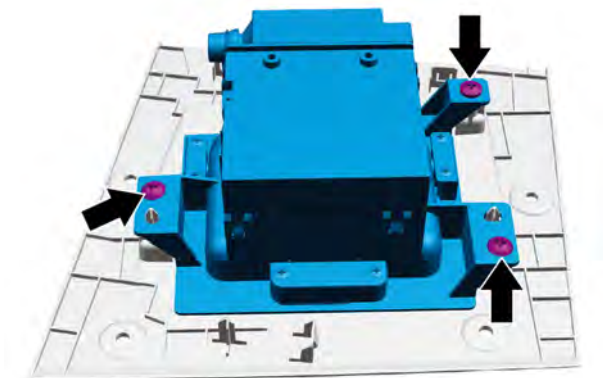
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the glove box. Refer to [Replacement of Glove Box](#)
- 3 Remove the 6 fixing screws connecting the fragrance mounting bracket with the instrument panel lower body assembly.





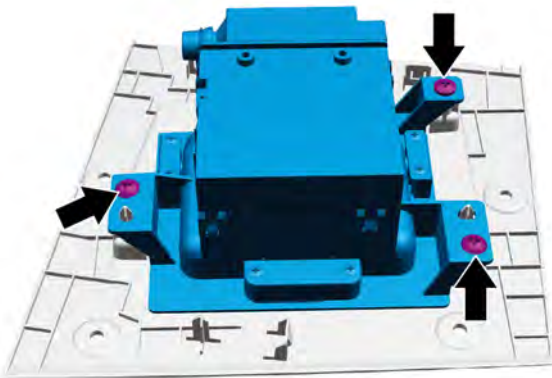
- 4 Disconnect the 1 harness connector A between the instrument harness assembly and the vehicle-mounted fragrance.
- 5 Disconnect the joint B connecting the fragrance pipe and the vehicle-mounted fragrance.
- 6 Take off the vehicle fragrance and mounting bracket.



- 7 Remove the 3 fixing screws of the vehicle-mounted fragrance and fragrance mounting bracket.
- 8 Take off the vehicle-mounted fragrance.

Installation procedure

- 1 Move the vehicle-mounted fragrance to the installation position.
- 2 Install and tighten the 3 fixing screws connecting the fragrance and the fragrance mounting bracket.



- 3 Move the fragrance mounting bracket and generator to the installation position.
- 4 Install the connector B connecting the fragrance pipe and the vehicle-mounted fragrance.

Caution

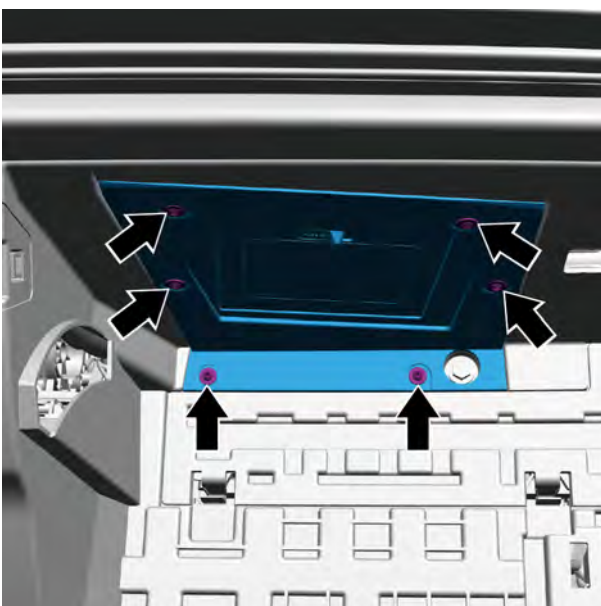
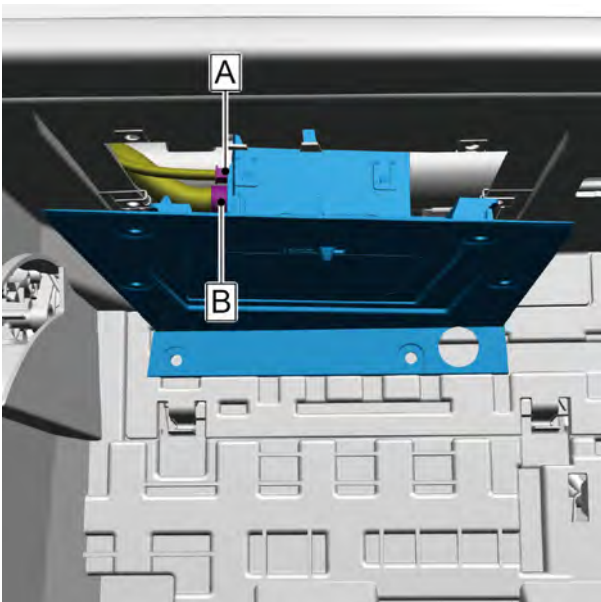
Check whether the connector B connecting the fragrance pipe and the vehicle-mounted fragrance is installed in place.

- 5 Connect the 1 harness connector A of the instrument harness assembly and fragrance.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 6 Install the 6 fixing screws connecting the fragrance mounting bracket with the instrument panel lower body assembly.



- 7 Install the glove box.
- 8 Connect the negative cable of battery.

Safety Protection Device

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9.1 Warnings and precautions

9.1.1 Warnings and precautions

9.1.1.1 Warnings and Precautions

Warning regarding airbag system

Warning

This vehicle is equipped with airbag system. Failure to follow proper operating procedures may result in the following situations:

- The airbag system is accidentally opened.
- The system does not work when the airbag is needed for protection.

Warning

Strictly observe the following guidelines to avoid the above situation:

- The airbag system component view should be referred to in order to ensure whether you are maintaining or operating on airbag system components, surrounding, or its circuit.
- If you are performing maintenance operations on airbag system components and its surroundings or its lines, disengage the airbag system. See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

Warning regarding extremely high temperature of deployed airbag electronic control unit (ACU)

Warning

After deployment, the metal surfaces of airbag system components may be very hot. To avoid fire and personal injury:

- There should be sufficient cooling time before touching any metal surface of the airbag system components.
- Do not place inflatable airbag system components next to any combustible material.

Warning regarding clock spring of airbag system

Warning

Improper installation of the clock spring assembly will damage the spiral coil inside the clock spring, which may cause coil failure and make the airbag module unable to work normally, thus leading to personal injury.

Warnings regarding safety system module scrapping

Warning

To prevent accidental deployment of airbags and personal injury, non-deployed airbag modules should not be disposed of as conventional workshop wastes. If the sealed container damages in the process of scrap, some of the substances contained in the non-deployed modules may cause serious illness or personal injury. Safely scrap non-deployed airbag modules with deployment procedures.

Warnings regarding taking and storage of the airbag system inflated modules

Warning

When transporting non-deployed airbag modules:

- Do not lift the wires or connectors on the airbag modules for handling.
- Make sure the airbag opening does not face yourself or someone else.

Warning

When storing undeployed airbags, ensure the airbag openings are not toward the surface where the airbag module is placed. The airbag openness should not be downward. It is prohibited to place any object on the airbag modules. There should be enough space around the airbag for accident deployment; otherwise, it will hurt people. It is prohibited to immerse the non-deployed airbag modules in water or contact with other liquids. The undeployed airbag should be prohibited from fire sources or high temperatures to avoid accident deployment of the airbag that may hurt people.

Warning regarding the treatment of airbag system impact sensor

Warning

Do not impact or shake the airbag system impact sensor. Before charging the impact sensor, make sure that the impact sensor is firmly fixed. Failure to follow the correct installation procedure may cause accidental detonation of the airbag system or no effect at the time of detonation, causing personal injury.

9.2 Airbag system

9.2.1 Specification

9.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Airbag electronic control unit fixing bolt	M6×12	8.5-11.5
Fixing screws the passenger's front airbag and the instrument panel body assembly.	-	2.5-3.5
Fixing bolt of left side curtain airbag	M6×16	8.5-11.5
Front left impact sensor fixing bolt	M6×25	8.5-11.5
Side impact sensor fixing bolt	M6×25	8.5-11.5

9.2.2 Instructions and operations

9.2.2.1 Description and Operations

Caution

Airbag system is not intended to overlap the function of seatbelt. If the seat belt is not fastened, serious personal injury may result when the air bag is detonated. Geely Auto reminds you to fasten your seat belt when driving or riding. Only when the seat belt is fastened can the airbag system better provide auxiliary protection for occupants in case of collision.

Description of airbag system

The airbag system consists of the following components:

- Airbag fault alarming indicator
- Instrument cluster display screen
- Airbag electronic control unit (ACU)
- Driver side left frontal impact sensor
- Passenger side left frontal impact sensor
- Driver side impact sensor
- Passenger side impact sensor
- Passenger detection switch
- Driver's airbag
- Passenger airbag
- Driver's seatbelt
- Passenger's seatbelt
- Front left side airbag
- Front right side airbag
- Left curtain airbag
- Right curtain airbag
- Clock spring
- Airbag system harness
- Steering wheel and steering column

Airbag system is a passive safety system, which provides the occupant with auxiliary protection in addition to seat belt. The airbag system has multiple inflatable protection modules distributed in different positions in the vehicle, including the steering wheel, instrument panel, front seat backs, and roof rails. Each inflatable module has an ignition circuit which is controlled by the airbag control module. When the airbag electronic control unit detects the impact force of the collision is huge enough, it will control the airbag to deploy. The airbag control module continuously diagnoses and monitors the electrical components of the airbag system. When a circuit fault is detected, the airbag control module will set a DTC and turn on the airbag warning lamp to inform the driver. The

steering column is of energy absorption type. When front side collision happens, it can be shrunk to reduce the driver injury odds.

The airbag electronic control unit will receive the sensor signals to judge the degree of severity of the collision. When the signal value is bigger than the setting value in the memorizer, the airbag electronic control unit will send out an ignition commands to deploy the corresponding inflatable module of the airbag system. When the front side collision with sufficient impact force, the front side airbags will deploy; When the side collision with sufficient impact force, the front side airbags and curtain airbags will deploy.

9.2.3 System working principles

9.2.3.1 System Working Principles

Airbag fault alarming indicator

If a fault is detected, the airbag electronic control unit will store a diagnostic trouble code (DTC), and then command the instrument cluster to turn on the airbag warning lamp through the CAN-bus serial data bus. After the vehicle is started, ACU will continuously detect each circuit. If there is a fault, the airbag electronic control unit will communicate with the instrument cluster through CANBUS serial data bus, and the airbag warning lamp will turn on after 5s. If there is any fault in the airbag system, it may prevent deployment of airbags, or cause the deployment of airbags when a collision does not reach the set severity level. If the airbag alarming indicator is turned on, please go to a Geely authorized service station for troubleshooting. Before completing fault repair, the airbag indicator will not go out.

Airbag electronic control unit (ACU)

Caution

ACU has its own capacitor to store energy, so that even if the battery power harness is cut off in the event of a collision, the airbag ACU can still detonate the actuator and store the collision records. Disconnect the negative cable of the battery and wait for more than 90s before carrying out the maintenance of the airbag system, and then empty the reserved power supply.

The airbag electronic control unit (ACU) is a microprocessor, which is the control center of the airbag system. When the vehicle is involved in a collision, the airbag electronic control unit compares the signal from the sensor with the value in the memory; when the generated signal value exceeds the stored value, the airbag electronic control unit sends an ignition command (current signal) to each ignition circuit to deploy the airbag. When the airbags are deployed, the airbag control unit will record the status of the airbag system and turn on the airbag indicator on the instrument cluster. After starting the vehicle, the airbag control unit will perform constant diagnosis monitoring of electrical components and circuits of the airbag system. When a fault of the airbag control unit is detected, it will store a DTC code and turn on the airbag alarming indicator to inform drivers of the fault.

Frontal left impact sensor (left/right)

Frontal left impact sensor is used to strengthen performance of the airbag system. The left frontal impact sensor is an acceleration sensor that transmits a signal of acceleration ahead of the vehicle to the airbag electronic control unit (ACU). The left frontal impact sensor can help to determine

the severity of a frontal collision. The ACU uses the measured acceleration values to perform calculations and compares these calculated values with those in the memory. When the generated calculation exceeds the stored value, the airbag electronic control unit sends an ignition command (current signal) to the front ignition circuit, thereby deploying the front airbag.

Driver side impact sensor, passenger side impact sensor

Each side impact sensor includes a sensing device that monitors vehicle acceleration and transmits vehicle side acceleration signals to the airbag electronic control unit (ACU). The side impact sensor can confirm the severity of side collision. The ACU uses the measured acceleration values to perform calculations and compares these calculated values with those in the memory. When the generated calculated value exceeds the storage value, the airbag control unit will issue an ignition command (current signal) to front ignition circuit to deploy the front side airbag.

Passenger seatbelt buckle switch+passenger detection switch

The passenger seatbelt buckle switch and passenger detection switch are used to indicate the seat belt status of the front passenger and the front passenger seat. When the co-driver seat belt is not buckled and the co-driver has no passenger seat, the switch outputs a high resistance value; When the co-driver seat belt is buckled and the co-driver has no passenger seat, the switch outputs a high resistance value; When the co-driver seat belt is buckled and the co-driver has a passenger seat, the switch outputs a low resistance value.

Driver airbag and passenger airbag

The driver airbag and passenger airbag module includes a shell, inflatable airbags, an ignition blasting device and a gas generator. When the frontal impact force of the vehicle is large enough, the airbag electronic control unit will send an ignition command to the frontal ignition circuit to deploy the airbag. Current flows through the igniter, blasting the gas generator to generate a lot of gas rapidly. The gas generated in the reaction quickly inflates the airbag. Once the airbag is filled with gas, it will quickly deflate through the vent of the airbag. The airbag electronic control unit wiring harness connector terminal (driver airbag, occupant airbag deployment loop) has a short-circuit plate. When the connector is disconnected, the short circuit strip will short circuit the inflation module

deployment circuit of the airbag to prevent accidental deployment of the airbag during the maintenance.

Front left side airbag and front right side airbag

Front left side airbag and front right side airbag are located on backrests of the driver seat and the passenger seat respectively. The front side airbag module includes airbag, ignition blasting device and gas generator. The igniter is part of the front side airbag module deployment circuit. When the side impact force in a vehicle collision is strong enough, the side impact sensor will detect that collision and signal to the air control unit. The airbag control unit compares the signal from side impact sensor with the set value in the storage. When the signal value exceeds the storage value, the airbag control unit (ACU) issues an ignition command to deploy the front side airbag. When a side collision happens to the passenger side, it requires the front left side airbag and left side curtain airbag not to ignite, while the right side airbag and right side curtain airbag to ignite. The airbag control unit constantly monitors deployment circuit for faults. Once a fault happens, the airbag indicator will be turned on. The airbag control unit harness connector terminal (each front side airbag deployment circuit) is equipped with a short circuit plate. The short circuit plate can short circuit the front side airbag module deployment circuit to prevent accidental deployment during maintenance.

Left curtain airbag and right curtain airbag

The left curtain airbag and the right curtain airbag are respectively located in the left and right side members on the roof of the vehicle. They stretch from A-pillar to C-pillar. The side curtain airbag module on the roof of the vehicle includes curtain airbag, ignition blasting device and gas generator. The igniter is part of the deployment circuit of side curtain airbag on the roof side member of the vehicle. When the side impact force in a vehicle collision is strong enough, the side impact sensor will detect that collision and signal to the air control unit. The airbag control unit compares the signal from side impact sensor with the set value in the storage. When the signal generated exceeds the storage value, the airbag control unit (ACU) issues an ignition command to deploy the curtain airbag. When a side collision happens to the passenger side, it requires the front left side airbag and left side curtain airbag not to ignite, while the right side airbag and right side curtain airbag to ignite. The airbag control unit constantly monitors deployment circuit for faults. Once a fault happens, the airbag indicator will be turned on. The airbag control unit harness connector terminal (each curtain airbag deployment circuit) is equipped with a short circuit plate. The short circuit plate can short circuit the deployment circuit of

side member curtain airbag module on the roof of the vehicle to prevent accidental deployment during the maintenance.

Clock spring

The airbag clock spring is on the steering column and under the steering wheel. The clock spring maintains continuous electrical contact between the driver deployment circuit and the driver's airbag as the steering wheel is turned. The connector of the steering wheel clock spring is fitted with a short-connecting piece that connects the deployment circuit of the driver's airbag to prevent accidental deployment during service.

Airbag system harness

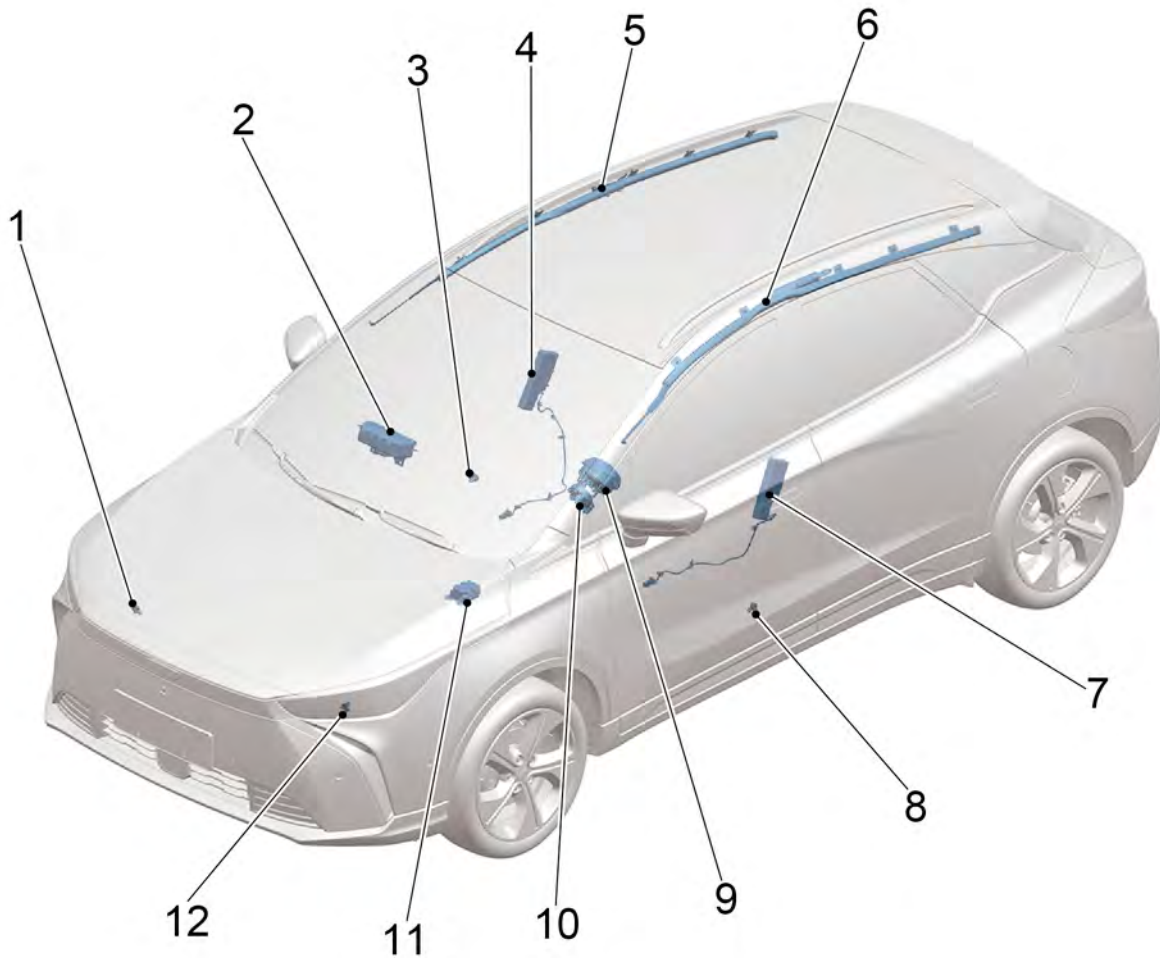
The airbag system harness connects the sensor, control unit, inflatable module, deployment loop, and CAN bus serial data circuit together through waterproof connectors. The connector of airbag system deployment circuit is designed in yellow for easy identification. Please follow related test and circuit repair procedures in the manual while repairing the airbag system harness.

Steering wheel and steering column

The steering wheel and steering column are designed to absorb energy when the driver comes into contact with the steering wheel or inflated airbags. In case of a frontal collision, the driver may directly contact the steering wheel, or the impact force may be loaded onto the steering wheel and steering column through the inflatable airbag, and the steering column will contract downward to absorb part of the collision energy, thus helping to reduce the personal injury caused to the driver. After a collision, the steering wheel and steering column must be checked for damage.

9.2.4 Part position

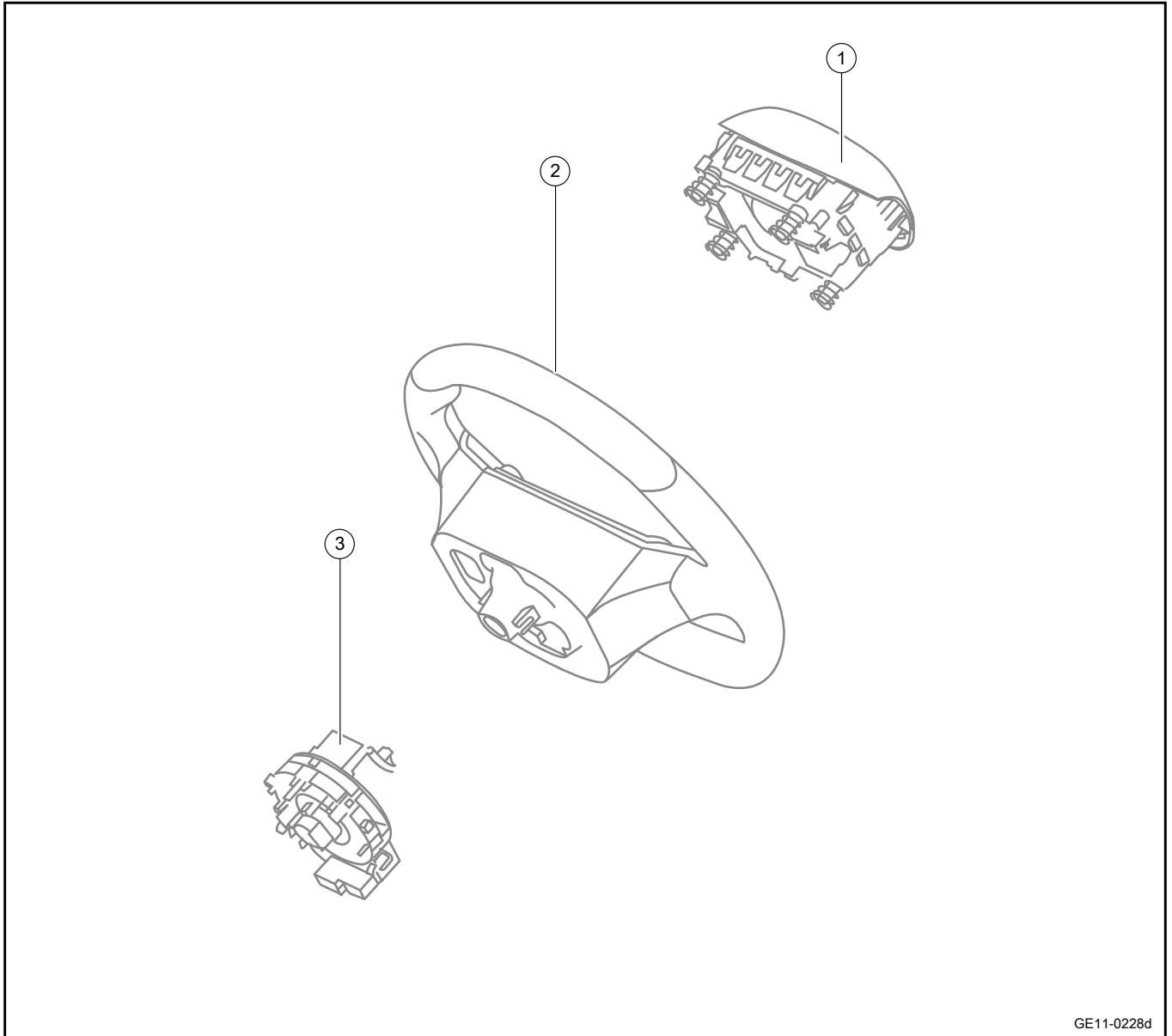
9.2.4.1 Part Position



- | | | | |
|----|--------------------------|-----|----------------------------|
| 1. | RF frontal impact sensor | 7. | Front left side airbag |
| 2. | Passenger frontal airbag | 8. | Side impact sensor |
| 3. | Side impact sensor | 9. | Driver's frontal airbag |
| 4. | Front right side airbag | 10. | Clock spring (14 circuits) |
| 5. | Right curtain airbag | 11. | Airbag ECU |
| 6. | Left curtain airbag | 12. | LF frontal impact sensor |

9.2.5 Breakdown drawing

9.2.5.1 Breakdown Drawing



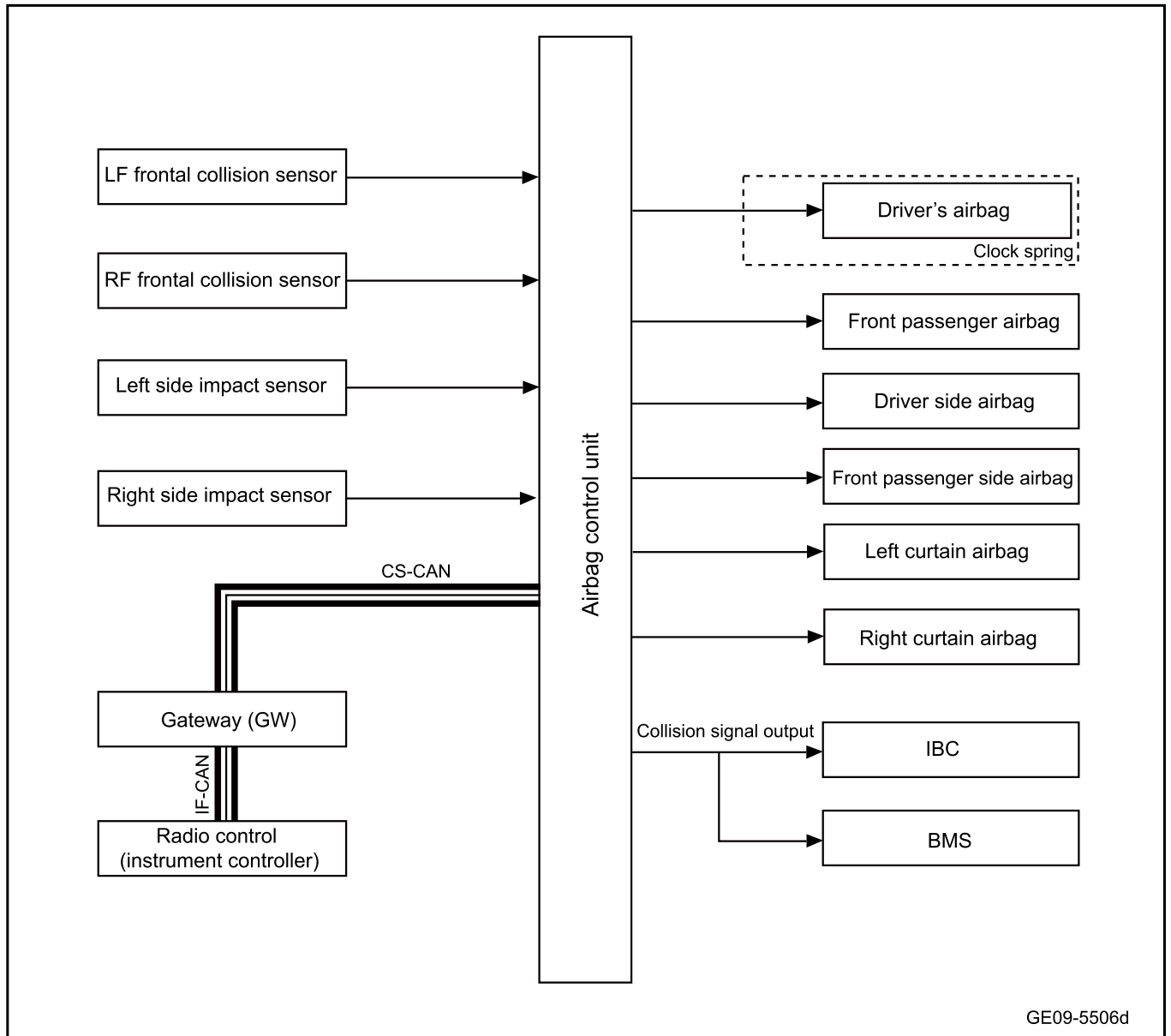
GE11-0228d

- 1. Driver's airbag
- 2. Steering wheel assembly

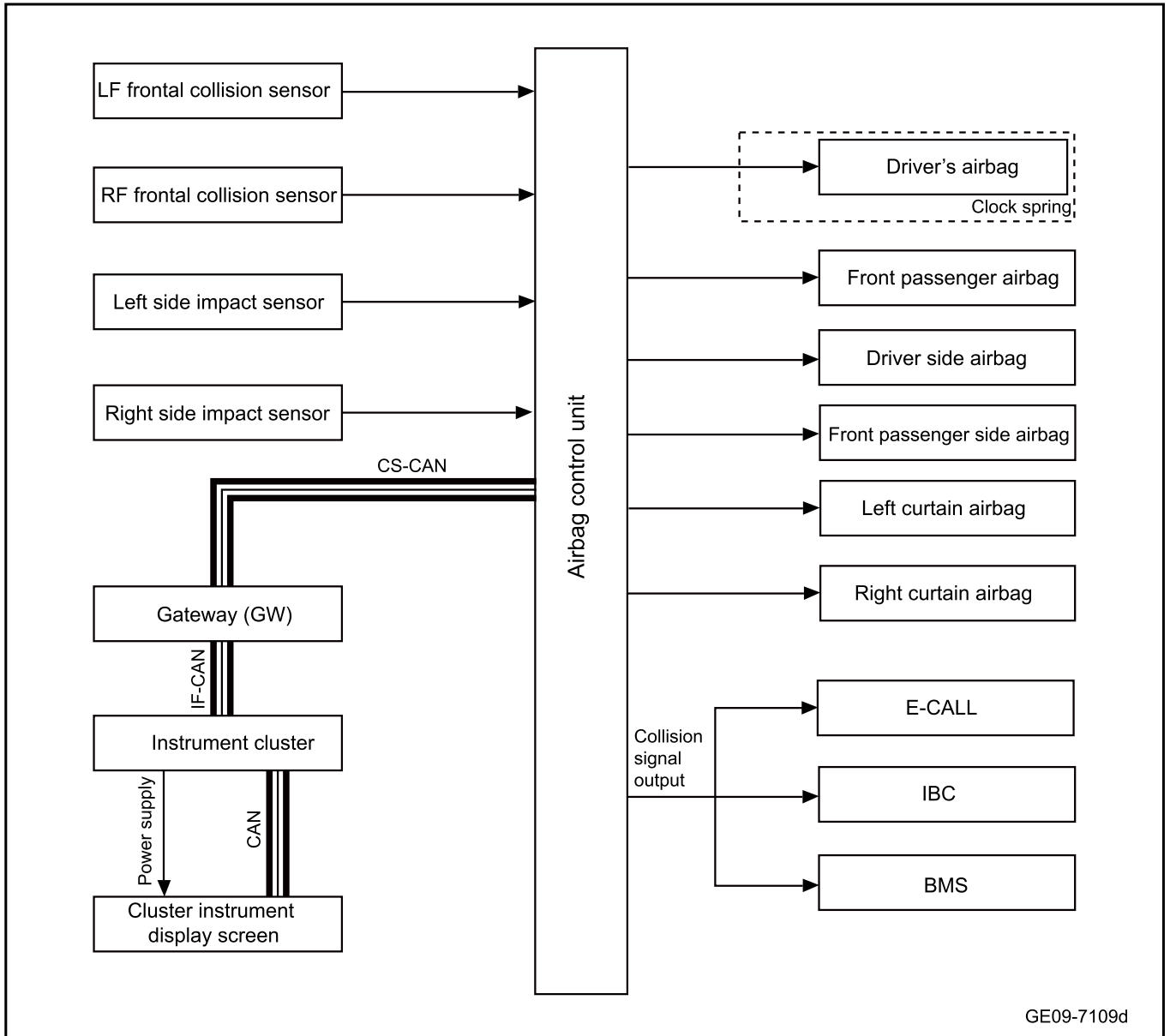
- 3. Clock spring

9.2.6 Electrical schematic diagram

9.2.6.1 Electrical Schematic Diagram of Airbag System(Type I)



9.2.6.2 Electrical Schematic Diagram of Airbag System(Type II)



9.2.7 Diagnostic information and procedures

9.2.7.1 Diagnosis Description

Refer to [Description and Operations](#)

9.2.7.2 Routine inspection

- Confirm faults symptoms.

The most difficult situation during troubleshooting is that no symptoms appear. Under the circumstances, the fault described by the user must be thoroughly analyzed. Then it is needed to simulate the same or similar conditions and environments when the customer's vehicle fault occurs. No matter how experienced and skilled the maintenance personnel is, if the fault symptoms are not confirmed before troubleshooting, something important during repair will be missed and some wrong guess will be made, which will result in troubleshooting unable to proceed.

- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
- Pivot for connector joint and vibration should be the main part subject to a thorough examination. If the fault is caused by vibration, the vibration method is recommended.

1. Gently vibrate the possible fault part with fingers, and check whether the fault occurs.
2. Gently shake the connector in both vertical and horizontal directions.
3. Gently shake the harness in both vertical and horizontal directions.

9.2.7.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

9.2.7.4 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.

c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

9.2.7.5 Data stream list

Serial No.	DID description	Normal value range	Unit
1	ECU supply voltage	0-20.4	V
2	Vehicle speed	0-460.6875	km/h
3	Resistance of driver airbag	0-65.535	ohm
4	Resistance of front passenger's airbag	0-65.535	ohm
5	Seat belt pretension resistance in the first row left	0-65.535	ohm
6	Right seat belt pretension resistance in the first row	0-65.535	ohm
7	First row left side airbag resistance	0-65.535	ohm
8	Right side airbag resistance in the first row	0-65.535	ohm
9	Left curtain airbag resistance	0-65.535	ohm
10	Right curtain airbag resistance	0-65.535	ohm
11	Left side belt pre-tightening resistance of seat in the second row	0-65.535	ohm
12	Right side belt pre-tightening resistance of seat in the second row	0-65.535	ohm
13	Resistance of driver's knee airbag	0-65.535	ohm
14	Front passenger's seatbelt buckle switch	/	/
15	Driver's seatbelt buckle switch	/	/
16	Disable switch status of auxiliary airbag	/	/
17	Front passenger seat detection switch	/	/
18	IMU calibration status	/	/
19	ACU phase	/	/
20	Power-on times	0- 100000000	Cycle
21	ABM power-on time	0- 1000000000	Sec
22	Rear seatbelt buckle switch	/	/

Serial No.	DID description	Normal value range	Unit
23	Back middle seat belt buckle switch	/	/
24	Rear right seatbelt buckle	/	/

9.2.7.6 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Controller voltage is low.	Refer to Power Failure of Airbag Control Module
U300617	Controller voltage is high.	
U007300	CAN bus off	Refer to Communication Failure of Airbag Control Unit
U011087	Communication with IPU module is lost	
U012287	Communication with ESP module is lost	
U015587	Communication with IPK module is lost	
U014087	Communication with BCM module is lost	
U012687	Communication with SAS module is lost	
U111487	Communication with VCU module is lost	
U130055	ACU configuration word is not written	Refer to Internal Faults of Airbag Control Unit
B120009	Internal error	
B120168	Front impact burst	
B120354	IMU calibration not performed	
B120392	IMU calibration failed	
B120468	Side impact burst	
B120568	Back impact burst	
U130155	Node configuration code is not written	
B121C52	EDR locking	Refer to Faults of Driver's Airbag
B000111	Driver airbag is short-circuited to ground	
B000112	Driver airbag is short-circuited to power supply	
B00011A	Low resistance of driver airbag	
B00011B	High resistance of driver airbag	
B00014A	Driver's airbag circuit plug-in is incorrectly plugged in	
B000195	Driver's airbag configuration error	Refer to Faults of Front Passenger's Airbag
B000211	Front passenger's airbag is short-circuited to ground	
B000212	Front passenger airbag is short-circuited to power supply	
B00021A	Low resistance of front passenger's airbag	

Diagnostic Trouble Code	Description	Fault location/elimination method
B00021B	High resistance of front passenger's airbag	
B00024A	Front passenger's airbag circuit plug-in is incorrectly plugged in	
B000295	Front passenger's airbag configuration error	
B002011	First row left side airbag is short to GND	Refer to Faults of Driver's Airbag
B002012	First row left side airbag is short to power supply	
B00201A	Low resistance of left side airbag in the first row	
B00201B	High resistance of the first row left side airbag	
B00204A	First row left side airbag circuit plug-in is incorrectly plugged in	
B002095	Configuration of left side airbag in the first row is incorrect	
B002111	Left curtain airbag is short to GND	Refer to Left side curtain airbag fault
B002112	Left curtain airbag is short to power supply	
B00211A	Left curtain airbag low resistance	
B00211B	Left curtain airbag high resistance	
B00214A	Left curtain airbag circuit plug-in is incorrectly plugged in	
B002195	Left curtain airbag incorrect configuration	
B002811	First row right side airbag is short to GND	Refer to Faults of Front Passenger's Airbag
B002812	Short circuit of right side airbag to power supply in the first row	
B00281A	Low resistance of right side airbag in the first row	
B00281B	High resistance of the right side airbag in the first row	
B00284A	Right side airbag circuit plug-in is incorrectly plugged in the first row	
B002895	Configuration error of the right side airbag in the first row	
B002911	Right curtain airbag is short to GND	Refer to Right side curtain airbag fault

Diagnostic Trouble Code	Description	Fault location/elimination method
B002912	Right curtain airbag is short to power supply	
B00291A	Right curtain airbag low resistance	
B00291B	Right curtain airbag high resistance	
B00294A	Driver's curtain airbag circuit plug-in is incorrectly plugged in	
B002995	Right curtain airbag incorrect configuration	
B009011	Left front frontal impact sensor is short-circuited to ground	Refer to Faults of Left Front Frontal Impact Sensor
B009013	Left front frontal impact sensor is disconnected and short-circuited to the power supply	
B009055	Left front frontal impact sensor configuration error	
B009081	Left front frontal impact sensor communication error	
B009086	Left front frontal impact sensor internal error	
B009012	Left front frontal impact sensor is short-circuited to power supply	
B009111	Left center pillar side impact sensor is short-circuited to ground	Refer to Faults of Left Side Impact Sensor
B009113	Left center pillar side impact sensor is disconnected and short-circuited to the power supply	
B009155	Left center pillar side impact sensor configuration error	
B009181	Left center pillar side impact sensor communication error	
B009186	Left center pillar side impact sensor internal error	
B009112	Left center pillar side impact sensor is short-circuited to power supply	
B009511	Right front frontal impact sensor is short-circuited to ground	Refer to Faults of Right Front Frontal Impact Sensor
B009513	Right front frontal impact sensor is disconnected and short-circuited to ground	

Diagnostic Trouble Code	Description	Fault location/elimination method
B009555	Right front frontal impact sensor configuration error	
B009581	Right front frontal impact sensor communication error	
B009586	Right front frontal impact sensor internal error	
B009512	Right front frontal impact sensor is short-circuited to power supply	
B009611	Right center pillar side impact sensor is short-circuited to ground	Refer to Faults of Right Side Impact Sensor
B009613	Right center pillar side impact impact sensor is disconnected or short-circuited to power supply	
B009655	Right center pillar side impact sensor configuration error	
B009681	Right center pillar side impact sensor communication error	
B009686	Right center pillar side impact sensor internal error	
B009612	Right center pillar side impact sensor is short-circuited to power supply	
B00D296	Fault of system warning lamp	Refer to Airbag Warning Lamp Faults (Type I) Refer to Airbag Warning Lamp Faults (Type II)
B121E96	Hardwire collision output configuration error	Refer to Crash Signal Failure
B121E13	Hardwire collision output open circuit	
B121E12	Hardwire collision output is short-circuited to power supply	
B121E11	Hardwire collision output is short-circuited to ground	

9.2.7.7 Airbag Warning Lamp Faults(Type I)

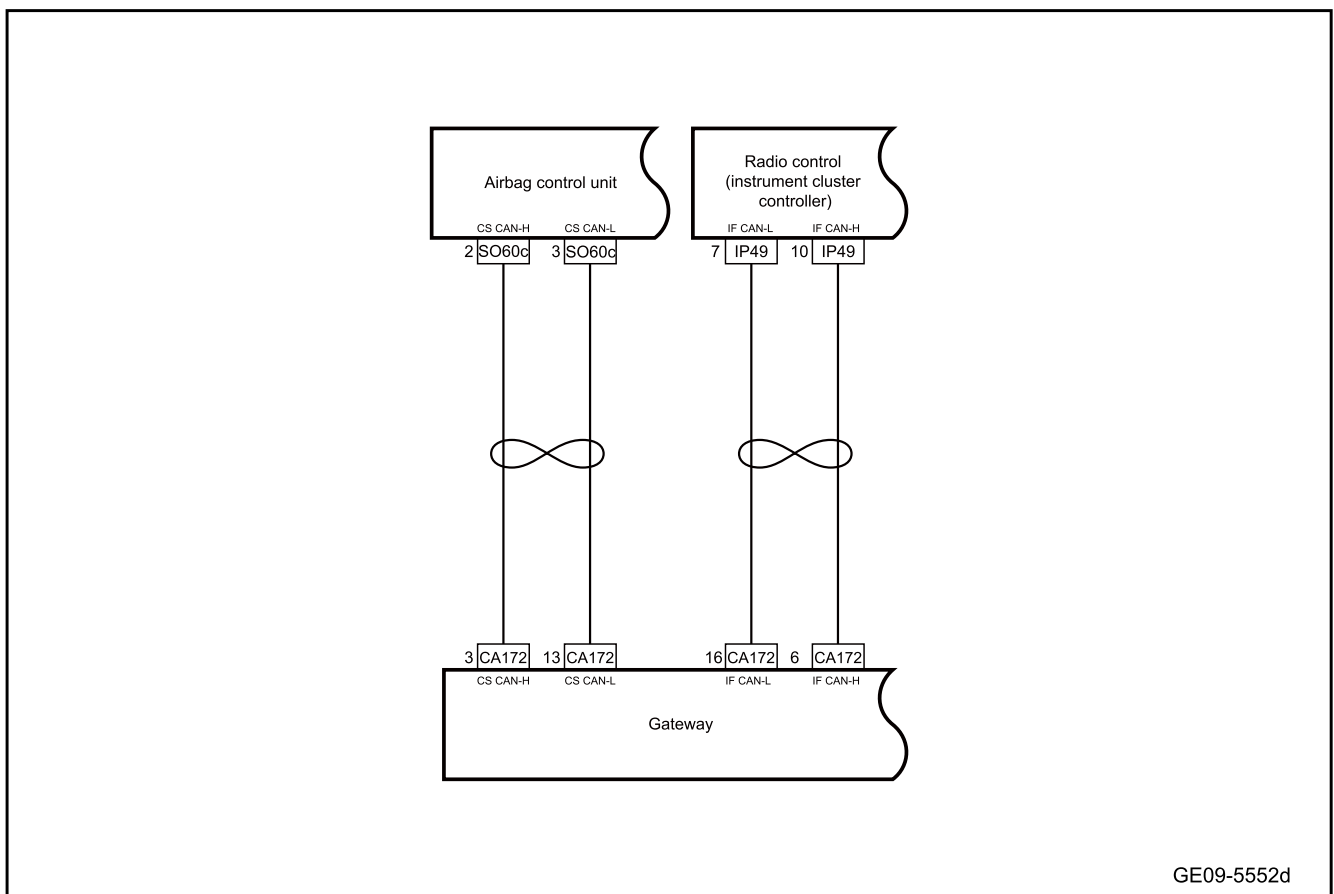
1. DTC description:

Diagnostic Trouble Code	Description
B00D296	Fault of system warning lamp

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B00D296	1. The warning lamp status sent by IP is 0x03 2. ABM receives that the warning lamp state sent by IP is inconsistent with the warning lamp state sent by it	The ignition voltage is normal and lasts for 7 seconds, and the power supply is 9V-16V	1. Communication circuit 2. Airbag control module

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the head unit, gateway and airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the head unit, gateway and harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CS-CAN network integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Check the IF-CAN network integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5 Change the head unit.

- A. Check the power supply and grounding circuits of head unit. Refer to [Head unit power supply failure](#)
- B. Change the head unit. Refer to [Replacement of head unit](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 6 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 7 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

9.2.7.8 Fault of left front frontal impact sensor

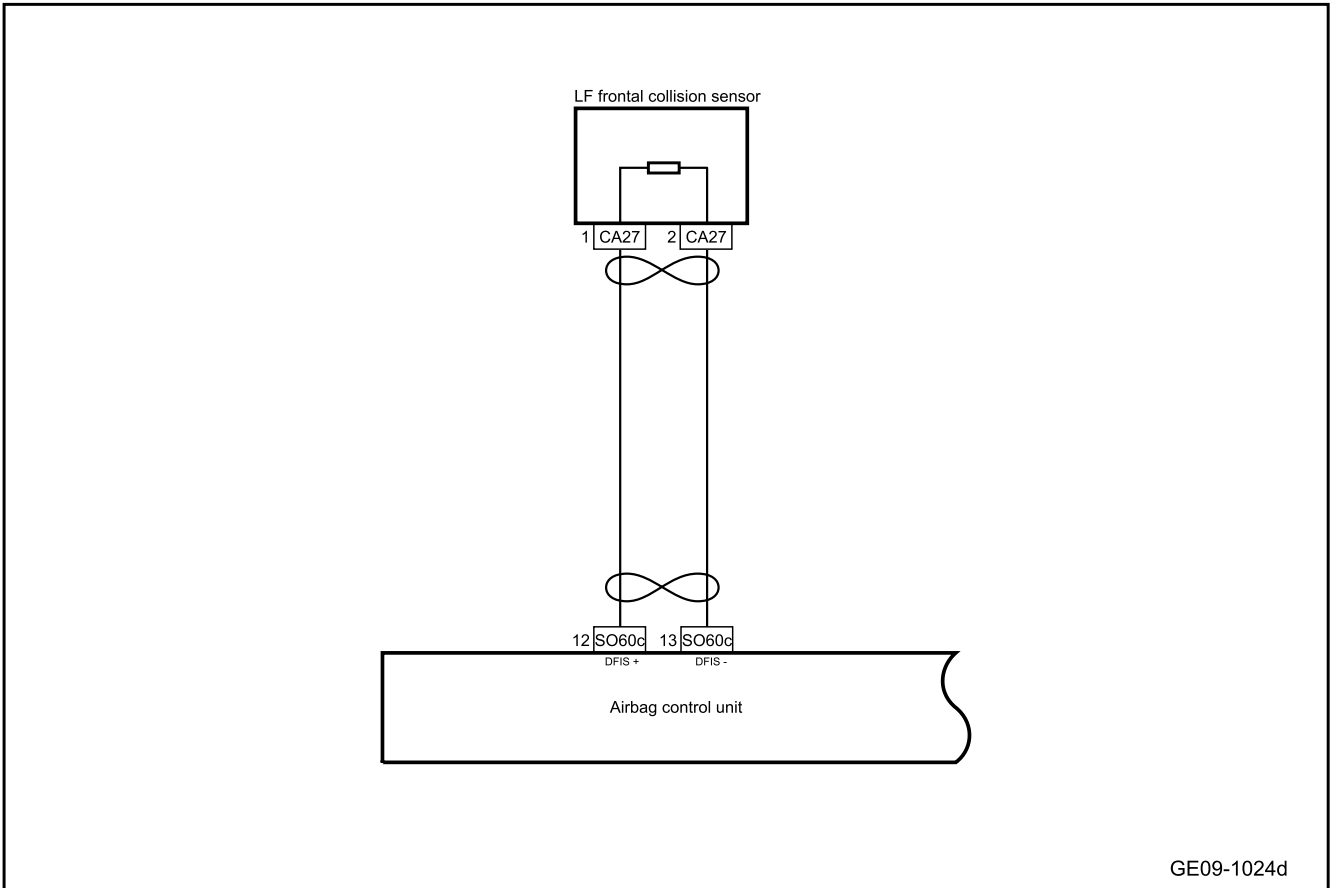
1. DTC description:

Diagnostic Trouble Code	Description
B009011	Left front frontal impact sensor is short-circuited to ground
B009013	Left front frontal impact sensor is disconnected and short-circuited to the power supply
B009055	Left front frontal impact sensor configuration error
B009081	Left front frontal impact sensor communication error
B009086	Left front frontal impact sensor internal error
B009012	Left front frontal impact sensor is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009011	Driver/front left constrained sensor is short-circuited to ground (200msx5)	Power supply voltage is 9V-16V.	1. Circuit 2. Left front frontal impact sensor 3. Airbag control module
B009013	Driver/front left constrained sensor is an open circuit or short-circuited to the battery (200MSx5)		
B009055	Driver/front left constrained sensor configuration error (200MSx5)		
B009081	Driver/front left constrained sensor communication error RSU data corresponding position error (200MSx5)		
B009086	Driver/front left constrained sensor data is out of the specified range (200MSx5)		
B009012	Driver/front left constrained sensor is short-circuited to the battery (200msx5)		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

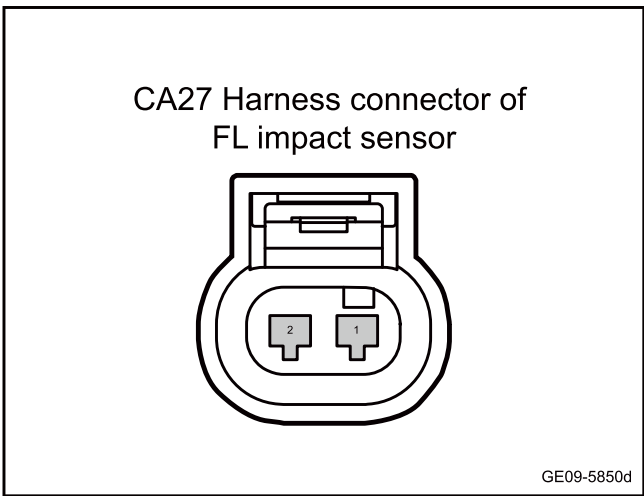
- A. Check the airbag control module, left front frontal impact sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module, left front frontal impact sensor harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

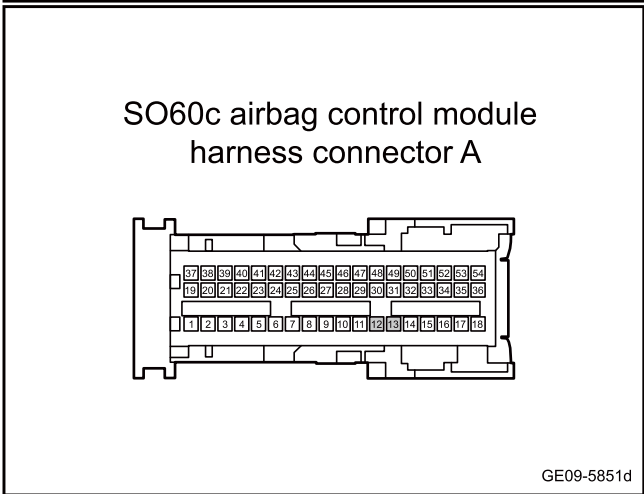
Step 3 Detect whether the harness between left front frontal impact sensor and airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left front frontal impact sensor harness connector CA27.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA27(1)	SO60c(12)	Standard resistance: less than 1Ω
CA27(2)	SO60c(13)	

- E. Confirm whether the measured value meets the standard.

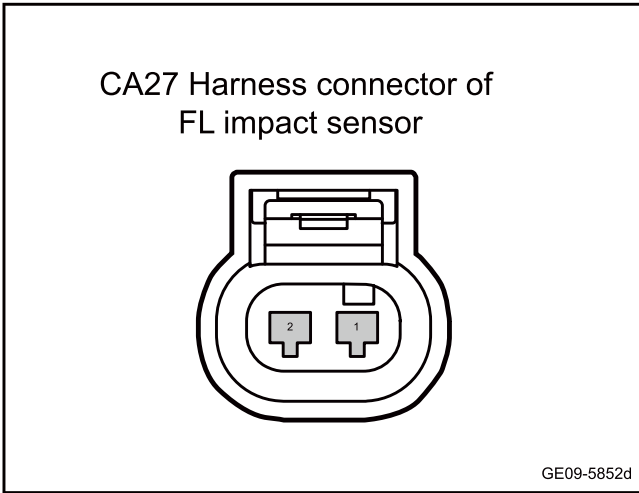


No

Repair or replace the harness.

Yes

Step 4 Detect whether the harness between left front frontal impact sensor and airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left front frontal impact sensor harness connector CA27.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

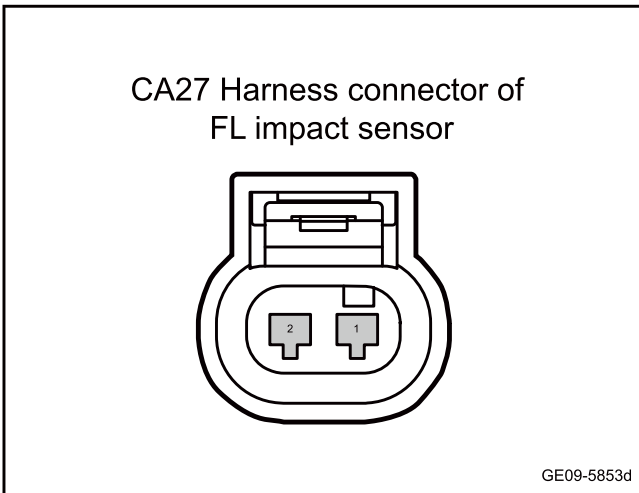
Measure terminal 1	Measure terminal 2	Standard value
CA27(1)	Vehicle body is grounded.	Standard voltage: 0V
CA27(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Detect whether the harness between left front frontal impact sensor and airbag control module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left front frontal impact sensor harness connector CA27.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA27(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA27(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the left front frontal impact sensor.

- A. Replace the left front frontal impact sensor. Refer to [Replacement of Left Front Frontal Impact Sensor](#)
- B. Confirm whether the left front frontal impact sensor is in normal operation.

Yes System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.2.7.9 Right front frontal impact sensor fault

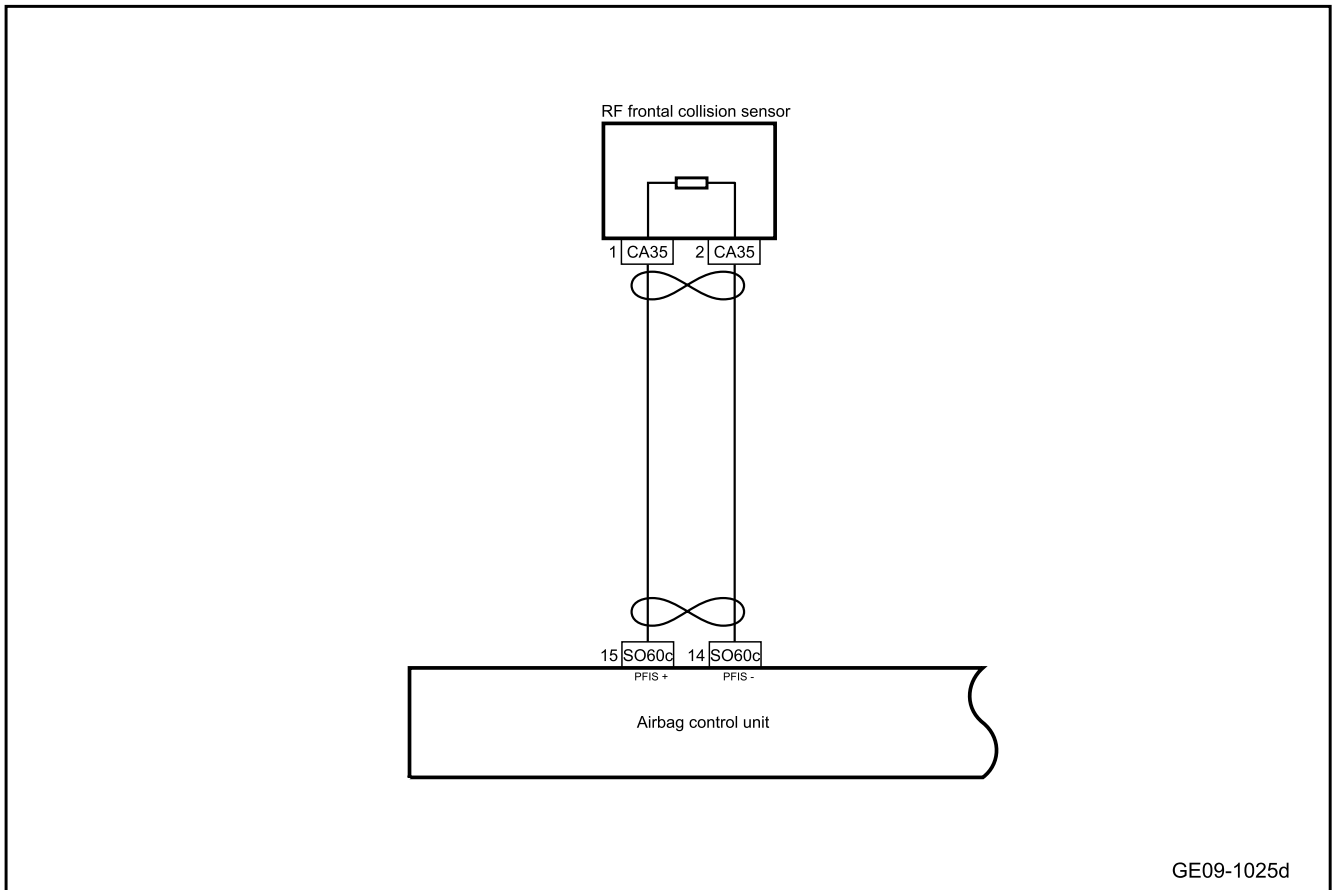
1. DTC description:

Diagnostic Trouble Code	Description
B009511	Right front frontal impact sensor is short-circuited to ground
B009513	Right front frontal impact sensor is disconnected and short-circuited to ground
B009555	Right front frontal impact sensor configuration error
B009581	Right front frontal impact sensor communication error
B009586	Right front frontal impact sensor internal error
B009512	Right front frontal impact sensor is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009511	Passenger/front right constrained sensor is short-circuited to ground (200msx5)	Power supply voltage is 9V-16V.	1. Circuit 2. FR frontal impact sensor 3. Airbag control module
B009513	Passenger/front right constrained sensor is an open circuit or short-circuited to the battery (200MSx5)		
B009555	Passenger/front right constrained sensor configuration error (200MSx5)		
B009581	Passenger/front right constrained sensor communication error RSU data corresponding position error (200MSx5)		
B009586	Passenger/front right constrained sensor data is out of specified range (200MSx5)		
B009512	Passenger/front right constrained sensor is short-circuited to the battery (200msx5)		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

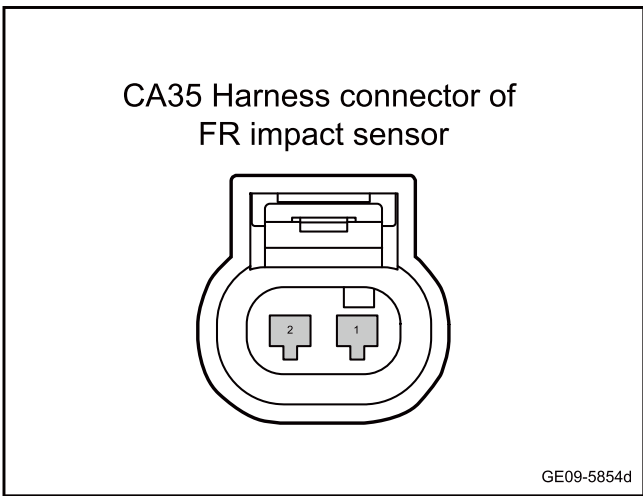
- A. Check the airbag control module, right front frontal impact sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and the harness connector of the FR frontal impact sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

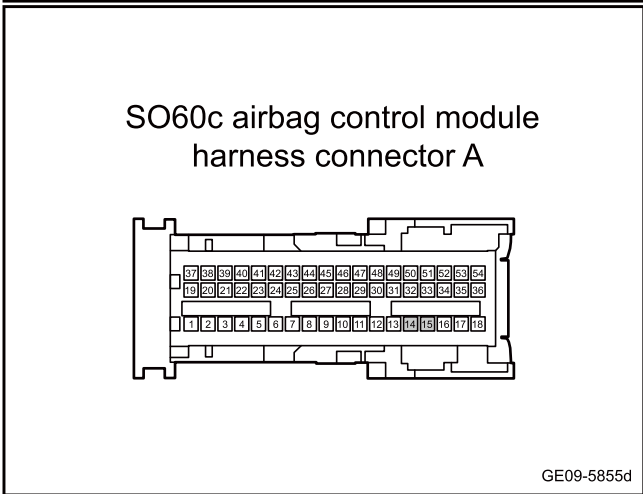
Step 3 Detect whether the harness between the FR frontal impact sensor and the airbag control module is circuit open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the FR frontal impact sensor CA35.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA35(1)	SO60c(15)	Standard resistance: less than 1Ω
CA35(2)	SO60c(14)	

- E. Confirm whether the measured value meets the standard.

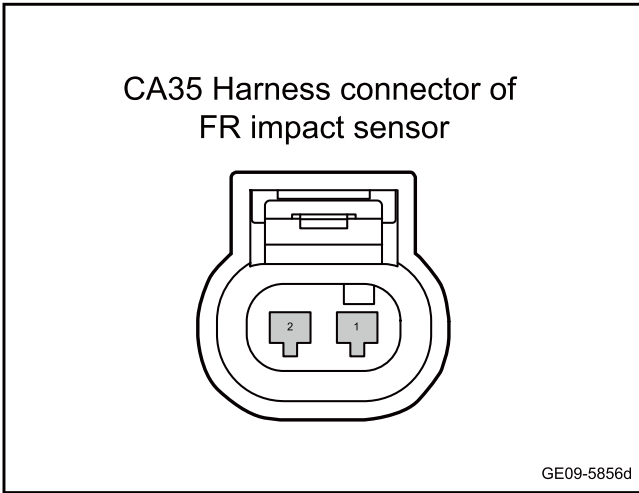


No

Repair or replace the harness.

Yes

Step 4 Detect whether the harness between the FR frontal impact sensor and the airbag control module is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the FR frontal impact sensor CA35.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA35(1)	Vehicle body is grounded.	Standard voltage: 0V
CA35(2)		

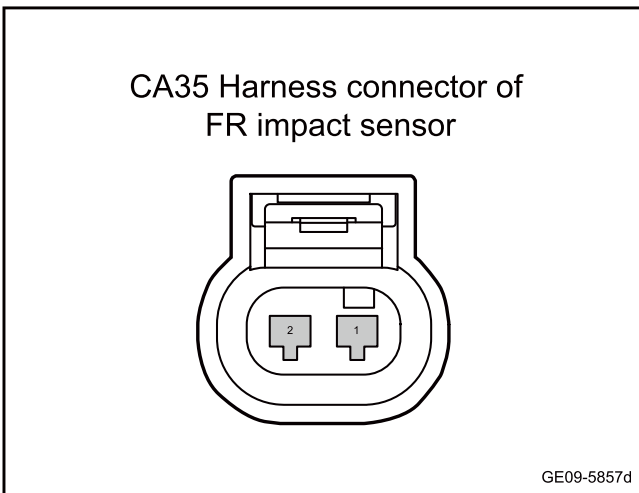
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Detect whether the harness between the FR frontal impact sensor and the airbag control module is shorted to GND.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the FR frontal impact sensor CA35.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA35(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA35(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the FR frontal impact sensor.
--------	---------------------------------------

- A. Replace the FR frontal impact sensor. Refer to [Replacement of Right Front Frontal Impact Sensor](#)
- B. Confirm whether the FR frontal impact sensor operates normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

9.2.7.10 Left impact sensor fault

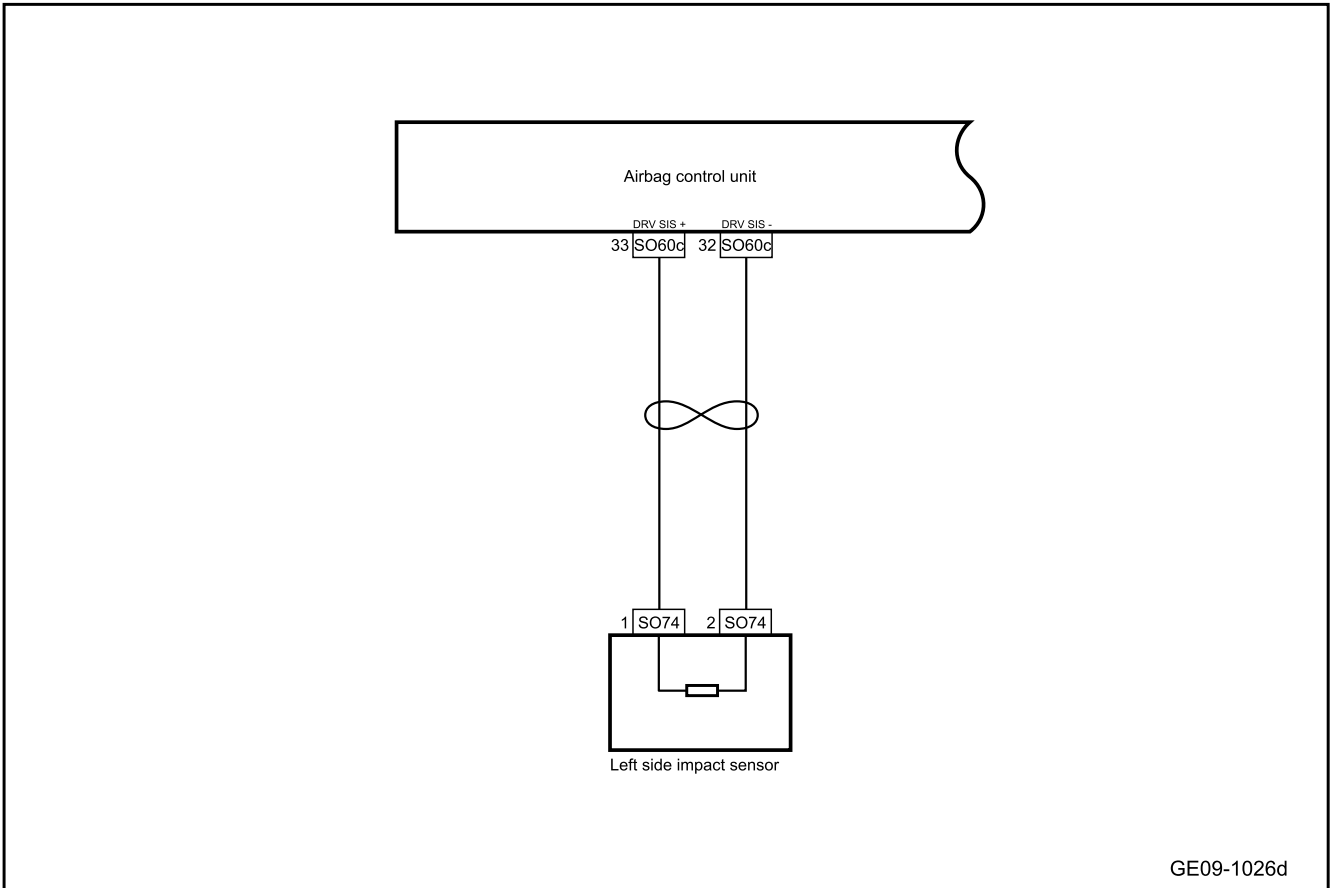
1. DTC description:

Diagnostic Trouble Code	Description
B009111	Left center pillar side impact sensor is short-circuited to ground
B009113	Left center pillar side impact sensor is disconnected and short-circuited to the power supply
B009155	Left center pillar side impact sensor configuration error
B009181	Left center pillar side impact sensor communication error
B009186	Left center pillar side impact sensor internal error
B009112	Left center pillar side impact sensor is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009111	Driver/front left constrained sensor is short-circuited to ground (200msx5)	Power supply voltage is 9V-16V.	1. Circuit 2. Left impact sensor 3. Airbag control module
B009113	Driver/front left constrained sensor is an open circuit or short-circuited to the battery (200MSx5)		
B009155	Driver/front left constrained sensor configuration error (200MSx5)		
B009181	RSU data corresponding position error (200msx5)		
B009186	Data is out of specified range (200msx5)		
B009112	Driver/left constrained sensor is short-circuited to the battery (200msx5)		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

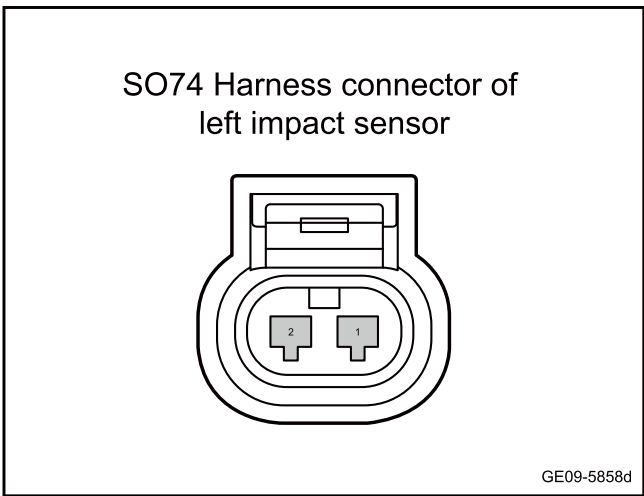
- A. Check the airbag control module, left side impact sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and harness connector of left impact sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

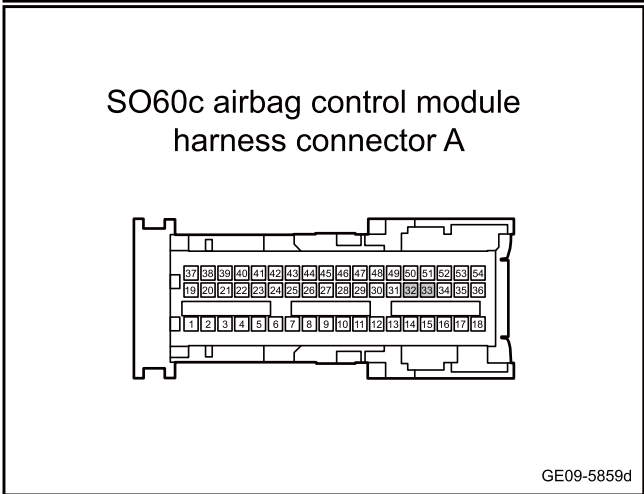
Step 3 Check whether harnesses between the left impact sensor and the airbag control module are open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of left impact sensor SO74.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO74(1)	SO60c(33)	Standard resistance: less than 1Ω
SO74(2)	SO60c(32)	

- E. Confirm whether the measured value meets the standard.

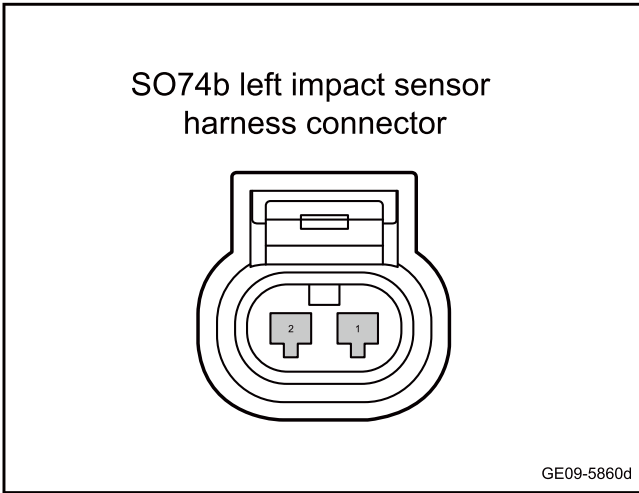


No

Repair or replace the harness.

Yes

Step 4 Check whether harnesses between the left impact sensor and the airbag control module are shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of left impact sensor SO74.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO74(1)	Vehicle body is grounded.	Standard voltage: 0V
SO74(2)		

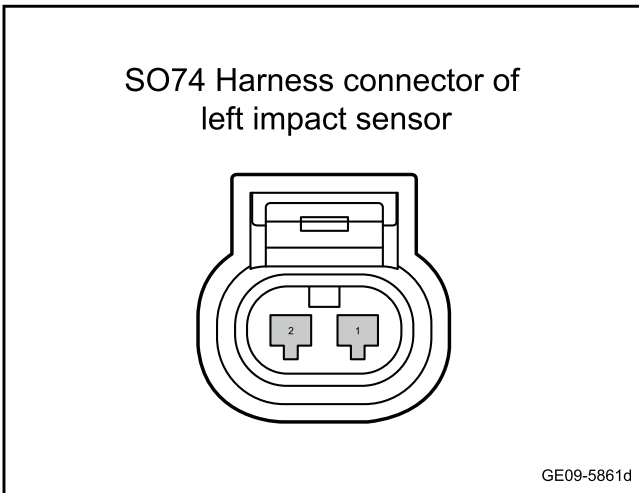
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check whether harnesses between the left impact sensor and the airbag control module are shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of left impact sensor SO74.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO74(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO74(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Replacement of the left impact sensor.

- A. Replacement of the left impact sensor. Refer to [Replacement of Left Side Impact Sensor](#)
- B. Confirm whether the left impact sensor works properly.

Yes

System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.2.7.11 Right side impact sensor fault

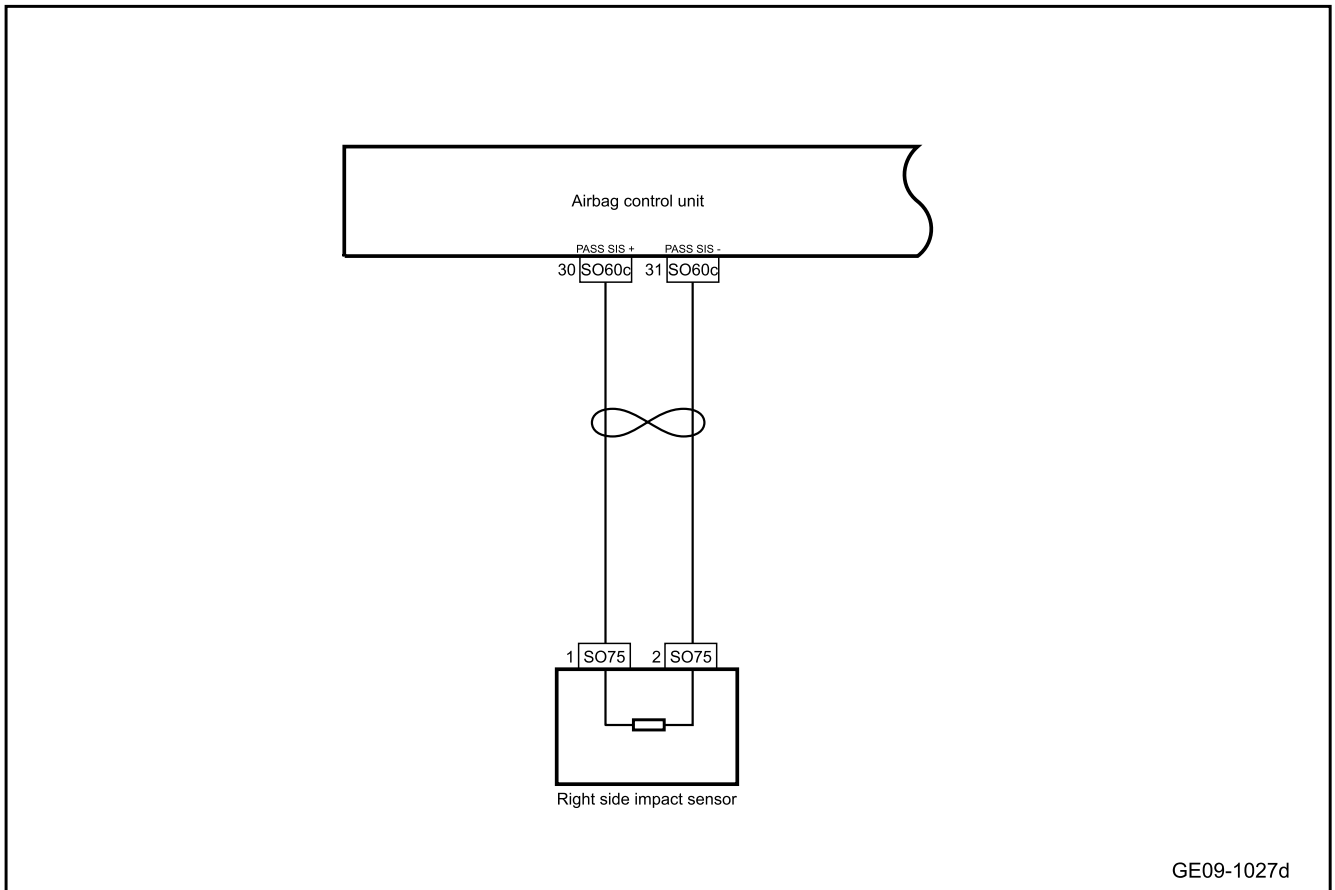
1. DTC description:

Diagnostic Trouble Code	Description
B009611	Right center pillar side impact sensor is short-circuited to ground
B009613	Right center pillar side impact sensor is disconnected or short-circuited to power supply
B009655	Right center pillar side impact sensor configuration error
B009681	Right center pillar side impact sensor communication error
B009686	Right center pillar side impact sensor internal error
B009612	Right center pillar side impact sensor is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B009611	Passenger/right constrained sensor is short-circuited to ground (200MSx5)	Power supply voltage is 9V-16V.	1. Circuit 2. Right side impact sensor 3. Airbag control module
B009613	Passenger/right constrained sensor is an open circuit or short-circuited to the battery (200MSx5)		
B009655	Passenger/right constrained sensor configuration error (200MSx5)		
B009681	Passenger/right constrained sensor communication error RSU data corresponding position error (200MSx5)		
B009686	Passenger/right constrained sensor data is out of specified range (200MSx5)		
B009612	Passenger/right constrained sensor is short-circuited to the battery (200msx5)		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

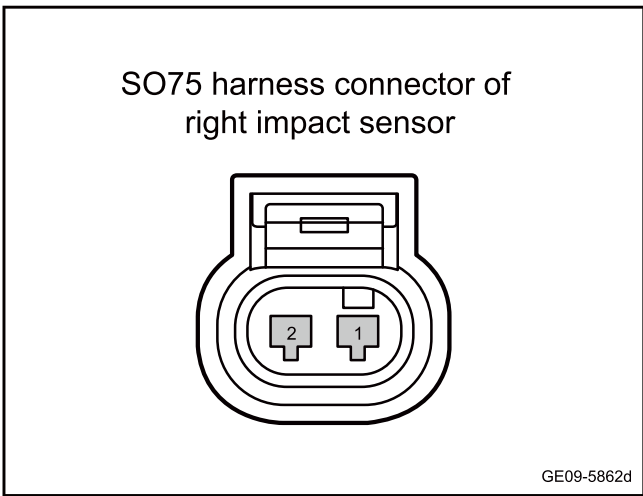
- A. Check the airbag control module, right side impact sensor for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module, harness connector of the right impact sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

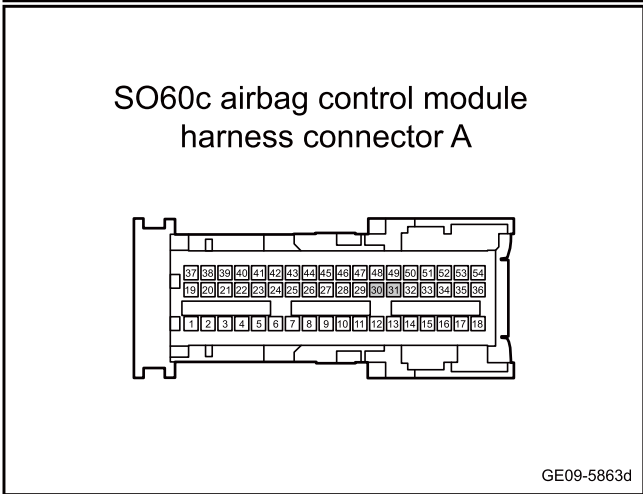
Step 3 Detect whether the harness between the right side impact sensor and the airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the right impact sensor SO75.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO75(1)	SO60c(30)	Standard resistance: less than 1Ω
SO75(2)	SO60c(31)	

- E. Confirm whether the measured value meets the standard.

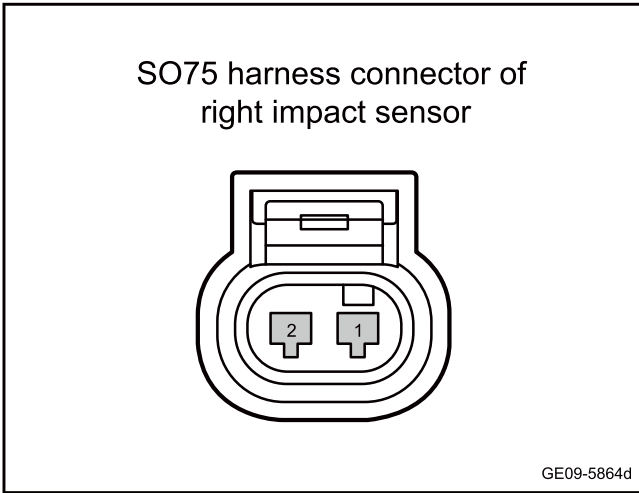


No

Repair or replace the harness.

Yes

Step 4 Detect whether the harness between the right side impact sensor and the airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the right impact sensor SO75.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

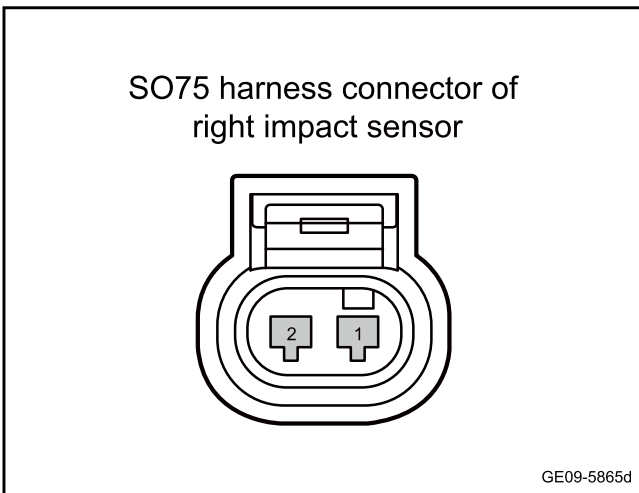
Measure terminal 1	Measure terminal 2	Standard value
SO75(1)	Vehicle body is grounded.	Standard voltage: 0V
SO75(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5	Detect whether the harness between the right side impact sensor and the airbag control module is shorted to GND.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector of the right impact sensor SO75.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO75(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO75(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6	Replace the right side impact sensor.
--------	---------------------------------------

- A. Replace the right side impact sensor. Refer to [Replacement of Right Side Impact Sensor](#)
- B. Confirm whether the right side impact sensor is in normal operation.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

9.2.7.12 Driver seat airbag fault

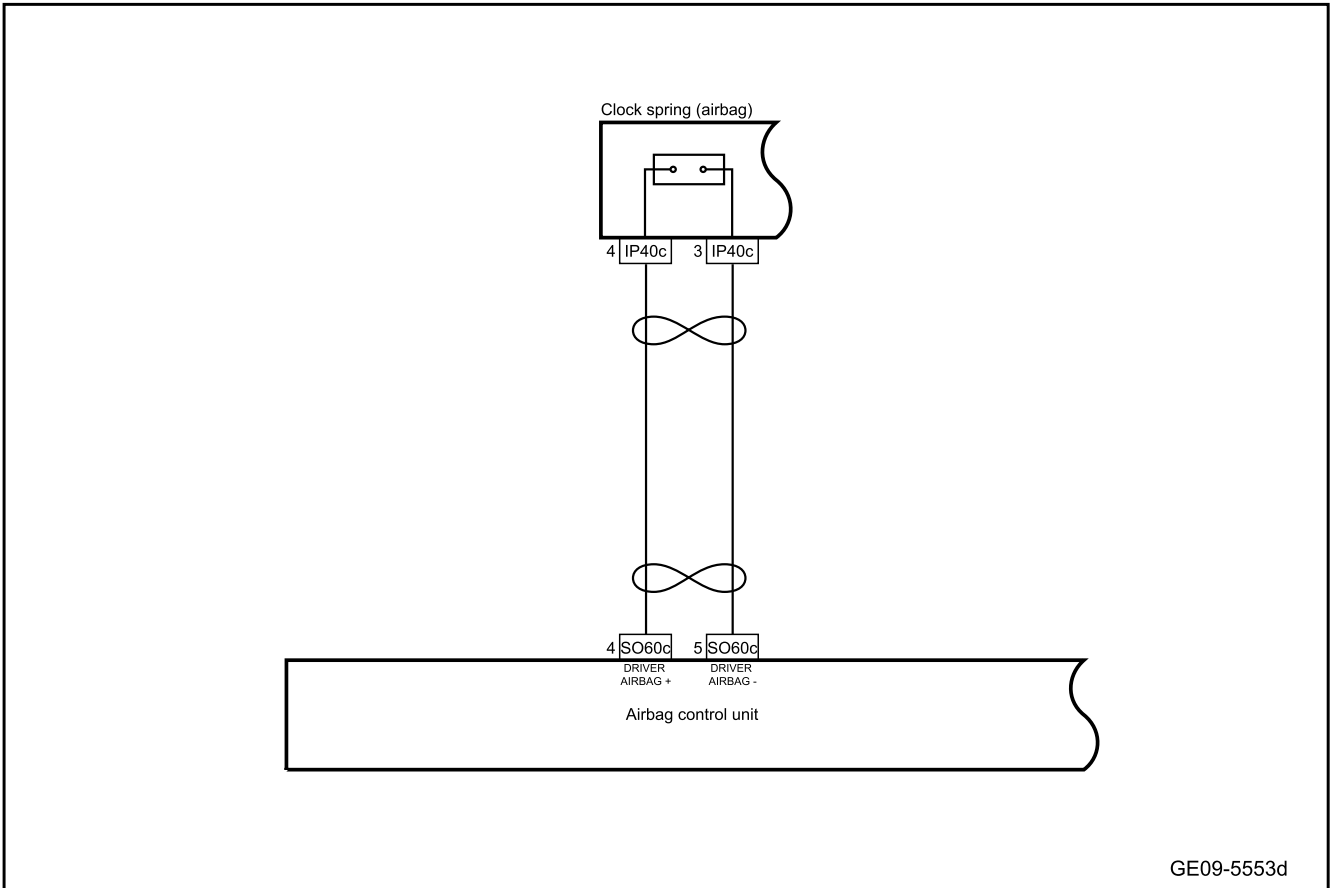
1. DTC description:

Diagnostic Trouble Code	Description
B000111	Driver airbag is short-circuited to ground
B000112	Driver airbag is short-circuited to power supply
B00011A	Low resistance of driver airbag
B00011B	High resistance of driver airbag
B00014A	Driver's airbag circuit plug-in is incorrectly plugged in
B000195	Driver's airbag configuration error

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B000111	Driver/left front airbag electric squib is short-circuited to ground for 2s (500ms*4)	ACU operating voltage is within the normal range: 9 V-16V	1. Circuit 2. Clock spring (Driver side airbag) 3. Airbag control module
B000112	Driver/left front airbag electric squib is short-circuited to power line for 2s (500ms*4)		
B00011A	Low resistance of driver/left front airbag electric squib for 2s (500ms*4) RES		
B00011B	High resistance of driver/left front airbag electric squib for 2s (500ms*4) RES:611OHM		
B00014A	The power supply end of the driver/left front airbag squib is connected in series with the power supply end of another airbag, and the series resistance is less than 1000ohm for 2S (500ms*4)		
B000195	If the airbag is available and the controller is connected to the airbag through the wire harness. The controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

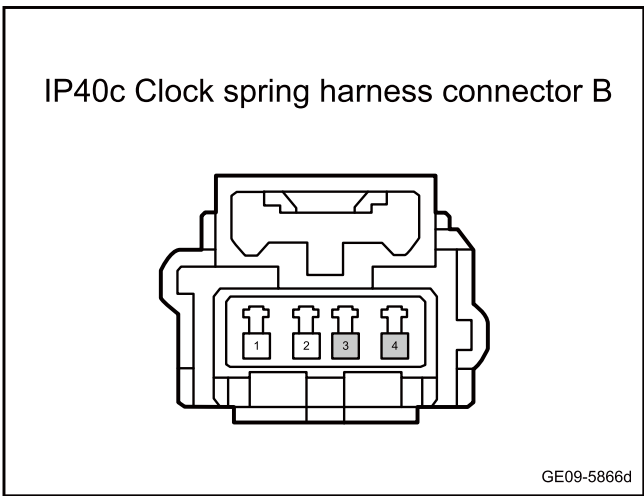
- A. Check the airbag control module, clock spring (driver airbag) for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module, clock spring (driver airbag) harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

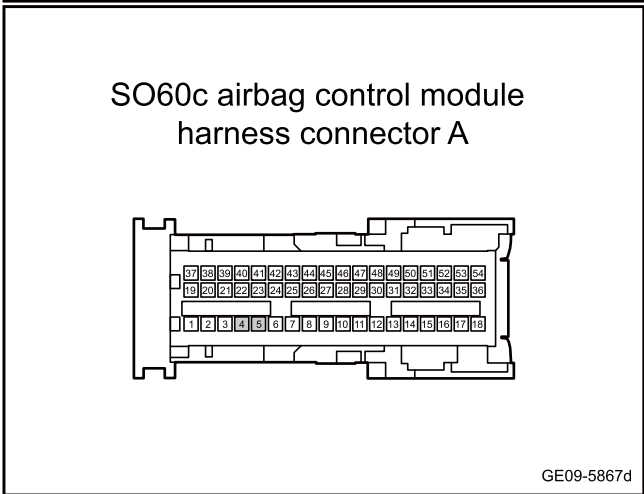
Step 3 Check whether the harness between the clock spring (driver seat airbag) and the airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the clock spring (airbag) harness connector IP40c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP40c(3)	SO60c(5)	Standard resistance: less than 1Ω
IP40c(4)	SO60c(4)	

- E. Confirm whether the measured value meets the standard.

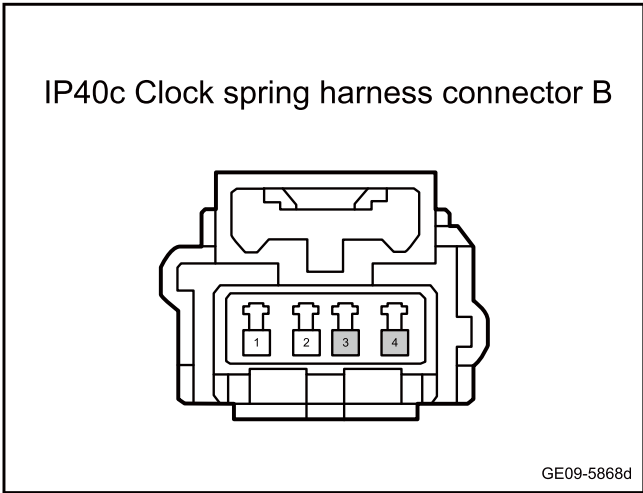


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the clock spring (driver seat airbag) and the airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the clock spring (airbag) harness connector IP40c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

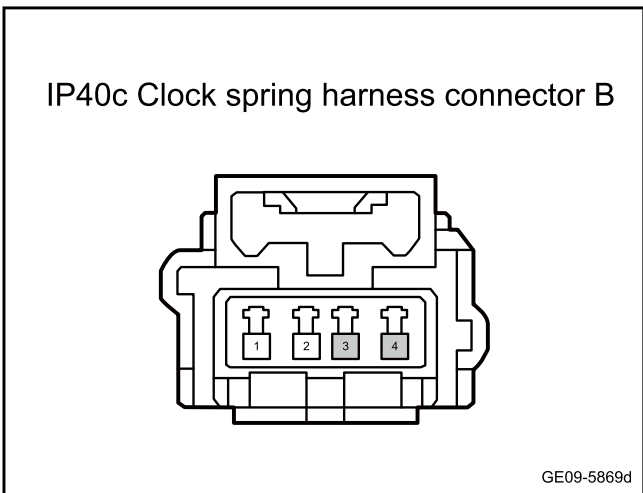
Measure terminal 1	Measure terminal 2	Standard value
IP40c(3)	Vehicle body is grounded.	Standard voltage: 0V
IP40c(4)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check whether the harness between the clock spring (driver seat airbag) and the airbag control module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the clock spring (driver airbag) harness connector IP40c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP40c(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP40c(4)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Clock spring (driver seat airbag)

- A. Clock spring (driver seat airbag) Refer to [Replacement of Clock Spring \(Driver's Airbag\)](#)
- B. Confirm that the clock spring (driver airbag) is functioning properly.

Yes

System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.2.7.13 Front passenger side airbag fault

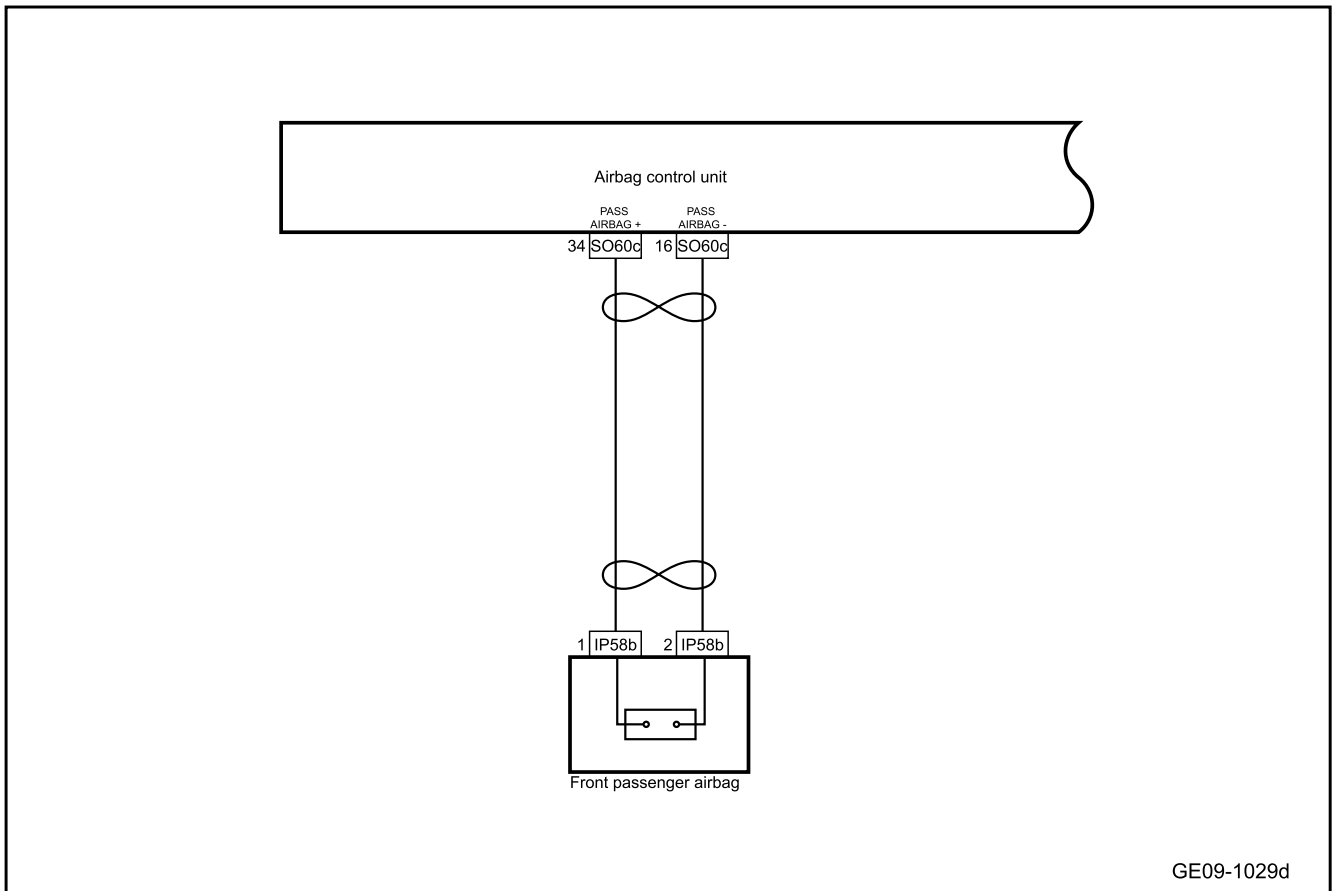
1. DTC description:

Diagnostic Trouble Code	Description
B000211	Front passenger's airbag is short-circuited to ground
B000212	Front passenger airbag is short-circuited to power supply
B00021A	Low resistance of front passenger's airbag
B00021B	High resistance of front passenger's airbag
B00024A	Front passenger's airbag circuit plug-in is incorrectly plugged in
B000295	Front passenger's airbag configuration error

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B000211	Passenger/right front airbag electric squib is short-circuited to ground for 2s (500ms*4)	Power supply voltage is 9V-16V.	1. Circuit 2. Front passenger airbag 3. Airbag control module
B000212	Passenger/right front airbag electric squib is short-circuited to ground for 2s (500ms*4)		
B00021A	Low resistance of driver/right front airbag electric squib for 2s (500ms*4) RES < 1.56OHM		
B00021B	High resistance of driver/right front airbag electric squib for 2s (500ms*4) RES > 5.4OHM		
B00024A	The power supply end of the passenger/right front airbag squib is connected in series with the power supply end of another airbag, and the series resistance is less than 1000ohm for 2.0S (500ms*4)		
B000295	If the airbag is available and the controller is connected to the airbag through the wire harness. The controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

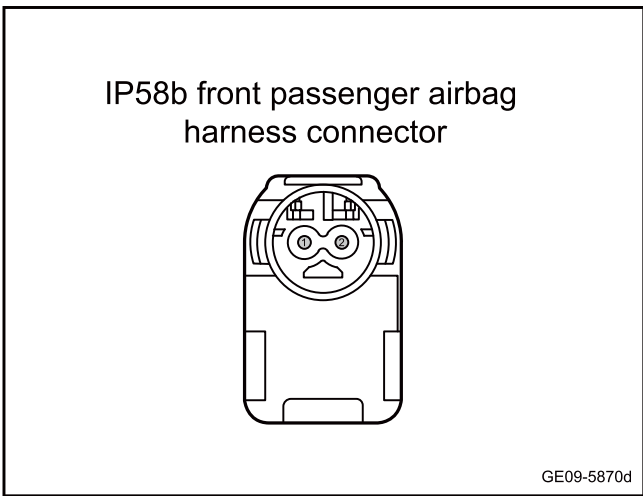
- A. Check the airbag control module, front passenger's airbag for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module, front passenger's airbag harness connectors for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

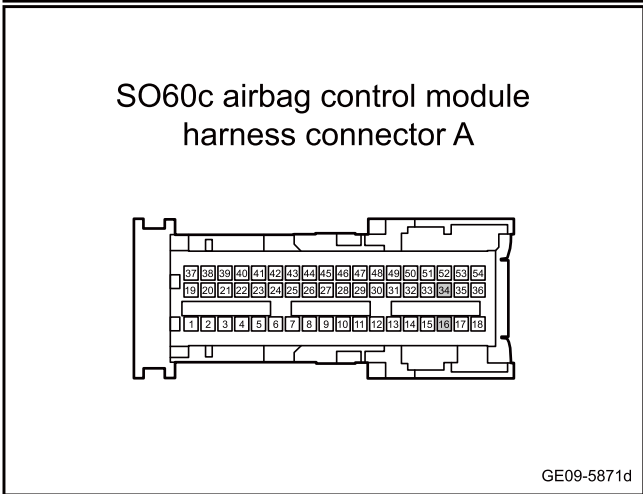
Step 3 Check whether the harness between the front passenger airbag and airbag control module is open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector IP58b of front passenger airbag.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP58b(1)	SO60c(34)	Standard resistance: less than 1Ω
IP58b(2)	SO60c(16)	

- E. Confirm whether the measured value meets the standard.

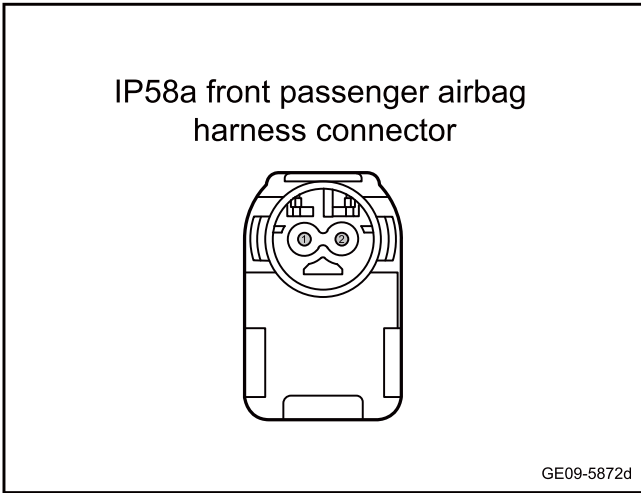


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between front passenger airbag and airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector IP58b of front passenger airbag.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

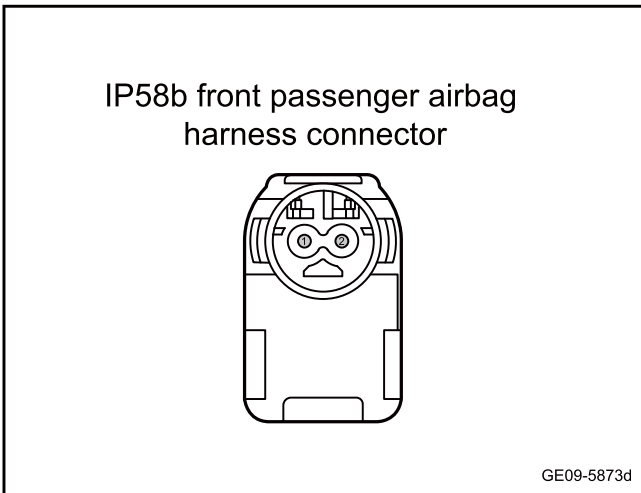
Measure terminal 1	Measure terminal 2	Standard value
IP58b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP58b(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the harness between the front passenger airbag and airbag control module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the harness connector IP58b of front passenger airbag.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP58b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP58b(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the front passenger airbag.

- A. Replace the front passenger airbag. Refer to [Replacement of Front Passenger's Airbag](#)
- B. Check whether the front passenger airbag works normally.

Yes

System is normal.

No

Step 7	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

9.2.7.14 Driver side airbag fault

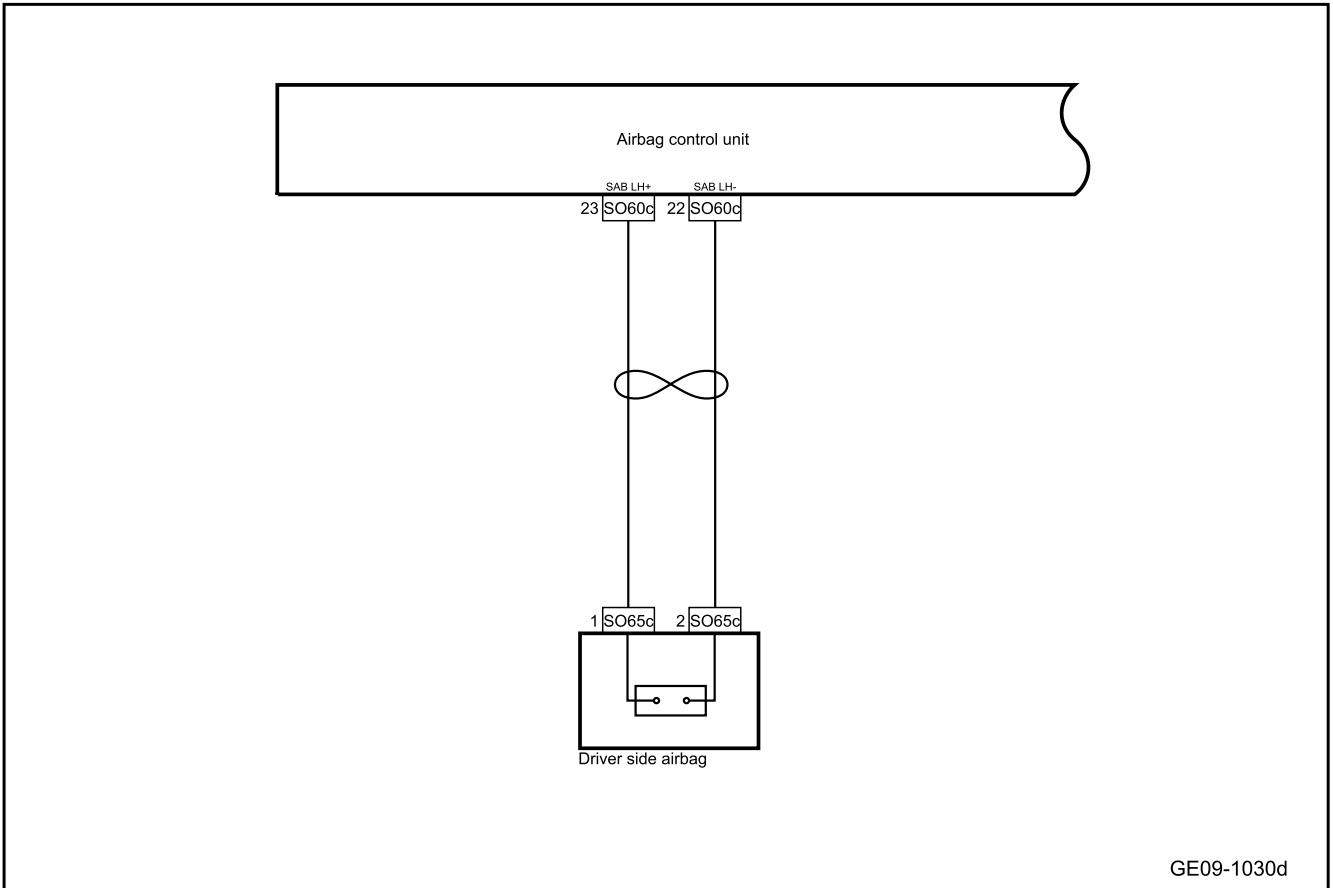
1. DTC description:

Diagnostic Trouble Code	Description
B002011	First row left side airbag is short to GND
B002012	First row left side airbag is short to power supply
B00201A	Low resistance of left side airbag in the first row
B00201B	High resistance of the first row left side airbag
B00204A	Wrong circuit plug-in of the first row left side airbag
B002095	Configuration of left side airbag in the first row is incorrect

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002011	Driver/left airbag electric squib is short-circuited to ground for 2s (500ms*4)	Power supply voltage is 9V-16V.	1. Circuit 2. Driver side airbag 3. Airbag control module
B002012	Passenger/right front airbag electric squib is short-circuited to ground for 2s (500ms*4)		
B00201A	Low resistance of passenger/right front airbag electric squib for 2s (500ms*4) RES < 1.56OHM		
B00201B	High resistance of passenger/right front airbag electric squib for 2s (500ms*4) RES > 5.4OHM		
B00204A	The power supply end of the passenger/right front airbag squib is connected in series with the power supply end of another airbag, and the series resistance is less than 1000ohm for 2.0S (500ms*4)		
B002095	If the airbag is available and the controller is connected to the airbag through the wire harness. The controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

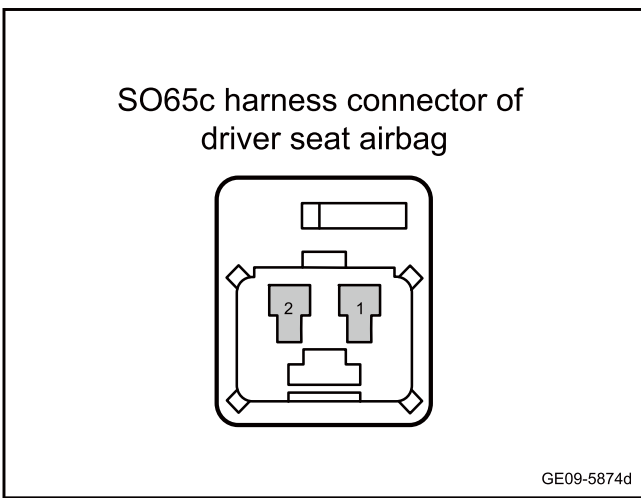
- A. Check the airbag control module, driver side airbag for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and driver side airbag harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

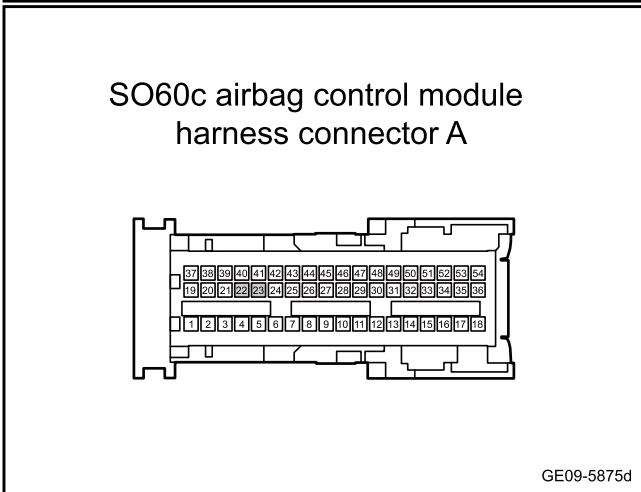
Step 3 Check whether the harness between the driver side airbag and the airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver side airbag harness connector SO65c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO65c(1)	SO60c(23)	Standard resistance: less than 1Ω
SO65c(2)	SO60c(22)	

- E. Confirm whether the measured value meets the standard.

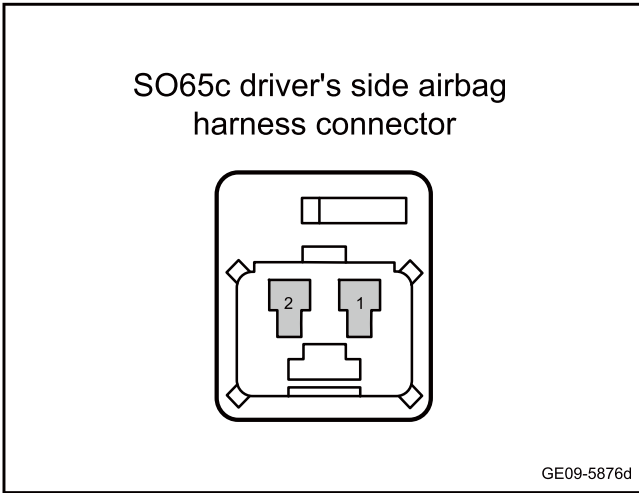


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the driver side airbag and the airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver side airbag harness connector SO65c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

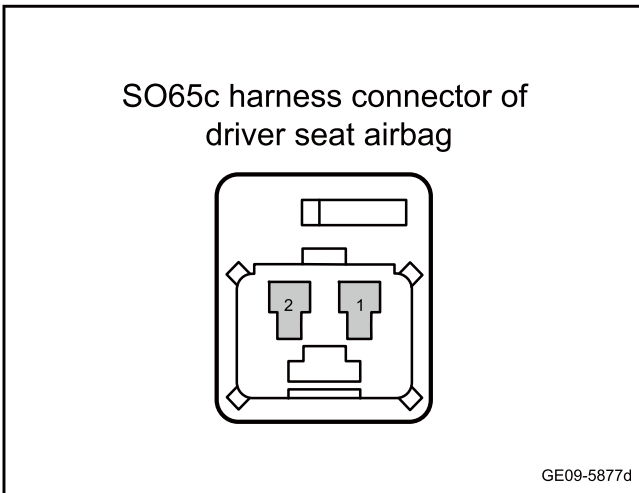
Measure terminal 1	Measure terminal 2	Standard value
SO65c(1)	Vehicle body is grounded.	Standard voltage: 0V
SO65c(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the harness between the driver side airbag and the airbag control module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver side airbag harness connector SO65c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO65c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO65c(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the driver side airbag.

- A. Replace the driver side airbag. Refer to [Replacement of Driver's Airbag](#)
- B. Confirm whether the driver side airbag works normally.

Yes System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.2.7.15 Left curtain airbag fault

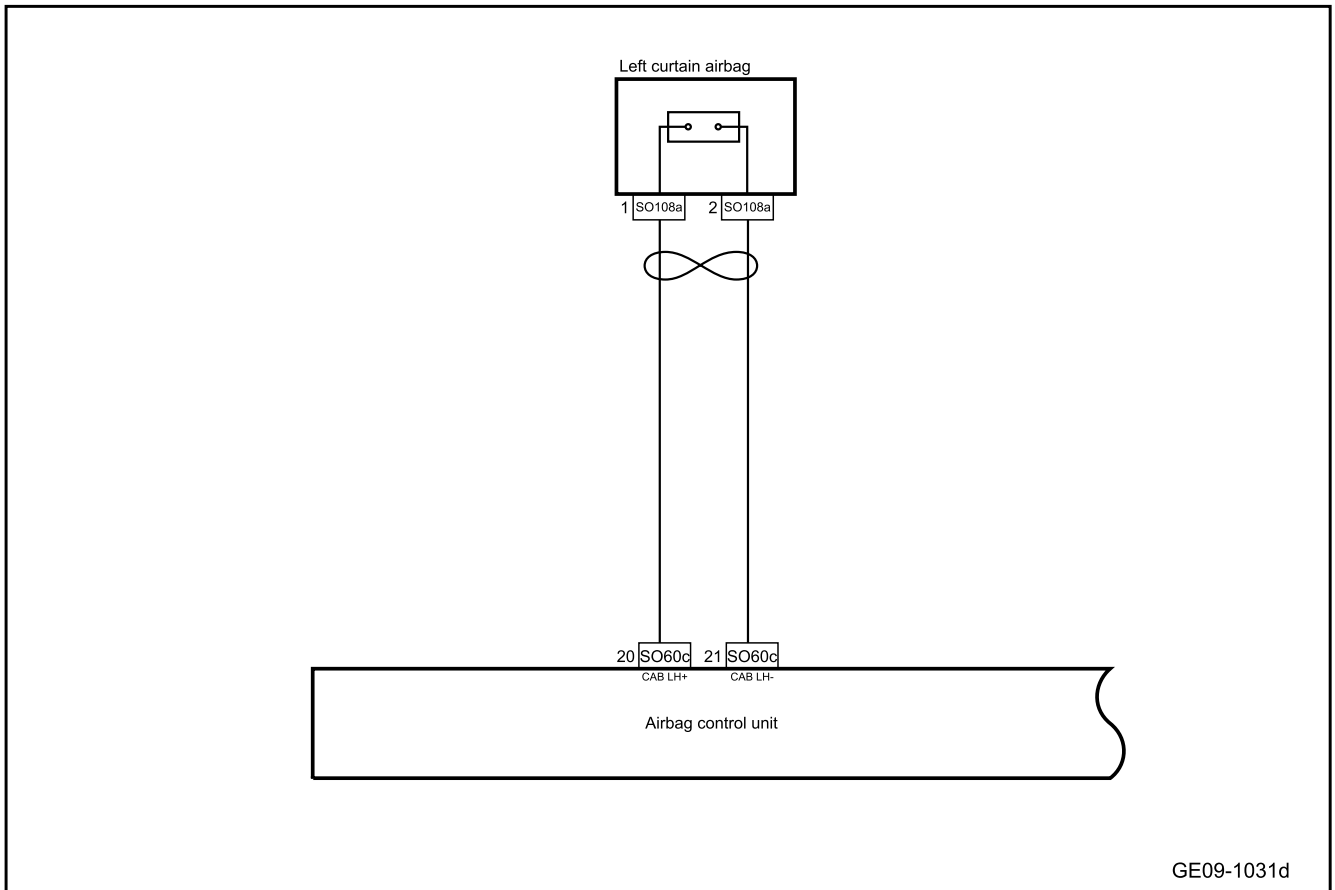
1. DTC description:

Diagnostic Trouble Code	Description
B002111	Left curtain airbag is short to ground
B002112	Left curtain airbag is short to power supply
B00211A	Left curtain airbag low resistance
B00211B	Left curtain airbag high resistance
B00214A	Left curtain airbag circuit plug-in is incorrectly plugged in
B002195	Left curtain airbag is incorrectly configured

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002111	Passenger/left curtain airbag electric squib is short-circuited to ground for 2s (500ms*4)	ACU operating voltage is within the normal range: 9 V-16V	1. Circuit 2. Left curtain airbag 3. Airbag control module
B002112	Passenger/left curtain airbag electric squib is short-circuited to ground for 2s (500ms*4)		
B00211A	Low resistance of driver/left curtain airbag electric squib for 2.0s (500ms*4) RES		
B00211B	High resistance of driver/left curtain airbag electric squib for 2s (500ms*4) RES > 5.4OHM		
B00214A	The power supply end of the driver/left curtain airbag squib is connected in series with the power supply end of another airbag, and the series resistance is less than 1000ohm for 2S (500ms*4)		
B002195	If the airbag is available and the controller is connected to the airbag through the wire harness. The controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

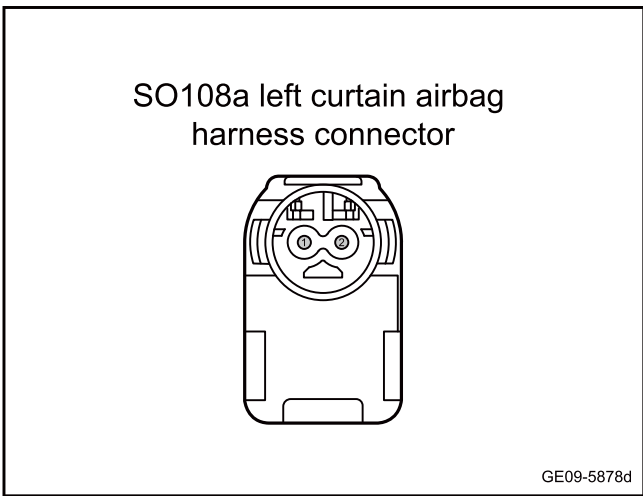
- A. Check the airbag control module, left curtain airbag for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and harness connector of left side curtain airbag for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

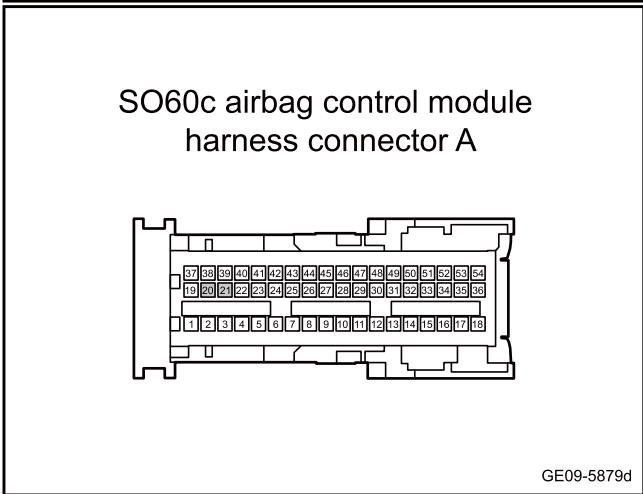
Step 3 Check whether the harness between left side curtain airbag and airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left side curtain airbag harness connector.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO108a(2)	SO60c(21)	Standard resistance: less than 1Ω
SO108a(1)	SO60c(20)	

- E. Confirm whether the measured value meets the standard.

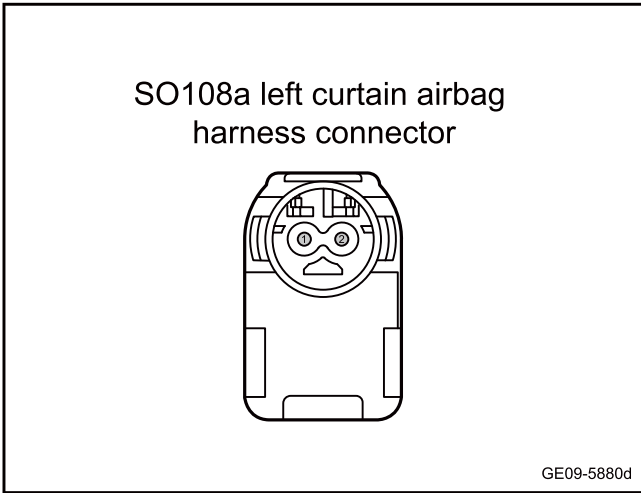


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between left side curtain airbag and airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left side curtain airbag harness connector.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

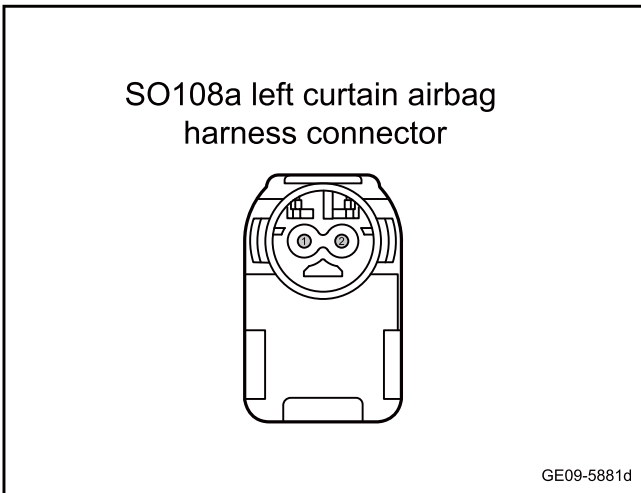
Measure terminal 1	Measure terminal 2	Standard value
SO108a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO108a(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the harness between let side curtain airbag and airbag control module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the left side curtain airbag harness connector SO108a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO108a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO108a(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace left curtain airbag

- A. Replace left curtain airbag Refer to [Replacement of left side curtain airbag](#)
- B. Check whether the left side curtain airbag works normally.

Yes

System is normal.

No

Step 7	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

9.2.7.16 Front passenger side airbag fault

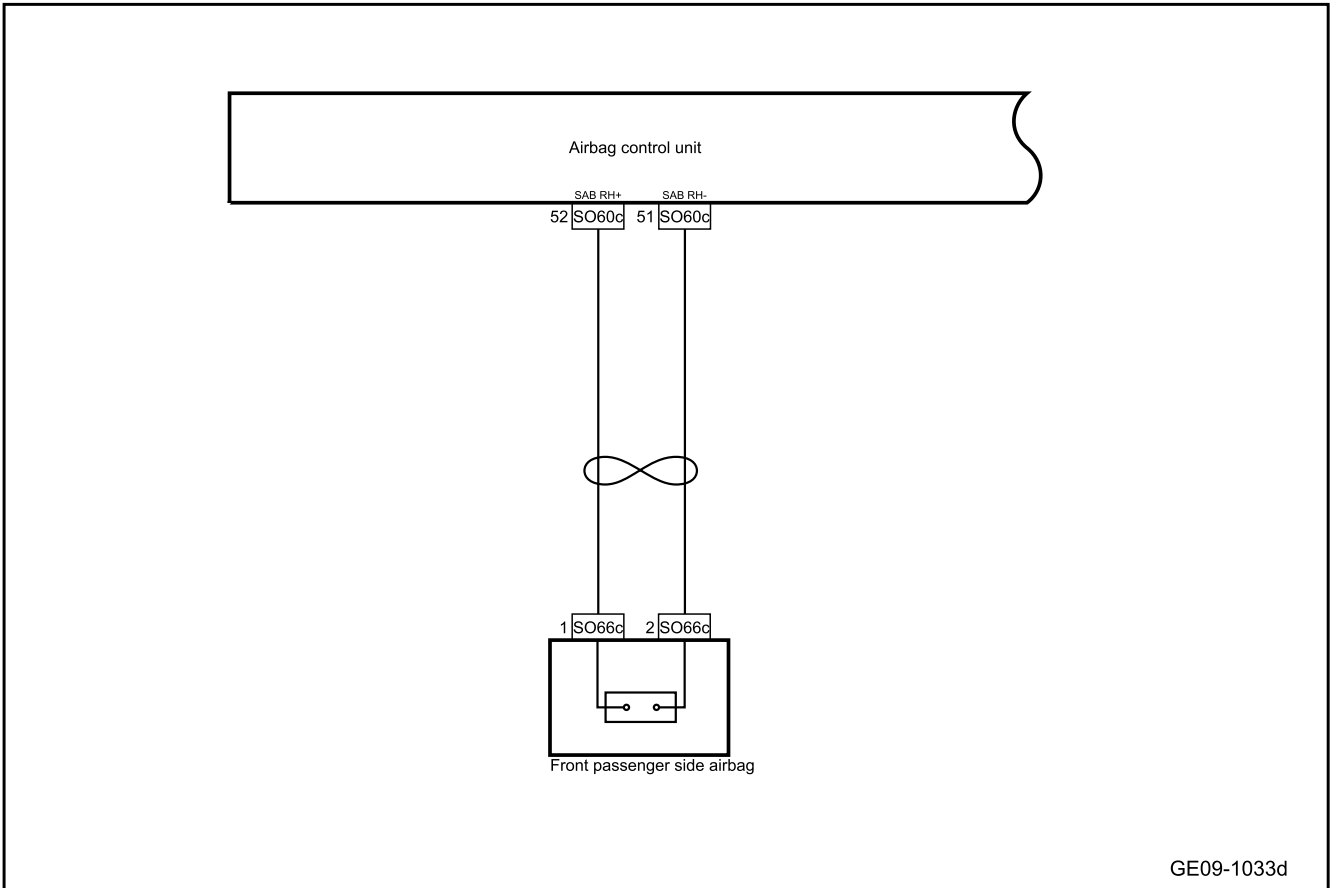
1. DTC description:

Diagnostic Trouble Code	Description
B002811	First row right side airbag is short to GND
B002812	First row right side airbag is short to power supply
B00281A	Low resistance of right side airbag in the first row
B00281B	High resistance of the right side airbag in the first row
B00284A	Right side airbag circuit plug-in is incorrectly plugged in the first row
B002895	Configuration error of the right side airbag in the first row

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002811	Passenger/right airbag electric squib is short-circuited to ground for 2s (500ms*4)	ACU operating voltage is within the normal range: 9 V-16V	1. Circuit 2. Front passenger side airbag 3. Airbag control module
B002812	Passenger/right airbag electric squib is short-circuited to ground for 2s (500ms*4)		
B00281A	Low resistance of driver/right airbag electric squib for 2s (500ms*4) RES < 1.56OHM		
B00281B	High resistance of driver/right airbag electric squib for 2s (500ms*4) RES > 5.4OHM		
B00284A	The power supply end of the passenger/right airbag squib is connected in series with the power supply end of another airbag, and the series resistance is less than 1000ohm for 2.0S (500ms*4)		
B002895	If the airbag is available and the controller is connected to the airbag through the wire harness. The controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

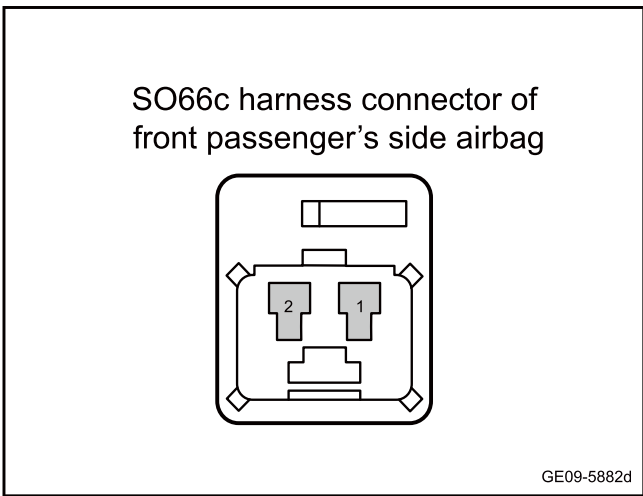
- A. Check the airbag control module, front passenger’s airbag for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and harness connector of front passenger side airbag for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

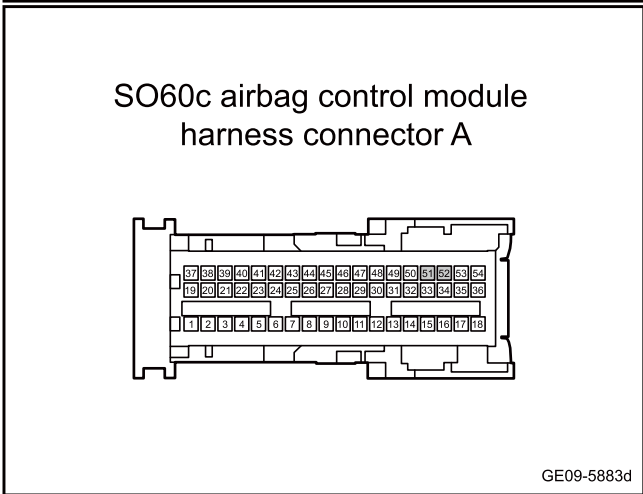
Step 3 Check the harness between the front passenger side airbag and the airbag control module for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger side airbag harness connector SO66c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO66c(1)	SO60c(52)	Standard resistance: less than 1Ω
SO66c(2)	SO60c(51)	

- E. Confirm whether the measured value meets the standard.



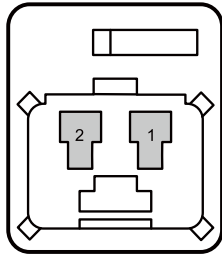
No

Repair or replace the harness.

Yes

Step 4 Detect the harness between the front passenger side airbag and the airbag control module for a short to power supply.

SO66c front passenger side's airbag harness connector



GE09-5884d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger side airbag harness connector SO66c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO66c(1)	Vehicle body is grounded.	Standard voltage: 0V
SO66c(2)		

- F. Confirm whether the measured value meets the standard.

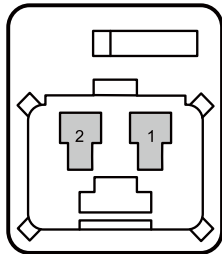
No

Repair or replace the harness.

Yes

Step 5 | Check the harness between the front passenger side airbag and the airbag control module for a short to ground.

SO66c harness connector of front passenger's side airbag



GE09-5885d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger side airbag harness connector SO66c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO66c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO66c(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Replace the front passenger side airbag.

- A. Replace the front passenger side airbag. Refer to [Replacement of Front Passenger's Side Airbag](#)
- B. Confirm that the front passenger side airbag operates properly.

Yes System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.2.7.17 Right curtain airbag fault

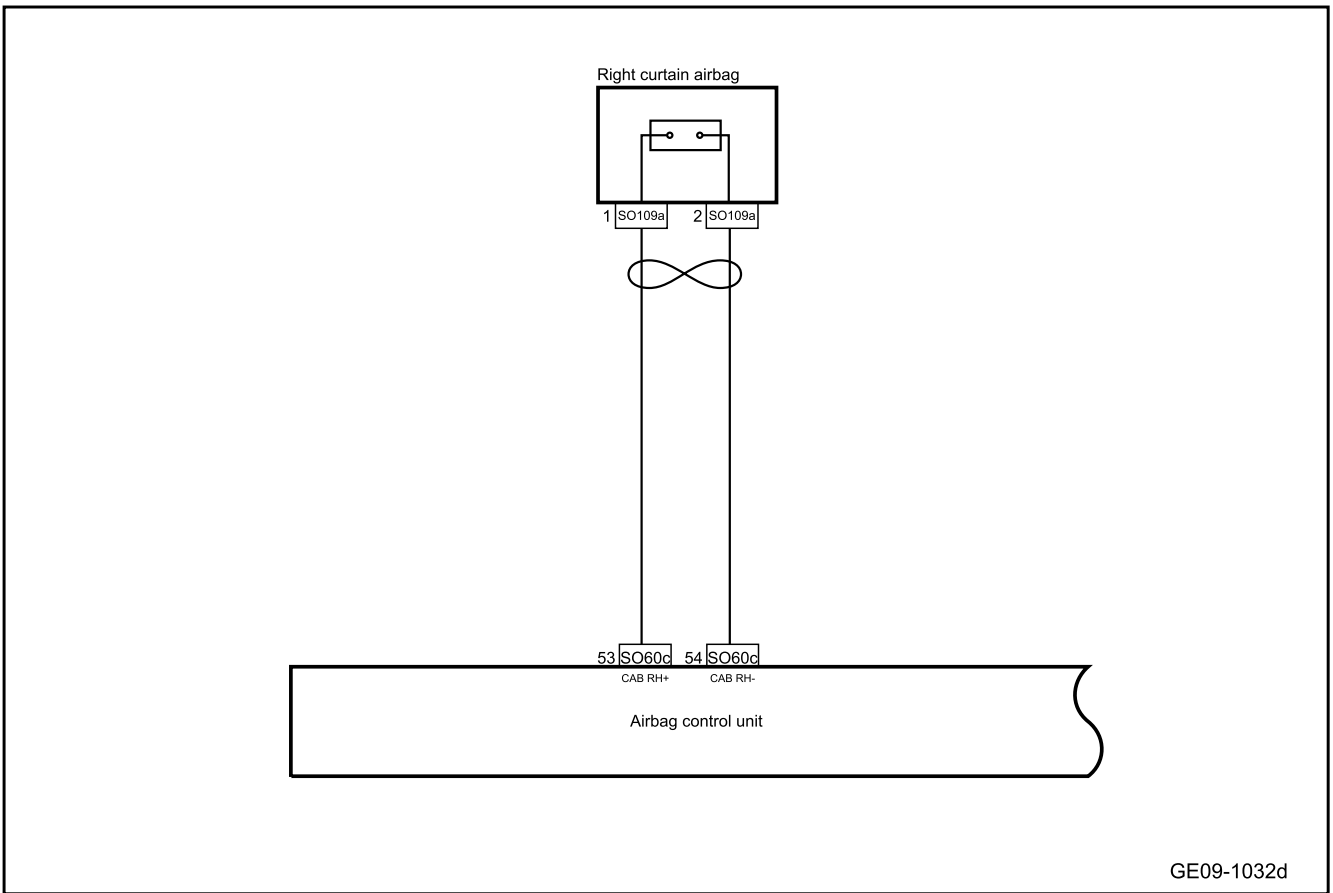
1. DTC description:

Diagnostic Trouble Code	Description
B002911	Right curtain airbag is short to ground
B002912	Right curtain airbag is short to power supply
B00291A	Right curtain airbag low resistance
B00291B	Right curtain airbag high resistance
B00294A	Right curtain airbag circuit plug-in is incorrectly plugged in
B002995	Right curtain airbag incorrect configuration

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B002911	Passenger/right curtain airbag electric squib is short-circuited to ground for 2s (500ms*4)	Power supply voltage is 9V-16V.	1. Circuit 2. Right curtain airbag 3. Airbag control module
B002912	Passenger/right curtain airbag electric squib is short-circuited to ground for 2s (500ms*4)		
B00291A	Low resistance of driver/right curtain airbag electric squib for 2s (500ms*4) RES < 1.56OHM		
B00291B	High resistance of driver/right curtain airbag electric squib for 2s (500ms*4) RES > 5.4OHM		
B00294A	The power supply end of the passenger/right curtain airbag squib is connected in series with the power supply end of another airbag, and the series resistance is less than 1000ohm for 2.0S (500ms*4)		
B002995	If the airbag is available and the controller is connected to the airbag through the wire harness. The controller can detect the existence of the airbag, but the software is not configured		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

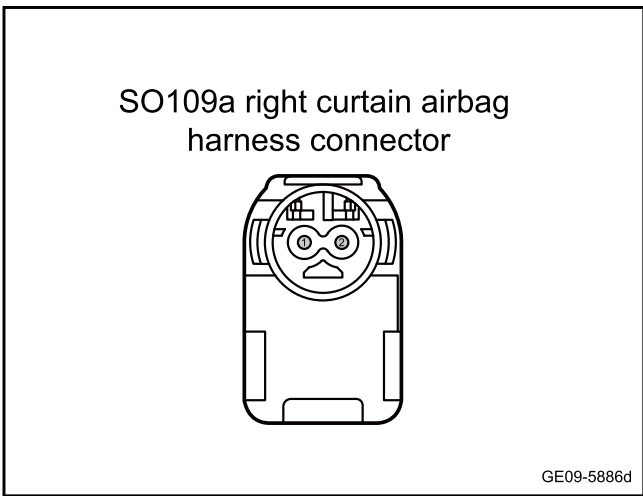
- A. Check the airbag control module, right curtain airbag for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and harness connector of right curtain side curtain airbag for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

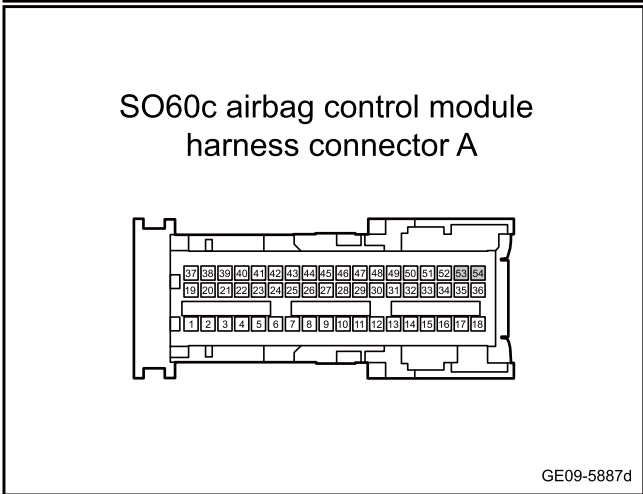
Step 3 Check whether the harness between right side curtain airbag and airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right side curtain airbag harness connector.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO109a(1)	SO60c(53)	Standard resistance: less than 1Ω
SO109a(2)	SO60c(54)	

- E. Confirm whether the measured value meets the standard.

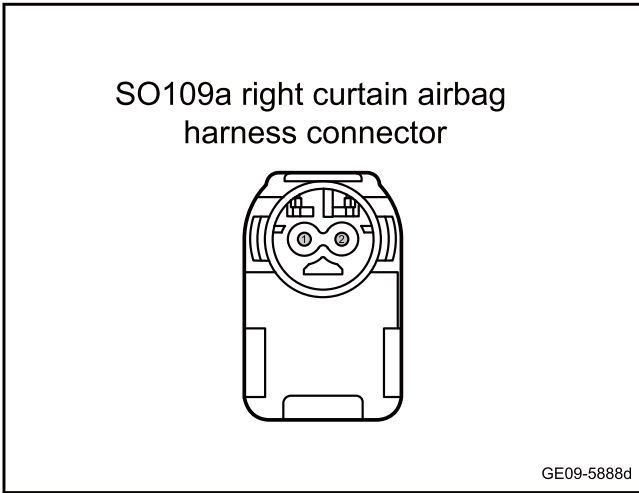


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between right side curtain airbag and airbag control module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right side curtain airbag harness connector.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

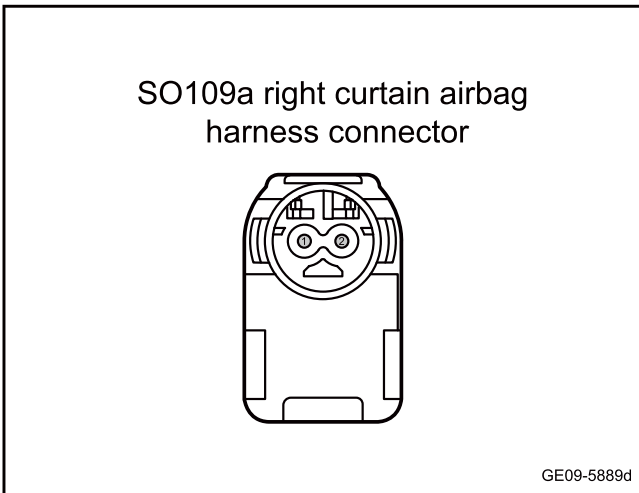
Measure terminal 1	Measure terminal 2	Standard value
SO109a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO109a(2)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the harness between right side curtain airbag and airbag control module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the right side curtain airbag harness connector SO109a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO109a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO109a(2)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace right curtain airbag

- A. Replace right curtain airbag Refer to [Replacement of right side curtain airbag](#)
- B. Check whether the right side curtain airbag works normally.

Yes

System is normal.

No

Step 7	Replace the airbag control module.
--------	------------------------------------

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

9.2.7.18 Internal Faults of Airbag Control Unit

1. DTC description:

Diagnostic Trouble Code	Description
U130055	ACU configuration word is not written
B120009	Internal error
B120168	Front impact burst
B120354	IMU calibration not performed
B120392	IMU calibration failed
B120468	Side impact burst
B120568	Back impact burst
U130155	Node configuration code is not written
B121C52	EDR locking

2. Trouble code setting and fault location:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U130055	ACU configuration word is not written	Power supply voltage is 9V-16V.	1. Airbag control module
B120009	ACU internal faults occur	CAN self-diagnosis is activated	
B120168	Front impact burst		
B120354	External IMU calibration is not performed	Power supply voltage is 9V-16V.	
B120392	The external IMU calibration result fails 1. The initialization data of the IMU700 chip itself exceeds the normal range, and the calibration fails to compensate		
B120468	Side impact burst	CAN self-diagnosis is activated	
B120568	Back impact burst		
U130155	ACU is in the mode of node unconfigured	Power supply voltage is 9V-16V.	
B121C52	There is a collision and the EDR is locked	-	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 5 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 System is normal.

9.2.7.19 Power Failure of Airbag Control Module

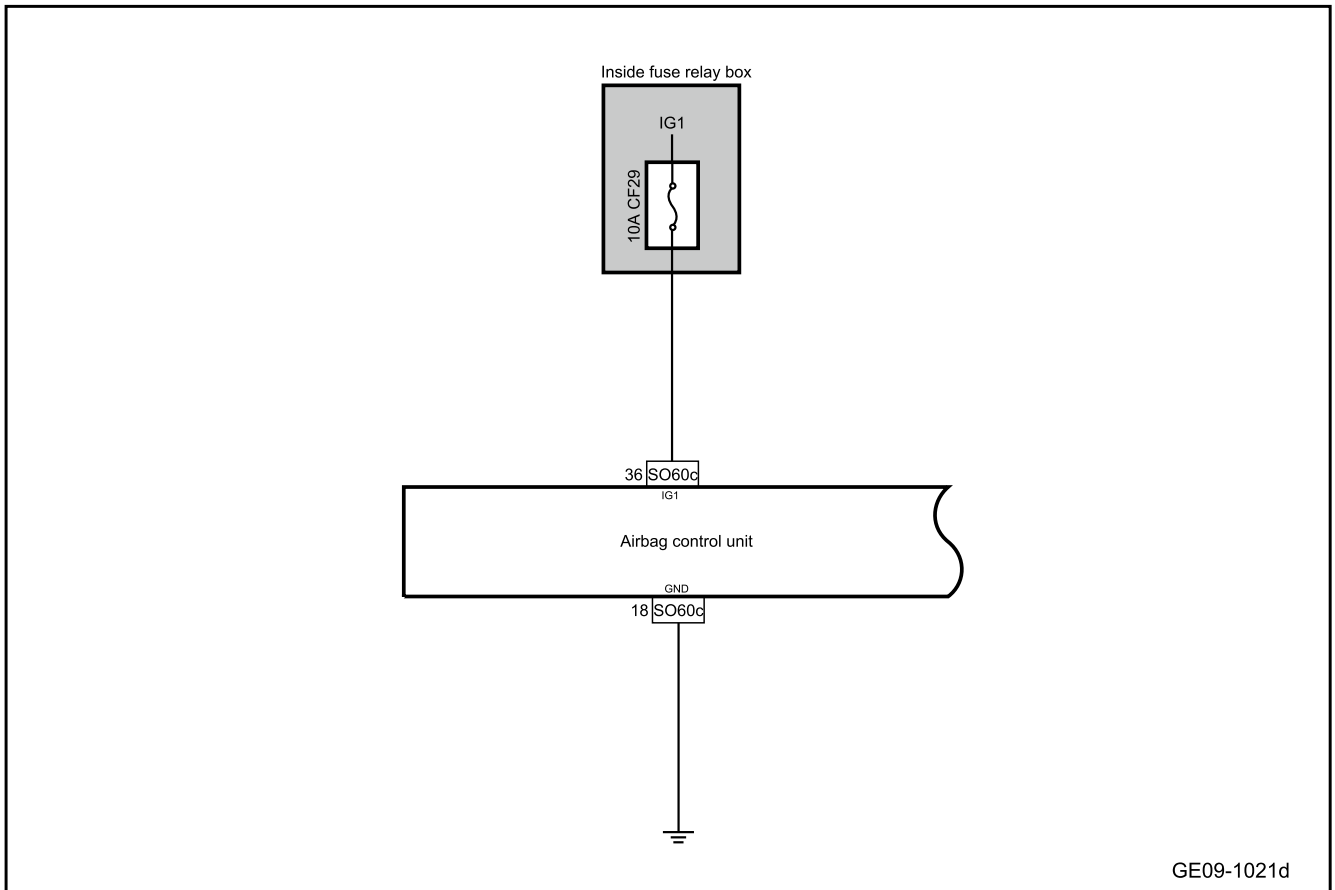
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller voltage is low.
U300617	Controller voltage is high.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measured voltage value <9V for 6s	Voltage is normal	1. Fuse 2. Circuit 3. Airbag control module
U300617	Measured voltage value >16V for 6S		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the fuse CF29.
--------	----------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove fuse CF29 and check if it is blown.

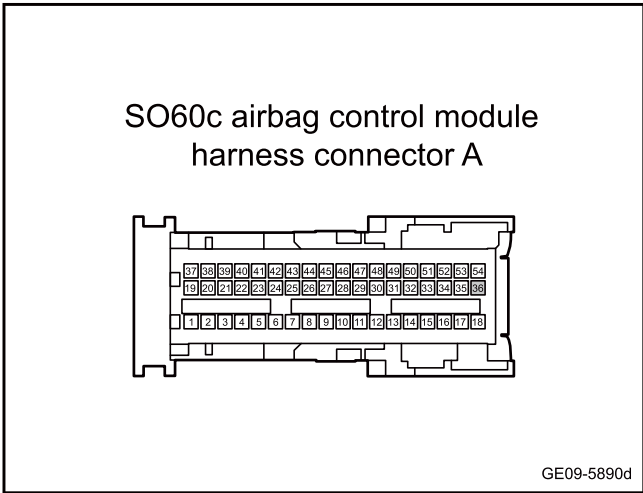
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the working voltage of the airbag control module is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between terminal 36 of the airbag control module harness connector SO60c and body grounding.

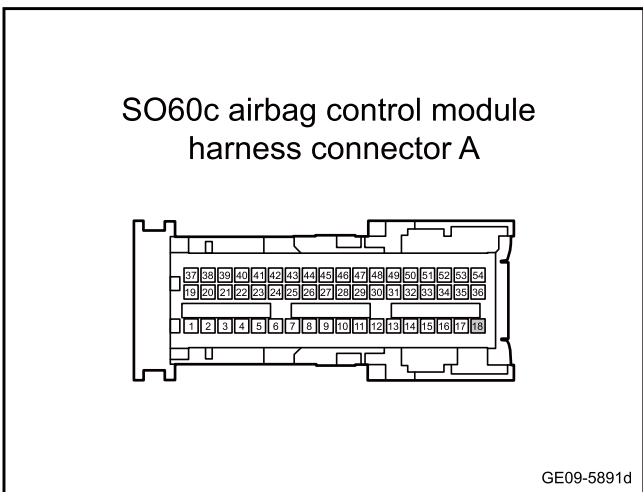
Standard voltage: 11-14V
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the grounding harness of the airbag control module is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Use a multimeter to measure the resistance between terminal 18 of the airbag control module harness connector SO60c and body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the airbag control module.

- A. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 6	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module.
Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 8	System is normal.
--------	-------------------

9.2.7.20 Communication Failure of Airbag Control Unit

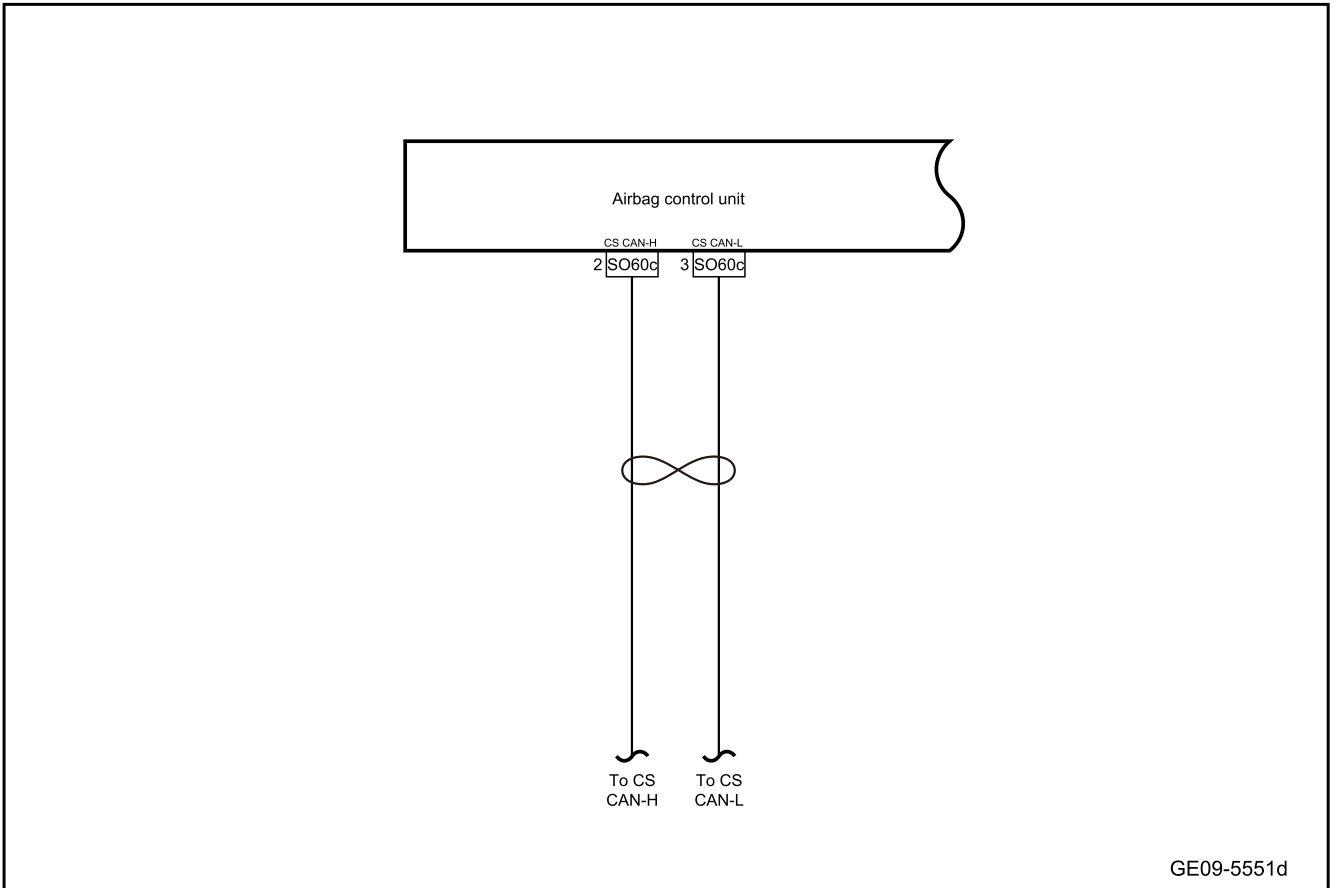
1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus off
U011087	Communication with IPU module is lost
U012287	Communication with ESP module is lost
U015587	Communication with IPK module is lost
U014087	Communication with BCM module is lost
U012687	Communication with SAS module is lost
U111487	Communication with VCU module is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	Detected CAN bus disconnection for 1s	1. CAN is waked up 2. Power supply voltage is 9V - 16V 3. No bus off	1. Communication circuit 2. Airbag control module
U011087	Messages from VCU lost 250ms (0x0A8)	1. Ignition lasts for 3 seconds; 2. Power supply voltage is 9V-16V; 3. No bus off 4. F110 bit IPU=1	
U012287	Messages from ESC lost 250ms (0x122, 0x125)	1. Ignition lasts for 3 seconds; 2. Power supply voltage is 9V-16V; 3. No bus off 4. F110 bit ESP=1	
U015587	Messages from IPK lost 500ms (0x26D) Messages from IPK lost 5s (0x3F1)	1. Ignition lasts for 3 seconds; 2. Power supply voltage is 9V-16V; 3. No bus off 4. F110 bit IPK = 1	
U014087	Messages from BCM lost 500ms (0xID0E0)	Ignition lasts for 3 seconds Power supply voltage range is 9V-16V No bus off occurs F110 bit BCM=1	
U012687	Messages from SAS is lost for 250ms (0xID284)	Ignition lasts for 3 seconds Power supply voltage range is 9V-16V No bus off occurs F110 bit SAS=1	
U111487	Messages from VCU lost 250ms (0x165 or 0x1A5 or 0x0A6)	1. Ignition lasts for 3 seconds; 2. Power supply voltage is 9V-16V; 3. No bus off 4. F110 bit VCU=1	

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CS-CAN network integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 | System is normal.

9.2.7.21 Crash Signal Failure

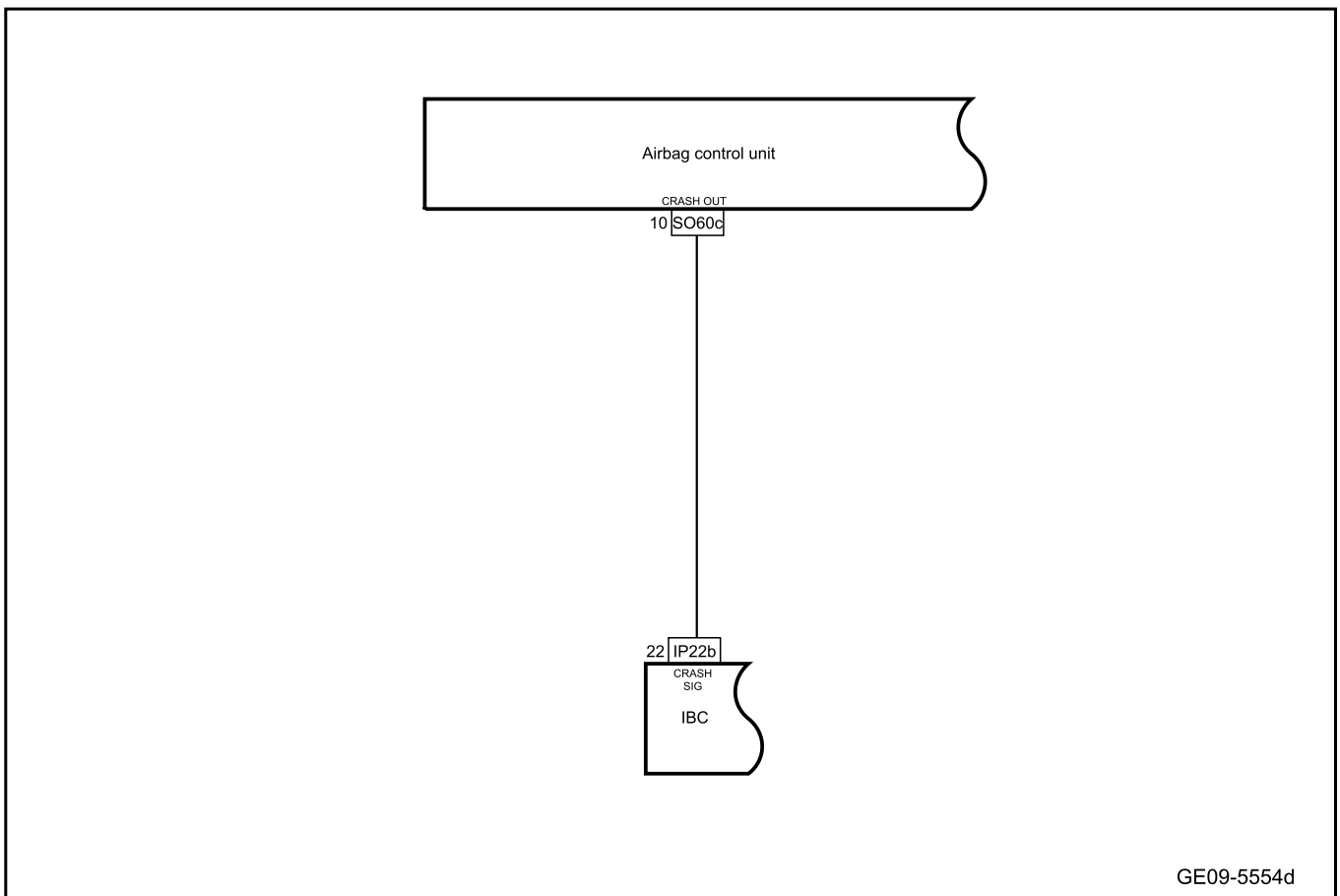
1. DTC description:

Diagnostic Trouble Code	Description
B121E96	Hardwire collision output configuration error
B121E13	Hardwire collision output open circuit
B121E12	Hardwire collision output is short-circuited to power supply
B121E11	Hardwire collision output is short-circuited to ground

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B121E96	ACU is not configured with hardwire collision output, but peripherals are connected for 3175ms	Power supply voltage is 9V-16V.	1. Airbag control module 2. Circuit 3.IBC
B121E13	ACU hard wire collision output signal circuit is opened for 3175ms		
B121E12	ACU hard wire collision output signal is short-circuited to power supply for 3175ms		
B121E11	ACU hard wire collision output signal is short-circuited to ground for 3175ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

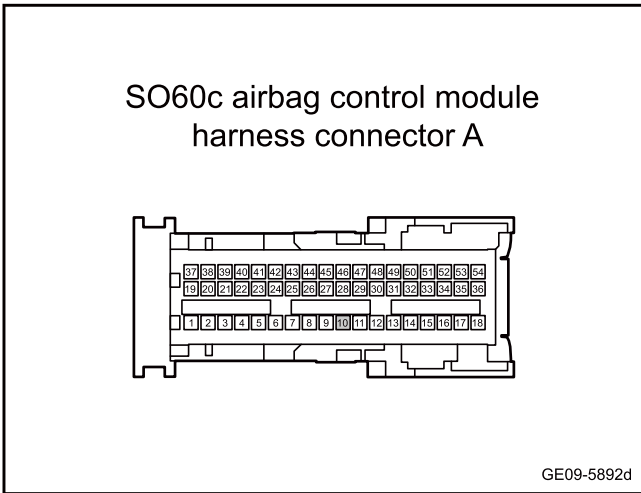
Step 2 Primary check.

- A. Check the airbag control module and IBC for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

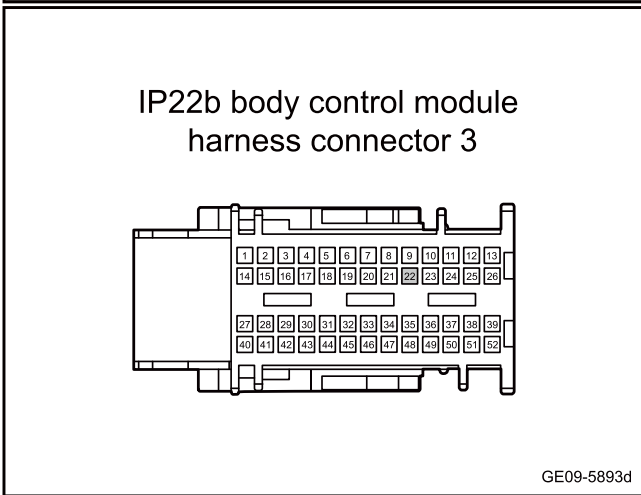
No Repair or replace the faulty part.

Yes

Step 3 Check whether the harness between airbag control module and IBC is open.



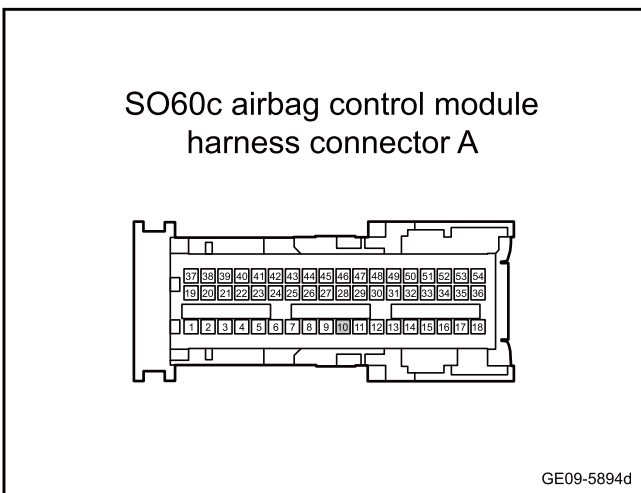
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the harness connector SO60c of airbag control module.
 - C. Disconnect the IBC harness connector IP22b.
 - D. Use a multimeter to measure the resistance between the terminal 10 of the harness connector SO60c of airbag control module and the terminal 22 of harness connector IP22b of the IBC.
- Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.



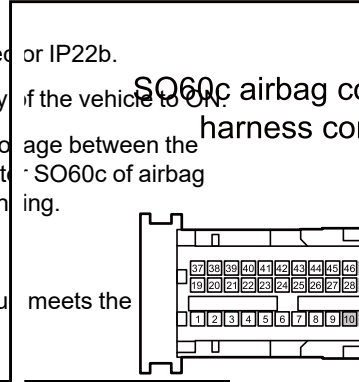
No Repair or replace the harness.

Yes

Step 4 Check whether the harness between airbag control module and IBC is short to power supply.



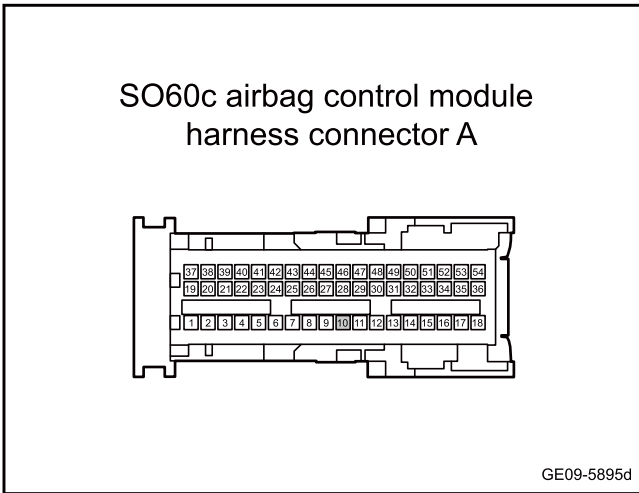
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the harness connector SO60c of airbag control module.
 - C. Disconnect the IBC harness connector IP22b.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between the terminal 10 of the harness connector SO60c of airbag control module and the body ground.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 5 Check whether the harness between airbag control module and IBC is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the resistance between the terminal 10 of the harness connector SO60c of airbag control module and the body grounding.

Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

9.2.7.22 Yaw sensor calibration

1. Diagnosis steps

Step 1 Brand selection, vehicle identification.

Next step

Step 2 Enter the main interface of the diagnostic instrument for the relevant vehicle model and scan the complete vehicle.

Next step

Step 3 Select a special operation.

Next step

Step 4 Select "yaw sensor calibration"

Next step

Step 5 Start the "calibration of the yaw angle sensor".

Next step

Step 6	Read the calibration state of the yaw angle sensor.
--------	---

Next step

Step 7	Safety certification.
--------	-----------------------

Next step

Step 8	Start calibration.
--------	--------------------

Next step

Step 9	Wait for 500ms.
--------	-----------------

Next step

Step 10	Read the calibration state.
------------	-----------------------------

Next step

Step 11	Exit calibration.
---------	-------------------

Next step

Step 12	Clear the trouble code.
------------	-------------------------

Next step

Step 13	ACU reset.
------------	------------

Next step

Step 14	Exit calibration and back to the main interface.
------------	--

9.2.7.23 Airbag Warning Lamp Faults(Type II)

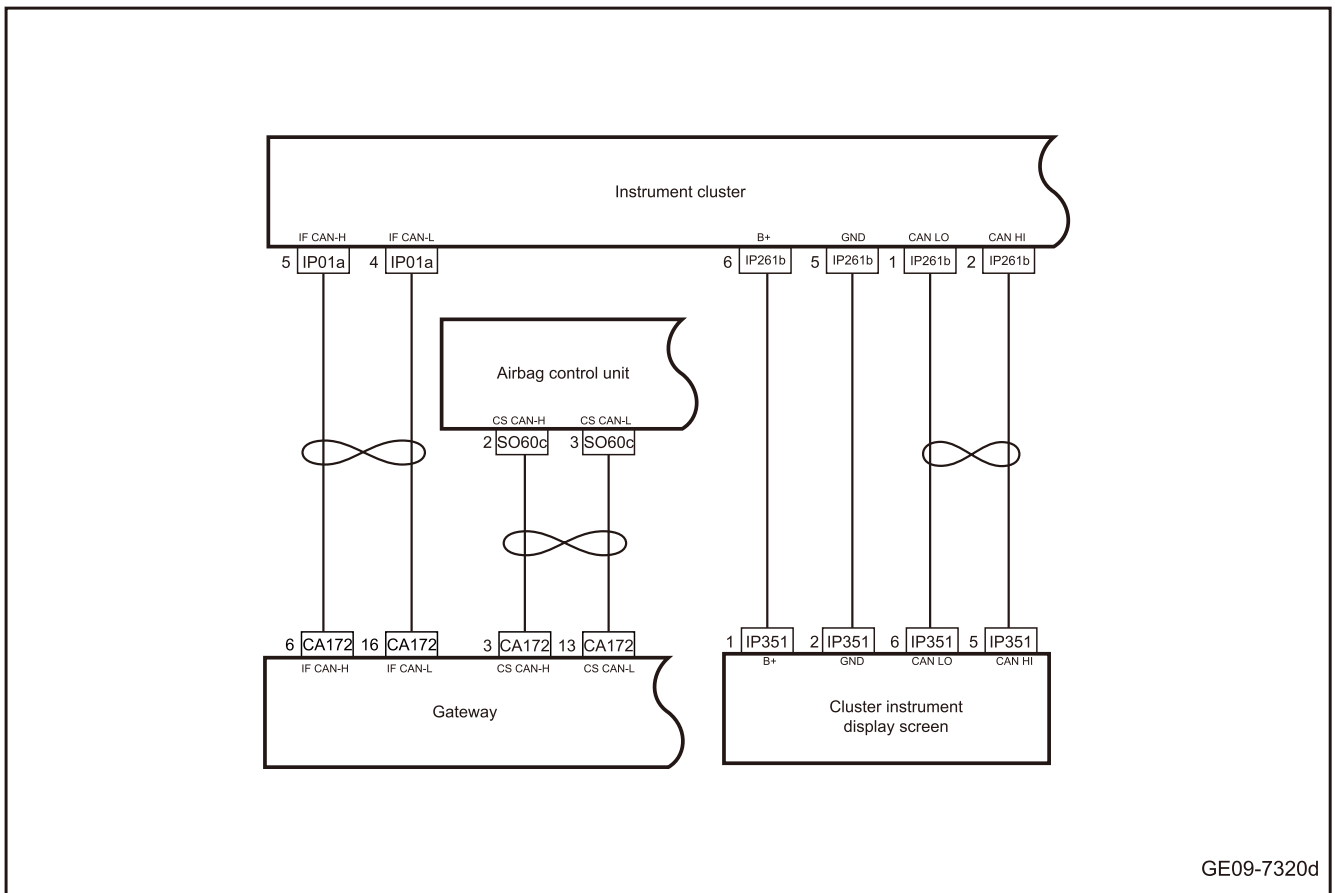
1. DTC description:

DTC	Trouble description
B00D296	Fault of system warning lamp

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B00D296	1. The warning lamp status sent by IP is 0x03 2. ABM receives that the warning lamp state sent by IP is inconsistent with the warning lamp state sent by it	The ignition voltage is normal and lasts for 7 seconds, and the power supply is 9V-16V	1. Harness 2. Gateway 3. Diagnostic interface 4. Instrument cluster 5. Instrument cluster display screen 6. Airbag control module

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the instrument cluster, instrument cluster display screen, gateway and airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the instrument cluster, instrument cluster display screen, gateway, and harness connector of airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CS-CAN network integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Check the IF-CAN network integrity.

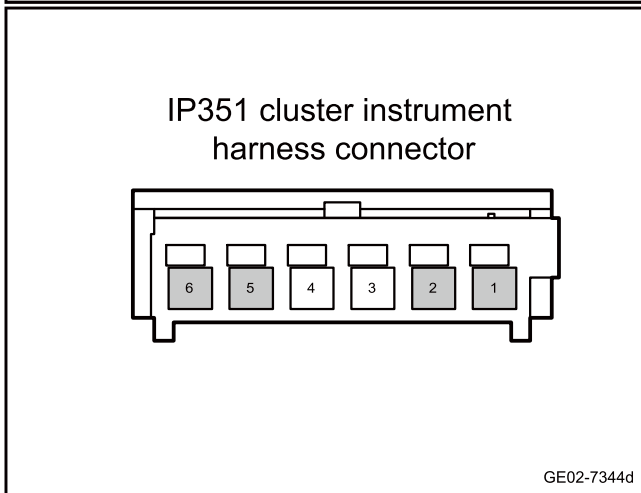
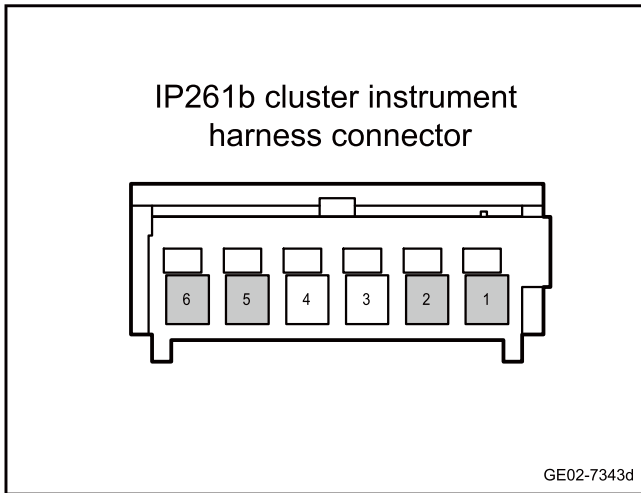
- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5 Check the circuit between the instrument cluster, and the instrument cluster display screen.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster harness connector IP261b.
- C. Disconnect the instrument cluster display screen harness connector IP351.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(1)	IP351(6)	Standard resistance: less than 1Ω
IP261b(2)	IP351(5)	
IP261b(5)	IP351(2)	
IP261b(6)	IP351(1)	
IP261b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP261b(2)		
IP261b(5)		
IP261b(6)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP261b(2)		
IP261b(5)		
IP261b(6)		

- G. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 6 Replace the instrument cluster display screen.

- A. Replace the instrument cluster display screen. Refer to [Replacement of the Instrument Cluster Display Screen](#)
- B. Confirm whether the system is working normally.

Yes
System is normal.

No

Step 7	Reprogram and reset the instrument cluster.
--------	---

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 8	Replace the instrument cluster.
--------	---------------------------------

- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster](#)
- B. Confirm whether the system is working normally.

Yes	System is normal.
-----	-------------------

No

Step 9	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 10	Replace the airbag control module.
---------	------------------------------------

- A. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

9.2.8 Removing and installing

9.2.8.1 Replacement of airbag electronic control unit

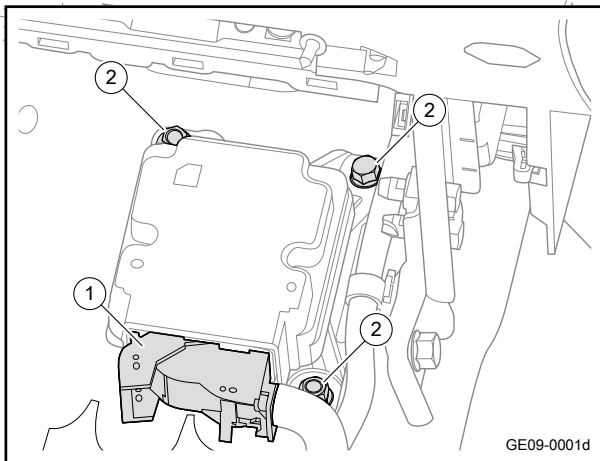
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

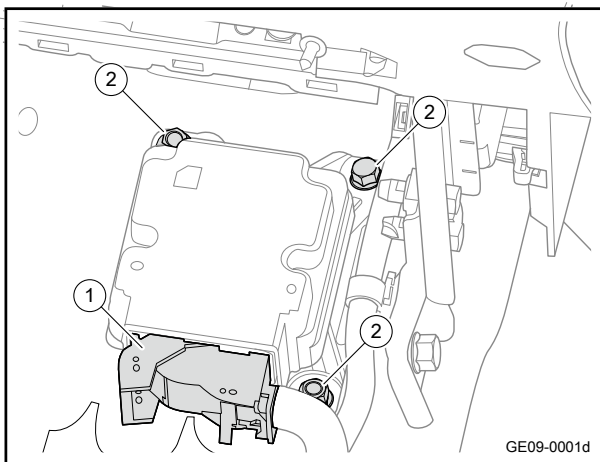
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the auxiliary fascia console body assembly. Refer to [Replacement of Auxiliary Fascia Console Body Assembly](#)
- 3 Disconnect the airbag control unit harness connector 1.
- 4 Remove the 3 fixing bolts 2 of the airbag electronic control unit.
- 5 Take off the airbag electronic control unit.



Installation procedure

- 1 Move the airbag electronic control unit to the installation position.
- 2 Install the 3 fixing bolts 2 of the airbag electronic control unit.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect the harness connector 1 of the ACU.

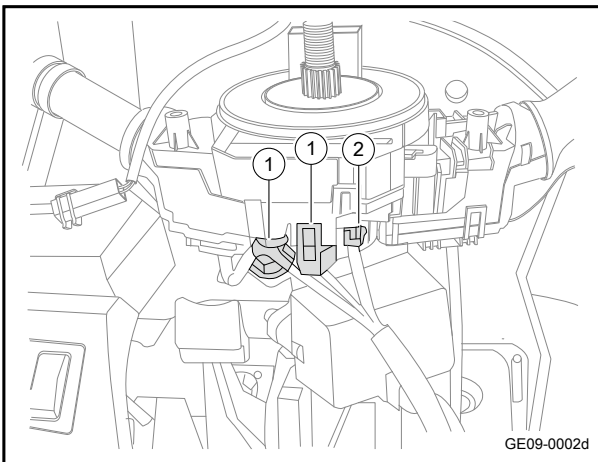


- 4 Install the auxiliary fascia console body assembly.
- 5 Connect the negative cable of battery.

9.2.8.2 Replacement of the clock spring

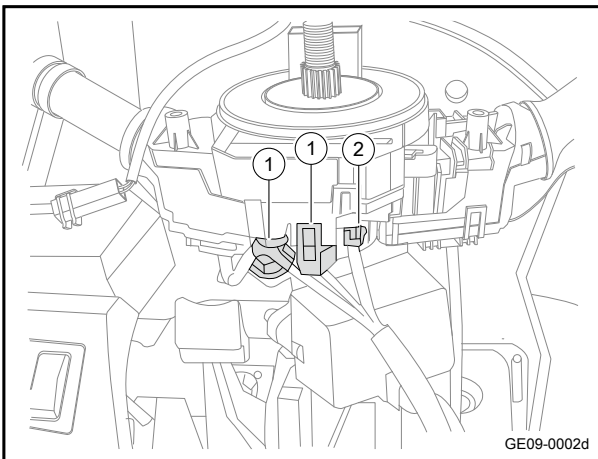
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the steering wheel. Refer to [Replacement of Steering Wheel](#)
- 3 Remove the lower cowl assembly of the steering column.
Refer to [Replacement steering column lower cowl assembly](#)
- 4 Disconnect the clock spring harness connector 1.
- 5 Disconnect the steering angle sensor harness connector 2.
- 6 Take off clock spring



Installation procedure

- 1 Move the clock spring to the installation position.
- 2 Connect the steering angle sensor harness connector 2.
- 3 Connect the clock spring connector 1.



- 4 Install the lower cowl assembly of the steering column.
- 5 Install the steering wheel assembly.
- 6 Connect the negative cable of battery.

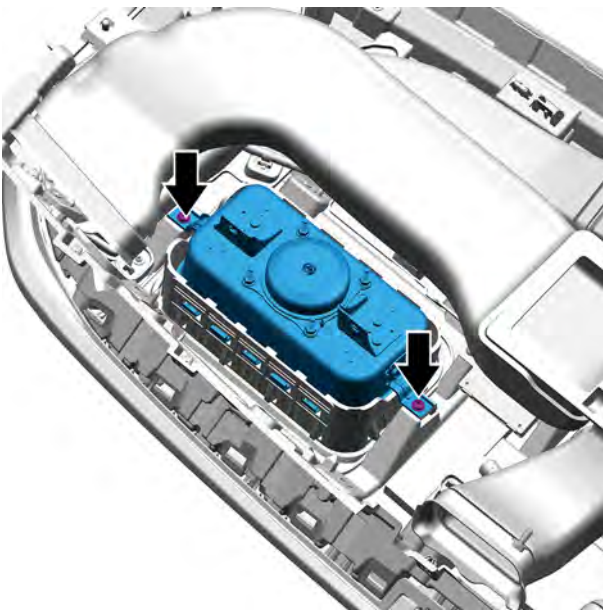
9.2.8.3 Replacement of Passenger's Frontal Airbag

Removal procedure

Caution

It is important to carry out the removal after the negative pole of the battery is disconnected for 90s and wait for the airbag capacitor to discharge fully. Insufficient discharge, the airbag may be accidentally deployed during disassembly and assembly.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the instrument panel body assembly. Refer to [Replacement of Instrument Panel Body Assembly](#)
- 3 Remove the 2 fixing screws of the passenger's front airbag and the instrument panel body assembly.



- 4 Disconnect the front passenger airbag from the instrument panel body assembly.
- 5 Take down passenger frontal airbag

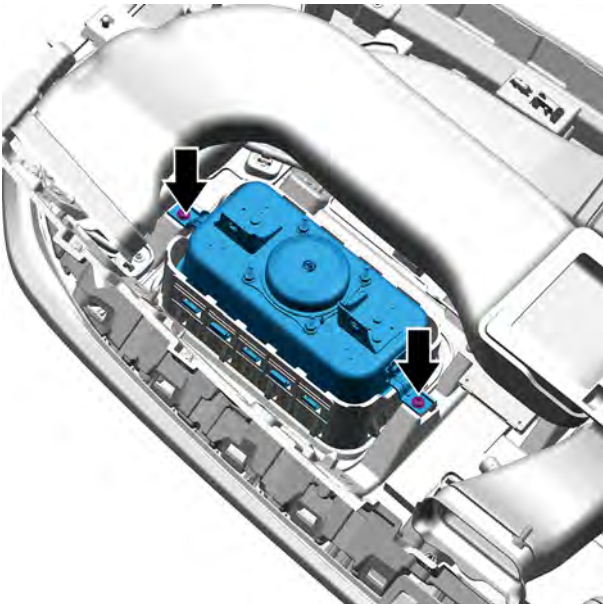
Caution

Take down the airbag and place it with the deployment surface upward.

Installation procedure



- 1 Install the passenger's front airbag onto the instrument panel body assembly to ensure that the passenger's front airbag and the instrument panel body are fixed in place.



- 2 Install the 2 fixing screws of the front passenger's airbag and the instrument panel body assembly.
Torque: 3N·m

- 3 Install the instrument panel body assembly.
- 4 Connect the negative cable of battery.

9.2.8.4 Replacement of left side curtain airbag

Removal procedure

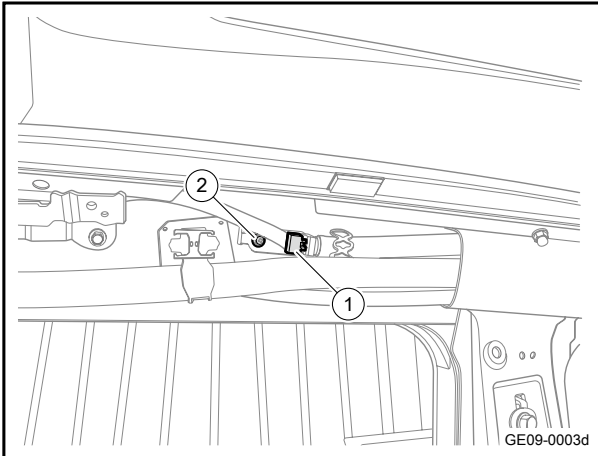
Caution

The removal method is the same for the left and right sides.

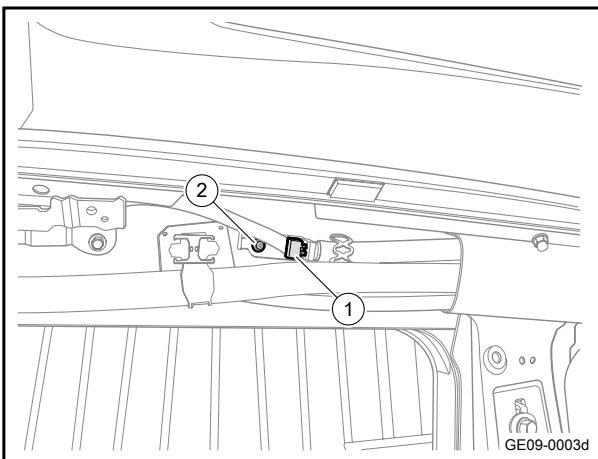
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



- 2 Replace headliner inner trim panel Refer to [Replacement of headliner Inner Trim Panel](#)
- 3 Disconnect the left side curtain airbag harness connector 1.
- 4 Remove the 1 fixing bolt 2 of left side curtain airbag.
- 5 Disconnect left curtain airbag clip and take down left curtain airbag



Installation procedure

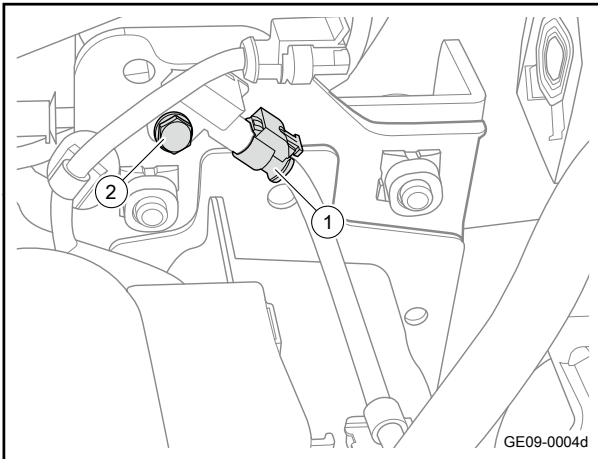
- 1 Move the left curtain airbag to the installation position.
- 2 Install the 1 fixing bolt 2 on the left curtain airbag.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect the left side curtain airbag harness connector 1.

- 4 Install the interior trim panel of top cover.
- 5 Connect the negative cable of battery.

9.2.8.5 Replacement of left front impact sensor

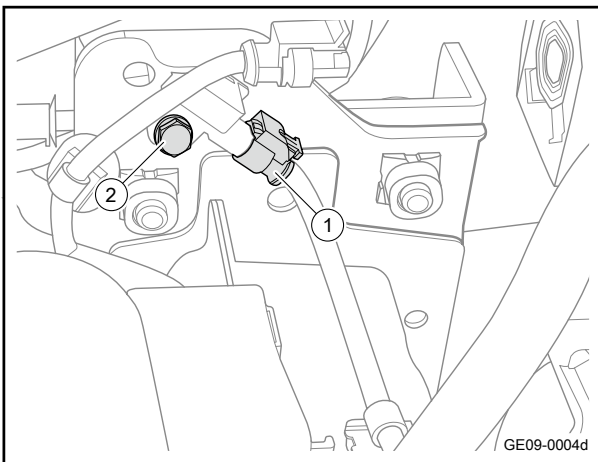
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)



- 4 Disconnect the left front frontal impact sensor harness connector 1.
- 5 Remove left front impact sensor fixing bolt 2
- 6 Remove left frontal impact sensor

Installation procedure



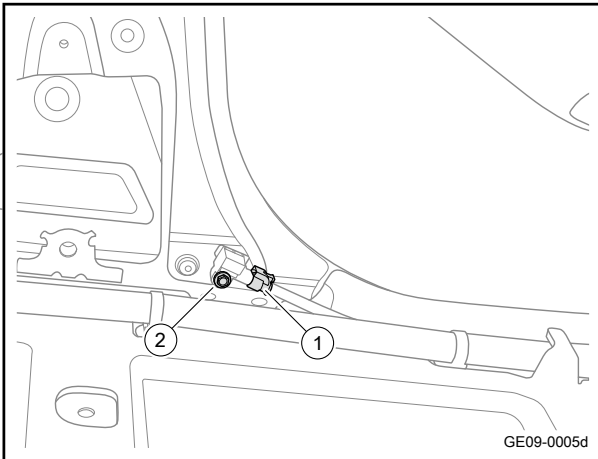
- 1 Move the left front impact sensor to the installation position.
- 2 Install fixing bolt 2 of the left front impact sensor.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect the left front impact sensor harness connector 1.

- 4 Install the front bumper assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

9.2.8.6 Replacement of side impact sensor

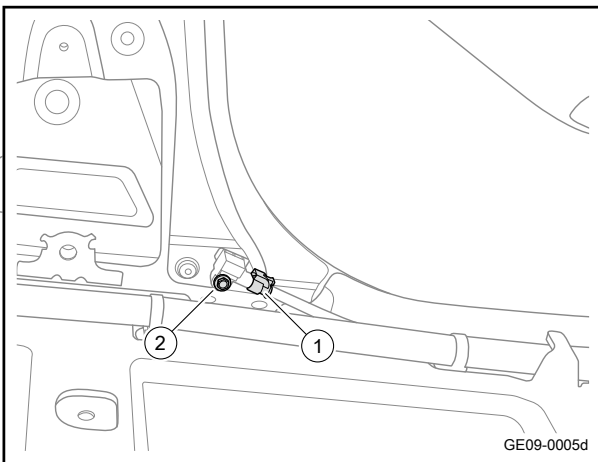
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left pillar B lower trim panel. Refer to [Replacement of Left Pillar B Lower Trim Panel Assembly](#)



- 3 Disconnect the side impact sensor harness connector 1.
- 4 Remove side impact sensor fixing bolt 2
- 5 Take off side impact sensor

Installation procedure



- 1 Move the side impact sensor to the installation position.
- 2 Install fixing bolt 2 on the side impact sensor.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect the side impact sensor harness connector 1.

- 4 Install the left B-pillar lower trim panel assembly.
- 5 Connect the negative cable of battery.

9.2.8.7 Replacement of driver side airbag

Refer to [Replacement of Driver's Seat](#)

9.2.8.8 Replacement of driver's airbag

Removal procedure

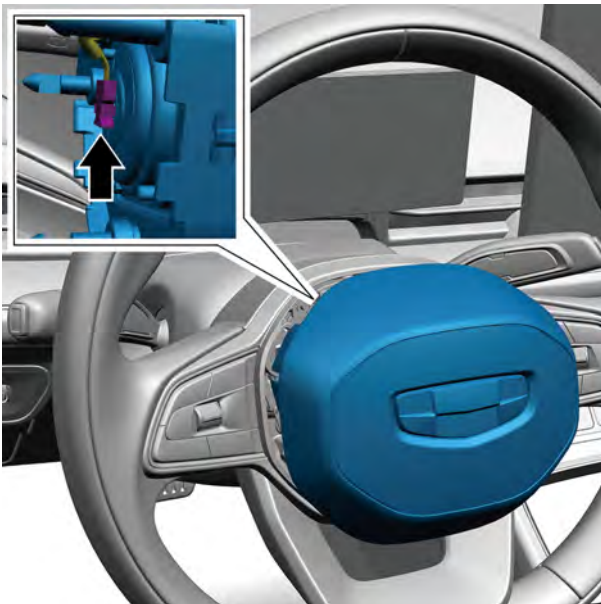
Caution

It is important to carry out the removal after the negative pole of the battery is disconnected for 90s and wait for the airbag capacitor to discharge fully. Insufficient discharge, the airbag may be accidentally detonated during disassembly and assembly.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)



- 2 Insert a slender straight screwdriver into the two holes in turn, press inward, press the clip, the airbag moves up, and take out the driver's airbag.

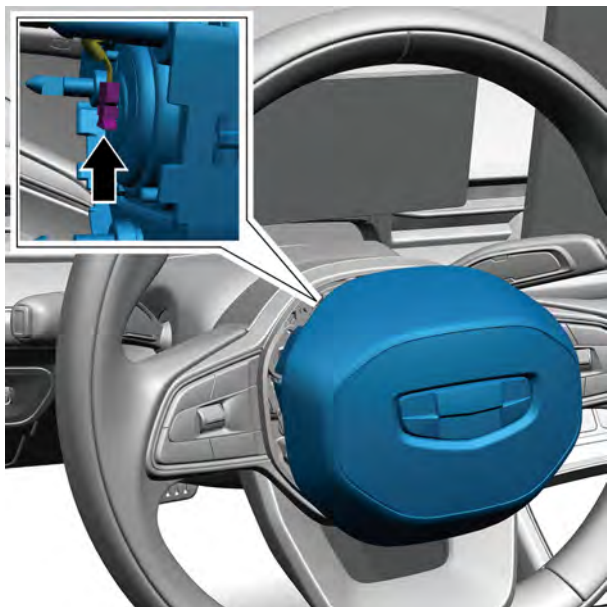


- 3 Disconnect the harness connector connecting the driver's airbag and steering wheel assembly.
- 4 Take off the driver's airbag.

Caution

When the vehicle is stored, the surface of the airbag faces upward, otherwise accidental deployment may occur and cause a serious accident. To prevent damage to airbags, keep away from engine oil, grease, detergent, water and other materials. Do not place any object on the airbag. Do not use detection lamps, voltmeters, ohmmeter and other tools to measure the circuit of the airbag system; otherwise, it may be detonated unexpectedly. The airbag system can only work once, and the airbags detonated in case of accident must be replaced.

Installation procedure



- 1 Move the driver's airbag to the installation position.
- 2 Connect the harness connector connecting the driver seat airbag and steering wheel assembly.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 3 Clip the driver seat airbag into the steering wheel.

- 4 Connect the negative cable of battery.

9.3 Seat belt system

9.3.1 Specification

9.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left side seatbelt buckle fixing nut of rear row	M12	40 ~ 50
Rear middle and right buckle fixing nut	M16	40 ~ 50
Rear left/right seat belt lower fixing bolt	7/16"-20UNF-2A level 8.8	40 ~ 50
Fixing bolt of seat belt in the front row height adjuster	M10×24	30-40
Seat belt assembly fixing bolt	7/16"-20UNF-2A level 8.8	40 ~ 50
Seat belt assembly center pillar fixing bolt	M6×12	8 -10
Seat belt assembly shoulder guide ring fixing bolt	7/16"-20UNF-2A level 8.8	40 ~ 50

9.3.2 Instructions and operations

9.3.2.1 Description and Operations

Seat belt

The front and rear seats of the vehicle are equipped with seat belts, which are the main way to protect passengers. Seat belts can keep passengers in the passenger compartment and gradually reduce the force of an impact under the following conditions:

- Front collision
- Rear collision
- Side collision
- Overturn caused collision

All vehicles are equipped with a retractor with an emergency lock nut function. The locking function is activated when the seat belt is quickly pulled out of the retractor. The locking function can prevent the seatbelt from being pulled out beyond the allowable retraction position. The vehicle is also equipped with an airbag system, please refer to Description and Operations in the “Airbag System”.

Front-row seat belt warning lamp

The front seat belt warning lamps are located on the instrument cluster to remind occupants to fasten their seat belts.

Child seat protection system

Warning

Do not use the rear-mounted child protective device on the passenger seat of the vehicle. When the passenger front airbag is inflated, the child in the rear-mounted child protective device sitting on the passenger seat will be seriously injured. If a forward-style child protective device is suitable for your child, be sure to move the front passenger seat as far back as possible before installing the child protective device. Ensure that the location of the child protective device does not conflict with any additional requirements of the manufacturer. For details, please refer to the User Manual and the Operating Guide accompanied with the child protection device.

The child seat can only be used in the forward seating position. The child seat should be installed and fixed in accordance with the instructions of the manufacturer. If there is an upper strap on the child seat, the seat needs to be fixed. If the seat belt on the seat is used to fix the child seat, no passengers are allowed on the seat.

9.3.3 System working principles

9.3.3.1 System Working Principles

Front seat belt system

The front seat belt system includes driver and passenger seat belt retractors, passenger identification sensors, and two front seat belt switches. Passenger identification sensor is applied to check whether passengers are in the seats. If no passenger is detected, turn off the front passenger seat belt warning lamp. The two front seat belt switches are respectively located in the seat buckle to control the front seat belt warning lamp.

Front-row seat belt warning lamp

- After the power mode of the start-and-stop switch is ON, if the driver's seat belt is not fastened, the Airbag Electronic Control Unit (ACU) will detect the condition of the driver's seat belt and sends a signal to the instrument cluster through the CAN bus. The front seat belt warning lamp on the instrument cluster will turn on to remind the driver to fasten his seat belt.
- After the power mode of the start-and-stop switch is ON, the passenger identification sensor will detect whether the passenger seat is occupied and send a signal to the airbag electronic control unit. The airbag electronic control unit detects the condition of the passenger seat belt and sends a signal to the instrument assembly, which illuminates the front seat belt warning lamp.

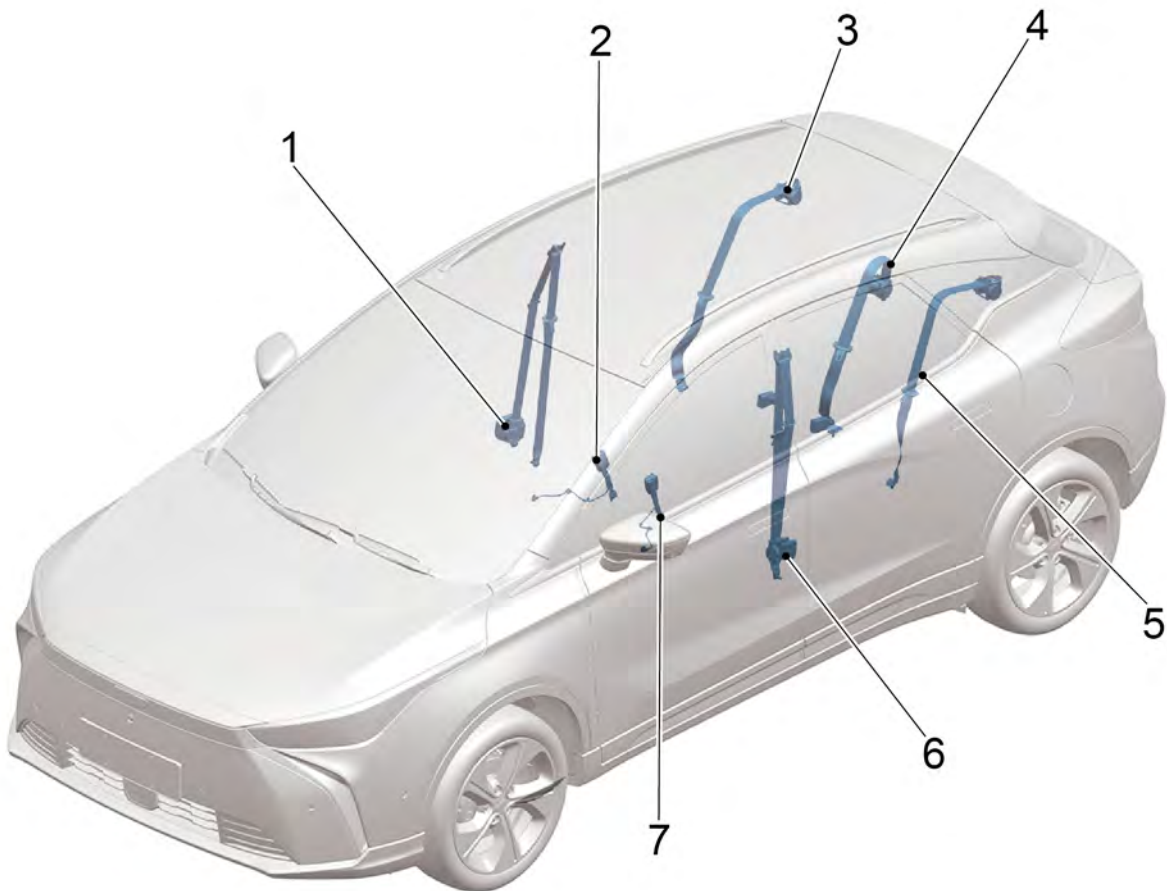
Rear seat belt system

The rear seat belt system consists of the following components:

- Rear seat belt retractor and seat belt assembly; the seat belt retractor is located under the rear shelf trim panel, and the lower part of the seat belt is fixed on the floor.
- Rear seat belt buckles; the buckles are fastened to the floor by a steel plate.

9.3.4 Part position

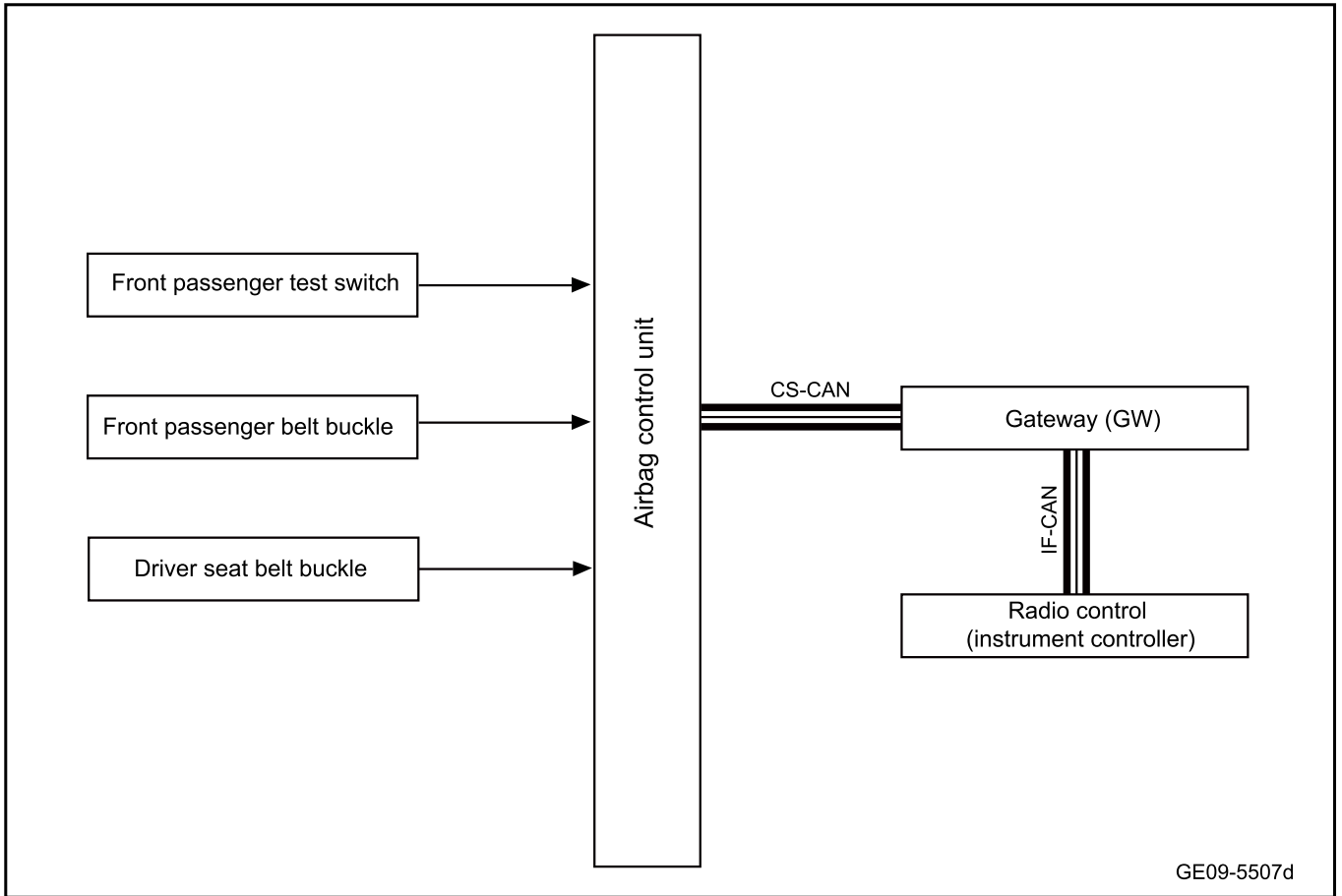
9.3.4.1 Part Position



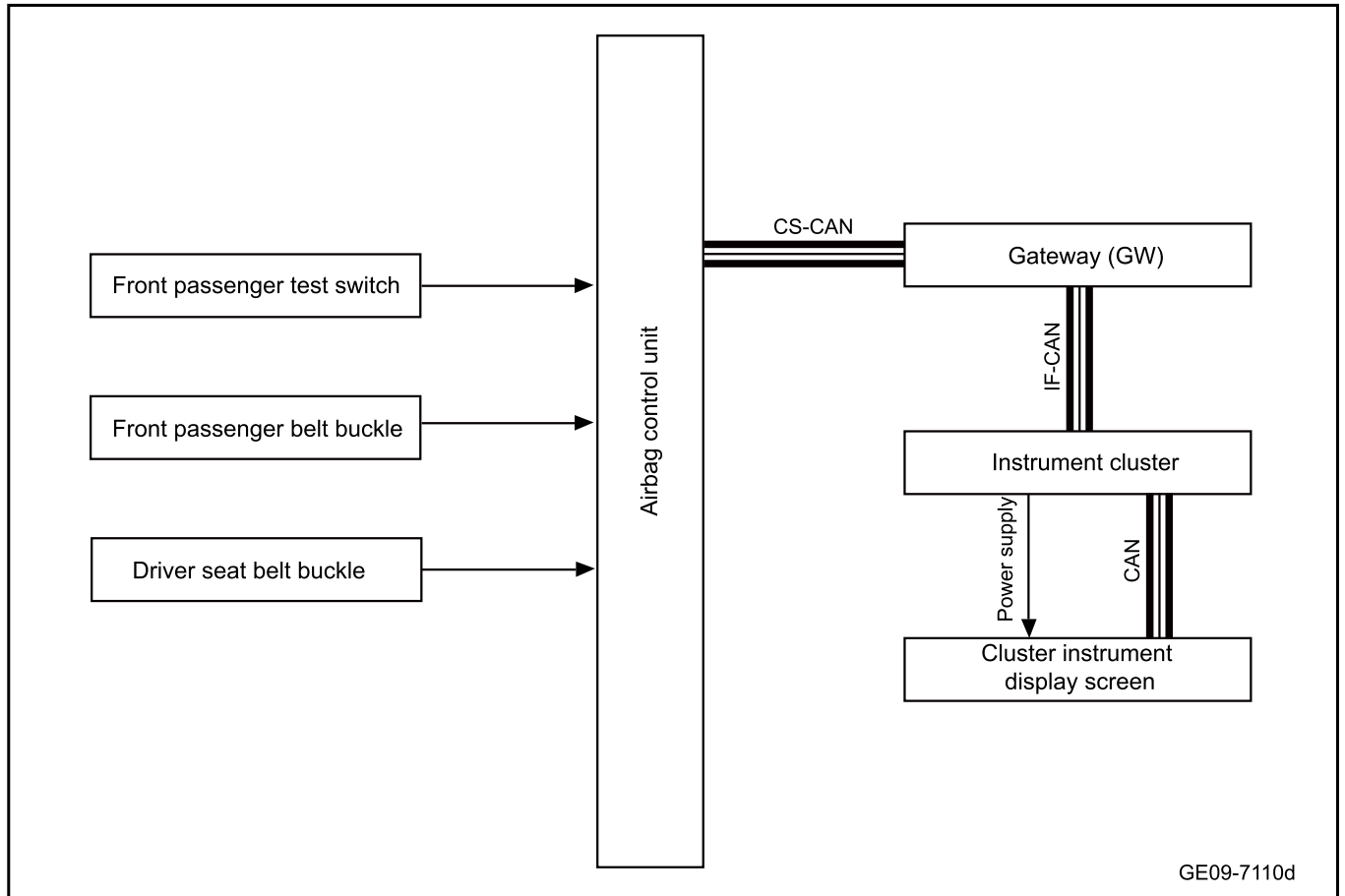
- | | | | |
|----|---|----|---------------------------------|
| 1. | Right side seatbelt of front row | 5. | Left side seatbelt of rear row |
| 2. | Right side seatbelt buckle of front row | 6. | Left side seatbelt of front row |
| 3. | Right side seatbelt of rear row | 7. | Front left seatbelt buckle |
| 4. | Rear central seat belt | | |

9.3.5 Electrical schematic diagram

9.3.5.1 Electrical Schematic Diagram of Seatbelt System(Type I)



9.3.5.2 Electrical Schematic Diagram of Seatbelt System(Type II)



9.3.6 Diagnostic information and procedures

9.3.6.1 Diagnosis Description

Refer to [Description and Operations](#)

9.3.6.2 Routine inspection

Confirm trouble symptom

The most difficult situation during troubleshooting is that no symptoms appear. Under such a condition, the fault described by distributors must be completely analyzed. Then simulate the same or similar condition and circumstance when the distributor's vehicle has faults. No matter how experienced and skillful maintenance personnel are, if eliminating faults without confirming fault symptoms, something important will be ignored in the maintenance, and wrong conjectures will be made in some places. It will make trouble shooting to fail.

Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.

The connector joints and vibration fulcrum are the main parts that should be thoroughly checked. Vibration method is recommended in case of failure due to vibration.

- a. Gently vibrate the possible fault part with fingers, and check whether the fault occurs.
- b. Gently shake the connector in both vertical and horizontal directions.
- c. Gently shake the harness in both vertical and horizontal directions.

Vehicle inspection

Front-row seat belt warning lamp inspection:

1. Driver's side

- a. The key activates the power supply of the vehicle to ON.
- b. When the driver's seat belt is unfastened, check whether the seat belt warning lamp on the instrument cluster display screen is flashing.
- c. When the driver's seat belt is fastened, check whether the seat belt warning lamp on the instrument cluster display screen went out.

2. Front passenger side

- a. The key activates the power supply of the vehicle to ON.
- b. When the passenger seat is occupied and the seatbelt is unfastened, check whether the seat belt warning lamp on the instrument cluster display screen is flashing.
- c. When the passenger seat is occupied and the seatbelt is unfastened, check whether the seat belt warning lamp on the instrument cluster display screen went out.

9.3.6.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

9.3.6.4 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

9.3.6.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B005012	Driver's seat belt buckle switch is short-circuited to power supply	Refer to Faults of Driver's Seatbelt Buckle
B005212	Passenger's seat belt buckle is short-circuited to power supply	Refer to Faults of Front Passenger's Seatbelt Buckle
B00B712	Passenger seat detection switch is short-circuited to power supply	Refer to Faults of Front Passenger Detection Switch

9.3.6.6 Driver seat belt buckle fault

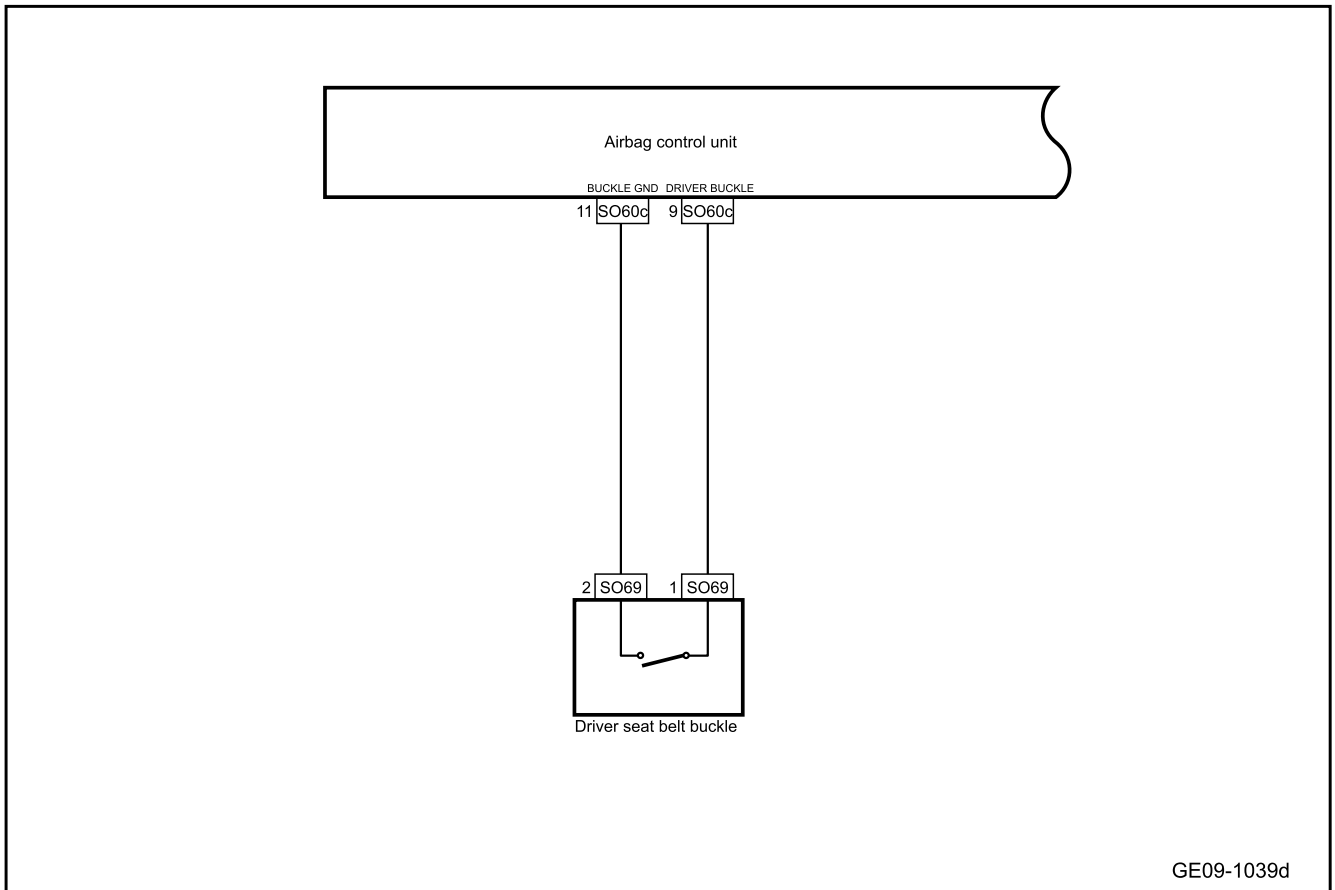
1. DTC description:

Diagnostic Trouble Code	Description
B005012	Driver's seat belt buckle switch is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005012	The driver seat belt buckle switch circuit is shorted to a high voltage for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. Driver seat belt buckle 3. Airbag control module

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

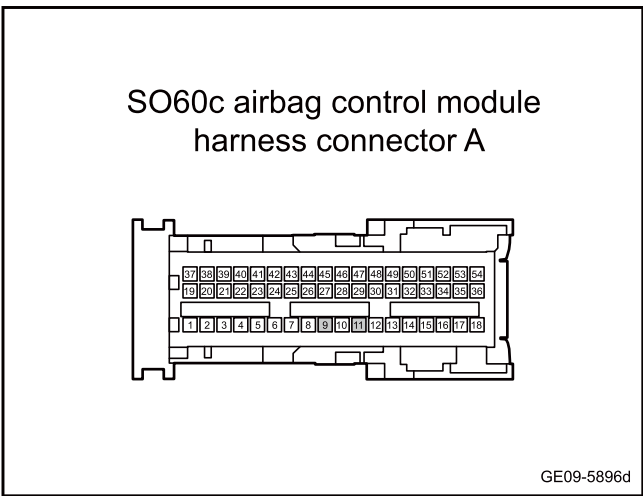
- A. Check the airbag control module, driver's seatbelt buckle for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and driver seat belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

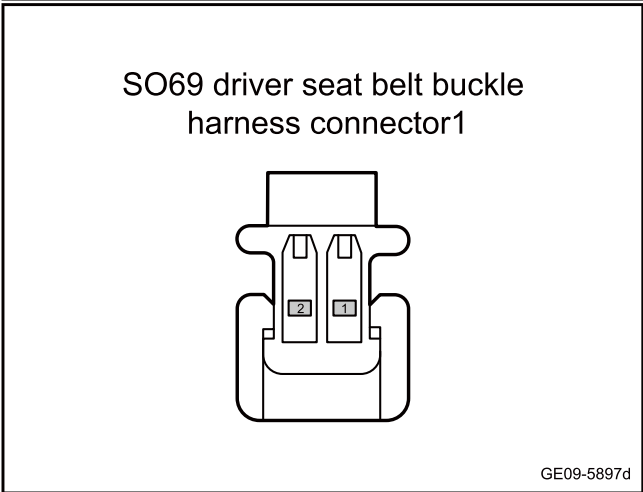
Step 3 Check whether the harness between the driver seat belt buckle and airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver seat belt buckle harness connector SO69.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(9)	SO69(1)	Standard resistance: less than 1Ω
SO60c(11)	SO69(2)	

- E. Confirm whether the measured value meets the standard.

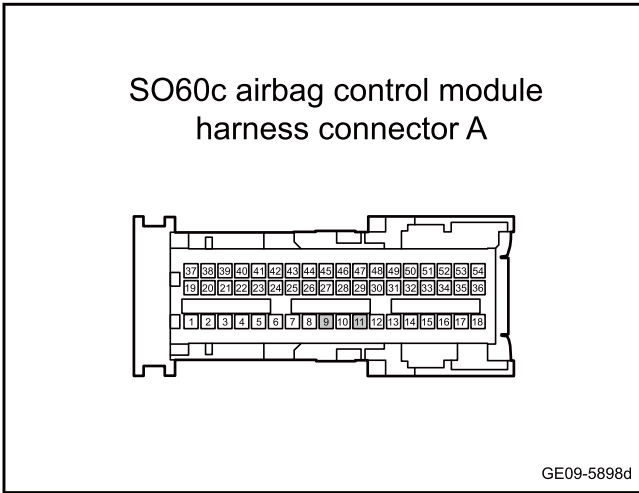


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the driver seat belt buckle and airbag control module is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver seat belt buckle harness connector SO69.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the following table:

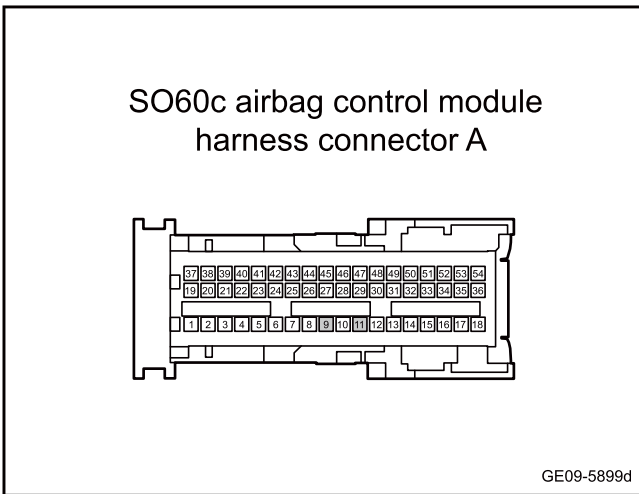
Measure terminal 1	Measure terminal 2	Standard value
SO60c(9)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the harness between the driver seat belt buckle and airbag control module is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the driver seat belt buckle harness connector SO69.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the driver seat belt buckle.

- A. Replace the driver seat belt buckle. Refer to [Replacement of Driver's Seatbelt Buckle](#)
- B. Confirm whether the driver seat belt buckle works normally.

Yes System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.3.6.7 Front passenger belt buckle fault

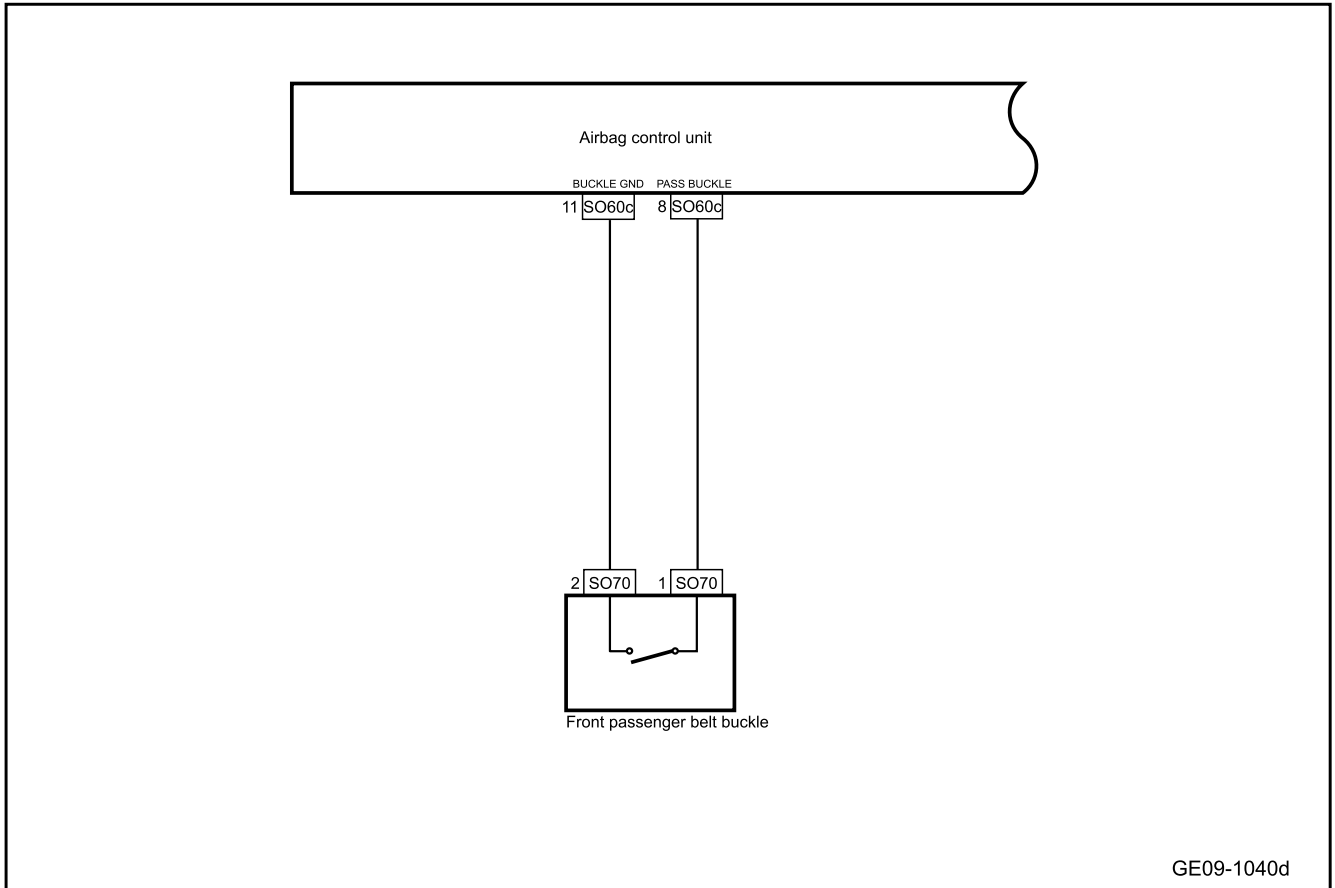
1. DTC description:

Diagnostic Trouble Code	Description
B005212	Passenger's seat belt buckle is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B005212	The passenger's seat belt buckle switch circuit is shorted to a high voltage for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. Front passenger belt buckle 3. Airbag control module

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

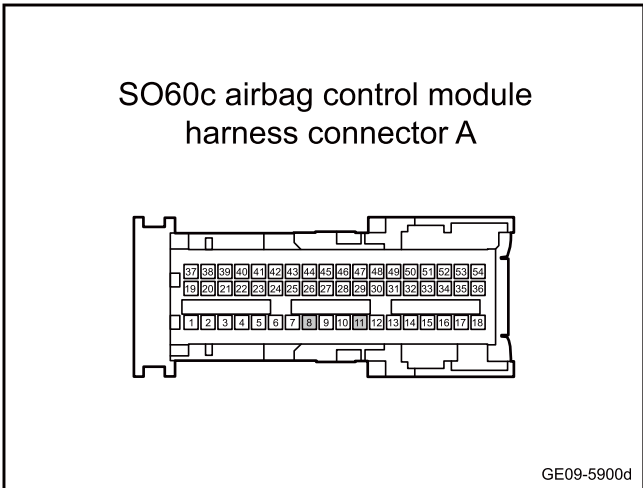
- A. Check the airbag control module, front passenger’s seatbelt buckle for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and front passenger belt buckle harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

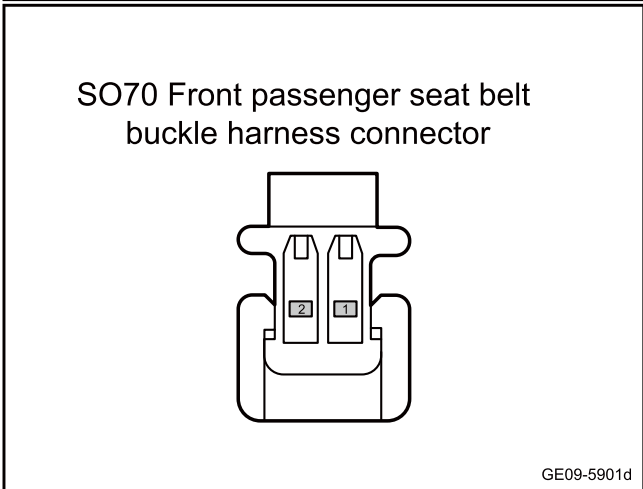
Step 3 Check whether the harness between the front passenger belt buckle and the airbag control module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger belt buckle harness connector SO70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(8)	SO70(1)	Standard resistance: less than 1Ω
SO60c(11)	SO70(2)	

- E. Confirm whether the measured value meets the standard.

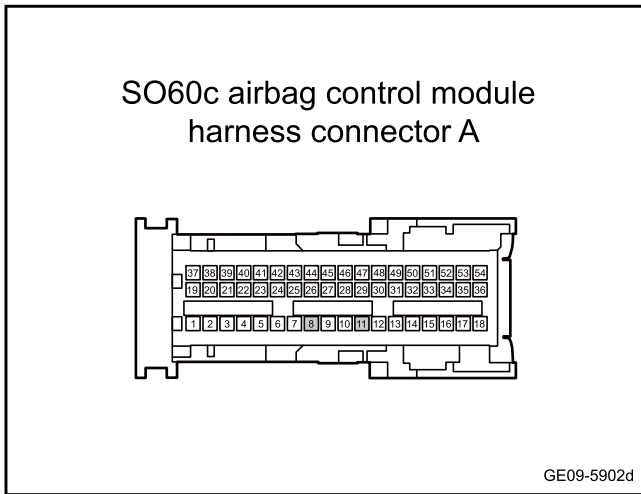


No

Repair or replace the harness.

Yes

Step 4 Detect whether the harness between the front passenger belt buckle and the airbag control module is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger belt buckle harness connector SO70.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the following table:

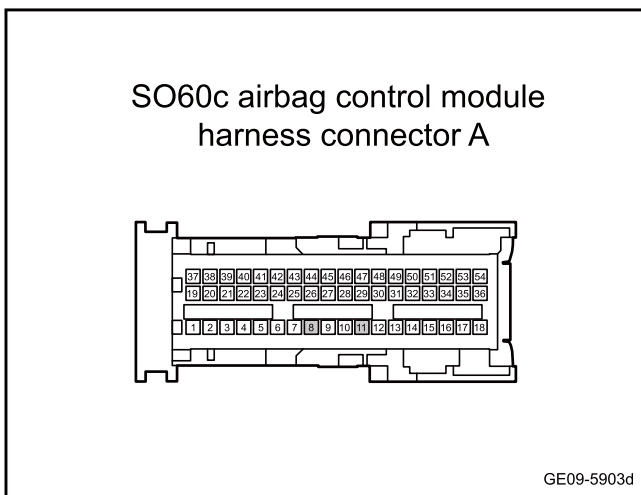
Measure terminal 1	Measure terminal 2	Standard value
SO60c(8)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Detect whether the harness between the front passenger belt buckle and the airbag control module is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger belt buckle harness connector SO70.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the front passenger belt buckle.

- A. Replace the front passenger belt buckle. Refer to [Replacement of Front Passenger's Seatbelt Buckles](#)
- B. Confirm whether the front passenger belt buckle operates normally.

Yes

System is normal.

No

Step 7 | Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 | Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 | System is normal.

9.3.6.8 Front passenger detection switch fault

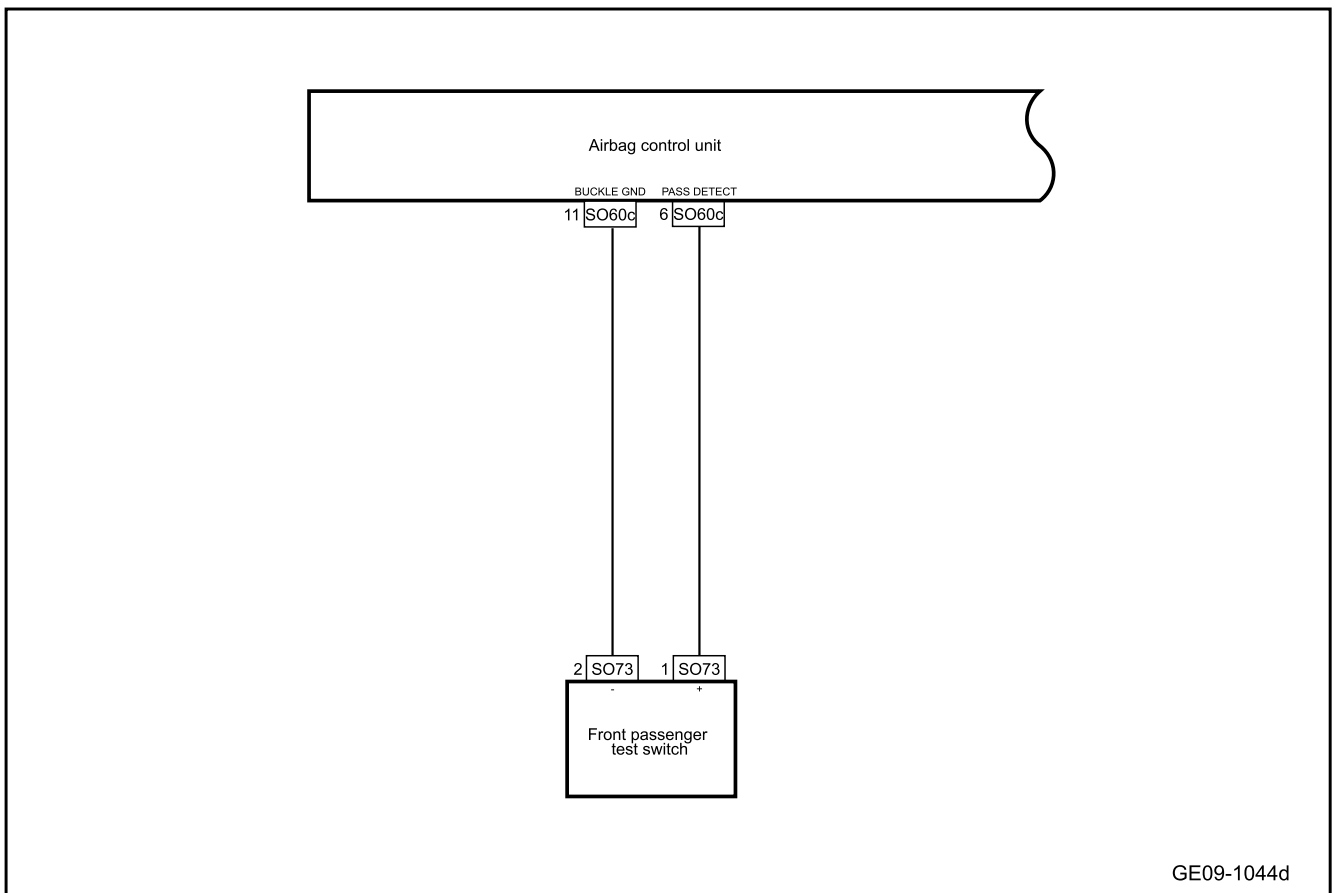
1. DTC description:

Diagnostic Trouble Code	Description
B00B712	Passenger seat detection switch is short-circuited to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B00B712	The passenger's seat detection circuit is shorted to a high voltage for 3.2s	Power supply voltage is 9V-16V.	1. Circuit 2. Front passenger detection switch 3. Airbag control module

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the airbag control module, front passenger detection switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the airbag control module and front passenger detection switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

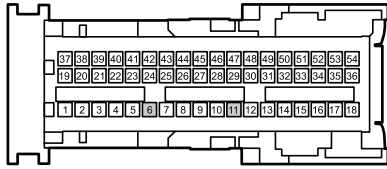
No

Repair or replace the faulty part.

Yes

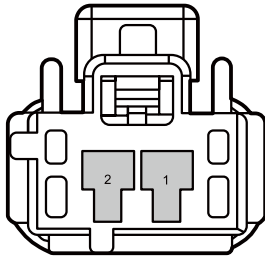
Step 3	Test whether the harness between the front passenger detection switch and the airbag control module is circuit opened.
--------	--

SO60c airbag control module harness connector A



GE09-5904d

SO73 front passenger detection switch harness connector



GE09-5905d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger detection switch harness connector SO73.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(6)	SO73(1)	Standard resistance: less than 1Ω
SO60c(11)	SO73(2)	

- E. Confirm whether the measured value meets the standard.

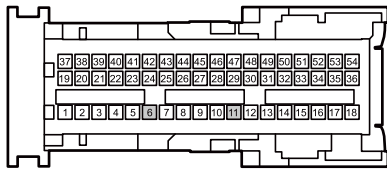
No

Repair or replace the harness.

Yes

Step 4 Test whether the harness between the front passenger detection switch and the airbag control module is shorted to power.

SO60c airbag control module harness connector A



GE09-5906d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger detection switch harness connector SO73.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(6)	Vehicle body is grounded.	Standard voltage: 0V
SO60c(11)		

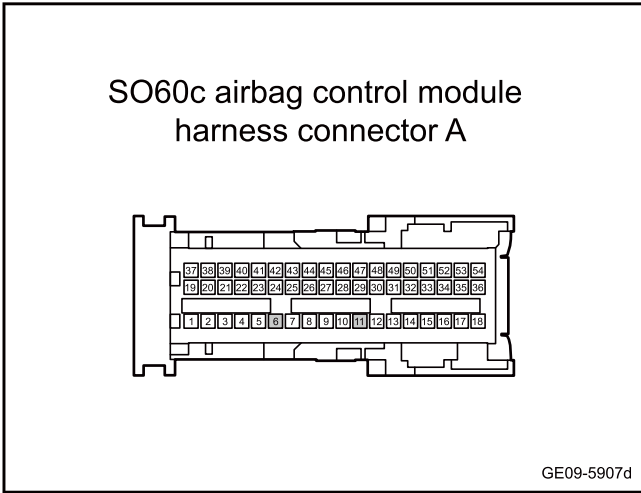
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Test whether the harness between the front passenger detection switch and the airbag control module is shorted to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the front passenger detection switch harness connector SO73.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO60c(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO60c(11)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 7 Reprogramme and reset the airbag control module.

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

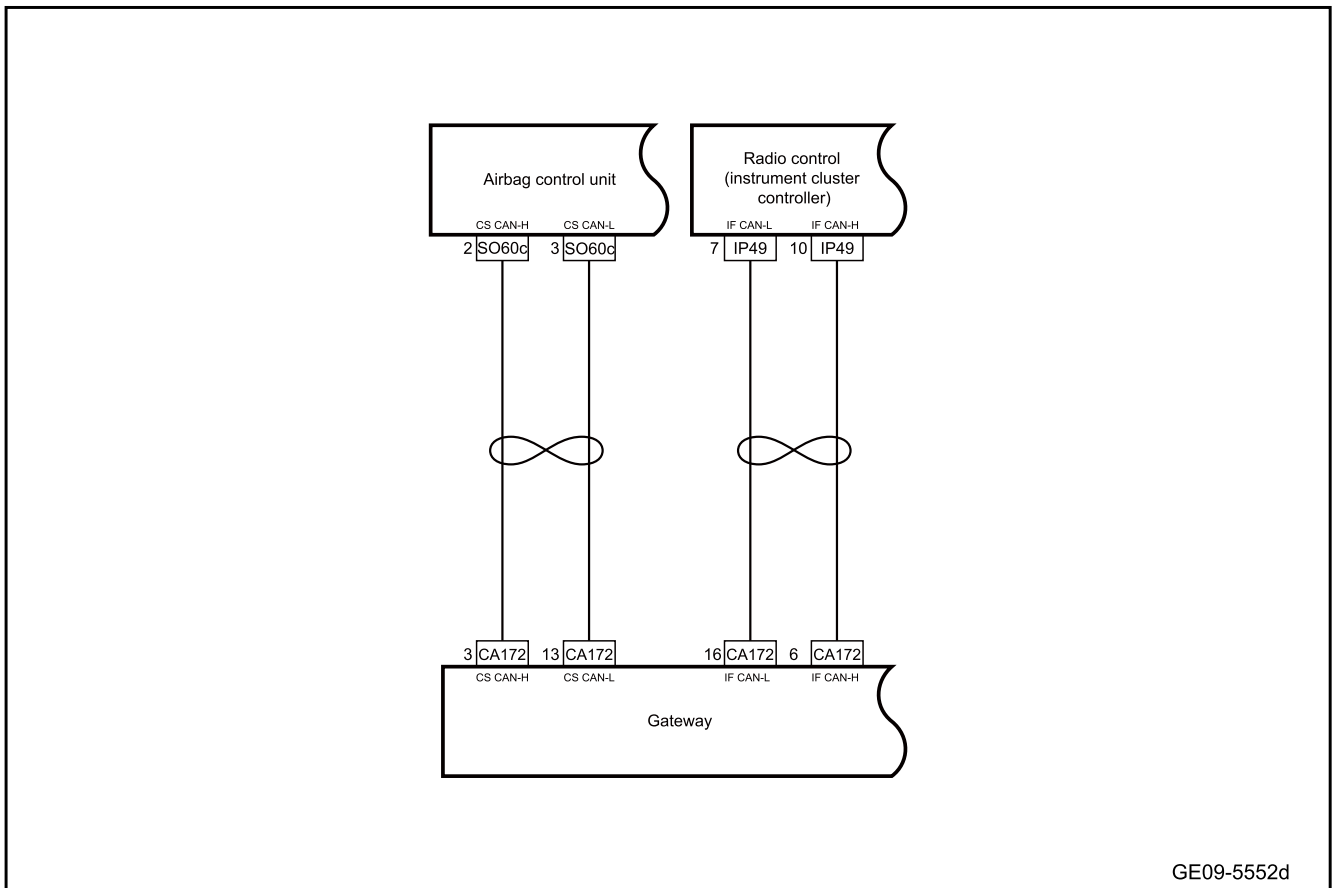
Diagnose according to the output trouble code.

No

Step 9 System is normal.

9.3.6.9 Seatbelt Warning Lamp(Type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the head unit, gateway and airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the head unit, gateway and harness connector of the airbag control module for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Change the head unit.
--------	-----------------------

- A. Check the power supply and grounding circuits of head unit. Refer to [Head unit power supply failure](#)
- B. Change the head unit. Refer to [Replacement of head unit](#)
- C. Confirm whether the system is working normally.

Yes → System is normal.

No

Step 5 Replace the airbag control module.

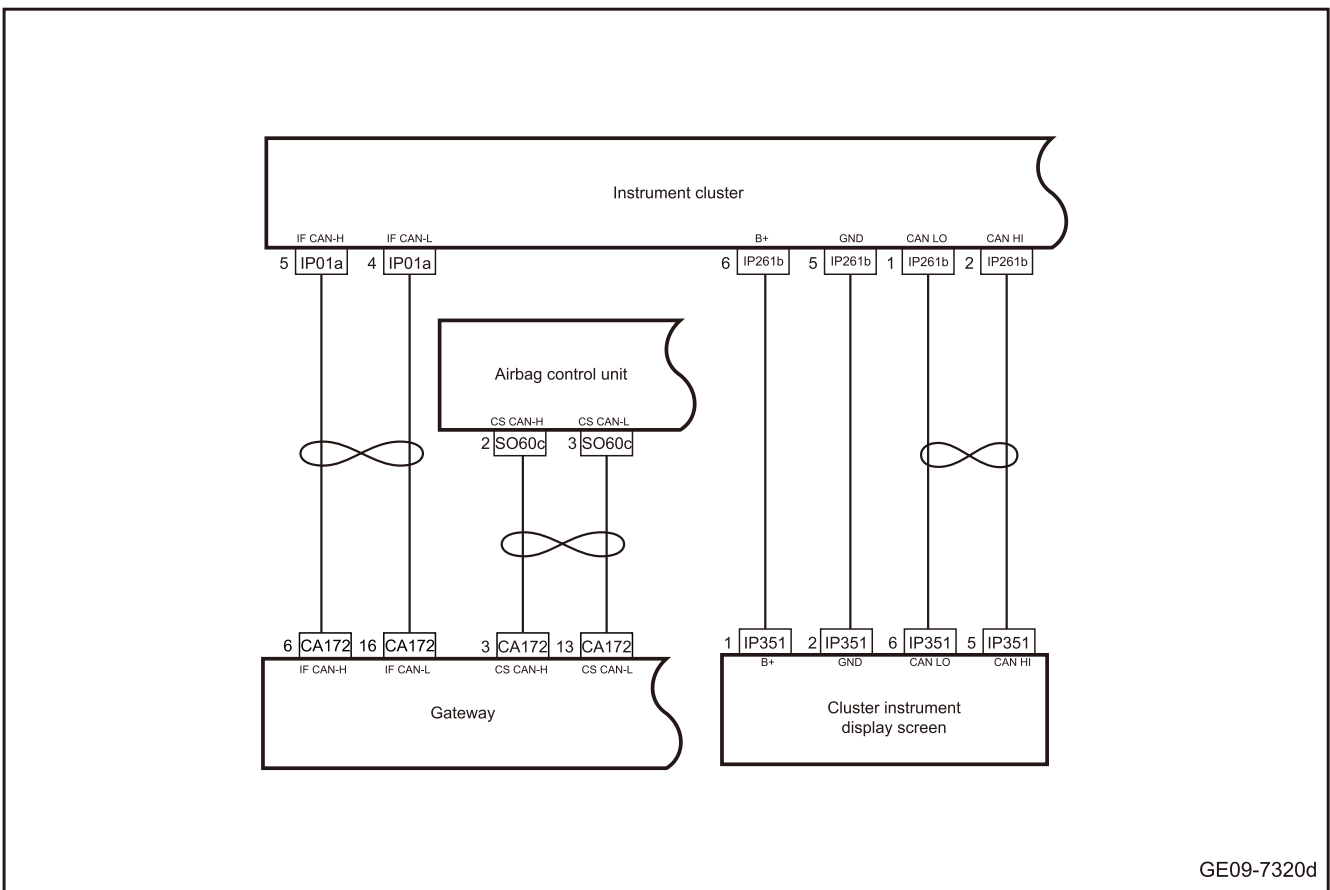
- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 6 System is normal.

9.3.6.10 Seatbelt Warning Lamp(Type II)

1. Schematic circuit diagram:



GE09-7320d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster, gateway, airbag control module and instrument cluster display screen for signs of damage, deformation, smudges, looseness, etc.
- B. Check the instrument cluster, gateway, airbag control module and harness connector of and instrument cluster display screen for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

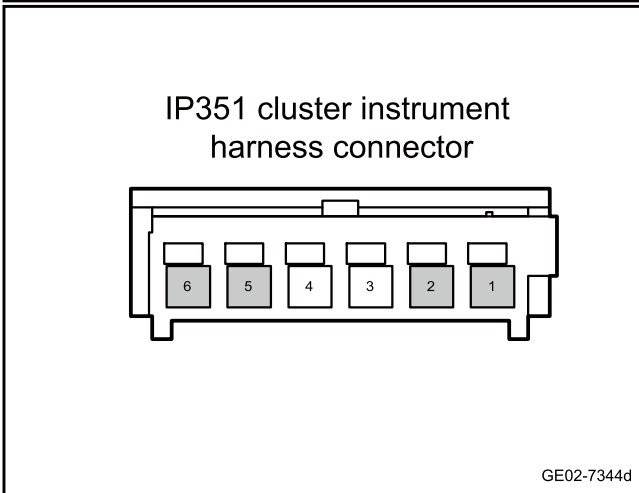
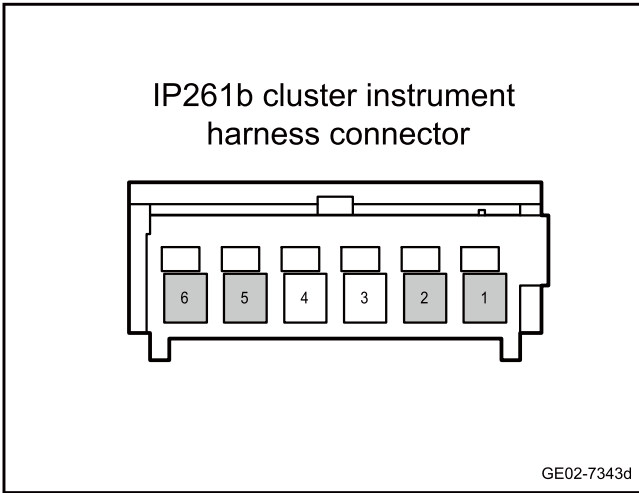
- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Check the circuit between the instrument cluster and the instrument cluster display screen.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster harness connector IP261b.
- C. Disconnect the instrument cluster display screen harness connector IP351.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(1)	IP351(6)	Standard resistance: less than 1Ω
IP261b(2)	IP351(5)	
IP261b(5)	IP351(2)	
IP261b(6)	IP351(1)	
IP261b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP261b(2)		
IP261b(5)		
IP261b(6)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP261b(2)		
IP261b(5)		
IP261b(6)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the instrument cluster display screen.

- A. Replace the instrument cluster display screen. Refer to [Replacement of the Instrument Cluster Display Screen \(Type II\)](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 6	Reprogram and reset the instrument cluster.
--------	---

- A. Reprogram and reset the instrument cluster. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 7	Replace the instrument cluster.
--------	---------------------------------

- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)
- B. Confirm whether the system is working normally.

Yes	System is normal.
-----	-------------------

No

Step 8	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Replace the airbag control module.
--------	------------------------------------

- A. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 10	System is normal.
---------	-------------------

9.3.7 Removing and installing

9.3.7.1 Replacement of Driver's Seatbelt Buckle

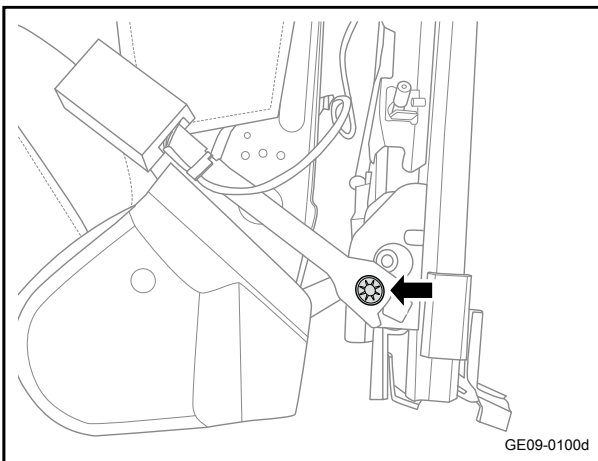
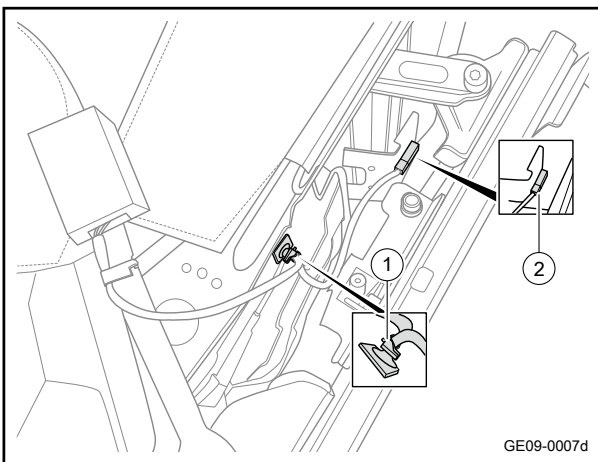
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

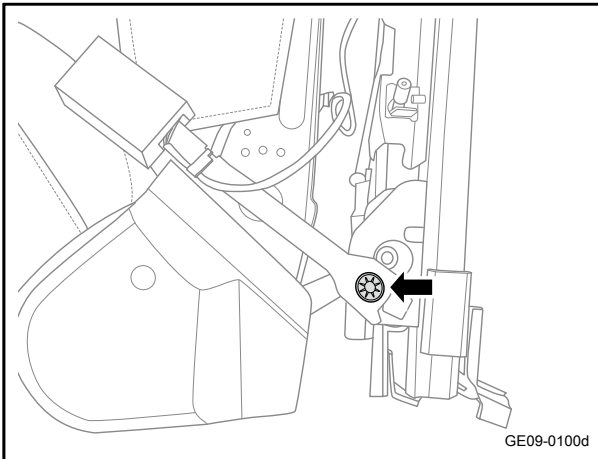
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Remove the left front seat assembly. Refer to [Replacement of Left Front Seat Assembly](#)
- 3 Disconnect harness connector 1 of the front seat belt buckle.
- 4 Disconnect harness connector 2 of the left front seat belt warning sensor.

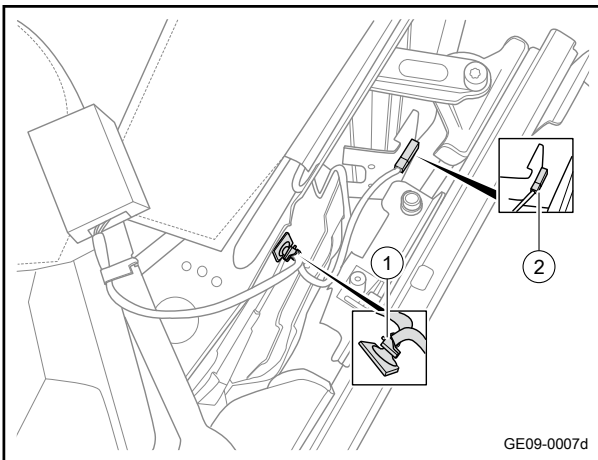


- 5 Remove the fixing bolt of seat belt buckle for front seats and take the seat belt buckle of front seat away.

Installation procedure



- 1 Install driver seat belt buckle to the installation position and fasten the fixing bolt of seat belt buckle for front seat.



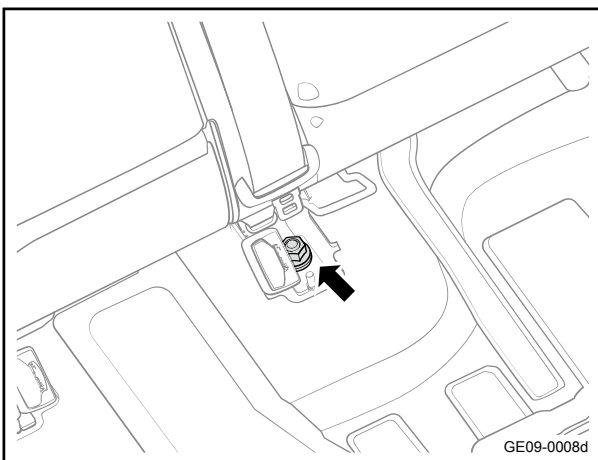
- 2 Connect harness connector 2 of the left front seat belt buckle warning sensor.
- 4 Fix the harness fixing clip 1 of the front seat belt buckle.

- 5 Install the left front seat assembly.
- 6 Connect the negative cable of battery.

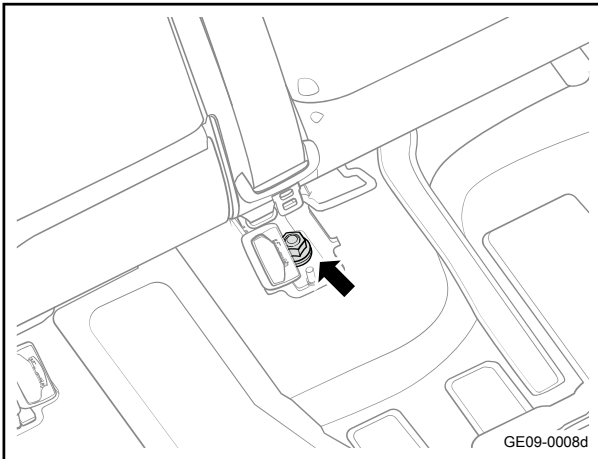
9.3.7.2 Replacement of seatbelt buckle on the rear row left seat (Type II)

Removal procedure

- 1 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 2 Remove the fixing nut of the seat belt buckle on the left seat of the rear row.
- 3 Remove the seatbelt buckle on the rear row left seat .



Installation procedure



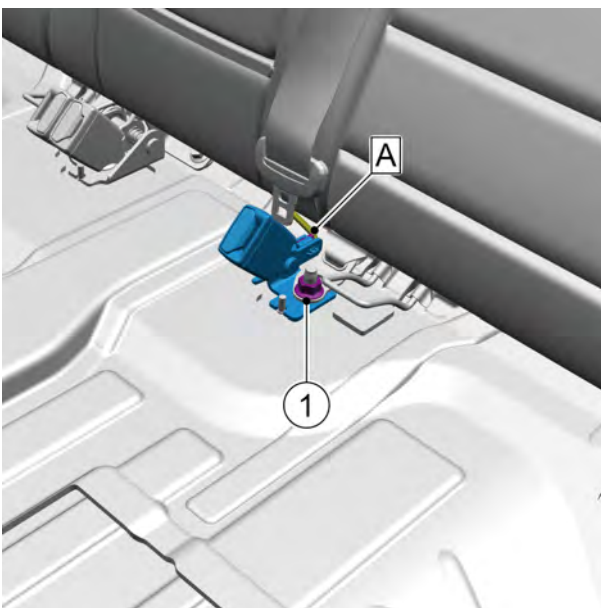
- 1 Move the rear left seat left belt buckle assembly to the installation position.
- 2 Install the 1 fixing nut of the rear central seatbelt buckle.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)

- 3 Install the rear seat cushion.

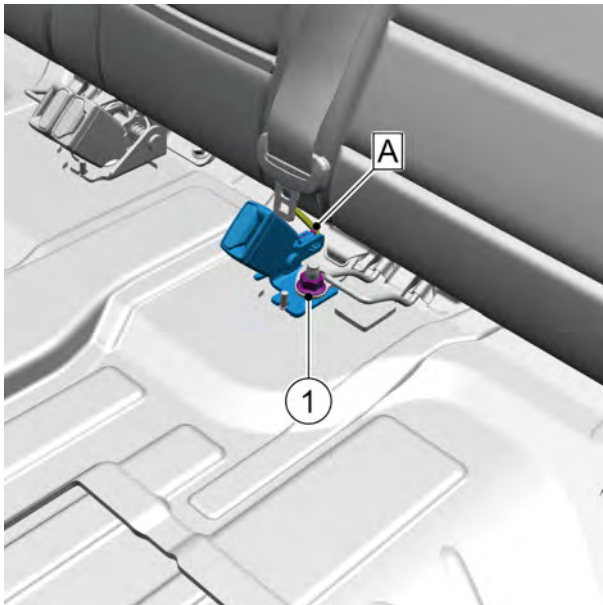
9.3.7.3 Replacement of seatbelt buckle on the rear row left seat(Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 3 Disconnect the 1 harness connectors 1 connecting the floor harness with the seatbelt buckle on the rear row left seat.
- 4 Remove the 1 fixing nut of the rear left seatbelt buckle.
- 5 Remove the seatbelt buckle on the rear row left seat .



Installation procedure



- 1 Move the rear left seat left belt buckle to the installation position.
- 2 Install the 1 fixing nut of the rear left seatbelt buckle.
- 3 Connect the 1 harness connector A connecting the floor harness with the rear left seat belt buckle.

Caution

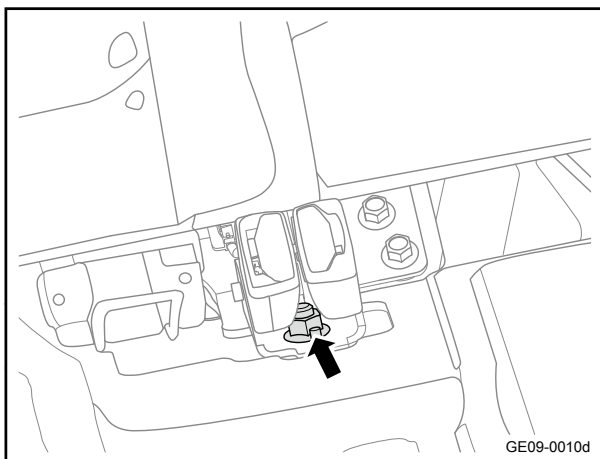
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the rear seat cushion.
- 5 Connect the negative cable of battery.

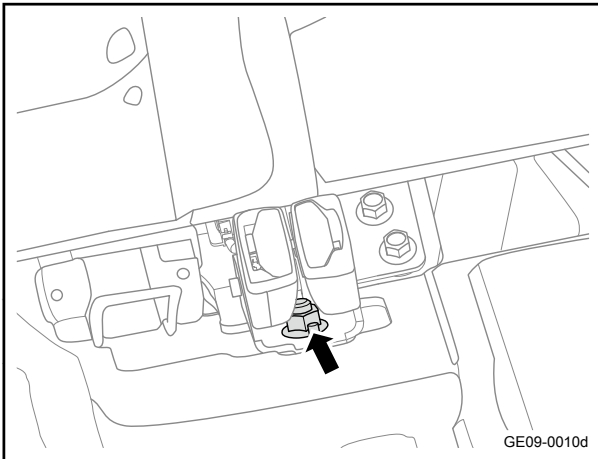
9.3.7.4 Replacement of rear middle and right buckle assembly(Type I)

Removal procedure

- 1 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 2 Remove the right mounting plate liner of the trunk carpet. Refer to [Replacement of Left Mounting Plate Liner of Trunk Carpet](#)
- 3 Remove the 1 fixing nut of the rear middle and right buckle.
- 4 Take off the rear middle and right buckle.



Installation procedure



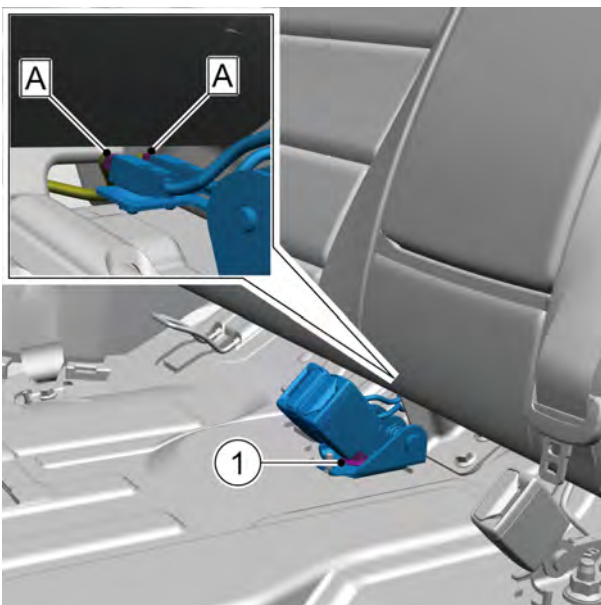
- 1 Move the rear middle and right buckle to the installation position.
- 2 Install the 1 fixing bolt of the rear middle and right buckle.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)

- 3 Install the right mounting plate liner of the trunk carpet.
- 4 Install the rear seat cushion.

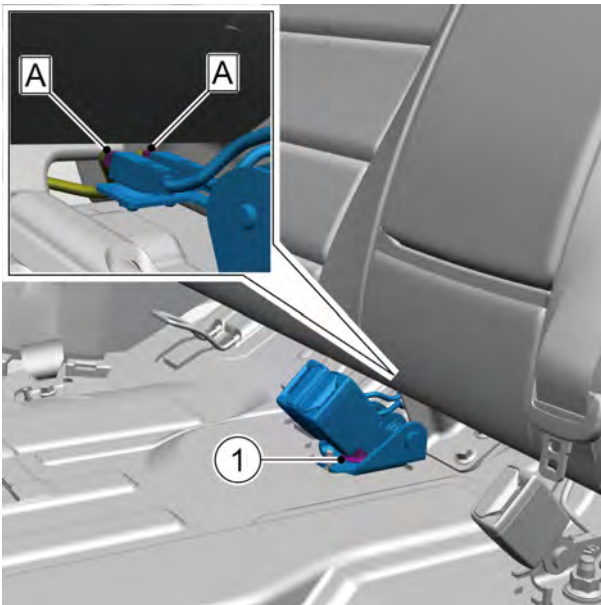
9.3.7.5 Replacement of rear middle and right buckle assembly(Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 3 Disconnect the 2 harness connectors A connecting the floor harness with the rear middle and right buckle assembly.
- 4 Remove the 1 fixing nut 1 of the rear middle and right buckle assembly.
- 5 Take off the rear middle and right buckle assembly.



Installation procedure



- 1 Move the rear middle and right buckle assembly to the installation position.
- 2 Install and fasten the 1 fixing nut of the rear middle and right buckle assembly.
- 3 Connect the 2 harness connectors A connecting the floor harness with the rear middle and right buckle assembly.

Caution

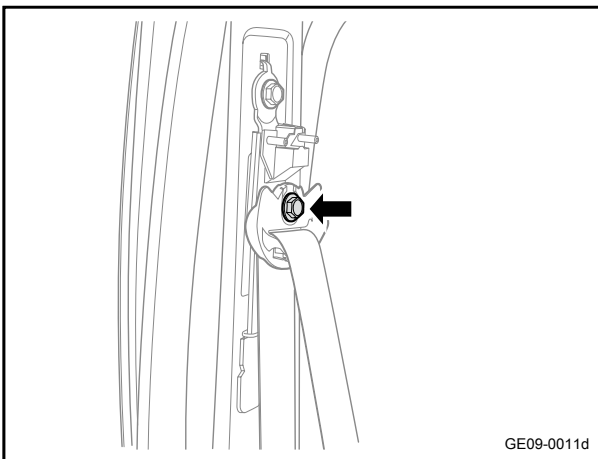
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the rear seat cushion.
- 5 Connect the negative cable of battery.

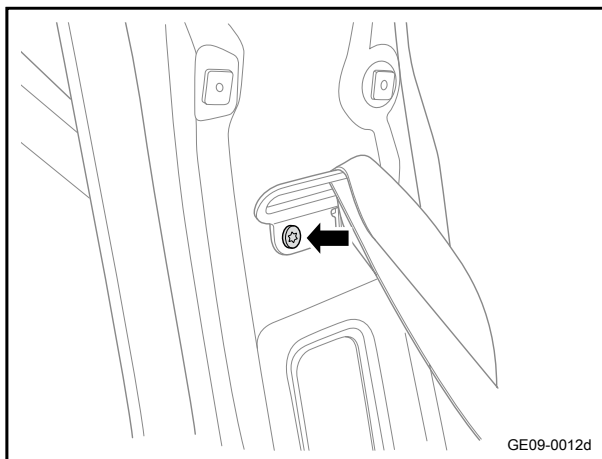
9.3.7.6 Replacement of front seat belt assembly (Type I)

Removal procedure

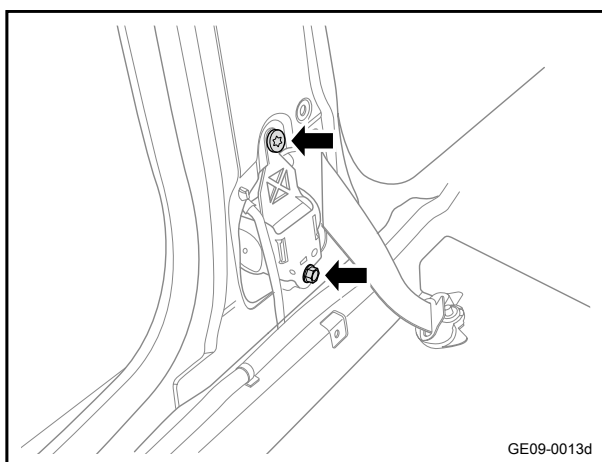
- 1 Remove the left pillar B upper trim panel assembly. Refer to [Replacement of Left Pillar B Upper Trim Panel Assembly](#)
- 2 Remove the left pillar B lower trim panel assembly. Refer to [Replacement of Left Pillar B Lower Trim Panel Assembly](#)
- 3 Remove the fixing bolt of the shoulder guide ring of the seat belt assembly.



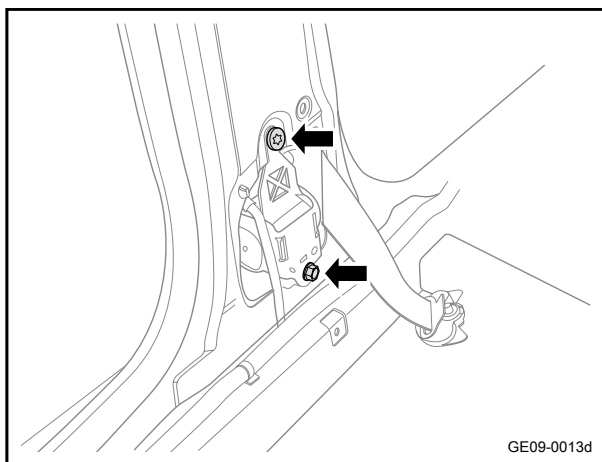
GE09-0011d



- 4 Remove the 1 fixing bolt of the seat belt assembly center pillar.

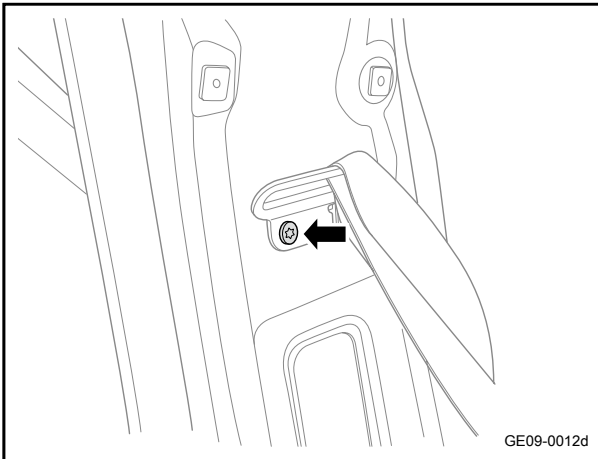


- 5 Remove the 2 fixing bolts of the seat belt assembly.
- 6 Remove the seatbelt assembly on the front row left seat.

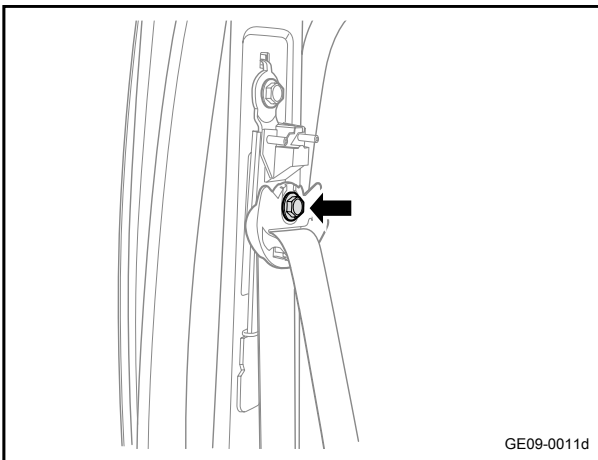


Installation procedure

- 1 Move the front left seat belt assembly to the installation position.
- 2 Install the 2 fixing bolts of the seat belt assembly.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 3 Install the 1 fixing bolt of the seat belt assembly center pillar.
Torque: 9N·m (metric system) 6.6lb-ft (British system)



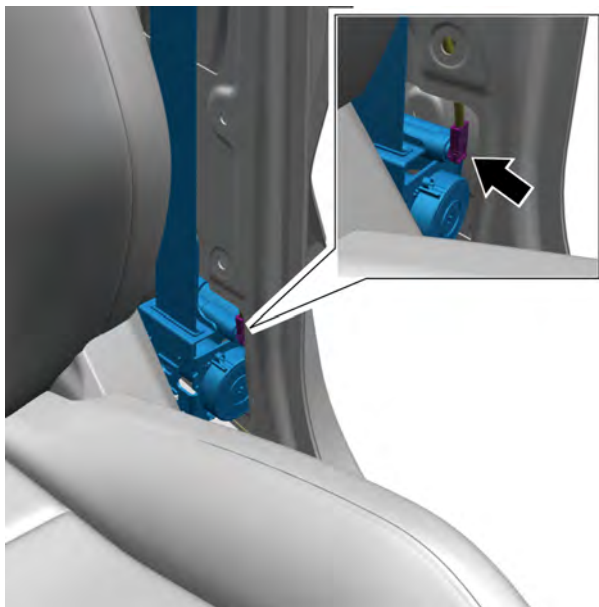
- 4 Install the 1 fixing bolt of the shoulder guide ring of the seat belt assembly.
Torque: 45N·m (metric system) 33.2lb-ft (British system)

- 5 Install the left B-pillar lower trim panel assembly.
- 6 Install the left B-pillar upper trim panel assembly.

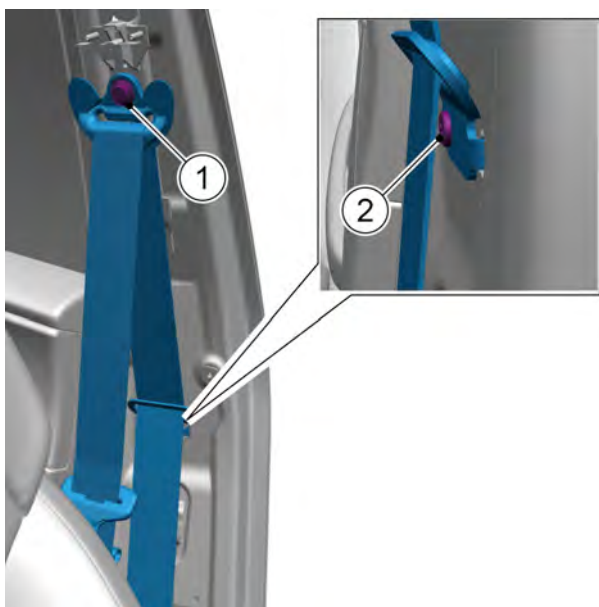
9.3.7.7 Replacement of front left seat belt assembly(Type II)

Removal procedure

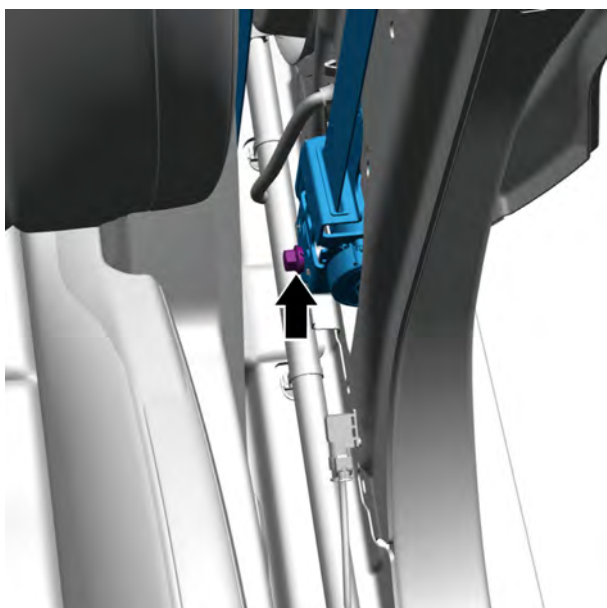
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left pillar B upper trim panel assembly. Refer to [Replacement of Left Pillar B Upper Trim Panel Assembly](#)



- 3 Disconnect the 1 harness connector connecting the floor harness with the front left seat belt assembly.

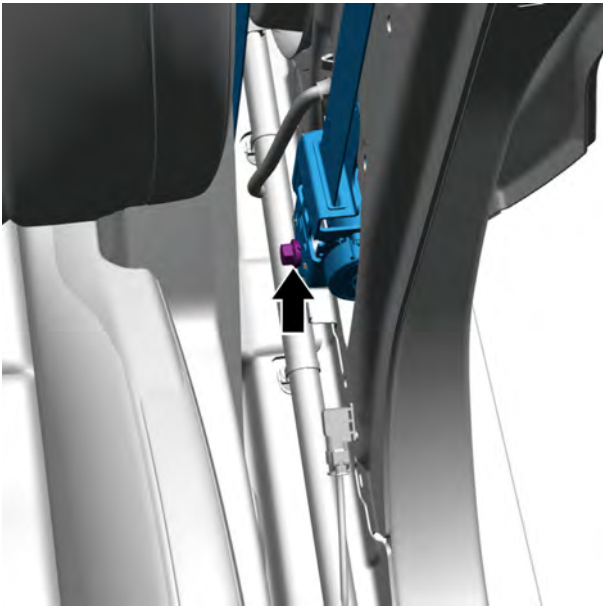


- 4 Remove the fixing bolt 1 of the seatbelt on the front row left seat and left center pillar inner panel.
- 5 Remove 1 fixing bolt 2 connecting the front left seat belt assembly with the front seat belt height adjuster.

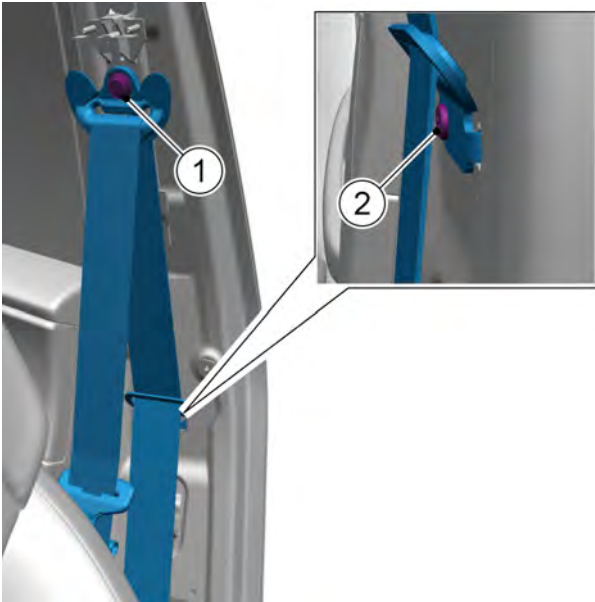


- 6 Remove 1 fixing bolt connecting the front left seat belt assembly with the front seat belt retractor assembly.
- 7 Remove the seatbelt assembly on the front row left seat.

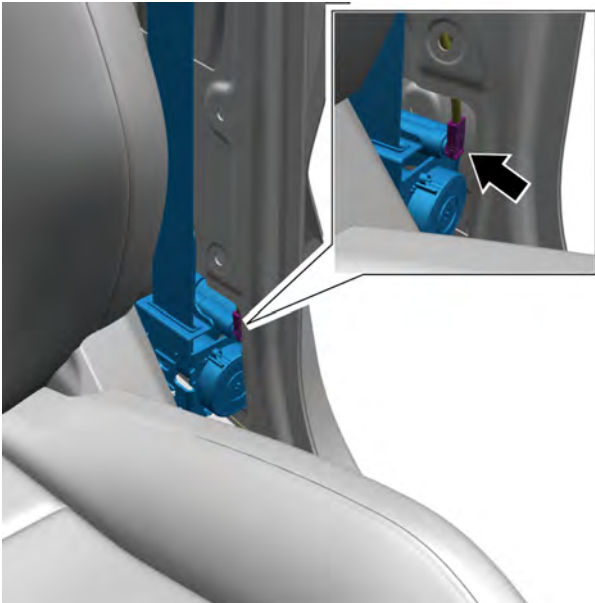
Installation procedure



- 1 Move the front left seat belt assembly to the installation position.
- 2 Install and tighten the 1 fixing bolt connecting the front left seat belt assembly with the front seat belt retractor.



- 3 Install and tighten the 1 fixing bolt 2 connecting the front left seat belt assembly with the front seat belt height adjuster.
- 4 Install and tighten the 1 fixing bolt 1 connecting the front left seat belt assembly with the left center pillar inner panel.



- 5 Connect the 1 harness connector 1 connecting the floor harness with the front seat belt assembly.

Caution

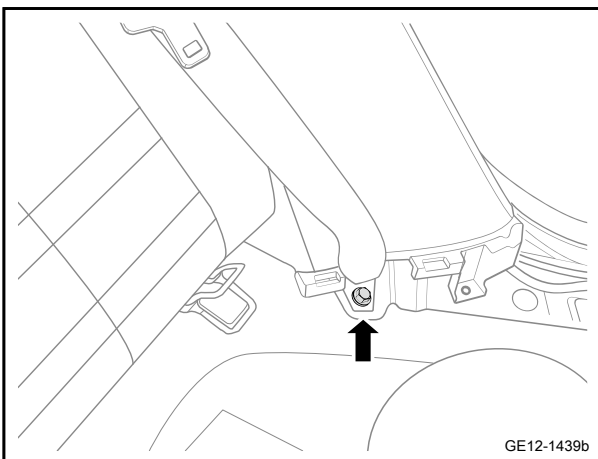
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

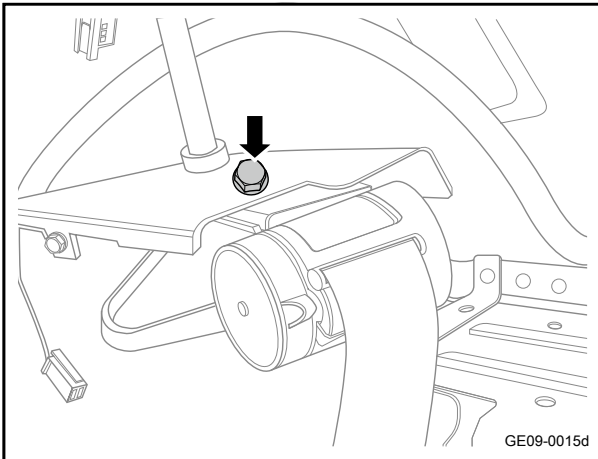
- 6 Install the left B-pillar upper trim panel assembly.
- 7 Connect the negative cable of battery.

9.3.7.8 Replacement of rear left seat belt assembly(Type I)

Removal procedure

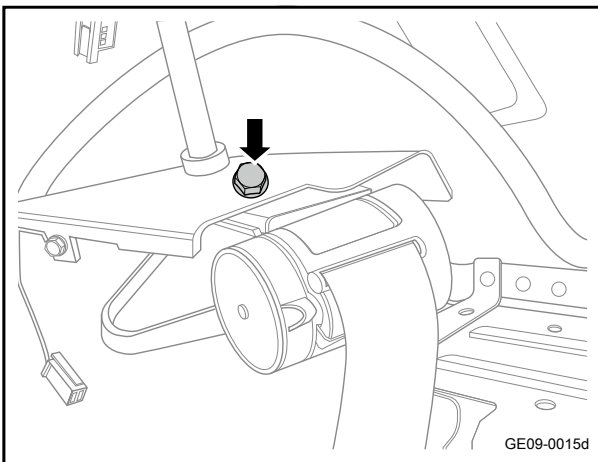
- 1 Remove the left rear pillar center trim panel assembly
Refer to [Replacement of Left Rear Pillar Center Trim Panels](#)
- 2 Remove the 1 fixing bolt of the lower retaining point of the rear left seat belt.



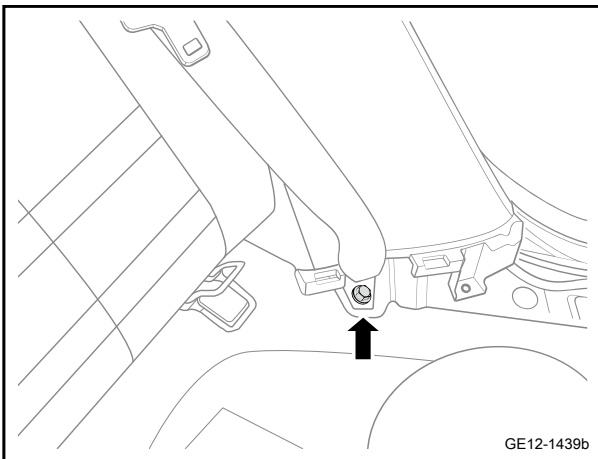


- 3 Remove the 1 fixing bolt of the rear left seat belt.
- 4 Remove the seatbelt on the rear row left seat.

Installation procedure



- 1 Move the rear left seat belt to the installation position.
- 2 Install the 1 fixing bolt of the rear left seat belt.
Torque: 45N·m (metric system) 33.2lb-ft (British system)

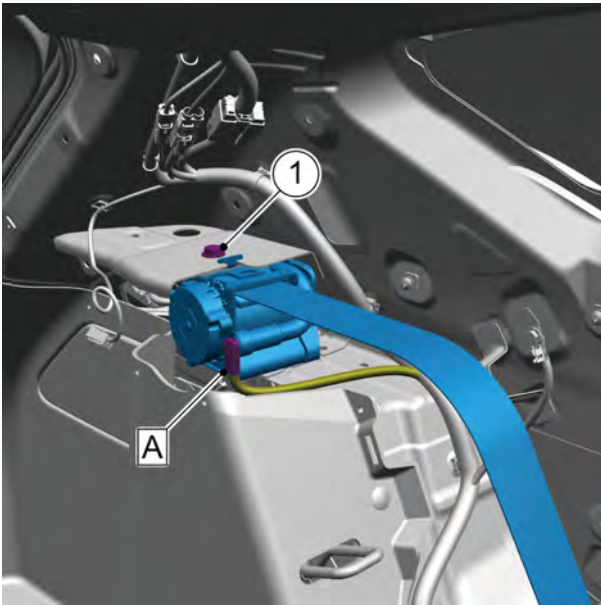


- 3 Install the lower fixing bolt of the rear left seat belt.
Torque: 45N·m (metric system) 6.6 lb-ft (British system)

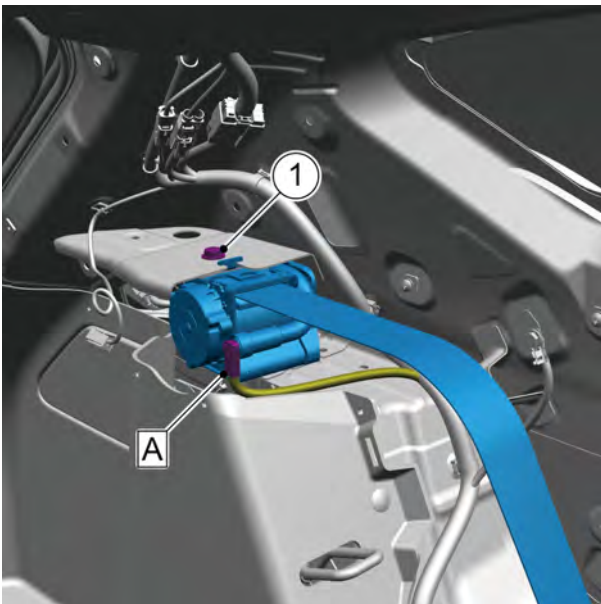
- 4 Install the left rear pillar center trim panel assembly.

9.3.7.9 Replacement of rear left seat belt assembly(Type II)

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left rear pillar center trim panel assembly
Refer to [Replacement of Left Rear Pillar Center Trim Panel Assembly](#)
- 3 Disconnect the 1 harness connector A connecting the floor harness with the rear left seat belt assembly.
- 4 Remove 1 fixing bolt 1 connecting the left seat belt assembly of the rear seat and the left fixing plate of the side wall rear seat belt.
- 5 Take off the rear left seat belt assembly.



Installation procedure

- 1 Move the rear left seat belt assembly to the installation position.
- 2 Install and tighten the 1 fixing bolt connecting the rear left seat belt assembly with the left fixing plate of the side wall rear seat belt.
- 3 Connect the 1 harness connector A connecting the floor harness with the rear left seat belt assembly.

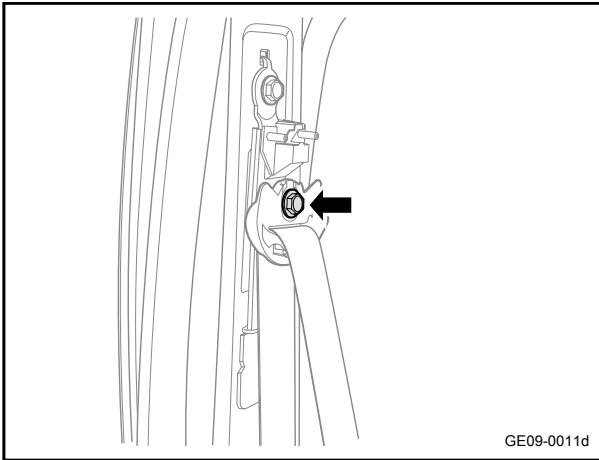
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

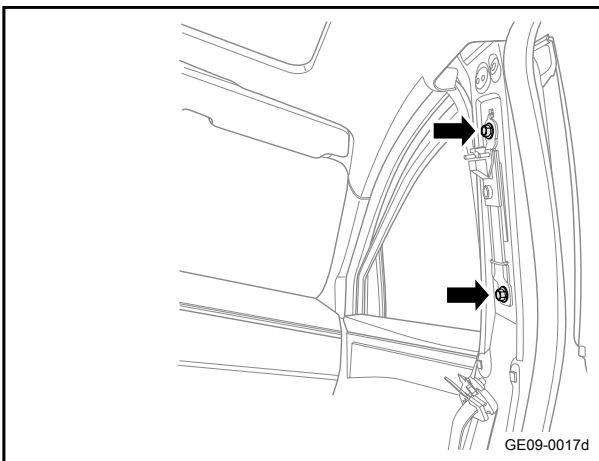
- 4 Install the left rear pillar center trim panel assembly.
- 5 Connect the negative cable of battery.

9.3.7.10 Replacement of front seat belt height adjuster

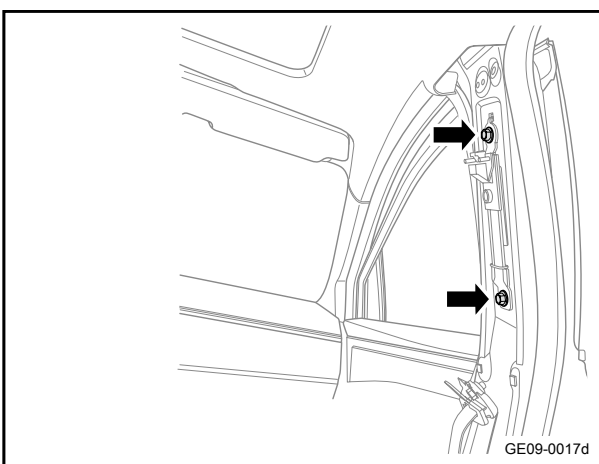
Removal procedure



- 1 Remove the left pillar B upper trim panel assembly. Refer to [Replacement of Left Pillar B Upper Trim Panel Assembly](#)
- 2 Remove the 1 fixing bolt of the front seat belt upper retaining point.

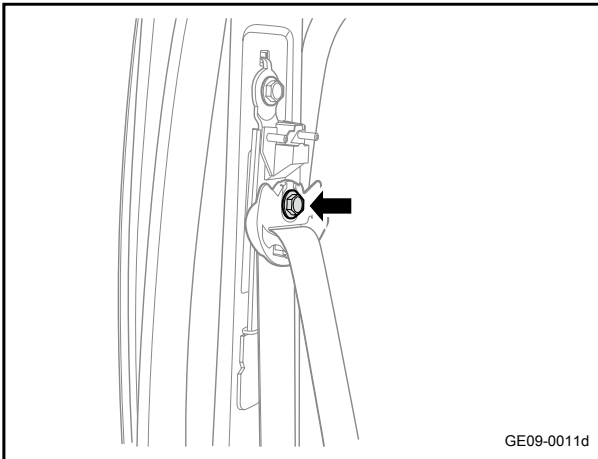


- 3 Remove 2 fixing bolts that secure front seat belt height adjuster.
- 4 Remove the front seat belt height adjuster.



Installation procedure

- 1 Move the front seat belt height adjuster to the installation position.
- 2 Install 2 fixing bolts that secure the front seat belt height adjuster.
Torque: 35N·m (metric system) 25.8lb-ft (British system)



3 Install the 1 fixing bolt of the front seat belt retaining point.

4 Install the left B-pillar upper trim panel assembly.

9.4 Active Safety System

9.4.1 Instructions and operations

9.4.1.1 Instructions and operations(Type I)

Automatic emergency braking system(AEB)

In case of late braking by driver, excessively small braking force or no braking action at all, by monitoring the distance and relative speed of the target in front, the system will act to assist the driver to avoid or mitigate the collision, and help the driver. AEB system consists of two modules: alarm and emergency braking.

The automatic emergency braking system is a safety system. The function is enabled by default every ignition cycle. After the automatic emergency braking system is enabled, the alarm function of the automatic emergency braking system can be enabled and the sensitivity can be selected. The sensitivity will memorize the driver's selection. There is no need to choose every time when getting in the vehicle. At low sensitivity, the alarm is relatively late. At high sensitivity, the alarm is relatively early and the medium sensitivity alarm is between the two above. If the driver thinks the alarm is too frequent, a lower sensitivity can be selected.

I. The automatic emergency braking (AEB) system has the following sub-functions:

1. Brake Pre-fill

The brake pre-filling function shall control the ESC to eliminate the gap between the brake pads and the brake disc, reduce response events and shorten the braking distance during emergency braking.

2. Hydraulic brake assist level adjustment

The hydraulic brake assist function is used to assist the driver in emergency braking. It determines according to preset parameters and when the driver braking speed meets the conditions, complete braking is adopted to achieve the optimal braking distance.

The hydraulic brake assist level adjustment function can control the ESC to adjust its HBA preset parameters according to different risk levels, so as to assist the driver to take complete braking in an emergency to avoid collision.

3. Safe distance alarm

The safe distance alarm works in a non-emergency situation. When the vehicle speed reaches 65 km/h or above, it reminds the driver that the following distance is too small, and the driver should adjust the driving behavior and keep a proper distance.

4. Alarm

The warning function shall prompt the driver to react as the first level alarm.

5. Emergency brake warning lamp

The emergency alarm function shall act as a Level 2 alarm (with some braking) to prompt the driver to react when a danger situation is more urgent.

6. Emergency brake assist (DBS)

The emergency brake assist function shall assist the driver with insufficient braking force to provide additional braking force in an emergency to avoid or mitigate the risk of collision.

7. Medium-speed emergency braking

The medium-speed automatic emergency brake function shall actively control the brake system to apply braking force after the driver fails to respond to the pre-collision warning function so as to increase the driver's response time and reduce the relative speed.

8. Low-speed emergency braking

The low-speed automatic emergency brake function shall actively control the brake system to brake at full force in an emergency that a collision is about to occur at a lower speed to avoid or mitigate the injury of the collision to the driver.

9. Pedestrian Brake Pre-fill

The brake pre-filling function shall control the ESC to eliminate the gap between the brake pads and the brake disc, reduce response events and shorten the braking distance during emergency braking.

10. Adjustment of pedestrian hydraulic brake assist level

The pedestrian hydraulic brake assist function is used to assist the driver in emergency braking. It determines according to preset parameters and when the driver braking speed meets the conditions, complete braking is adopted to achieve the optimal braking distance.

The pedestrian hydraulic brake assist level adjustment function can control the ESC to adjust its HBA preset parameters according to different risk levels, so as to assist the driver to take complete braking in an emergency to avoid collision.

11. Pedestrian warning

The pedestrian warning function alerts the driver when pedestrians are detected and there is a risk of an emergency,

so that the driver can react in time to reduce the risk of collision. The pedestrian warning function should not only meet the test scene of E-NCAPVRU, that is, the mobile pedestrian ahead of vehicle, but also react to the static pedestrian ahead of vehicle.

12. Pedestrian automatic emergency brake (AEB)

The pedestrian automatic emergency brake function shall actively control the brake system to apply braking force after the driver fails to respond to the pre-collision warning function so as to increase the driver's response time and reduce the relative speed.

Caution

- The functions related to AEB pedestrian protection can only be triggered when the camera can observe pedestrians.
- The function of pedestrian protection will be triggered more carefully than the AEB vehicle system as a whole. The alarm and braking will be relatively late and the braking force will be relatively stronger.

II. In some cases, the AEB function will be suppressed and activated under the following conditions

- The driver turns actively.
- The driver's active throttle reaches a certain threshold (85%).
- The driver's active braking reaches a certain threshold.
- The radar detects faults
- System is normal.
- Engage the N gear.
- The vehicle is in an unstable state.
- ESC function is not available.
- Select the OFF function in the driver's HMI interface.
- Driver seat belt unfastened.
- The driver's door is opened.

Caution

Most of the inhibition activation is temporary (such as braking, accelerator steering, etc.). When the driver stops steering, accelerator, braking, etc., the function will automatically resume.

III. In some cases, the AEB function will be suspended under the following conditions:

- The driver turns actively.
- The driver's active throttle reaches a certain threshold (85%).

- The radar detects faults
- System is normal.
- The vehicle is still.
- ESC function is not available.
- Driver seat belt unfastened warning
- The driver's door is opened.

Caution

Suspension activation means that the function has been triggered. If the driver performs the above operations, the system will terminate the AEB operation and respond to the driver's operation request.

Lane Keeping Assist (LKA)*

Lane keeping assist (LKA) system consists of lane departure warning, lane departure assist and lane keeping assist. Through the front monocular camera, the system recognizes the lane lines and calculates the distance between the vehicle and the left and right lane lines. When the vehicle deviates from the lane, the system will provide active deviation correction to prevent it from deviating from the lane, or remind the driver to keep the vehicle in the lane. This function is applicable to highways or similar trunk roads.

Lane Departure Warning (LDW)

Lane Departure Warning (LDW) warns the driver when the vehicle deviates from the lane unconsciously. Unconscious lane departure includes the already happened lane departure and the imminent lane departure.

Lane Departure Prevention (LDP)

As for Lane Departure Prevention (LDP), when the vehicle approaches lane lines and there is a risk of deviation, the system will assist the driver to control the vehicle back to the lane by applying torque to steering wheel.

Emergency lane keeping assist (LKS)*

The Lane Keeping Assist (LKS) will actively control the vehicle to keep driving in the middle of the lane by applying torque to the steering wheel. LKS can work only when it needs to recognize the lane lines on the left and right sides at the same time.

Speed limit information function (SLIF)

When the speed limit reminder system (SLIF) exceeds the current road speed limit value, the system will give an alarm in time to assist the driver in regulating driving. The driver can check whether to activate this function in the setting interface of the central control screen.

1. Source of speed limit data

The front-mounted camera can recognize the speed limit sign about 70 m ahead. When the vehicle passes through the plane where the sign is located, the speed limit information will be displayed on the instrument and HUD.

The navigation system can provide the speed limit information of the electronic eye photo about 700 m/ 300 m ahead. When the vehicle is 700 m/ 300 m in front of the electronic eye, the electronic eye speed limit value will be displayed on the instrument and HUD.

2. System working mode

Integration Mode

When the camera system and the navigation system work normally, the speed limit reminder system (SLIF) will enter the integration mode, which is the normal mode of SLIF. In this mode, SLIF can identify the speed limit sign and the electronic eye speed limit information.

Camera-only mode

The speed limit reminder system (SLIF) still works after the navigation system has faults. At this time, it will enter the camera-only mode, but only the speed limit sign can be recognized in this mode, and the driver cannot obtain the electronic eye speed limit information.

Navigation only mode:

The speed limit reminder system (SLIF) still works after the camera system sends an blocking fault. At this time, it will enter the navigation only mode, but only the electronic eye speed limit value can be recognized in this mode, and the driver cannot obtain the speed limit sign information.

3. Speed limit information display logic

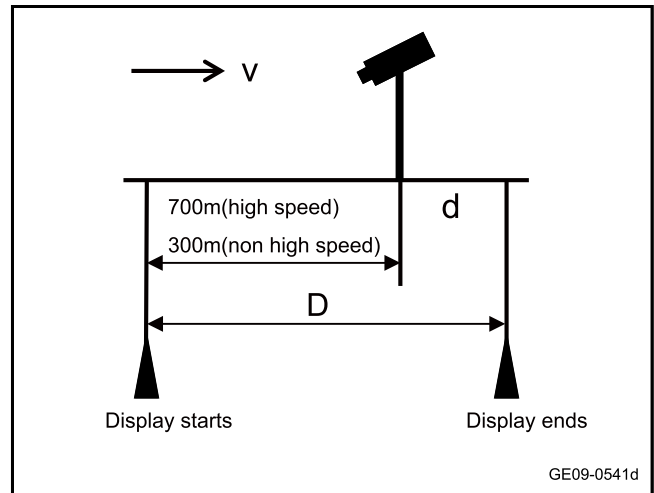
a. Display of electronic eye speed limit (navigation sends electronic eye speed limit logic):

- The speed limit value of the electronic eye is continuously sent 700 m (highway) and 300 m (non-highway) before the speed limit of the electronic eye.
- After the speed limit of the vehicle passes through the electronic eye, the navigation will no longer send the speed limit value.
- If there is a continuous electronic speed limit, the navigation will send the previous electronic speed limit before sending the subsequent electronic speed limit.
- The SLIF function sets a delay holding distance d for the electronic eye speed limit, which is sent by the camera.

The electronic eye speed limit will continue to show a distance on the instrument and HUD, that is, D:

The speed limit distance of electronic eyes of a vehicle driving on a high-speed road is: $D= 700 +d$.

The speed limit distance of electronic eyes of a vehicle when driving on a non-high-speed road is: $D= 300 +d$.

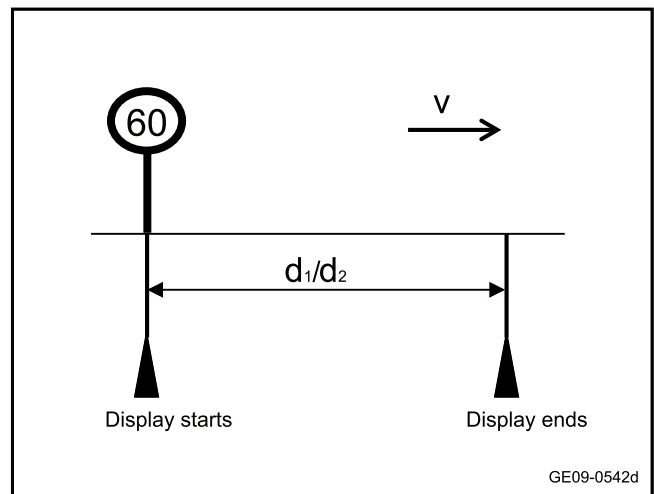


b. Display of speed limit sign (camera sends speed limit sign logic):

- After passing the plane where the speed limit sign is located, the speed limit value is continuously sent, and the display ends after a certain distance d.
- The display holding distance d corresponding to different speed limit signs is different, for example, for the "50" speed limit sign under a non-highway, the display shall be maintained at 700 m, and for the "70" speed limit sign, the display shall be maintained at 900 m.
- Non-high speed d 1: the lowest is 200 m, the highest is 1100 m.
- High speed d 2:400 m at least and 3800 m at most.

Note

The above data are experience values defined according to different speed limit values and different working conditions, so as to optimize the driving experience.



c. Display of the "Speed Limit Cancel" sign (the camera sends the "Speed Limit Canceling Sign" logic):

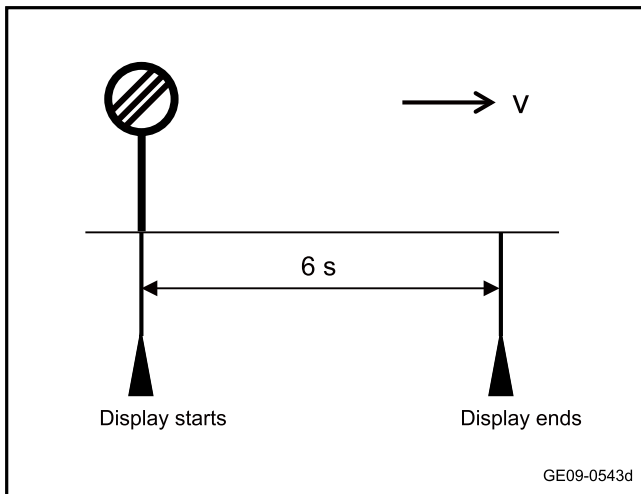
– After passing through the plane where the "speed limit is cancelled" sign is located, the vehicle continuously sends the speed limit cancellation signal, and stops sending after a period of 6 seconds.

– The holding area of the "speed limit cancelled" sign is different from other signs. The purpose of the speed limit cancellation sign is to inform the driver of the current speed limit requirement, and the time definition for the display and holding area of this sign is more suitable.

– The holding area of other speed limit signs is better defined as a distance, so as to avoid the wheels of the vehicle stopping and causing the speed limit sign to end in advance, which does not better prompt the driver for help.

4. Speed limit information display scheme in different modes

The display plan of various speed limit information under different SLIF working modes is as follows:



SLIF mode	Electronic eye	Speed limit sign	Sign of speed limit cancelled	Description
in integration mode	Non-high speed: $D=300+d$ High speed: $D=700+d$	Non-high speed: d1 High speed: d2	$t=6\text{ s}$	When the navigation is normal, it can provide current road information, and road conditions and non-highways can provide different speed limit signs display for a better driving experience.
In camera mode only	Cannot be obtained	All road conditions: d1	$t=6\text{ s}$	In case of a navigation fault, the speed limit information of the electronic eye cannot be obtained and the current road type cannot be obtained at the same time. The holding distance of the speed limit sign will be displayed under all working conditions at the distance set by non-high-speed road conditions.
Only in navigation mode	Non-high speed: $D=300$ High speed: $D=700$	System speed cannot be obtained	System speed cannot be obtained	When the camera is faulty, the speed limit sign information cannot be obtained.

5. Display strategy of speed limit information

In real road conditions, the speed limit sign and the electronic eye speed limit do not exist alone, and often appear alternately. The speed limit sign is displayed after passing its plane and maintains a certain distance, while the electronic eye speed limit is displayed 700 m/ 300 m in advance and maintains a certain distance. In this process, the effective display distance between the speed limit sign and the electronic eye speed limit must overlap. Therefore, it is necessary to define the corresponding display strategy after the two data overlap. The overlapping area should display the speed limit data from the navigation or the camera. The specific strategy definition is as follows:

– The speed limit value is displayed according to the updated speed limit value and its holding distance.

– When the vehicle enters a ramp, the ramp speed limit is displayed to the driver.

SLIF ramp speed limit display strategy:

- a. When the vehicle enters a ramp, the ramp speed limit is displayed to the driver.
- b. When the vehicle just passes through the ramp and continues to run along the main road, the ramp speed limit is not displayed to the driver.

Caution

- When driving on an elevated road, the SLIF may lose an alarm or give a wrong alarm because the navigation does not give out the correct road type.

- Due to the limited resolution of the camera, if the auxiliary sign of the ramp speed limit is not recognized, the SLIF may lose an alarm or give a wrong alarm about the ramp speed limit.

9.4.1.2 Instructions and operations(Type II)**Rear collision warning (RCW)**

When the vehicle is running, the rear radar can monitor the targets behind the vehicle in real time. When it is detected that a vehicle is quickly approaching the vehicle and there is a risk of rear-end collision, an alarm message is issued to turn on the hazard warning lamp to remind the rear vehicle to slow down or keep a safe distance.

Door Opening Warning (DOW)

When the vehicle is about to open the door in the stopped state, the rear radar monitors the moving targets in the rear blind area on the vehicle side in real time. When the system determines that a collision risk may occur due to the opening of the door, it warns the driver and the passenger at the same time by turning on the warning lamp on the same side exterior rearview mirror and issuing a warning sound, so as to avoid safety accidents caused by door opening.

Rear Cross Traffic Alert(RCTA)

When the vehicle is started and the gear is in the R position, the reversing side assist function is in working status to detect the moving vehicles in the blind area of the visual field of the exterior rearview mirror.

During the reversing process, when the system detects that a vehicle is approaching behind the vehicle and the collision may occur, the alarm lamp on the corresponding side flashes and there is an audible alarm to prompt that it is dangerous to continue reversing.

In some cases, the side assist function of reversing may not work properly or will not work, such as:

1. For vehicles approaching or leaving quickly.
2. For small and stationary targets (vehicles, pedestrians, etc.).
3. When the front vehicle speed is too high or too low.
4. When the driver depresses the accelerator pedal firmly.
5. When the driver turns the steering wheel quickly.
6. When it runs in severe environments such as rain and snow.
7. When running on sharp bends or slopes or on very wide or narrow lanes.

9.4.2 Part position

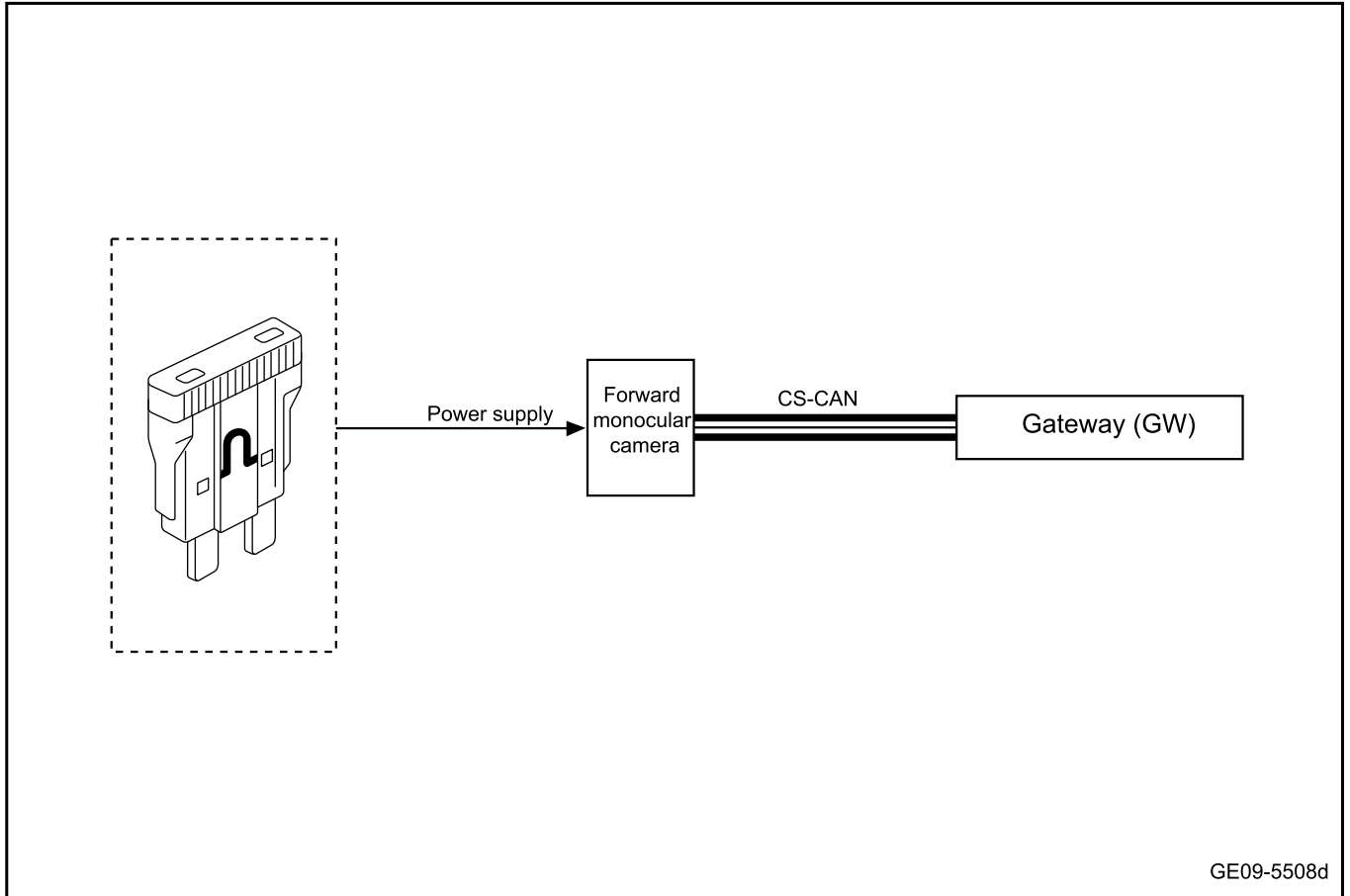
9.4.2.1 Part Position



- 1. Forward monocular camera

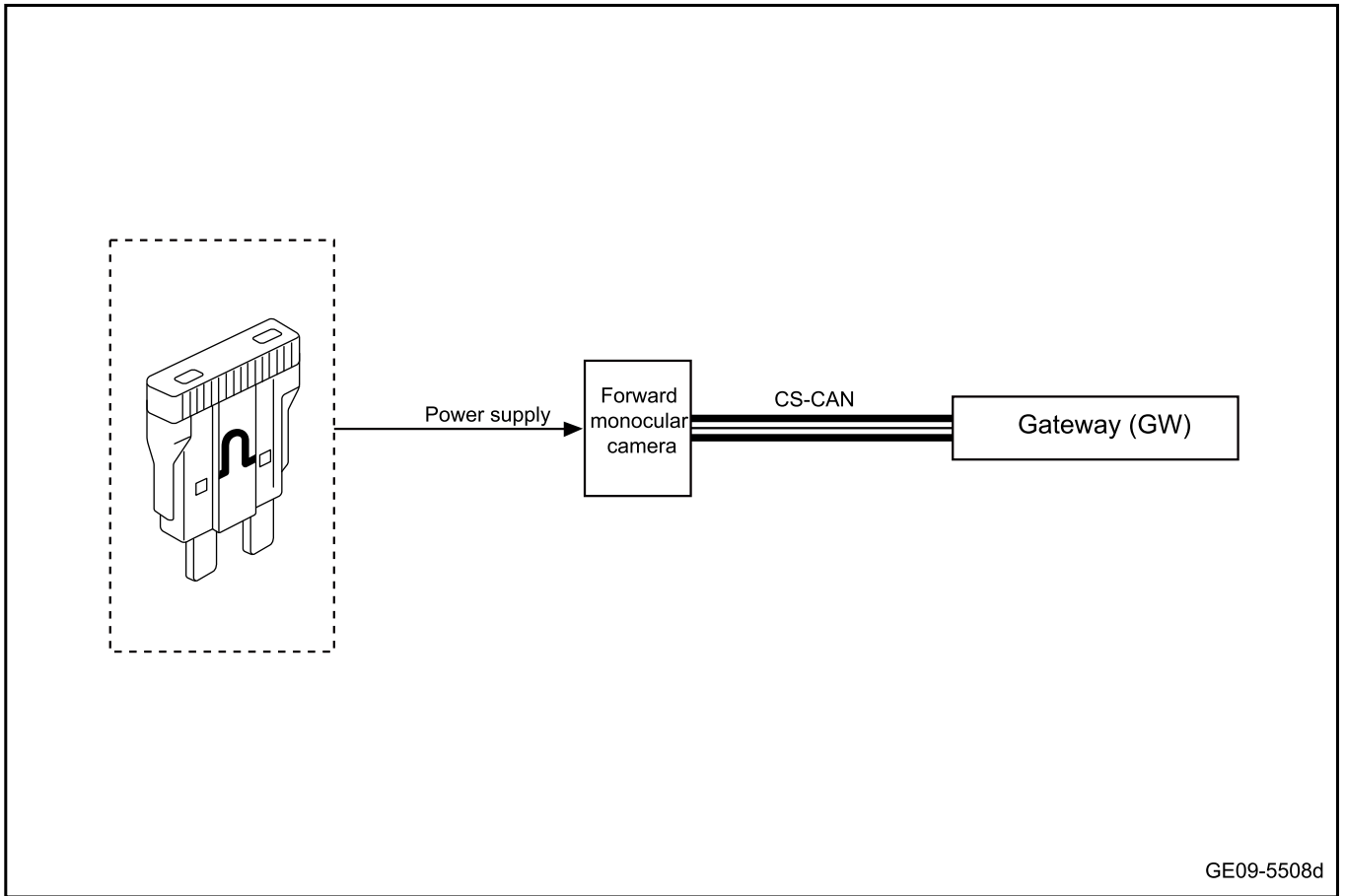
9.4.3 Electrical schematic diagram

9.4.3.1 Electrical Schematic Active safety System(Type I)

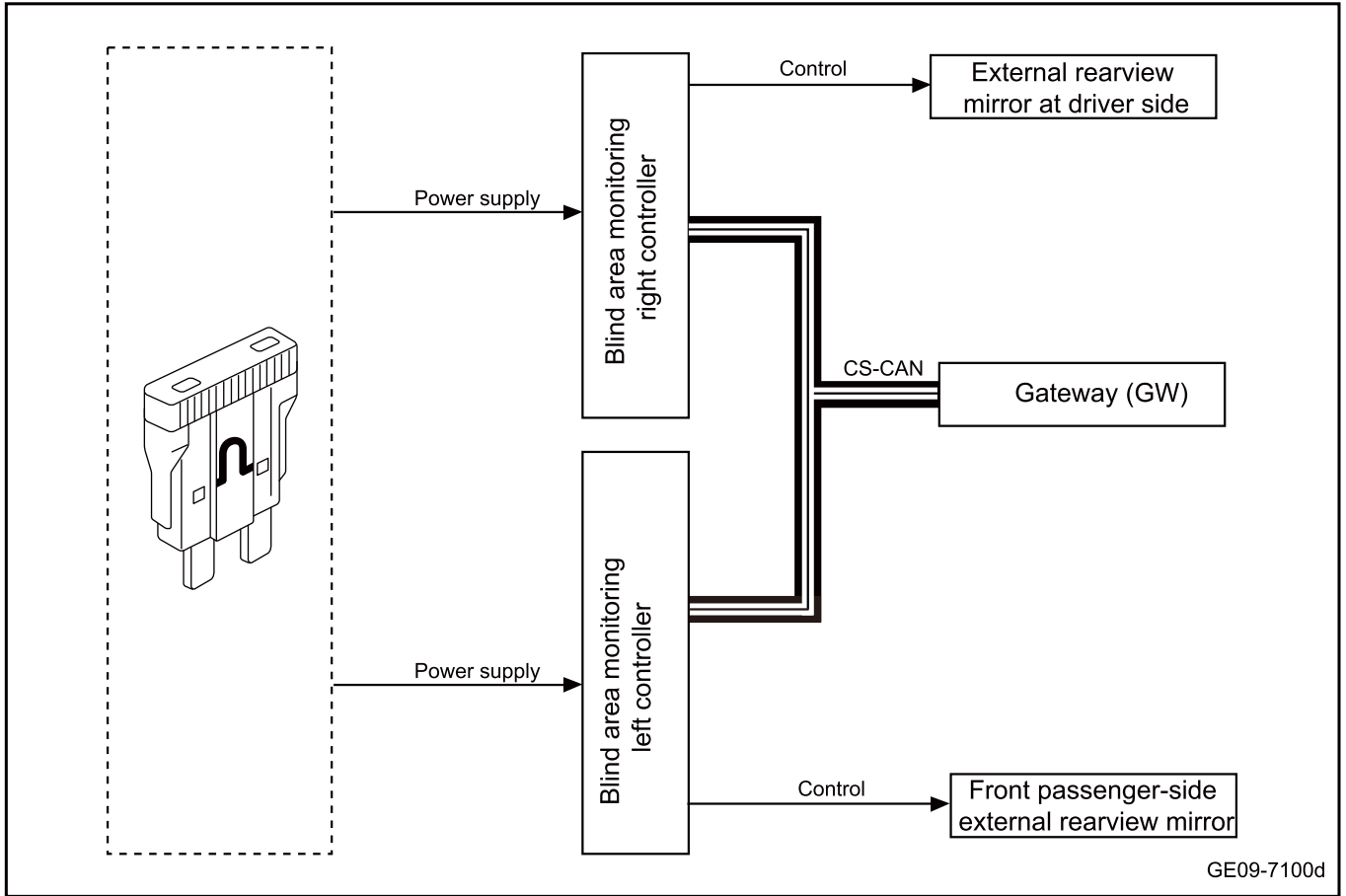


9.4.3.2 Electrical Schematic Diagram of Active Safety System(Type I)

FCS



RSRS



GE09-7100d

9.4.4 Diagnostic information and procedures

9.4.4.1 Diagnosis Description

Refer to [Description and Operations](#)

9.4.4.2 Routine inspection

1. Check after-sale installations that may affect the operation of the active safety system to ensure that they do not affect the operation of the active safety system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
3. Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

9.4.4.3 Data stream list

FCS

Serial No.	DID description	Normal value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	ECU temperature	-40-215	degC
4	Rolling angle	/	deg
5	Tilting angle	/	deg
6	Yaw angle	/	deg
7	Camera height	/	mm
8	FSC calibration state.	/	/
9	Calibration error cause	/	/
10	Lateral Deviation	-250~250	degree
11	Pitch Deviation	-250~250	degree
12	Rolling angle deviation	-0.055~0.055	degree
13	Self-calibration lateral deviation	-160~160	Pixel
14	Self-calibration pitch deviation	-160~160	Pixel
15	Self-calibration rolling deviation	-0.055~0.055	Rad
16	FCS software mismatch reasons	0- 255	-
17	Reason for camera blocking	0- 65535	/
18	Internal Faults of FCS	0-0xFFFFFFFFFFFFFFFF	/
19	Reason for the image processing unit failure	/	/
20	Reason for EyeQBoot failure	/	/
21	Reason for EyeQApp failure	/	/
22	Reason for EyeQ diagnosis failure 1	/	/

Serial No.	DID description	Normal value range	Unit
23	Reason for EyeQ diagnosis failure 2	/	/
24	EyeQ status	/	/
25	AEB event snapshot 1-4	/	/
26	Driver's operating behavior 1-5	/	/
27	Driver's operating behavior reasons 0-7 persons	0- 255	/
28	Driver's operating behavior reasons 8-15 persons	0- 255	/
29	Driver's operating behavior 16-23 persons	0- 255	/
30	Driver's operating behavior year	2000-2063	/
31	Driver's operating behavior month	1- 12	/
32	Driver's operating behavior day	1- 31	/
33	Driver's operating behavior hour	0- 23	/
34	Driver's operating behavior minute	0- 59	/
35	Driver's operation behavior second	0- 59	/
36	Mileage of driver's operating behavior	0- 999999	KM
37	Vehicle status 1-5	/	/
38	Vehicle status 0-7 digits	0- 255	/
39	Vehicle status 8-15 digits	0- 255	/
40	Vehicle status 16-23 digits	0- 255	/
41	Vehicle status year	2000-2063	/
42	Vehicle status month	1- 12	/
43	Vehicle status day	1- 31	/
44	Vehicle status hour	0- 23	/
45	Vehicle status minute	0- 59	/
46	Vehicle status second	0- 59	/
47	Vehicle status mileage	0- 999999	KM
48	AEB suppression interrupt 1-3	/	/

Serial No.	DID description	Normal value range	Unit
49	AEB suppression interrupt cause position 0-7digits	0- 255	/
50	AEB suppression interrupt cause 8-15 digits	0- 255	/
51	AEB suppression interrupt year	2000-2063	/
52	AEB suppression interrupt month	1- 12	/
53	AEB suppression interrupt day	1- 31	/
54	AEB suppression interrupt hour	0- 23	/
55	AEB suppression interrupt minute	0- 59	/
56	AEB suppression interrupt second	0- 59	/
57	AEB suppression interrupt mileage	0- 999999	KM
58	Mileage	0- 999999	KM
59	Static calibration parameters (EOL)	/	/
60	Radius of round warp	/	mm
61	Distance between the front axle and the rear axle	/	m
62	The lateral deviation between the center line of the front axle and the center line of the calibration board	/	mm
63	The lateral deviation between the center line of the rear axle and the center line of the calibration board	/	mm
64	Marking X axis coordinates at the upper left corner of the calibration board	/	mm
65	Y axis coordinates marked at the upper left corner of the calibration board	/	mm
66	Z axis coordinates marked at the upper left corner of the calibration board	/	mm

Serial No.	DID description	Normal value range	Unit
67	Marking X axis coordinates at the upper right corner of the calibration board	/	mm
68	Y axis coordinates marked at the upper right corner of the calibration board	/	mm
69	Mark Z axis coordinates at the upper right corner of the calibration board	/	mm
70	Mark X axis coordinates at the lower left corner of the calibration board	/	mm
71	Y axis coordinates marked at the lower left corner of the calibration board	/	mm
72	Left lower corner mark Z axis coordinates of the calibration board	/	mm
73	Mark X axis coordinates at the lower right corner of the calibration board	/	mm
74	Y axis coordinates marked at the lower right corner of the calibration board	/	mm
75	Mark the lower right corner of the calibration board Z axis	/	mm
76	Calibrate the tracking field	/	/
77	Calibrated event year	2000-2063	mm
78	Calibrated event month	1- 12	/
79	Calibrated event date	1- 31	/
80	Calibrated event hour	0- 23	/
81	Calibrated event minute	0- 59	/
82	Calibrated event second	0- 59	/
83	Calibrated event mileage	0- 999999	KM

RSRS

Serial No.	DID description	Physical value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Internal temperature of the radar	-40 - +80	Celsius
4	Horizontal angle deviation	/	degree

9.4.4.4 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

9.4.4.5 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

9.4.4.6 List of FCS Diagnostic Trouble Codes (DTC)

FCS

Diagnostic Trouble Code	Description	Fault location/elimination method
U015187	ACU communication fault	Refer to FCS Communication Failure
U045281	ACU data is invalid	
U042881	SAS data is invalid	
U013187	Communication with EPS is lost	
U042081	EPS signal is invalid	
U012287	ESC communication fault	
U041681	ESC data is invalid	
U111487	Communication with VCU is lost	
U140481	VCU data is invalid	
U014087	BCM communication fault	
U015687	Communication with MMI is lost	
U015587	Communication with IPK is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U007300	Switch off of CAN bus (PublicCAN)	
U000100	REMCAN bus-off (REMCAN)	
U015987	Communication with PAS is lost	
U045A81	PAS data is invalid	
U042281	BCM data is invalid	
U042381	Invalid IPK data	
U045789	TCM signal is invalid	
U045781	MMI signal is invalid	
C120987	(Pprivate CAN) node OCU (TBox) is lost	
U300616	Control module input voltage is low	
U300617	Control module input voltage is high	
C12024B	ECU temperature out of bounds	Refer to Internal Faults of FCS
C120197	Camera is blocked	
C120644	Wrong matching parameter	
C120B07	System Hardware Fault	
C120047	Calibration initial error (calibration failed DTC)	
C121181	DLC error	
C121204	System Temporary Fault	

9.4.4.7 FCS power supply fault

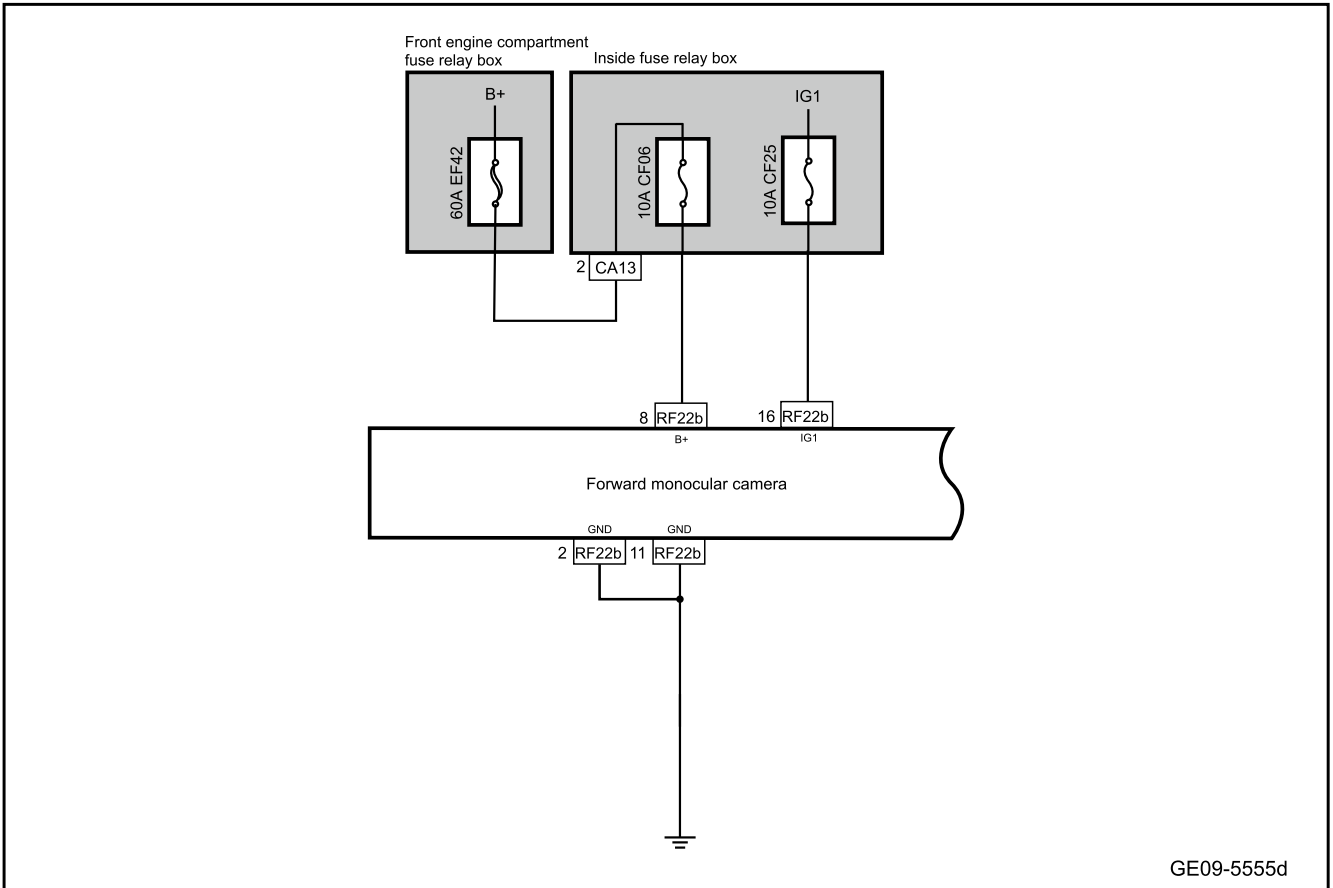
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage is $\leq 9V$ ($\pm 0.5V$), lasting for at least 1s	1. Ignition status is IGN ON	1. Fuse 2. Circuit 3. Forward monocular camera
U300617	Battery voltage $\geq 16V$ ($\pm 0.5V$), lasting for more than 1s		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Primary check.
--------	----------------

- A. Check the forward monocular cameras for signs of damage, deformation, stain, loosening, etc.
- B. Check the forward monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the interior fuse CF06 and check whether the fuse is blown.

Rated capacity of fuse: 10A

- C. Unplug the interior fuse CF25 and check whether the fuse is blown.

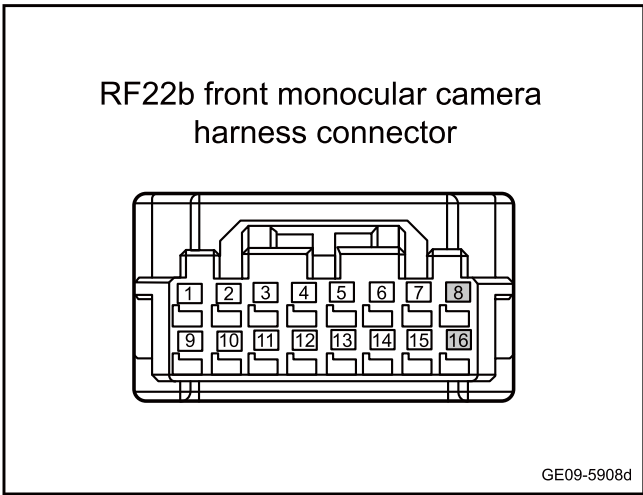
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Detect whether working voltage of forward monocular camera is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the forward monocular camera harness connector RF22b.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF22b(8)	Vehicle body is grounded.	Standard voltage: 11-14V
RF22b(16)		

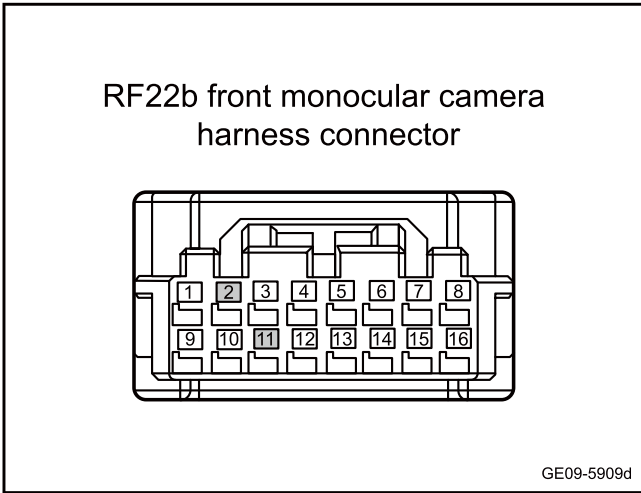
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the forward monocular camera grounding harness is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the forward monocular camera harness connector
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
RF22b(11)	Vehicle body is grounded.	Standard resistance: less than 1Ω
RF22b(2)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace forward monocular camera

- A. Replace forward monocular camera Replacement of [Forward Monocular Camera](#)

Next step

Step 6 Reprogram and set the forward monocular camera.

- A. Reprogram and set the forward monocular camera. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

9.4.4.8 FCS communication fault

1. DTC description:

Diagnostic Trouble Code	Description
U015187	ACU communication fault
U045281	ACU data is invalid
U042881	SAS data is invalid
U013187	Communication with EPS is lost
U042081	EPS signal is invalid
U012287	ESC communication fault
U041681	ESC data is invalid
U111487	Communication with VCU is lost
U140481	VCU data is invalid
U014087	BCM communication fault
U015687	Communication with MMI is lost
U015587	Communication with IPK is lost
U007300	CAN network bus is switched off
U000100	Switch off of CAN bus (PublicCAN)
U015987	Communication with PAS is lost
U045A81	PAS data is invalid
U042281	BCM data is invalid
U042381	Invalid IPK data
U045789	TCM signal is invalid
U045781	MMI signal is invalid
C120987	(Pprivate CAN) node OCU (TBox) is lost
C120B07	System Hardware Fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	ACU(ID=0x130) message is lost for 250ms		
U045281	One of the following conditions is met: 0 x 380ACU_ drvseattbeltbuckleinvalid== 0 x 1: invalid for 1000 ms 0 x 130YRS_ YawRateSensorState== 0 x 1: invalid for 250 ms 0 x 130YRS_ LateralSensorState== 0 x 1: invalid for 250 ms 0 x 131YRS_longtsensorstate== 0 x 1: invalid for 250 ms Note: error detection time is the correct value, and the counter is used to remove noise	1. CAN bus mode power supply voltage is between 9V-16V 2. The TDiagenable (3s-4s) condition is complied with 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery 4. IGN is in open status	1. Circuit 2. Forward monocular camera 3. Diagnostic interface
U042881	One of the following conditions is met: 0 x0E0SAS_ SteerWheelAngle== 0 x7FFF: invalid for 250 ms 0 x0E0SAS_ SteerWheelTorSpd== 0 xFF: invalid for 250 ms 0 x0E0SAS_FailureSts== 0 x 0: invalid for 250 ms 0 x0E0SASU calibrations== 0 x 0: sensor is not calibrated for 250 ms. Note: error detection time is the correct value, and the counter is used to remove noise		
U013187	EPS(ID=0x150) message is lost for 250ms		

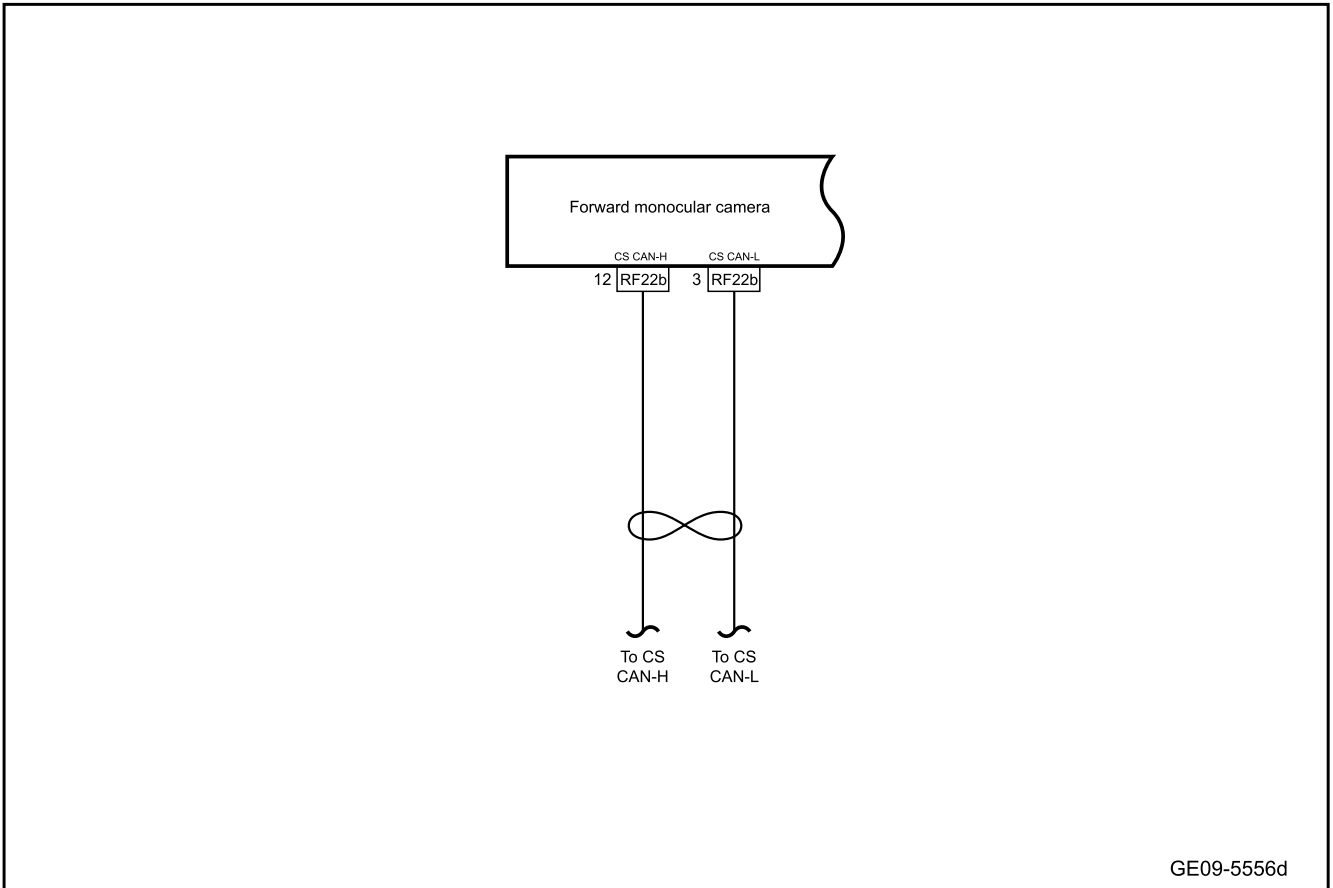
DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042081	One of the following conditions is met: 0 x 150EPS_TorsionBarTorqueValid== 0 x 1: invalid for 250 ms 0 x 150EPS_LKS_ControlSts== 0 x 3,0 x 4,0 x 5,0 x 6,0 x 7, lasting for 250 ms 0 x 150EPS_LDW_ControlSts== 0 x 3,0 x 4,0 x 5,0 x 6,0 x 7, lasting for 250 ms. Note: error detection time is the correct value, and the counter is used to remove noise		
U012287	ESC(ID=0x125) message is lost for 250 milliseconds		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U041681	One of the following conditions is met: 0 x 125 Electronic stability control unit vehicle speed is valid== 0 x 1: invalid within 250 ms 0 x 125ESC_ BrakePedalSwitchInvalid== 0 x 1: invalid within 250 ms 0 x 122ESC_Mcylinder_ PressureInvalid== 0 x 1: invalid for 250 ms 0 x 125ESC_ESPFailed== 0 x 1: ESP failure 250 ms 0 x 121 Electronic stability control fails! =0 x 0: No failure within 250 ms 0 x 122ESC_ FLWheelSpeedInvalid== 0 x 1: invalid for 250 ms 0 x 122ESC_ FRWheelSpeedInvalid== 0 x 1: invalid within 250 ms 0 x 123ESC_ RLWheelSpeedInvalid== 0 x 1: invalid within 250 ms 0 x 123ESC_ RRWheelSpeedInvalid== 0 x 1: invalid for 250 ms Note: error detection time is the correct value, and the counter is used for noise removal		
U111487	VCU(ID=0x165) message is lost for 250ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140481	One of the following conditions is met: 0 x0A6VCU_AccelPedalPositionInvalid== 0 x 1: invalid for 250 ms 0 x1A4VCU_limphomets== 0 x 1: run in LimpHome mode for 250 ms. Note: error detection time is the correct value, and the counter is used to remove noise		
U014087	VCU(ID=0x1F0) message is lost for 250ms		
U015687	5T lost MMI (ID=0x3E1) message		
U015587	5T (T analysis) lost IPK (ID=0x3F1) message		
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. CAN bus power supply voltage is within the range of 9-16V 2. Bus off detected	
U000100	Bus off counter cBusOff equals 10	1. The power supply voltage at the CAN bus node is in the range of 9v-16v (see the definition of communication diagnostic voltage for details) 2. The condition of Tdiagenable (3s-4s) is met 3. Ignition status is ignition ON 4. Not in Quiet Mode 5.3s after PEPS_PowerMode value from not ON to ON	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015987	Reserved	1. The power supply voltage at the CAN bus node is in the range of 9v-16v (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON 5. Not in Quiet Mode 6. 3s after PEPS_PowerMode value from not ON to ON	
U045A81	Reserved		
U042281	BCM_CruiseSwInvalidSts=fault (0 x 1) lasts for 10 cycles (10 * 100 ms) BCM_Set_ResumeSwInvalidSts=fault (0x1) lasts for 2 cycles (2*100ms) BCM_HoodacceparStatus= 0 x 3, lasting for 10 cycles (10 * 100 ms)		
U042381	IPK_Fail=error (0 x 1) lasts for 10 cycles (10 * 100 ms) IPK_vDisplay= invalid (0 x 1 fff), lasting for 10 cycles (10 * 100 ms) IPK_m'ashAlodFail= 10-cycle reverse error (10 * 100 ms)		
U045789	TCM_SW_Highbeam invalid== 0 x 1 or TCM_SW_FlashLightStsInvalid== 0 x 1, or TCM_IHBC_MenuReqInvalid== 0 x 1, lasting for 300 ms		
U045781	MMI_Nav_SpeedLimit== 0xFF , lasting for 300ms		
C120987	Message MMI_GPS_Info1 (0x3E1) from T-BOX is lost for 1000 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the forward monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 | Check the CS-CAN network integrity.

- A. To check the instrument communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 | Replace Forward monocular camera

- A. Check whether the power supply of control module forward monocular camera and the grounding harness are normal. Refer to [Forward monocular Camera Power Supply Fault](#)
- B. To replace the rear camera, please refer to [Replacement of Forward Monocular Camera](#)

Next step

Step 5 | Reprogram and set the forward monocular camera.

- A. Reprogram and set the forward monocular camera. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

9.4.4.9 Internal faults of FCS

1. DTC description:

DTC	Trouble description
C12024B	ECU temperature out of bounds
C120197	Camera is blocked
C120644	Wrong matching parameter
C120B07	System Hardware Fault
C120047	Calibration initial error (calibration failed DTC)
C121181	DLC error
C121204	System Temporary Fault

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C12024B	1. The internal temperature of the FCS exceeds 105 °C during initialization. Or the internal temperature of the FCS exceeds 124°C for 5 s during operation.	1. IGN is not in starting state 2.No Innerft 3. CAN bus supply voltage is within the range of 9v-16v (see the definition of communication diagnostic voltage for details).	1. Forward monocular camera
C120197	The windshield is dirty or foggy. Block FCS	1. IGN is not in starting state 2.No Innerft 3.No Overtemp 4. CAN bus supply voltage is within the range of 9v-16v (see the definition of communication diagnostic voltage for details).	
C120644	When powering on, ECU software detects faults related to the data set.	1. IGN is not in starting state 2. CAN bus supply voltage is within the range of 9v-16v (see the definition of communication diagnostic voltage for details).	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C120B07	Refer to any fault that the software update cannot fix or a fault that needs to be reported to the supplier in the event of an error, such as RAM error, ECC error, loss of calibration or loss of product information, camera running time fault, camera temperature/voltage error, etc.	<ol style="list-style-type: none"> 1. IGN is not in starting state 2. CAN bus supply voltage is within the range of 9v-16v (see the definition of communication diagnostic voltage for details). 	
C120047	If the FCS is not calibrated or calibration is wrong	<ol style="list-style-type: none"> 1. IGN is not in starting state 2. CAN bus supply voltage is within the range of 9v-16v (see the definition of communication diagnostic voltage for details). 	
C121181	10 consecutive received random message DLC is incorrect	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9v-16v (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON 5. Not in Quiet Mode 6. PEPS_PowerMode value changes from non-ON to O 3 s 	
C121204	EyeQ fails to start after this power on	<ol style="list-style-type: none"> 1. IGN is not in starting state 2. CAN bus supply voltage is within the range of 9v-16v (see the definition of communication diagnostic voltage for details). 	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the forward monocular camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Replace Forward monocular camera

- A. Check whether the power supply of control module forward monocular camera and the grounding harness are normal. Refer to [FCS Power Failure](#)
- B. To replace the rear camera, please refer to [Replacement of Forward Monocular Camera](#)

Next step

Step 5 Reprogram and set the forward monocular camera.

- A. Reprogram and set the forward monocular camera. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 Write controller data.

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next step

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8 System is normal.

9.4.4.10 List of RSRs Diagnostic Trouble Codes (DTC)

RSRS

DTC	Trouble description	Fault location/elimination method
U300616	Power supply is low	Refer to Power Supply Failure of Blind Area Detection Controller
U300617	Power supply is high	
C190454	Module not calibrated	Refer to Internal Faults of Blind Area Detection Controller
C190455	Module calibration failed	
C190649	Internal electronic fault of radar	
C19074B	Radar system over-temperature	
C190797	System Block Fault	
C190945	Internal software fault of radar	
C190E49	Fault of LED drive module	

DTC	Trouble description	Fault location/elimination method
U007300	CAN bus off	Refer to Communication failure of the blind area detection controller
U150082	Error in communication with ICM	
U010087	Communication with EMS is lost	
U010187	Communication with TCU is lost	
U012187	Communication with ESC is lost	
U012687	Communication with TCM is lost	
U014087	Communication with BCM is lost	
U015187	Communication with ACU is lost	
U015587	Communication with instrument is lost	
U015687	Communication with MMI is lost	
U040281	Gear signal is invalid	
U041681	Invalid vehicle speed signal	
U045281	Signals such as Yawrate and horizontal and vertical acceleration are invalid	
U243081	Steering lever signal is invalid	
U042881	SAS data is invalid	
U130055	Function configuration incorrect	
U243181	Door lock status fault	Refer to Communication failure of blind area monitoring left controller and blind area monitoring right controller
U017087	Loss of communication with the radar and auxiliary radar	

9.4.4.11 Fault of power supply of the blind area monitoring controller

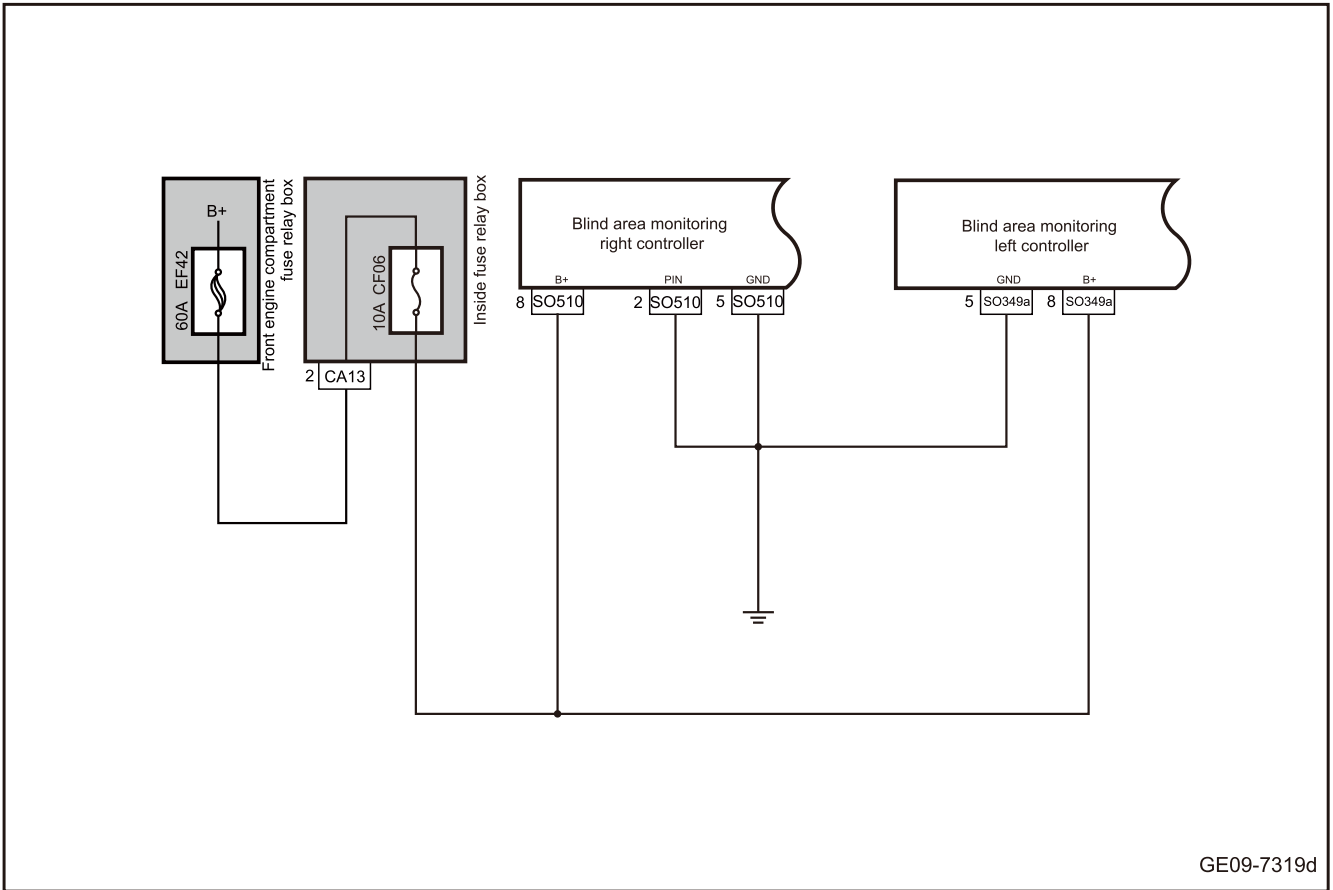
1. DTC description:

DTC	Trouble description
U300616	Power supply is low
U300617	Power supply is high

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage is less than 9V, with the status kept for at least 1 second	1. The TDiagenable (3s-4s) condition is complied with 2. No bus disconnection failure is detected. 3. IGN is in the ON status. (Power mode =0x2:ON)	1. Fuse 2. Harness 3. Battery 4. Left controller for blind area monitoring and right controller for blind area monitoring
U300617	The battery voltage should not be less than 16V, with its status maintained for at least 1 second		

3. Schematic circuit diagram:



GE09-7319d

4. Diagnosis steps

This manual is only used to diagnose the power supply fault of the right controller for blind area monitoring system. The power supply fault diagnosis of the left controller for blind area monitoring is the same as that of the right controller.

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 3.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No → Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

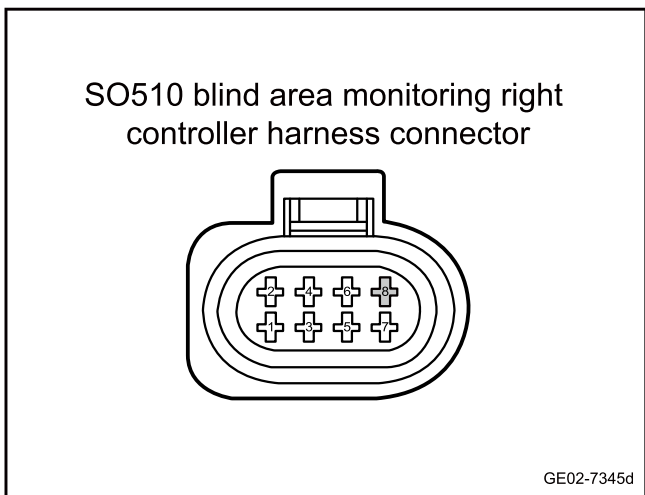
- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF06	10A
Front engine compartment fuse relay box	EF42	60A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the power supply circuit of blind area monitoring right controller.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the blind area monitoring right controller harness connector SO510.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO510(8)	Vehicle body is grounded.	Standard voltage: 11-14V

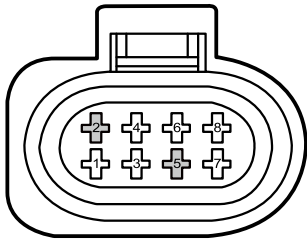
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check the blind area monitoring right controller grounding circuit.

SO510 blind area monitoring right controller harness connector



GE02-7346d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the blind area monitoring right controller harness connector SO510.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO510(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO510(5)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Reprogram and set the blind area monitoring right controller.

- A. Reprogram and set the blind area monitoring right controller. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replacement of blind area monitoring right controller

- A. To replace the blind area monitoring right controller, please refer to [Replacement of Blind Area Monitoring Right Controller](#)

Next step

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

9.4.4.12 Internal Faults of Blind Area Monitoring Controller

1. DTC description:

DTC	Trouble description
C190454	Module not calibrated
C190455	Module calibration failed
C190649	Internal electronic fault of radar
C19074B	Radar system over-temperature
C190797	System Block Fault
C190945	Internal software fault of radar
C190E49	Fault of LED drive module

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C190454	Calibration is not completed	1. Power supply voltage of the CAN bus mode is within the range of 9V-16V 2. The TDiagenable (3s-4s) condition is complied with 3. No bus disconnection failure is detected. 4. IGN is in the ON status. (Power mode=0x2:ON)	Blind area monitoring controller
C190455	Alignment angle error is out of range		
C190649	Hardware error in radar		
C19074B	Radar overtemperature		
C190797	Radar blocking		
C190945	Internal software fault		
C190E49	The fault symbol of 'LED driver module becomes low, and any of the following states 1. Radar LED module driver error; 2. Vehicle LED is short-circuited to ground or battery.		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

- A. Check the blind area monitoring controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the blind area monitoring controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the blind area monitoring controller.

- A. Reprogram and reset the blind area monitoring controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

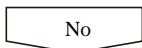
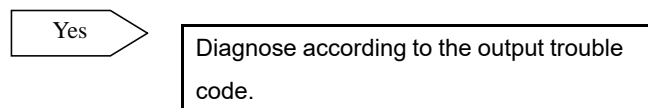
Step 4 Replacement of blind area monitoring controller

- A. To replace the PTC heat controller, please refer to [Replacement of Blind Area Monitoring Controller](#)

Next step

Step 5 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.



Step 6	System is normal.
--------	-------------------

9.4.4.13 Communication fault of blind area monitoring controller data

1. DTC description:

DTC	Trouble description
U007300	CAN bus off
U150082	Error in communication with ICM
U010087	Communication with EMS is lost
U010187	Communication with TCU is lost
U012187	Communication with ESC is lost
U012687	Communication with TCM is lost
U014087	Communication with BCM is lost
U015187	Communication with ACU is lost
U015587	Communication with instrument is lost
U015687	Communication with MMI is lost
U040281	Gear signal is invalid
U041681	Invalid vehicle speed signal
U045281	Signals such as Yawrate and horizontal and vertical acceleration are invalid
U243081	Steering lever signal is invalid
U042881	SAS data is invalid
U130055	Function configuration incorrect
U243181	Door lock status fault

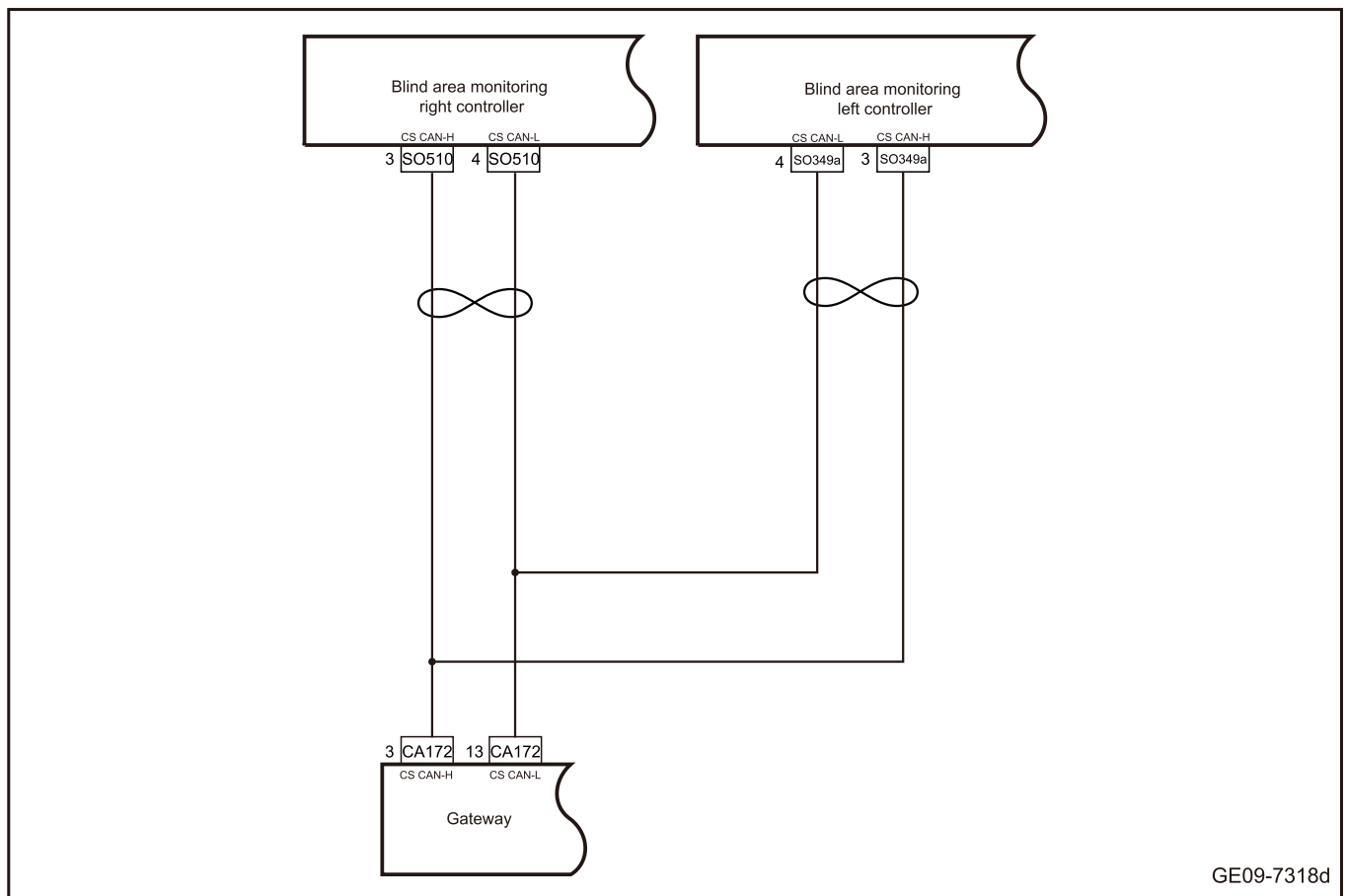
2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. Power supply voltage of the CAN bus mode is within the range of 9V-16V 2. The TDiagenable (3s-4s) condition is complied with 3. bus disconnection failure is detected. 4. IGN is in the ON status. (Power mode =0x2:ON)	
U150082	Detected activity counter errors or checksum errors or DLC < 8 equals 10 (Live counter error must occur 10 times continuously. Or the checksum error must occur 10 times continuously. Or it is detected that DLC < 8 must occur ten times continuously.)		
U010087	EMS (ID=0x85) message is lost for 250 milliseconds	1. Power supply voltage of the CAN bus mode is within the range of 9V-16V	1. Circuit
U010187	Loss of TCU (ID=0x113) information within 250 milliseconds	2. The TDiagenable (3s-4s) condition is complied with	2. Diagnostic interface
U012187	ESC (ID=0x125) message is lost for 250ms	3. No bus disconnection failure is detected.	3. Gateway
U012687	TCM (ID=0x0E0) message is lost for 250 milliseconds	2. IGN is in the ON status. (Power mode =0x2:ON)	4. Right controller for blind area monitoring and left controller for blind area monitoring
U014087	Lost BCM (ID=0x285/0x284/0x286) message for 5T (T is message period)		
U015187	ACU (ID=0x130) message is lost for 250 milliseconds		
U015587	5T (T is the message period) of IPK (ID=0x3F1) information is lost		
U015687	5T (T is the message period) of MMI (ID=0x2AA) information is lost		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U040281	One of the following conditions is met during slow charging: TCU_CurrentGearPosition==0xF : invalid		
U041681	One of the following conditions is met during slow charging: ESC_VehicleSpeedInvalid== 0 x 01: invalid; ESC_VehicleSpeed== 0 x1FFF: invalid; "		
U045281	One of the following conditions is met during slow charging: YRS_LateralAccel== 0x0FA1~0xFFFF : invalid ; YRS_YawRate== 0x8CA1~0xFFFF : invalid ; YRS_YawRateSensorState== 0x01 : invalid ; YRS_LongitCae== 0x0FA1~0xFFFF:invalid ; "		
U243081	One of the following conditions is met during slow charging: BCM_TurnLeverSts==0x3 : error state ; "		
U042881	"Meet any of conditions below: SAS_SteerWheelAngle==0x7FFF: invalid ; SAS_FailureSts== 0x0 : invalid ; "		
U130055	"F101 has not been configured (all the default values are 0 xFF"		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U243181	"Any of the following conditions are met: BCM_DoorLockStatusRL== 0 x 3: error; BCM_DoorLockStatusDrv== 0 x 3: error; BCM_DoorLockStatusRR== 0 x 3: error; BCM_DoorLockStatusPass== 0 x 3: error;		

3. Schematic circuit diagram:



4. Diagnosis steps

This manual is only used to diagnose the data communication fault of the left controller for blind area monitoring system. The data communication fault diagnosis of the right controller for blind area monitoring is the same as that of the left controller.

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the blind area monitoring left controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the blind area monitoring left controller and blind area monitoring right controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the CS-CAN bus integrity.
--------	---------------------------------

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 4	Reprogram and set the blind area monitoring left controller.
--------	--

- A. To reprogram and reset the blind area monitoring left controller, please refer to Programming and Setting of Each Module of the Complete Vehicle
- B. Confirm whether the system is normal.

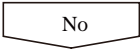
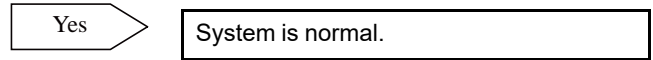
Yes

System is normal.

No

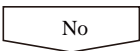
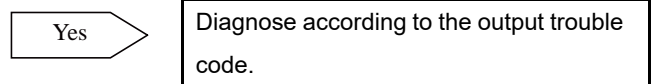
Step 5	Replacement of blind area monitoring left controller
--------	--

- A. Replacement of blind area monitoring left controller
Refer to [Replacement of the Blind Area Monitoring Left Controller](#)
- B. Confirm whether the system is working normally.



Step 6 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.



Step 7 System is normal.

9.4.4.14 Communication failure of blind area monitoring left controller and blind area monitoring right controller

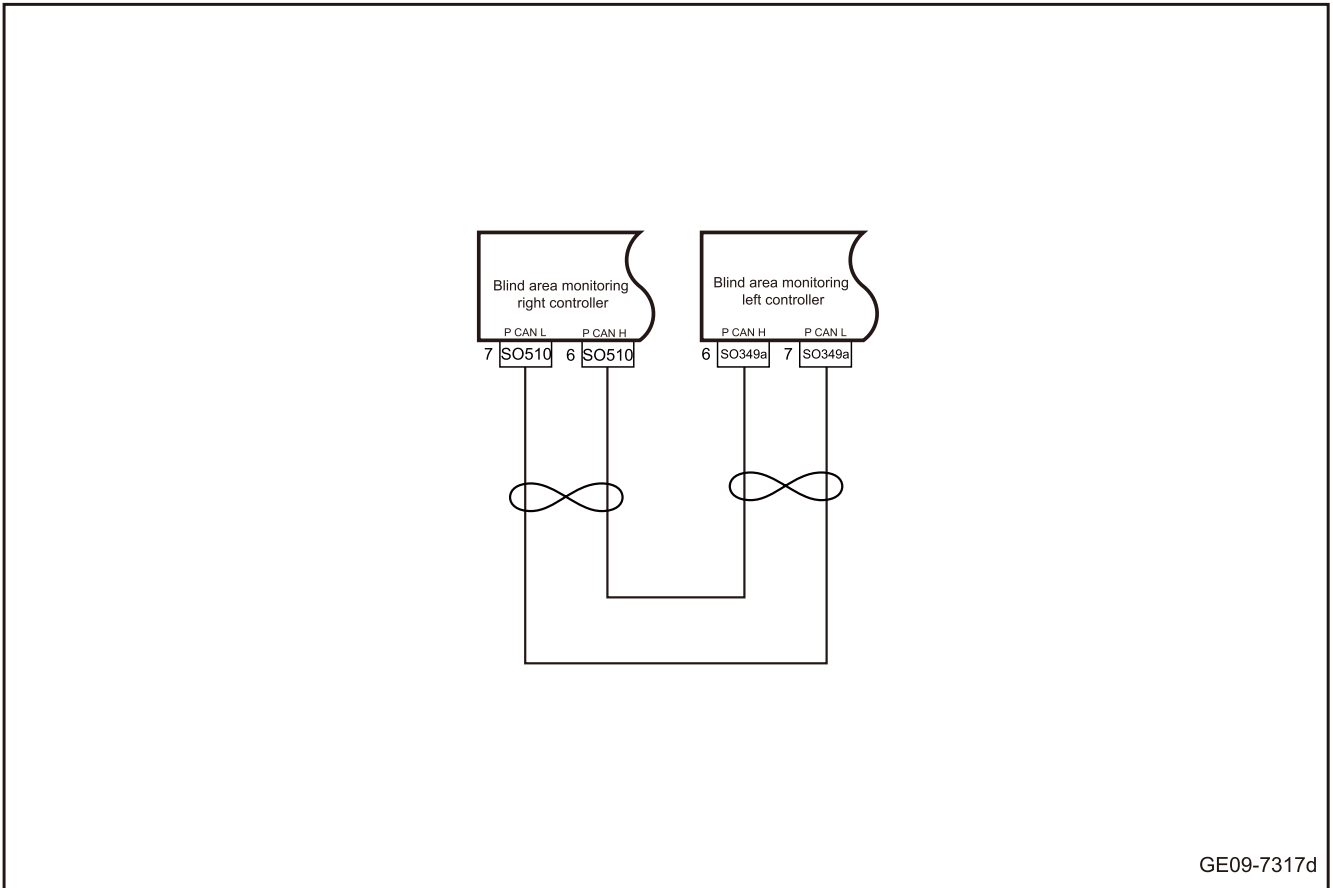
1. DTC description:

DTC	Trouble description
U017087	Loss of communication between radar and auxiliary radar

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U017087	"The master radar cannot receive any message from the slave node if: Cycle time <= 50 ms, error detection time=250 ms Cycle time > 50 ms, error detection time=5 * Cycle time "	1. Power supply voltage of the CAN bus mode is within the range of 9V-16V 2. The TDiagenable (3s-4s) condition is complied with 3. No bus disconnection failure is detected. 4.IGN is in the awaking status. Power mode =0x2:ON	1. Circuit 2. Blind area monitoring left controller 3. Right controller for blind area monitoring

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent fault check
----	---

Yes

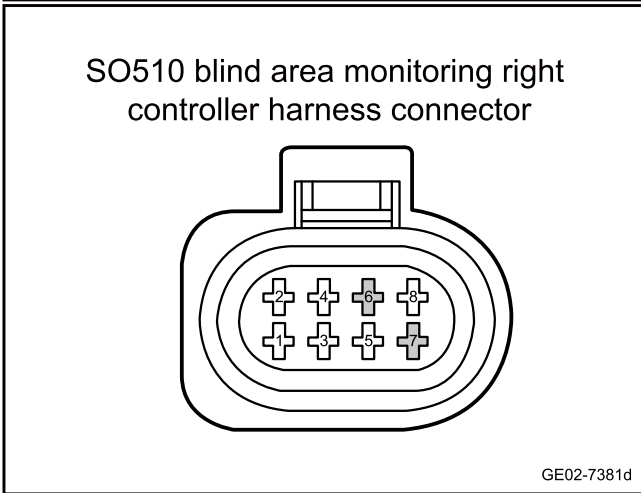
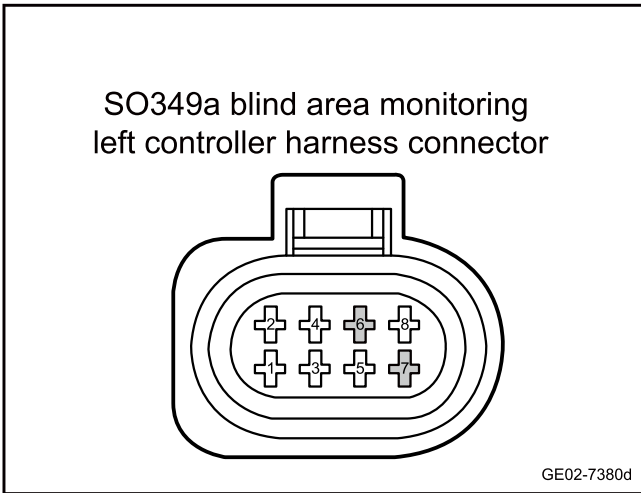
Step 2	Primary check.
--------	----------------

- A. Check the blind area monitoring left controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the blind area monitoring left controller and blind area monitoring right controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check the circuit between the blind area monitoring left controller and the blind area monitoring right controller.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the blind area monitoring left controller harness connector SO349a.
- C. Disconnect the blind area monitoring right controller harness connector SO510.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO510(7)	SO349a(7)	Standard resistance: less than 1Ω
SO510(6)	SO349a(6)	
SO510(7)	Vehicle body is grounded.	Standard resistance:
SO510(6)		10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO510(7)	Vehicle body is grounded.	Standard voltage: 0V
SO510(6)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Program and set the left and right blind area monitoring controllers.

- A. Program and set the left and right blind area monitoring controllers. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the left and right blind area monitoring controllers.

- A. To replace the blind area monitoring left controller, please refer to [Replacement of Blind Area Monitoring Left Controller](#)
- B. To replace the blind area monitoring right controller, please refer to [Replacement of Blind Area Monitoring Right Controller](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

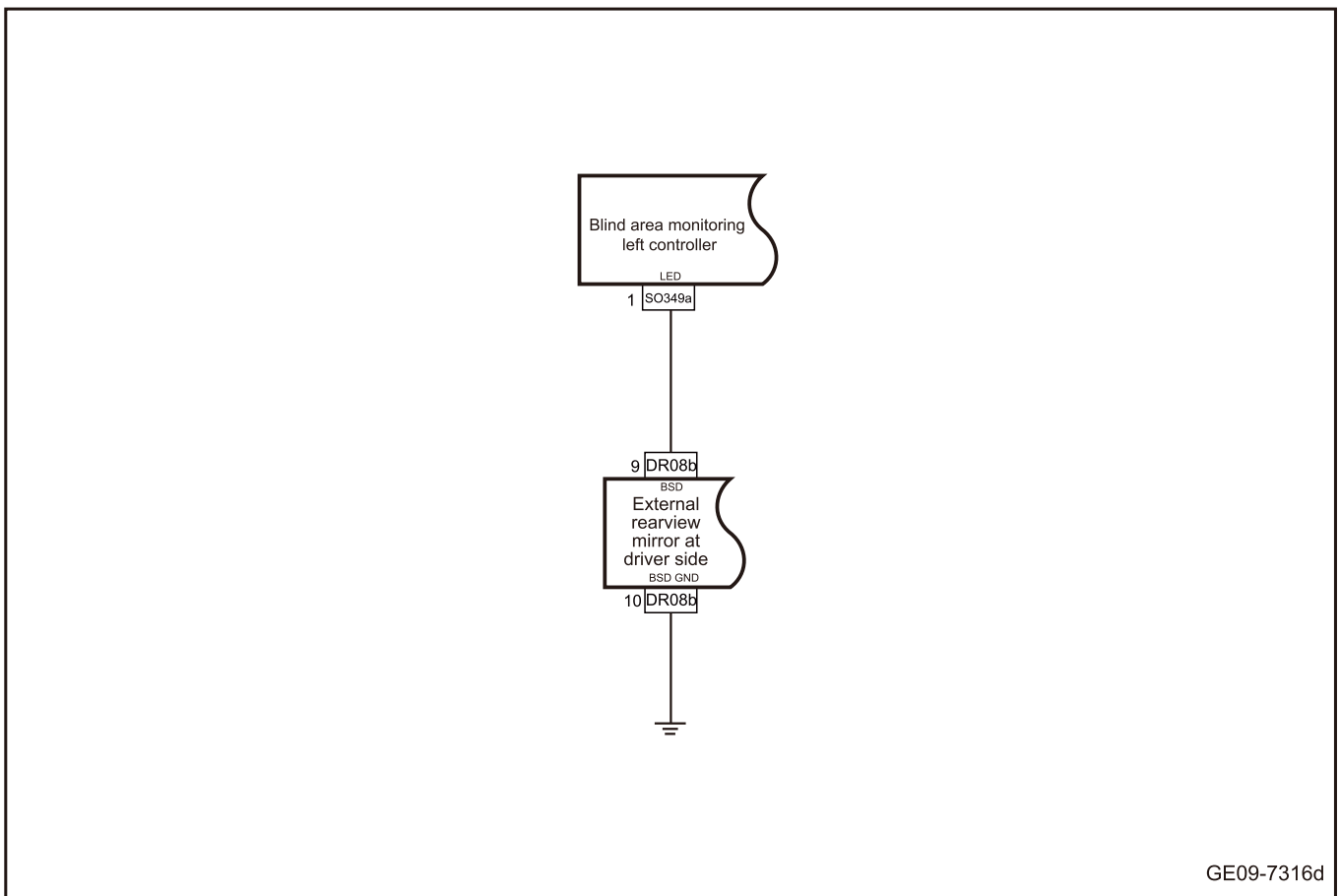
Diagnose according to the output trouble code.

No

Step 7 System is normal.

9.4.4.15 Left blind area monitoring indicator fault (Type II)

1. Circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

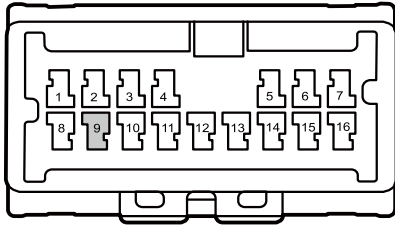
- A. Check the driver side exterior rear-view mirror for signs such as damage and falling off.
- B. Check the driver side exterior rearview mirror and blind area monitoring left controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

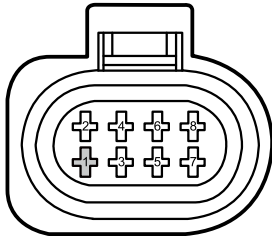
Step 2	Check the circuit between the driver's exterior rearview mirror and the blind area monitoring left controller.
--------	--

DR08b harness connector for exterior rearview mirror at driver side



GE02-7347d

SO349a blind area monitoring left controller harness connector



GE02-7348d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the blind area monitoring left controller harness connector SO349a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	SO349a(1)	Standard resistance: less than 1Ω
DR08b(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 Replace the driver's side exterior rearview mirror

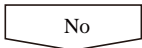
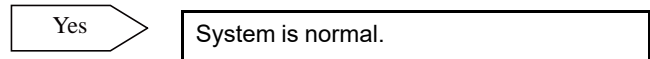
- A. Replace the driver's side exterior rearview mirror Refer to [Replacement of Left Exterior Rearview Mirrors \(Type II\)](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

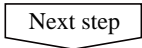
Step 4 Reprogram and set the blind area monitoring left controller.

- A. Reprogram and set the blind area monitoring left controller. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.



Step 5 Replacement of blind area monitoring left controller

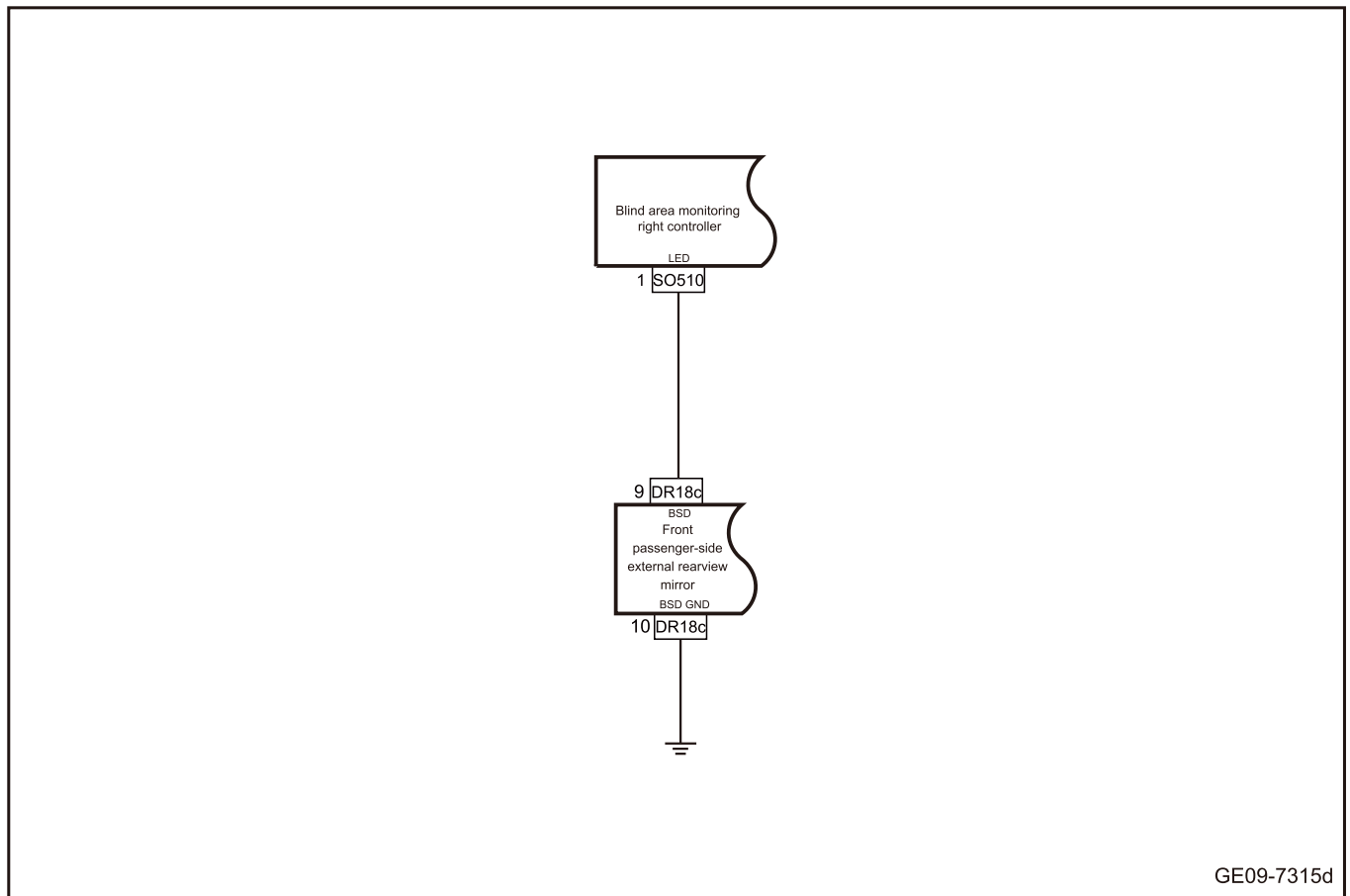
- A. Replacement of blind area monitoring left controller
Refer to [Replacement of the Blind Area Monitoring Left Controller](#)



Step 6 System is normal.

9.4.4.16 Right blind area monitoring indicator fault (Type II)

1. Circuit diagram:



2. Diagnosis steps

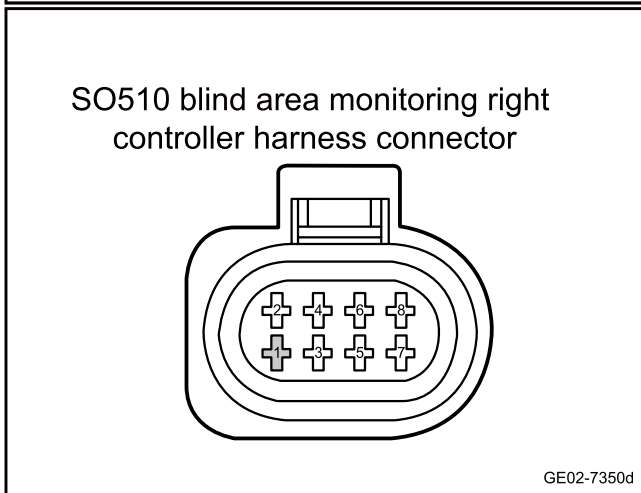
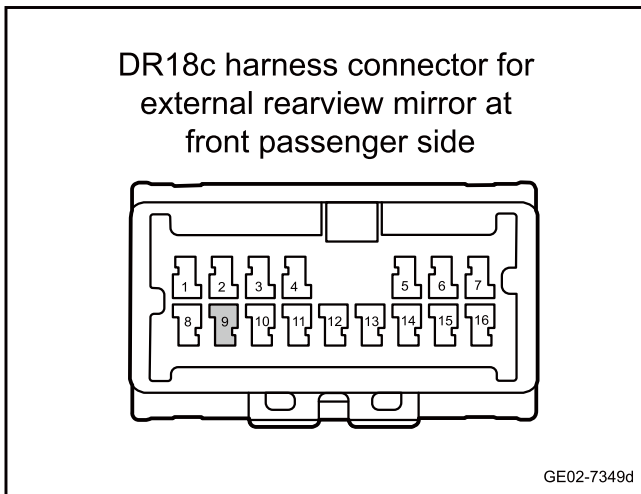
Step 1	Primary check.
--------	----------------

- A. Check the front passenger side exterior rearview mirror for signs such as damage and falling off.
- B. Check front passenger side exterior rearview mirror and the harness connector of blind area monitoring right controller for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check the circuit between the front passenger side exterior rearview mirror and the blind area monitoring right controller.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the blind area monitoring right controller harness connector SO510.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	SO510(1)	Standard resistance: less than 1Ω
DR18c(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 3	Replace front passenger’s side exterior rearview mirror.
--------	--

- A. Replace front passenger’s side exterior rearview mirror. Refer to [Replacement of front passenger-side exterior rearview mirror](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 4	Reprogram and set the blind area monitoring right controller.
--------	---

- A. Reprogram and set the blind area monitoring right controller. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 5	Replacement of blind area monitoring right controller
--------	---

- A. Replacement of blind area monitoring right controller Refer to [Replacement of the Blind Area Monitoring Right Controller](#)

Next step

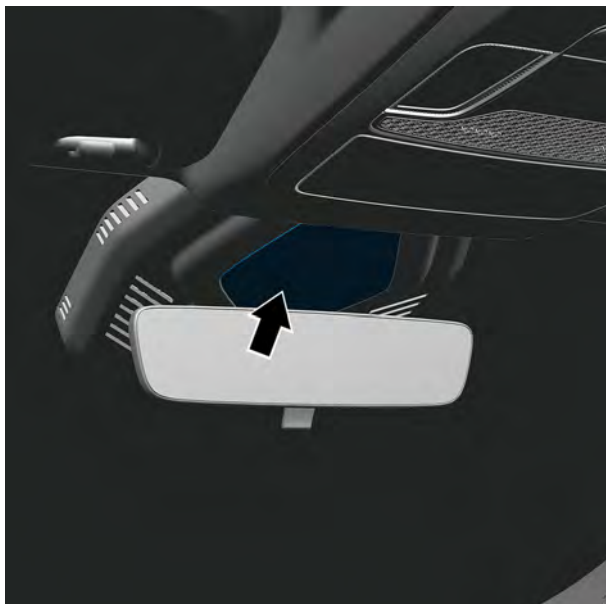
Step 6	System is normal.
--------	-------------------

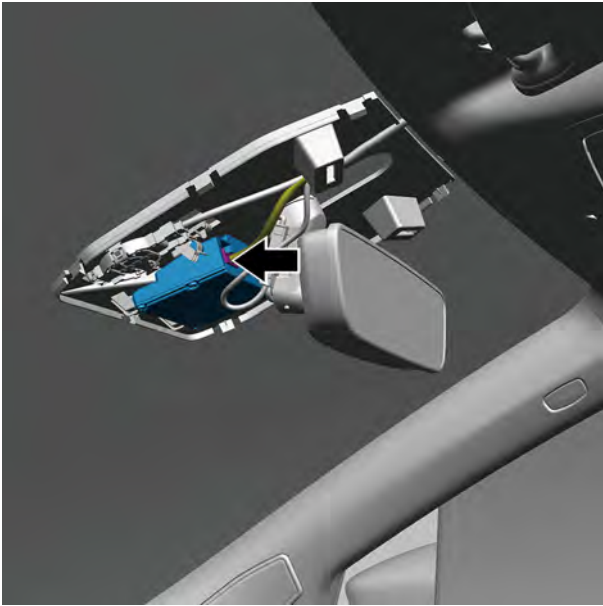
9.4.5 Removing and installing

9.4.5.1 Replacement of Forward Monocular Camera

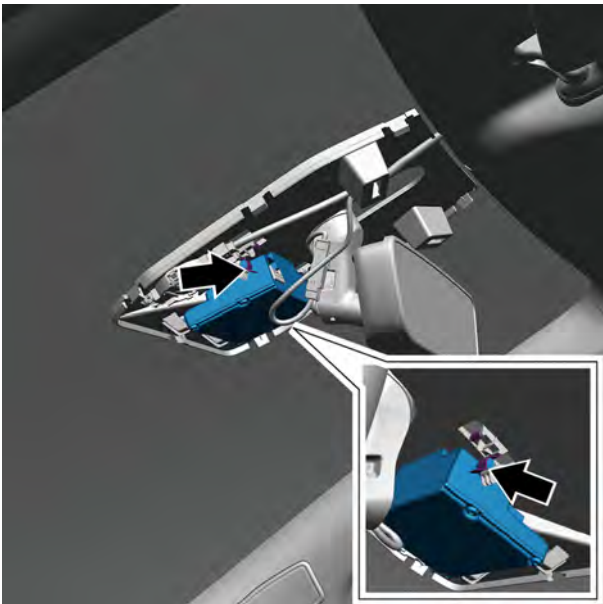
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Use the plastic prying plate to pry off the interior rearview mirror trim cover.
- 3 Use the plastic prying plate to pry off the interior rearview mirror trim hood.



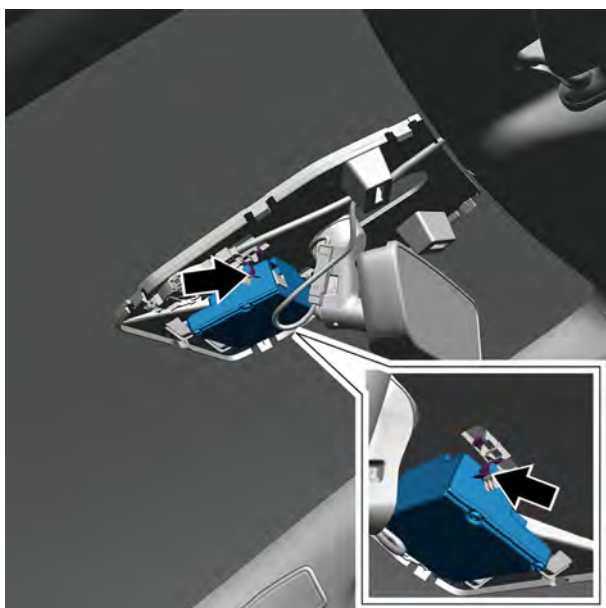


- 4 Disconnect the 1 harness connector connecting forward monocular camera and ceiling harness connector.

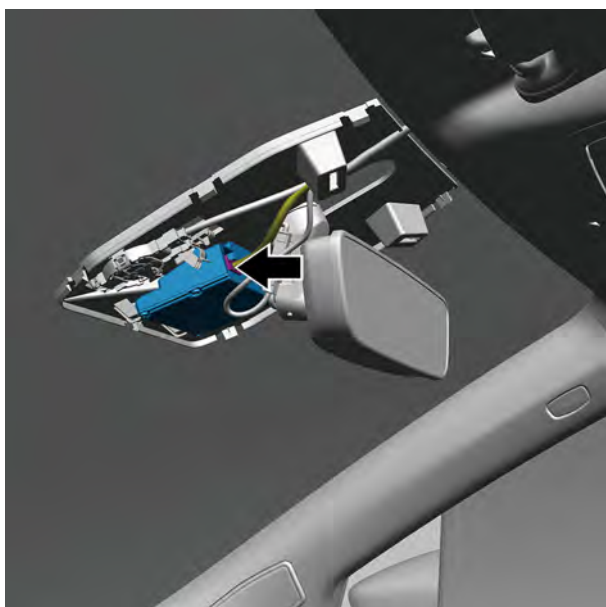


- 5 Disconnect the 2 fixing clips connecting the forward monocular camera and the interior rearview mirror trim seat.
- 6 Take down Forward monocular camera

Installation procedure



- 1 Install the 2 fixing clips connecting the forward monocular camera and the interior rearview mirror trim seat.



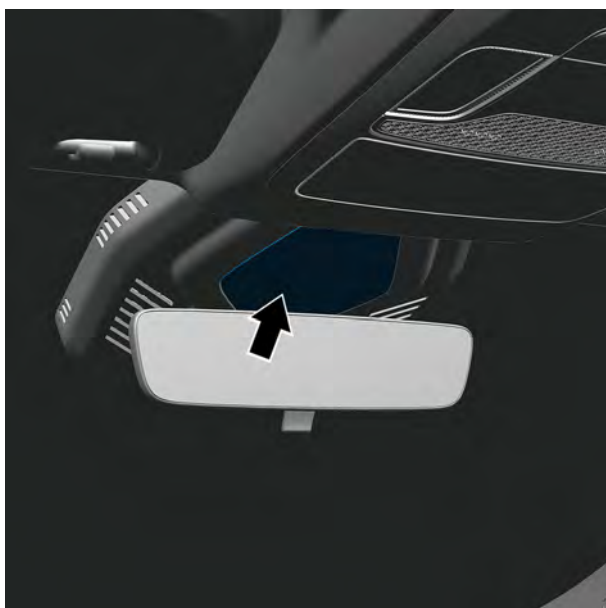
- 2 Connect the harness connector connecting the forward monocular camera and ceiling harness connector

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



- 4 Install Interior rearview mirror trim seat



5 Install the inner rearview mirror cover plate.

6 Connect the negative cable of battery.

Body Control System

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10.1 Warnings and precautions

10.1.1 Warnings and precautions

10.1.1.1 Warnings and Precautions

1. Warnings regarding battery disconnection

Warning

Before maintaining any electrical component, the start and stop button power mode should be in the OFF status and all electrical loads must be “OFF” (switch off) unless otherwise stated in the operational program. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable. Violation of these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

2. Warning regarding road test

Warning

Road test should be conducted under the premise of ensuring safety and observing all traffic regulations. Do not try any operation that may endanger the control of the vehicle. Violating the above safety instructions can cause serious personal injury and damage the vehicle.

3. Warning regarding window fast down function

Warning

When the driver door operates the electric window switch, the fast up/down function makes the window move extremely fast without stopping, which may result in personal injury.

4. Notice of setting the power supply mode in OFF position when disconnecting the battery

Caution

Be sure to put the power supply mode in the OFF position, whenever connecting or disconnecting battery cables, battery chargers, or jumper cables. Otherwise, the control module or other electrical components may be damaged.

5. Notice of power system control module and electro-static discharge

Caution

Do not touch the connector pins or welding components on the circuit board to prevent electrostatic discharge from damaging the electronic control module on the vehicle.

10.2 Body control module

10.2.1 Specification

10.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Body control module (BCM) fixing nut	M6	8.5-11.5
Door handle control module fixing nut	M6	5 ~ 7

10.2.2 Instructions and operations

10.2.2.1 Description and Operations

External anti-theft

1. Early warning

Enter the warning status first by anti-theft relief status (3s) At this time, the anti-theft indicator flashes rapidly, with a cycle of 160ms on and 160ms off. During this period, if a door/trunk lid/engine compartment cover is opened, the warning status will always remain. Otherwise, the system will automatically turn into the anti-theft alert status after three seconds.

2. Alarm issuing

In the anti-theft alarm issuing state, the anti-theft indicator flashes slowly, with a cycle of 80ms on, and 3120ms off. When the vehicle is in an alert status, once there is external illegal action, the body anti-theft alarm system will enter the alarm status.

Under the alert status, the conditions for triggering the alarm are as follows:

- Open the FL door
- Open the FR door
- Open the RL door
- Open the RR door
- Open the trunk
- Open the engine compartment cover
- Illegal switch ignition

3. Alarm status

When the anti-theft system is in the alarm mode, the alarm cycle is as follows: the left and right flash lamps flash, the anti-theft alarm horn beeps and works interactively. The working cycle is 500ms ON, 500ms OFF, the horn stops working after 30s, and only the left and right flash lamps flash for 5min. If the system is in mute mode, the sound of horns will not occur. When receiving the remote locking button, the turn signal lamp will flash once, and the alarm circulation will be terminated with the system entering the anti-theft alert system. In addition, even the same trigger condition occurs again, the alarm cannot be triggered. This trigger condition can be reset only after entering the relief alert.

4. Reminding state

When locking the door with the remote control locking button, if any door/trunk lid/engine compartment cover is not closed, the turn signal flashes 3 times, the system will enter the reminder state, the anti-theft horn will sound twice every 2s, and enter the anti-theft alarm state after 10s. If all doors are

closed within the reminder period (10s), the reminder state will be suspended, and the anti-theft alarm system will turn to the alarm issuing state or the alarm release state according to the situation. If the locking button is pressed again within 10s and remains in the reminder state, the alarm cycle will begin after 10s. If you press the remote control unlocking button within 10s, the system will enter the alarm release state from the reminder state.

5. Anti-theft release status

Enter the anti-theft release state by pressing the remote control locking button. When the remote unlocking command is received, the left and right turn signals flash three times, the position lamp turns on for 25s, and the LED stops flashing.

6. Mute mode

When in the anti-theft status, Press down the “lock” and “unlock” buttons on the remote control at the same time for more than 2S, and then the turn signal lamp flashes twice, indicating that the mute status is entered. Then press down the “lock” and “unlock” buttons on the remote control at the same time for more than 2s. At this time, the turn signal lamp flashes twice, indicating that it exits mute status. In mute status, if alarm occurs, the anti-theft horn will not sound

Door lock control function

The radio frequency receiver of this vehicle is located at the rear of the roof to transmit information with the IBC through the LIN line. The vehicle body control system provides the following central locking functions:

1. Remote control key lock/unlock

Start and stop button power supply system OFF status, and press the unlock button on the remote control twice within 500ms to unlock four doors, then the turn signal lamp flashes three times for confirmation, and the internal light fades on, with the position lamp on.

The power supply mode is OFF status, and press down the lock button on the remote controller once, to lock four doors, then the turn signal lamp flashes for conformation, and the inside lamp fades off, with the position lamp off.

The power supply mode is OFF status, and press down the remote locking button for more than 2s, then the electric vehicle windows will switch off automatically, with its signal transmitted through LIN

2. Inside central switch unlock/lock

Press the locking button on the central door control switch, then the IBC drives the four doors to unlock. When the vehicle speed is greater than 15km/h, the central control unlocking command is prohibited. The inside central control unlocking can be performed only in the anti-theft relief status. If it is in other anti-theft status, it will not respond.

3. Unlock the door at driver's side individually

Turn the mechanical key to the UNLOCK position to unlock the door at driver's side individually. Press down remote unlock button once with 1s, the driver side door unlock.

4. Automatic re-locking

30s after the unlock of remote control, any one of the four doors and trunk door are unlocked will be automatically re-locked. Inside lamp switch off, and the system enter the alert status

5. Automatic locking during running

When the power mode is in the ON position, and the vehicle speed is greater than 20km/h for more than 0.5s, the four-door lock will automatically be locked.

6. Automatic unlocking in case of collision

When the collision signal is received from the CAN bus, the IBC will trigger the central control unlocking twice within 3s, and the left and right turn signals will continue to flash, and the central control lock will be invalid. Unless a door is opened while the power mode is OFF and the collision signal has expired (4s).

7. Automatic unlocking after flameout

When the door lock is in lock status and the power supply mode is in OFF status, the four-door will unlock automatically.

8. Backdoor unlocking

In OFF state of power mode, press the back door remote control unlocking button for more than 1.0 s to unlock the backdoor.

9. Backdoor automatic unlocking

The back door will automatically lock after 1.5 seconds of closing. During the automatic re-locking process, the backdoor will also be locked.

10. Disable backdoor unlocking

When the power supply mode is in ON status and the vehicle speed is faster than 15km/h, the unlocking of backdoor will not be performed.

11. Prohibit remote control command

When the power supply is in ON status, any remote commands other than the unalarm operation and the unlocking of the tailgate will not be executed.

12. Door lock motor protection against overheat

After six consecutive locking or unlocking actions with an interval of no more than 1280ms are performed, the overheat protection function of the door lock will be activated. At this point, only the collision automatic unlocking, the other unlocking requests can only be executed once, and no other locking/unlocking requests will be executed for 20s.

Driver alarm information

When the driver has some abnormal operation, the body control system will send CAN message to the instrument, and the instrument will produce buzzer warning to remind the driver. It has the following functions: issue a warning when the light is not turned OFF: when the power mode is OFF, the combination switch will light up the headlight or position lamp. If the door at driver's side is open, the body control system will generate an alarm signal to the instrument, and the instrument will issue an audible warning.

Automatic control of external lights

Follow Me Home light: within 10min after the power mode is switched from the ON state to the OFF state, rotate the light switch from the OFF position to the mini light position, or the headlight position, or the automatic light position, and then return to the OFF position. After the Follow Me Home light function is activated, the low beam lights up for 30s. When the Follow Me Home light function is activated, if one door is opened, the low beam can not light up within 180s. (the delay is reset).

Remote unlock search lamp function

When the power mode is in the OFF state, press the locking button on the remote control twice within 500ms to trigger the vehicle locating function, and the position lamp will keep on for 25s. If the door moves within 25s, the position lamp will automatically go out 5s after all the doors are closed.

Automatic lamplight

When the power supply mode is in ON status and the combination switch is in AUTO position, if the environment light sensor is required to light up, the position lamp relay and the headlamp relay will automatically pull in at the request of the sunlight sensor.

When the power mode is in the ON position and the combination switch is in the AUTO position, if the ambient light sensor gives a request to turn off, the position lamp relay and the headlight relay will be automatically disconnected

after a delay of 2s according to the request of the sunlight sensor.

When the combination switch is in the AUTO position and the power mode exits the ON state, if the status of the headlight or position lamp is on, they will keep on for 60s. If the locking signal is received within 60s, this function will be turned off.

Turn signal lamp

Turn signal lamp system will use turn light lamp flash signals to react to various body control request. The requests coming from turn signal lamp system are mainly: left turn signal on and off, right turn signal on and off and warning lamp on and off. Other requests coming from external module are mainly: central door control, diagnosis operation, anti-theft alarm system, emergency brake and collision flash. Collision flash has the highest priority, and alarm lamp has the second highest priority.

1. Flashing due to collision

When the power mode is in the ON state, if the IBC receives a collision signal from the hardware, the front, rear, left and right turn signals will flash at the same time at a frequency of 85 times/min. Press the warning switch button once again to cancel the warning flashing function.

2. Hazard warning lamp

Regardless of the power mode, press the hazard warning lamp switch button, the left and right turn signals will flash at a frequency of about 85 times/min at the same time. Press the hazard warning lamp switch button once again and to cancel the warning flash function.

3. Steering prompt

When the power mode is ON, turn on the left turn signal switch and the left turn signal blinks at a frequency of about 85 times/min. When the power mode is ON, turn on the right turn signal switch and the right turn signal blinks at a frequency of about 85 times/min.

4. Self-diagnosis of turn signals

In the steering state, the front and rear turn signals are LEDs. When the output current of the turn signal is less than 110mA, it is regarded as a fault (when the LED turn signal fails, the output waveform of the fault feedback line at the turn signal terminal is opposite to the output waveform of the IBC switch); other turn signals on the same side flash about twice as often as in normal mode. When the alarm is activated, if one of the turn signals is damaged, the turn signals on both sides will flash at a frequency of about 170 times/min.

5. Functions of lane-changing lamps

When the turn signal lamp switch is turned on and off between 100ms and 700ms, the corresponding turn signal lamp will flash three times as a lane change signal.

6. Emergency brake warning lamp

If the vehicle speed (the IBC obtains the vehicle speed and braking signal through the CAN bus) is rapidly reduced due to emergency braking, all turn signals are activated and flash; if the vehicle speed is rapidly reduced, the hazard warning flasher function is relieved.

Heating function

1. Rear defrosting and rearview mirror heating function

A voltage signal is obtained from the CAN bus to allow the rear defrosting/mirror heating operation when the battery voltage is greater than 10.7V and the power mode is ON. Rear defrosting/mirror heating is not allowed when the detected battery voltage is less than 10.3 V.

The rear defrosting/rearview mirror heating switch is an inching button switch. Press the rear defrosting/rearview mirror heating switch, the rear defrosting/rearview mirror heater will heat for 12 minutes; if the rear defrosting/rearview mirror heating switch is pressed again during the operation, the rear defrosting/rearview mirror heating operation will be stopped. Press the rear defrosting/rearview mirror heating switch again, and the rear defrost/ rearview mirror heater will stop heating until 12min after the first press of the rear defrosting/rearview mirror heating switch (accumulated operation time is 12min). The heating time before 36min is not accumulated in the next operation.

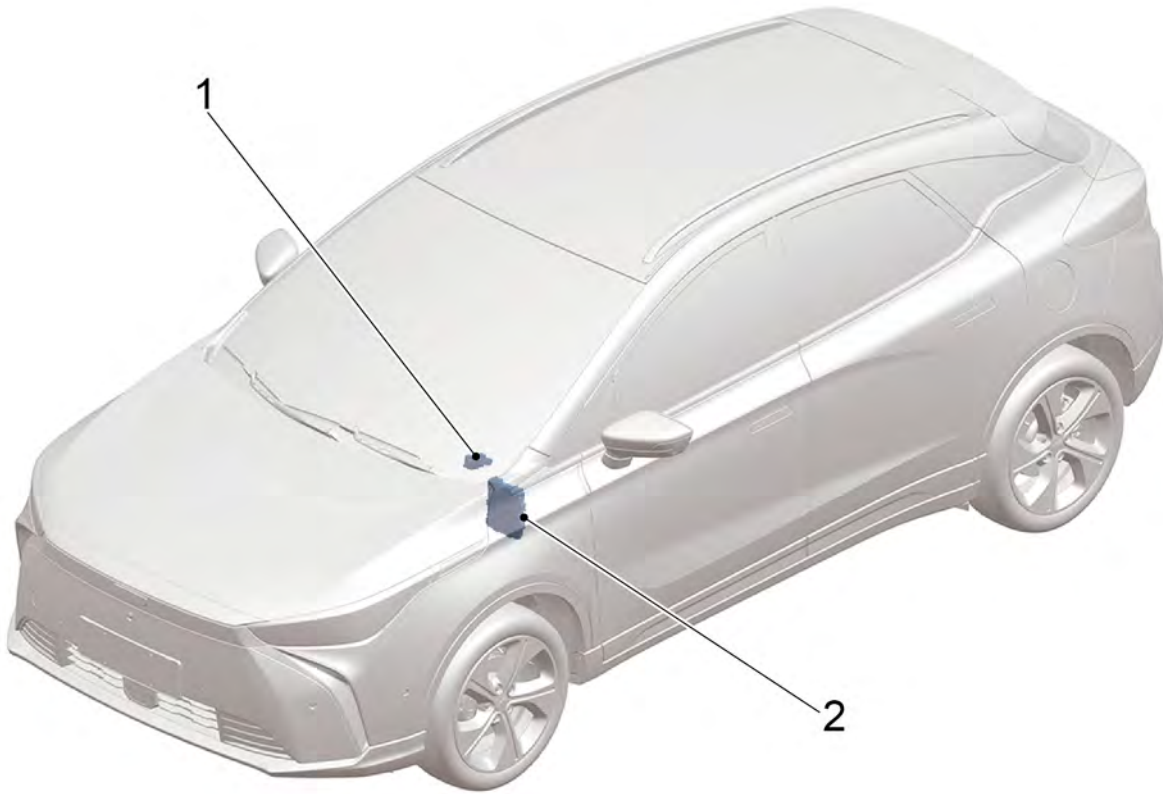
Window control

When the power mode is ON, the windows can be operated. When the power mode is ON, the window control is disabled when any of the following conditions is met:

- 1min after the power mode is OFF.
- The power mode is OFF and any door in the front row is opened within one minute.

10.2.3 Part position

10.2.3.1 Part Position



1. Body control module

2. Door handle control module

10.2.4 Diagnostic information and procedures

10.2.4.1 Diagnosis Description

Before diagnosing the fault of the vehicle control system. Refer to Description and operation. Understand and familiarize yourself with the working principle of the vehicle control system, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Any fault diagnosis of the vehicle control system should start with the visual inspection, which will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

10.2.4.2 Routine inspection

1. Check if there is any after-sales installation that may affect the normal operation of IBC, and confirm that IBC can operate normally.
2. Check system components that are easily accessible or visible to ensure that there are no obvious damages or conditions that might cause malfunctions.

10.2.4.3 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by IBC can be checked with no need to remove any part and component. Before diagnosing the related faults of the control system, the motion test is the prerequisite for troubleshooting, which can shorten the troubleshooting time.

Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- a. Multimedia settings from vehicle power supply to OFF gear.
- b. Connect the scan tool.
- c. The key activates the power supply of the vehicle to ON.
- d. Select “IBC”/“action test”.
- e. Refer to the following table and conduct active test.

Diagnostic scanner display item	Test components	Control range	Diagnosis Description
Exterior light control - position lamp	Position lamp	On/Off	Control the position lamp to turn on/off in accordance with the instructions of the diagnostic instrument
Exterior light control-low beam lamp	Low beam lamp	On/Off	Control low beam lamps to turn on/off in accordance with the instructions of the diagnostic instrument
Exterior light control-high beam lamp	High beam lamp	On/Off	Control the high beam to turn on/off in accordance with the instructions of the diagnostic instrument
Exterior light control-Daytime Running Lights	Daytime Running Lights	On/Off	Control the on/off of daytime running lights according to the instructions of the diagnostic instrument

Diagnostic scanner display item	Test components	Control range	Diagnosis Description
Exterior light control-turn signals	Turn signal lamp	On/Off	Control turn signal on/off in accordance with the instructions of the diagnostic instrument
Exterior light control-reverse lamp	Reversing lamp	On/Off	Control the turn on/off of reverse lamps in accordance with the instructions of the diagnostic instrument
Exterior light control - rear fog lamp	Rear fog lamp	On/Off	Control the on/off of rear fog lamp according to the instructions of the diagnostic instrument
Exterior light control-courtesy lamp	Courtesy lights	On/Off	Control the on/off of the courtesy lamp according to the instructions of the diagnostic instrument
Exterior light control-flowing lamp	water flowing lamp	On/Off	Control the turning on/off of flowing lights in accordance with the instructions of the diagnostic instrument
Exterior lamp control-brake lamp	Brake lamps	On/Off	Control the brake lamp to turn on/off in accordance with the instructions of the diagnostic instrument
Exterior lamp control-High-mounted stop light	High-mounted stop light	On/Off	Control the on/off of high-mounted stop light according to the instructions of the diagnostic instrument
Interior lamp	Interior lamp	On/Off	Control the on/off of interior lamps according to the instructions of the diagnostic instrument
Foot lamp	Foot lamp	On/Off	Control the foot lamp to turn on/off in accordance with the instructions of the diagnostic instrument
Backlight	Backlight	On/Off	According to the instructions of the diagnostic instrument, the backlight of the control switch is turned on/off
Power saving relay	Power saving relay	On/Off	Control to turn on/off the power-saving relay in accordance with the instructions of the diagnostic instrument
Wiper/washer control-front washing	Washer motor	On/Off	Control the position lamp to turn on/off in accordance with the instructions of the diagnostic instrument
Wiper/washer control-front wiper high speed	Front wiper- high speed	On/Off	Control the high-speed opening/closing of front wipers in accordance with the instructions of the diagnostic instrument

Diagnostic scanner display item	Test components	Control range	Diagnosis Description
Wiper/washer control-front wiper low speed	Front wiper- low speed	On/Off	Control the low-speed opening/closing of front wipers in accordance with the instructions of the diagnostic instrument
Wiper/washer control-rear wiper	Rear wiper motor	On/Off	Control the opening/closing of rear wipers according to the instructions of the diagnostic instrument
Wiper/washer control-rear washing	Washer motor	On/Off	Control the position lamp to turn on/off in accordance with the instructions of the diagnostic instrument
Warning control-horn	Anti-theft horn	On/Off	Control the horn to turn on/off in accordance with the instructions of the diagnostic instrument
Trunk opening	Trunk lock	On/Off	Control the opening/closing of the trunk according to the instructions of the diagnostic instrument
Central Door Lock	Central Door Lock	Lock/unlock	Control the central control locking/unlocking according to the instructions of the diagnostic instrument
Child safety lock	Child safety lock	Lock/unlock	Control child locking/unlocking according to the instructions of the diagnostic instrument
Electronic glove box	Electronic glove box	Lock/unlock	Control the locking/unlocking of electronic glove box according to the instructions of the diagnostic instrument
Electronic door handle	Electronic door handle	Folding/unfolding	Control the folding/unfolding of the electronic door handle in accordance with the instructions of the diagnostic instrument
Driver side door	Driver side door	Lock/unlock	Control the locking/unlocking of the driver side door according to the instructions of the diagnostic instrument
Defrosting output control-rear defroster	Rear defroster	On/Off	Control the opening/closing of rear defroster according to the instructions of the diagnostic instrument
Defrosting output control-front defroster	Front defroster	On/Off	Control the opening/closing of front defroster according to the instructions of the diagnostic instrument
Rearview mirror folding control	Rearview mirror folding motor	Fold/Open	Control the folding/opening of rearview mirrors in accordance with the instructions of the diagnostic instrument

Diagnostic scanner display item	Test components	Control range	Diagnosis Description
Indicator light control-EPB indicator light	EPB indicator lamp	On/Off	According to the instructions of the diagnostic instrument, control the EPB indicator light to turn on/off
Indicator light control-Anti-theft alarm indicator light	Anti-theft alarm indicator light	On/Off	Control the on/off of anti-theft alarm indicator according to the instructions of the diagnostic instrument
Economic mode	Economic mode	On/Off	Control to turn on/off the economic mode in accordance with the instructions of the diagnostic instrument
Sport mode	Sport mode	On/Off	Control the on/off of the sport mode according to the instructions of the diagnostic instrument
Comfort Mode	Comfort Mode	On/Off	Control the on/off of comfort mode according to the instructions of the diagnostic instrument
Indicator light control-Hazard warning indicator	Hazard warning indicator	On/Off	Control the hazard warning indicator to turn on/off in accordance with the instructions of the diagnostic instrument
Indicator light control-Door lock status indicator lamp	Door lock status indicator lamp	On/Off	According to the instructions of the diagnostic instrument, control the door lock status indicator light to turn on/off
Indicator light control-Window disabling switch indicator lamp	Window disabling switch indicator lamp	On/Off	Control the on/off of disabling switch indicator lamp of vehicle windows according to the instructions of the diagnostic apparatus
Indicator light control-Rear defrosting indicator lamp	Rear defrosting indicator lamp	On/Off	Control the on/off of rear defrosting indicator according to the instructions of the diagnostic instrument
Indicator light control-child lock indicator lamp	Child lock indicator lamp	On/Off	Control the child lock indicator to turn on/off in accordance with the instructions of the diagnostic instrument
Wireless charging	Wireless charging module	On/Off	Control the wireless charging on/off in accordance with the instructions of the diagnostic instrument
Start output control-START_Relay_HSD start output (high side)	START_Relay_HSD starting output (high side)	On/Off	Control START_Relay_HSD start output (high side) on/off according to the instructions of the diagnostic instrument
Startup output control-ACC_Relay	ACC_Relay	On/Off	Control the ACC_Relay on/off according to the instructions of the diagnostic instrument

Diagnostic scanner display item	Test components	Control range	Diagnosis Description
Startup output control- KL_15_1_Relay	KL_15_1_Relay	On/Off	Control KL_15_1_Relay on/off according to the instructions of the diagnostic instrument
Startup output control- KL_15_2_Relay	KL_15_2_Relay	On/Off	Control KL_15_2_Relay on/off according to the instructions of the diagnostic instrument

10.2.4.4 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

10.2.4.5 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

10.2.4.6 Data stream list

Serial No.	DID description	Normal value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Lane departure warning switch	Activated/unactivated	/

Serial No.	DID description	Normal value range	Unit
4	Cruise control switch	Switchless activation/cruise main switch/speed limit switch/cruise cancel switch/distance increase switch/distance reduction switch/cruise (main) switch fault	/
5	Exterior light input switch state	Left turn switch: Activated/unactivated Right turn switch: Activated/unactivated Hazard warning switch: Position lamp switch: Activated/unactivated Low beam lamps switch: Activated/unactivated Automatic lamp switch: Activated/unactivated Left turn feedback: Activated/unactivated Right turn feedback: Activated/unactivated Brake lamp switch: Activated/unactivated Front fog lamp switch: Activated/unactivated Rear fog lamp switch: Activated/unactivated High beam lamp switch: Activated/unactivated Light sensor signal: activated/unactivated Reverse gear switch: Activated/unactivated	/

Serial No.	DID description	Normal value range	Unit
6	Switch status of four doors and two covers	Left front door switch: open/ close Right front door switch: open/ close Left rear door switch: open/ close Right rear door switch: open/ close Trunk opening switch: open/ close Bonnet opening switch: on/off	/
7	Door lock system input switch status	Central locking switch: activated/unactivated Central lock unlock switch: activated/unactivated Driver door mechanical lock switch: activated/not activated (inner) trunk release switch: activated/not activated Exterior trunk release switch: activated/not activated Driver door lock status: activated/unactivated Other than the driver's locking status, the other three doors are activated/ unactivated. Driver side dead lock unlocking status: activated/ unactivated	/
8	Front wiper/cleaning input and output status	Front wiper cleaning switch: activated/not activated Front wiper automatic switch: activated/not activated Front wiper return switch: activated/not activated Front wiper high-speed switch: activated/not activated Front wiper low-speed switch: activated/not activated	/

Serial No.	DID description	Normal value range	Unit
9	Front wiper automatic gear sensitivity	Sensitivity 1/sensitivity 2/ sensitivity 3/sensitivity 4/ sensitivity 5/sensitivity 6/ sensitivity 7/error	/
10	Defrosting input status	Rear defrosting switch: Activated/unactivated Front defrosting switch: Activated/unactivated	/
11	Rear wiper/cleaning input and output status	Rear washing switch: Activated/unactivated Rear wiper intermittent switch: Activated/unactivated Rear wiper constant open switch: activated/unactivated Rear wiper low-speed switch: activated/unactivated	/
12	Rearview folding switch	Activated/unactivated	/
13	Door window regulator motor switch status	Front left glass up switch: Activated/unactivated Front left glass down switch: Activated/unactivated Front right glass up switch: Activated/unactivated Front right glass down switch: Activated/unactivated Rear left glass up switch: Activated/unactivated Rear left glass down switch: Activated/unactivated Rear right glass up switch: Activated/unactivated Rear right glass down switch: Activated/unactivated	/
14	Key inserting status	Key out/key insertion	/
15	Ignition state	Ignition is not activated/ Ignition is activated	/
16	Remote key	/	/
17	Ambient light sensor signal	Daytime/night	/

Serial No.	DID description	Normal value range	Unit
18	Locking source history	Record the last locking source/record the second last locking source/record the third last locking source/record the fourth last locking source Remote lock/key lock/central lock/automatic vehicle speed lock/automatic re-locking/keyless locking	/
19	Drive mode switch	Economic mode switch: activated/unactivated Sport mode switch: activated/unactivated Electric mode: Activated/unactivated Mode saving switch: activated/unactivated	/
20	Sunshade switch	Idle status/manual on/off/stop action	/

Serial No.	DID description	Normal value range	Unit
21	Door window regulator motor switch status	Driver side glass switch: inactivate/manual lower/ automatic lower/manual rise/ automatic rise/error Door passenger side glass switch: inactivated/manual lower/automatic lower/ manual rise/automatic rise/ error Left rear glass switch of the driver's door: inactivated/ manual lower/automatic lower/manual rise/automatic rise/error Right rear glass switch of the driver's door: inactivated/ manual lower/automatic lower/manual rise/automatic rise/error Passenger side glass switch: inactivate/manual lower/ automatic lower/manual rise/ automatic rise/error Left rear glass switch: inactivate/manual lower/ automatic lower/manual rise/ automatic rise/error Right rear glass switch: inactivate/manual lower/ automatic lower/manual rise/ automatic rise/error Passenger side window disabling switch: release/ press Permissible identifier of vehicle window: on/off	/
22	LED turn signal lamp feedback	Left front turn signal feedback: activated/not activated Right front turn signal feedback: activated/not activated Left rear turn signal	/

Serial No.	DID description	Normal value range	Unit
		feedback : activated/not activated Right rear turn signal feedback : activated/not activated	
23	Collision event counter	Hardwire collision signal counter/CAN bus collision signal counter	/
24	Central lock switch status	Driver side window switch: idle/auto up pressed/manual up pressed/manual down pressed/automatic down pressed/window lifting disabling switch is valid/window lifting disabling switch is invalid Passenger side window switch: idle/auto up pressed/manual up pressed/manual down pressed/automatic down pressed/window lifting disabling switch is valid/window lifting disabling switch is invalid Left rear window switch: idle/auto up pressed/manual up pressed/manual down pressed/auto down Right rear window switch: idle/auto up pressed/manual up pressed/manual down pressed/auto down	/
25	Cruise function input status	Neutral gear/On/OFF/CALCEL/LIM/Distance +/Distance-/ERROR	/

Serial No.	DID description	Normal value range	Unit
26	Ignition state hard wire feedback	ACC relay feedback: short to ground/press/not pressed/ short to power supply IGN1 relay feedback: short to ground/press/not pressed/ short to power supply START relay feedback: short to ground/press/not pressed/ short to power supply	/
27	Clutch switch status	Clutch bottom switch/clutch top switch/P-gear switch/ short to power supply	/
28	Child Lock status	Locking/Unlocking	/
29	Double flash reasons	Collision unlocking/hazard warning lamp/anti-theft alarm/emergency brake alarm	/
30	N gear sensor signal	Not in N gear/ in N gear/error	/
31	Hard wire collision signal status	No collision/collision/no connection or invalid signal	/
32	Factory mode	after sales mode/transport mode/production line mode	/
33	ECO/SPORT driving mode switch.	/	/
34	TPMS hardware version number (reserve)	/	/
35	TPMS software version number (reserve)	/	/
36	Electronic child safety lock feedback	Locking/Unlocking	/
37	FL handle inching switch	FL handle inching switch 1 status: not completely out FL handle inching switch 2 status: not completely in	/
38	Power tailgate switch	No operation/pull-up/press	/

Serial No.	DID description	Normal value range	Unit
39	Unlocking source history	Remote key locking/ mechanical key locking/ central control locking/ automatic vehicle speed locking/automatic re-locking/ PE locking/collision unlocking/remote key unlocking/central control unlocking/stalling unlocking/ PE unlocking/automatic unlocking within the vehicle by key/Tbox locking/Tbox unlocking	/
40	Exterior light input switch state 2	Activated/unactivated	/
41	Driver's seat switch status	Activated/unactivated	/
42	Unlocking source history	Remote key locking/ mechanical key locking/ central control locking/ automatic vehicle speed locking/automatic re-locking/ PE locking/PLG locking/ collision unlocking/remote key unlocking/mechanical key unlocking/central control unlocking/flameout unlocking/PE unlocking/key error automatic unlocking inside the vehicle/RPA external locking/RPA internal locking/Tbox locking/Tbox unlock/leave locking/time out locking/approaching unlocking/parking automatic unlocking	/

Serial No.	DID description	Normal value range	Unit
43	Anti-theft alarm trigger source	The protected driver door is opened/the protected co-driver door is opened/the protected left rear door is opened/the protected right rear door is opened/the protected engine hood is opened/the protected trunk is opened/the ignition status reaches KL15 and no legal key is detected within the next 1.5 seconds	/
44	Tire pressure system matching state	Left front tire pressure sensor matching status: matched/unmatched Right front tire pressure sensor matching status: matched/unmatched Right rear tire pressure sensor matching status: matched/unmatched Left rear tire pressure sensor matching status: matched/unmatched	/
45	Tire pressure sensor ID	Front left tire pressure sensor ID/front right tire pressure sensor ID/rear right tire pressure sensor ID/rear left tire pressure sensor ID	/
46	Pressure values of four tires	0-348.742	Kpa
47	Temperature values of four tires	-40-120	°C
48	TPMS alarm source history	Low pressure alarm/high pressure alarm/quick leakage/sensor loss/sensor fault/TPMS battery voltage is low	/

Serial No.	DID description	Normal value range	Unit
49	Low tire pressure alarm record	Front left tire ID/front left tire pressure/front left tire temperature/front right tire ID/front right tire pressure/front right tire temperature/rear left tire pressure/rear left tire temperature/rear right tire ID/rear right tire pressure/rear right tire temperature	/
50	Initial tire pressure and temperature	Front left tire pressure/front left tire temperature/front right tire pressure/front right tire temperature/rear left tire pressure/rear right tire pressure/rear right tire temperature	/
51	Number of IMMO/UID keys that have been learned	No learning key/1 key learned/2 keys learned/3 keys learned	/
52	Key writing state	Key not written/key has been written	/
53	All IDEs in the BCM	/	/
54	RF receiver IDE	/	/
55	BCM Identification	/	/
56	Door handle switch input	Driver side door handle unlocking valid: open/close Driver side door handle locking valid: open/close Front passenger side door handle unlocking valid: open/close Front passenger side door handle locking valid: open/close	/
57	Wheel speed signal	/	km/h
58	Current IMMO antenna reading key IDE	/	/
59	Power supply mode and start control	00~FF	/
60	Logical input state	/	/
61	PEPS learning state	0-255	/
62	Analog input and output state	/	/

Serial No.	DID description	Normal value range	Unit
63	Logical output status	/	/
64	Wireless charging prohibition line output status	0-255	/
65	Parameter configuration for active entry	/	/
66	Parameter configuration for passive entry	/	/
67	Vehicle input configuration	0-255	/
68	Parameter configuration for remote-control function	/	/
69	IGN1 internal output fault diagnosis information	/	/
70	IGN1 external relay output fault diagnosis information	/	/
71	IGN2 internal output fault diagnosis information	/	/
72	IGN2 external relay output fault diagnosis information	/	/
73	ACC internal output fault diagnosis information	/	/
74	ACC external relay output fault diagnosis information	/	/
75	Internal output fault diagnosis information of START	/	/
76	Routine diagnostic information of RF receiver	/	/
77	RF receiver operating mode	/	/
78	Internal data calibration version information	/	/
79	Record the trunkreleased trigger source	/	/
80	Record the remote trunk command and the external trunk switch trigger source	/	/

10.2.4.7 List of Diagnostic Trouble Codes (DTC)

IBC module

Diagnostic Trouble Code	Description	Fault location/elimination method
U007300	CAN bus switch-off fault	Refer to IBC Communication Failure
U012187	Communication with ABS/ESC is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U012687	Communication with steering angle sensor module is lost	
U042881	Invalid data received from TCM module	
U013187	Communication with power-assisted steering module is lost	
U015187	Communication with airbag control unit is lost	
U015587	Communication with instrument panel control module is lost	
U015687	Communication with multi-media module is lost	
U016487	Communication with air-conditioning module is lost	
U019887	Communication with TBOX module is lost	
U019987	Communication with DDM is lost	
U020087	Communication with PDM is lost	
U022287	Communication with FL window anti-clip module is lost	
U022387	Communication with FR window anti-clip module is lost	
U022487	Communication with RL window anti-clip module is lost	
U022587	Communication with RR window anti-clip module is lost	
U023187	Communication with rain and light sensor is lost	
U041681	Invalid data received from the electronic stability control module (wrong counter or checksum)	
U045281	Invalid data received from the airbag module (wrong counter or checksum)	
U111187	Communication with driving mode switch module is lost	
U111487	Communication with vehicle control module is lost	
U111587	Communication with OBC is lost	
U120387	Communication with the front camera module is lost.	

Diagnostic Trouble Code	Description	Fault location/elimination method	
U140481	Invalid data received from the vehicle control module (wrong counter or checksum)		
U143381	Invalid data received from the front camera module (wrong counter or checksum)		
U112287	Communication with VCU_CSCAN is lost		
U018087	Communication with ADB is lost		
U013387	Communication with Roll is lost		
U030E87	Communication with WMM is lost		
U013487	Communication with FMDM is lost		
U017087	Communication with RSRS_R is lost		
U011287	Communication with BMSH is lost		
U015987	Communication with parking assist system is lost		
U045A81	Invalid data received from the parking assist system module (wrong counter or checksum)		
U110000	LIN1 communication fault		Refer to IBC Module LIN1 Communication Failure
B109C87	Communication with the concealed door handle controller is lost		Refer to IBC Module LIN2 Communication Failure
U110100	LIN2 communication fault		
U300616	ECU supply voltage low	Refer to IBC Power Failure	
U300617	ECU supply voltage high		
B103629	Hard wire collision PWM signal is invalid	Refer to Hard Wire Collision PWM Signal Is Invalid	
B101109	General faults of light sensor	Refer to Ambient Light and Sunlight Sensor Circuit Failure	
B101796	Sunlight sensor fault		
B101896	Light sensor hardware fault		
B128D00	WPC control output fault	Refer to Internal Faults of IBC	
B12AA53	Anti-theft authentication failed		
B109D98	Music rhythm control circuit is overtemperature		

Door handle control module

Diagnostic Trouble Code	Description	Fault location/elimination method
B108F01	Left front door handle motor fault	Refer to Concealed Door Handle Motor Fault
B109201	FR door handle motor fault	
B109501	Rear left door handle motor fault	

Diagnostic Trouble Code	Description	Fault location/elimination method
B109801	Fault of RR door handle motor	
B109B09	Concealed door handle controller LIN communication error	Refer to Door Handle Control Module LIN Communication Failure
B109B16	Concealed door handle controller undervoltage	Refer to Power Supply Failure of Door Handle Control Module
B109B17	Concealed door handle controller overvoltage	
B109B04	Internal circuit failure of the hidden door handle controller	Refer to Door Hand Control Module Interior Failure

10.2.4.8 IBC communication fault

1. DTC description:

Diagnostic Trouble Code	Trouble description
U007300	CAN bus switch-off fault
U012187	Communication with ABS/ESC is lost
U012687	Communication with steering angle sensor module is lost
U042881	Invalid data received from TCM module
U013187	Communication with power-assisted steering module is lost
U015187	Communication with airbag control unit is lost
U015587	Communication with instrument panel control module is lost
U015687	Communication with multi-media module is lost
U016487	Communication with air-conditioning module is lost
U019887	Communication with TBOX module is lost
U019987	Communication with DDM is lost
U020087	Communication with PDM is lost
U022287	Communication with FL window anti-clip module is lost
U022387	Communication with FR window anti-clip module is lost
U022487	Communication with RL window anti-clip module is lost
U022587	Communication with RR window anti-clip module is lost
U023187	Communication with rain and light sensor is lost
U041681	Invalid data received from the electronic stability control module (wrong counter or checksum)
U045281	Invalid data received from the airbag module (wrong counter or checksum)
U111187	Communication with driving mode switch module is lost
U111487	Communication with vehicle control module is lost
U111587	Communication with OBC is lost
U120387	Communication with the front camera module is lost.
U140481	Invalid data received from the vehicle control module (wrong counter or checksum)
U143381	Invalid data received from the front camera module (wrong counter or checksum)
U023587	Communication with FRS is lost
U112287	Communication with VCU_CSCAN is lost

Diagnostic Trouble Code	Trouble description
U018087	Communication with ADB is lost
U013387	Communication with Roll is lost
U030E87	Communication with WMM is lost
U013487	Communication with FMDM is lost
U017087	Communication with RSRS_R is lost
U011287	Communication with BMSH is lost
B109C87	Communication with the concealed door handle controller is lost
U015987	Communication with parking assist system is lost
U045A81	Invalid data received from the parking assist system module (wrong counter or checksum)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	Detected CAN bus disconnection	IBC supply voltage is within the range of 9V-16V	1. Circuit 2. IBC
U012187	ESC(ID=0x125) message is lost for 250 milliseconds	1. IBC supply voltage is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. No bus off is detected, more than 1000ms after the last bus disconnection recovery 3. The ignition status is in ON mode and the condition for communication enabling is met.	
U012687	Messages from SAS lost 250ms (0x0E0)	1. The ignition status is in ON mode and the condition for communication enabling is met. 2. IBC Power supply The supply voltage is within the range of 9-16V 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery	
U042881	Message checksum error occurs 3 times continuously or the activity counter keeps the same value 3 times continuously (ID: 0x281)		
U013187	Messages from EPS lost 500ms (0x2F7)		
U015187	Messages from ACU lost 1s (0x380)		
U015587	Messages from IPK lost 500ms (0x26D)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	Messages from MMI lost 500ms (0x2A1)		
U016487	Messages from AC lost 500ms (0x2F1)		
U019887	Messages from TBOX is lost for 500ms (0x292)	<ol style="list-style-type: none"> The ignition state is IGN ON (PhyTccStsBody==ON), which meets the TdiagEnable condition; 2. IBC power supply voltage is within the range of 9-16V No bus off is detected, more than 1000ms after the last bus disconnection recovery. cfgNodeBSD/RSRSoption==1 (F110, byte 1 bit 6==1) 	
U019987	DDM (ID=0x139) message lost for 250 milliseconds	<ol style="list-style-type: none"> IBC supply voltage is in the range of 9-16V (see the definition of communication diagnostic voltage for details) The ignition status should be in ON mode and should meet the condition of communication enabling No bus off is detected, more than 1000ms after the last bus disconnection recovery cfg node DCU option=== 1 	
U020087	PDM (ID=0x286) message is lost for 500ms		
U022287	No message is received from FL APWL for more than 500 milliseconds (0x10)	<ol style="list-style-type: none"> LIN1 is in the wake-up state and meets the communication enabling conditions 	
U022387	No message is received from FR APWL for more than 500 milliseconds (0x11)	<ol style="list-style-type: none"> IBC Power supply The supply voltage is within the range of 9-16V 	
U022487	No message is received from RL APWL for more than 500 milliseconds (0x12)	<ol style="list-style-type: none"> CfgAPWL option= 00 	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U022587	No message is received from RR APWL for more than 500 milliseconds (0x13)		
U023187	No message received from RLS for more than 500ms (0x15 or 0x16)	1. LIN1 is in the wake-up state and meets the communication enabling conditions 2. IBC Power supply The supply voltage is within the range of 9-16V 3. CfgAPWL option==00	
U041681	Message checksum error occurs 3 times continuously or the activity counter keeps the same value 3 times continuously, or the difference between the actual received survival counter and the previously received survival counter is greater than 3 (ID:0x125).	1. The ignition state is IGN ON (PhyTccStsBody==ON), which meets the TdiagEnable condition; 2. IBC power supply voltage is within the range of 9-16V	
U045281	Message checksum error occurs 3 times continuously or the activity counter keeps the same value 3 times continuously, or the difference between the actual received survival counter and the previously received survival counter is greater than 3 (ID:0x380).	1. The ignition status should be IGN ON (PhyTccStsBody==ON) and should meet the TdiagEnable condition 2. The IBC power supply voltage range is 9-16V 3. cfgNodeACUOption==1 (F110byte0 bit 4==1)	

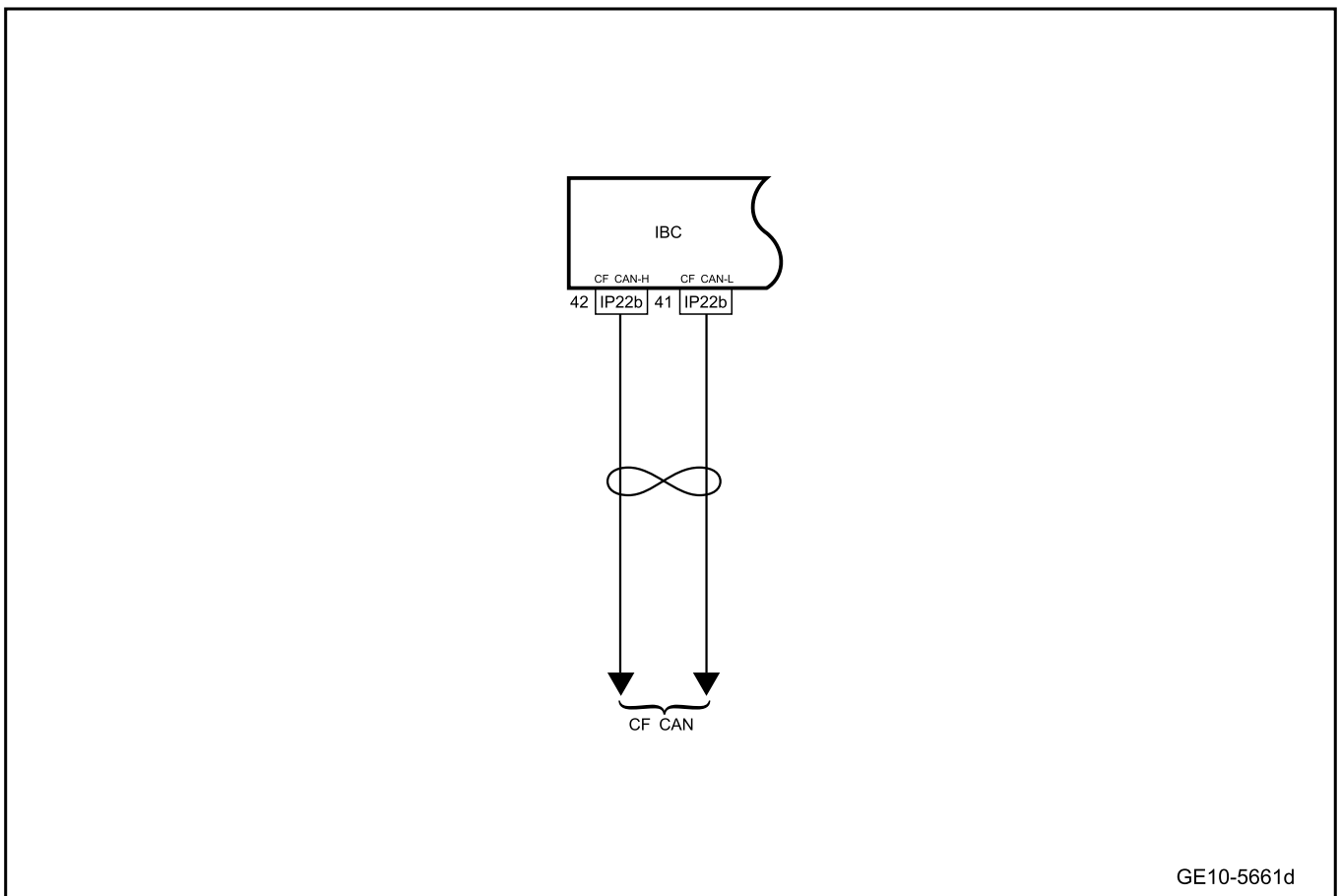
DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111187	Messages from DMS lost 500ms (0x228)	1. The ignition status is in ON mode and the condition for communication enabling is met. 2. IBC Power supply The supply voltage is within the range of 9-16V 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery	
U111487	Messages from VCU lost 250ms (0x162)		
U111587	500ms OBC CAN message 0x220 detected as lost	1. IBC supply voltage is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. The ignition status should be in ON mode and should meet the condition of communication enabling 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. cfg node DCU option=== 1	
U120387	Message from "FCS" is lost for 500ms (0x2e0)	1. The ignition status is in ON mode and the condition for communication enabling is met. 2. IBC Power supply The supply voltage is within the range of 9-16V 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140481	Message checksum error occurs 3 times continuously or the activity counter keeps the same value 3 times continuously, or the difference between the actual received survival counter and the previously received survival counter is greater than 3 (0x162).	1. The ignition status should be IGN ON (PhyTccStsBody==ON) and should meet the TdiagEnable condition 2. The IBC power supply voltage range is 9-16V 3. cfgNodeVCUOption==1 (F110byte 3 bit 5==1)	
U143381	Message checksum error occurs 3 times continuously or the activity counter keeps the same value 3 times continuously, or the difference between the actual received survival counter and the previously received survival counter is greater than 3 (0x2E0).	1. The ignition status should be IGN ON (PhyTccStsBody==ON) and should meet the TdiagEnable condition 2. The IBC power supply voltage range is 9-16V 3. cfgNodeFCSOption==1 (F110byte 2 bit 1==1)	
U112287	Loss of vcu-cscan (id = 0x165) message for 250ms		
U018087	500ms ADB(ID=0x2CD) message is lost for 500ms		
U013387	Loss of Roll(ID=0x17) message lasts for 250ms	1. LIN2 wakes up and meets the communication enabling conditions 2. IBC Power supply The supply voltage is within the range of 9-16V 3. CfgSunroof option== 10	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U030E87	WMM(ID=0x25) message is lost for 250 milliseconds	1. IBC supply voltage is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. The ignition status should be in ON mode and should meet the condition of communication enabling 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4.cfg node DCU option=== 1	
U013487	FMDM (ID=0x20) message is lost for 500 milliseconds	1. The power supply voltage of the host is within the range of 9-16V. 2. Meet the TDiag enable condition 3. cfgFMDM option is != 0 x0	
U017087	RSRS (ID=0x2E4) message is lost for 5T	1.IBC Power supply The supply voltage is within the range of 9-16V 2. The ignition status is IGNON and should meet the condition of Tdiag enabling 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4.cfg node BSD/RSRS option== 1 (F110, byte 5 bit 7 == 1)	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011287	Messages from BMSH is lost for 250ms (0x17B)	1. IBC Power supply The supply voltage is within the range of 9-16V 2. No bus off is detected, more than 1000ms after the last bus disconnection recovery 3. cfg node BMSH option== 1 (F110 byte 3 bit 3 == 1) 4. cfg node VCU option== 1 (F110, byte 3 bit 5 == 1)	
B109C87	DHC (ID=0x18) message is lost for 500 milliseconds	1. LIN2 is in the wake-up state and meets the Tdiag Enable condition 2. The power supply voltage range of IBC is 9-16V 3. cfg node hidden door handle option== 1 (F101, byte 14, digit 1 == 1)	
U015987	PAS (ID=0x291) message is lost for 500 milliseconds	1. IBC supply voltage is within the range of 9-16V (see the definition of communication diagnostic voltage for details). 2. The ignition status is in ON mode and the condition for communication enabling is met 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. cfgRpa option=== 1	
U045A81	Message checksum error occurs 3 times continuously or the activity counter keeps the same value 3 times continuously(0x291)	1. The ignition status is in ON mode and the condition for communication enabling is met 2. The power supply voltage range of IBC is 9-16V 3. cfgRpa option=== 1	

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the CF-CAN network integrity.
--------	-------------------------------------

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm that the CF-CAN network is functioning properly.

No

Check or repair CF-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 5	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

10.2.4.9 IBC power supply fault

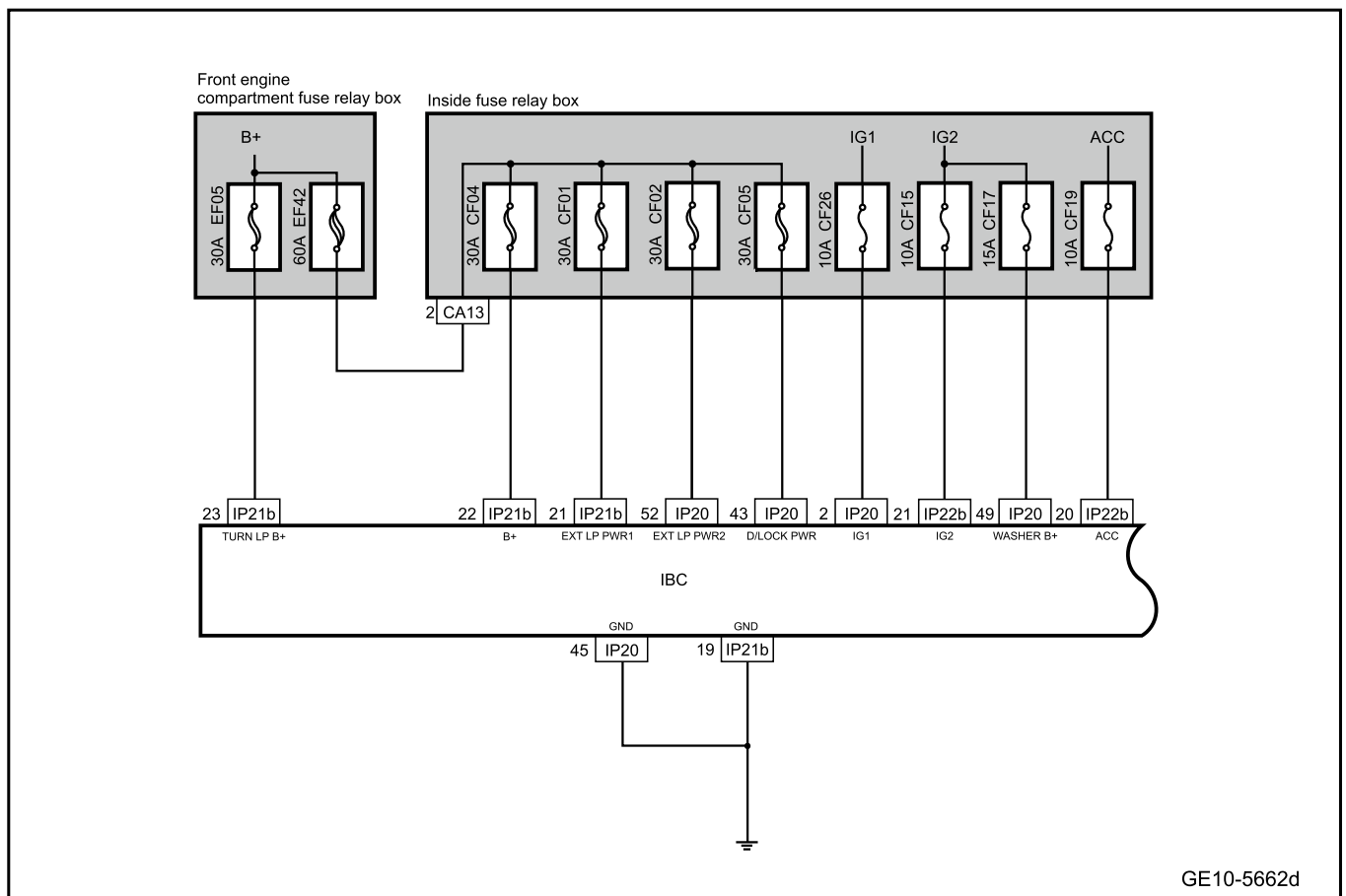
1. DTC description:

Diagnostic Trouble Code	Trouble description
U300616	ECU supply voltage low
U300617	ECU supply voltage high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measured voltage < 8.5V (± 0.5V) for 500ms	1. MCU works	1. Circuit 2. Fuse
U300617	Measured voltage > 16.5 V (± 0.5 V) for 500 milliseconds	2. MCU works	3.IBC

3. Schematic circuit diagram:



GE10-5662d

4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble! The diagnosis methods of the above fault codes are similar.

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 4.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
 B. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
 B. Use a multimeter to measure the battery voltage.
 Standard voltage: 9-16V
 C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the fuses of indoor fuse relay box and check whether the fuses CF01, CF02, CF04 and CF05 are blown.

Rated capacity of fuse: 30A
- C. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF17 is blown out.

Rated capacity of fuse: 15A
- D. Unplug the indoor fuse relay box and check whether the fuses CF15, CF19, CF26 are blown.

Rated capacity of fuse: 10A
- E. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF05 is blown out.

Rated capacity of fuse: 30A
- F. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF42 is blown out.

Rated capacity of fuse: 60A

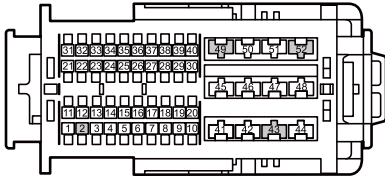
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

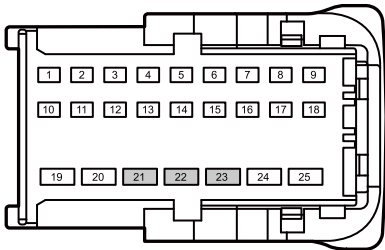
Step 5	Check the power supply circuit of IBC
--------	---------------------------------------

IP20 body control module harness connector 1



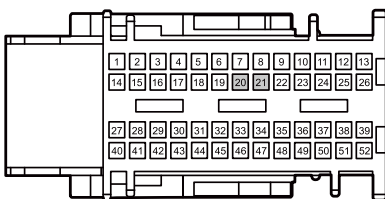
GE10-5860d

IP21b body control module harness connector 2



GE10-5861d

IP22b body control module harness connector 3

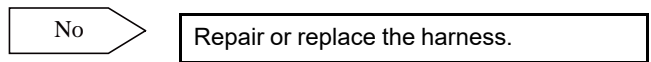


GE10-5862d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connectors IP20, IP21b and IP22b.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	Vehicle body is grounded.	Standard voltage: 11-14V
IP20(43)		
IP20(49)		
IP20(52)		
IP21b(21)		
IP21b(22)		
IP21b(23)		
IP22b(20)		
IP22b(21)		

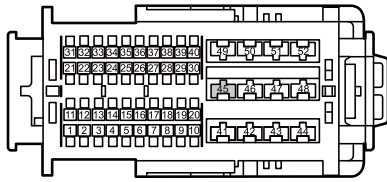
- E. Confirm whether the measured value meets the standard.



Yes

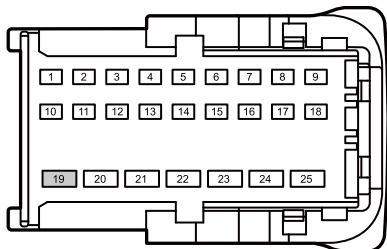
Step 6 Check the IBC ground circuit.

IP20 body control module harness connector 1



GE10-5863d

IP21b body control module harness connector 2



GE10-5864d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connectors IP20 and IP21b.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(45)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP21b(19)		

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 8 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 | Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

10.2.4.10 IBC module LIN1 communication failure

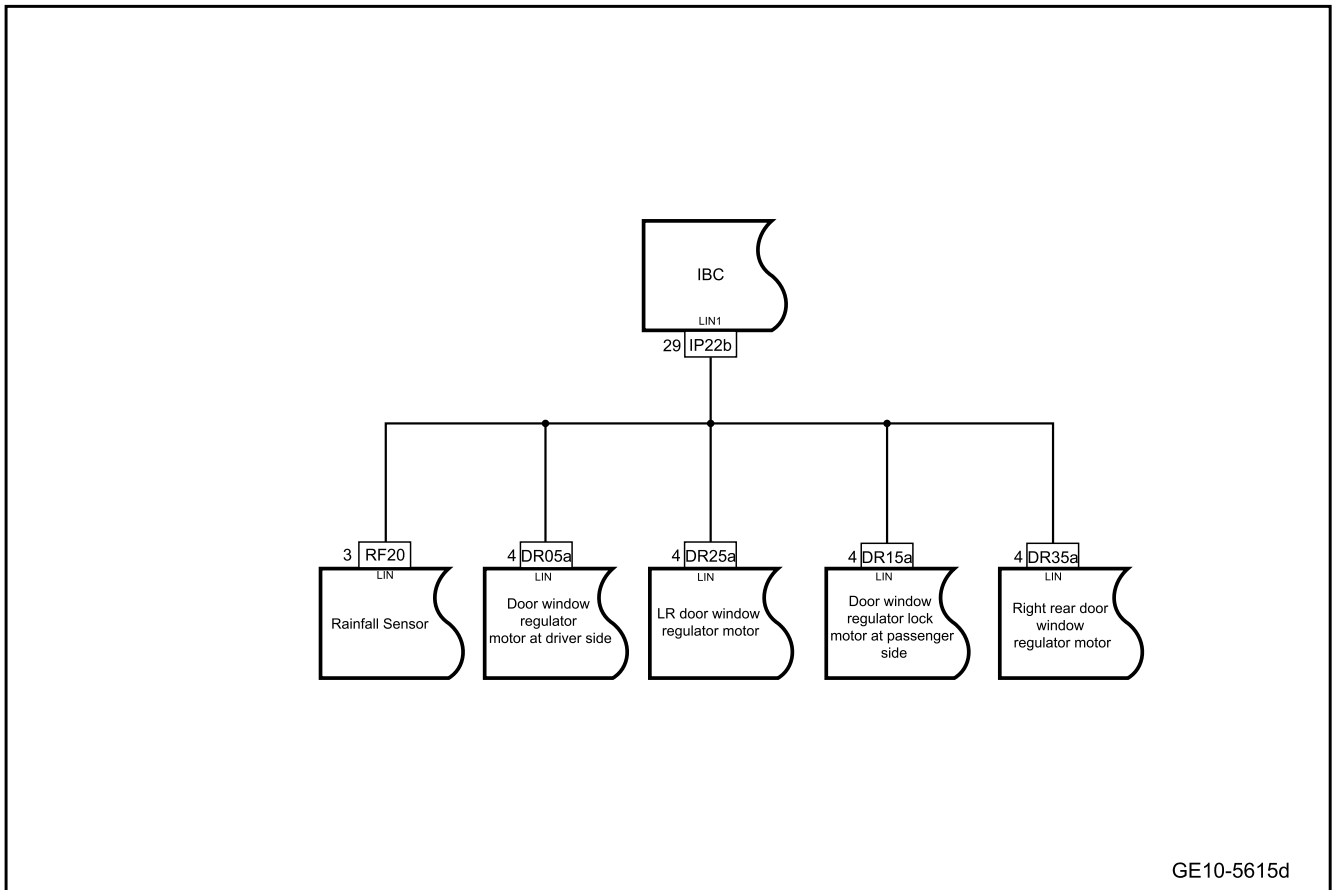
1. DTC description:

Diagnostic Trouble Code	Trouble description
U110000	LIN1 communication fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U110000	Main request transmission failed. Lin-1 is used for 4S	1. LIN1 wakeup 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Rain sensor 3. Door window regulator motor at driver side 4. Replace the left rear door window regulator motor 5. Door window regulator motor at front passenger side 6. Replace the right rear window glass regulator motor 7. IBC

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the rain sensor, driver side door window regulator motor, the left rear door window regulator motor, front passenger side door window regulator motor, right rear door window regulator motor and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

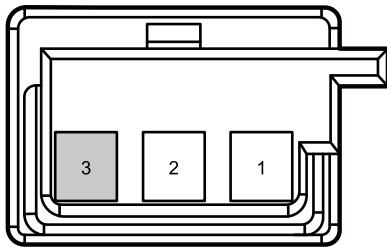
No Repair or replace the faulty part.

Yes

Step 3

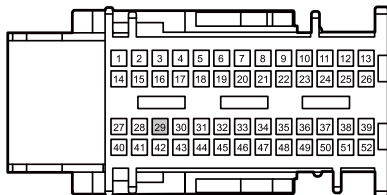
Check whether the LIN1 communication line of IBC module is open.

RF20 rainfall sensor harness connector



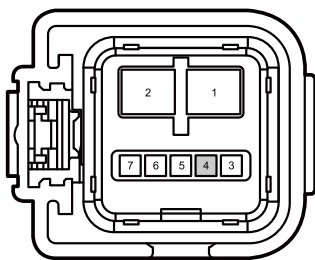
GE10-5865d

IP22b body control module harness connector 3



GE10-5866d

DR05a driver's side window regulator motor harness connector



GE10-5867d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rain sensor harness connector RF20.
- C. Disconnect the harness connector DR05a of the window regulator motor of the driver side door.
- D. Disconnect the harness connector DR25a of the left rear window regulator motor.
- E. Disconnect the harness connector DR15a of the front passenger side door window regulator motor.
- F. Disconnect the harness connector DR35a of the right rear window regulator motor.
- G. Disconnect the IBC harness connector IP22b.
- H. Use a multimeter to measure each terminal according to the table below:

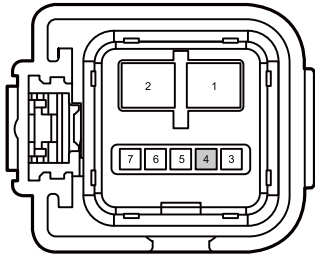
Measure terminal 1	Measure terminal 2	Standard value
RF20(3)	IP22b(29)	Standard resistance: less than 1Ω
DR05a(4)		
DR25a(4)		
DR15a(4)		
DR35a(4)		

- I. Confirm whether the measured value meets the standard.

No

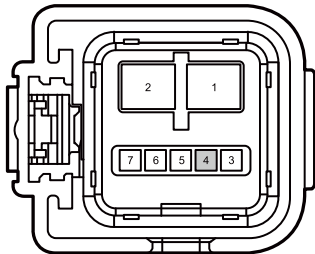
Repair or replace the harness.

DR25a RL door window regulator motor harness connector



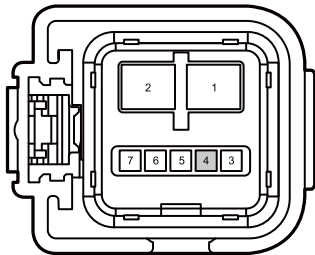
GE10-5868d

DR15d front passenger' side door window regulator motor harness connector



GE10-5869d

DR35a RR door window regulator motor harness connector

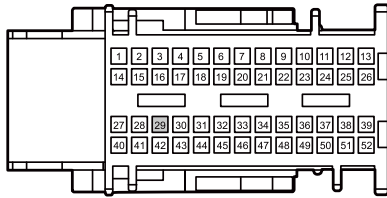


GE10-5870d

Yes

Step 4	Check whether the LIN1 communication line of IBC module is short to power supply.
--------	---

IP22b body control module harness connector 3



GE10-5871d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rain sensor harness connector RF20.
- C. Disconnect the harness connector DR05a of the window regulator motor of the driver side door.
- D. Disconnect the harness connector DR25a of the left rear window regulator motor.
- E. Disconnect the harness connector DR15a of the front passenger side door window regulator motor.
- F. Disconnect the harness connector DR35a of the right rear window regulator motor.
- G. Disconnect the IBC harness connector IP22b.
- H. The key activates the power supply of the vehicle to ON.
- I. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard voltage: 0V

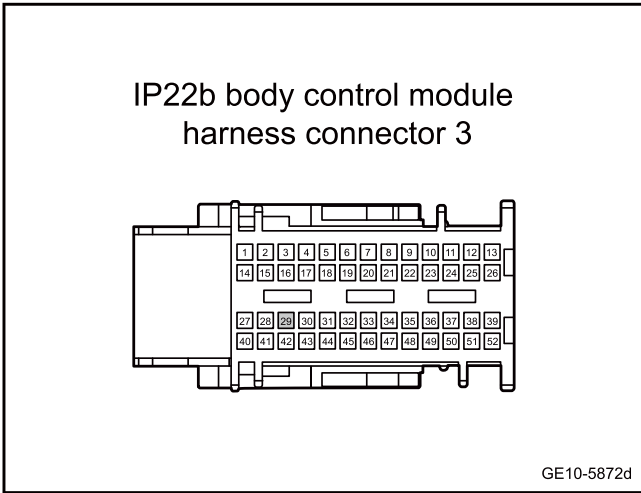
- J. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the LIN1 communication line of IBC module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rain sensor harness connector RF20.
- C. Disconnect the harness connector DR05a of the window regulator motor of the driver side door.
- D. Disconnect the harness connector DR25a of the left rear window regulator motor.
- E. Disconnect the harness connector DR15a of the front passenger side door window regulator motor.
- F. Disconnect the harness connector DR35a of the right rear window regulator motor.
- G. Disconnect the IBC harness connector IP22b.
- H. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(29)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- I. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace rain sensor.

- A. Replace rain sensor. Refer to Replacement of rain sensor.
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the window regulator motor of the driver side door.

- A. Replace the window regulator motor of the driver side door. Refer to [Replacement of the window regulator motor of the driver side door](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Replace the front passenger side door window regulator motor.

- A. Replace the front passenger side door window regulator motor. Refer to [Replacement of front passenger side door window regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Replace the left rear window regulator motor.

- A. Replace the left rear window regulator motor. Refer to [Replacement of left rear door window regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 | Replace the right rear window regulator motor.

- A. Replace the right rear window regulator motor. Refer to [Replacement of left rear door window regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 12 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

10.2.4.11 Internal faults of IBC

1. DTC description:

Diagnostic Trouble Code	Trouble description
B12AA53	Anti-theft authentication failed
B109D98	Music rhythm control circuit is overtemperature

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B12AA53	1. Not received within 1.2 s after the power mode is changed from IG1 to ON	1. IBC Power supply The supply voltage is within the range of 9-16V 2. No bus disconnection failure is detected.	1. IBC
B109D98	The output current is detected to monitor overtemperature faults, and when the current is greater than a specific hardware threshold, it is regarded as an overtemperature fault. Music console output overload 200 ms	The power supply voltage range of IBC is 9-16V, and the music rhythm function is activated for 100ms.	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the Body control module](#)

Next step

Step 4	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 System is normal.

10.2.4.12 IBC module LIN2 communication failure

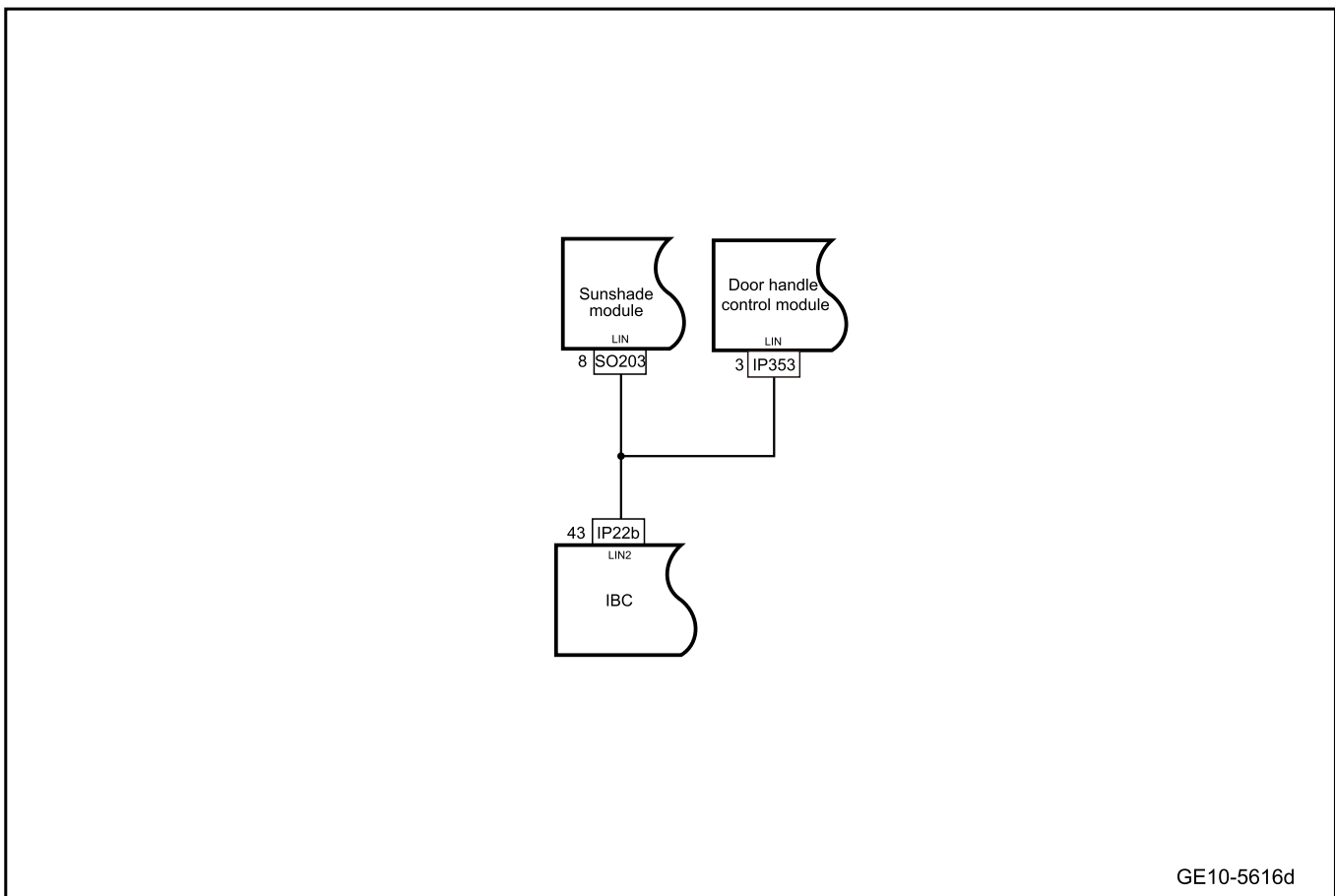
1. DTC description:

Diagnostic Trouble Code	Trouble description
B109C87	Communication with the hidden door handle controller is lost
U110100	LIN2 communication fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109C87	Loss of DHC (ID=0x18) message within 500ms	1. LIN2 wakeup 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Sunshade module 3. Concealed door handle controller 4. IBC
U110100	Main request transmission failed. Lin-2 is used for 4S		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No → Refer to Intermittent Fault Detection

Yes

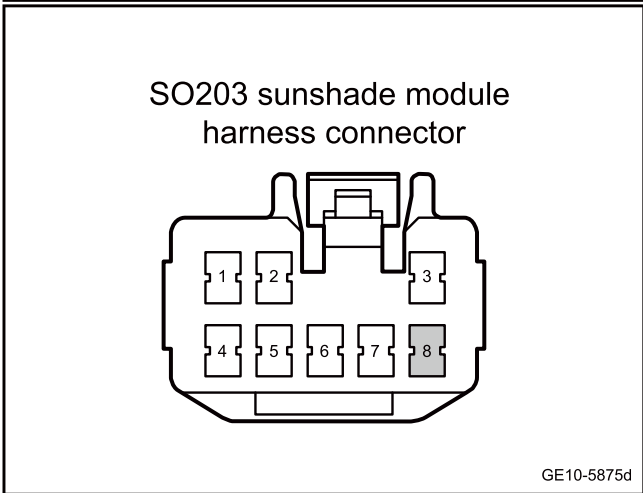
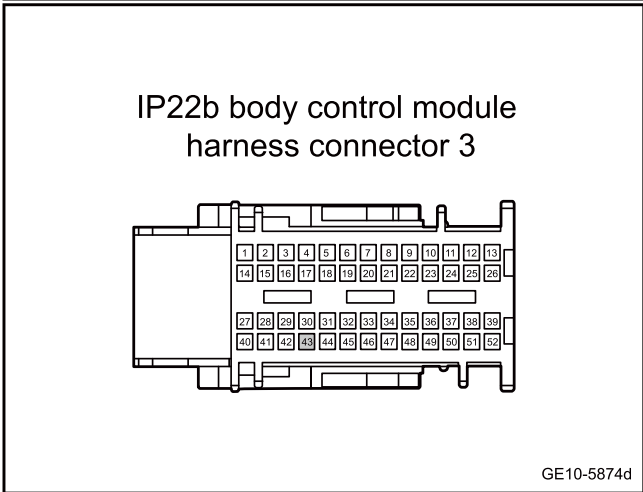
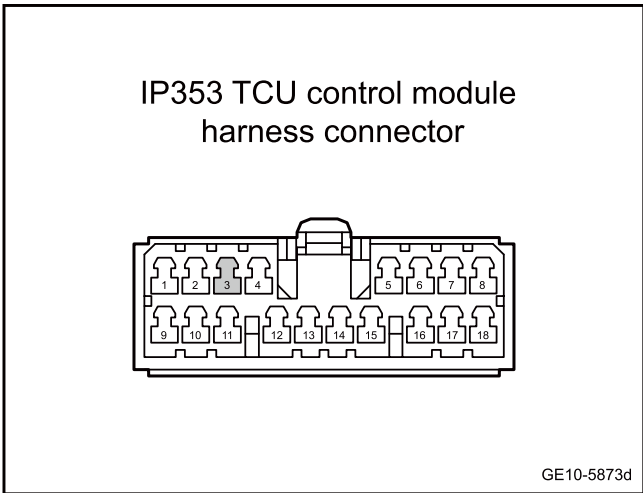
Step 2 Primary check.

- A. Check the sunshade module, door handle control module and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 3 Check for open circuit of LIN2 of IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the door handle control module harness connector IP353.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure each terminal according to the table below:

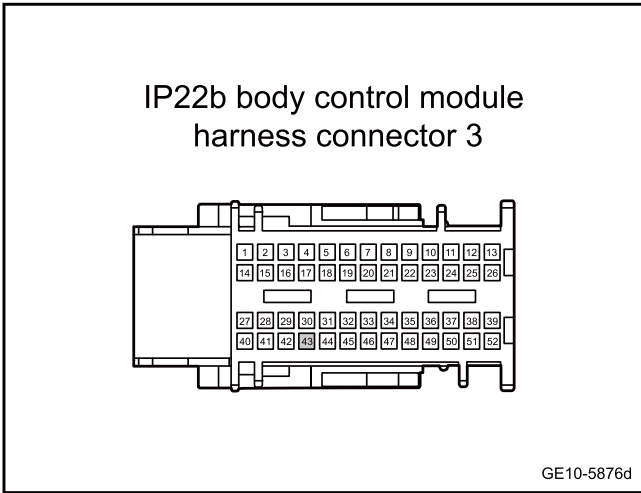
Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	IP22b(43)	Standard resistance: less than 1Ω
SO203(8)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Check whether the circuit LIN2 of IBC is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the door handle control module harness connector IP353.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

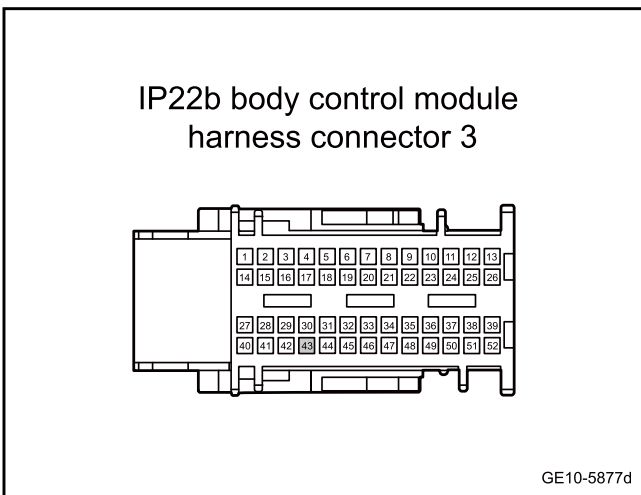
Measure terminal 1	Measure terminal 2	Standard value
IP22b(43)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit LIN2 of IBC is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the sunshade module harness connector SO203.
- C. Disconnect the door handle control module harness connector IP353.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(43)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace Sunshade module

- A. Replace Sunshade module Refer to [Replacement of Sunshade Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace Door handle control module

- A. Replace Door handle control module Refer to [Replacement of Door handle Control Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

10.2.4.13 Hard Wire Collision PWM Signal Is Invalid

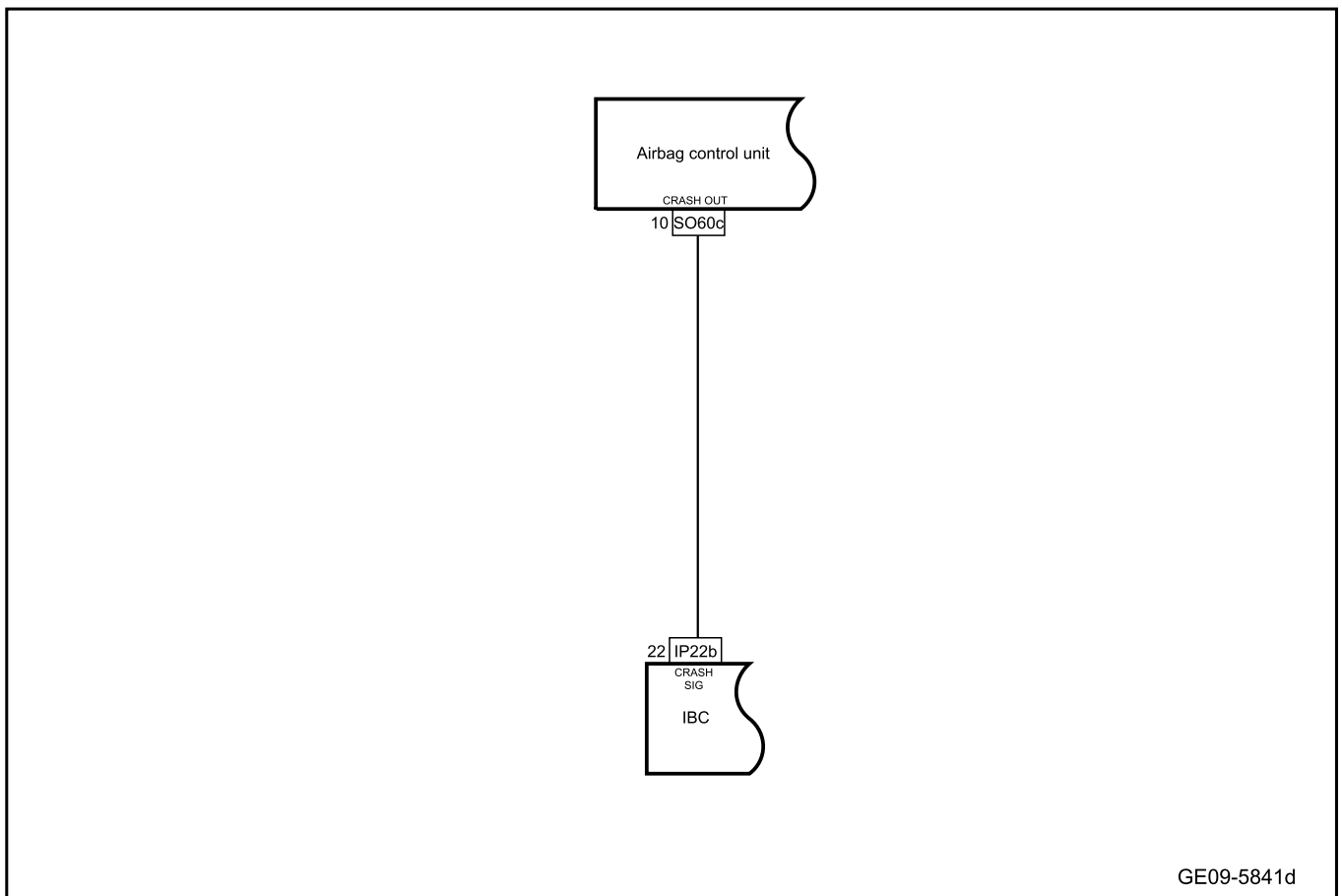
1. DTC description:

Diagnostic Trouble Code	Description
B103629	Hard wire collision PWM signal is invalid

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B103629	The hard wire collision signal is invalid within 500 milliseconds (this value can be changed due to the pulse width modulation detection strategy, ranging from 500ms to 800ms). The effective value is 250Hz ± 10%, and the duty cycle is 40% - 60%; Or 10Hz ± 10%, with a duty cycle of 40%-60%. See the function specification for details.	Power supply voltage range is 9V-16V	1. Airbag control module 2. Circuit 3. IBC

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

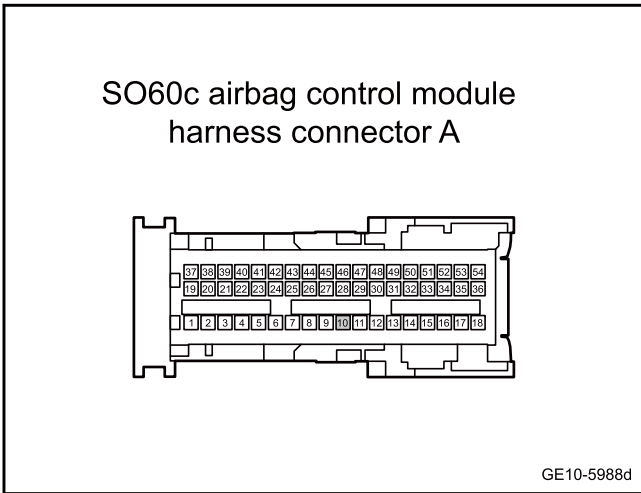
Step 2	Primary check.
--------	----------------

- A. Check the airbag control module and IBC for signs of damage, distortion, stain, loosening, etc.
- B. Check the airbag control module and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

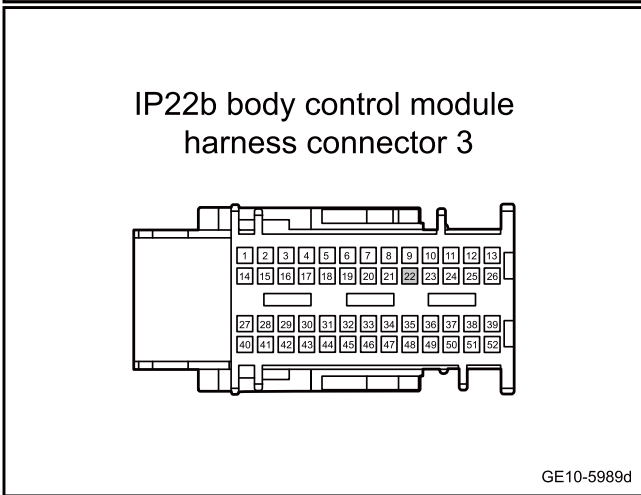
No ➤ Repair or replace the faulty part.

Yes

Step 3 Check whether the harness between airbag control module and IBC is open.



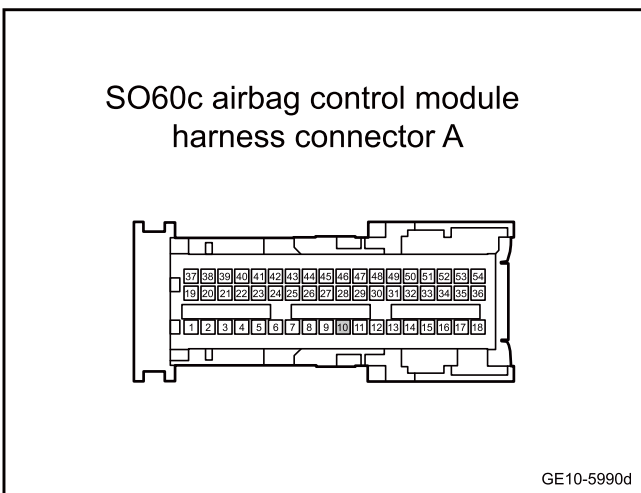
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the harness connector SO60c of airbag control module.
 - C. Disconnect the IBC harness connector IP22b.
 - D. Use a multimeter to measure the resistance between the terminal 10 of the harness connector SO60c of airbag control module and the terminal 22 of harness connector IP22b of the IBC.
- Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 4 Check whether the harness between airbag control module and IBC is short to power supply.



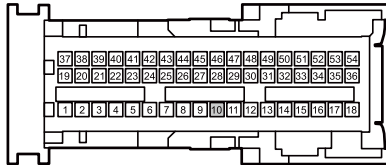
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the harness connector SO60c of airbag control module.
 - C. Disconnect the IBC harness connector IP22b.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between the terminal 10 of the harness connector SO60c of airbag control module and the body grounding.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the harness between airbag control module and IBC is short to GND.

SO60c airbag control module
harness connector A



GE10-5991d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the resistance between the terminal 10 of the harness connector SO60c of airbag control module and the body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the airbag control module.

- A. Check power supply of airbag control module and grounding harness. Refer to [Power Failure of Airbag Control Module](#)
- B. Replace the airbag control module. Refer to [Replacement of Airbag Control Module](#)

Next step

Step 8 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 10 System is normal.

10.2.4.14 Door handle control module LIN communication failure

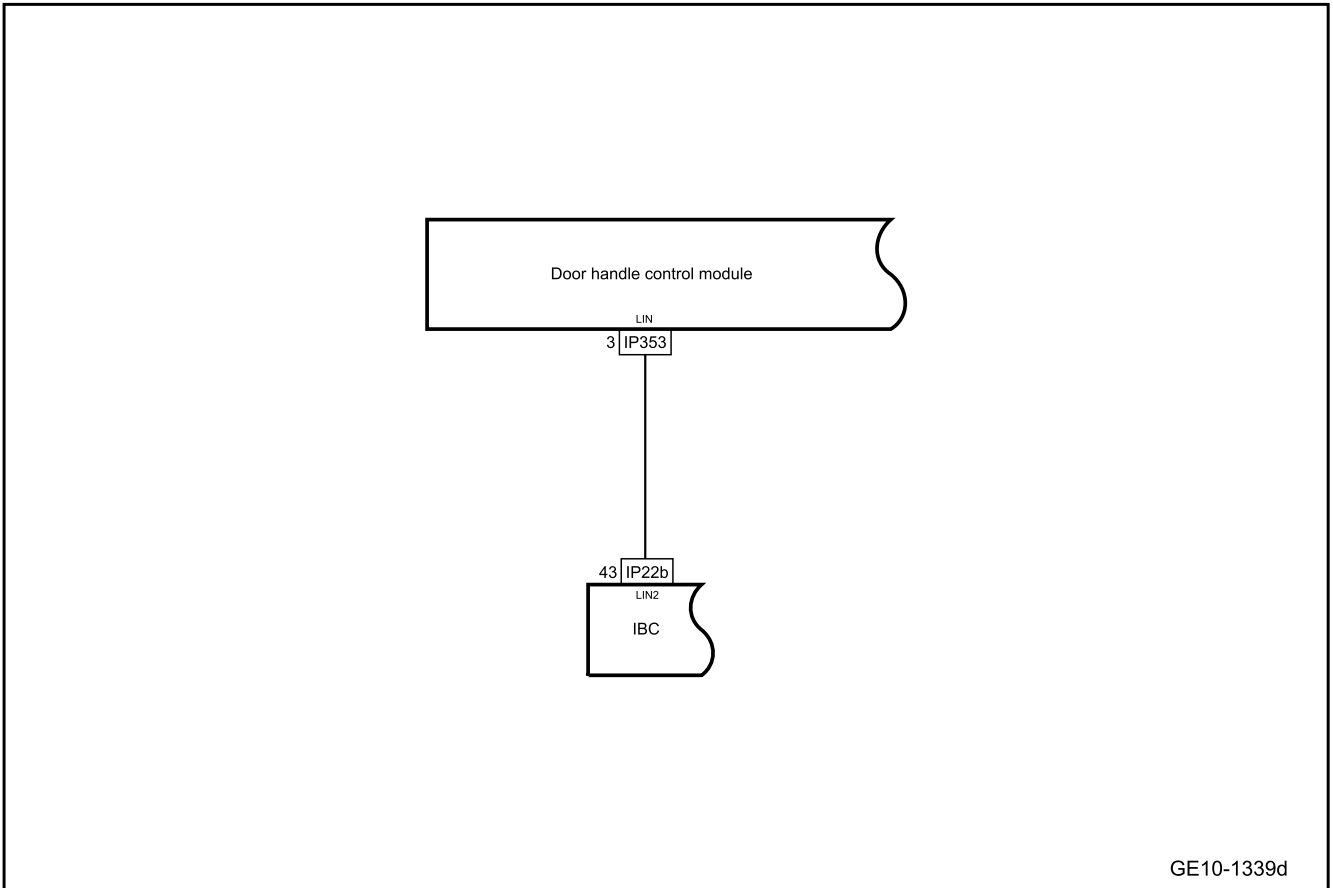
1. DTC description:

Diagnostic Trouble Code	Trouble description
B109B09	Concealed door handle controller LIN communication error

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109B09	Received DHC (door handle controller) information indicates that LIN has errors for 3 consecutive times (0 x 18:L_DHC_LIN_response_error== 0 x 1)	1. LIN2 wakes up and the communication enabling conditions are met 2. IBC Power supply The supply voltage is within the range of 9-16V 3. cfg hidden door handle option== 1 (F101 byte 14 bit 1 == 1)	1. Circuit 2. Door handle control module 3. IBC

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

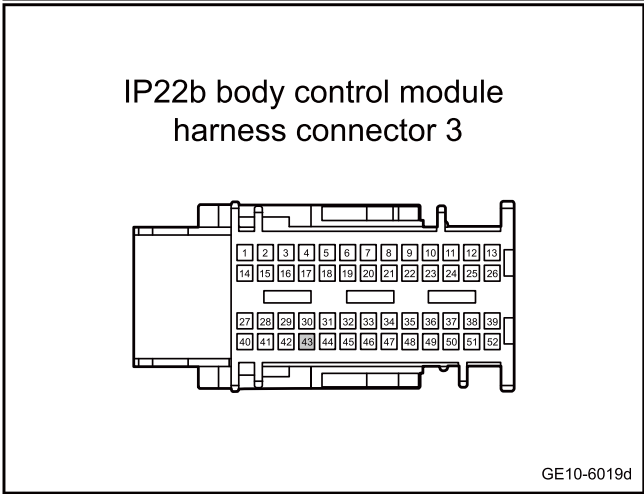
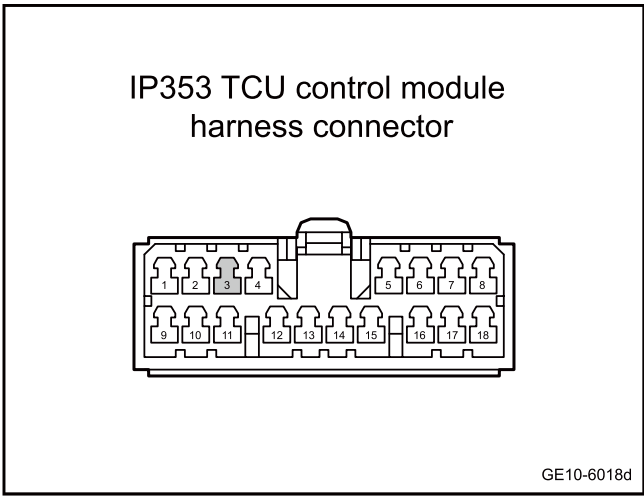
Step 2	Primary check.
--------	----------------

- A. Check the harness connector of door handle control module for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check whether the LIN line between door handle control module and IBC is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the door handle control module harness connector IP353.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the table below:

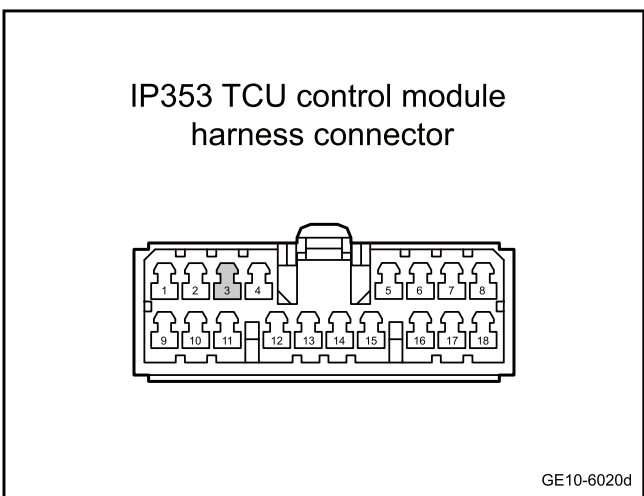
Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	IP22b(43)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Check whether the LIN line between door handle control module and IBC is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the door handle control module harness connector IP353.
- C. Disconnect the IBC harness connector IP22b.
- D. Disconnect the related LIN2 line module of the vehicle.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

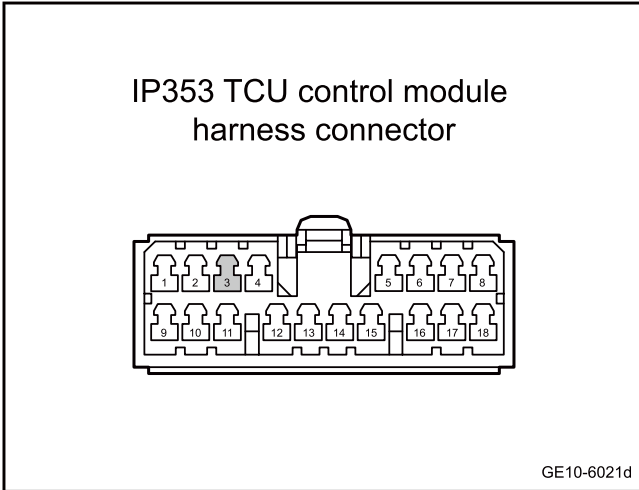
Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the LIN line between door handle control module and IBC is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the door handle control module harness connector IP353.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP353(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace Door handle control module

- A. Replace Door handle control module Refer to [Replacement of Door Handle Control Module](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Reprogram and reset door handle control module.

- A. Reprogram and reset door handle control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 10 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 11 | System is normal.

10.2.4.15 Door handle control module power supply fault

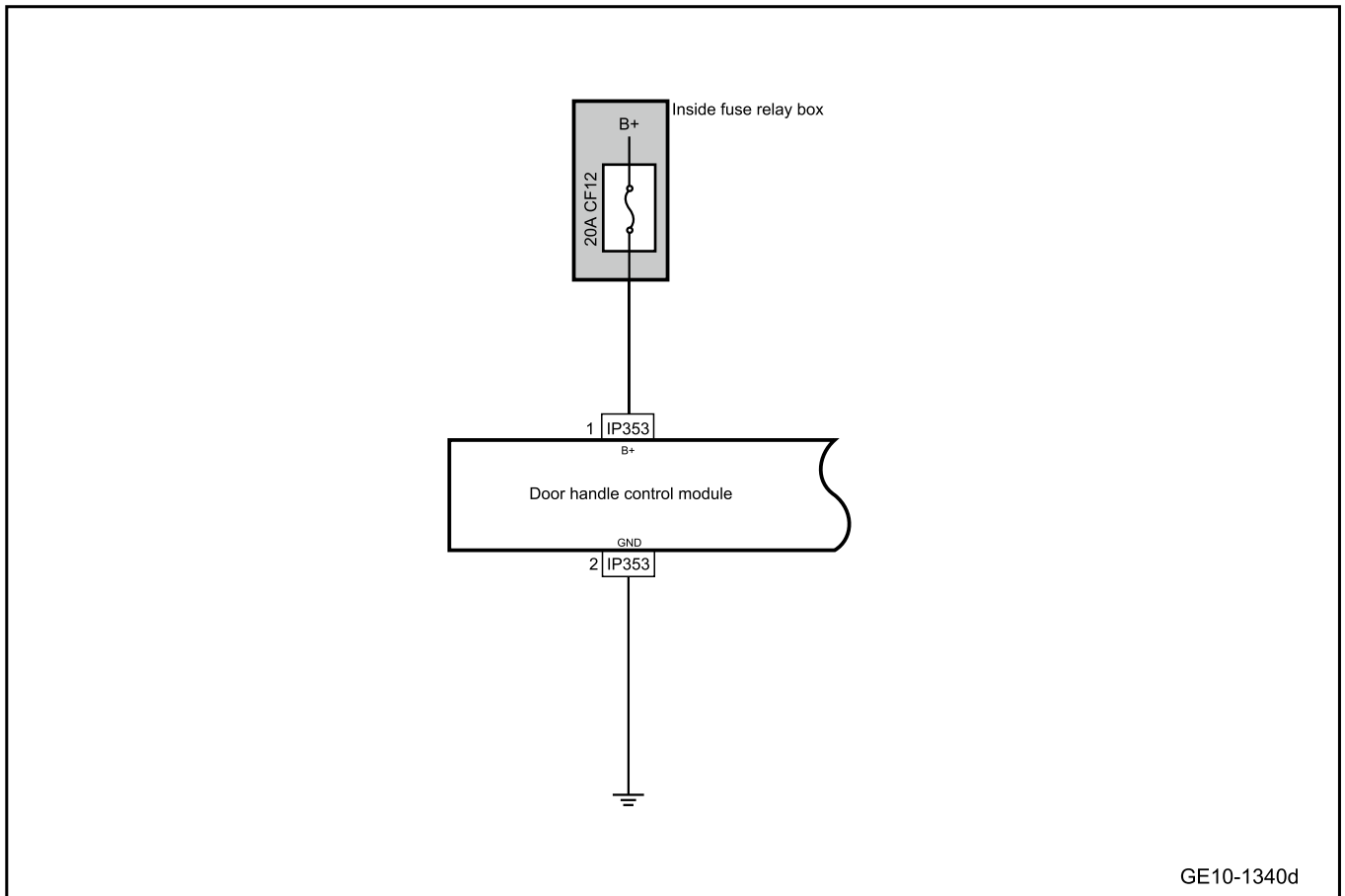
1. DTC description:

Diagnostic Trouble Code	Trouble description
B109B16	Concealed door handle controller undervoltage
B109B17	Concealed door handle controller undervoltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109B16	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_Under_Volt== 0 x 1)	1. LIN2 wakes up and the communication enabling conditions are met 2. The power supply voltage range of IBC is 9-16V	1. Circuit 2. Fuse
B109B17	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_Over_Volt== 0 x 1)	3.cfg hidden door handle option== 1 (F101 byte 14 bit 1 == 1)	3. Door handle control module

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 4.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of door handle control module for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

Yes

Repair or replace the faulty part.

No

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect the fuse.
--------	-------------------

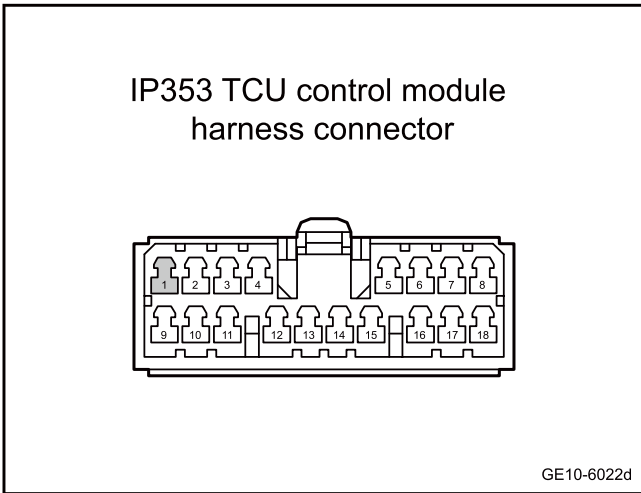
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF12 is blown out.
Rated capacity of fuse: 20A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check the grounding circuit of the door handle control module.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the door handle control module harness connector IP353.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

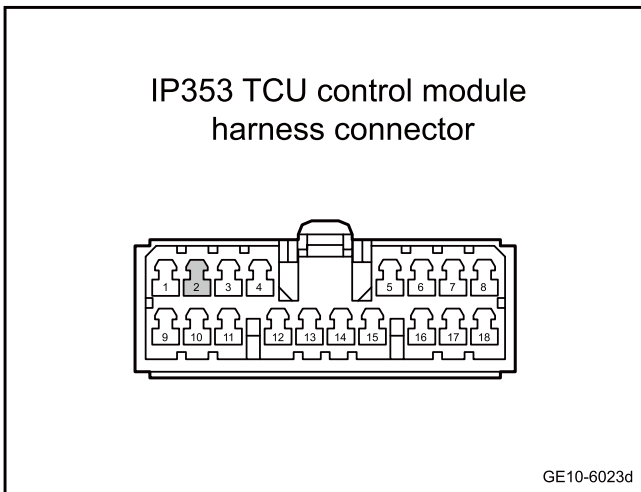
Measure terminal 1	Measure terminal 2	Standard value
IP353(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check door handle control module grounding line.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the door handle control module harness connector IP353.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP353(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace Door handle control module

- A. Replace Door handle control module Refer to [Replacement of Door Handle Control Module](#)

Next step

Step 8	Reprogram and reset door handle control module.
--------	---

- A. Reprogram and reset door handle control module. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

10.2.4.16 Door handle control module internal fault

1. DTC description:

Diagnostic Trouble Code	Trouble description
B109B04	Internal circuit failure of the hidden door handle controller

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128C00	A received DHC (door handle controller) message indicates that there are errors in 3 consecutive times in the LIN frame (0 x 18:L_DHC_Circuit_error== 0 x 1)	1. LIN2 wakes up and the communication enabling conditions are met 2. The power supply voltage range of IBC is 9-16V 3.cfg hidden door handle option== 1 (F101 byte 14 bit 1 ==1)	1. Door handle control module

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of door handle control module for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Replace Door handle control module
--------	------------------------------------

- A. Check whether the power supply of door handle control module and the grounding harness are normal. Refer to [Power Supply Failure of Door Handle Control Module](#)
- B. Replace Door handle control module Refer to [Replacement of Door Handle Control Module](#)

Next step

Step 4	Reprogram and reset door handle control module.
--------	---

- A. Reprogram and reset door handle control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6	System is normal.
--------	-------------------

10.2.4.17 Concealed door handle motor fault

1. DTC description:

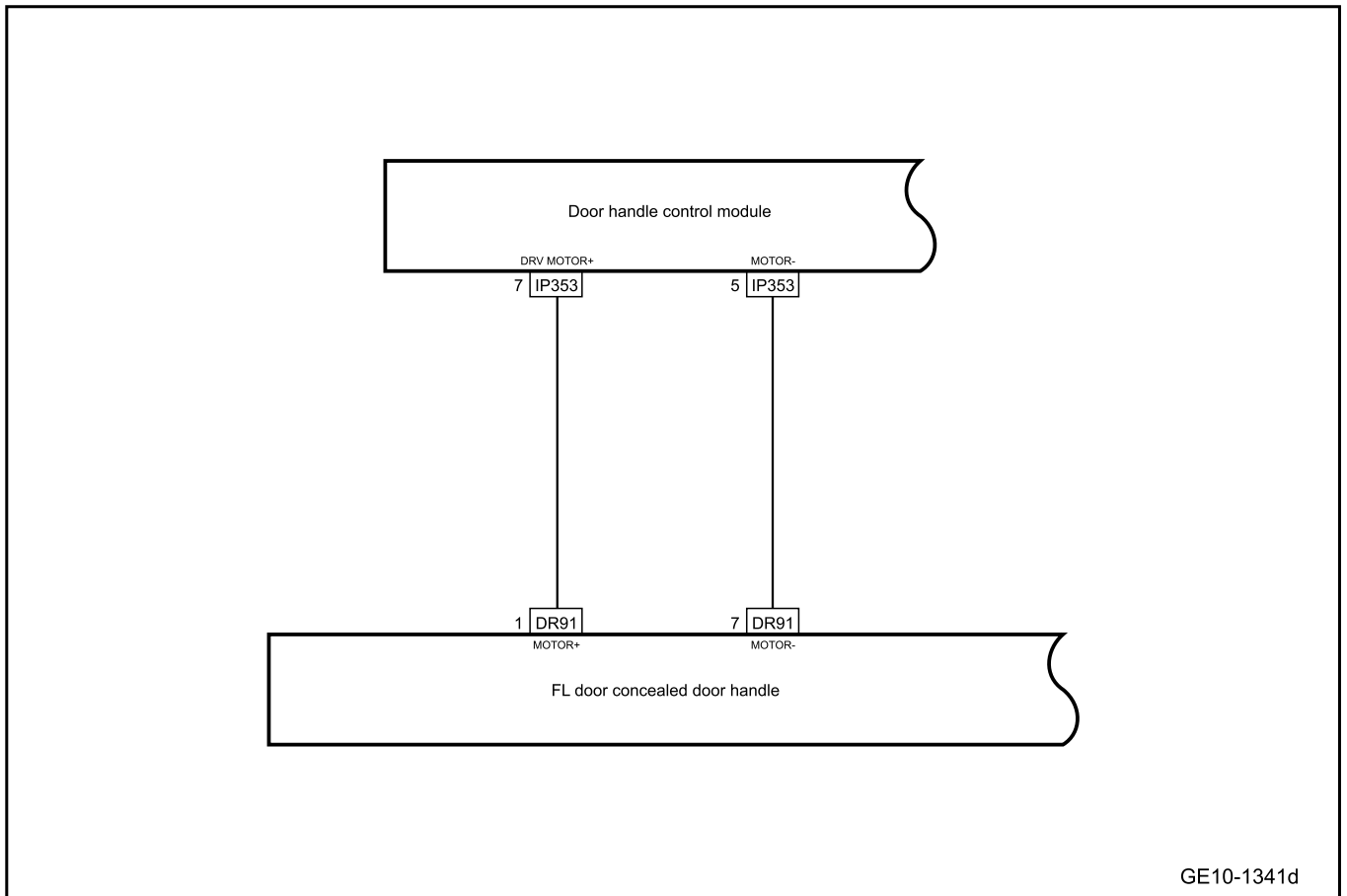
Diagnostic Trouble Code	Trouble description
B108F01	Left front door handle motor fault
B109201	FR door handle motor
B109501	Rear left door handle motor fault
B109801	Fault of RR door handle motor

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108F01	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_LF_error == 0 x 3)	1. LIN2 is in the wake-up state and meets the communication enabling conditions 2. The power supply voltage range of IBC is 9-16V 3.cfg hidden door handle option== 1 (F101 byte 14 bit 1 == 1)	1. Circuit 2. Door handle control module 4. Concealed door handle
B109201	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_RF_error == 0 x 3)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109501	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_LR_error == 0 x 3)		
B109801	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_RR_error == 0 x 3)		

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of left front concealed door handle. The diagnosis of other door handles is the same as that of left front door handle.

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left front door handle and door handle control module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

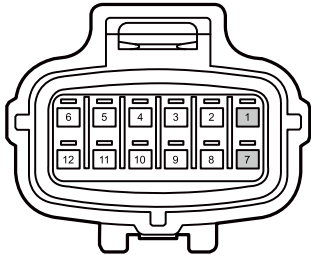
No

Repair or replace the faulty part.

Yes

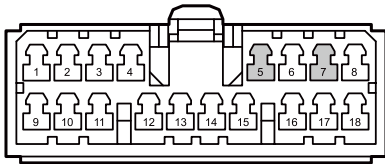
Step 3	Check the circuit trouble between the left front hidden door handle and the door handle control module.
--------	---

DR91 FL door concealed door handle harness connector



GE10-6024d

IP353 TCU control module harness connector



GE10-6025d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(7)		
DR91(1)	IP353(7)	Standard resistance: less than 1Ω
DR91(7)	IP353(5)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard voltage: 0V
DR91(7)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Replace left front concealed door handle

- A. Replace left front concealed door handle Refer to [Replacement of Left Front Concealed Door Handle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 5 | Replace door handle control module

- A. Check whether the power supply of door handle control module and the grounding harness are normal. Refer to [Power Supply Failure of Door Handle Control Module](#)
- B. Replace the door handle control module, refer to [Replacement of door handle control module](#)

Next step

Step 6 | Reprogram and reset door handle control module.

- A. Reprogram and reset door handle control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 | Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 | System is normal.

10.2.4.18 Ambient light and sunlight sensor circuit failure

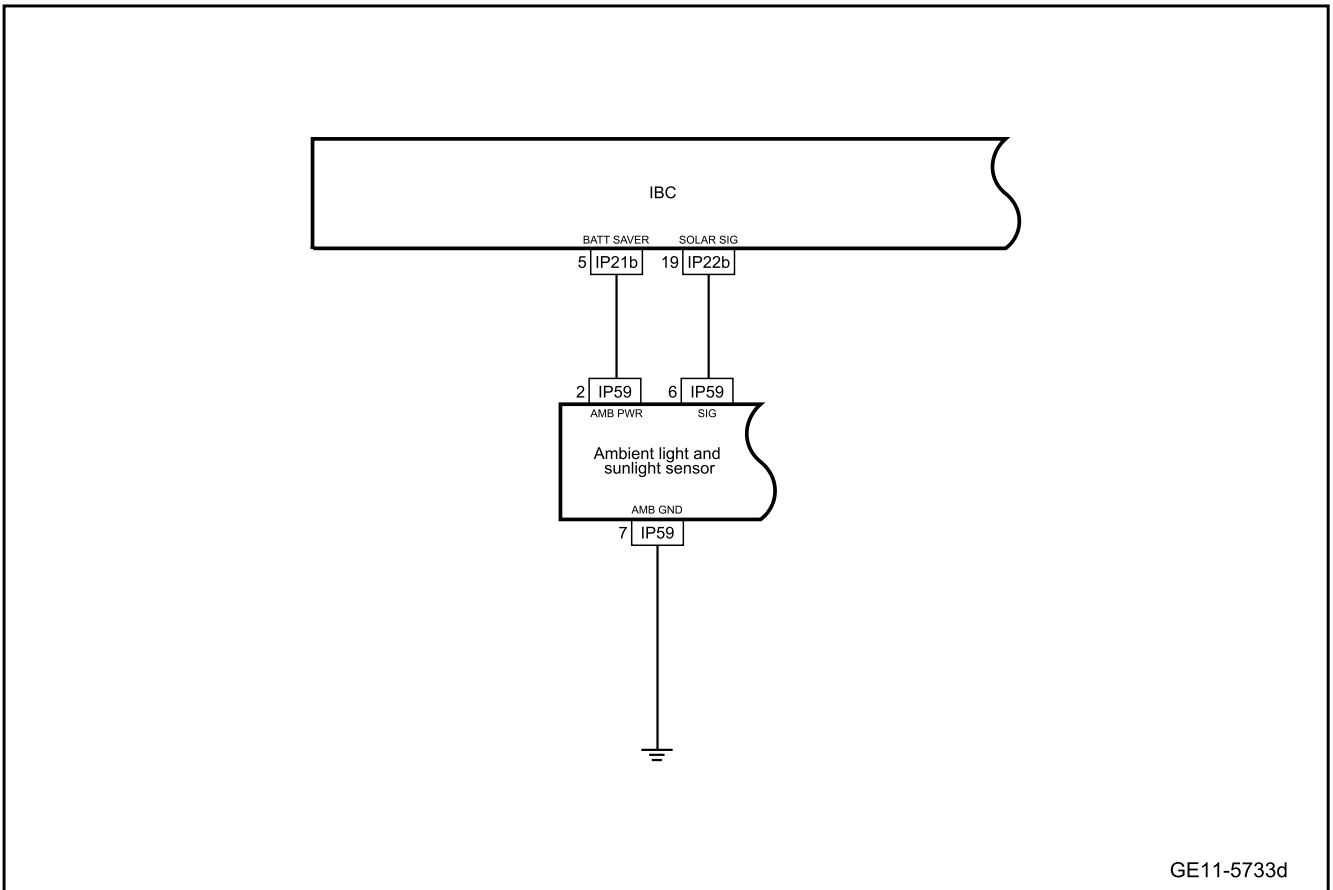
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101109	General faults of light sensor
B101796	Sunlight sensor fault
B101896	Light sensor hardware fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101109	A successfully received RLS message indicates this error in the LIN frame (L_Status_Light_Sens=1)	1. LIN1 wakeup 2. IBC Power supply The supply voltage is within the range of 9-16V 3. The ignition status is IGN ON(PhyTccStsBody==ON) and should meet the ignition condition.	1. Circuit 2. IBC 3. Ambient light and sunlight sensor
B101796	A successfully received RLS message indicates this error in the LIN frame (L_RS_SolarSensorError=1)		
B101896	A successfully received RLS message indicates this error in the LIN frame (L_Err_State_Light_Sens=1)		

3. Schematic circuit diagram:



GE11-5733d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the appearance of ambient light and sunlight sensor for signs of damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

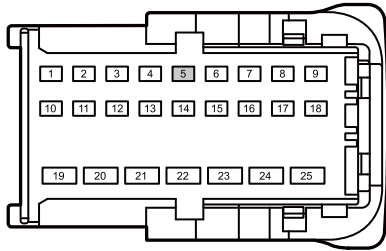
No

Repair or replace the faulty part.

Yes

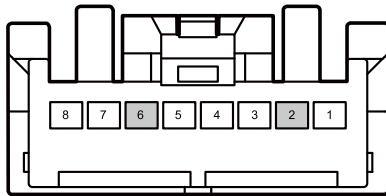
Step 2	Check whether the circuit between the IBC and the ambient light and sunlight sensor is normal.
--------	--

IP21b body control module harness connector 2



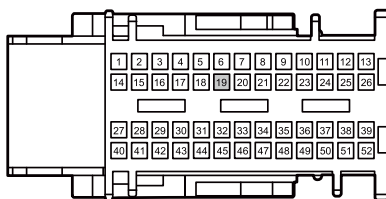
GE11-6220d

IP59 ambient light and sunlight sensor harness connector



GE11-6221d

IP22b body control module harness connector 3



GE11-6222d

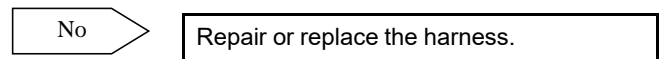
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP22b and IP21b.
- C. Disconnect the ambient light and sunlight sensor IP59.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	IP59(2)	Standard resistance: less than 1Ω
IP22b(19)	IP59(6)	
IP21b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(19)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

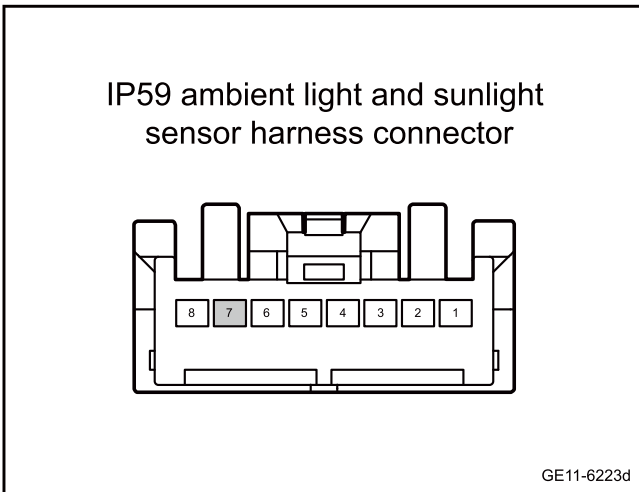
Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(19)		

- G. Confirm whether the measured value meets the standard.



Yes

Step 3 Check whether the grounding circuit of the ambient light and sunlight sensor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ambient light and sunlight sensor IP59.
- C. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 | Replace the ambient light and sunlight sensor.

- A. Replace the ambient light and sunlight sensor. Refer to [Replacement of Ambient Light and Sunlight Sensor](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 5 | Replace the IBC

- A. Replace the IBC Refer to [Replacement of the Body Control Module](#)

Next step

Step 6 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 | System is normal.

10.2.5 Removing and installing

10.2.5.1 Replacement of body control module

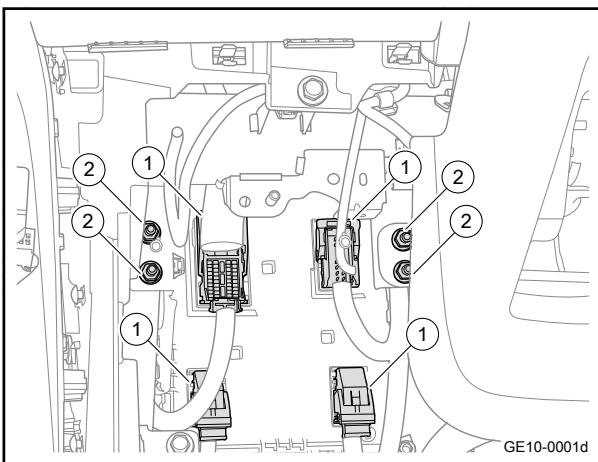
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

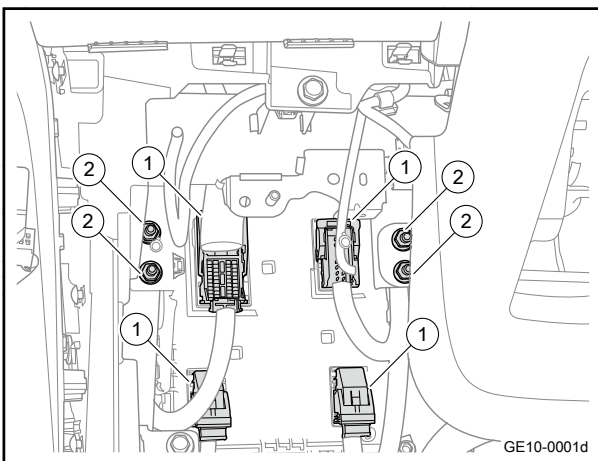
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Disconnect Body control module harness connector 1
- 4 Remove the 4 fixing nuts 2 from the body control module.
- 5 Take down body control module



Installation procedure

- 1 Move the body control module to the installation position.
- 2 Install the 4 fixing nuts 2 of the body control module.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect body control module harness connector 1

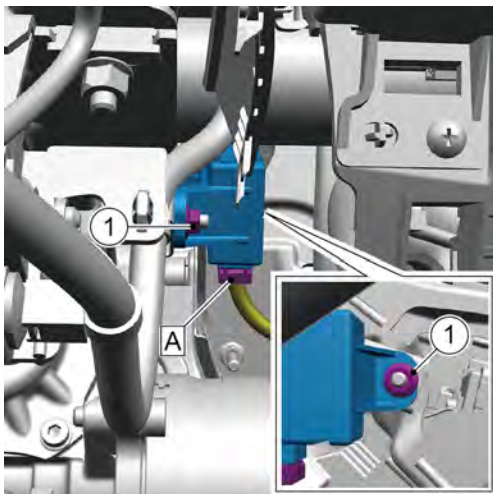
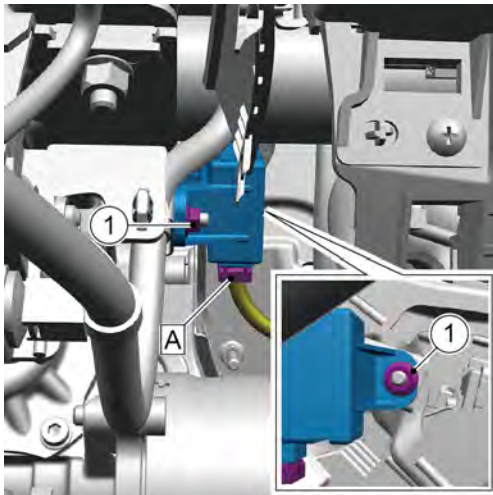


- 4 Install the left lower shield assembly of the dashboard.
- 5 Connect the negative cable of battery.

10.2.5.2 Replacement of Door handle control module

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 3 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 4 Remove the lower cowl of the steering column. Refer to [Replacement of Steering Column Lower Cowl Assembly](#)
- 5 Disconnect the 1 harness connector A connecting the door handle control module and instrument panel harness connector.
- 6 Remove the 2 fixing nuts 1 connecting the door handle control module and pipe beam.
- 7 Take down Door handle control module



Installation procedure

- 1 Move the door handle control module to the installation position.
- 2 Install and tighten the 2 fixing nuts 1 connecting door handle control module.
Torque: 6N·m
- 3 Connect the 1 harness connector A connecting the door handle control module and the instrument panel.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 4 Install the lower cowl of the steering column.
- 5 Install the left lower shield assembly of the dashboard.
- 6 Connect the negative cable of battery.

10.3 Vehicle control unit (VCU)

10.3.1 Specification

10.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Vehicle control unit fixing bolt	M6×16	8 -10
Vehicle control unit fixing nut	M6	8 -10

10.3.2 Description and operation

10.3.2.1 Description and Operations

Vehicle control unit

The vehicle control unit (VCU) is the core control component of the complete vehicle. It collects or receives accelerator pedal signal, brake pedal signal, brake other power system component signal and vehicle platform controller signal, makes corresponding judgment (for example, driver's intention identification), controls the action of each sub component controller in the system, and drives the vehicle force output. At the same time, it also serves as the energy management center of the vehicle, controlling the SOC balance of the high-voltage battery pack and the power output of the 12V low-voltage system. The main functions of the VCU include: driving torque control, energy recovery control during braking, energy management control of the complete vehicle, CAN network communication function, fault diagnosis and treatment of the power system, vehicle status monitoring and fault reaction, etc. The hardware of VCU mainly includes microprocessor, watchdog monitoring module, CAN communication module, BDM debugging module, serial debugging module, serial port communication module, power supply and protection intersection communication module, power supply and protection circuit, various output IO control and protection circuit, PWM control interface circuit, etc.

Power supply management

Power-on and starting management

Start function: the start function refers to the process of the vehicle from other power gears (OFF, ACC, ON) to READY gear, which can also be called powering on at a high voltage.

Powering on function: the powering on function refers to the process of shifting the from OFF gear to other power gears (ACC, ON), or the process of shifting from ACC to ON.

After receiving the signal ACC/ON from PEPS, VCU shall query the status of all high-voltage related components. When there is no system failure that does not allow power-on and there is no charging signal for plugging in the gun, the VCU sends a command to allow powering on at a high voltage, and the system enters the pre-charge state.

When the VCU receives the information of the completion of pre-charging and the pull-in of the main relay of the power battery, the VCU detects that the gear is switched to D or R gear, and the vehicle enters the READY state.

After powering on at a high voltage, VCU sends Buck instruction to OBC (DCDC) to make DC-DC enter working state.

Power off management

Power out function: refers to the process of shifting the complete vehicle from the READY gear to the OFF gear.

Power off function: refers to the process of shifting the complete vehicle from the ON gear to the OFF gear or ACC gear.

Power down in emergency

- a. Make sure the vehicle is stationary, then step on the brake pedal and press and hold the hazard warning lamp switch for more than 7 seconds, you can power off to the OFF gear;

Powering off at a high voltage refers to the process of shifting the complete vehicle from the READY gear to the OFF gear or ACC gear. The power-off mode varies from the current vehicle speed.

- a. When the vehicle speed is larger than 5km/h, it is necessary to press the brake pedal and press the hazard warning light switch for more than 7 seconds, PEPS will recognize it as a power-off request, disconnects the IG hard-wired signal and sends the power OFF status on the bus. When the VCU detects that the IG hard-wired signal is disconnected, the VCU requests high voltage and turns off the Ready light.
- b. When the vehicle speed is less than 5km/h, click the power-off switch of the whole vehicle from the multimedia display, and the PEPS side recognizes it as a power-off request, disconnects the IG hard-wired signal and sends the power OFF status on the bus. When the VCU detects that the IG hard-wired signal is disconnected, the VCU requests high voltage and turns off the Ready light
- c. VCU sends the allowable power of air conditioner as 0 on the Bus and sends fast discharging command to IPU.
- d. When the vehicle speed is less than 1.8 km/h, the VCU sends the EPB engaging command, and the ONEBOX module controls the EPB to perform corresponding operations.
- e. After all high-voltage power components send the working stop status to VCU (the actual torque sent by AC and IPU is 0), VCU sends the turning off command. After BMS receives the turning off command, it immediately disconnects the positive and negative contactors and feeds back the turning off status.

Driver's demand

Accelerator pedal information collection and processing

The accelerator pedal is the main component used to reflect the driving intention. VCU collects the analog voltage signal of the accelerator pedal signal pin, converts it into digital quantity and converts it into 0-100% opening signal through the calibration curve, characterizes the driver's acceleration demand and sends the corresponding signal to the Bus.

Brake pedal information collection and processing

The brake pedal is a component that reflects the driver's braking intention. The VCU collects the status signal of the brake switch, analyzes the driver's braking demand, and sends corresponding information to the Bus.

Collect the information of main and auxiliary brake switches to judge the driver's braking demand.

Check the reliability of the signal and diagnose the fault according to the signals of the main and auxiliary switches.

Gear information management

EGSM detects the operation of the gear selector, resolves the driver's gear shifting intention and sends this shifting request through the Bus to the VCU. The VCU determines whether to respond to the gear shifting request according to the brake switch signal, power supply gear signal, and vehicle speed signal at this time, and sends the actual gear position and electric control drive mode to the Bus. The power system performs the gear shifting action to complete the switching management and control of the vehicle in the four gears of P, R, N, and D.

Driving mode management

The driver selects the desired driving mode through the mode switch, and the VCU determines the actual driving mode according to the state of the vehicle.

Mode switch (head unit soft switch)-(target driving mode)-IBC (determine driving mode)-VCU (control to realize actual mode)

After powering on, the default driving is ECO mode. The vehicle operation mode can be set only in the ON or READY gear. If the OFF and ACC gear receives the mode switching request, the VCU will not respond.

In ON or READY gear, press the SPORT button in ECO mode to switch to SPORT mode, and press the ECO button to switch to ECO mode in SPORT mode.

When the IBC receives the mode switching request and determines that mode switching can be performed, it sends

the corresponding vehicle mode IPK to display the current vehicle mode.

After the Sport mode is activated, the whole vehicle can output at the maximum output power, which has better dynamic response.

After ECO mode is started, VCU adjusts the change rate of torque output to limit rated discharge and peak power. In this mode, the power output is weaker than that in Sports modes, but the endurance performance is higher.

Taxiing feedback intensity management

The feedback intensity level of vehicle taxiing can be set through MMI, and there are three feedback levels: low, medium and high. Each time the feedback level is switched, the instrument display will prompt the user of the current feedback level.

The vehicle taxiing feedback can be set through MMI. The MMI sends a setting signal to the VCU, and the VCU determines the current feedback level according to the MMI setting signal, which is divided into three levels: low, medium and high. Each time the feedback level is switched, the instrument display will prompt the user of the current feedback level.

The factory default of the VCU is the medium taxiing feedback level.

The vehicle taxiing feedback mode can be set only in the ON or READY gear. In the OFF gear and the ACC gear, the VCU does not respond even when receiving the taxiing feedback level switching request sent by the MMI.

Vehicle power control

Vehicle creeping

When the vehicle is started, the vehicle control unit (VCU) judges that the gear is D gear or R gear, the driver does not perform relevant operations on the brake pedal and accelerator pedal, and the EPB is released; the VCU creeping drive torque signal is sent to the Integrated Power Unit (IPU).

When the vehicle is on a slope of less than 10%, the vehicle is not allowed to slide when the vehicle starts creeping. When stepping on the brake pedal to shift gears, the VCU provides the initial torque value to ensure that the vehicle does not slide. When the brake pedal is fully released, the vehicle torque needs to keep up smoothly, and the vehicle creeps forward or backward normally. In the creeping mode, the creeping forward speed is less than or equal to 5km/h, and the creeping backward speed is less than or equal to 5km/h.

Vehicle running

The execution conditions for traveling forward and backward of the vehicle are controlled by the VCU. The VCU determines that the segment is in the D or R gear, analyzes the accelerator pedal signal and determines the allowable continuous and peak discharge power sent by the battery management system (BMS). The IPU sends the positive torque limit and the negative torque limit, calculates the target torque and the maximum allowable output torque to the IPU, and IPU controls the motor torque to drive the vehicle forward or backward.

Cruise control

In the READY gear, the vehicle speed can be maintained stable through the switch setting without depressing the accelerator pedal and brake pedal, so as to improve driving comfort; the cruise control switch signal is collected by the BCM and then sent to the VCU through the CAN bus. The VCU controls the cruise control function.

AC charging

The AC charging port of the vehicle can be connected to an external AC charging gun to charge the power battery. The full charging function includes the insertion detection of the charging gun, the judgment of the charging permission condition, the charging power control, and the judgment of the charging completion. As one of the components, the VCU takes part in the management of the entire process of AC charging.

CC signal sent by OBC instructs the head unit module to turn on the instrument charging gun connection indicator lamp.

After VCU receives the CP signal sent by OBC and the fault level sent by IPU and DC is normal or does not affect the fault level of AC charging, it is allowed to send the charging command.

After the AC charging is completed, VCU stops DC and A/C charging after receiving the charging stopping command sent by BMS, and sends the instruction to turn on the main relay after receiving the inactive state sent by IP (DC-DC) and the actual power consumption sent by A/C is 0kW. If there is no feedback from DC or A/C after VCU sends the instruction, VCU will delay waiting for 2min before sending the turning off instruction.

When the VCU detects the semi-connecting state of the charging gun sent by the OBC, charging is not allowed, the vehicle is not allowed to run, and the vehicle remains in P gear.

When the vehicle speed is greater than 1.8km/h, the OBC detects the CC or CP signal, and after the VCU receives the

CC connection signal sent by the OBC, the vehicle does not enter AC charging state, and the vehicle runs normally.

DC/AC charging

The vehicle supports the DC fast charging function of the DC charging port. The full charging function includes the insertion detection of the charging gun, the judgment of the charging permission condition, the charging power control, and the judgment of the charging completion. As one of the components, the VCU takes part in the management of the entire process of DC charging.

During the charging process, when the VCU receives the fast charging connection signal sent by the battery management system (BMS), the VCU sends the information to the gateway and forwards it to the instrument, and the instrument turns on the charging cable connection indicator lamp.

VCU also needs to detect the connection signal of BMS fast-charging gun. After the connection signal is normal, it is allowed to send the allowable charging when the high-voltage interlocking status is normal and the fault level sent by IPU and DC is normal or does not affect the DC charging.

After the DC charging is completed, VCU stops DC and A/C charging after receiving the charging stopping command sent by BMS, and sends the instruction to turn on the main relay after receiving the inactive state sent by IPU (DC-DC) and the actual power consumption sent by A/C is 0kW. If there is no feedback from DC or A/C after VCU sends the instruction, VCU will delay waiting for 1S before sending the instruction of turning on the main relay.

Smart electricity compensating function

The smart electricity compensating function refers to that the BMS regularly monitors the voltage of the low-voltage battery when the vehicle is in the sleep mode. When the battery voltage is lower than the set lower limit, the VCU wakes up, and the VCU activates DC-DC to charge the battery to prevent the low-voltage battery from lack of electricity.

Thermal management function

Thermal management function refers to that the user can control the turning on and off of the air conditioner and adjust the temperature in the vehicle through the local A/C panel, MMI air conditioner and remote air conditioner settings. In addition, according to the temperature of each power component (such as battery), turn on the fan, air conditioner or PTC heating device to control the temperature of the power component and make it work under the appropriate temperature condition.

Working conditions for charging

After the complete vehicle enters the charging mode, the cooling water pump is enabled. The control of the fan is affected by the DCDC body, the water temperature of the high and low-voltage charging system, the delay strategy, etc; when the VCU collects the signal that the high and low-voltage charging system is in the working state, it starts the demand signal for water pump control, and controls the gear of the fan by judging the water temperature signal sent by the high and low-voltage charging system.

Considering that the high-power use of other electrical appliances and external electrical appliances of the complete vehicle makes DCDC work under maximum load, resulting in the excessive and rapid rise of the body temperature of DCDC, the monitoring of the body temperature of DCDC is intensified under the charging condition.

Working conditions for driving

Under the driving condition, the speed of the fan is controlled by the temperature of the virtual water inlet of the motor controller, the body of the parts and the vehicle speed; when VCU collects the READY state signal, it collects the virtual temperature of the water inlet of the motor controller, and at the same time collects and judges the body temperature signal sent by the motor/inverter/DCDC body (taking the high temperature collected by the body sensor as the control parameter) to control the fan gear.

Safety management function

Power failure after collision

During the driving or charging process of the vehicle, after the vehicle involves in a collision, the VCU receives the main positive and main negative relays sent by the BMS to be disconnected, and the VCU initiates the command of pulling up the EPB.

Insulation testing

During AC/DC charging, the battery management system (BMS) sends a signal to the VCU when it detects the leakage of the high-voltage system; after the VCU judges and processes this signal, and send a relay disconnection command to BMS, and sends a signal to the IPU. The DC stops working. The IPU start releasing.

Stopping while charging

The function of stopping vehicle while charging refers to the function that when the vehicle speed is $-1.8\text{km/h} \leq V \leq 1.8\text{km/h}$, and the DC charging gun or the AC charging gun is connected, the complete vehicle is not allowed to run.

When the vehicle is in the READY gear and the vehicle speed is $V > 1.8\text{km/h}$ or $V < -1.8\text{km/h}$, if the VCU receives the DC

charging gun connection signal sent by the BMS or the AC charging gun connection signal sent by the OBC, the vehicle keeps running normally.

When the vehicle is in the READY gear and the vehicle speed is $-1.8\text{km/h} \leq V \leq 1.8\text{km/h}$, if the VCU receives the connection signal of the DC charging gun sent by the BMS or the AC charging gun sent by the OBC, the vehicle is not allowed to run, and the Ready state indicator lamp turns off, and it is judged whether the gear position is P gear at this time. If it is not P gear, it needs to be switched to P gear, and gear shifting is not allowed. When in P gear, it does not respond to the shifting action, and keeps the P gear.

When the vehicle is in the OFF or ON gear, plug in the DC charging gun or the AC charging gun, or plug in the DC charging gun and the AC charging gun at the same time. When the brake pedal is pressed and the start-and-stop button is pressed, the complete vehicle cannot be started at a high voltage. The VCU judges whether the P gear is engaged at this time. When not in P gear, it is needed to switch to P gear and gear shifting is not allowed. When in P gear, it does not respond to the shifting action, and keeps the P gear.

High voltage interlocking

When the BMS detects a failure of the high-voltage system inside the battery pack while the vehicle is running, the BMS limits the power, and the VCU limits the output power according to the current continuous discharge power sent by the BMS.

VCU high voltage interlocking includes the positive and negative connectors of the motor controller, the positive and negative connectors on the junction box, the compressor positive and negative connectors, the OBC AC charging positive and negative terminals with high-voltage output positive and negative terminals and PTC positive and negative terminals. When VCU can not detect the normal high-voltage interlocking signal, it sends the high-voltage interlocking connection fault through CAN network, records the fault code of high-voltage interlock connection, and lights up the system fault lamp.

When the vehicle speed is greater than 1.8 km/h during running, if the VCU receives the abnormal high-voltage interlocking signal of the complete vehicle, the VCU records the fault but does not deal with it. When the vehicle speed is less than 1.8km/h, send the A/C allowable discharge power as 0, IPU(DC-DC) sends inactive command, and VCU controls the vehicle to shift to P gear and does not allow gear shifting after the VCU receives an IPU(DC-DC) message and its working status is inactive and A/C power consumption is 0.

The VCU sends a command to the BMS to turn on the main relay, disconnecting the positive and negative contactors.

10.3.3 Part position

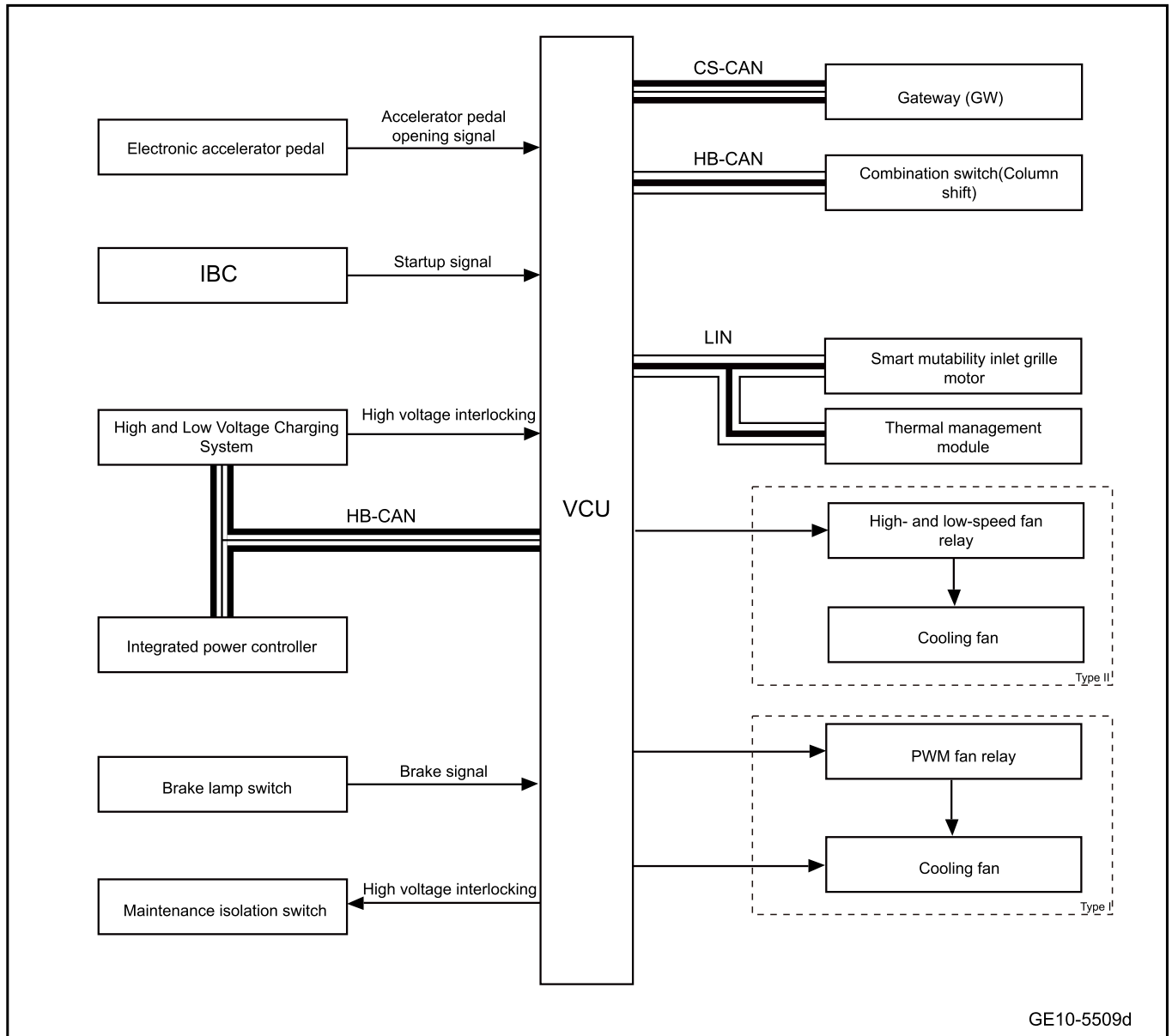
10.3.3.1 Part Position



1. Vehicle control unit

10.3.4 Electrical block diagram

10.3.4.1 Electrical Schematic Diagram of VCU



GE10-5509d

10.3.5 Diagnostic information and procedures

10.3.5.1 Diagnosis Description

Before diagnosing the fault of the vehicle control system. Refer to Description and operation. Understand and familiarize yourself with the working principle of the vehicle control system, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Any fault diagnosis of the vehicle control system should start with the visual inspection, which will guide maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

10.3.5.2 Routine inspection

1. Check if there is any after-sales installation that may affect the normal operation of VCU, and confirm that VCU can operate normally.
2. Check system components that are easily accessible or visible to ensure that there are no obvious damages or conditions that might cause malfunctions.

10.3.5.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

10.3.5.4 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

10.3.5.5 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Power supply is low	Refer to VCU Power Failure

Diagnostic Trouble Code	Description	Fault location/elimination method
U300617	Power supply is high	
U003788	The chassis bus is switched off.	Refer to VCU Communication Failure
U006488	The new energy bus is switched off	
U000100	Private CAN bus off	
U016487	Communication with AC is lost	
U042481	AC CAN communication error	
U014687	Communication with GW is lost	
U044781	GW CAN communication error	
U015587	Communication with IPK is lost	
U042381	IPK CAN communication error	
U011087	Communication with motor controller IPU is lost	
U249683	IPU CAN communication error	
P1C8A87	Communication with private CAN motor controller is lost	
P1C8B86	Communication with private CAN motor controller error	
U029887	Communication with DCDC is lost	
U059981	DCDC CAN communication error	
U111587	Communication with vehicle-mounted charger OBC is lost	
U140581	OBC CAN communication error	
U011287	Communication with BMSH is lost	
U041381	BMSH CAN communication error	
U111887	Communication with PCU parking lock module is lost	
U140881	PCU CAN communication error	
U010387	Communication with gear lever EGSM is lost	
U040481	EGSM CAN communication error	
U015187	Communication with ACU airbag module is lost	
U045281	ACU CAN communication error	
U014087	Communication with the BCM vehicle body control unit is lost	
U042281	BCM CAN communication error	
U013187	Communication with EPS power-assisted steering is lost	
U042081	EPS CAN communication error	
U012687	Communication with SAS is timeout	
U042881	SAS CAN communication error	

Diagnostic Trouble Code	Description	Fault location/elimination method
U012287	Communication with ESC is lost	
U241283	ESC CAN communication error	
U019887	Communication with T-BOX remote information processing controller is lost	
U049981	T-BOX CAN communication error	
U120387	Communication with FCS is lost	
U143381	Communication with FCS error CAN	
U015987	Communication with PAS is lost	
U045A81	Communication with PAS error CAN	
U015687	Communication with MMI is lost	
U045781	MMI CAN communication error	
P1C1E04	Accelerator pedal signal 1 overvoltage	
P1C1F04	Accelerator pedal signal 1 undervoltage	
P1C2004	Accelerator pedal signal 2 overvoltage	Refer to Electronic Accelerator Pedal Signal 2 Failure
P1C2104	Accelerator pedal signal 2 undervoltage	
P1C2105	Accelerator pedal signal is unreliable	Refer to Electronic Accelerator Pedal Signal Failure
P1C2204	The two signals of accelerator pedal are inconsistent	
P1C0852	Main Relay Fault	Refer to Main Relay Fault
P1C2604	Battery discharge fault level 2	Refer to Other System Faults Reported by VCU
P1C2704	Battery discharge fault level 3	
P1C2804	Battery discharge fault level 4	
P1C6C04	BMS reports power battery discharging fault level 6	
P1C6D04	BMS reports power battery charging fault level 2	
P1C718A	BMS reports power battery charging fault level 3	
P1C728A	BMS reports power battery charging fault level 4	
P1C6E04	BMS reports power battery charging fault level 6	
P1C2B04	Charger fault level 2	
P1C2C04	Charger fault level 3	
P1C2C05	Charger fault level 6	
P1C2F04	Gear selector fault level 3	
P1C6F04	PCU reports level-3 fault	
P1C3304	Motor controller fault level 1 (power reduction)	
P1C3404	Motor controller fault level 2 (output off)	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1C3504	Motor controller fault level 3 (power off)	
P1C3804	DCDC controller fault level 2 (automatic recovery)	
P1C3904	DCDC controller fault level 3 (can be reset and recovered by KL15)	
P1C4296	Vehicle speed signal warning failure	
P1CA504	ADC low voltage detection fault	
P1CA604	ADC reference voltage fault	
P1C6B25	BMS reports an insulation fault	
P1C3A96	EBD reports a fault	
P1C3B96	ABS reports a fault	
P1C3B00	ESP reports a fault	
P1C3C96	TCS reports a fault	
P1C3D96	EPS reports a fault	
P1C3F96	Air conditioning system reports a fault	
P1C4096	High voltage interlocking fault	
P1C8C04	High voltage interlock PWM output signal is short to power supply	
P1C8D04	High voltage interlock PWM output signal is short to ground	
P1C8E04	High voltage interlock PWM output signal has the open circuit	Refer to Motor water valve PWM Signal Failure
P1C7D04	Motor system water pump PWM control signal is short-circuited to power supply	
P1C7E04	Motor system water pump PWM control signal is short-circuited to ground	
P1C7F04	Motor system water pump PWM control signal circuit is opened	Refer to Motor Water Pump Feedback Signal Fault
P1C1352	Motor water pump relay fault	
P1C7D05	Motor water pump enabling signal is short-circuited to power supply	Refer to Motor water pump relay control signal fault
P1C7E05	Motor water pump enabling signal is short-circuited to ground	
P1C7F05	Motor water pump enabling signal circuit is opened	
P1C9304	VCU sensor power supply 1 output fault	Refer to Internal Faults of VCU
P1C9404	VCU sensor power supply 1 is overtemperature	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1C9504	VCU sensor power supply 1 is overvoltage	
P1C9604	VCU sensor power supply 1 is short-circuited to ground	
P1C9704	VCU sensor power supply 1 is undervoltage	
P1C9804	VCU sensor power supply 2 output fault	
P1C9904	VCU sensor power supply 2 is overtemperature	
P1C9A04	VCU sensor power supply 2 is overvoltage	
P1C9B04	VCU sensor power supply 2 is short-circuited to ground	
P1C9C04	VCU sensor power supply 2 is undervoltage	
P1CA204	VCU internal NVM reading data error	
P1CA304	VCU internal NVM writing data error	
P1CA404	VCU stack overflow	
P1C1E00	IMMO authentication failure causes startup failure	
P1C1E01	Vehicle body control unit BCM reports cruise switch failure	
P1C4396	Invalid vehicle speed signal (power reduction)	
P1C5C63	Crash signal detected	
P1CAC04	VCU internal abnormal software reset	
P1C6B87	PCU does not respond to VCU commands	
P1C6B01	Waiting for pre-charging work timeout upon regular request of powering on at a high voltage	
P1C6B02	Waiting for pre-charging work timeout upon charging request of powering on at a high voltage	
P1C6B03	Waiting for pre-charging work timeout upon smart electricity supplementing request of charging powering on at a high voltage	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1C6B04	Waiting for pre-charging work timeout upon external discharging request of powering on at a high voltage	
P1C6B05	Waiting for pre-charging work timeout upon remote A/C request of powering on at a high voltage	
P1C6B06	Waiting for main relay closing timeout upon regular request of powering on at a high voltage	
P1C6B07	Waiting for main relay closing timeout upon charging request of charging powering on at a high voltage	
P1C6B08	Waiting for main relay closing timeout upon smart electricity supplementing request of charging powering on at a high voltage	
P1C6B09	Waiting for main relay closing timeout upon external discharging request of powering on at a high voltage	
P1C6B0A	Waiting for main relay closing timeout upon remote A/C request of powering on at a high voltage	
P1C6B0C	Waiting for BMS&IPU work timeout upon charging request of powering on at a high voltage	
P1C6B0D	Waiting for BMS&IPU work timeout upon smart electricity supplementing request of charging powering on at a high voltage	
P1C6B0E	Waiting for BMS&IPU work timeout upon external discharging request of powering on at a high voltage	
P1C6B0F	Waiting for BMS&IPU work timeout upon remote A/C request of powering on at a high voltage	
P1C6B10	Waiting for BMS&IPU work timeout upon regular fast powering on at a high voltage	
P1C6B11	Waiting for BMS&IPU work timeout upon charging request of fast powering on at a high voltage	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1C6B12	Waiting for BMS&IPU work timeout upon smart electricity supplementing request of charging powering fast on at a high voltage	
P1C6B13	Waiting for BMS&IPU work timeout upon external discharging request of fast powering on at a high voltage	
P1C6B14	Waiting for BMS&IPU work timeout upon remote A/C request of fast powering on at a high voltage	
P1C6B15	BMS&IPU status abnormal response timeout in normal mode under high voltage state	
P1C6B16	BMS&IPU&DCDC status abnormal response timeout in charging mode under high voltage state	
P1C6B17	BMS&IPU&DCDC status abnormal response timeout in smart electricity supplementing mode under high voltage state	
P1C6B18	BMS&IPU&DCDC status abnormal response timeout in external discharging mode under high voltage state	
P1C6B19	BMS&IPU&DCDC status abnormal response timeout in remote A/C mode under high voltage state	
P1C6C01	RSRS power supply relay fault	
P1C6C02	Stopper fault	
P1C6C03	Locked rotor fault	
P1C6C09	Electrical fault	
P1C6C05	Low voltage fault	
P1C6C06	Over voltage fault	
P1C6C07	Over temperature fault	
P1CAC00	Internal Faults of VCU	
P1CAD04	The software is not compatible with the vehicle	
P1C6B0B	Waiting for BMS&IPU work timeout upon regular request of powering on at a high voltage	
P1C6C08	Lin fault	

Diagnostic Trouble Code	Description	Fault location/elimination method
P1CCE92	PWM fan relay fault	Refer to Cooling fan does not work(Type II)
P1CCF12	PWM fan enable signal is short-circuited to power supply	
P1CCF11	PWM fan enable signal is short-circuited to ground	
P1CCF13	PWM fan enable signal is open circuited	
P1CD012	PWM fan control signal is short-circuited to power supply	
P1CD011	PWM fan control signal is short-circuited to ground	
P1CD013	PWM fan control signal is open circuited	
P1C0F52	High-speed fan relay fault	Refer to High-speed fan relay circuit fault
P1C7704	High-speed fan enable signal is short-circuited to power supply	
P1C7804	High-speed fan enable signal is short-circuited to ground	
P1C7904	High-speed fan enable signal is open circuited	
P1C1152	Low-speed fan relay fault	Refer to Low-speed fan relay circuit fault
P1C7A04	Low-speed fan enable signal is short-circuited to power supply	
P1C7B04	Low-speed fan enable signal is short-circuited to ground	
P1C7C04	Low-speed fan enable signal is open circuited	

10.3.5.6 VCU power supply failure

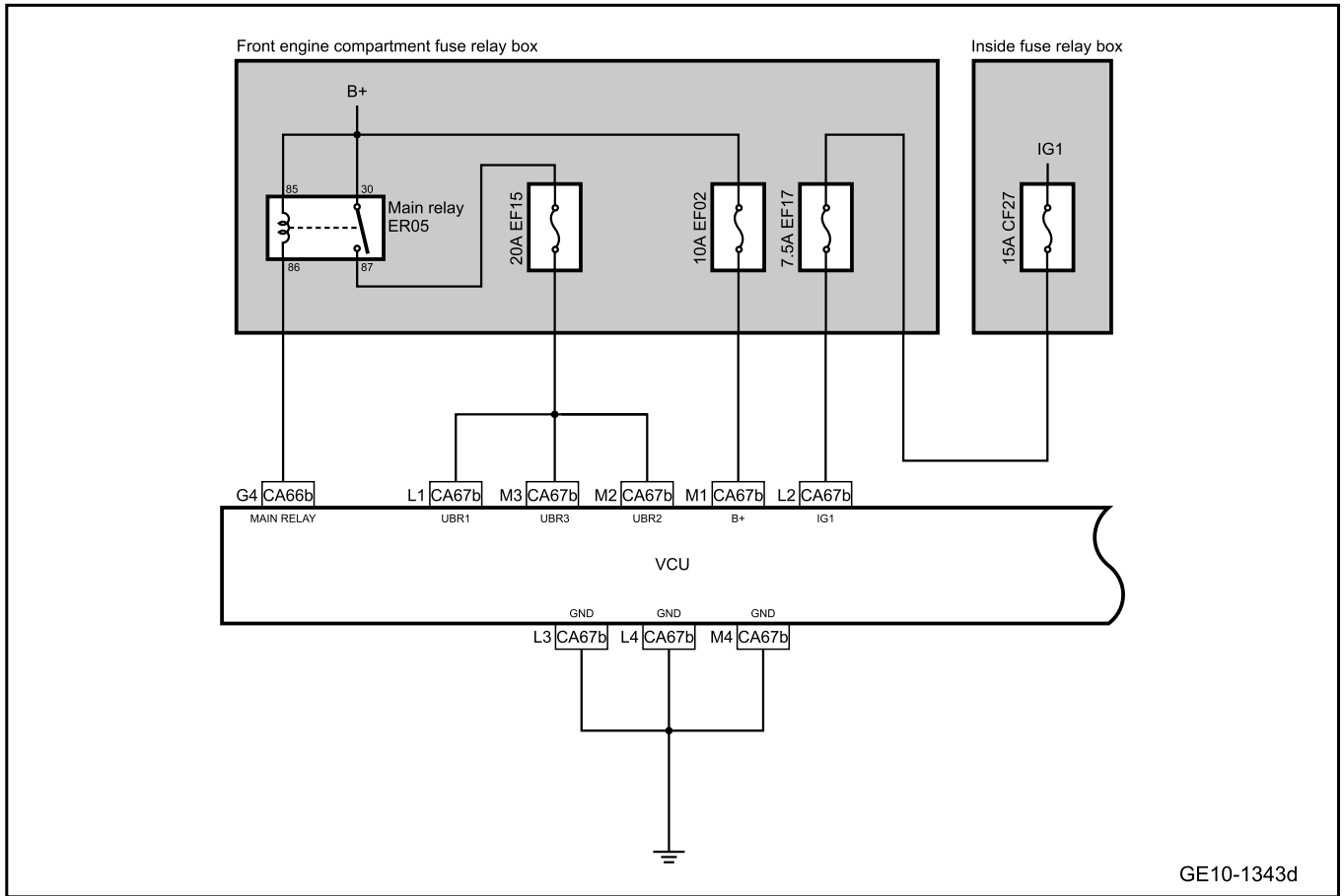
1. DTC description:

Diagnostic Trouble Code	Trouble description
U300616	Power supply is low
U300617	Power supply is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	The battery voltage is $\leq 9V$, lasting for at least 1s, the main relay did not report an error.	Ignition state should be IGN ON for greater than or equal to 1 second or wake up after 500ms	1. Circuit 2. Fuse 3.VCU
U300617	Battery voltage $\geq 16V$, lasting for at least 1s		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble! The diagnosis methods of the above fault codes are similar.

Step 1	Check whether other modules have power failure codes.
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- A. Read the fault code and confirm whether other modules have output power failure code.

No	To Step 4.
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Yes

Step 2	Primary check.
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- A. Check the VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

Yes	Repair or replace the faulty part.
-----	------------------------------------

No

Step 3 | Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF02 is blown out.
Rated capacity of fuse: 10A
- C. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF15 is blown out.
Rated capacity of fuse: 20A
- D. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF17 is blown out.
Rated capacity of fuse: 7.5A

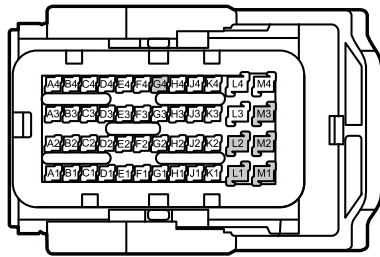
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 | Check the power supply circuit of VCU

CA67b VCU module harness connector A



GE10-6032d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the VCU harness connector CA67b.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(G4)	Vehicle body is grounded.	Standard voltage: 11-14V
CA67b(L1)		
CA67b(M3)		
CA67b(M2)		
CA67b(M1)		
CA67b(L2)		

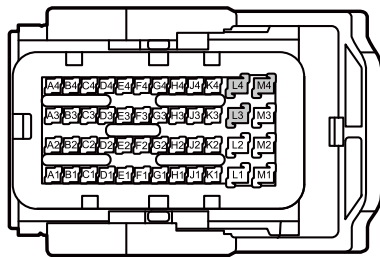
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check the VCU ground circuit.

CA67b VCU module harness connector A



GE10-6033d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the VCU harness connector CA67b.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(L3)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA67b(L4)		
CA67b(M4)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Replace the VCU

- A. Replace the VCU Refer to [Replacement of VCU](#)

Next step

Step 8 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

10.3.5.7 VCU communication fault

1. DTC description:

Diagnostic Trouble Code	Trouble description
U003788	The chassis bus is switched off.
U006488	The new energy bus is switched off
U000100	Private CAN bus off
U016487	Communication with AC is lost
U042481	AC CAN communication error
U014687	Communication with GW is lost
U044781	GW CAN communication error
U015587	Communication with IPK is lost
U042381	IPK CAN communication error
U011087	Communication with motor controller IPU is lost
U249683	IPU CAN communication error
P1C8A87	Communication with private CAN motor controller is lost

Diagnostic Trouble Code	Trouble description
P1C8B86	Communication with private CAN motor controller error
U029887	Communication with DCDC is lost
U059981	DCDC CAN communication error
U111587	Communication with vehicle-mounted charger OBC is lost
U140581	OBC CAN communication error
U011287	Communication with BMSH is lost
U041381	BMSH CAN communication error
U111887	Communication with PCU parking lock module is lost
U140881	PCU CAN communication error
U010387	Communication with gear lever EGSM is lost
U040481	EGSM CAN communication error
U015187	Communication with ACU airbag module is lost
U045281	ACU CAN communication error
U014087	Communication with the VCU vehicle body control unit is lost
U042281	VCU CAN communication error
U013187	Communication with EPS power-assisted steering is lost
U042081	EPS CAN communication error
U012687	Communication with SAS is timeout
U042881	SAS CAN communication error
U012287	Communication with ESC is lost
U241283	ESC CAN communication error
U019887	Communication with T-BOX remote information processing controller is lost
U049981	T-BOX CAN communication error
U120387	Communication with FCS is lost
U143381	Communication with FCS error CAN
U015987	Communication with PAS is lost
U045A81	Communication with PAS error CAN
U015687	Communication with MMI is lost
U045781	MMI CAN communication error

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U003788	Detected CAN bus disconnection for 1s	1. The power supply voltage is 9V-16V 2. Meet the TDiagEnable condition 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery	1. Circuit 2. VCU
U006488	Detected CAN bus disconnection for 1s		
U000100	Detected CAN bus disconnection for 1s		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U016487	Any failure while communicating with message 0x1E0, confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) Period is as follows: 0x1E0/50ms	1. One of the following conditions is met: 2. AC charging mode 3. DC charging mode 4. V2G discharging mode 5. Remote A/C mode 6. Intelligent charging mode 7. Vehicle ready state without any of the above modes (TKL15_open>3S) 8. Open above any mode- The supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details). 9. Meet the TDiagEnable condition 10. No bus off is detected, and more than 1000ms after the last bus disconnection recovery 11. Ignition state should be IG ON for 3 seconds;	
U042481	When communicating with MMI information individual, 0x1E0 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x1E0/50ms		
U014687	Any failure while communicating with message 0x283 0x2F1, confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) 0x2F1/100ms		
U044781	When communicating with GW information individual, 0x2F1 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x2F1/100ms		
U015587	IPK (ID=0x3F1) information loss 5T confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) 0x3F1/1000ms		
U042381	When communicating with IPK information individual, 0x3F1 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x3F1/1000ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U011087	The fault occurs while communicating with any IPU message, a single message of 0x171、 0x0A8, 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) cycle is as follows: 0 x 171:20 ms 0 xA8:10 ms		
U249683	Any IPU message individual 0x171 0x0A8 activity counter error or checksum error or DLC < 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0 x 171:20 ms 0 xA8:10 ms		
P1C8A87	The fault occurs while communicating with any IPU message, a single message of 0x71 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x71/10 ms		
P1C8B86	The fault occurs while communicating with any IPU message, a single message of 0x71 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x71/10ms		
U029887	Any IPU message individual 0x71 activity counter error or checksum error or DLC < 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0x71/10ms		
U059981	When communicating with DCDC information individual, 0x176 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x176/50ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111587	The fault occurs while communicating message, a single message (0x220, 0x221, 0x222) 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0 x 220:100 ms 0 x 221:100 ms 0 x 222:100 ms		
U140581	When communicating with OBC information individual, 0x220 0x221 0x222 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0 x 220:100 ms 0 x 221:100 ms 0 x 222:100 ms		
U011287	The fault occurs while communicating message, a single message loss (0x0B0, 0x211, 0x178, 0x17A) 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0 x0B0:10 ms 0 x 211:100 ms 0 x 178:10 ms 0 x 17A:100 ms		
U041381	Any BMS message individual (0x0B0 0x211 0x178 0x17A) activity counter error or checksum error or DLC < 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0 x0B0:10 ms 0 x 211:100 ms 0 x 178:10 ms 0 x 17A:100 ms		
U111887	Faults 0x213 occurred during communication with any PCU information, 5*Tx (Tx>50ms) or 250ms (Tx≤50ms). 0x213/100ms		

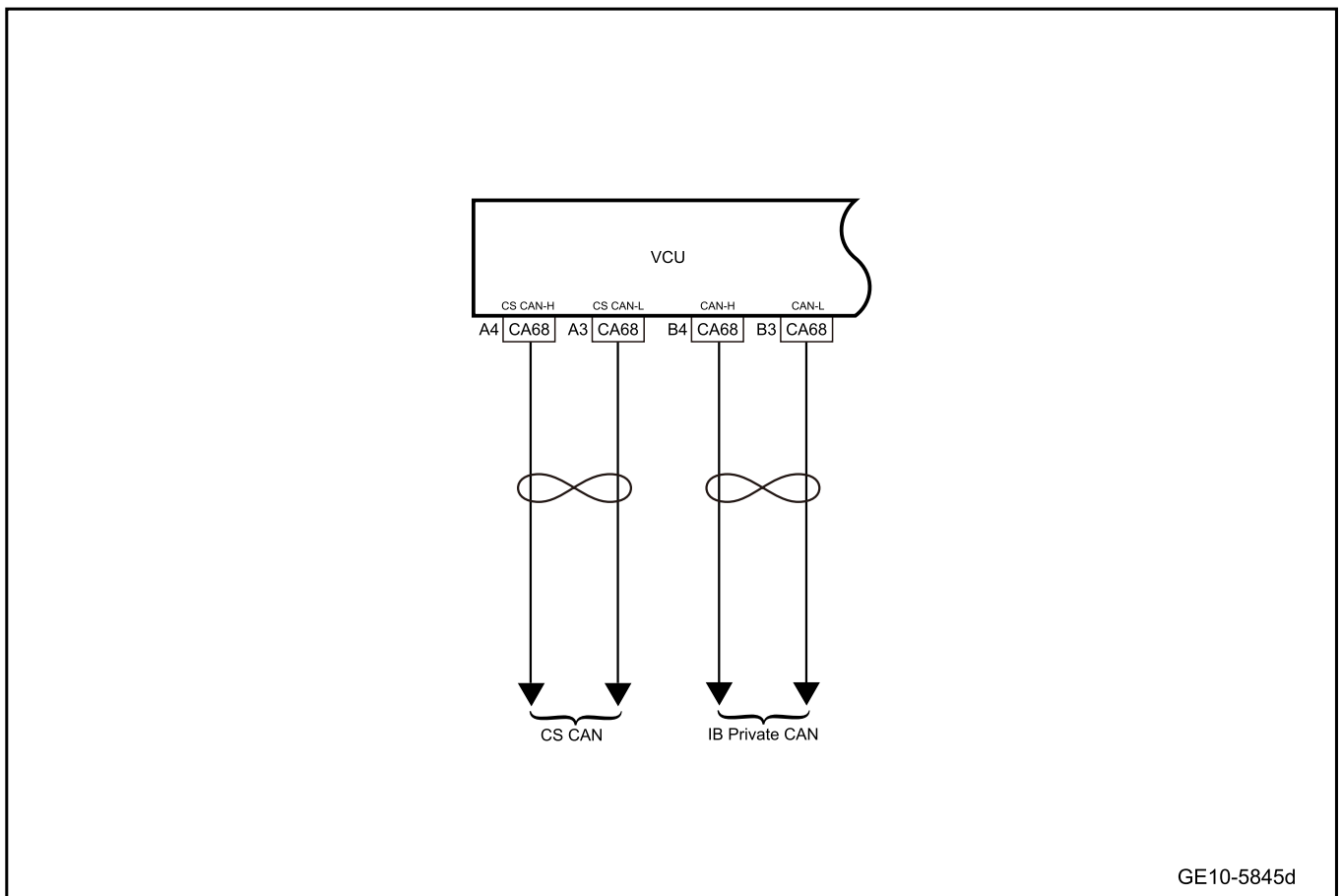
DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U140881	Any PCU message individual 0x213 activity counter error or checksum error or DLC <; 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0x213/100ms		
U010387	Faults 5*Tx (Tx>50ms) or 250ms (Tx ≤ 50ms) occurred when communicating with EGSM information 0x145. 0x145/20ms		
U040481	Any EGSM message individual 0x145 activity counter error or checksum error or DLC <; 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0x145/20ms		
U015187	Faults 0x380 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) occurred during communication with any ACU information.The cycle is as follows: 0x380/200ms		
U045281	Any ACU message individual 0x380 activity counter error or checksum error or DLC <; 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0x380/200ms		
U014087	Faults 0x286/0x284/0x285/0x283/0x1E2 5*Tx (, Tx>50ms) or 250ms (Tx≤50ms) occurred during communication with any body control module information. 0 x 286:100 ms 0 x 284:100 ms 0 x 285:100 ms 0 x 283:100 ms 0 x1E2:20 ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U042281	When communicating with body control module information individual, 0x286/0x284/0x285/0x283/0x1E2 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0 x 286:100 ms 0 x 284:100 ms 0 x 285:100 ms 0 x 283:100 ms 0 x1E2:20 ms		
U013187	The fault occurs while communicating with any EPS message, a single message of 0x150 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) The cycle is as follows: 0x150/20ms		
U042081	When communicating with EPS information individual, 0x150 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x150/20ms		
U012687	Faults 0x0E0 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) occurred during communication with any SAS information. 0xE0/10ms		
U042881	Any SAS message individual 0x0E0 activity counter error or checksum error or DLC <; 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0xE0/10ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012287	Faults 0x125/0x121/0x127/ 0x128/0x129/0x62/0xE5 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) occurred during communication with any ESC information. 0 x 125:20 ms 0 x 121:20 ms 0 x 127:20 ms 0 x 128:20 ms 0 x 129:20 ms 0 x 62:10 ms 0 xE5:20 ms		
U241283	Any ESC message individual 0x125/0x121/0x127/0x128/ 0x129/0xE5 activity counter error or checksum error or DLC < 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0 x 125:20 ms 0 x 121:20 ms 0 x 127:20 ms 0 x 128:20 ms 0 x 129:20 ms 0 x 62:10 ms 0 xE5:20 ms		
U019887	Faults 0x292 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) occurred during communication with any T- BOX information. 0x292/ 100ms		
U049981	Any T-BOX information individual 0x292 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x292/100ms		
U120387	Any failure while communicating with message/0x1A2/ 0x1A2, confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) 0 x1A1:20 ms 0 x1A2:20 ms		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U143381	Any IPU message individual /0x1A1/0x1A2 activity counter error or checksum error or DLC < 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0 x1A1:20 ms 0 x1A2:20 ms		
U015987	Any failure while communicating with message 0x136, confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) 0x136/20ms		
U045A81	Any IPU message individual 0x136 activity counter error or checksum error or DLC < 8 Confirmation time: 5*Tx (Tx > 50ms) or 250ms (Tx ≤ 50ms), and the cycle is as follows: 0x136/20ms		
U015687	Any failure while communicating with message 0x2A2, confirmation time: 5*Tx (Tx>50ms) or 250ms (Tx≤50ms) 0x2A2/100ms		
U045781	When communicating with MMI information individual, 0x2A2 DLC < 8 confirmation time: 5 * TX (TX > 50ms) or 250ms (TX ≤ 50ms) cycle is as follows: 0x2A2/100ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 | Check the IB private-CAN network integrity.

- A. To check the integrity of the IB private-CAN bus, please refer to [IB private-CAN Bus Network Integrity Check](#)
- B. Confirm that the IB private-CAN network is functioning properly.

No Check or repair IB private-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4 | Check the CS-CAN network integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm that the CS-CAN network is functioning properly.

No Check or repair CS-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 5 | Replace the VCU

- A. Check whether VCU power supply and grounding harness are normal. Refer to [VCU Power Failure](#)
- B. Replace the VCU. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 | Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

10.3.5.8 High voltage interlocking fault(Type I)

1. DTC description:

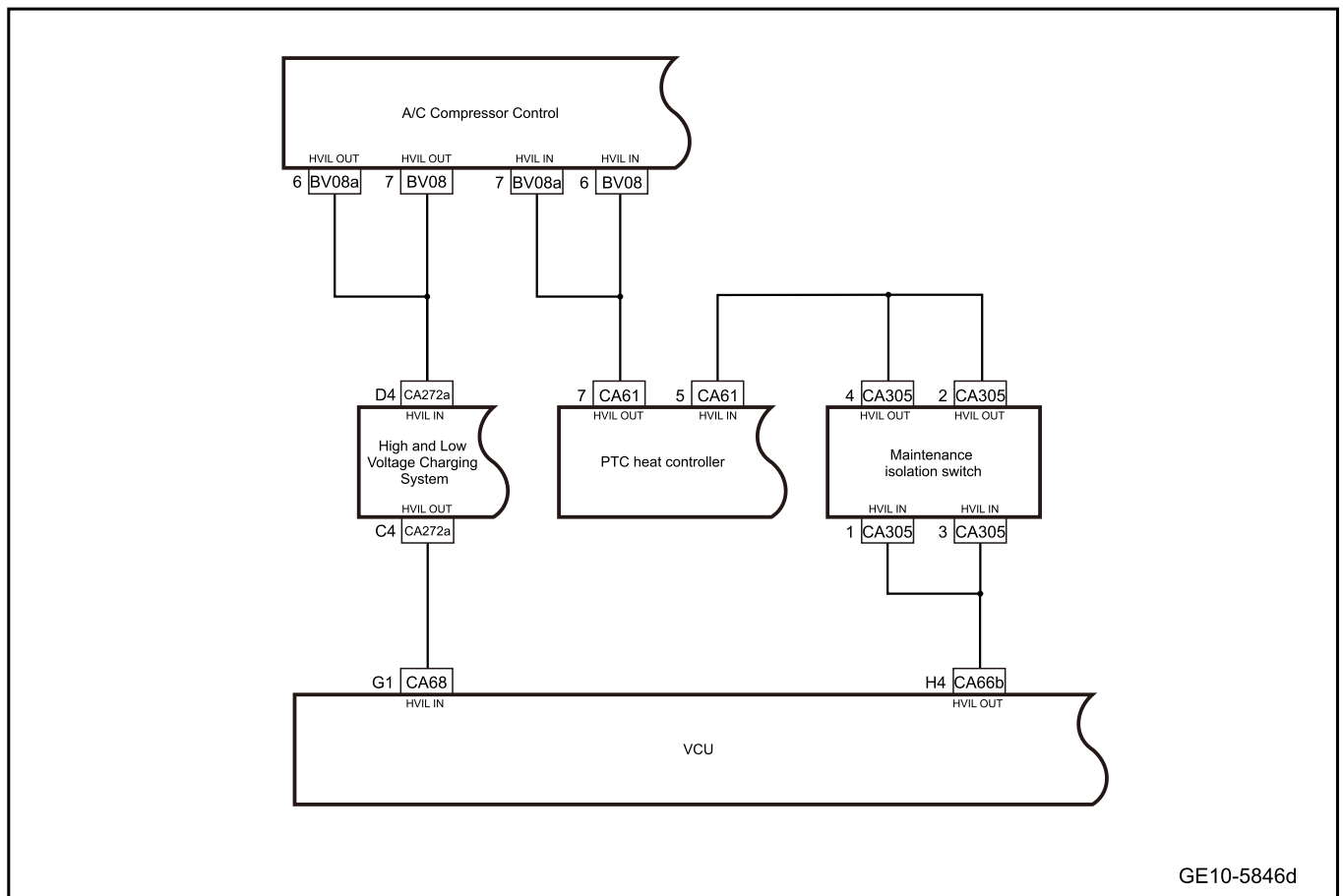
Diagnostic Trouble Code	Description
P1C4096	High voltage interlocking fault
P1C8C04	High voltage interlock PWM output signal is short to power supply
P1C8D04	High voltage interlock PWM output signal is short to ground
P1C8E04	High voltage interlock PWM output signal has the open circuit

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C4096	HVIL signal of BMSH (0x0B0) and VCU indicates that HVIL is abnormal (in one of the lists) VCU detection failure time:500 ms. The main relay does not report an error	1. One of the following conditions is met: 2. AC charging mode 3. DC charging mode 4. V2G discharging method 5. Remote A/C mode 6. Intelligent charging mode 7. Vehicle ready state without any of the above modes (TKL15_open>3S) 8. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	1. Circuit 2. A/C compressor 3. High and low-voltage charging system 4. PTC heating controller 2 5. VCU

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C8C04	Short circuit to power supply	TKL15 Off -> On, delay 1000ms	
P1C8D04	Short circuit to ground		
P1C8E04	Open circuit	1. TKL15 Off -> On, delay 1000ms 2. There is no fault in the main relay	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

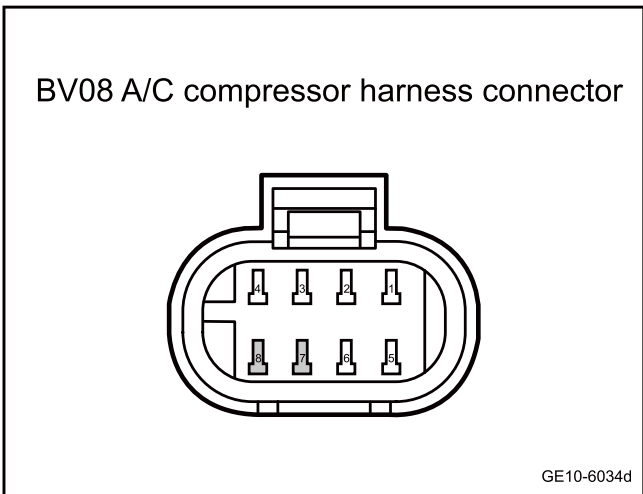
- A. Check the A/C compressor, the PTC heat controller 2, the high and low-voltage charging system, maintenance isolating switch and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

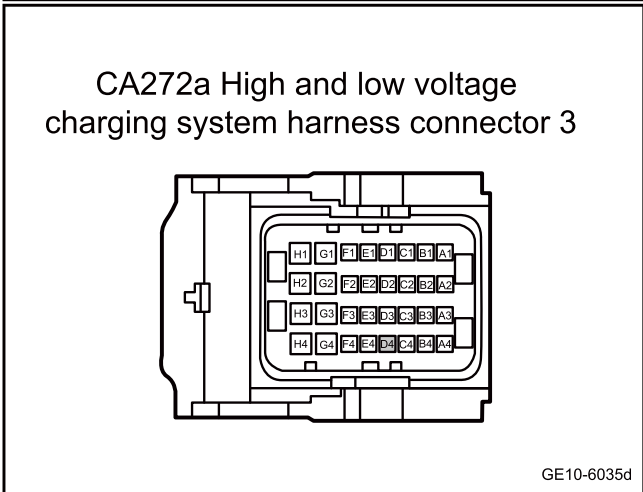
Yes

Step 3 Check the harness between the AC compressor and the high and low voltage charging system.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV08(7)	CA272a(D4)	Standard resistance: less than 1Ω
BV08(8)		
CA272a(D4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher



- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA272a(D4)	Vehicle body is grounded.	Standard voltage: 0V

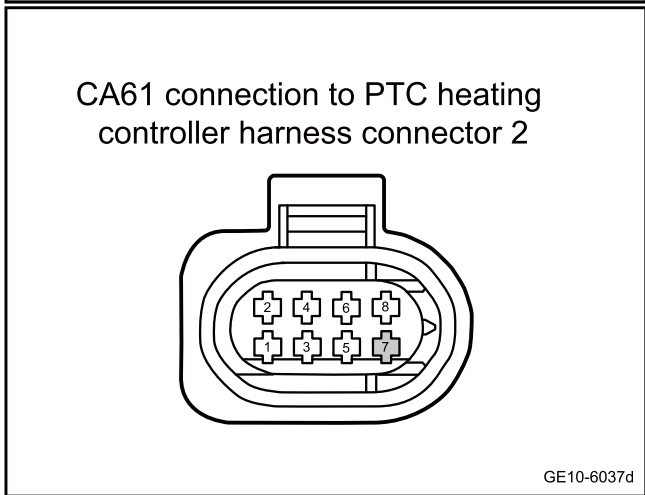
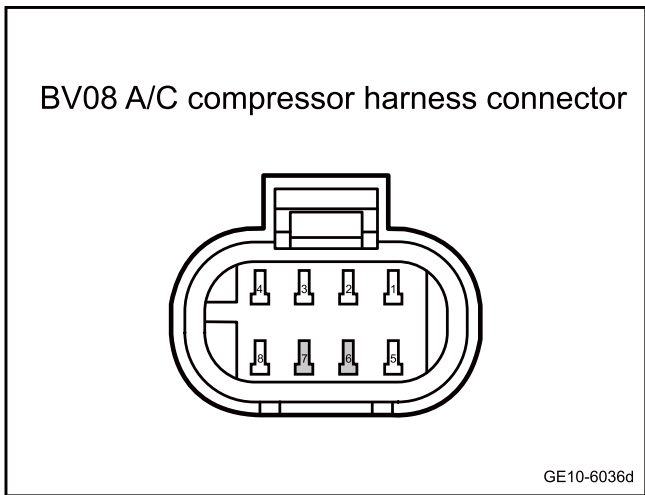
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the A/C compressor and the PTC controller 2 is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the PTC heat controller 2 harness connector CA61.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV08(6)	CA61(7)	Standard resistance: less than 1Ω
BV08(7)		
CA61(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA61(7)	Vehicle body is grounded.	Standard voltage: 0V

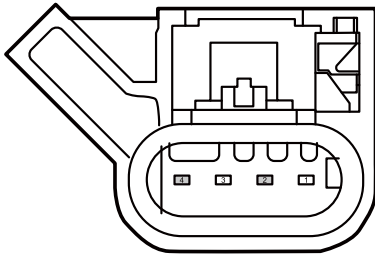
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

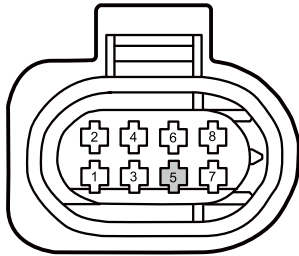
Step 5 Check the circuit between maintenance isolating switch and heat controller 2.

CA305 maintenance isolation switch harness connector



GE10-6038d

CA61 connection to PTC heating controller harness connector 2



GE10-6039d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect harness connector CA305 of the EPB switch.
- C. Disconnect the PTC heat controller 2 harness connector CA61.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA305(2)	CA61(5)	Standard resistance: less than 1Ω
CA305(4)		
CA61(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA61(5)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

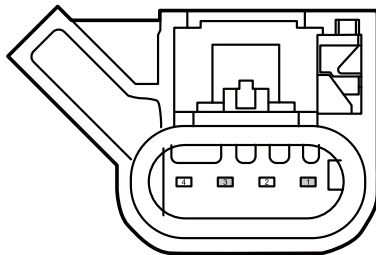
No

Repair or replace the harness.

Yes

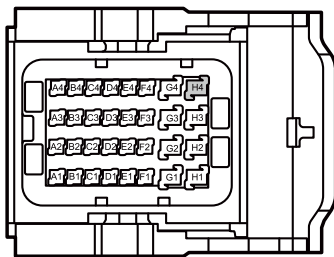
Step 6 Check whether the circuit between the VCU and the maintenance isolating switch is normal.

CA305 maintenance isolation switch harness connector



GE10-6040d

CA66b VCU module harness connector B



GE10-6041d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect harness connector CA305 of the EPB switch.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA305(1)	CA66b(H4)	Standard resistance: less than 1Ω
CA305(3)		
CA66b(H4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(H4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

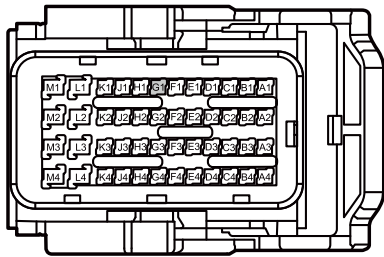
No

Repair or replace the harness.

Yes

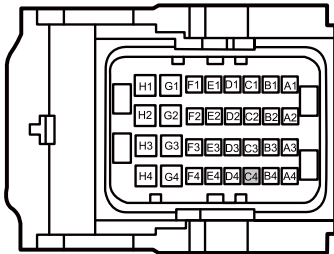
Step 7 | Check the circuit between VCU and high and low voltage charging system.

CA68 VCU module harness connector C



GE10-6042d

CA272a High and low voltage charging system harness connector 3



GE10-6043d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the VCU harness connector CA68.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(G1)	CA272a(C4)	Standard resistance: less than 1Ω
CA68(G1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(G1)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Replace the A/C compressor.

- A. To replace the A/C compressor, refer to [Replacement of A/C Compressor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Replace the high and low-voltage charging system.

- A. To replace the high and low voltage charging system, please refer to [Replacement of High and Low Voltage Charging System](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10	Replace the PTC heat controller 2.
------------	------------------------------------

- A. To replace the PTC heat controller 2, please refer to [Replacement of PTC Heat Controller 2](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Replace the VCU
---------	-----------------

- A. Check whether VCU power supply and grounding harness are normal. Refer to [VCU Power Failure](#)
- B. Replace the VCU Refer to [Replacement of VCU](#)

Next step

Step 12	Reprogram and reset the VCU.
------------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

10.3.5.9 Motor water pump PWM signal failure

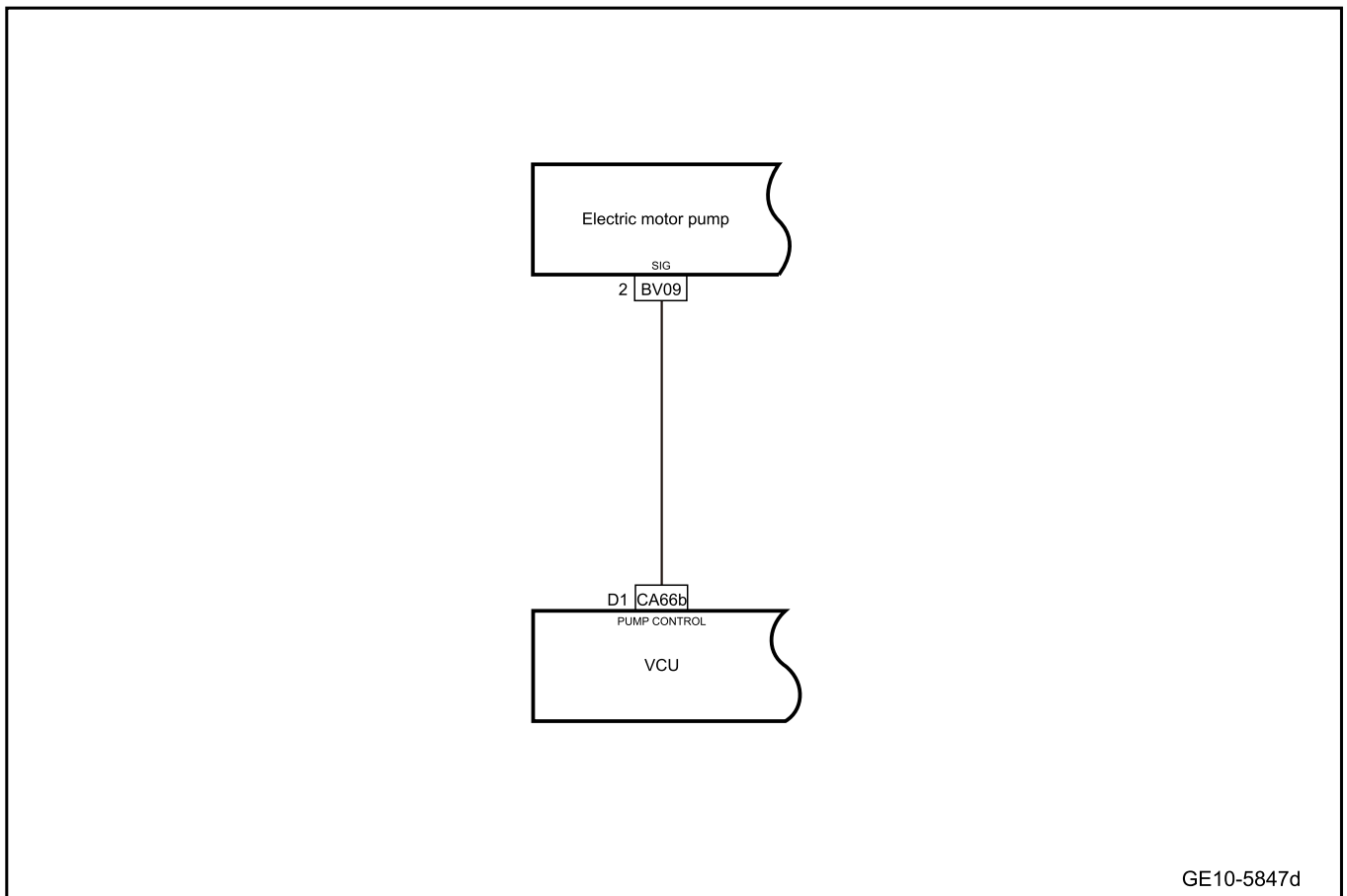
1. DTC description:

Diagnostic Trouble Code	Description
P1C7D04	Motor system water pump PWM control signal is short-circuited to power supply
P1C7E04	Motor system water pump PWM control signal is short-circuited to ground
P1C7F04	Motor system water pump PWM control signal circuit is opened

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C7D04	Short circuit to VCC	1. In all operating conditions 2. when the water pump is enabled, the water pump relay has no fault	1. Circuit 2. Motor water pump 3.VCU
P1C7E04	Short circuit to ground		
P1C7F04	Open circuit		

3. Circuit diagram:



GE10-5847d

4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the motor water pump for signs of damage, falling off, etc.
- B. Check the motor water pump and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

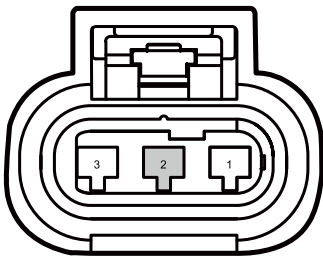
No

Repair or replace the faulty part.

Yes

Step 3	Check whether the circuit between the motor water pump and the VCU is open circuit.
--------	---

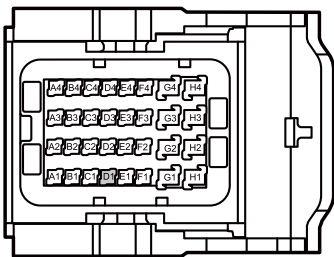
BV09 motor water pump harness connector



GE10-6044d

- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the electronic water pump harness connector BV09.
 - C. Disconnect the VCU harness connector CA66b.
 - D. Use a multimeter to measure the resistance between terminal 2 of motor water pump harness connector BV09 and terminal D1 of VCU control module harness connector CA66b.
- Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

CA66b VCU module harness connector B



GE10-6045d

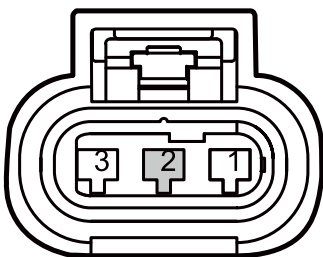
No

Repair or replace the harness.

Yes

Step 4 | Check whether the circuit between the motor water pump and the VCU is short circuit to ground.

BV09 motor water pump harness connector



GE10-6046d

- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the electronic water pump harness connector BV09.
 - C. Disconnect the VCU harness connector CA66b.
 - D. Use a multimeter to measure the resistance between terminal 2 of motor water pump harness connector BV09 and body grounding.
- Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

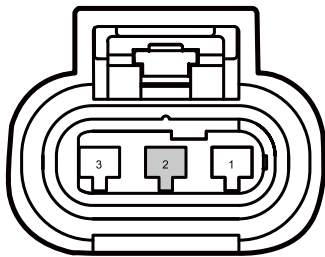
No

Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between the motor water pump and the VCU is short to power supply.

BV09 motor water pump harness connector



GE10-6047d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic water pump harness connector BV09.
- C. Disconnect the VCU harness connector CA66b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between terminal 2 of the motor water pump harness connector BV09 and body grounding.

Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the motor water pump.

- A. To replace the motor water pump, please refer to [Replacement of Motor Water Pump](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 8 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

10.3.5.10 Motor water pump feedback signal fault

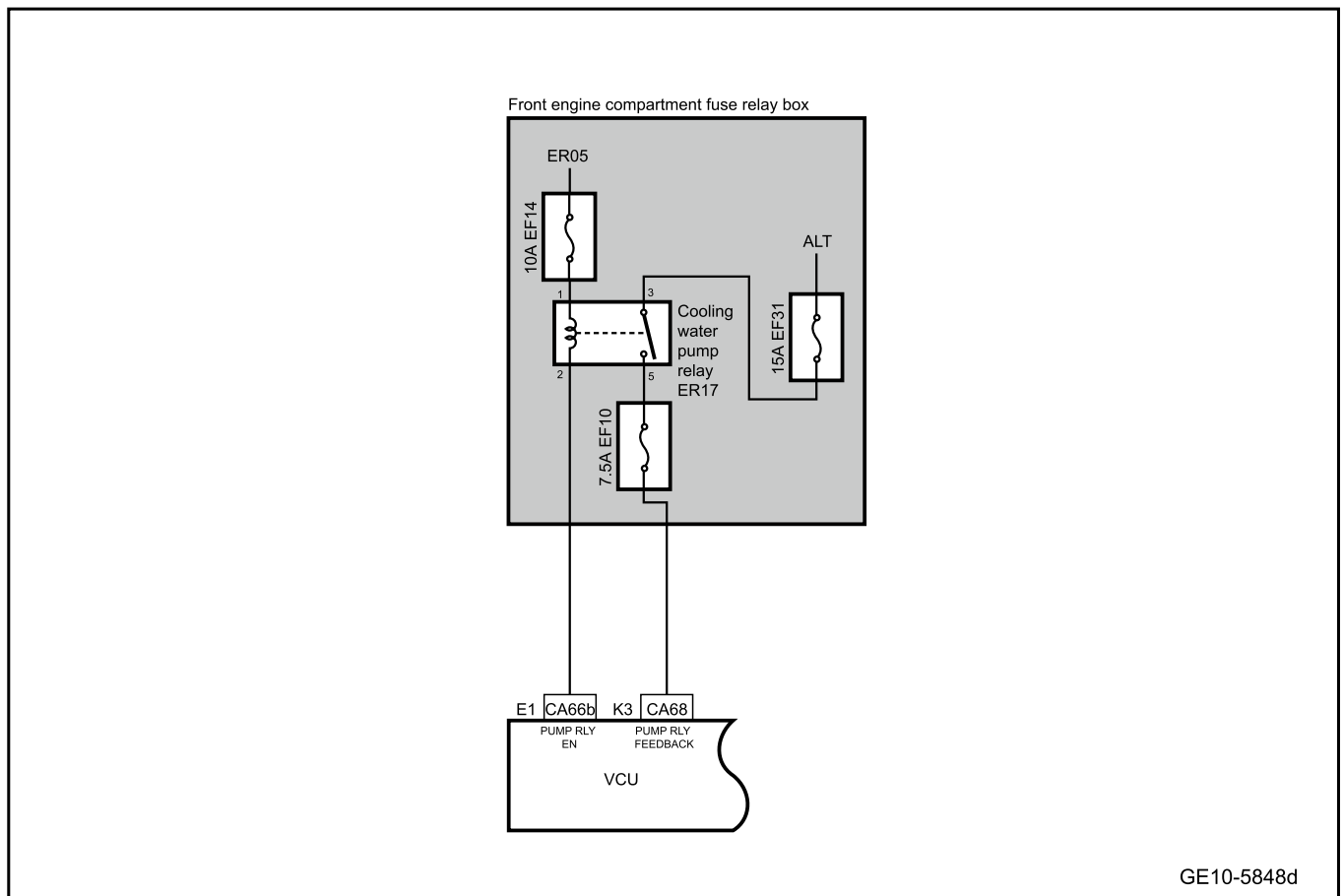
1. DTC description:

Diagnostic Trouble Code	Description
P1C1352	Motor water pump relay fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C1352	The time difference between the feedback signal and the output signal is 500ms, and the main relay does not report an error	1. IG15 Off -> On, delay 1000ms	1. Circuit 2. Relay 3. Fuse 4. VCU

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the cooling water pump main relay for signs such as damage and falling off.
- B. Check the cooling water pump main relay and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF10 of the front engine compartment. Check whether the fuse EF10 is blown.

Rated capacity of fuse: 7.5A
- C. Pull out the fuse EF14 of the front engine compartment. Check whether the fuse EF14 is blown.

Rated capacity of fuse: 10A
- D. Pull out the fuse EF31 of the front engine compartment. Check whether the fuse EF31 is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the cooling water pump relay ER17.

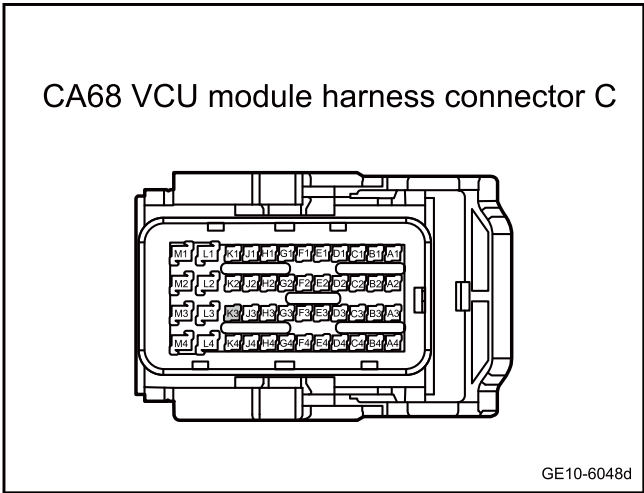
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug cooling water pump relay ER17 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Check whether the harness between the cooling water pump relay and VCU is open circuited.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(K3)	ER17(5)	Standard resistance: less than 1Ω

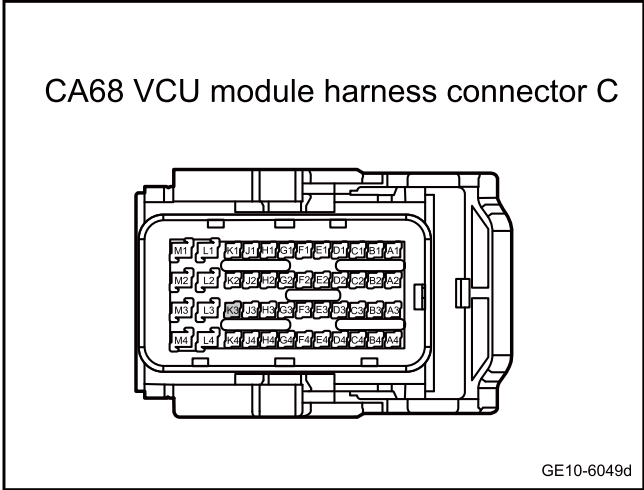
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the cooling water pump main relay and the VCU is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(K3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

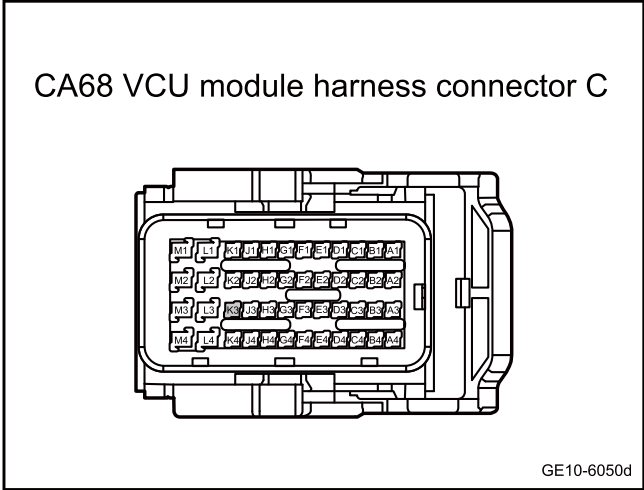
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between the cooling water pump main relay and the VCU is short-circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA68.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(K3)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 9 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11 System is normal.

10.3.5.11 Motor water pump relay control signal fault

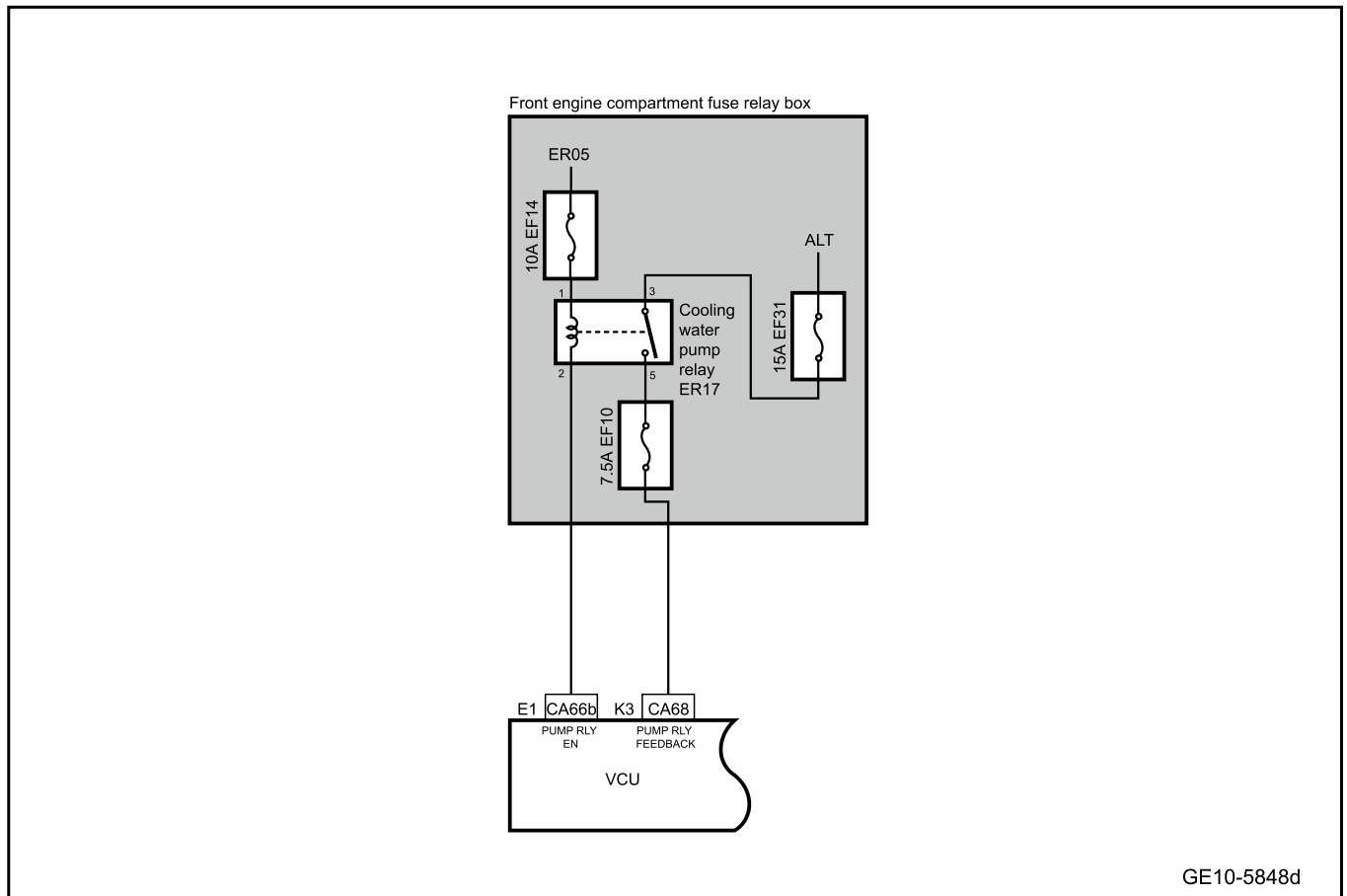
1. DTC description:

Diagnostic Trouble Code	Description
P1C7D05	Motor water pump enabling signal is short-circuited to power supply
P1C7E05	Motor water pump enabling signal is short-circuited to ground
P1C7F05	Motor water pump enabling signal circuit is opened

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C7D05	Short circuit to VCC	1. In all operating conditions	1. Circuit 2. Relay 3. Fuse 4. VCU
P1C7E05	Short circuit to ground		
P1C7F05	Open circuit		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the cooling water pump main relay for signs such as damage and falling off.
- B. Check the cooling water pump main relay and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the cooling water pump relay ER17.

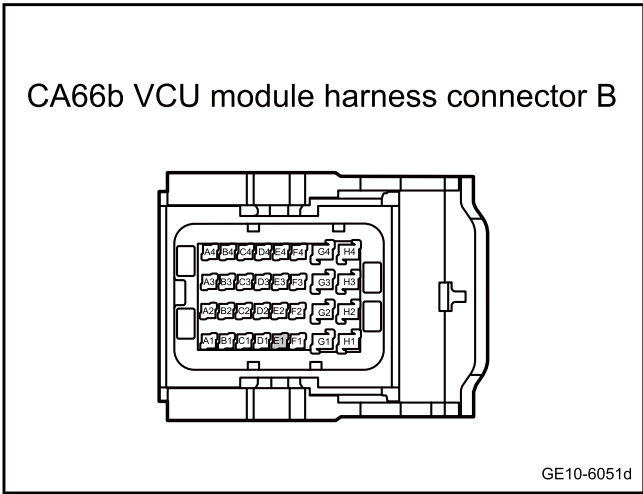
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug cooling water pump relay ER17 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 Check whether the harness between the cooling water pump relay and VCU is open circuited.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the cooling water pump relay ER17.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure the resistance between terminal 2 of the cooling water pump main relay ER17 and terminal E1 of the VCU harness connector CA66b.

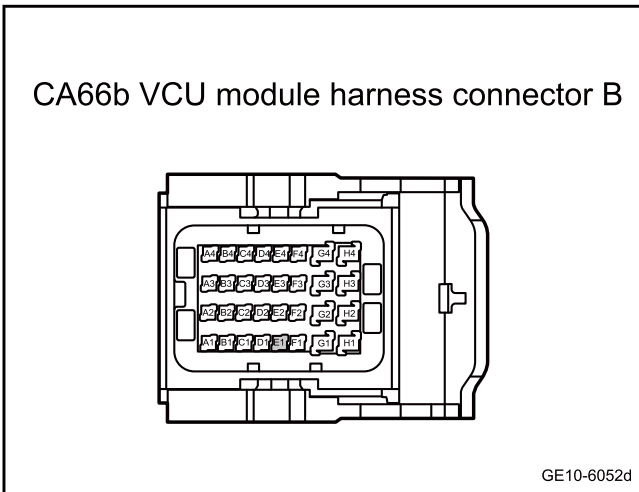
Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the cooling water pump main relay and the VCU is short-circuited to ground.



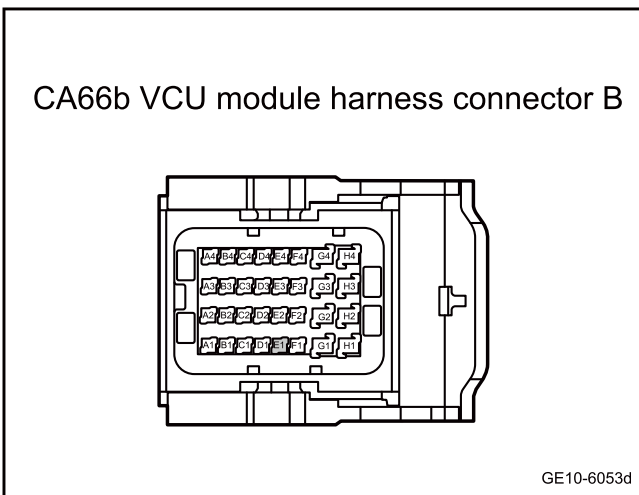
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Unplug the cooling water pump relay ER17.
 - C. Disconnect the VCU harness connector CA66b.
 - D. Use a multimeter to measure the resistance between terminal E1 of VCU harness connector CA66b and the body grounding.
- Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Check whether the circuit between the cooling water pump main relay and the VCU is short-circuited to power supply.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
 - B. Unplug the cooling water pump relay ER17.
 - C. Disconnect the VCU harness connector CA66b.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between terminal E1 of the VCU harness connector CA66b and body grounding.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7	Replace the VCU
--------	-----------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 8	Reprogram and reset the VCU.
--------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

10.3.5.12 Electronic accelerator pedal signal 1 failure

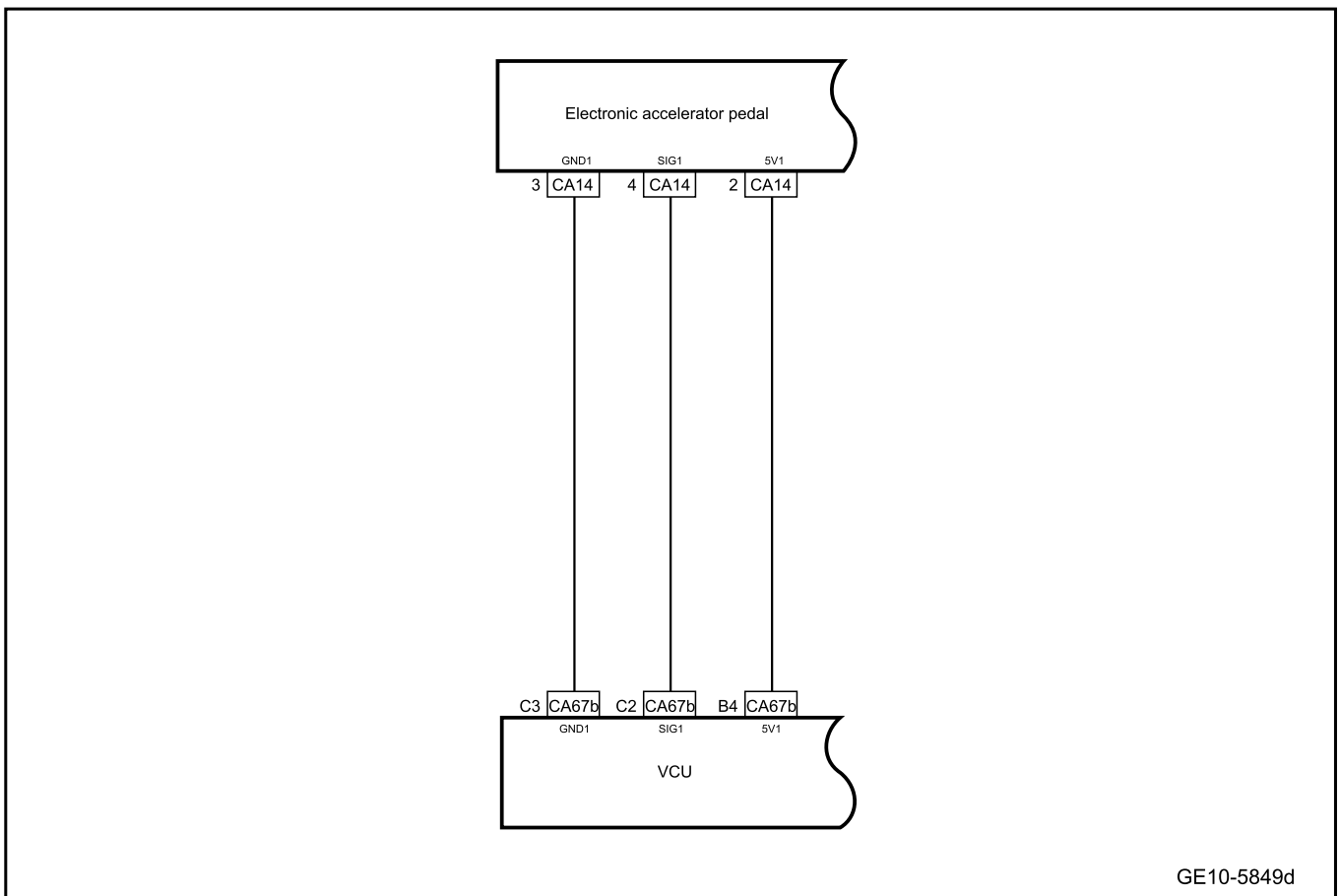
1. DTC description:

Diagnostic Trouble Code	Description
P1C1E04	Accelerator pedal signal 1 overvoltage
P1C1F04	Accelerator pedal signal 1 undervoltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C1E04	The voltage of accelerator pedal 1 is higher than the limit (4.8V) for 500ms.	2. IG15 Off -> On, delay 1000ms	1. Circuit 2. VCU 3. Electronic accelerator pedal
P1C1F04	The voltage of accelerator pedal 1 is lower than the limit (0.4V) for 500ms		

3. Circuit diagram:



GE10-5849d

4. Diagnosis steps:

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

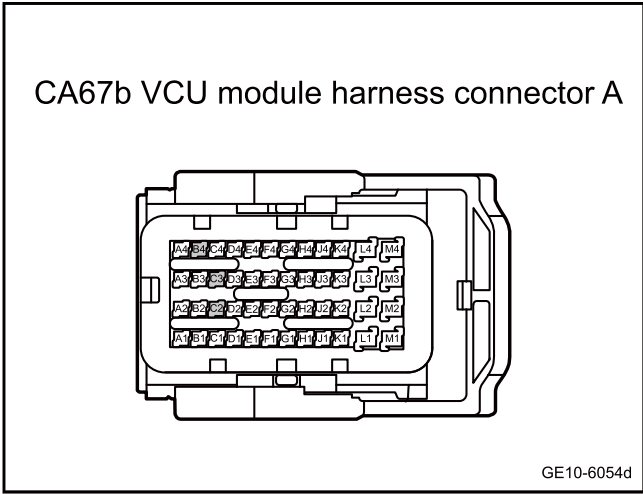
Step 2 Primary check.

- A. Check the electronic accelerator pedal and VCU harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

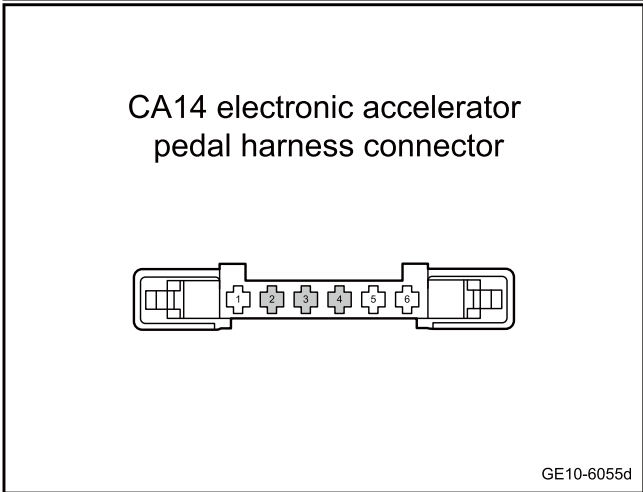
Step 3 Check whether the circuit between VCU and electronic accelerator pedal is opened.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(C2)	CA14(4)	Standard resistance: less than 1Ω
CA67b(B4)	CA14(2)	
CA67b(C3)	CA14(3)	

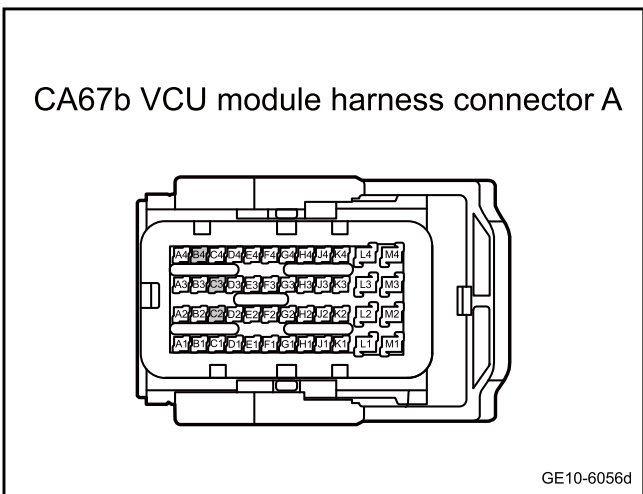
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 4 Check whether the circuit between VCU and electronic accelerator pedal is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure:

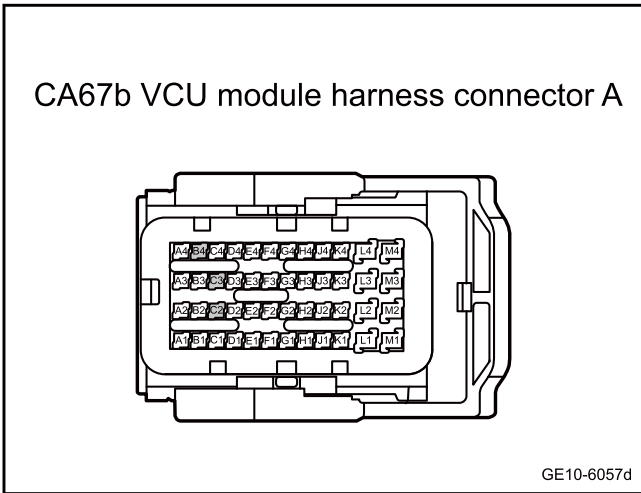
Measure terminal 1	Measure terminal 2	Standard value
CA67b(C2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(B4)		
CA67b(C3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between VCU and electronic accelerator pedal is short-circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(C2)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(B4)		
CA67b(C3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the electronic accelerator pedal.

- A. To replace the electronic accelerator pedal, please refer to [Replacement of Electronic Accelerator Pedal](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [10.3.5.10 VCU Power Supply Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 8 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

10.3.5.13 Electronic Accelerator Pedal Signal 2 Failure

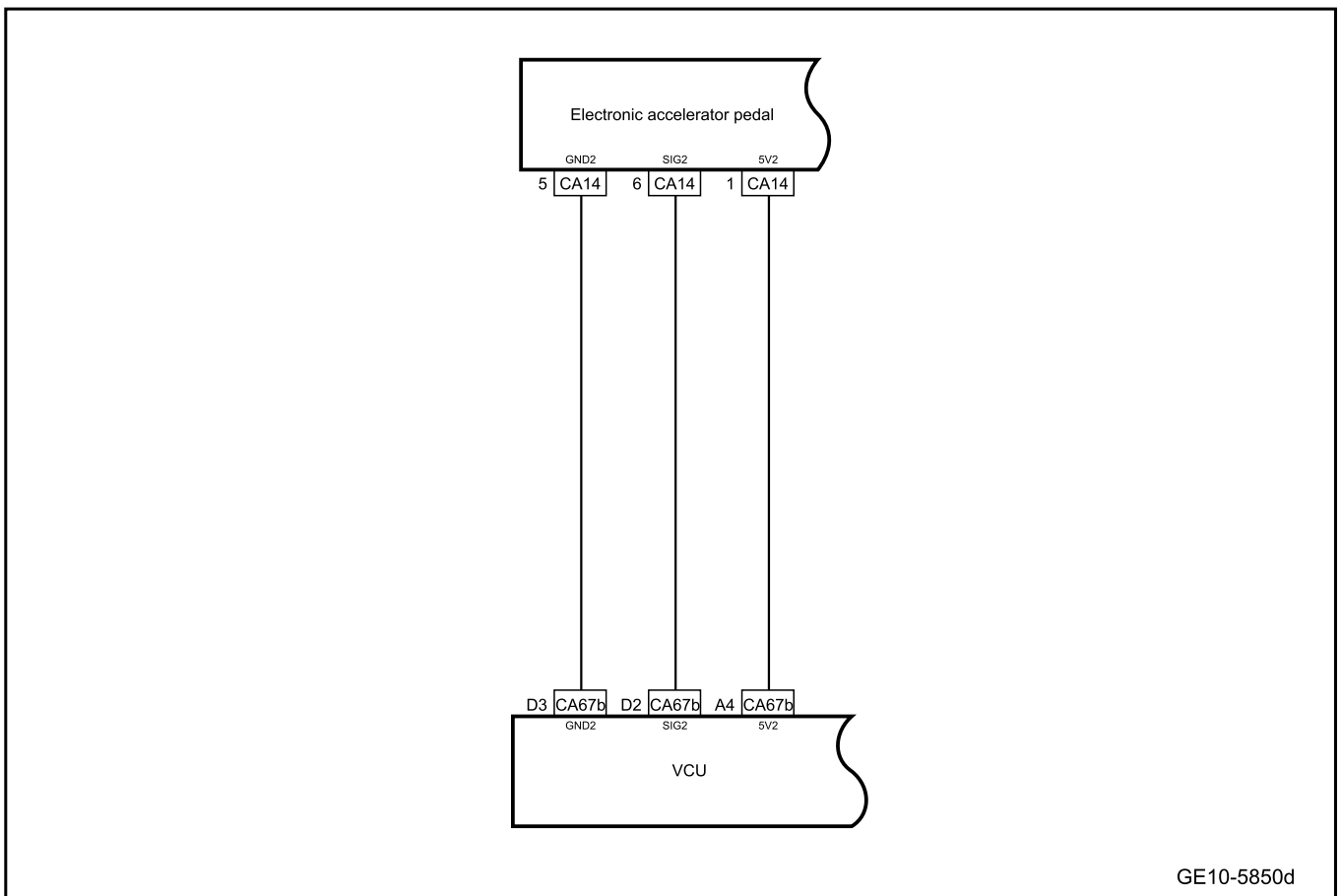
1. DTC description:

Diagnostic Trouble Code	Description
P1C2004	Accelerator pedal signal 2 overvoltage
P1C2104	Accelerator pedal signal 2 undervoltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C2004	The voltage of accelerator pedal 2 is higher than the limit (2.4V) for 500ms.	2. IG15 Off -> On, delay 1000ms	1. Circuit 2. VCU 3. Electronic accelerator pedal
P1C2104	The voltage of accelerator pedal 2 is lower than the limit (0.2V) for 500ms		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

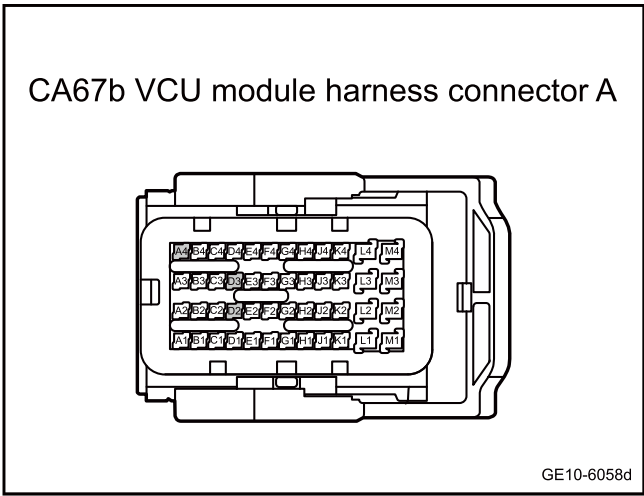
Step 2	Primary check.
--------	----------------

- A. Check the electronic accelerator pedal and VCU harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

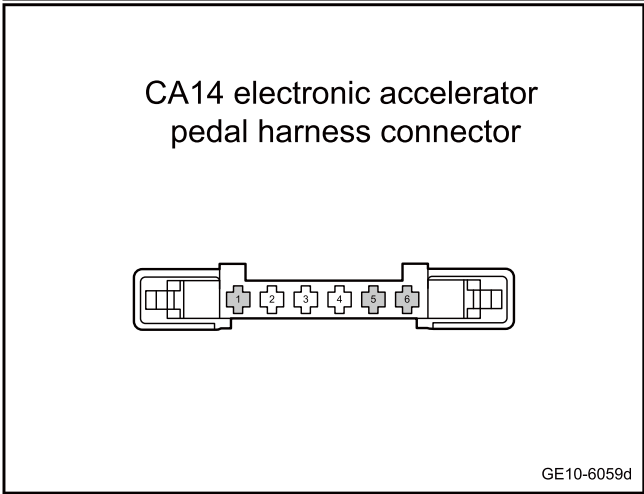
Step 3 Check whether the circuit between VCU and electronic accelerator pedal is opened.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	CA14(6)	Standard resistance: less than 1Ω
CA67b(D3)	CA14(5)	
CA67b(A4)	CA14(1)	

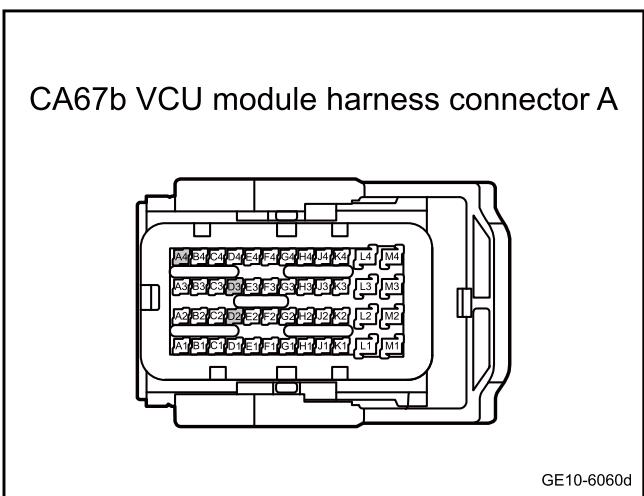
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 4 Check whether the circuit between VCU and electronic accelerator pedal is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure:

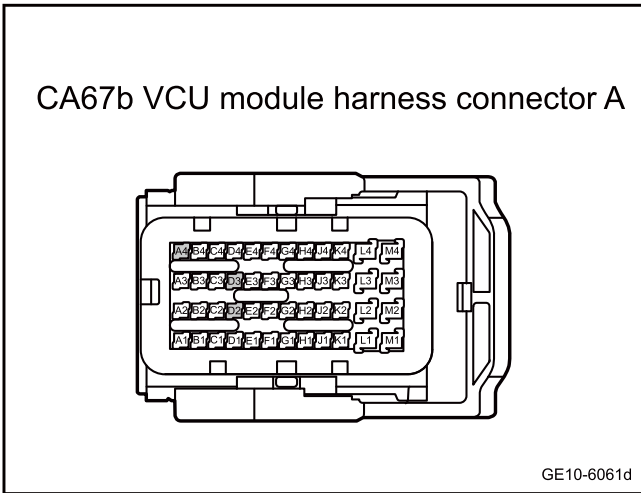
Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(D3)		
CA67b(A4)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between VCU and electronic accelerator pedal is short-circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(D3)		
CA67b(A4)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the electronic accelerator pedal.

- A. To replace the electronic accelerator pedal, please refer to [Replacement of Electronic Accelerator Pedal](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [10.3.5.10VCU Power Supply Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 8 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

10.3.5.14 Electronic accelerator pedal signal failure

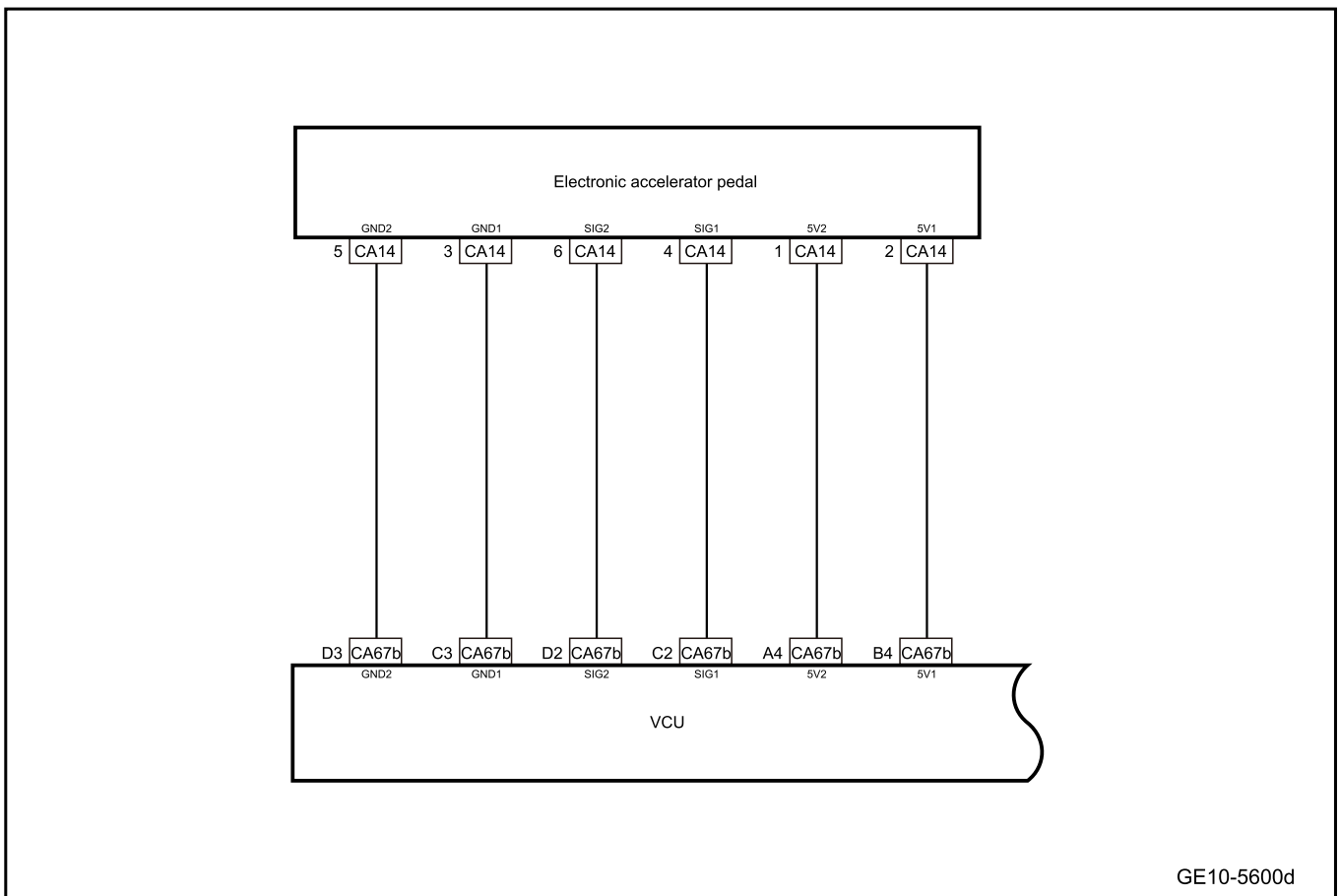
1. DTC description:

Diagnostic Trouble Code	Description
P1C2105	Accelerator pedal signal is unreliable
P1C2204	The two signals of accelerator pedal are inconsistent

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C2105	Pedal sensors 1 and 2 have made an error in the last 500 milliseconds	1. IG15 Off -> On, delay 1000ms	1. Circuit 2. VCU 3. Electronic accelerator pedal
P1C2204	The voltage difference between accelerator pedals 1 and 2 ($V1-2 * V2 > 0.4$) lasting for 500ms		

3. Circuit diagram:



4. Diagnosis steps:

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

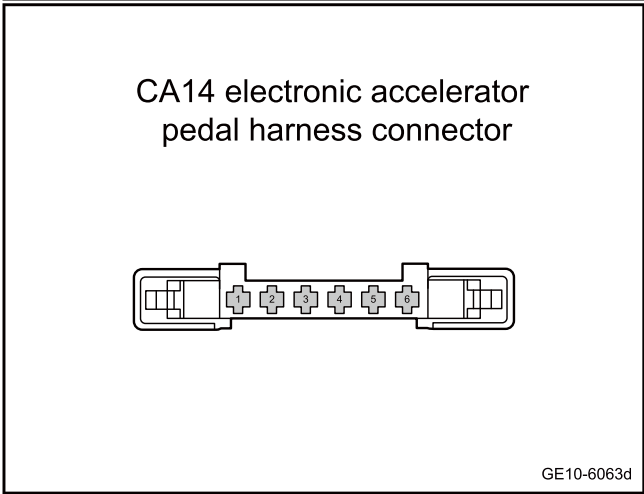
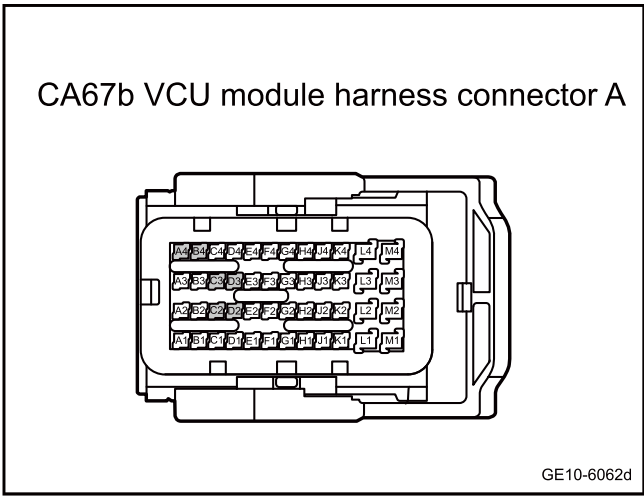
Step 2 Primary check.

- A. Check the electronic accelerator pedal and VCU harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between VCU and electronic accelerator pedal is opened.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure:

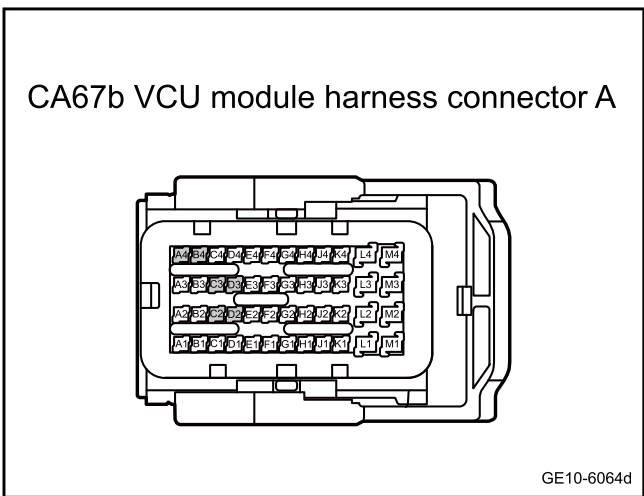
Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	CA14(6)	Standard resistance: less than 1Ω
CA67b(D3)	CA14(5)	
CA67b(A4)	CA14(1)	
CA67b(C2)	CA14(4)	
CA67b(B4)	CA14(2)	
CA67b(C3)	CA14(3)	

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the circuit between VCU and electronic accelerator pedal is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(D3)		
CA67b(A4)		
CA67b(C2)		
CA67b(B4)		

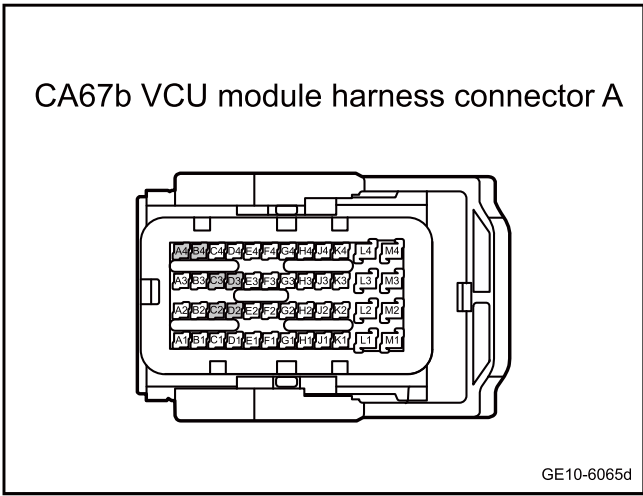
Measure terminal 1	Measure terminal 2	Standard value
CA67b(C3)		

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between VCU and electronic accelerator pedal is short-circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the electronic accelerator pedal harness connector CA14.
- C. Disconnect the VCU harness connector CA67b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(D2)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(D3)		
CA67b(A4)		
CA67b(C2)		
CA67b(B4)		
CA67b(C3)		

F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the electronic accelerator pedal.

- A. To replace the electronic accelerator pedal, please refer to [Replacement of Electronic Accelerator Pedal](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7	Replace the VCU
--------	-----------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [10.3.5.10 VCU Power Supply Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 8	Reprogram and reset the VCU.
--------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

10.3.5.15 Main Relay Fault

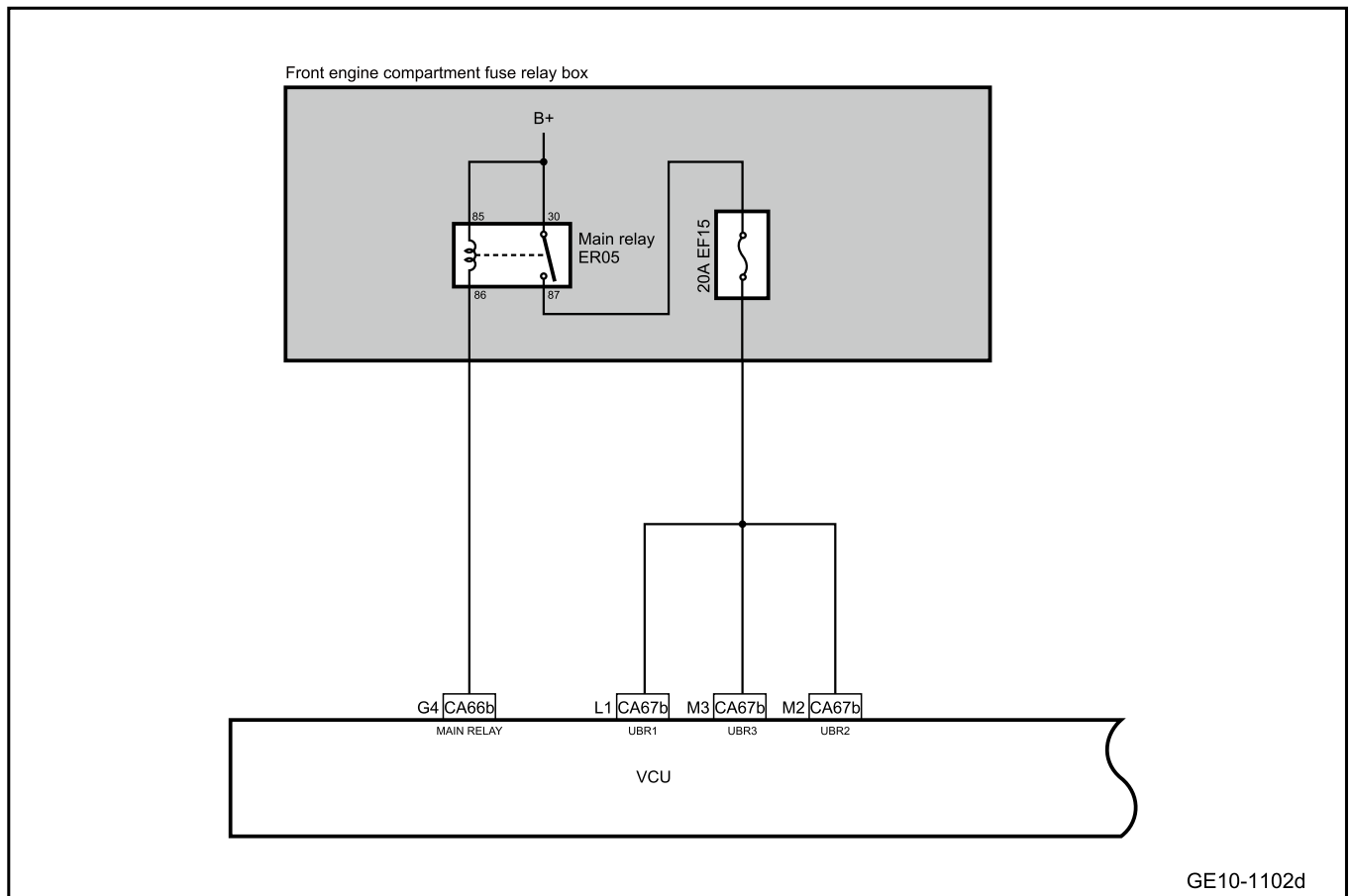
1. DTC description:

Diagnostic Trouble Code	Description
P1C0852	Main Relay Fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C0852	The time difference between the feedback signal and the output signal is 500ms	1. AC charging mode 2. DC charging mode 3. V2G discharge mode 4. Remote A/C mode 5. Intelligent charging mode 6. Vehicle READY state without any of the above modes (TKL15_ON>3S) 7. Vehicle READY state without any of the above modes (TKL15_ON>3S) 8. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	1. Circuit 2. Relay 3. Fuse 4. VCU

3. Circuit diagram:



GE10-1102d

4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the main relay for signs such as damage and falling off.
- B. Check the main relay and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuse EF15 of the front engine compartment. Check whether the fuse EF15 is blown.

Rated capacity of fuse: 20A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the main relay ER05.
--------	----------------------------

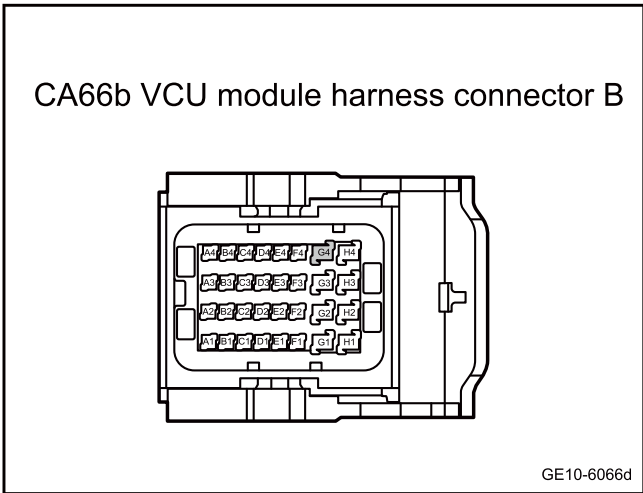
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug main relay ER05 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

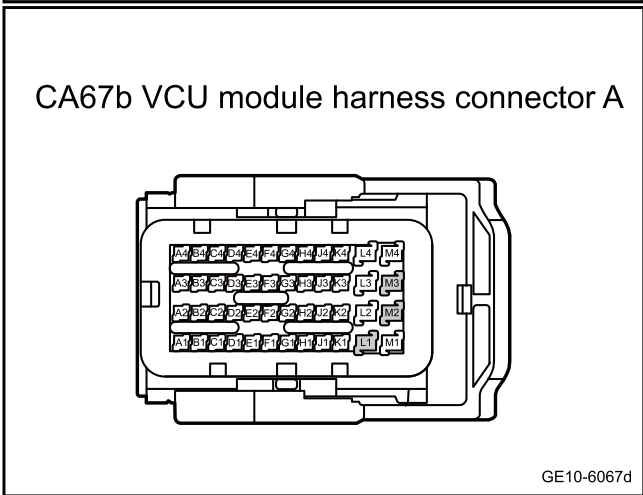
No

Step 5 Check the circuit between the main relay and the VCU for open circuit fault.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the main relay ER05.
- C. Disconnect the VCU harness connectors CA66b and CA67b.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(G4)	ER05(86)	Standard resistance: less than 1Ω
CA67b(L1)	ER05(87)	
CA67b(M3)		
CA67b(M2)		



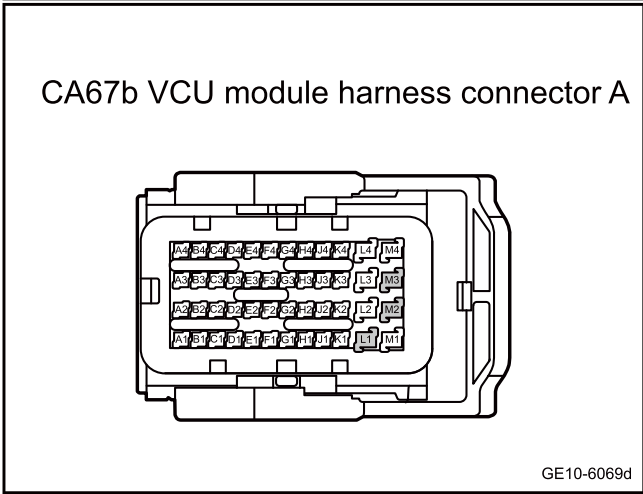
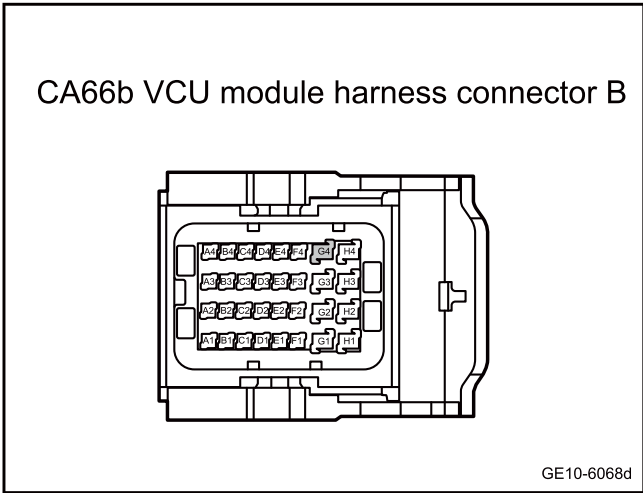
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the main relay and the VCU is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the main relay ER05.
- C. Disconnect the VCU harness connectors CA66b and CA67b.
- D. Use a multimeter to measure the terminals according to the following table:

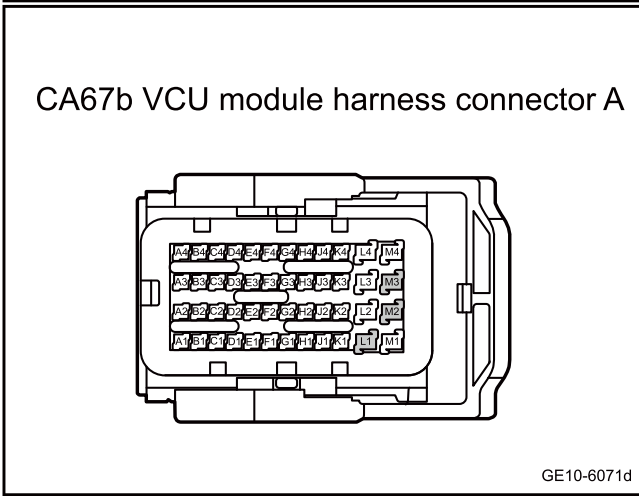
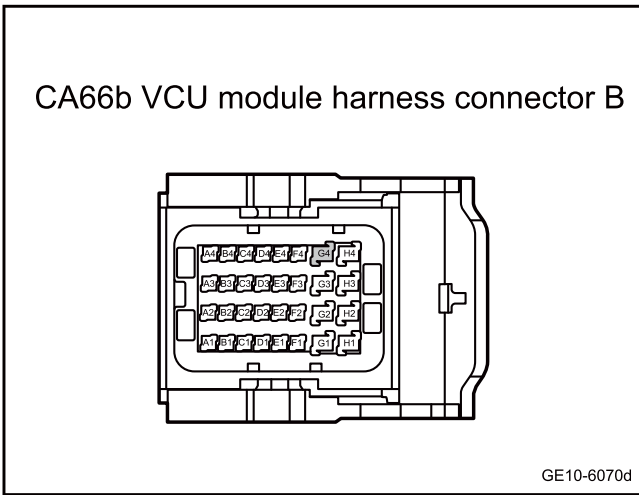
Measure terminal 1	Measure terminal 2	Standard value
CA66b(G4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA67b(L1)		
CA67b(M3)		
CA67b(M2)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the circuit between the main relay and the VCU is short-circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the main relay ER05.
- C. Disconnect the VCU harness connectors CA66b and CA67b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(G4)	Vehicle body is grounded.	Standard voltage: 0V
CA67b(L1)		
CA67b(M3)		
CA67b(M2)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 9 | Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 10	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

10.3.5.16 Other system faults reported by VCU

1. DTC description:

DTC	Trouble description
P1C2604	Battery discharge fault level 2
P1C2704	Battery discharge fault level 3
P1C2804	Battery discharge fault level 4
P1C6C04	BMS reports power battery discharging fault level 6
P1C6D04	BMS reports power battery charging fault level 2
P1C718A	BMS reports power battery charging fault level 3
P1C728A	BMS reports power battery charging fault level 4
P1C6E04	BMS reports power battery charging fault level 6
P1C2B04	Charger fault level 2
P1C2C04	Charger fault level 3
P1C2C05	Charger fault level 6
P1C2F04	Gear selector fault level 3
P1C6F04	PCU reports level-3 fault
P1C3304	Motor controller fault level 1 (power reduction)
P1C3404	Motor controller fault level 2 (output off)
P1C3504	Motor controller fault level 3 (power off)
P1C3804	DCDC controller fault level 2 (automatic recovery)
P1C3904	DCDC controller fault level 3 (can be reset and recovered by KL15)
P1C4296	Vehicle speed signal warning failure
P1CA504	ADC low voltage detection fault
P1CA604	ADC reference voltage fault

DTC	Trouble description
P1C6B25	BMS reports an insulation fault
P1C3A96	EBD reports a fault
P1C3B96	ABS reports a fault
P1C3B00	ESP reports a fault
P1C3C96	TCS reports a fault
P1C3D96	EPS reports a fault
P1C3F96	Air conditioning system reports a fault

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C2604	BMSH indicates the error status (from 0xB0) as BMSH_DischgFaultLevel = 2 error state signal quality is normal.	One of the following conditions is met: 2. Remote A/C mode 3. Intelligent charging mode 4. Vehicle READY state without any of the above modes (TKL15_ON>3S) 5. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	1.VCU
P1C2704	BMSH indicates the error status (from 0xB0) as BMSH_DischgFaultLevel = 3 error state signal quality is normal.	One of the following conditions is met: 2. V2G discharging method 3. Remote A/C mode 4. Intelligent charging mode 5. Vehicle READY state without any of the above modes (TKL15_ON>3S) 6. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	
P1C2804	BMSH indicates the error status (from 0xB0) as BMSH_DischgFaultLevel = 4 error state signal quality is normal..		
P1C6C04	BMS indicates the error status (from 0x0B0) as BMS_BatteryDchgSysFaultLevel=6 error state signal quality is normal.		
P1C6D04	BMS indicates the error status (from 0x0B0) as BMSH_ChgFaultLevel = 2 error state signal quality is normal.	One of the following conditions is met: 2. AC charging mode 3. DC charging mode	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C718A	BMS indicates the error status (from 0x0B0) as BMSH_ChgFaultLevel = 3 error state signal quality is normal.		
P1C728A	BMS indicates the error status (from 0x0B0) as BMSH_ChgFaultLevel = 4 error state signal quality is normal.		
P1C6E04	BMS indicates the error status (from 0x0B0) as BMSH_ChgFaultLevel = 6 error state signal quality is normal.		
P1C2B04	OBC indicates error status (from 0x220) as OBC_OnBdFailSt = 2 error state signal quality is normal..		
P1C2C04	OBC indicates error status (from 0x220) as OBC_OnBdFailSt = 3 error state signal quality is normal.		
P1C2C05	OBC indicates error status (from 0x220) as OBC_OnBdFailSt = 6 error state signal quality is normal..		
P1C2F04	EGSM indicates error status (from 0 x 145) as EGSM \uShiftleverFailSt= 3 error status and signal quality is normal	1. Vehicle IG ON status (TKL15_ON >3S)	
P1C6F04	PCU indicates error status (from 0x213) as PCU_FaultLevel = 3 error status signal quality is good	One of the following conditions is met: 2. AC charging mode 3. DC charging mode	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C3304	IPU indicates error status (from 0x171) IPU_FltLev = 1 error status signal quality is good	One of the following conditions is met: 2. V2G discharging method 3. Remote A/C mode 4. Intelligent charging mode 5. Vehicle READY state without any of the above modes (TKL15_ON>3S) 6. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	
P1C3404	IPU indicates error status (from 0x171) IPU_FltLev = 2 error status signal quality is good		
P1C3504	IPU indicates error status (from 0x171) IPU_FltLev = 3 error status signal quality is good		
P1C3804	DCDC indicates error status (from 0 x 176) as IPU DCDC FailSt= 2 error status and signal quality is normal		
P1C3904	DCDC indicates error status (from 0 x 176) as IPU DCDC FailSt= 3 error status and signal quality is normal		
P1C4296	(vehicle speed (0 x 125) controller area network (CAN) signal error or CAN signal with invalid value of speed) or IPUNMOT speed signal (0 xA8) quality is abnormal	Vehicle IG ON status (TKL15 _ON>3S)	
P1CA504	contact plate	IG15 Off-> On	
P1CA604	contact plate		
P1C6B25	BMS_Insulation_Error_ Range = 0x2 Insulation error HV Bus. Confirmation time: 0	One of the following conditions is met: 2. V2G discharging method 3. Remote A/C mode 4. Intelligent charging mode 5. Vehicle READY state without any of the above modes (TKL15_ON>3S) 6. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C3A96	EBD indicates that the fault flag (from 0 x 125) ESC \uEBDFailed is true and the signal quality is normal	Vehicle IG ON status (TKL15_ON>3S)	
P1C3B96	ABS indicates that the fault flag (from 0 x 125) ESC \uABSFailed is true and the signal quality is normal		
P1C3B00	ESP indicates the fault flag (from 0 x 125) ESC \uESPFailed for TRUE fault, and the signal quality is normal		
P1C3C96	TCS indicates that the fault flag (from 0 x 125) ESC \uTCSFailed is TRUE and the fault signal quality is normal		
P1C3D96	EPS means failure flag (from 0 x 150) EPS \u EpasFailed for TRUE fault signal quality is normal		
P1C3F96	AC indication (fault flag (from 0x252) AC U remote U set U sts is 2, fault signal quality is normal.	One of the following conditions is met: 2. V2G discharging method 3. Remote A/C mode 4. Intelligent charging mode 5. Vehicle READY state without any of the above modes (TKL15_ON>3S) 6. Vehicle IG ON status without any of the above modes (TKL15_ON >3S)	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [10.3.5.10 VCU Power Supply Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 5 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Write controller data.
--------	------------------------

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next step

Step 7	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 8	System is normal.
--------	-------------------

10.3.5.17 Internal Faults of VCU

1. DTC description:

DTC	Trouble description
P1C9304	VCU sensor power supply 1 output fault
P1C9404	VCU sensor power supply 1 is overtemperature
P1C9504	VCU sensor power supply 1 is overvoltage
P1C9604	VCU sensor power supply 1 is short-circuited to ground
P1C9704	VCU sensor power supply 1 is undervoltage
P1C9804	VCU sensor power supply 2 output fault
P1C9904	VCU sensor power supply 2 is overtemperature
P1C9A04	VCU sensor power supply 2 is overvoltage
P1C9B04	VCU sensor power supply 2 is short-circuited to ground
P1C9C04	VCU sensor power supply 2 is undervoltage
P1CA204	VCU internal NVM reading data error
P1CA304	VCU internal NVM writing data error
P1CA404	VCU stack overflow
P1C1E00	IMMO authentication failure causes startup failure

DTC	Trouble description
P1C1E01	Vehicle body control unit BCM reports cruise switch failure
P1C4396	Invalid vehicle speed signal (power reduction)
P1C5C63	Crash signal detected
P1CAC04	VCU internal abnormal software reset
P1C6B87	PCU does not respond to VCU commands
P1C6B01	Waiting for pre-charging work timeout upon regular request of powering on at a high voltage
P1C6B02	Waiting for pre-charging work timeout upon charging request of powering on at a high voltage
P1C6B03	Waiting for pre-charging work timeout upon smart electricity supplementing request of charging powering on at a high voltage
P1C6B04	Waiting for pre-charging work timeout upon external discharging request of powering on at a high voltage
P1C6B05	Waiting for pre-charging work timeout upon remote A/C request of powering on at a high voltage
P1C6B06	Waiting for main relay closing timeout upon regular request of powering on at a high voltage
P1C6B07	Waiting for main relay closing timeout upon charging request of charging powering on at a high voltage
P1C6B08	Waiting for main relay closing timeout upon smart electricity supplementing request of charging powering on at a high voltage
P1C6B09	Waiting for main relay closing timeout upon external discharging request of powering on at a high voltage
P1C6B0A	Waiting for main relay closing timeout upon remote A/C request of powering on at a high voltage
P1C6B0C	Waiting for BMS&IPU work timeout upon charging request of powering on at a high voltage
P1C6B0D	Waiting for BMS&IPU work timeout upon smart electricity supplementing request of charging powering on at a high voltage
P1C6B0E	Waiting for BMS&IPU work timeout upon external discharging request of powering on at a high voltage
P1C6B0F	Waiting for BMS&IPU work timeout upon remote A/C request of powering on at a high voltage
P1C6B10	Waiting for BMS&IPU work timeout upon regular fast powering on at a high voltage
P1C6B11	Waiting for BMS&IPU work timeout upon charging request of fast powering on at a high voltage
P1C6B12	Waiting for BMS&IPU work timeout upon smart electricity supplementing request of charging powering on at a high voltage
P1C6B13	Waiting for BMS&IPU work timeout upon external discharging request of fast powering on at a high voltage
P1C6B14	Waiting for BMS&IPU work timeout upon remote A/C request of fast powering on at a high voltage
P1C6B15	BMS&IPU status abnormal response timeout in normal mode under high voltage state

DTC	Trouble description
P1C6B16	BMS&IPU&DCDC status abnormal response timeout in charging mode under high voltage state
P1C6B17	BMS&IPU&DCDC status abnormal response timeout in smart electricity supplementing mode under high voltage state
P1C6B18	BMS&IPU&DCDC status abnormal response timeout in external discharging mode under high voltage state
P1C6B19	BMS&IPU&DCDC status abnormal response timeout in remote A/C mode under high voltage state
P1C6C01	RSRS power supply relay fault
P1C6C02	Stopper fault
P1C6C03	Locked rotor fault
P1C6C09	Electrical fault
P1C6C05	Low voltage fault
P1C6C06	Over voltage fault
P1C6C07	Over temperature fault
P1CAC00	Internal Faults of VCU
P1CAD04	The software is not compatible with the vehicle
P1C6B0B	Waiting for BMS&IPU work timeout upon regular request of powering on at a high voltage

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C9304	Interval (100 ms)	IG15 Off-> On	1.VCU
P1C9404			
P1C9504			
P1C9604			
P1C9704			
P1C9804			
P1C9904			
P1C9A04			
P1C9B04			
P1C9C04			
P1CA204	contact plate		
P1CA304			
P1CA404			

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C1E00	IPU indicates error status (from 0x171) IPU_ IsgReleaseSig=Isg locked or undefined, error status signal quality is good	<ol style="list-style-type: none"> 1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery 4. Ignition state should be IG ON for 3 seconds; 	
P1C1E01	Body control module indicates error status (from 0 x 283) Body control module cruise WinValidSts=fault, error status signal quality is normal	Vehicle Ready state without any of the above modes (TKL15 U ON>3S)	
P1C4396	(Vehicle speed CAN signal ESC_ VehicleSpeed (0x125) is wrong or vehicle speed CAN signal ESC_ VehicleSpeedInvalid (0x125) is invalid value and IPUNMOT speed signal (0xA8) is of poor quality.	<ol style="list-style-type: none"> 1. One of the following conditions is met: 2. AC charging mode 3. DC charging mode 4. V2G discharging method 5. Remote A/C mode 6. Intelligent charging mode 7. Vehicle ready state without any of the above modes (TKL15 _open>3S) 8. Vehicle IG ON status without any of the above modes (TKL15 _ ON >3S) 	
P1C5C63	ACU indicates fault flag (from 0 x 380) ACU ▶uCrashOutputSts is a true fault on bit 1 or bit 2 or bit 3 or bit 4. Signal quality is normal	IG15 Off -> On, delay 1000ms	
P1CAC04	Unexpected reset occurred	IG15 Off -> On, delay 1000ms	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B87	PCU will not respond to VCU requests or respond incorrectly	PCU does not respond or incorrectly responds to VCU request and F110 CCU 0 x 1: PCU	
P1C6B01	Wait for BMS to enter the precharge for more than 10s during regular startup at a high voltage	Wait for BMS to enter the precharge for more than 10s during regular startup at a high voltage	
P1C6B02	Waiting for BMS to enter pre-charging timeout during charging powering on at a high voltage: BMS has been in standby for more than 120s or not in standby for more than 2S.	Waiting for BMS to enter pre-charging timeout during charging powering on at a high voltage: BMS has been in standby for more than 120s or not in standby for more than 2S.	
P1C6B03	Wait for BMS to enter the precharge for more than 10s during smart electricity supplementing on at a high voltage	Wait for BMS to enter the precharge for more than 10s during smart electricity supplementing on at a high voltage	
P1C6B04	Wait for BMS to enter the precharge for more than 10s during external discharging at a high voltage	Wait for BMS to enter the precharge for more than 10s during external discharging at a high voltage	
P1C6B05	Wait for BMS to enter the precharge for more than 10s during remote A/C powering on at a high voltage	Wait for BMS to enter the precharge for more than 10s during remote A/C powering on at a high voltage	
P1C6B06	Waiting for BMS main relay closing for more than 10s upon regular request of powering on at a high voltage	Waiting for BMS main relay closing for more than 10s upon regular request of powering on at a high voltage	
P1C6B07	Waiting for BMS main relay closing for more than 10s upon charging request of powering on at a high voltage	Waiting for BMS main relay closing for more than 10s upon charging request of powering on at a high voltage	
P1C6B08	Waiting for main relay closing for more than 10s upon smart electricity supplementing at a high voltage	Waiting for main relay closing for more than 10s upon smart electricity supplementing at a high voltage	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B09	Waiting for main relay closing for more than 10s upon external discharging at a high voltage	Waiting for main relay closing for more than 10s upon external discharging at a high voltage	
P1C6B0A	Waiting for main relay closing for more than 10s upon remote A/C powering on at a high voltage	Waiting for main relay closing for more than 10s upon remote A/C powering on at a high voltage	
P1C6B0C	Waiting for BMS to enter AC, DC charge or for IPU to enter the standby during charging powering on at a high voltage for more than 120S.	Waiting for BMS to enter AC, DC charge or for IPU to enter the standby during charging powering on at a high voltage for more than 120S.	
P1C6B0D	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby for more than 10s during smart electricity supplementing of charging powering on at a high voltage.	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby for more than 10s during smart electricity supplementing of charging powering on at a high voltage.	
P1C6B0E	Wait for BMS to enter the normal discharge, V2G, or for IPU to enter the standby for more than 10s during external discharging powering on at a high voltage.	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby for more than 10s during external discharging powering on at a high voltage.	
P1C6B0F	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby for more than 10s during remote A/C powering on at a high voltage.	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby for more than 10s during remote A/C powering on at a high voltage.	
P1C6B10	Wait for BMS to enter the normal discharge or for IPU to enter the standby for more than 5s during regular powering on at a high voltage.	Wait for BMS to enter the normal discharge or for IPU to enter the standby for more than 5s during regular powering on at a high voltage.	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B11	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby, fault or DCDC enabling for more than 5s during charging fast powering on at a high voltage.	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby, fault or DCDC enabling for more than 5s during charging fast powering on at a high voltage.	
P1C6B12	Waiting for BMS to enter normal discharge or for IPU to enter the standby upon smart electricity supplementing of charging fast powering on at a high voltage for more than 5S.	Waiting for BMS to enter normal discharge or for IPU to enter the standby upon smart electricity supplementing of charging fast powering on at a high voltage for more than 5S.	
P1C6B13	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby, fault or DCDC enabling for more than 5s during external discharging of fast powering on at a high voltage.	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby, fault or DCDC enabling for more than 5s during external discharging of fast powering on at a high voltage.	
P1C6B14	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby, fault or DCDC enabling for more than 5s during fast Air Conditioner powering on at a high voltage.	Wait for BMS to enter the normal discharge, V2G or for IPU to enter the standby, fault or DCDC enabling for more than 5s during fast Air Conditioner powering on at a high voltage.	
P1C6B15	Wait for BMS to exit the normal discharge, V2G or for IPU to exit the standby, fault or TqCtrl for more than 5s during charging fast powering on at a high voltage.	Wait for BMS to exit the normal discharge, V2G or for IPU to exit the standby, fault or DCDC for more than 5s during charging fast powering on at a high voltage.	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6B16	Wait for DCDC is disabled, the BMS exits the AC, DC charge, normal discharge, V2G or for IPU to exit the standby, fault or TqCtrl for more than 5s during charging fast powering on at a high voltage.	Wait for DCDC is disabled, the BMS exits the AC, DC charge, the normal discharge, V2G or for IPU to exit the standby, fault or TqCtrl for more than 5s during charging fast powering on at a high voltage.	
P1C6B17	DCDC is not enabled in smart electricity supplementing mode at high voltage, BMS exits AC, DCcharge, normaldischarge, V2G or IPU exits standby, fault, TqCtrl for more than 5S	DCDC is not enabled in smart electricity supplementing mode at high voltage, BMS exits AC, DCcharge, normaldischarge, V2G or IPU exits standby, fault, TqCtrl for more than 5S	
P1C6B18	Wait for DCDC is disabled, the BMS exits the AC, DC charge, the normal discharge, V2G or for IPU to exit the standby, fault or TqCtrl for more than 5s during external discharging of fast powering on at a high voltage.	Wait for DCDC is disabled, the BMS exits the AC, DC charge, the normal discharge, V2G or for IPU to exit the standby, fault or TqCtrl for more than 5s during external discharging of fast powering on at a high voltage.	
P1C6B19	DCDC is not enabled under high voltage in remote A/C mode, BMS exits AC, DCcharge, normaldischarge, V2G or IPU exits standby, fault, TqCtrl for more than 5S	DCDC is not enabled under high voltage in remote A/C mode, BMS exits AC, DCcharge, normaldischarge, V2G or IPU exits standby, fault, TqCtrl for more than 5S	
P1C6C01	The feedback signal is different from the output signal for 500 ms.	1. CAN bus power supply voltage is within the range of 9-16V 2. IG is turned on or within 15 minutes after IG is turned on->IG is turned off	
P1C6C02	Over travel error flag remains true	Over travel error flag changes from false to true.	
P1C6C03	Module error flag remains true	Module error flag changes from false to true	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6C09	Electric error flag remains true	Electric error flag changes from false to true.	
P1C6C05	Undercoltage error flag remains true	The error flag changes from false to true under coltage	
P1C6C06	Overvoltage error flag remains true	Overvoltage error flag changes from false to true.	
P1C6C07	Overtemperature error flag remains true	Overtemperature error flag changes from false to true.	
P1CAC00	-	-	
P1CAD04	When the vehicle software is running, the OBC CAN message 0x220 or 0x221 or 0x222 is detected, which is greater than 500ms	OBC configuration in F110 configuration word is 0x0: no OBC	
P1C6B0B	Check the IPU-CAN bus integrity.	Wait for BMS to enter the normal discharge or for IPU to enter the standby for more than 10s during regular powering on at a high voltage.	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 5 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Write controller data.

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next step

Step 7 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

10.3.5.18 LIN Communication Failure

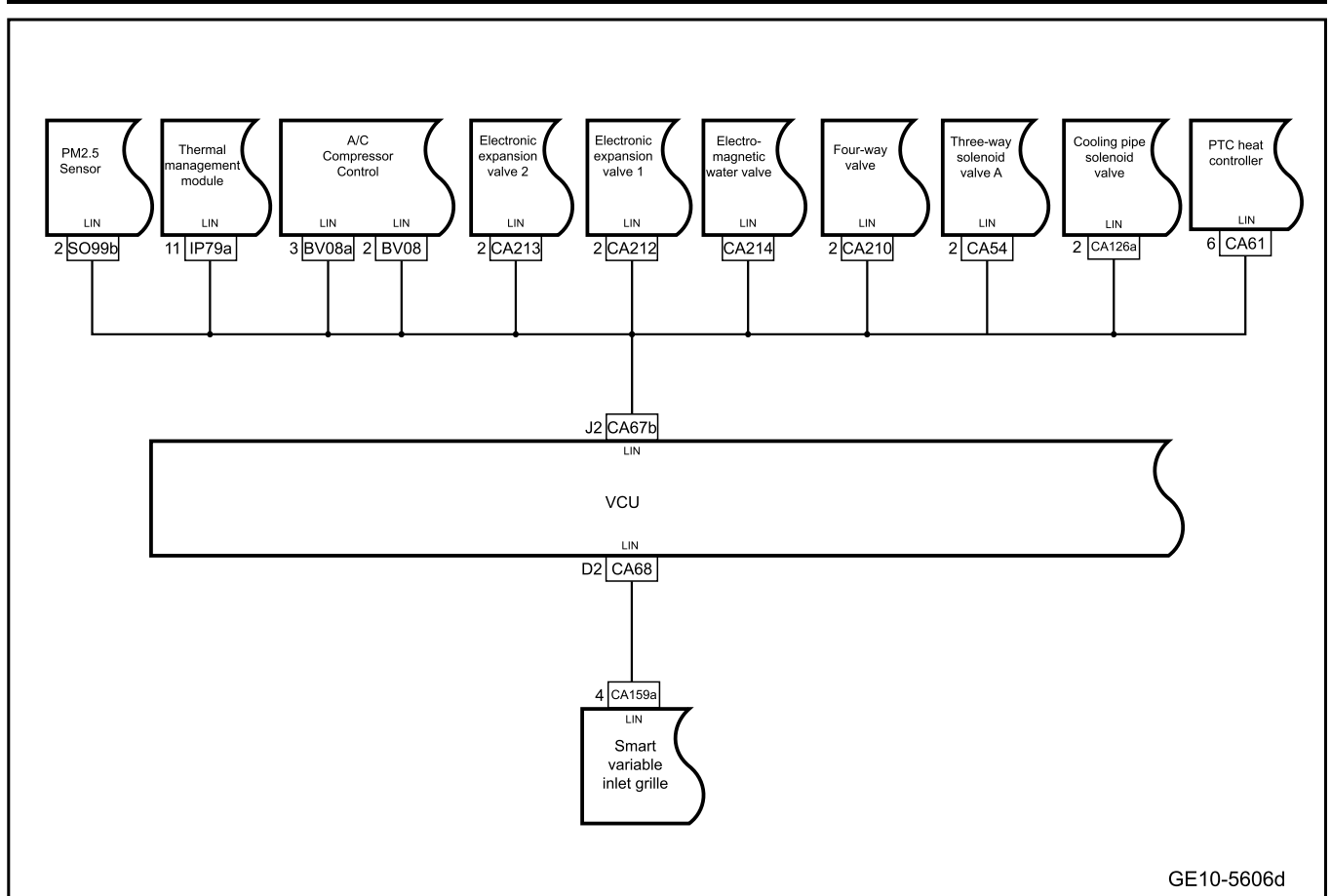
1. DTC description:

Diagnostic Trouble Code	Description
P1C6C08	LIN fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C6C08	LIN error flag remains true	1. LIN error flag changes from false to true	1. Circuit 2. VCU 3. PM2.5 sensor 4. Thermal management control module 5. A/C compressor 6. Electronic expansion valve 1 7. Electronic expansion valve 2 8. Solenoid valve 9. Four-way valve 10. Solenoid valve 11. Refrigerant tube solenoid valve 12. Refrigerant tube solenoid valve 13. PTC heating controller 2

3. Circuit diagram:



GE10-5606d

4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the intelligent variable intake grill motor, PM2.5 sensor, thermal management control module, A/C compressor, electronic expansion valve 1, electronic expansion valve 2, refrigeration pipe solenoid valve, solenoid water valve, four-way valve, three-way solenoid valve A, PTC heat controller 2, VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

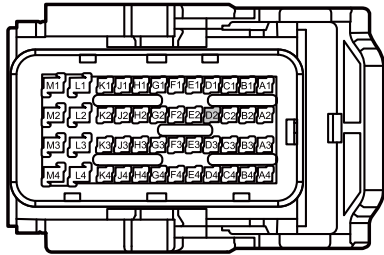
No

Repair or replace the faulty part.

Yes

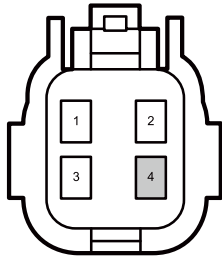
Step 3	Check VCU-LIN bus communication line.
--------	---------------------------------------

CA68 VCU module harness connector C



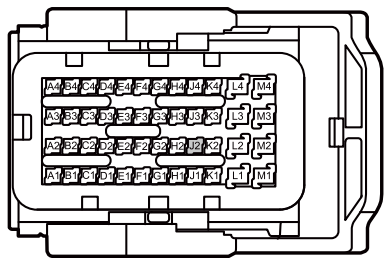
GE10-6072d

CA159a smart variable inlet grille motor harness connector



GE10-6073d

CA67b VCU module harness connector A



GE10-6074d

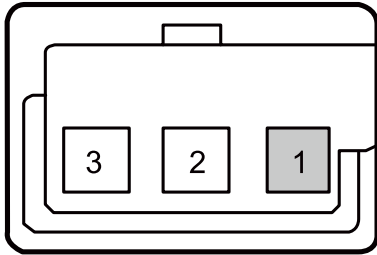
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. Disconnect the A/C compressor harness connector BV08 and BV08a.
- E. Disconnect the harness connector CA213 of the electronic expansion valve 2.
- F. Disconnect the harness connector CA212 of the electronic expansion valve 1.
- G. Disconnect the refrigerant tube solenoid valve harness connector CA126a.
- H. Disconnect the electronic water valve wiring harness connector CA214.
- I. Disconnect the four-way solenoid valve harness connector CA210.
- J. Disconnect the three-way solenoid valve A harness connector CA52.
- K. Disconnect the PTC heat controller 2 harness connector CA61.
- L. Disconnect the intelligent variable intake grill motor harness connector CA159a.
- M. Disconnect the VCU harness connectors CA67b and CA68.
- N. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	CA159a(4)	Standard resistance: less than 1Ω
CA67b(J2)	SO99b(1)	
CA67b(J2)	IP79a(11)	
CA67b(J2)	BV08(2)	
CA67b(J2)	BV08a(3)	
CA67b(J2)	CA213(2)	
CA67b(J2)	CA212(2)	
CA67b(J2)	CA126a(2)	
CA67b(J2)	CA214(2)	
CA67b(J2)	CA210(2)	
CA67b(J2)	CA61(2)	

- O. Confirm whether the measured value meets the standard.

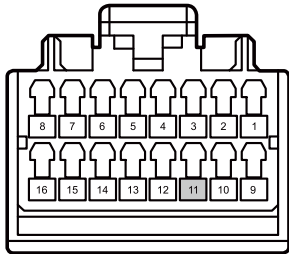
No
 Repair or replace the harness.

SO99b PM2.5 sensor harness connector



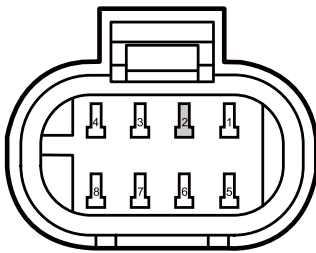
GE10-6075d

IP79a thermal management control module harness connector 1



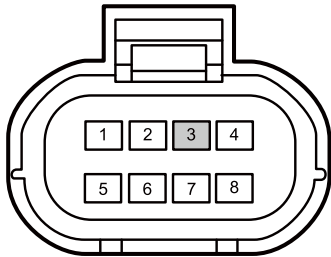
GE10-6076d

BV08 A/C compressor harness connector



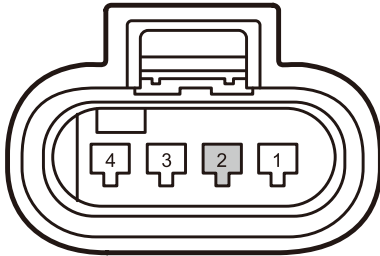
GE10-6077d

BV08a A/C compressor harness connector



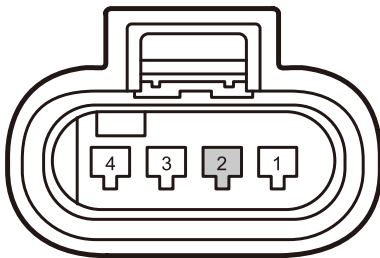
GE10-6078d

CA213 electronic expansion valve harness connector 2



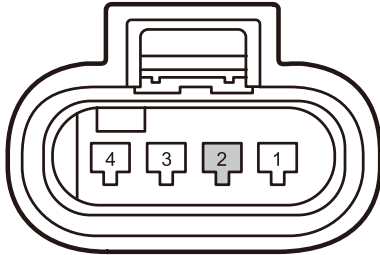
GE10-6079d

CA212 electronic expansion valve harness connector 1



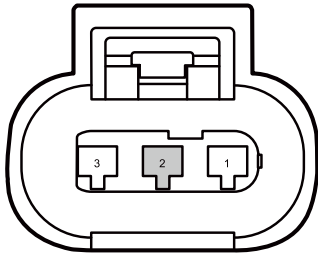
GE10-6080d

CA126a refrigerant pipe solenoid valve harness connector



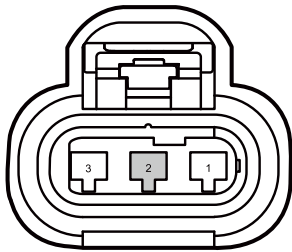
GE10-6081d

CA214 solenoid water valve harness connector



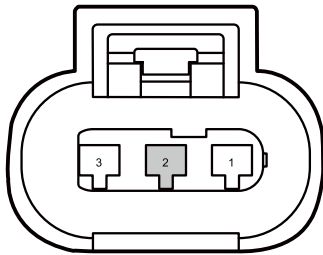
GE10-6082d

CA210 four-way valve harness connector



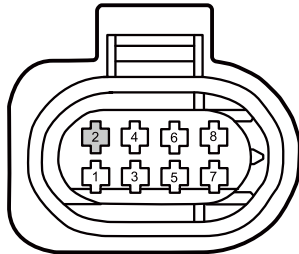
GE10-6083d

CA54 three-way solenoid valve harness connector



GE10-6084d

CA61 connection to PTC heating controller harness connector 2

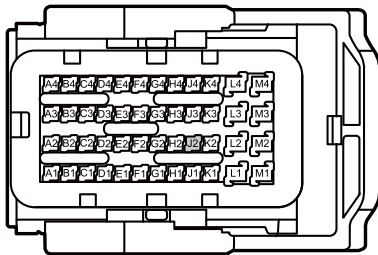


GE10-6085d

Yes

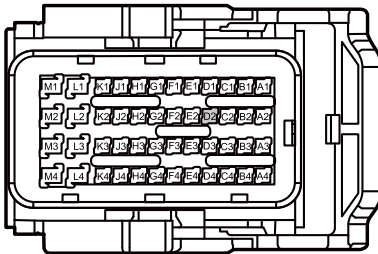
Step 4 Remove the trouble of short circuit between the VCU LIN communication line to grounding.

CA67b VCU module harness connector A



GE10-6086d

CA68 VCU module harness connector C



GE10-6087d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. Disconnect the A/C compressor harness connector BV08 and BV08a.
- E. Disconnect the harness connector CA213 of the electronic expansion valve 2.
- F. Disconnect the harness connector CA212 of the electronic expansion valve 1.
- G. Disconnect the refrigerant tube solenoid valve harness connector CA126a.
- H. Disconnect the electronic water valve wiring harness connector CA214.
- I. Disconnect the four-way solenoid valve harness connector CA210.
- J. Disconnect the three-way solenoid valve A harness connector CA52.
- K. Disconnect the PTC heat controller 2 harness connector CA61.
- L. Disconnect the intelligent variable intake grille motor harness connector CA159a.
- M. Disconnect the VCU harness connectors CA67b and CA68.
- N. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(J2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA68(D2)		

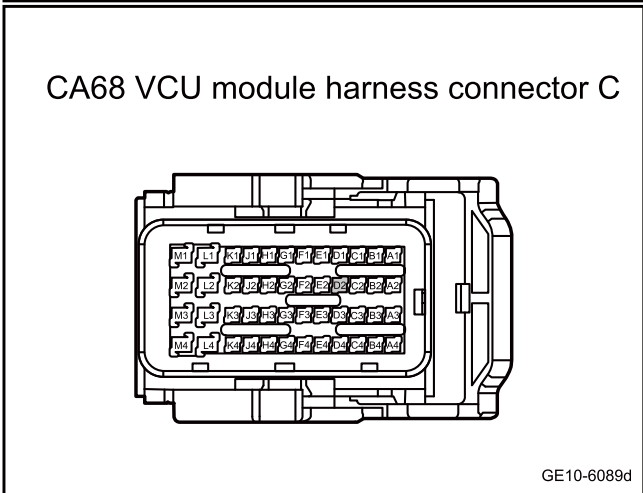
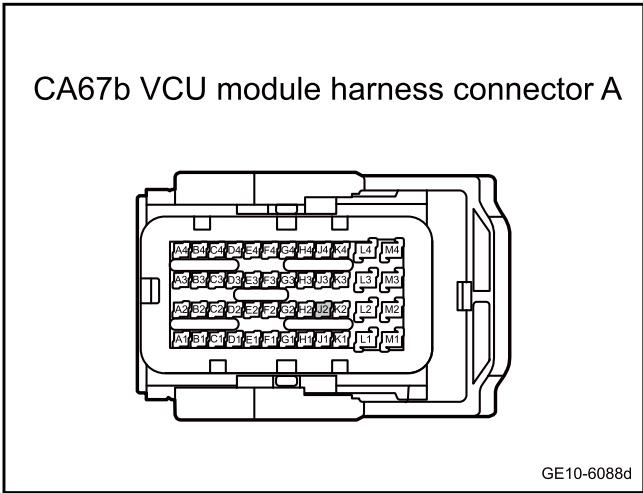
- O. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Remove the trouble of short circuit between VCULIN communication line and power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the PM2.5 sensor harness connector SO99b.
- C. Disconnect the thermal management control module harness connectors IP79a.
- D. Disconnect the A/C compressor harness connector BV08 and BV08a.
- E. Disconnect the harness connector CA213 of the electronic expansion valve 2.
- F. Disconnect the harness connector CA212 of the electronic expansion valve 1.
- G. Disconnect the refrigerant tube solenoid valve harness connector CA126a.
- H. Disconnect the electronic water valve wiring harness connector CA214.
- I. Disconnect the four-way solenoid valve harness connector CA210.
- J. Disconnect the three-way solenoid valve A harness connector CA52.
- K. Disconnect the PTC heat controller 2 harness connector CA61.
- L. Disconnect the intelligent variable intake grille motor harness connector CA159a.
- M. Disconnect the VCU harness connectors CA67b and CA68.
- N. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA67b(J2)	Vehicle body is grounded.	Standard voltage: 0V
CA68(D2)		

- O. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Replace the PM2.5 sensor.

- A. To replace the PM2.5 sensor, please refer to [Replacement of PM2.5 Sensor](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7	Replace the thermal management control module.
--------	--

- A. To replace the thermal management module, please refer to [Replacement of Thermal Management Control Module](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 8	Replace the A/C compressor.
--------	-----------------------------

- A. To replace the A/C compressor, refer to [Replacement of A/C Compressor](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Replace electronic expansion valve 2
--------	--------------------------------------

- A. To replace the electronic expansion valve 2, please refer to Replacement of Electronic Expansion Valve 2.
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 10	Replace electronic expansion valve 1
---------	--------------------------------------

- A. To replace the electronic expansion valve, please refer to Replacement of Electronic Expansion Valve 1.
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 11	Replace the refrigerant tube solenoid valve.
---------	--

- A. To replace the refrigerant tube solenoid valve, please refer to [Replacement of Refrigerant Tube Solenoid Valve](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 12	Replace the solenoid water valve.
------------	-----------------------------------

- A. To replace the solenoid water valve, please refer to [Replacement of Solenoid Water Valve](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Replace the four-way valve.
------------	-----------------------------

- A. To replace the four-way valve, please refer to [Replacement of Four-way Valve](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 14	Replace the three-way solenoid valve.
------------	---------------------------------------

- A. To replace the three-way solenoid valve, please refer to [Replacement of Three-way Solenoid Valve A](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 15	Replace the PTC heat controller 2.
------------	------------------------------------

- A. To replace the PTC heat controller 2, please refer to [Replacement of PTC Heat Controller 2](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 16	Replace Intelligent Variable Inlet Grille
------------	---

- A. To replace the intelligent variable intake grill motor, please refer to [Replacement of Intelligent Collapsible Intake Grill Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 17	Replace the VCU
------------	-----------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 18	Reprogram and reset the VCU.
------------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 19	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 20	System is normal.
------------	-------------------

10.3.5.19 High-speed fan relay circuit fault

1. DTC description:

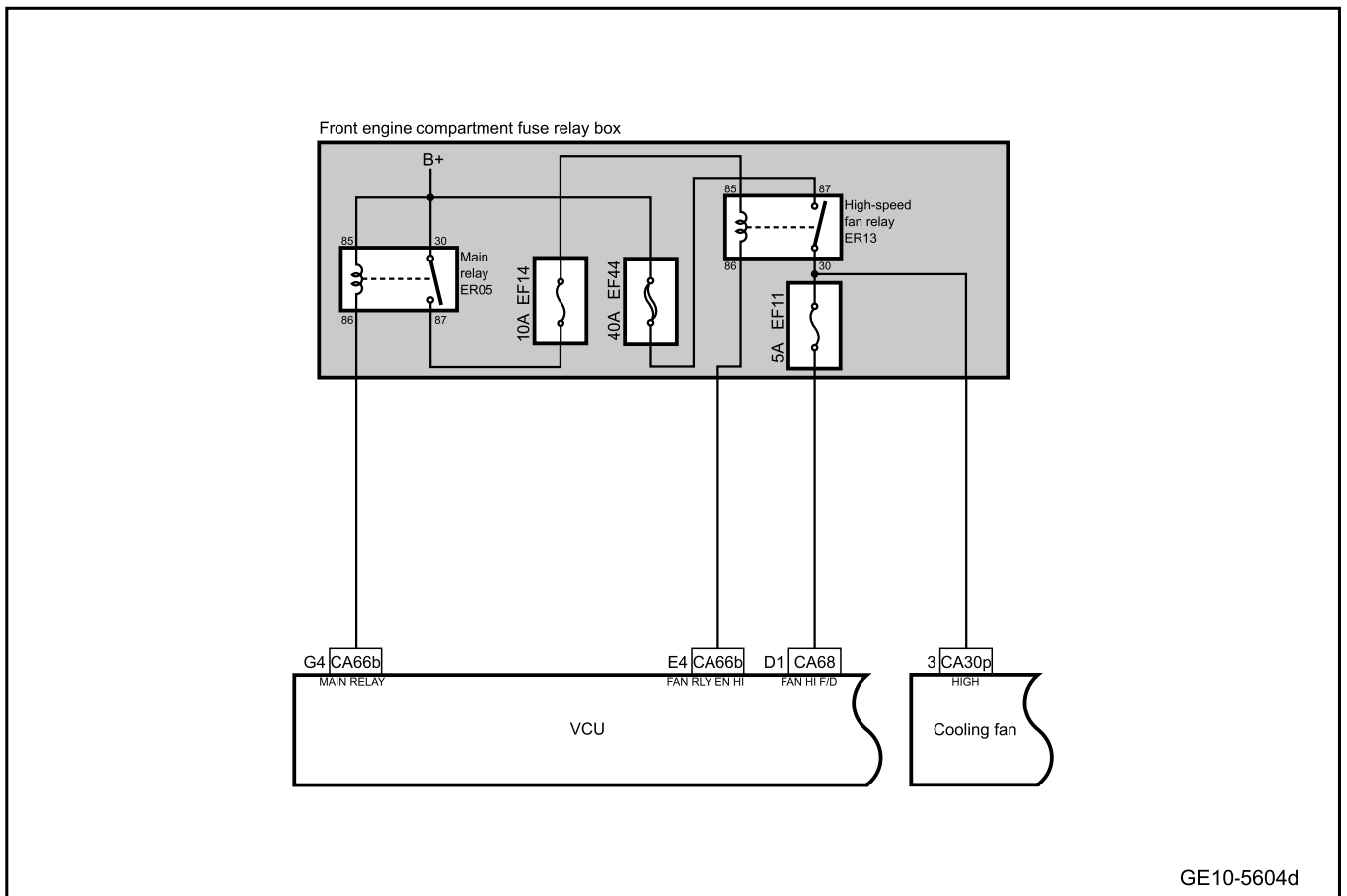
DTC code	Code description
P1C0F52	High-speed fan relay fault
P1C7704	High-speed fan enable signal is short-circuited to power supply
P1C7804	High-speed fan enable signal is short-circuited to ground
P1C7904	High-speed fan enable signal is open circuited

2. Trouble code setting and trouble locations:

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
P1C0F52	1. The feedback signal is different from the output signal and lasts for 500ms, and the fault enabling condition can meet more than 500ms at the same time	1. Under all working conditions and when the fan configuration in F101 configuration word is 0x0: High and low-speed fan 2. There is no fault in the main relay 3. The high and low-speed fan enabling signal does not continuously trigger a fault for more than 100ms (short circuit to power supply, short circuit to ground, open circuit)	1. Relay 2. VCU

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
P1C7704	Short circuit to VCC	Under all working conditions and when the fan configuration in F101 configuration word is 0x0: High and low-speed fan. And when the high-speed fan is enabling,	
P1C7804	Short circuit to ground	Under all working conditions and when the fan configuration in F101 configuration word is 0x0: High and low-speed fan. And when the high-speed fan is enabling,	
P1C7904	Open circuit		

3. Schematic circuit diagram:



GE10-5604d

4. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No
Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF14 is blown out.

Rated capacity of fuse: 10A
- C. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF44 is blown out.

Rated capacity of fuse: 40A
- D. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF11 is blown out.

Rated capacity of fuse: 5A

Yes
Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

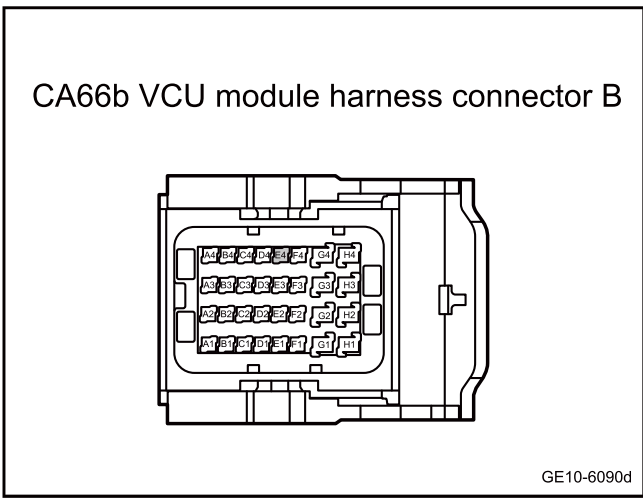
Step 4	Check the high-speed fan relay ER13.
--------	--------------------------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out high-speed fan relay ER13. Use relay with the same model to replace high-speed fan relay in turn.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

Step 5 | Check the circuit between the high-speed fan relay and the VCU.

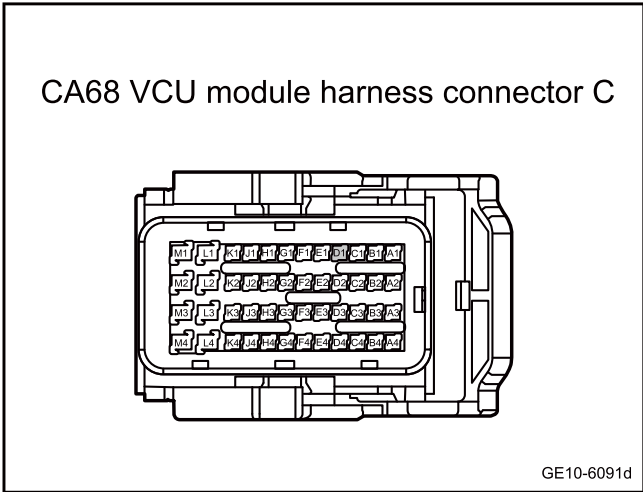


- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connectors CA68 and CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the high-speed fan relay ER13.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E4)	ER13(86)	Standard resistance: less than 1Ω
CA68(D1)	ER13(30)	

- F. Confirm whether the measured value meets the standard.

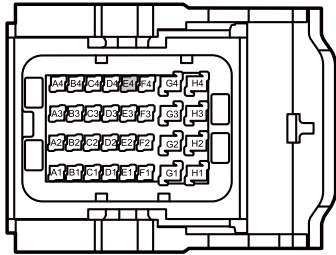
No Repair or replace the harness.



Yes

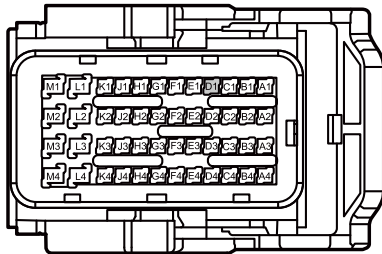
Step 6 | Check whether the line between VCU and high-speed relay is shorted to GND.

CA66b VCU module harness connector B



GE10-6092d

CA68 VCU module harness connector C



GE10-6093d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connectors CA68 and CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the high-speed fan relay ER13.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(E4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA68(D1)		

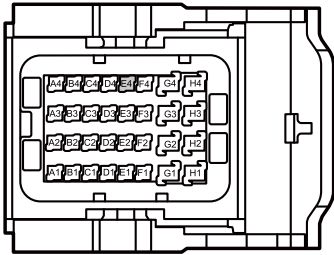
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

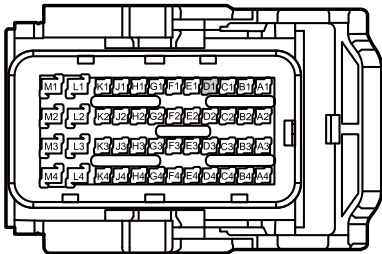
Step 7 | Check whether the circuit between VCU and the high speed fan relay is shorted to power.

CA66b VCU module harness connector B



GE10-6094d

CA68 VCU module harness connector C



GE10-6095d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connectors CA68 and CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the high-speed fan relay ER13.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

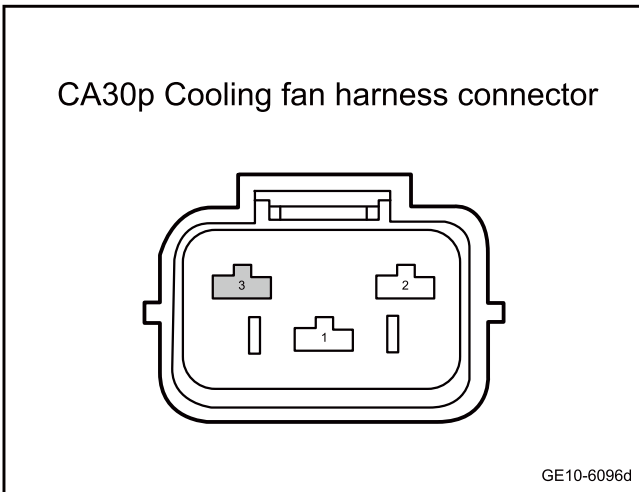
Measure terminal 1	Measure terminal 2	Standard value
CA66b(E4)	Vehicle body is grounded.	Standard
CA68(D1)		voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Check the circuit between the cooling fan and the high-speed fan relay.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connectors CA68 and CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the high-speed fan relay ER13.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(3)	ER13(30)	Standard resistance: less than 1Ω
CA30p(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(3)	Vehicle body is grounded.	Standard voltage: 0V

- H. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 | Replace the VCU

- A. Check whether VCU power supply and grounding harness are normal. Refer to [VCU Power Failure](#)
- B. Replace the VCU Refer to [Replacement of VCU](#)

Next step

Step 10 | Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 11	Use diagnostic scanner to confirm the trouble code.
---------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 12	System is normal.
---------	-------------------

10.3.5.20 Low-speed fan relay circuit fault

1. DTC description:

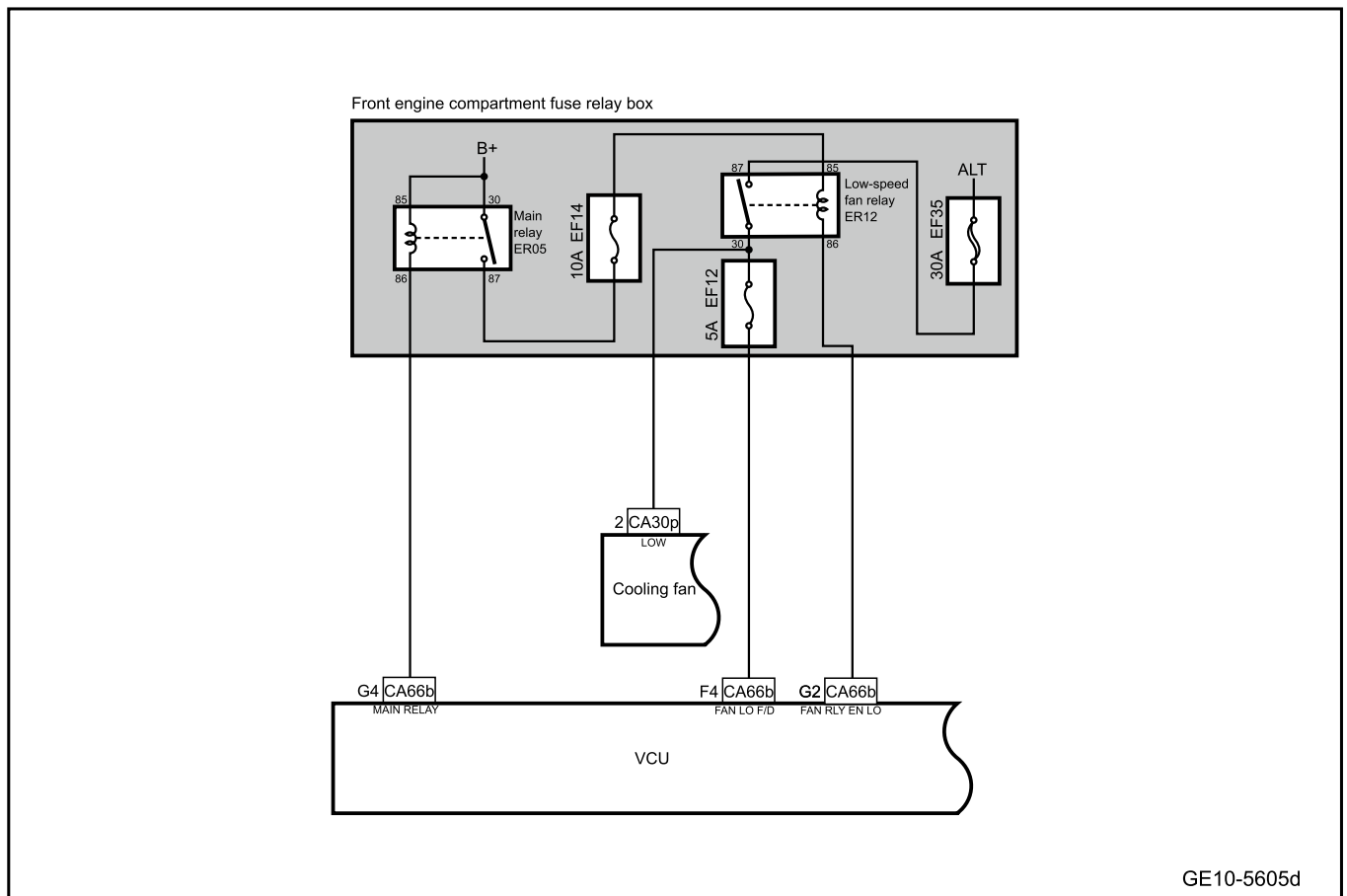
DTC code	Code description
P1C1152	Low-speed fan relay fault
P1C7A04	Low-speed fan enable signal is short-circuited to power supply
P1C7B04	Low-speed fan enable signal is short-circuited to ground
P1C7C04	Low-speed fan enable signal is open circuited

2. Trouble code setting and trouble locations:

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
P1C1152	1. The feedback signal is different from the output signal and lasts for 500ms, and the fault enabling condition can meet more than 500ms at the same time	1. Under all working conditions and when the fan configuration in F101 configuration word is 0x0: High and low-speed fan 2. There is no fault in the main relay 3. The high and low-speed fan enabling signal does not continuously trigger a fault for more than 100ms (short circuit to power supply, short circuit to ground, open circuit)	1. Relay 2. VCU

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
P1C7A04	Short circuit to VCC	Under all working conditions and when the fan configuration in F101 configuration word is 0x0: High and low-speed fan. And when the high-speed fan is enabled,	
P1C7B04	Short circuit to ground		
P1C7C04	Open circuit		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the VCU harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF14 is blown out.
Rated capacity of fuse: 10A
- C. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF12 is blown out.
Rated capacity of fuse: 5A
- D. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF35 is blown out.
Rated capacity of fuse: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

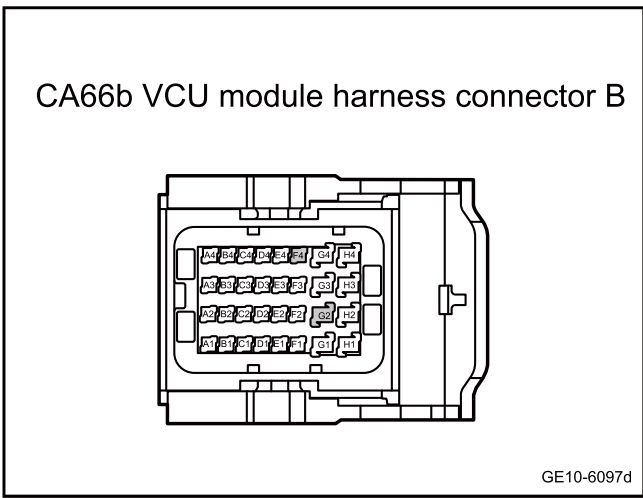
Step 4	Check the low-speed fan relay ER12.
--------	-------------------------------------

- A. Operate the vehicle power supply to the mode OFF
- B. Pull out low-speed fan relay ER12. Use relay with the same specification to replace low-speed fan relay.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

Step 5 Check the circuit between the low-speed fan relay and the VCU for open circuit fault.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the low-speed fan relay ER12.
- E. Use a multimeter to measure the terminals according to the table below:

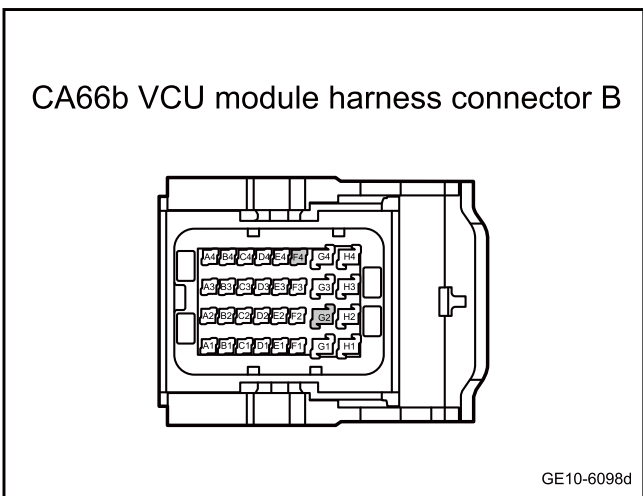
Measure terminal 1	Measure terminal 2	Standard value
CA66b(F4)	ER12(30)	Standard resistance: less than 1Ω
CA66b(G2)	ER12(86)	

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check whether the line between VCU and low-speed fan relay is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the low-speed fan relay ER12.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(F4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA66b(G2)		

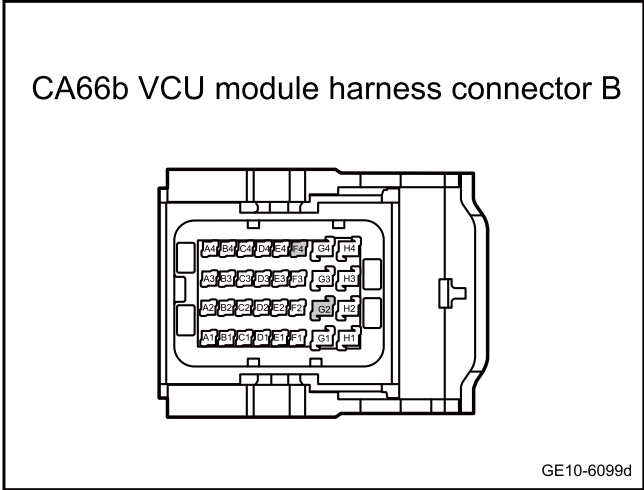
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between VCU and the low-speed relay is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the low-speed fan relay ER12.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(F4)	Vehicle body is grounded.	Standard voltage: 0V
CA66b(G2)		

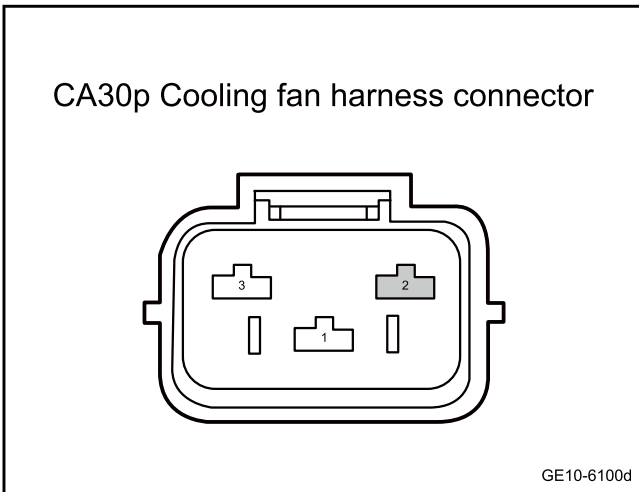
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check the circuit between the cooling fan and the low-speed fan relay.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30p.
- D. Unplug the low-speed fan relay ER12.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(2)	ER12(30)	Standard resistance: less than 1Ω
CA30p(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30p(2)	Vehicle body is grounded.	Standard voltage: 0V

- H. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 | Replace the VCU

- A. Check whether VCU power supply and grounding harness are normal. Refer to [VCU Power Failure](#)
- B. Replace the VCU Refer to [Replacement of VCU](#)

Next step

Step 10 | Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 11 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12 System is normal.

10.3.5.21 Fault of cooling fan(Type I)

1. DTC description:

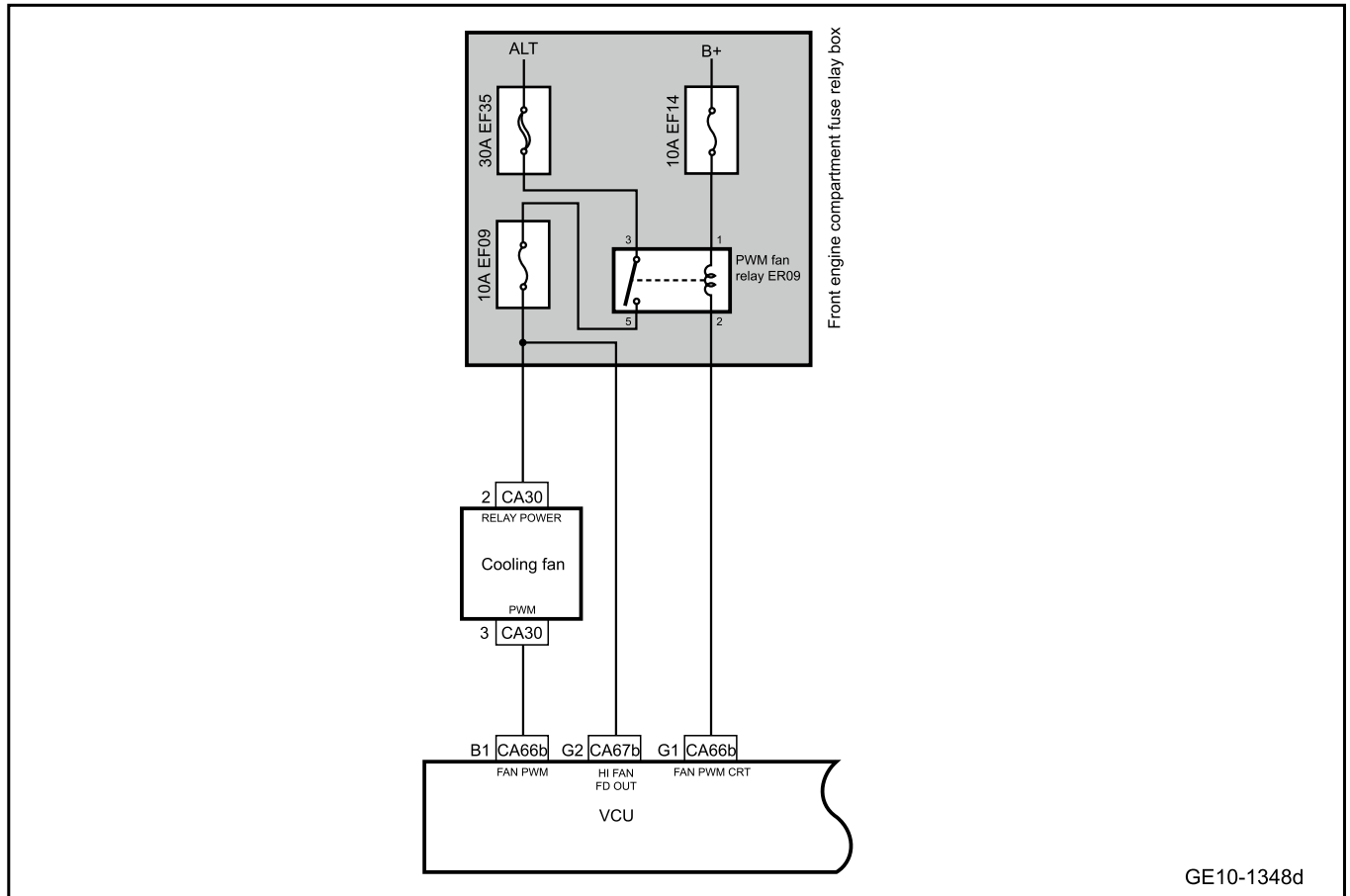
Diagnostic Trouble Code	Description
P1CCE92	PWM fan relay fault
P1CCF12	PWM fan enable signal is short-circuited to power supply
P1CCF11	PWM fan enable signal is short-circuited to ground
P1CCF13	PWM fan enable signal is open circuited
P1CD012	PWM fan control signal is short-circuited to power supply
P1CD011	PWM fan control signal is short-circuited to ground
P1CD013	PWM fan control signal is open circuited

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1CCE92	The time difference between the feedback signal and the output signal is 500ms, and the cooling fan does not report an error	1. In all operating conditions	1. Circuit 2. Relay 3. Fuse 4. VCU 5. Cooling fan
P1CCF12	Short circuit to VCC		
P1CCF11	Short circuit to ground		
P1CCF13	Open circuit		
P1CD012	Short circuit to VCC		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1CD011	Short circuit to ground		
P1CD013	Open circuit		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the cooling fan for signs such as damage and falling off.
- B. Check the cooling fan and VCU harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the fuses EF09 and EF14 of the front engine compartment. Check whether the fuses EF09 and EF14 are blown.

Rated capacity of fuse: 10A

- C. Pull out the fuse EF35 of the front engine compartment. Check whether the fuse EF35 is blown.

Rated capacity of fuse: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the PWM fan relay ER09.

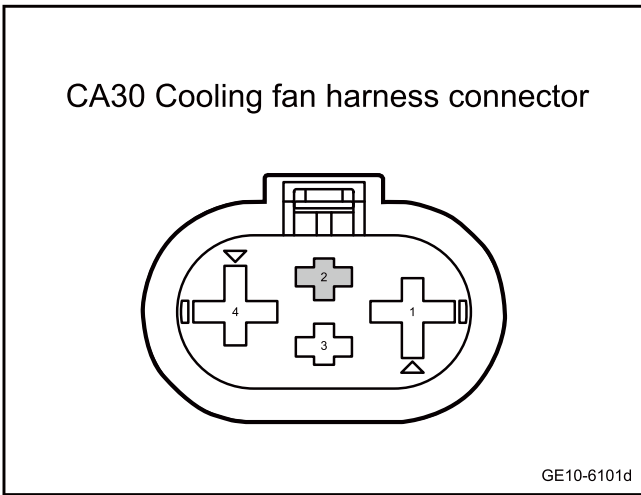
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug PWM fan relay ER09 and replace PWM fan relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Check the circuit between the cooling fan and the PWM relay.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(2)	ER09(5)	Standard resistance: less than 1Ω

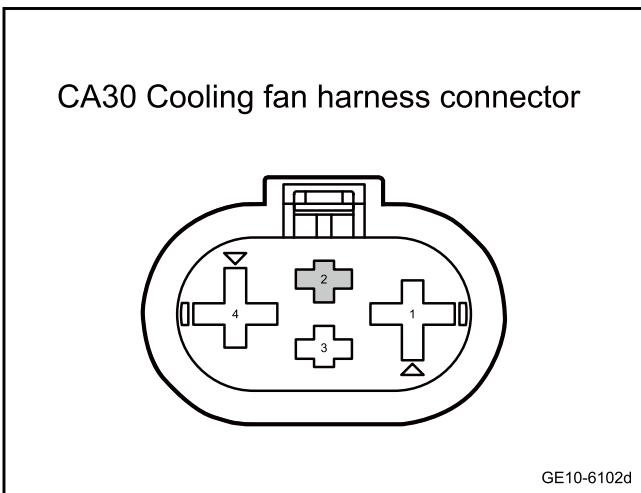
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check the circuit between the cooling fan and the PWM fan relay for short circuit fault to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

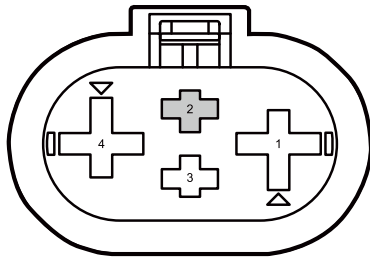
No

Repair or replace the harness.

Yes

Step 7 Check the circuit between the cooling fan and the PWM fan relay.

CA30 Cooling fan harness connector



GE10-6103d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

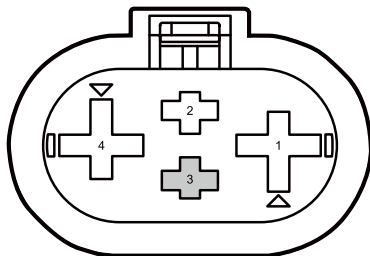
No

Repair or replace the harness.

Yes

Step 8 Check the circuit between the cooling fan and the VCU for open circuit fault.

CA30 Cooling fan harness connector



GE10-6104d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	CA66b(B1)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

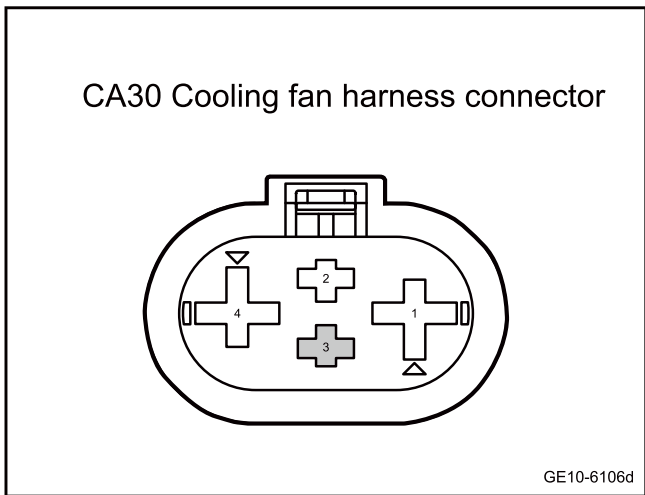
Repair or replace the harness.

CA66b VCU module harness connector B

GE10-6105d

Yes

Step 9 Check the circuit between the cooling fan and the VCU for short circuit fault to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30.
- D. Use a multimeter to measure the terminals according to the following table:

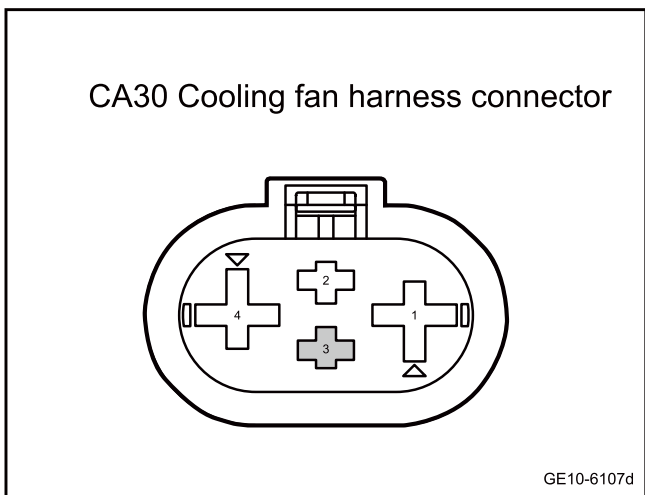
Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 10 Check the circuit between the cooling fan and the VCU for short circuit fault to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA66b.
- C. Disconnect the cooling fan harness connector CA30.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA30(3)	Vehicle body is grounded.	Standard voltage: 0V

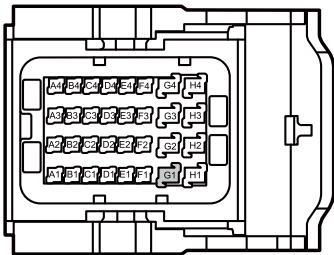
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

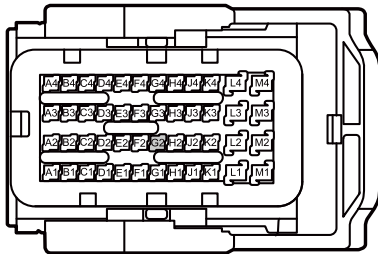
Step 11 Check the circuit between PWM fan relay and VCU for open circuit fault.

CA66b VCU module harness connector B



GE10-6108d

CA67b VCU module harness connector A



GE10-6109d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the VCU harness connectors CA66b and CA67b.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER09(2)	CA66b(G1)	Standard resistance: less than 1Ω
ER09(5)	CA67b(G2)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 12	Check whether the circuit between the PWM fan relay and the VCU is short-circuited to ground.
---------	---

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Disconnect the VCU harness connectors CA66b and CA67b.
- E. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER09(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
ER09(5)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 13	Check whether the circuit between the main relay and the VCU is short-circuited to power supply.
------------	--

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the PWM fan relay ER09.
- C. Disconnect the cooling fan harness connector CA30.
- D. Disconnect the VCU harness connectors CA66b and CA67b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
ER09(2)	Vehicle body is grounded.	Standard voltage: 0V
ER09(5)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 14	Replace the VCU
------------	-----------------

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 15	Reprogram and reset the VCU.
------------	------------------------------

- A. Reprogram and reset the VCU. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 16	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

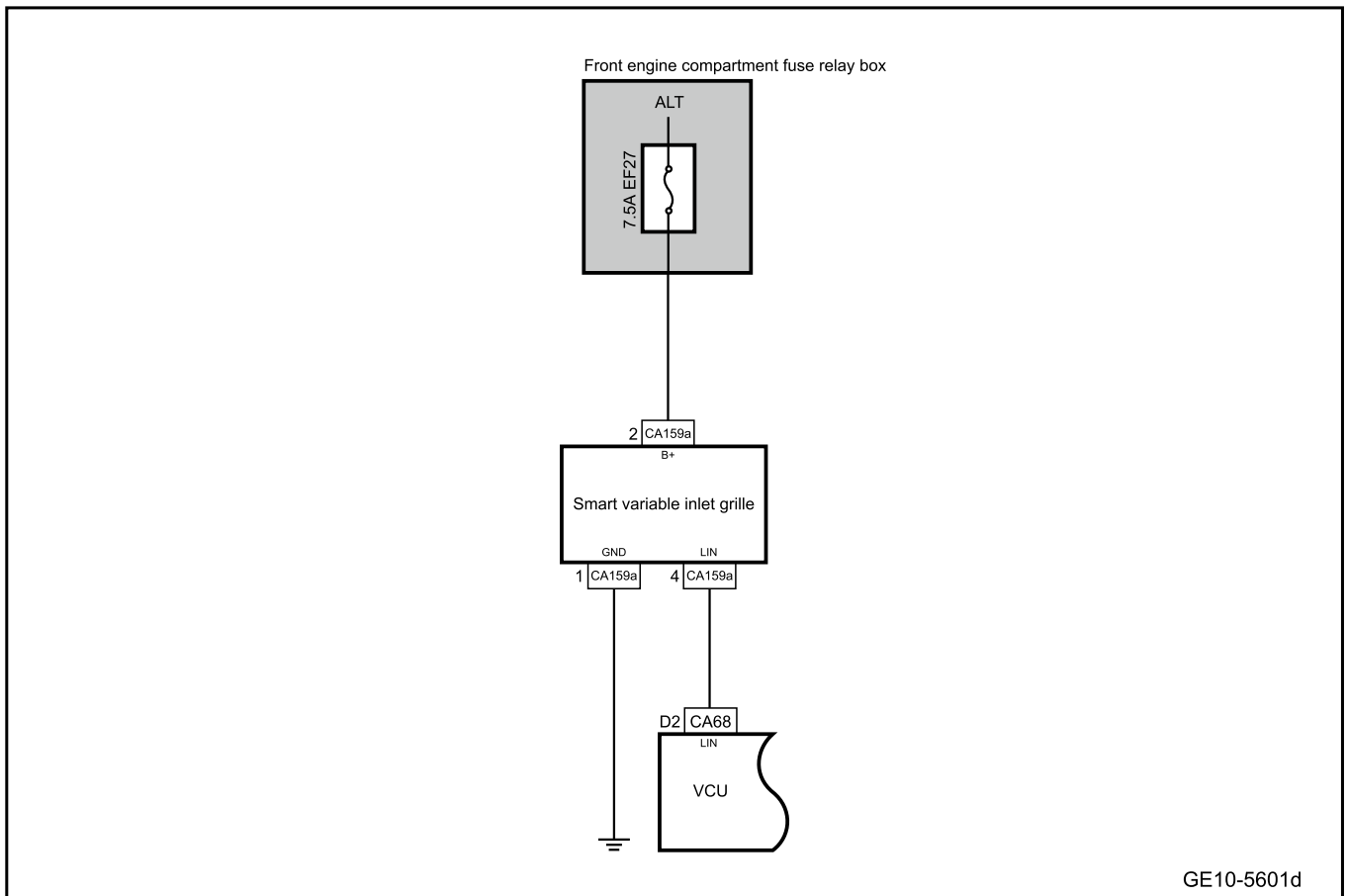
Diagnose according to the output trouble code.

No

Step 17	System is normal.
------------	-------------------

10.3.5.22 Intelligent Variable Inlet Grille does not work

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the intelligent variable inlet grille harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Inspect the fuse.
--------	-------------------

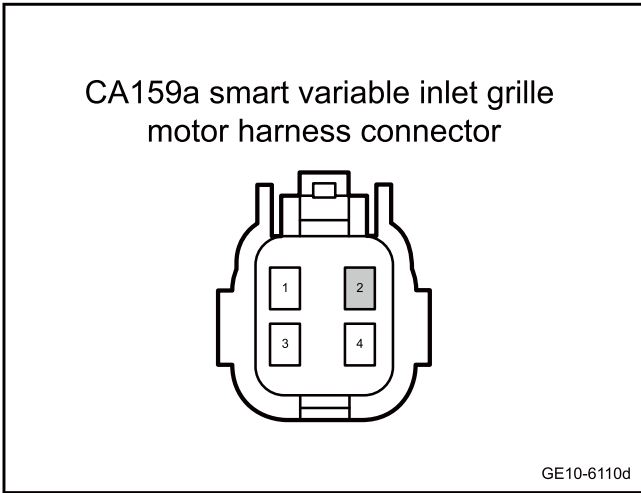
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF27 is blown out.
Rated capacity of fuse: 7.5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Inspect power supply circuit of Intelligent Variable Inlet Grille
--------	---



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the intelligent variable inlet grille motor harness connector CA159a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

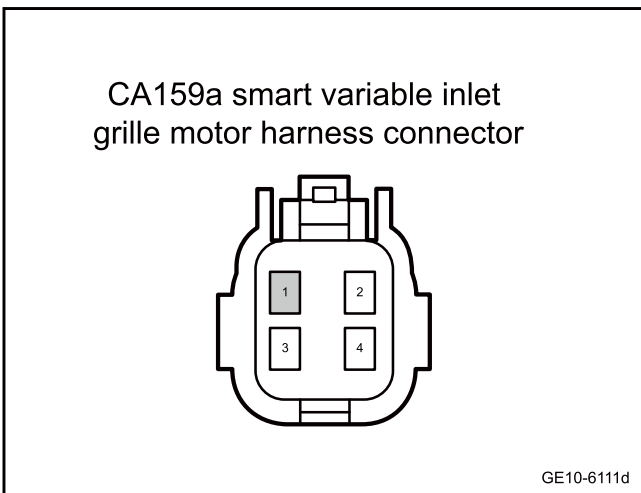
Measure terminal 1	Measure terminal 2	Standard value
CA159a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Inspect intelligent Variable Inlet Grille ground circuit



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the intelligent variable inlet grille motor harness connector CA159a.
- C. Use a multimeter to measure each terminal according to the table below:

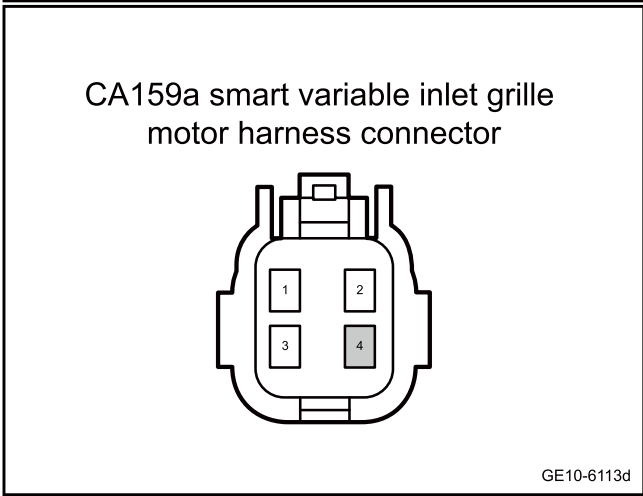
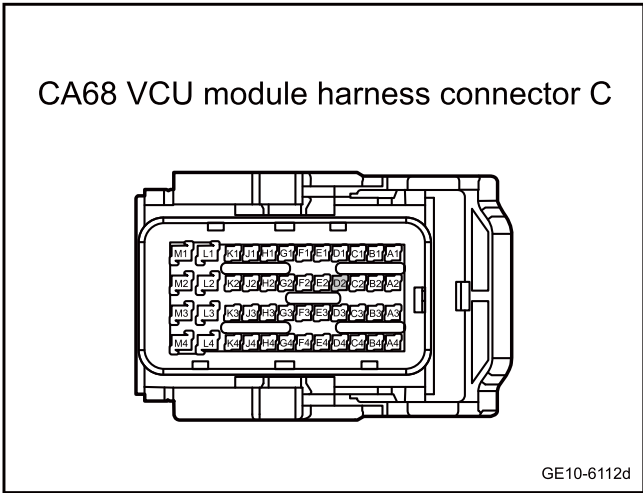
Measure terminal 1	Measure terminal 2	Standard value
CA159a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check for open circuit fault between the intelligent variable inlet grille and VCU.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the intelligent variable inlet grille motor harness connector CA159a.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure:

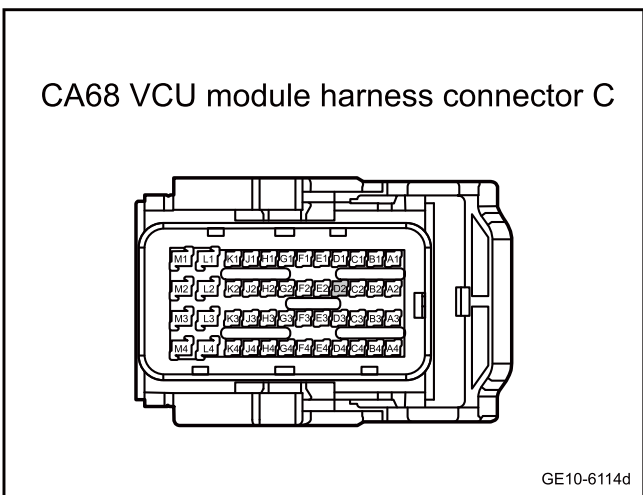
Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	CA159a(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Check whether the circuit between the intelligent variable inlet grille and VCU is short to ground.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the intelligent variable inlet grille motor harness connector CA159a.
- C. Disconnect the VCU harness connector CA68.
- D. Use a multimeter to measure:

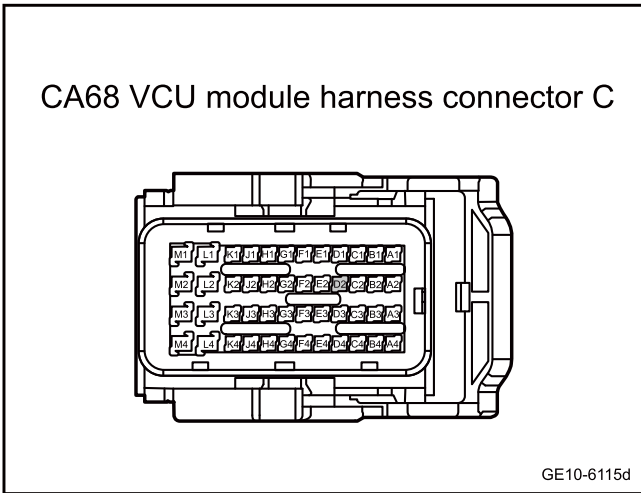
Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Check whether the circuit between the intelligent variable inlet grille and VCU is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the intelligent variable inlet grille motor harness connector CA159a.
- C. Disconnect the VCU harness connector CA68.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
CA68(D2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace intelligent Variable Inlet Grille motor

- A. To replace the intelligent variable intake grill motor, please refer to [Replacement of Intelligent Variable Intake Grill Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Replace the VCU

- A. Check whether the power supply of control module VCU and the grounding harness are normal. Refer to [VCU Power Failure](#)
- B. To replace the VCU, please refer to [Replacement of VCU](#)

Next step

Step 11 Reprogram and reset the VCU.

- A. Reprogram and reset the VCU. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 12	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

10.3.5.23 High voltage interlocking fault(Type II)

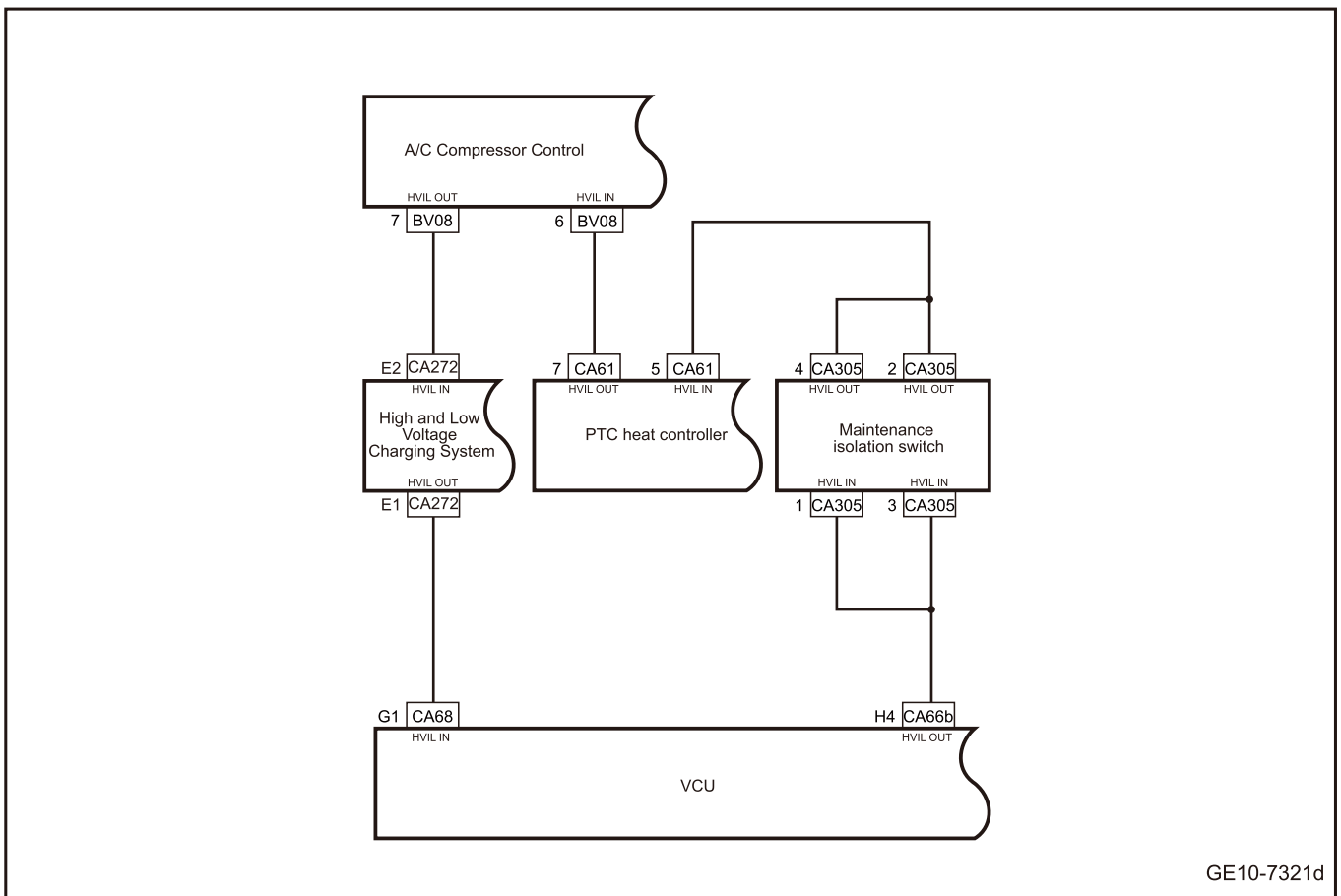
1. DTC description:

DTC	Trouble description
P1C4096	High voltage interlocking fault
P1C8C04	High voltage interlock PWM output signal is short to power supply
P1C8D04	High voltage interlock PWM output signal is short to ground
P1C8E04	High voltage interlock PWM output signal has the open circuit

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
P1C4096	HVIL signal of BMSH (0x0B0) and VCU indicates that HVIL is abnormal (in one of the lists) VCU detection failure time:500 ms. The main relay does not report an error	<ol style="list-style-type: none"> 1. One of the following conditions is met: 2. AC charging mode 3. DC charging mode 4. V2G discharging method 5. Remote A/C mode 6. Intelligent charging mode 7. Vehicle ready state without any of the above modes (TKL15_open>3S) 8. Vehicle IG ON status without any of the above modes (TKL15_ON >3S) 	<ol style="list-style-type: none"> 1. Circuit 2. A/C compressor 3. High and low-voltage charging system 4. PTC heating controller 5. Repair the isolating switch 6.VCU
P1C8C04	Short circuit to power supply	TKL15 Off -> On, delay	
P1C8D04	Short circuit to ground	1000ms	
P1C8E04	Open circuit	<ol style="list-style-type: none"> 1. TKL15 Off -> On, delay 1000ms 2. There is no fault in the main relay 	

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

This manual only specifies the diagnosis of the high-voltage interlock fault of the model equipped with Mitsubishi electric compressor. The diagnosis of the high-voltage interlock fault of the model equipped with Haili electric compressor is the same as that of the model equipped with Mitsubishi electric compressor.

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

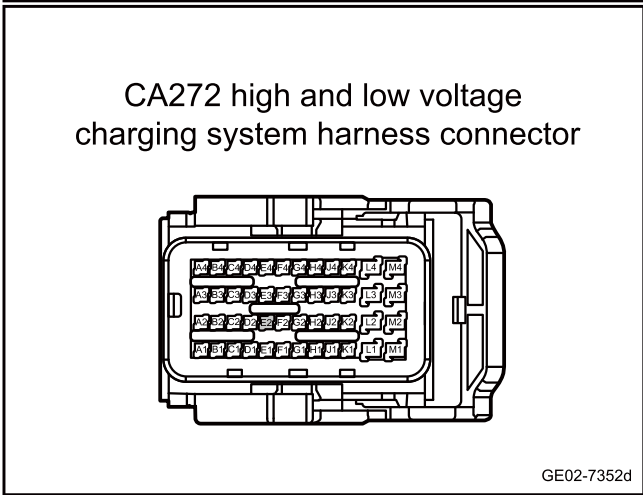
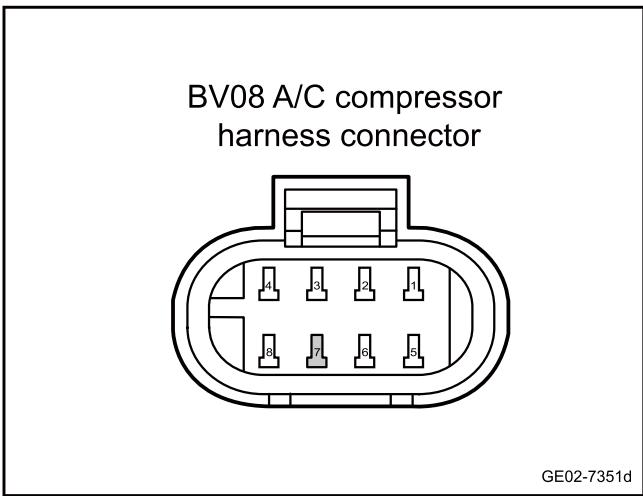
- A. Check the A/C compressor, the PTC heat controller, the high and low-voltage charging system, maintenance isolating switch and VCU harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the harness between the AC compressor and the high and low voltage charging system.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV08(7)	CA272(E2)	Standard resistance: less than 1Ω
BV08(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA272(E2)	Vehicle body is grounded.	Standard voltage: 0V

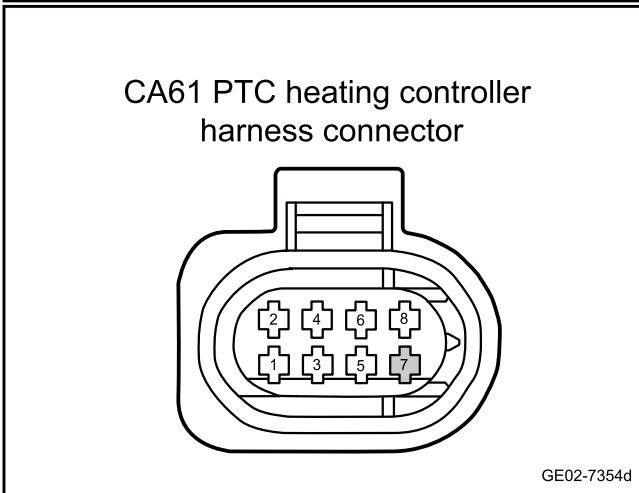
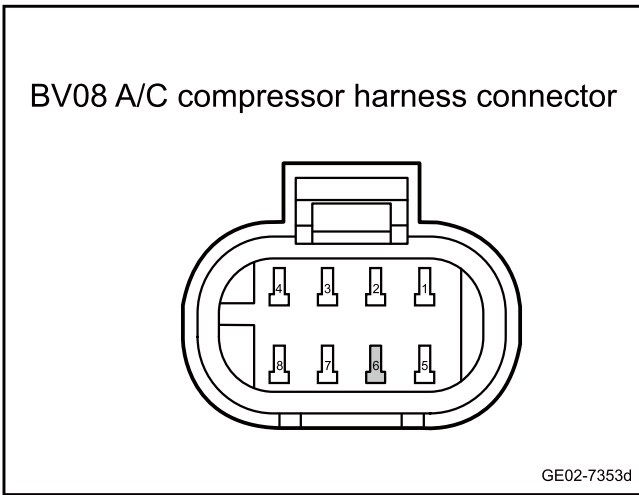
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the A/C compressor and the PTC heat controller is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the A/C compressor harness connector BV08.
- C. Disconnect the PTC heat controller harness connector CA61.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
BV08(6)	CA61(7)	Standard resistance: less than 1Ω
CA61(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

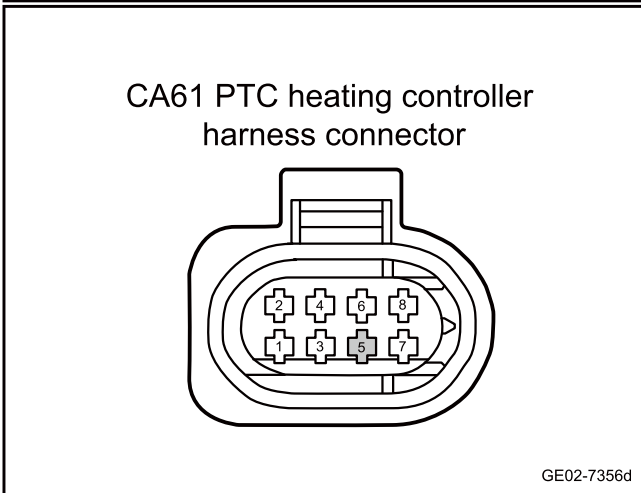
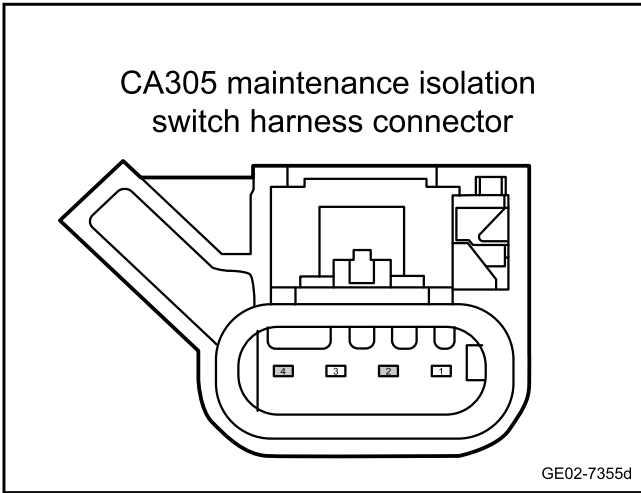
Measure terminal 1	Measure terminal 2	Standard value
CA61(7)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5	Check the circuit between the maintenance isolating switch and PTC.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA305 of the maintenance isolating switch.
- C. Disconnect the PTC heat controller harness connector CA61.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA305(2)	CA61(5)	Standard resistance: less than 1Ω
CA305(4)		
CA61(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA61(5)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

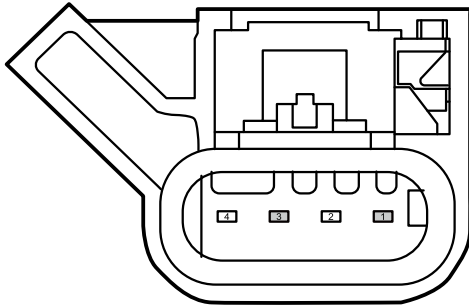
No

Repair or replace the harness.

Yes

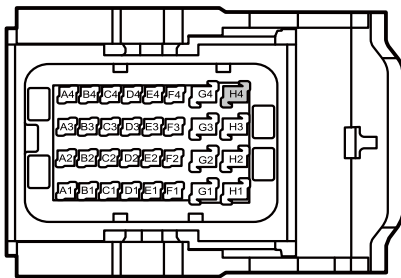
Step 6	Check whether the circuit between the VCU and the maintenance isolating switch is normal.
--------	---

CA305 maintenance isolation switch harness connector



GE02-7357d

CA66b VCU harness connector



GE02-7358b

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA305 of the maintenance isolating switch.
- C. Disconnect the VCU harness connector CA66b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA305(1)	CA66b(H4)	Standard resistance: less than 1Ω
CA305(3)		
CA66b(H4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA66b(H4)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

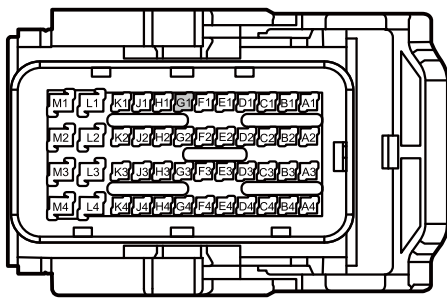
No

Repair or replace the harness.

Yes

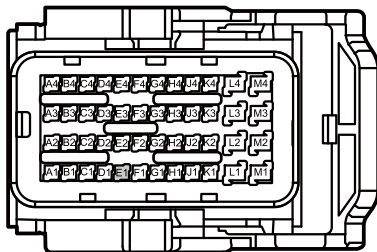
Step 7 Check the circuit between VCU and high and low voltage charging system.

CA68 VCU harness connector



GE02-7359d

CA272 high and low voltage charging system harness connector



GE02-7360d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the VCU harness connector CA68.
- C. Disconnect the high and low voltage charging system wiring harness connector CA272.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(G1)	CA272(E1)	Standard resistance: less than 1Ω
CA68(G1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA68(G1)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace the A/C compressor.

- A. To replace the A/C compressor, refer to [Replacement of Motor Compressor Assembly](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the high and low-voltage charging system.

- A. To replace the high and low voltage charging system, please refer to [Replacement of High and Low Voltage Charging System\(low figuration\)](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10	Replace the PTC heat controller.
------------	----------------------------------

- A. To replace the PTC heat controller, please refer to [Replacement of PTC Heat Controller](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Program and set the VCU.
---------	--------------------------

- A. Program and set the VCU. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 12	Replace the VCU
------------	-----------------

- A. Replace the VCU Refer to [Replacement of VCU](#)

Next step

Step 13	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

10.3.6 Removing and installing

10.3.6.1 Replacement of Vehicle Control Unit

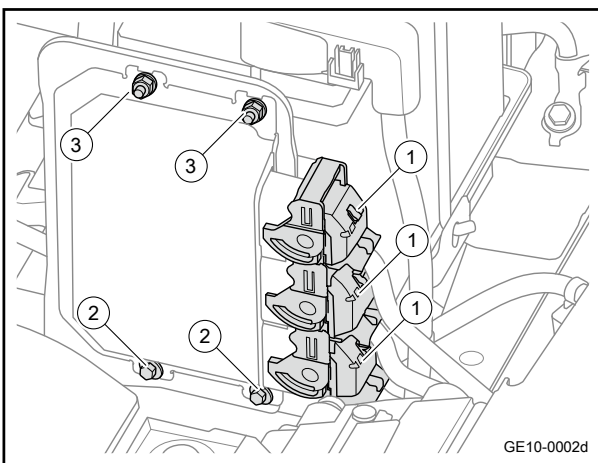
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

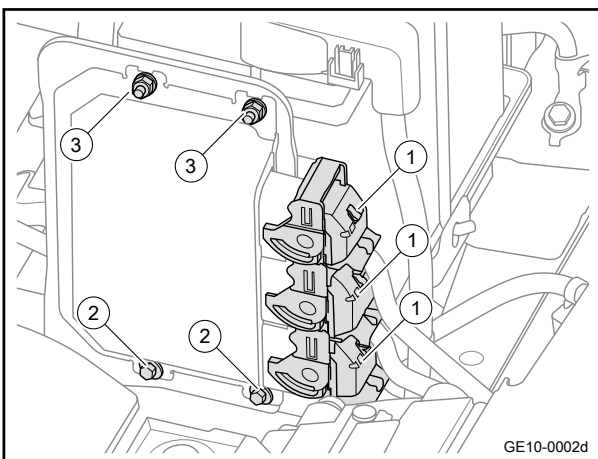
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front engine compartment trim cover assembly. Refer to [Replacement of Front Engine Compartment Trim Cover Assembly](#)
- 3 Connect the harness connector 1 of the vehicle control unit assembly.
- 4 Remove the 2 fixing bolts 2 of the vehicle control unit assembly.
- 5 Remove the 2 fixing nuts 3 of the vehicle control unit assembly.
- 6 Take off the vehicle control unit assembly.



Installation procedure

- 1 Move the vehicle control unit assembly to the installation position.
- 2 Install the 2 fixing nuts 3 of the vehicle control unit assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Install the 2 fixing bolts of the vehicle control unit assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 4 Connect the harness connectors 1 of the vehicle control unit.
- 5 Install the front engine compartment trim cover assembly.
- 6 Connect the negative cable of battery.



10.4 Programming and Setting

10.4.1 Diagnostic information and procedures

10.4.1.1 Programming precautions

Before programming the control module, ensure that the following conditions are met:

1. The charging system shall have no fault. Before programming the control module, the fault of the charging system must be eliminated first.
2. Battery voltage should be higher than 12V but lower than 16V. If the battery voltage is too low, it should be charged before programming the control module.
3. The battery charger shall not be connected to the vehicle battery. Incorrect system voltage or voltage fluctuation caused by a battery charger can lead to programming failures or damage to the control module.
4. Turn off or disable all electrical loads on the vehicle battery, such as interior lights, daytime running lights, heating, ventilation and air conditioning (HVAC) systems, cooling fans, radios, etc.
5. Ensure that all tool connections are secure, including the following components and circuits:
 - Control module serial data link tester.
 - Connection at the diagnostic interface (DLC).
 - Power supply circuit
6. Do not disturb tool harness when programming. Unexpected programming interruptions can lead to programming failures or damage to the control module.

10.4.1.2 Replacement of controller

Note

After replacing the controller, it is needed to write data and other operations on the controller.

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click "Confirm".
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select "Write data function".
--------	-------------------------------

Note

The data writing function includes "one key configuration", "one key backup", "vehicle name", "vehicle identification number (VIN)", "system name", "ECU installation date", "anti-theft key", "erase anti-theft key", "network topology configuration 2", "network node configuration code - code input" and "function configuration code - code input" (the actual control module shall prevail). Select the data name to be written as required. The following description will take writing vehicle name data as an example.

Next step

Step 8	Select "vehicle name".
--------	------------------------

Note

The system will prompt: the current vehicle name is xxxxx

Next step

Step 9	Click "Confirm".
--------	------------------

Next step

Step 10	Input data.
------------	-------------

Note

The system will prompt: Please enter the vehicle name

Next step

Step 11	Click "Confirm".
---------	------------------

Next step

Step 12	Input data.
------------	-------------

Note

The system will prompt: Please enter the vehicle name again

Next step

Step 13	Click "Confirm".
------------	------------------

Note

The system will prompt: the data you just entered is XXX. Please confirm whether the input data is correct. If it is correct, press yes to proceed to the next step. Otherwise, press no to re-enter.

Next step

Step 14	Click "Ok" to implement the next step.
------------	--

Note

The system will prompt: performing, please wait...

Next step

Step 15	Write data function completes.
------------	--------------------------------

10.4.1.3 Program and setup of each module of the complete vehicle

1. Programming and settings after BCM is replaced

After replacing the IBC control module, the module must be reset. The specific steps are as follows:

- a. Connect a diagnostic instrument to the diagnostic interface of the vehicle
- b. The key activates the vehicle power supply to the mode ON.
- c. Enter the main interface of the diagnostic instrument and automatically identify or select "XX Auto" brand - "XX" model.
- d. Select manual selection system - select body control system (IBC).
- e. Select data writing function-Write anti-theft key.
 - Input ESK code of the anti-theft key and re-input ESK code of anti-theft key.
 - It will prompt to confirm the successful anti-theft writing.
- f. Select special function-sunroof self-learning, refer to Sunroof Self-learning
- g. Select special function-RLS information configuration and read, refer to Information configuration and read of rain and light sensor

2. Programming and settings after ONE BOX is replaced

After replacing the ONE BOX control module, the module must be reset. The specific steps are as follows: Refer to [Replacement of Controller](#)

3. Programming and settings after ACU is replaced

To replace or remove ACU, it is necessary to calibrate the heading angle sensor Refer to [Calibration of the Yaw Angle Sensor](#)

4. Programming and settings after EPS is replaced

To remove or replace EPS, it is necessary to calibrate the steering wheel angle Refer to [Calibration of Steering Wheel Angle](#)

5. Programming and Setting of EPB Initialization

EPB initiation settings Refer to [EPB Initial Setup](#)

6. Programming and settings for entering service mode (brake caliper release)

Programming and settings for entering service mode (brake caliper release) Refer to [Enter maintenance mode \(ready to replace brake block\), exit maintenance mode \(functions performed after brake block is replaced\)](#)

7. Programming and settings of combination instrument maintenance mileage reset

Maintenance mileage reset (maintenance indicator light of diagnostic apparatus) Refer to [Maintenance mileage reset function](#)

8. Programming and settings of combination instrument mileage reset

Maintenance mileage reset (eliminating maintenance indicator light of diagnostic apparatus) Refer to [Mileage reset](#)

10.4.1.4 Clear the trouble code

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click "Confirm".
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select "clear trouble code".
--------	------------------------------

Next step

Step 8	Click "YES".
--------	--------------

Note

The system will prompt: the fault code clearing is completed.

Next step

Step 9	Click "Confirm" to complete the function of clearing the trouble code.
--------	--

10.4.1.5 Read data stream

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click "Confirm".
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select "read data stream".
--------	----------------------------

Next step

Step 8	Select data stream.
--------	---------------------

Note

Select one or more data streams as needed, or select all data streams with one touch.

Next step

Step 9	Click "OK".
--------	-------------

Next step

Step 10	View data stream information.
---------	-------------------------------

Note

At the bottom of the page of data flow, there are following function options: reset, previous page, next page, save, history, graphics, print, freeze, return. You can select the function according to your needs.

Next step

Step 11	Reading data stream function is completed.
---------	--

10.4.1.6 Motion test

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click “Confirm”.
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select “motion test”.
--------	-----------------------

Note

Motion test has different motion selections. Select the appropriate action as required.

Next step

Step 8	Select the motion to be tested.
--------	---------------------------------

Next step

Step 9	Input value.
--------	--------------

Note

The system will prompt: enter value range: x-xx (the entered value should be within this range).

Next step

Step 10	Click “confirm” to complete the motion test function.
------------	---

10.4.1.7 Controller reset

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click "Confirm".
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select "ECU Reset".
--------	---------------------

Note

ECU reset function includes: ECU software reset and ECU hardware reset. ECU software reset is described below. Refer to ECU software reset method for ECU hardware reset method.

Next step

Step 8	Select "ECU Software Reset".
--------	------------------------------

Note

The system will prompt whether to reset.

Next step

Step 9	Click "Yes" and complete the ECU reset function.
--------	--

10.4.1.8 Read freeze frame

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click "Confirm".
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select "read freeze frame".
--------	-----------------------------

Next step

Step 8	Read freeze frame function is completed.
--------	--

10.4.1.9 ECU filling

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click “Confirm”.
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select “ECU filling”.
--------	-----------------------

Next step

Step 8	Select “Yes”.
--------	---------------

Note

The system will prompt: Please select the first file to be filed.

Next step

Step 9	Click “YES”.
--------	--------------

Note

The system will prompt: Open the file to be filed.

Next step

Step 10	Click “Open”.
------------	---------------

A. Add files to be filled?

Yes	Go to Step 9.
-----	---------------

No

Step 11	Click “No”.
---------	-------------

Note

The system will prompt: You have selected the following file. Do you want to continue with the filing function?

Next step

Step 12	Click “YES”.
------------	--------------

Next step

Step 13	The ECU filling function is completed.
------------	--

10.4.1.10 Read vision information

1. Diagnosis steps

Step 1	Connect one end of diagnostic apparatus with OBD diagnostic interface.
--------	--

Next step

Step 2	Connect one end of diagnostic apparatus with the computer equipped with DLC software.
--------	---

Next step

Step 3	The key activates the power supply of the vehicle to ON.
--------	--

Next step

Step 4	Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".
--------	--

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5	Click "Confirm".
--------	------------------

Next step

Step 6	Select the system.
--------	--------------------

Next step

Step 7	Select "Vision Information"
--------	-----------------------------

Note

The system will display: vehicle name, Bootloader software ID, part number, supplier code, ECU production date, ECU serial number, vehicle identification number (VIN), ECU hardware version number, ECU software version number, ECU brushing repair shop code or equipment number, ECU brushing date, ECU installation date, emission type and calibration software version number.

Next step

Step 8 Click "OK", and complete version number information reading,

10.4.1.11 Read the fault code

1. Diagnosis steps

Step 1 Connect one end of diagnostic apparatus with OBD diagnostic interface.

Next step

Step 2 Connect one end of diagnostic apparatus with the computer equipped with DLC software.

Next step

Step 3 The key activates the power supply of the vehicle to ON.

Next step

Step 4 Start the fault diagnosis software on the computer (the computer needs to be connected to the network), and click "welcome".

Note

The system will prompt: Model name: xx VIN code: XXXXXXXXXXXXXXXXXXXX

Next step

Step 5 Click "Confirm".

Next step

Step 6 Select the system.

Next step

Step 7 Select "Read the fault code".

Note

The system will display: current fault code: XXXX Fault name: XXXX

Next step

Step 8 Click "Confirm", and the function of reading the fault code is completed.

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11.1 Warnings and precautions

11.1.1 Warnings and precautions

11.1.1.1 Warnings and Precautions

Warning regarding the vehicle lifting

Warning

To avoid vehicle damage, serious personal injury and even death, when the main components are removed from the vehicle, and the lifter is used for support, the jack should be used to support the vehicle part corresponding to the components to be removed.

Warnings regarding battery disconnection

Warning

Before maintaining any electrical component, the power mode should be in the OFF status and all electrical loads must be "OFF" (switch off) unless otherwise stated in the operational program. If tools or equipment are easily accessible to exposed live electrical terminals, disconnect the negative battery cable.

Violating these safety instructions may result in personal injury and/or damage to the vehicle or vehicle components.

Warning regarding cracked windows

Warning

If a window glass is cracked but remains intact, the protective tape should be cross-pasted to the window glass to prevent further damage to the window glass and personal injury.

Warning about the express window down function

Warning

When the driver's door operates the open and close of electric windows, the windows moves fast and the windows without clamping cannot be stopped, which may lead to personal injury.

Warning regarding halogen bulb

Warning

Halogen bulb contains high pressure gas. Improper handling can cause the bulb to explode into glass shards. To avoid personal injury: turn off the lamp switch and allow the bulb to cool before replacing it. Keep the light off until the bulb is replaced. Wear goggles when replacing the halogen bulb. When holding the bulb, it is important to hold the lamp base only. Avoid contact with glass. The bulb should avoid dust and moisture. Scrap the old bulbs correctly. Keep halogen bulbs away from children.

11.2 Audio entertainment system

11.2.1 Specification

11.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing screw of woofer	ST4.8	1-2
Multimedia screen fixing screw	ST4.2	1-2
Head unit fixing bolt	M6×16	8.5-11.5
Antenna amplifier assembly fixing bolt	M8×16	8 -10
Vehicle audio power amplifier fixing nut	M6	8.5-11.5
Wireless charging module fixing screw	-	2-3
Front reading lamp fixing screw	M4×12	4-5

11.2.2 Description and operation

11.2.2.1 Instructions and operations(Type I)

The vehicle-mounted multimedia infotainment system is mainly composed of vehicle-mounted basic terminal assembly, front central control display screen assembly, radio antenna, GPS antenna, Bluetooth antenna, loudspeaker, microphone, switch buttons and various interfaces related to the system on the steering wheel.

It mainly realizes the functions of mobile phone mapping, radio, USB audio and video playback, clock display, Bluetooth phone, GPS navigation, information display, complete vehicle settings, voice control function requirements, reversing video/dynamic reversing assistant line/panoramic video/reversing radar icon display, air conditioner information display and setting, etc.

T-BOX

As an independent system, the T-BOX should be powered independently. MMI is not responsible for supplying power for the T-BOX, but it is required to provide the T-BOX with an enabling power supply terminal (USB+5V) according to the USB protocol. The current is limited to 500 mA.

T-BOX and MMI are connected through USB, and TCP communication protocol based on USB is adopted. MMI is used as the host end of USB communication, and T-BOX is used as the Slave end of USB communication.

T-BOX shall be able to provide MMI with network connection information, signal strength, upgrade information.

Instrument

The combination instrument controller is integrated inside the head unit. MMI can display multimedia, navigation and other information through the combination instrument display.

AVM

The vehicle-mounted panoramic image can intuitively see the 360-degree panoramic bird's eye view around the vehicle on the multimedia display, and there is no longer any blind spot in the visual field.

Rear camera

HD camera, connected to MMI through LVDS, with image resolution of 1280 * 720, image correction is completed by the camera, and dynamic reversing guiding lines are described by MMI and superposed on RVC images.

A normal camera is connected to the MMI through CVBS, and the image meets the CVBS signal standard. The image correction is completed by the camera. The dynamic

reversing assistant line is painted by MMI and overlay on the RVC image.

Tuner antenna

Coaxial cable is shared for antenna signal and electricity.

The working voltage is 8-18V, supporting the start-stop function, and the antenna can work normally during the start-stop process.

Signal line impedance 50 ohms.

GPS antenna

Coaxial cable is shared for antenna signal and electricity.

The power supply voltage is $5V \pm 0.5V$ and the impedance is 50 Ω .

4G Antenna

Coaxial cable is shared for antenna signal and electricity.

Power supply voltage $5V \pm 0.5V$, impedance 50 ohms;

- 1 frequency range:

791-960 MHz

1710-170MHz

2300-2400MHz

2496-2690MHz

LTE 2 frequency range:

1710-2170MHz

2300-2400MHz

2496-2690MHz

Microphone

Support voice recognition and Bluetooth phone call.

Support noise reduction of microphone. Use the built-in noise reduction module for noise reduction

Support the open circuit and short circuit detection of the microphone.

USB

The multimedia host outputs USB to the outside world and has the fault detection function

1. When the MMI detects USB overcurrent, the MMI stops power supply from the USB interface and pops up a prompt interface;

2. The user is prompted on the screen that "USB disconnection is detected, please check the external equipment" ;
3. When the user clicks the "OK" button, the MMI supplies power to the USB interface again;
4. It works normally after the power supply is restored. Repeat steps 1-3 if the overcurrent problem is detected again;
5. The overcurrent strategy with USB-HUB is suitable: within one power-on cycle, count 3 times, and the fourth overcurrent will no longer supply power;

The overcurrent strategy without USB-HUB is suitable: In one power-on cycle, if the MMI detects a USB overcurrent problem for the fourth time, no prompt screen will pop up, the power supply of the USB interface will be stopped, and the power supply to the USB interface will not be restored within this power-on cycle. The interface is not recognized with the USB device;
6. The system does not support distinguishing which USB port is overcurrent (HUB cannot be distinguished);
7. MAX2.1AUSB interface current limit 2.3A; MAX500 mAUSB interface current limit 650 mA

Time configuration

With GPS/WIFI/4G

1. MMI does not support the user to set the time. When the instrument time setting changes, the instrument sends the time to MMI.
2. When the MMI has a time signal, each time the MMI is started to power on (ON), the MMI needs to synchronize the time to the instrument.
3. When the GPS/WIFI/4G signal cannot be obtained, the instrument displays the crystal oscillator time according to its own time, and the MMI needs to display the MMI time according to the time released by the instrument through the CAN.
4. When the instrument time cannot be obtained, MMI needs to use its own RTC (time crystal oscillator) for time updating.

Without GPS/WIFI/4G:

MMI should display the time of MMI according to the time when the instrument is released through CAN.

Display

1. The screen is powered from the vehicle separately.

2. The multimedia host provides a wake-up signal to the screen.
3. LVDS line is used to transmit video signal and touch signal information.

Warning sound

The types of alarm sounds include: radar active guard alarm sound and automatic parking alarm sound.

The active radar alarm sound should be given from speakers from different directions according to whether the front radar or the rear radar is armed.

noise reduction in tunnels

When the vehicle drives into areas with weak radio signals (tunnels, underground parks, high-rise buildings, remote mountain areas, etc.) and the signal is not good, if the radio signal is not good, the sound will be automatically degraded, and the vehicle will drive out of the area with weak radio signal, and the radio signal will be recognized to be intensified, and the sound will be gradually strengthened.

1. Judge the sound degradation according to the field strength signal, and the threshold value of the field strength is related to the antenna, radio circuit and the vehicle environment.
2. When Access Map judges to enter the tunnel, it sends the incoming signal to the host, and the host will mute the radio according to the map signal. When driving out of the tunnel, the map will send the outgoing signal to the host, and the host will unmute and restore the sound. (There are currently radio antennas in some tunnels)

Intelligent voice reminder

Low voltage alarm

Instrument commands send a low voltage alarm signal.

Charging reminder upon appointment

MMI successfully receives the appointment charging setting (T-BOX is sent through USB) and the charging gun is not connected. MMI confirms that the two conditions are met at the same time before the next OFF gear, and performs a voice broadcasting "Hello you have an appointment for charging, please be ready to charge and connect the charging gun".

Get out of the car and take your mobile phone away

If the mobile phone is not taken away during wireless charging of ACCOFF, the wireless charging sends a signal to MMI, MMI voice reminder, and MMI needs to prompt the user: find foreign matters. Remind the customer to take the mobile

phone away (when the vehicle is powered off, the charging function reminds when executing. The little coaster is responsible for pop-up).

When ACCOFF is opened, the PEPS sends a turning off signal to the wireless charging module. Wireless charging cannot work at this time. Because the wireless charging and the Bluetooth key are interfered in the same frequency band, the invalid charging cannot work;

Upgrade

MMI system upgrade is a package upgrade of the operating system and its own APP(radio, multimedia, Bluetooth, etc.)

System update

There are two kinds of system upgrading modes: online upgrade and USB upgrade.

Upgrade the entry to engineering mode.

- When choosing a USB upgrade, you should confirm whether the USB device containing the upgrade pack is inserted. If the USB device contains a valid upgrade pack, you will be prompted not to power off during the upgrade. If it is not inserted, you should give a prompt.

- When choosing an online upgrade, make sure that the network connection is available, and give a prompt if it is not available. If supported by the background server, support the continuous transmission at the breakpoint.

Upgrade Treatment

1. Connect the USB upgrade file or online upgrade file COPY to the designated location of EMMC;
2. Start the system again;
3. Enter the upgrade mode after starting, and start to update the EMMC system area according to the EMMC upgrade file;
4. After the upgrade is completed, flag is successfully completed and the startup is restarted.
5. After restarting, it is judged that the upgrade has been completed and started to a new system, and the upgrade action is completed;
6. If the system upgrade fails due to power failure during the upgrade process, after re-powering on, continue steps 3,4, and 5 until the upgrade is completed correctly;
7. After the upgrade is completed, delete the upgrade file.

System OTA upgrade

The OTA upgrade is applicable to models with T-BOX configuration or MMI with 4G network.

The application range of OTA upgrade scheme is only for IHU, including SOC upgrade (Arim software upgrade) and MCU upgrade (microcontroller software upgrade).

The following two methods are adopted in the upgrade plan:

1. Incremental upgrade: differential comparison between the local software version and the latest version of the TSP server, download the differential software upgrade package for the upgrade;
2. Full upgrade: Download the complete system software upgrade pack from the TSP Server to upgrade.

IHU accesses the TSP service through T-BOX or MMI with 4G network and downloads the latest software upgrade package to achieve OTA upgrade.

Supported video formats by USB

Audio file types

The supported video formats: MP3, WMA, AAC, WAV, APE, OGG, FLAC, MP2, M4A, AMR.

Category of video file

支持以下格式的视频文件:AVI、3gp/3g2、MP4、FLV、F4V、WebM、RMVB、WMV、MOV、M4V、MKV。

Wireless charging

The wireless equipment is charged through the wireless charging module, and the MMI controls the charging on/off and the status display.

Ambient lamp

The MMI provides a turning-off control switch for the ambient lamp, which works with the position lamp to turn on and off the ambient lamp.

When the position lamp is On, the ambient lamp can be controlled to turn on through the ambient lamp switch on the MMI. That is, the ambient lamp will light up only when the position lamp signal and the ambient lamp switch on the MMI are both On.

HUD Steering Wheel Setting

The brightness adjustment and image position adjustment of HUD can be realized by the buttons on the multifunctional steering wheel of the complete vehicle. The MMI processes the signal and sends HUD and HUD receives the signal to control accordingly.

Steering wheel usage right

1. When the brightness and display position adjustment is turned on in the MMI setting item, when the MMI sends the HUD mode, the right to use the left and right buttons of the

steering wheel and the OK button is switched to HUD, and the steering wheel is used for brightness adjustment of HUD and image position setting. The steering wheel right can only be switched to HUD when the power supply gear is ON.

2. When the steering wheel right returns to MMI, when the MMI sends the MMI mode, the steering wheel right returns to MMI:
 1. MMI judges that the HUD setting interface has no operation and waits for 10 s (judges that the steering wheel has no motion);

11.2.2.2 Instructions and operations(Type II)

Audio entertainment system composition

The audio entertainment system is mainly composed of head unit, antenna, tweeter, woofer, display screen, etc.

Audio entertainment system functions

The functions of audio entertainment system mainly include functions such as radio, USB audio and video playback, clock display, Bluetooth phone, GPS navigation, information display, vehicle settings, voice control functions, air conditioner information display and settings; for vehicles with visual parking functions, the reversing radar of parking assist system and camera are displayed through the display screen.

Audio entertainment system settings

The audio entertainment system can adjust the setting of complete vehicle, comfort, driving assistance and system, respectively. Whenever disconnecting the sound system circuit and battery, all personalized settings will be initialized.

1. Vehicle settings: The vehicle information, vehicle control, door lock and other options can be set and adjusted.
2. Comfort settings: options such as sound, seat, display, ambient light can be set.
3. Assist driving settings: functions such as automatic emergency braking, road information reminder, cruise function, lane keeping assist can be set.
4. System setting: System information, on-board Bluetooth, on-board hotspots, wireless network, software updating, SIM card authentication and other functions can be set.

A/C settings

The air conditioner can be controlled and adjusted by virtual buttons on the multimedia screen, and the air conditioner related information can be displayed on the multimedia screen.

Vehicle window voice control

2. Heads up display (HUD) is closed
3. Press OK button to exit the HUD setting page, and at the same time return the steering wheel right to MMI; When you press OK button and hold it for more than 1 s, the MMI sends a long press instruction, and switches the steering wheel right to MMI;
4. Press the working mode button to exit the HUD setting page, and the steering wheel right returns to MMI;
5. The brightness and display position adjustment is closed, and the steering wheel use right returns to MMI;

Voice control is to realize human-computer interaction through voice commands, and control of vehicle functions can be realized through voice commands. Wake-up method: press the voice button on the steering wheel to wake up, click the voice assistant APP on the multimedia desk, and wake up the words: "Hello Geely".

Voice control can realize voice navigation, voice call, voice song ordering, voice query weather/time, voice control air conditioner, voice control body, voice control volume, and voice control settings/applications.

GPS navigation

The onboard device of the car audio entertainment system is equipped with the "Baidu Map Automotive Version" navigation system. You can click the navigation application card of the desktop application "Baidu Map Automotive Version" or the homepage navigation card or call it up by voice.

Multimedia entertainment

1. Online Music: You can click music on the multimedia screen and listen to online music, journal, reading and other functions.
2. USB and Bluetooth Music: After inserting the USB flash drive, you can read the music files in the USB flash disk and play it. The supported USB flash disk file system is in the following formats: FAT16 /FAT32 /NTFS, and the rest of the formats will not be recognized. After the phone is connected to the onboard Bluetooth, it can play the music in the phone through Bluetooth. Click to switch the audio source through the Bluetooth/USB button.

Bluetooth hands-free system

Geely car Bluetooth hands-free system will establish wireless connections with Bluetooth phones to realize hands-free calls and the playing of Bluetooth stereo music through the vehicle

sound system. Geely Bluetooth hands-free system provides the following functions:

1. Smooth wireless hands-free calls can be realized via Bluetooth connections

-It supports functions of missed call dials, received call dials and redials

-Private mode/hands-free mode switch - microphone mute mode/cancel mute switch

2. Touch screen display and operation - synchronous download and browsing of the phone book

-Management of Bluetooth device

-Make calls by the touch screen

3. Bluetooth matching connection

—Control the on/off of on-board Bluetooth, and turn on Bluetooth

—Search Bluetooth devices, turn on the Bluetooth of the mobile phone at the same time to pair, and select your own Bluetooth to pair

—The mobile phone will receive a matching message reminder and confirm

Caution

It is indicated that the realization of the function depends on the compatibilities of phones. Please match and connect Bluetooth phones with a hands-free system before using the system. The system can match with several Bluetooth phones, but at the present, only one phone can be connected with the Bluetooth system. Upon the completion of Bluetooth phones connecting with the hands-free system, the system will restore the ID of the phone. When the next time the system is started or activated, the system will try to automatically connect the last phone that has been connected. If the phone is not here or the Bluetooth of it is in an inactive status, the system will search for previous matching phones in that order. If the connection is successful, the tone will prompt. Upon the establishment of the connection, the icon of the status column will prompt.

Night mode switch: In case of turning on vehicle lights, the display screen will be switched into the night mode.

Driving protection function: Users cannot be allowed to play videos at a vehicle speed of more than 15km/h. For existed playing videos, the video will be exited 3s after the warning information prompts up. Users can turn off the restriction.

11.2.3 System working principles

11.2.3.1 System working principles(Type I)

CAN

The common CAN communication rate is 500 kb/s, which has the functions of wake-up, function and diagnosis.

MMI can control or display vehicle-related functions through the bus. When the CAN bus is Sleep or signal is lost, functions on all buses become unavailable.

The multimedia host controls the volume, sound effects, channels, etc. through the PWM signal.

The private CAN communication rate is 125 \ 500 kb/s. The private CAN is used for communication between the multimedia host and the external amplifier, and the communication includes the control of volume, sound effect and volume channel.

LIN

LIN communication is the communication between the host and the external control input unit, and it is not connected to the public LIN network.

The LIN function does not support wakeup of MMI from the node.

The LIN bus is used for communication and control between the multimedia master device, the wireless charging module and the ambient lamp.

Low voltage strategy

MMI detects the battery voltage, and the timing starts when it is less than 11V, and less than 11V is constantly detected for 30 s, then the pop-up message always displays "Please start charging to save power" until the voltage is greater than 11V;

When the battery voltage is lower than 11V, after the Taiwan-Up and TTS bled, the voltage continues to drop to 10.5V. The continuous voltage is detected once for 6 s, and is detected 3 times. The 3 voltages are less than 10.5V. MMI automatically enters the power-saving mode;

Conditions under which the pop-up message is silenced:

It is detected that the voltage greater than 11V automatically cancels the pop-up message within 30 seconds;

When the voltage is detected to be low, the message overpower screen will pop up. After the vehicle is unlocked and started, and then return to the OFF gear, ACC gear and ON gear, the message will pop up again;

High temperature of host

- Multimedia host high temperature detection:80°C; high temperature release:75°C (ambient temperature)

- After the multimedia host detects it at a high temperature, the multimedia volume is reduced

- After the multimedia control unit detects at a high temperature, if the volume is less than 10, the volume will remain unchanged, and if the volume is greater than 10, the volume will automatically decrease to 10; after the volume is released, the volume will not change and the status quo will be maintained.

- When the multimedia control unit detects it at a high temperature, it will notify the display screen to minimize the brightness (i.e., the duty cycle value corresponding to Lev 1 in the dimming level). When the high temperature of MMI is released, the display will be notified to restore the original brightness.

Button backlight adjustment

Touch Buttons

In the normal operating mode of MMI, the backlight adjustment logic of the button is as follows:

For mini lamp signal ON, the background light of MMI button will adjust the brightness of the button according to the level of dimmer; for mini lamp signal OFF, the brightness is adjusted to the maximum level (default: level 10, and the model can adjust the backlight brightness according to the actual situation of the calibration), and no longer follow the backlight signal of the complete vehicle;

Button operations

There are 3 ways to operate MMI:

Capacitor display

Steering wheel buttons

Power button, audio volume +/--button

The steering wheel buttons are detected for the AD value and are periodically detected every 8 ms. If the detected value at 8 ms * 2 times (adjusted according to the actual measurement) is consistent, it is considered that the corresponding button is detected (sting/lifted).

Power button, sound volume +/--button are detected by the host through a hard wire;

11.2.3.2 System working principles(Type II)

Head unit

The role of head unit is to receive the input signals such as microphone, camera and reversing radar sensor, and output control instructions after internal processing to control the work of speakers, multimedia display, etc.

Display screen

The main function of the display screen is to convert the signal output by the head unit into pictures or video images for external output. In addition, the multimedia display screen also has control signal input functions, such as air conditioner control panel functions and seat function settings, which can be set through the multimedia display.

Speaker

The loudspeaker is divided into tweeter and woofer, and the function is to convert the audio source signal output by the audio host into sound output.

Radio

When switching on the head unit and switching to “AM” and “FM”, the antenna module receives radio signals and transmits them to the head unit through a special line. After receiving the radio signals, the head unit will process them through an internal filter circuit and call out the desired channel. In addition, it will amplify the audio signal through an internal amplifier.

Reversing camera system information display

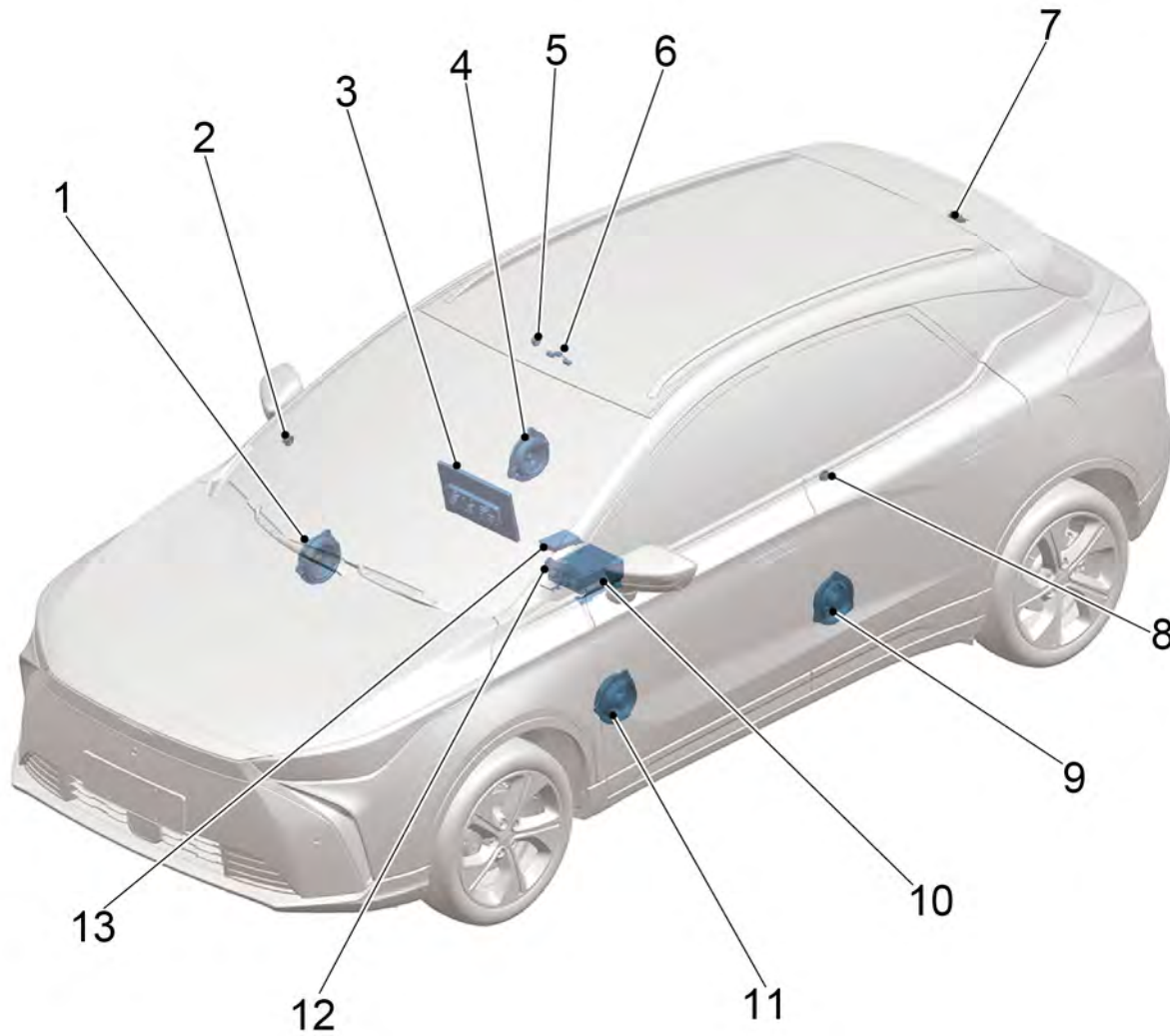
When the vehicle is in reverse, the switch for vehicle backing is switched on and a signal is given to the head unit. At this time, the head unit switches on the rear reversing camera, the display screen will show the rear reversing camera system. If the shift selector is switched to a position other than reverse, the switch for vehicle backing will be disconnected. The head unit will cut rear camera power supply. In addition, the display screen will return to the previous picture.

Other functions

When a device is connected to the head unit via USB, the head unit will switch to the corresponding USB module selected by the user, such as video, pictures, etc.

11.2.4 Part position

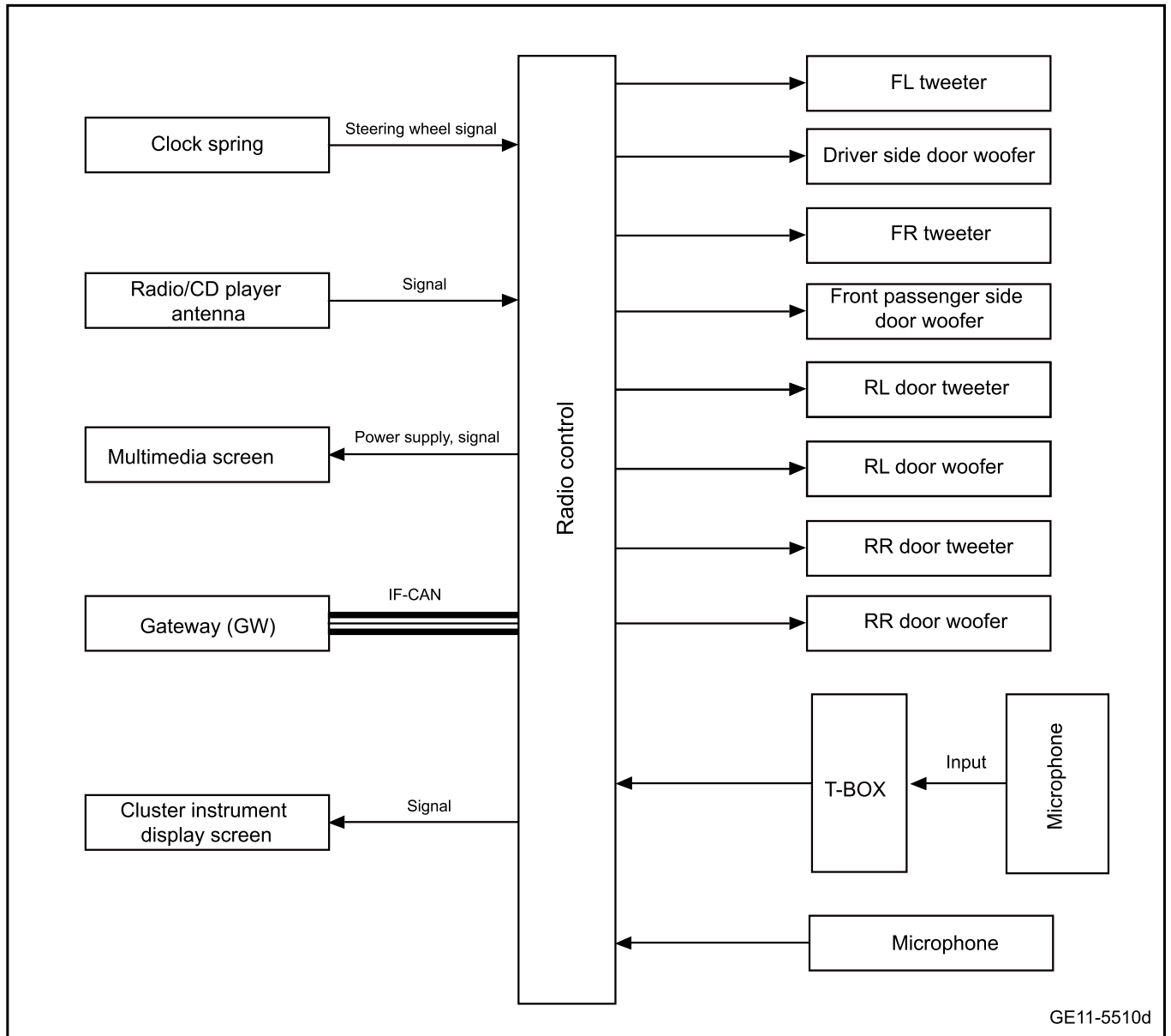
11.2.4.1 Part Position



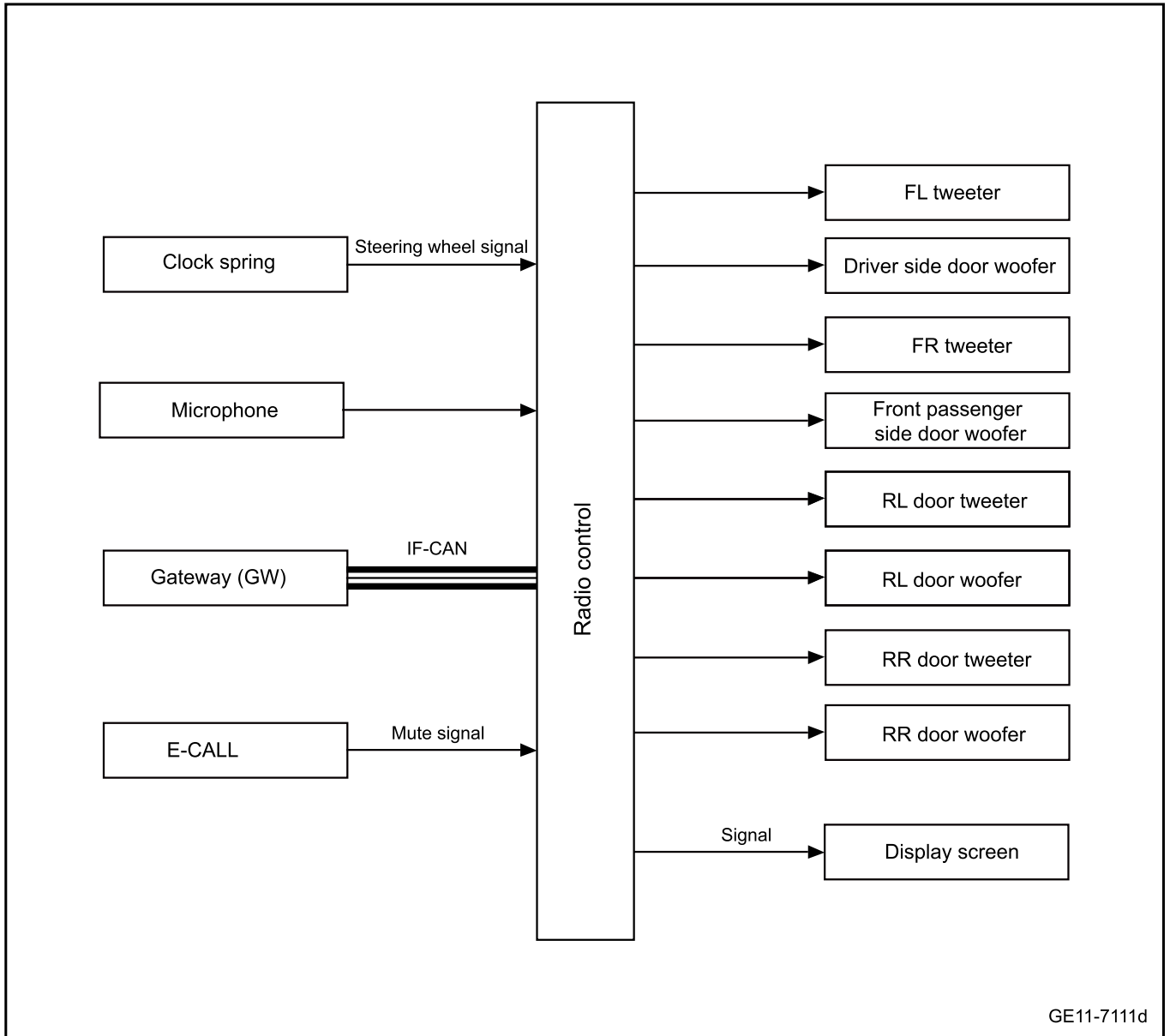
- | | |
|-------------------------------|------------------------------|
| 1. FR woofer | 8. RL tweeter |
| 2. FR tweeter | 9. RL full range loudspeaker |
| 3. Multimedia screen | 10. Head unit |
| 4. RR full range loudspeaker | 11. FL woofer |
| 5. RR tweeter | 12. FL tweeter |
| 6. Front microphone | 13. Wireless charging module |
| 7. Antenna amplifier assembly | |

11.2.5 Electrical block diagram

11.2.5.1 Electrical Schematic Diagram of Audio System(Type I)



11.2.5.2 Electrical Schematic Diagram of Audio System(Type II)



11.2.6 Diagnostic information and procedures

11.2.6.1 Diagnosis Description

refer to Description and Operation. Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

11.2.6.2 Visual Check

- Check after-sales installations that may affect the operation of audio system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
- For faults where all of the speakers are inoperative, focus on areas of the speaker circuit that are prone to short to GND, to facilitate quick removing the fault.
- For the fault of a single speaker inoperative, the distributor may inadvertently use the sound channel shielding function of the host/intelligent vehicle host to make a single sound channel inoperative in the process of use, which is not a fault of the sound system. You can consult the handbook for instructions of sound system.

11.2.6.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.2.6.4 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.2.6.5 List of Diagnostic Trouble Codes (DTC)

DTC	Trouble description	Fault location/elimination method
U300616	Controller voltage is too low	Refer to Head unit power supply fault
U300617	Controller voltage is too high	
U007300	Entertainment CAN network bus is switched off	Refer to head unit communication fault
U012687	Communication with steering-angle sensor is lost	
U014087	Communication with body control module is lost	
U014687	Communication with gateway module is lost	
U015587	Communication with instrument module is lost	
U016487	Communication with air-conditioning module is lost	
U020887	Communication with DSCU is lost.	
U021487	Communication with the keyless entry system is lost.	
U023587	Communication with the front radar module is lost.	
U120387	Communication with the front camera module is lost.	
U111587	Communication with OBC is lost	
U011287	Communication with BMSH is lost	
U111487	Communication with VCU is lost	
U016087	Communication with AVAS is lost	
U012287	Communication with ESC is lost	
U019887	Communication with TBOX module is lost	
U013187	Communication with EPS is lost	
U012187	Communication with ABS is lost	
U015187	Communication with ACU is lost	
U017087	Communication with the side rear radar module is lost.	
U011087	Communication with IPU is lost	
U010387	Communication with the electronic gear shifter module is lost.	
B110144	Wrong mileage of odometer	
U111A87	Communication with IB is lost	
U000100	Private CAN network bus is switched off	

DTC	Trouble description	Fault location/elimination method
U015987	Communication with parking assist system is lost	
U020987	Communication with seat ventilation and heating module is lost	
U111687	Lost communication with tachograph	
U111787	Communication with AVM (around view monitor module) is lost	
U015887	Communication with HUD (head up display) is lost	
U019987	Communication with DDM module is lost	
B138111	MIC is short to GND	Refer to Microphone Does Not Work (Type I)
B138112	MIC is short to power supply	
B138113	MIC open circuit	Refer to Microphone Does Not Work (Type II)
B138211	Camera power supply is short to GND.	Refer to Camera Fault
B138511	Power amplifier FR is short to GND	Refer to FR loudspeaker fault (Type I) Refer to FR loudspeaker fault (Type II)
B138512	Power amplifier FR is short to power supply	
B138513	Power amplifier FR is open	
B138611	Power amplifier FL short circuit to ground	Refer to FL loudspeaker fault (Type I) Refer to FL loudspeaker fault (Type II)
B138612	Power amplifier FL short circuit to power supply	
B138613	Power amplifier FL circuit open	
B138711	Power amplifier RR is short to GND.	Refer to Rear Right Woofer Fault Refer to RR loudspeaker fault (Type II) Rear Right Woofer Fault
B138712	Power amplifier RR is short to power supply.	
B138713	Power amplifier RR is open.	
B138811	Power amplifier RL short to GND	Refer to Rear Left Loudspeaker Fault (Type I) Refer to Rear Left Loudspeaker Fault (Type II)
B138812	Power amplifier RL short to power supply	
B138813	Power amplifier RL open circuit	
B13A687	Communication with ambient lamp is lost	Refer to head unit and ambient lamp communication fault
B138B04	Bluetooth communication error	Refer to Internal fault of head unit
B13A94B	MMI is of high temperature	
B13C104	IHUSOC video signal conversion chip (MIPI to LVDS) works abnormally	
B13C204	IHUSOC heartbeat pack is abnormal	

DTC	Trouble description	Fault location/elimination method
B13C304	EEPROM data error of IHU (including configuration word damage)	
B13B719	HOST USB interface 1 circuit is overcurrent	
B13C541	CSD received video signal is abnormal (host side DTC)	
B13AA16	Power supply of display screen is undervoltage	Refer to Display Screen Does Not Work
B13AA17	Power supply of display screen is overvoltage	
B13AA98	High temperature of the screen	
B13C604	Display screen FOG display module fault	
B13C849	Display screen backlight module fault	
B13C986	LOCK signal detected abnormal when the display is powered on for the first time (does not represent fault of the display screen)	
B13C987	A valid backlight value is not received when the display screen is powered on for the first time (not a display screen fault)	
B13CA1C	The internal FOG power supply TFT_3V3 voltage of the display screen is abnormal	
B13C711	Short touch circuit of the display screen	
B13C713	Open circuit when touching the display screen	
B13C749	Display screen touch button module fault	
B13C811	Display screen backlight short circuit	
B13C813	Display screen backlight open circuit	
B13AE96	Rear left radar probe fault (UART radar)	
B13B096	Right middle rear radar probe fault (UART sensor)	Refer to RRM radar probe fault
B13B196	Rear right radar probe fault (UART sensor)	Refer to Rear right radar probe fault
B138411	Steering wheel button is shorted to ground	Refer to Steering wheel button Circuit Fault

DTC	Trouble description	Fault location/elimination method
B138412	Steering wheel buttons are short to power supply	
B13BE71	Steering wheel multimedia control buttons are stuck	
B13A787	Communication with wireless charging device is lost	Refer to Wireless Charging Fault
B13A896	Wireless charging error	
B1D0013	AVM front camera harness open circuit	Refer to AVM Camera Circuit Fault
B1D0113	AVM left camera harness open circuit	
B1D0213	AVM right camera harness open circuit	
B1D0313	AVM rear camera harness open circuit	
B1D0C54	AVM not calibrated	Refer to 360 AVM calibration
B138911	Tuner antenna is short to GND	Check or replace antenna
B138913	Tuner antenna open circuit	

11.2.6.6 Head unit power supply fault

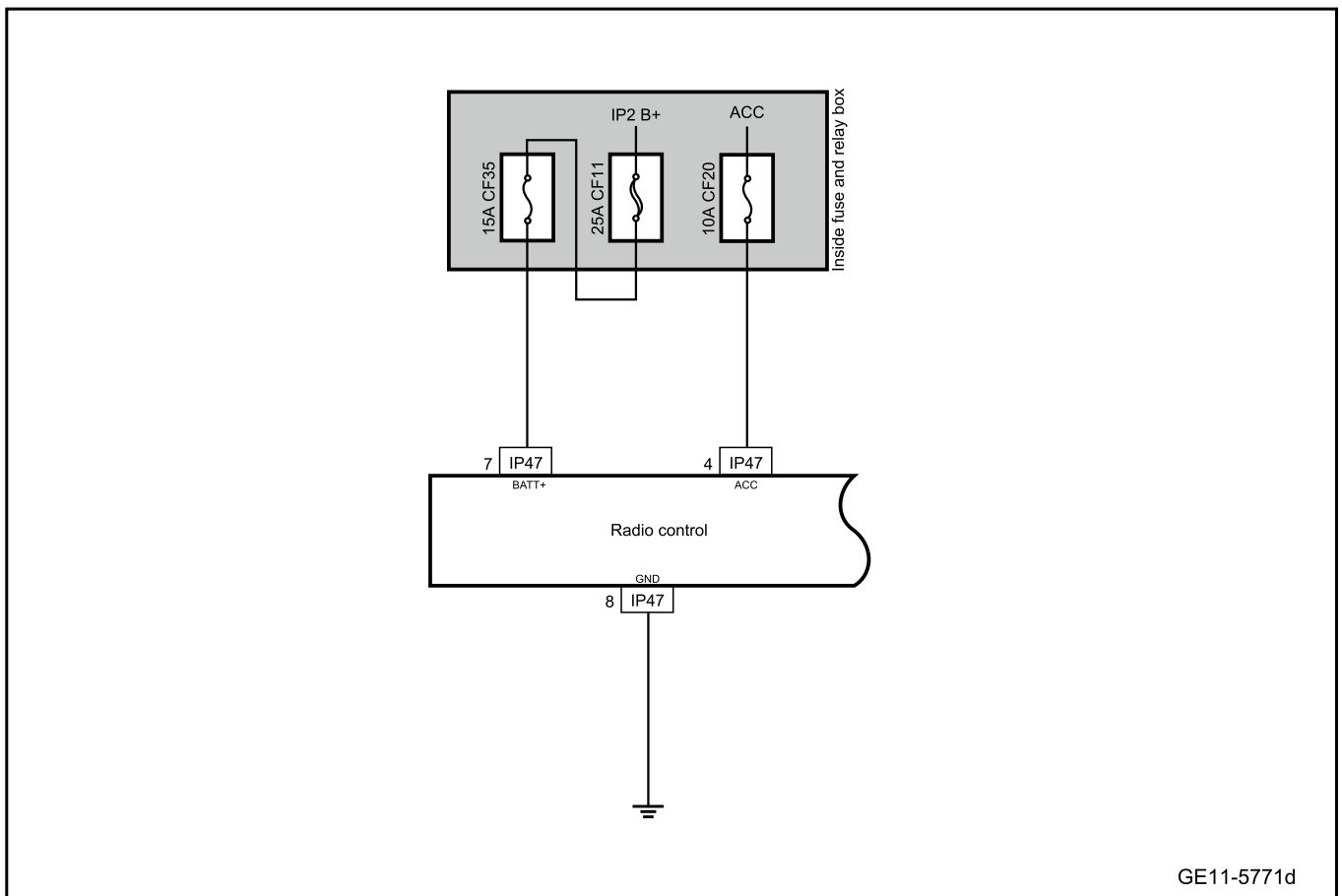
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Controller voltage is too low
U300617	Controller voltage is too high

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measured voltage < 9V for 5s	Measure the voltage < 9 V	1. Circuit
U300617	Measured voltage value > 16V for 5s	Measure the voltage > 16V	2. Fuse 3. Head unit

3. Circuit diagram:



GE11-5771d

4. Diagnosis steps:

Step 1	Primary check.
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- A. Check the head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect head unit fuse
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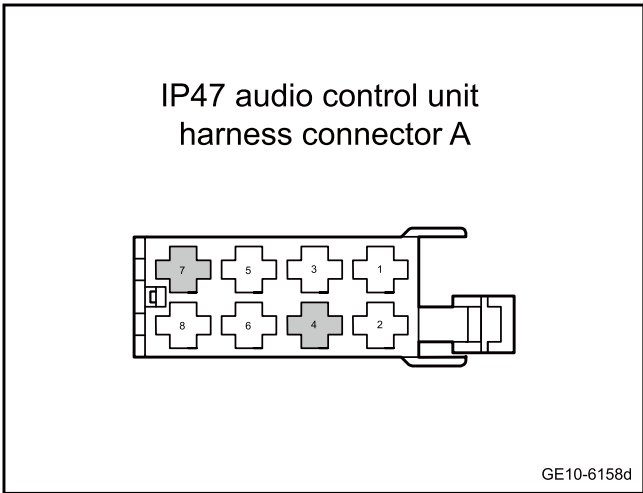
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse and check whether the fuse CF11 is blown.
Rated capacity of fuse: 25A
- C. Unplug the indoor fuse and check whether the fuse CF20 is blown.
Rated capacity of fuse: 10A
- D. Unplug the indoor fuse and check whether the fuse CF35 is blown.
Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the power circuit of head unit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP47.
- C. The key activates the power supply of the vehicle to ON.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP47(4)	Vehicle body is grounded.	Standard voltage: 11-14V
IP47(7)	Vehicle body is grounded.	

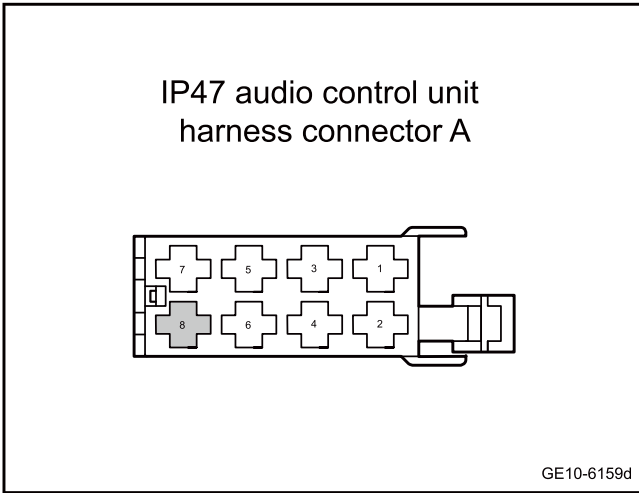
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the grounding circuit of head unit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP47.
- C. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP47(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Change the head unit.

- A. Change the head unit. Refer to [Replacement of head unit](#)

Next step

Step 6 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

11.2.6.7 Microphone does not work (Type I)

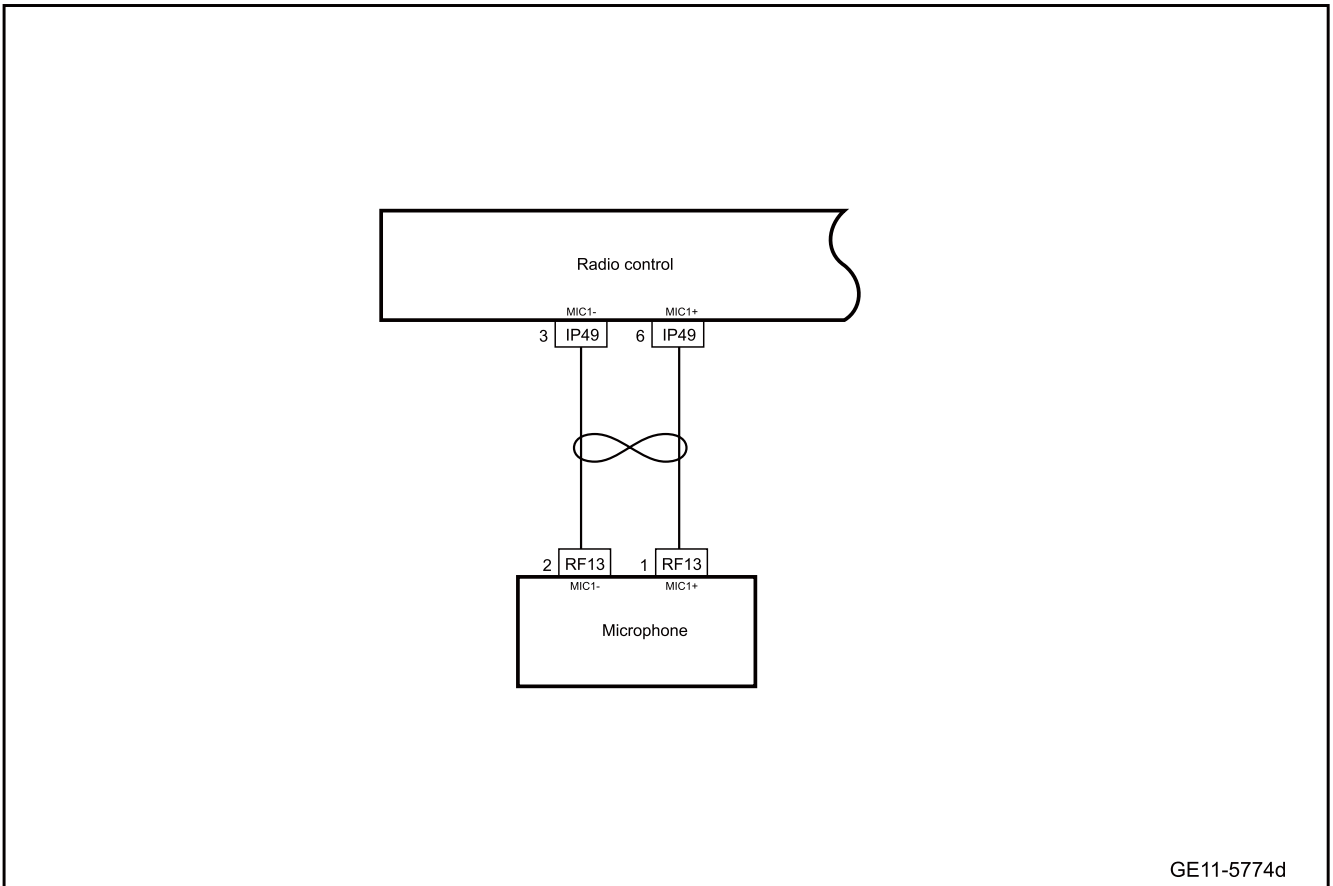
1. DTC description:

DTC	Trouble description
B138111	MIC is short to GND
B138112	MIC is short to power supply
B138113	MIC open circuit

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138111	Microphone is short-circuited to GND for 300ms	1. The supply voltage is 9V-16V.	1. Head unit 2. Circuit 3. Microphone
B138112	Microphone is short-circuited to battery for 300ms		
B138113	Microphone output circuit is open for 300ms		

3. Schematic circuit diagram:



GE11-5774d

4. Diagnosis steps

Step 1	Primary check.
--------	----------------

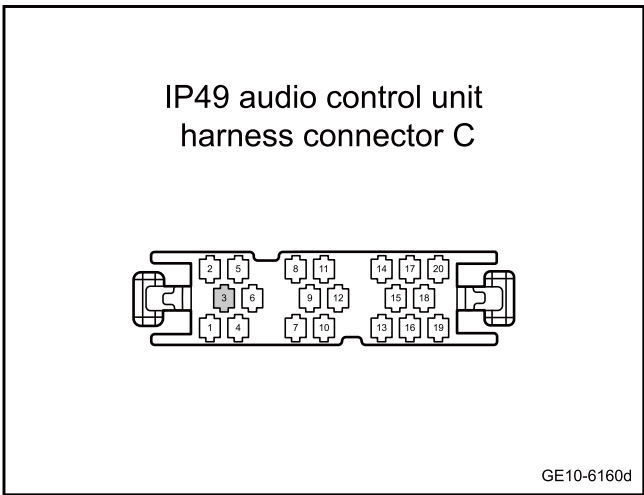
- A. Check the appearance of microphone for signs of damage, rust, dirt, etc.
- B. Check the microphone harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

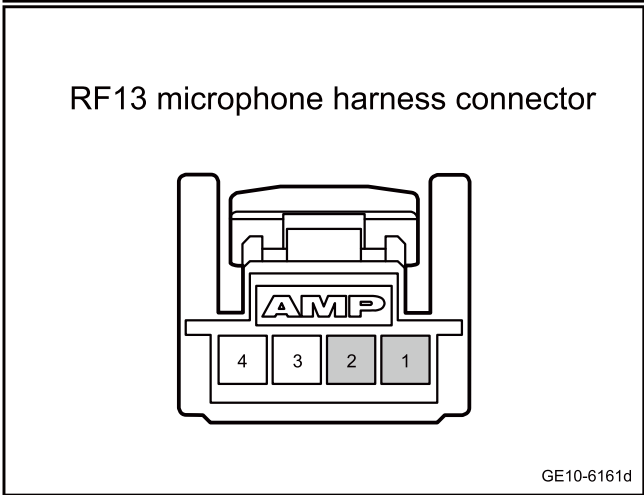
Step 2	Check whether the circuit between the head unit and Microphone is open.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP49(3)	RF13(2)	Standard
IP49(6)	RF13(1)	resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

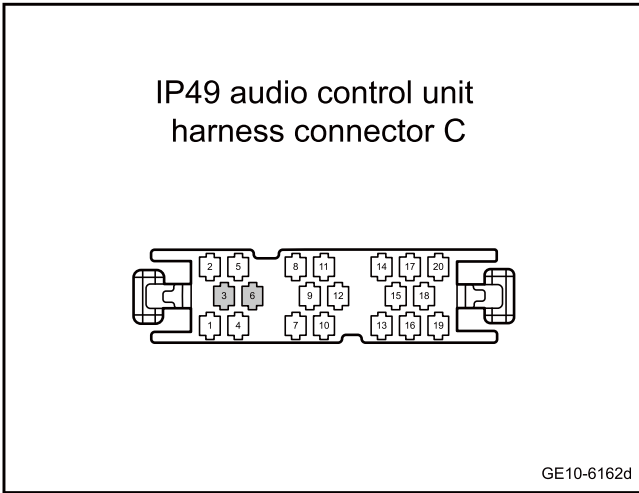


No

Repair or replace the harness.

Yes

Step 3	Check whether the circuit between the head unit and microphone is short to the power supply.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect microphone harness connector RF13.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

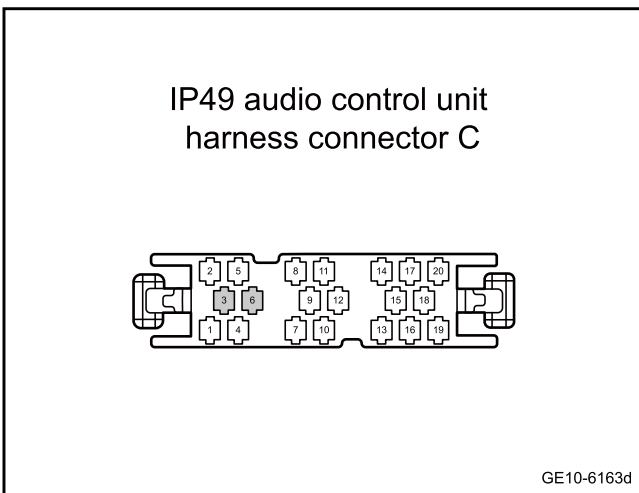
Measure terminal 1	Measure terminal 2	Standard value
IP49(3)	Vehicle body is grounded.	Standard voltage: 0V
IP49(6)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the head unit and microphone is short to grounding.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP49(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP49(6)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the microphone.

- A. Replace microphone, refer to [Replacement of microphone](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6	Change the head unit.
--------	-----------------------

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 7	Reprogram and reset the head unit.
--------	------------------------------------

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	System is normal.
--------	-------------------

11.2.6.8 Display screen does not work

1. DTC description:

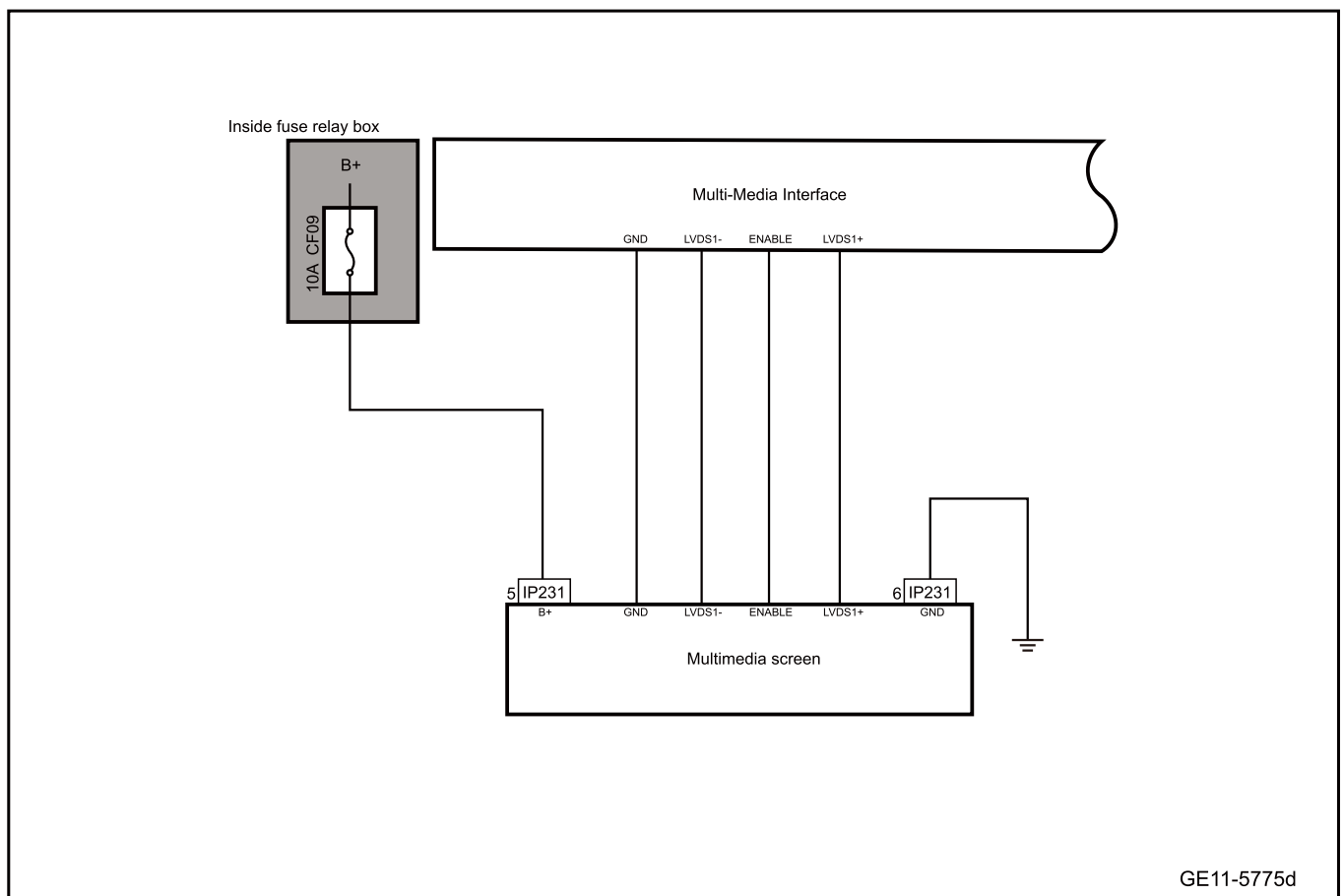
DTC	Trouble description
B13AA16	Display screen power supply undervoltage
B13AA17	Display screen power supply overvoltage
B13AA98	High temperature of the screen
B13C604	Display screen FOG display module fault
B13C849	Display screen backlight module fault
B13C986	LOCK signal detected abnormal when the display is powered on for the first time (does not represent fault of the display screen)
B13C987	A valid backlight value is not received when the display screen is powered on for the first time (not a display screen fault)
B13CA1C	The internal FOG power supply TFT_3V3 voltage of the display screen is abnormal
B13C711	Short touch circuit of the display screen
B13C713	Open circuit when touching the display screen
B13C749	Display screen touching module fault
B13C811	Display screen backlight short circuit
B13C813	Display screen backlight open circuit

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13AA16	Voltage measured within 5000 ms <9V (specific voltages will be different in different items)	1. The power supply voltage is 9V -16V 2. MMI is started 3. Communication between the display screen and the host is normal	1. Circuit 2. Fuse 3. Screen 4. Head unit
B13AA17	Voltage measured in 5000 milliseconds > 16V (specific voltages will be different in different items)	1. The power supply voltage is 9V -16V 2. MMI is started 3. Communication between the display screen and the host is normal	
B13AA98	Displayed temperature > 70°C	1. The power supply voltage is 10V -15V 2. MMI is started	
B13C604	FOG internal failure and three times of restarting FOG power supply do not resume	1. The power supply voltage is 10V -15V 2. CSD power on 3. Communication between the display screen and the host is normal	
B13C849	The backlight inside the display screen is overvoltage or overcurrent. In the case of overtemperature, the backlight power supply will not resume after three times	1. The power supply voltage is 9V -16V 2. CSD power on 3. Communication between the display screen and the host is normal	
B13C986	After the display screen is powered on and started for 10 s, the LOCK level is detected to be low for 10 s	1. The power supply voltage is 9V -16V 2. CSD power on 3. Communication between the display screen and the host is normal	
B13C987	Wait for 10S after waiting for the backlight value sent by the host after the display screen is powered on and started	1. The power supply voltage is 9V -16V 2. CSD power on 3. Communication between the display screen and the host is normal	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13CA1C	1. Voltage supply > 4.29V or voltage supply < 2.31V 2. Failure does not resume after TFT_3V3 power supply is restarted three times	1. The power supply voltage is 9V -16V 2. CSD power on 3. Communication between the display screen and the host is normal	
B13C711	The internal touch short circuit of the display screen lasts for 5S		
B13C713	Open circuit of internal touch of display lasts for 5S		
B13C749	Internal touch failure of the display screen is reactivated and does not resume after three times of touching the power supply	1. The power supply voltage is 9V-16V 2. CSD power on 3. Communication between the display screen and the host is normal	
B13C811	The internal backlight short circuit of the display screen lasts for 5S		
B13C813	The internal backlight open circuit of the display lasts for 5S		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent fault check
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the display screen for signs of damage, getting adrift, etc.
- B. Check the display screen, head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check the power fuse of the display screen.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse and check whether the fuse CF09 is blown.

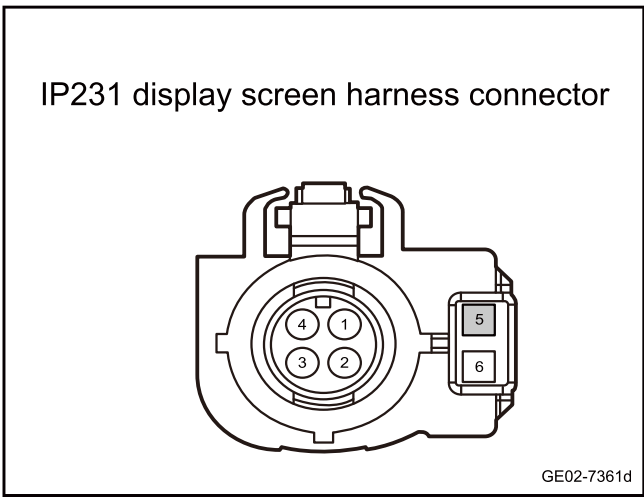
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power supply circuit of the display screen.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the display screen harness connector IP231.
- C. The key activates the power supply of the vehicle to ON.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP231(5)	Vehicle body is grounded.	Standard voltage: 11-14V

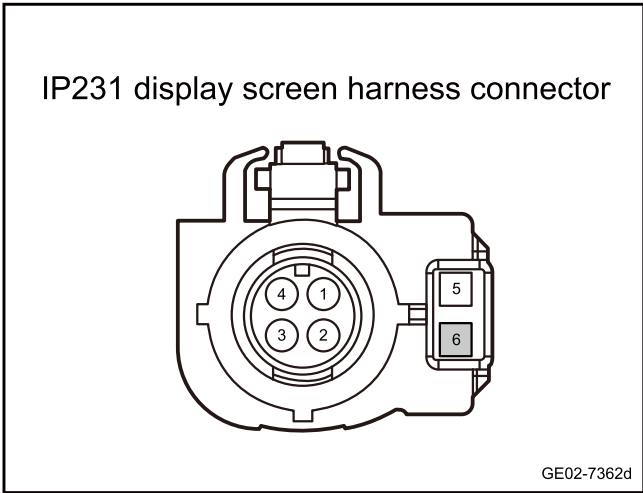
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

No

Step 5 Check the grounding circuit of the display screen.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the display screen harness connector IP231.
- C. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP231(6)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Replace the display screen.

- A. Replace the display screen. Refer to [Replacement of Multimedia Screen\(Type II\)](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 8 | Change the head unit.

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.2.6.9 Head unit communication fault

1. DTC description:

Diagnostic Trouble Code	Description
U007300	Entertainment CAN network bus is switched off
U012687	Communication with steering-angle sensor is lost
U014087	Communication with body control module is lost
U014687	Communication with gateway module is lost
U015587	Communication with instrument module is lost
U016487	Communication with air-conditioning module is lost
U020887	Communication with DSCU is lost.
U021487	Communication with the keyless entry system is lost.
U023587	Communication with the front radar module is lost.
U120387	Communication with the front camera module is lost.
U017087	Communication with RSRS (rear side radar module) is lost
U111587	Communication with OBC is lost
U011287	Communication with BMSH is lost
U111487	Communication with VCU is lost
U016087	Communication with AVAS is lost
U012287	Communication with ESC is lost
U019887	Communication with TBOX module is lost
U013187	Communication with EPS is lost
U012187	Communication with ABS is lost
U015187	Communication with ACU is lost
U017087	Communication with the side rear radar module is lost.
U011087	Communication with IPU is lost
U010387	Communication with the electronic gear shifter module is lost.
B110144	Wrong mileage of odometer

Diagnostic Trouble Code	Description
U111A87	Communication with IB is lost
U000100	Private CAN network bus is switched off
U015987	Communication with parking assist system is lost
U020987	Communication with seat ventilation and heating module is lost
U111687	Lost communication with tachograph
U111787	Communication with AVM (around view monitor module) is lost
U015887	Communication with HUD (head up display) is lost
U019987	Communication with DDM module is lost

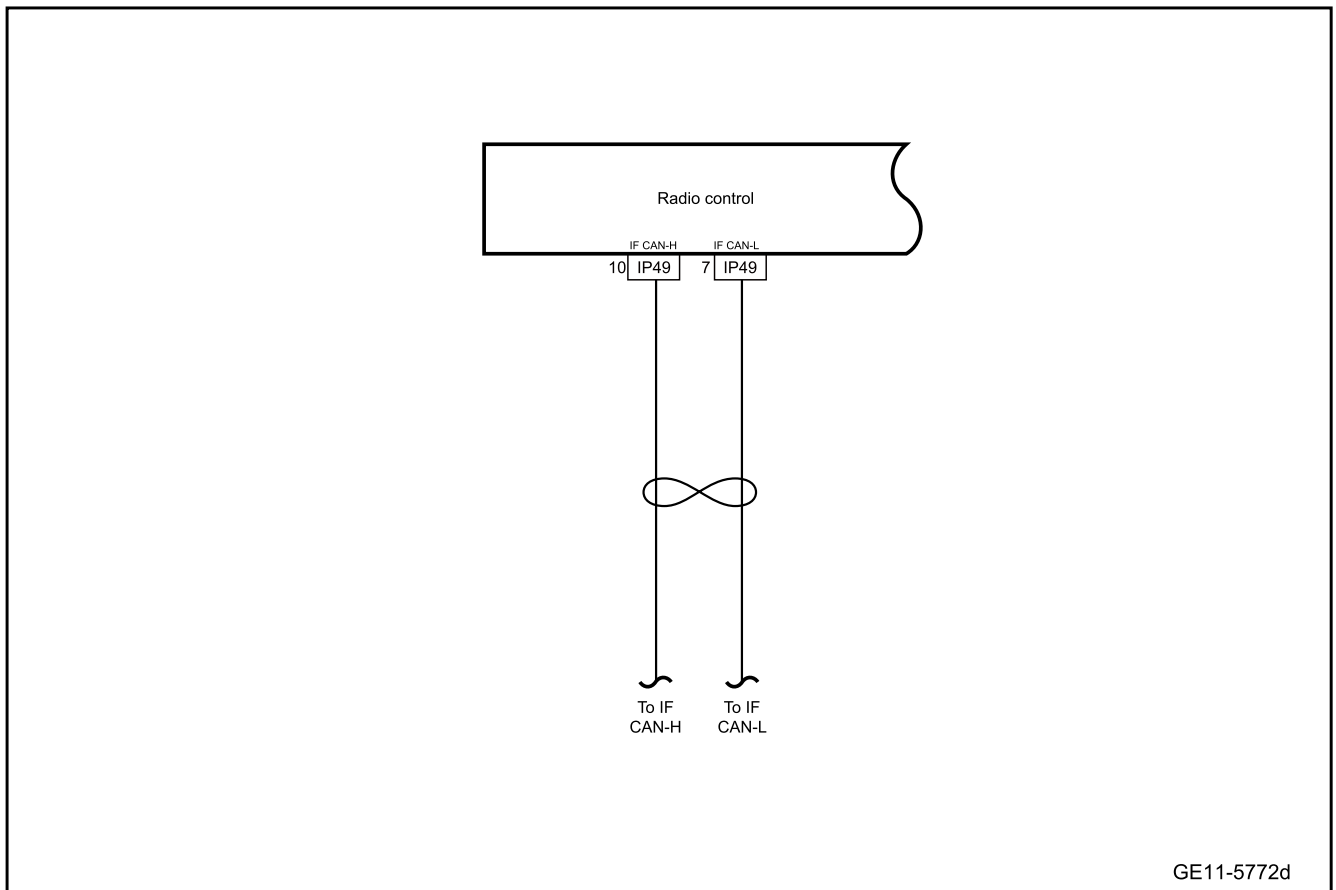
2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	cBusOff of bus disconnection counter equals to 10 (the CAN bus is detected to be disconnected for 1000 ms)	1. CAN bus power supply voltage is within the range of 9-16V 2. Ignition status should be on IGN on 3. $9V < V < 16V$, V DLon, V DHon TRestart = 1S	1. Circuit 2. Head unit 3. Diagnostic interface
U012687	Messages from SAS lost 250ms (0x0E0)	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition. 3. No bus-off is detected 4. Ignition status is IG ON 5. The diagnostic configuration supports the ECU.	
U014087	Messages from vehicle control unit lost 250ms (0x1F0)		
U014687	Messages from GW lost 500ms (0x2FC)		
U015587	Messages from IPK lost 500ms (0x26D)		
U016487	Messages from AC lost 500ms (0x2F2)		
U020887	Messages from DSCU lost 500ms (0x2D2)		
U021487	GW_PEPS_Information (0 x2FC):: PEPS_ 0 x1E2 _TimeoutFlag= 1 or GW_ PEPS_Information (0 x2FC):: PEPS_ 0 x 272 _TimeoutFlag= 1, once		
U023587	Message from FRS is lost for 250ms (0x1A3 and 0x1A2 at the same time)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U120387	Message from FCS is lost for 250ms (0x1B0)		
U111587	Battery electric vehicle: Messages from OBC lost 500ms (0x220)		
U011287	Battery electric vehicle: GW_ BMSH_IPU_Information (0 x 250)BMSH_0 x 211 _Timeout= 1		
U111487	Battery electric vehicle: Messages from VCU lost 250ms (0x162, 0x1A5)		
U016087	Battery electric vehicle: Messages from AVAS lost 500ms (0x2B2)		
U012287	Message from ESC is lost for 250ms (0x125)		
U019887	Messages from TBOX lost 500ms (0x292)		
U013187	Message from EPS is lost for 250ms (0x150)		
U012187	Message from ABS is lost for 250ms (0x125)		
U015187	Message from ACU is lost for 1000ms (0x380)		
U011087	5*T (Tx>50ms) or 250ms (Tx≤50ms) Tolerance:10%		
U010387	5*T (Tx>50ms) or 250ms (Tx≤50ms) Tolerance:10%		
B110144	Immediately after an error is detected		
U111A87	5*T (Tx>50ms) or 250ms (Tx≤50ms) Tolerance:10%		
U015987	Message from PAS is lost for 2500ms (0x390)		
U020987	Messages from HVSM is lost for 500ms (0x2C1)		
U111687	Messages from DVR is lost for 500ms (0x2B1)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111787	Messages from AVM is lost for 1000ms (0x2AB)		
U015887	Message from ESC is lost for 1000ms (0x2CA)		
U019987	Message from DDM is lost for 500ms (0x285)		
U000100	It is detected that the CAN bus is switched off for 1000ms.	1. The power supply voltage is 9V-16V 2. No bus is switched off 3. The TDiagenable (3s-4s) condition is complied with 4. $9V < V < 16V$, V_{DLon} , V_{DHon} $T_{Restart} = 1S$	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the IF-CAN network integrity.

- A. To check the instrument communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Change the head unit.

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 5 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.2.6.10 Head unit and ambient light communication fault

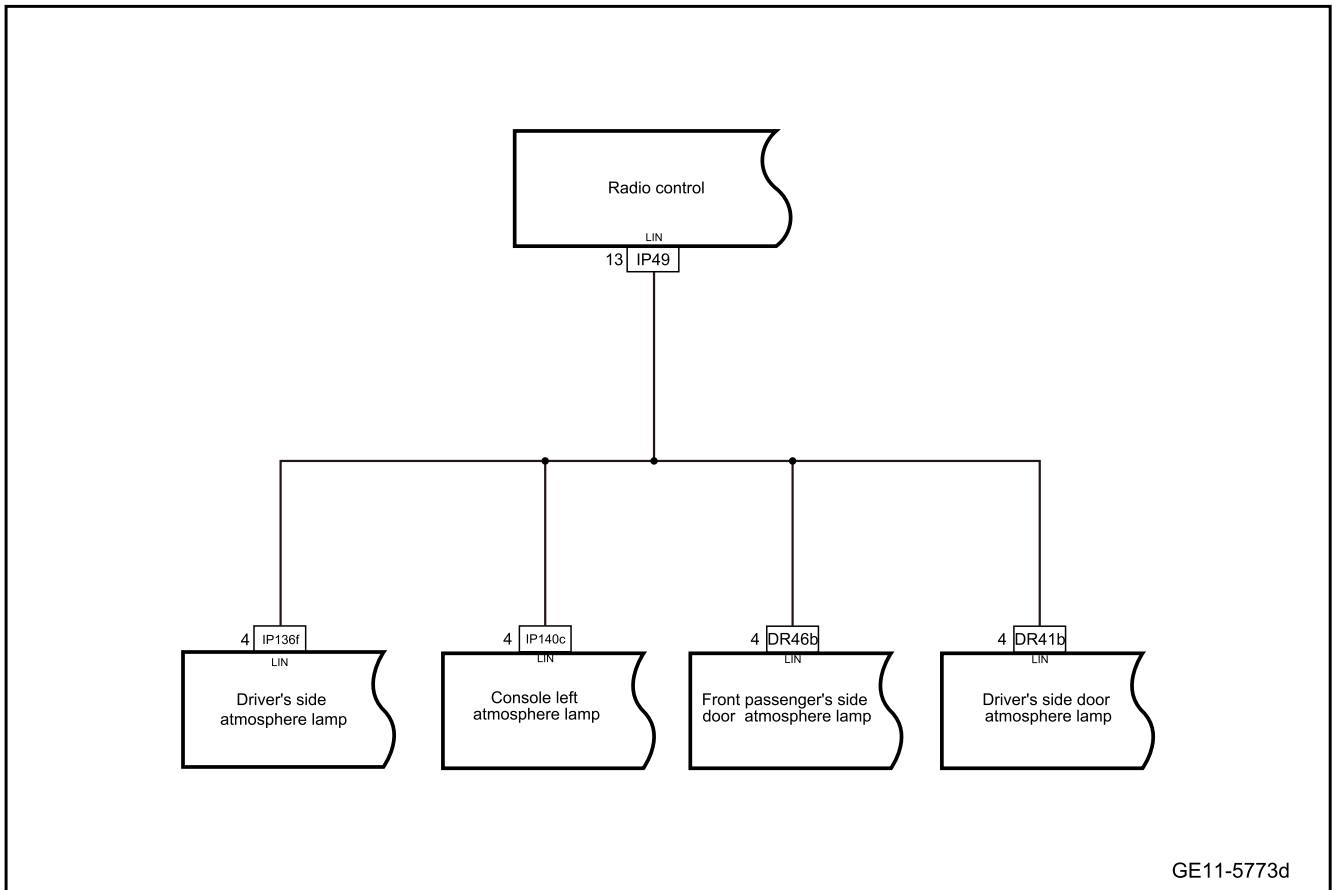
1. DTC description:

Diagnostic Trouble Code	Trouble description
B13A687	Communication with ambient light is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13A687	Messages from AL lost 1800ms.	1. The power supply voltage is 9V-16V	1. Circuit 2. Head unit 3. Ambient lamp

3. Schematic circuit diagram:



This manual is only for diagnosing the fault of the driver's side ambient lamp switch background light. The diagnosis of other background lights is the same as this.

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No
Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

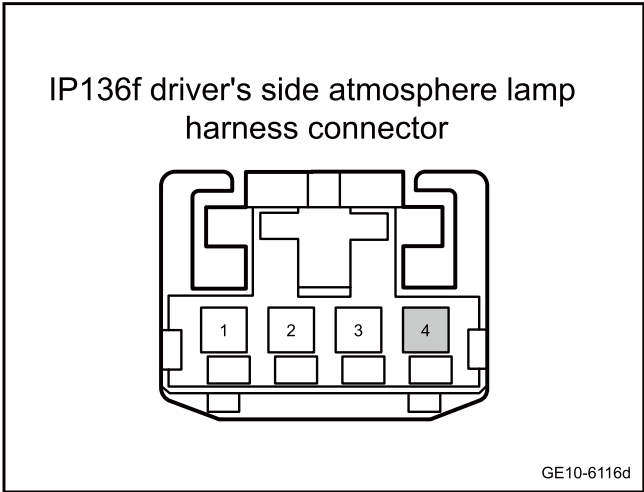
- A. Check the driver side ambient lamp and head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

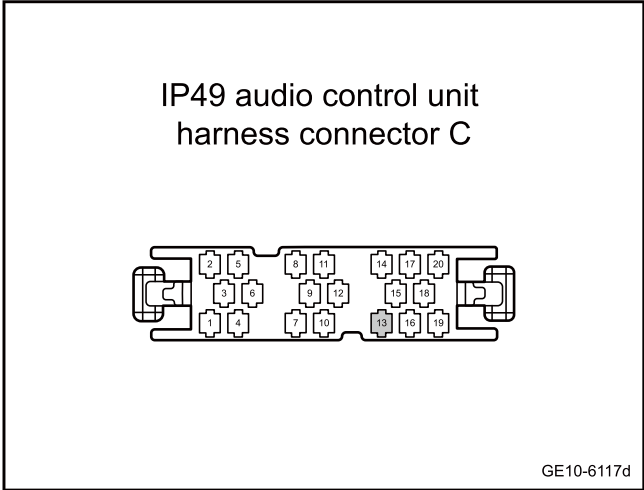
Step 3 Check whether the circuit between driver side ambient lamp and head unit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the driver side ambient lamp harness connector IP136f.
- D. Use a multimeter to measure the resistance between terminal 4 of the driver side ambient lamp switch harness connector IP136f and terminal 13 of the head unit harness connector IP49.

Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

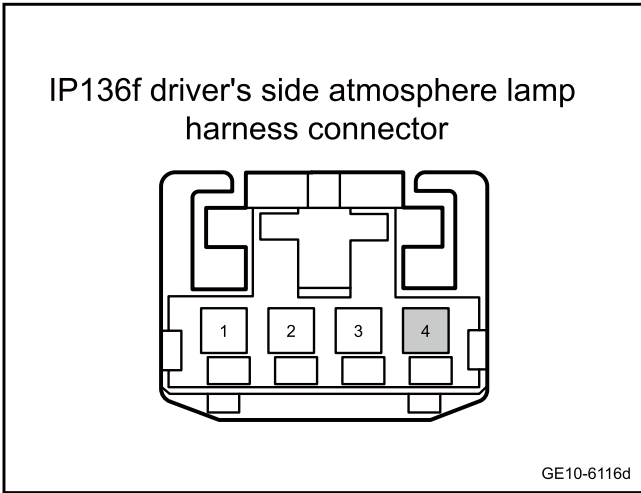


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between driver' side ambient lamp and the head unit is short to power supply.



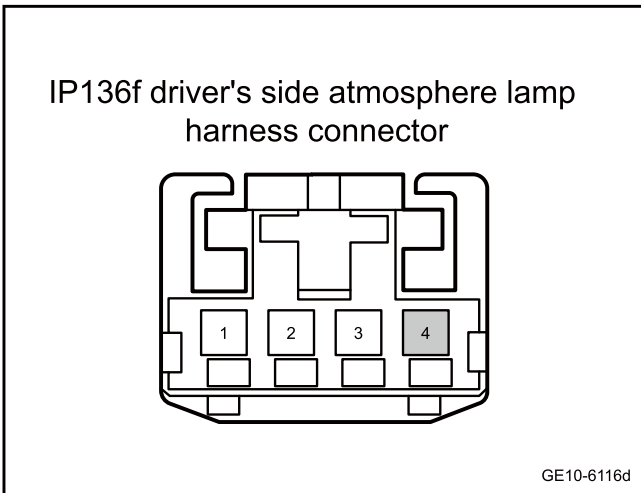
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the head unit harness connector IP49.
 - C. Disconnect the driver side ambient lamp harness connector IP136f.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between terminal 4 of driver side ambient lamp harness connector IP136f and body grounding.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between driver side ambient lamp and the head unit is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the head unit harness connector IP49.
 - C. Disconnect the driver side ambient lamp harness connector IP136f.
 - D. Use a multimeter to measure the resistance between the terminal 4 of ambient lamp harness connector IP136f and body grounding
- Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the driver side atmosphere lamp.

- A. Replace the driver side atmosphere lamp. Refer to [Replacement of Driver' SideAmbient Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Change the head unit.

- A. Check whether the head unit grounding harness is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the had unit. Refer to [Replacement of Body Control Module](#)

Next step

Step 8 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 10 | System is normal.

11.2.6.11 FL loudspeaker fault(Type I)

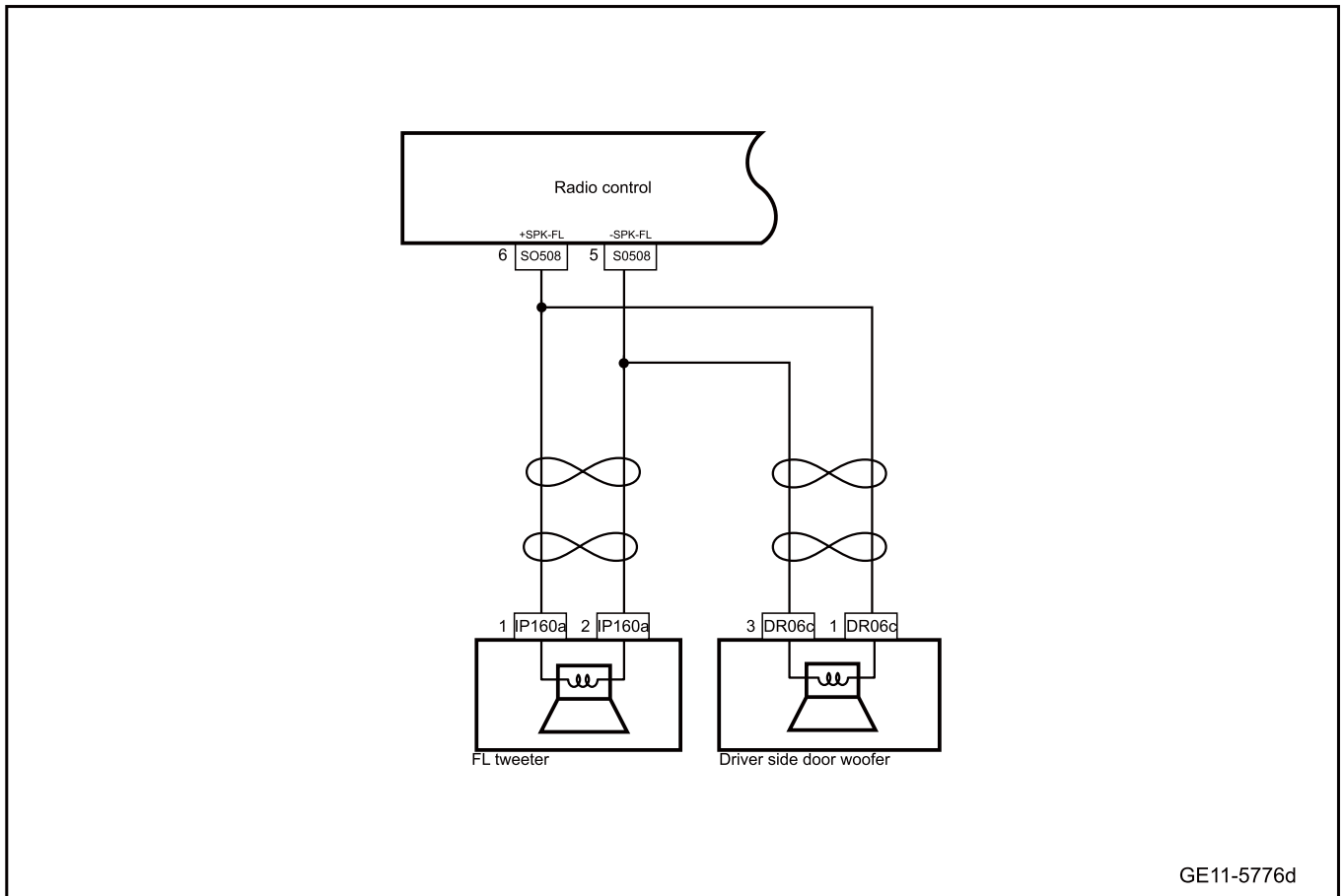
1. DTC description:

Diagnostic Trouble Code	Description
B138611	Power amplifier FL short circuit to ground
B138612	Power amplifier FL short circuit to power supply
B138613	Power amplifier FL circuit open

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138611	Short-circuited to ground for 1200 milliseconds	1. The power supply voltage is 9V -16V 2. MMI is started	1. Circuit 2. Head unit 3. Loudspeaker
B138612	Current is short-circuited to the battery for 1,200 ms		
B138613	The amplifier is turned on for 300 ms		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the driver's side loudspeaker for signs of frame damage or cone damage.
- B. Check the driver's side loudspeaker and radio harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

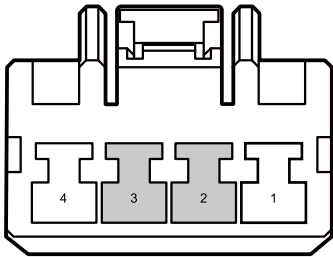
No

Repair or replace the faulty part.

Yes

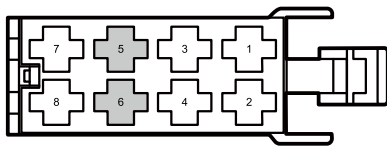
Step 3	Check whether the circuit between the head unit and the driver's side loudspeaker is open.
--------	--

DR06c driver's side door woofer harness connector



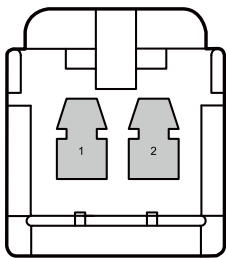
GE10-6120d

SO508 radio control harness connector



GE10-6121d

IP160a FL tweeter harness connector



GE10-6122d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front left tweeter harness connector IP160a.
- C. Disconnect harness connector DR06c of woofer at driver side woofer.
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
S0508(5)	DR06c(3)	Standard resistance: less than 1Ω
SO508(6)	DR06c(1)	
S0508(5)	IP160a(2)	
SO508(6)	IP160a(1)	

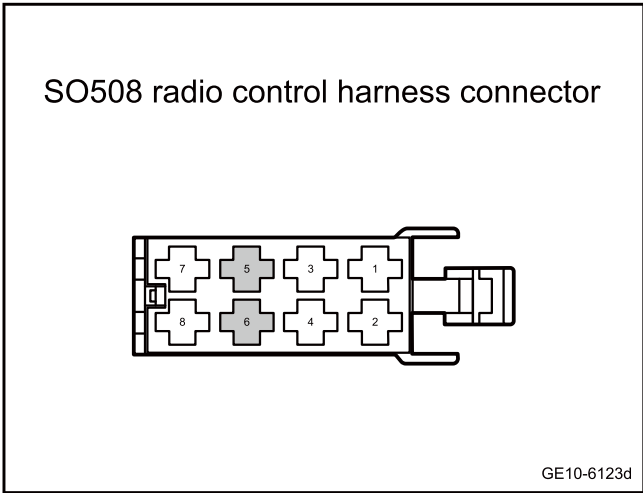
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the and the head unit and driver side door loudspeaker is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector of woofer at driver side DR06c
- C. Disconnect harness connector of front left tweeter IP160a
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

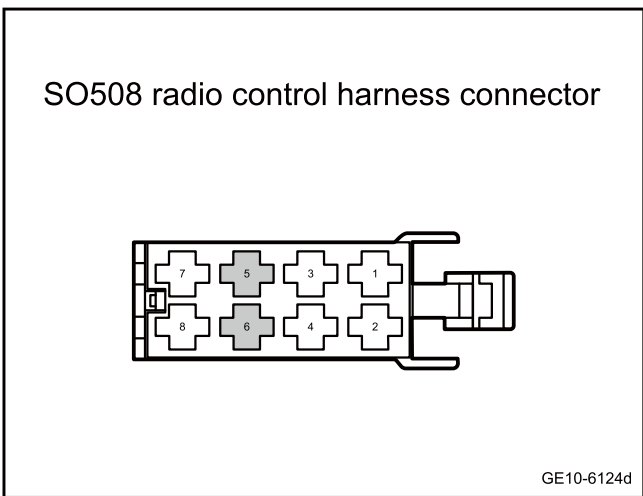
Measure terminal 1	Measure terminal 2	Standard value
SO508(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO508(5)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Overhaul whether the line between head unit and RL speaker is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector of woofer at driver side DR06c
- C. Disconnect harness connector of front left tweeter IP160a
- D. Disconnect the head unit harness connector SO508.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(5)	Vehicle body is grounded.	Standard voltage: 0V
SO508(6)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace front left tweeter

- A. Replace front left tweeter, refer to [Replacement of front left tweeter](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the woofer of the driver side door
--------	--

- A. To replace the woofer of the driver side door, please refer to [Replacement of the Woofer of the Driver Side Door](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Change the head unit.
--------	-----------------------

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9	Reprogram and reset the head unit.
--------	------------------------------------

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.2.6.12 FR loudspeaker fault(Type I)

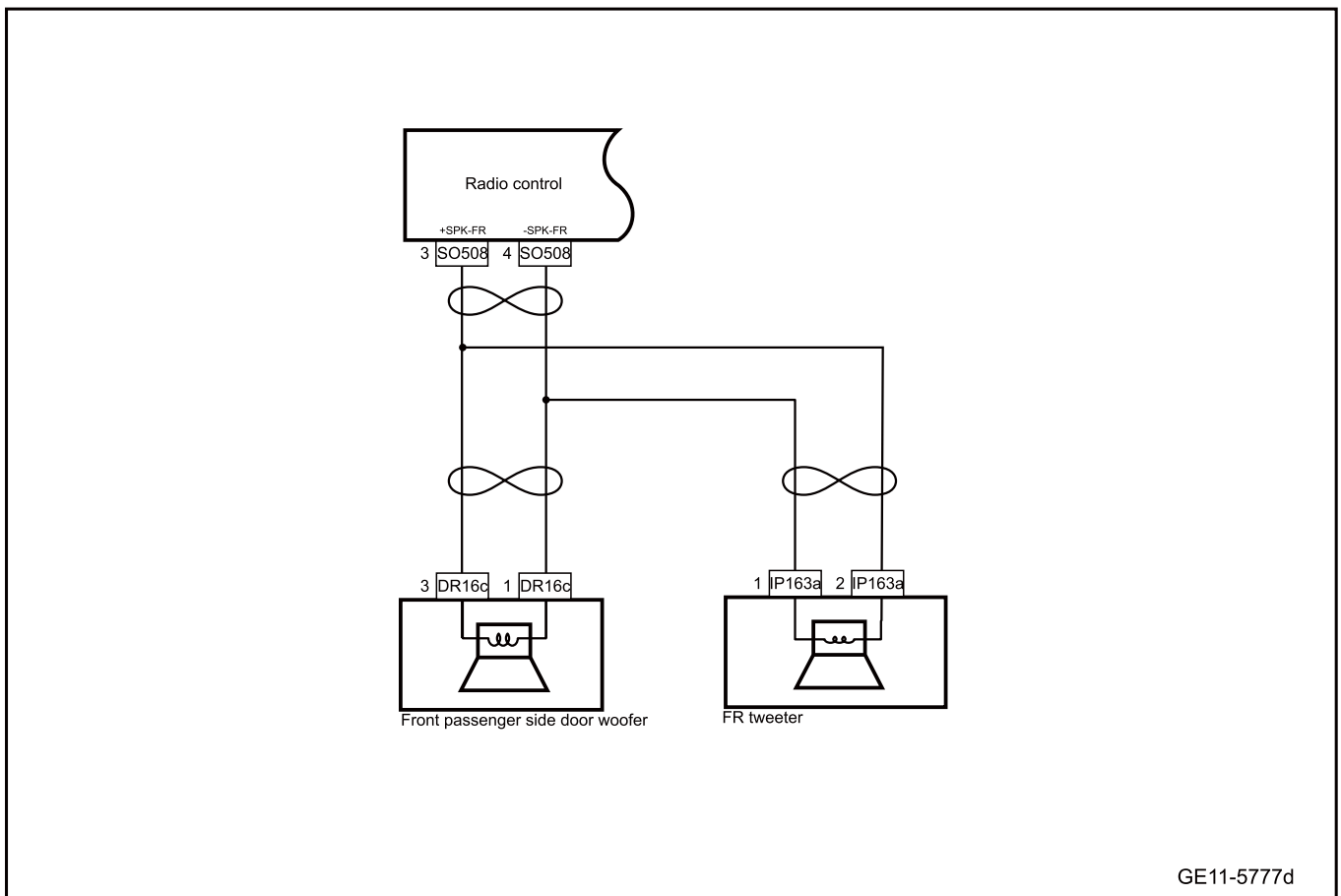
1. DTC description:

Diagnostic Trouble Code	Description
B138511	Power amplifier FR is short to GND
B138512	Power amplifier FR is short to power supply
B138513	Power amplifier FR is open

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138511	Short-circuited to ground for 1200 milliseconds	1. The power supply voltage is 10V -15V 2. MMI is started	1. Circuit 2. Head unit 3 Loudspeaker
B138512	Current is short-circuited to the battery for 1,200 ms		
B138513	The amplifier is turned on for 300 ms		

3. Circuit diagram:



GE11-5777d

4. Diagnosis steps:

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

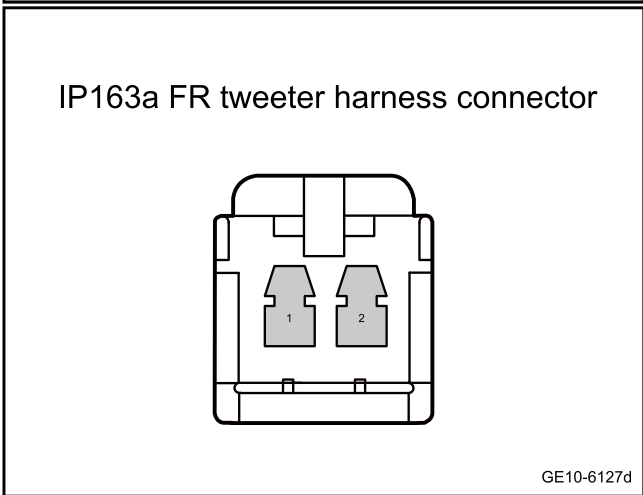
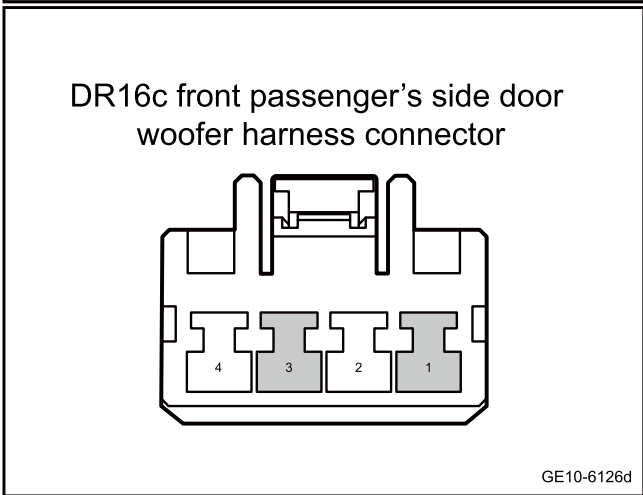
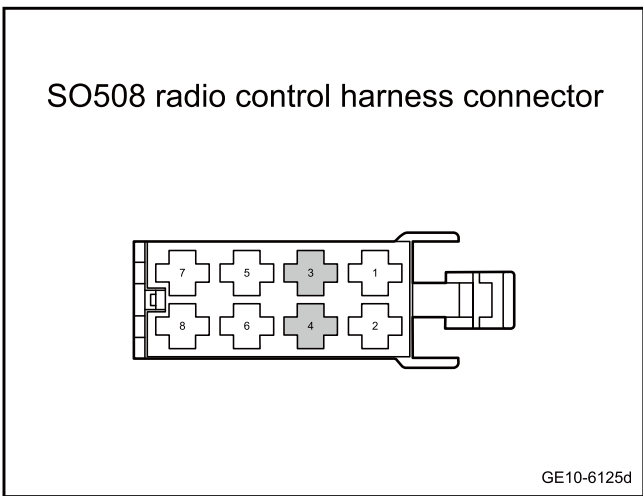
Step 2 Primary check.

- A. Check the front passenger's side door speaker for signs of frame damage or cone damage.
- B. Check the front passenger's side door speaker and radio harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the head unit and the front passenger's side door speaker is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector IP163a of FR tweeter speaker
- C. Disconnect the woofer harness connector DR16c at front passenger side door.
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(4)	DR16c(1)	Standard resistance: less than 1Ω
SO508(3)	DR16c(3)	
SO508(4)	IP163a(1)	
SO508(3)	IP163a(2)	

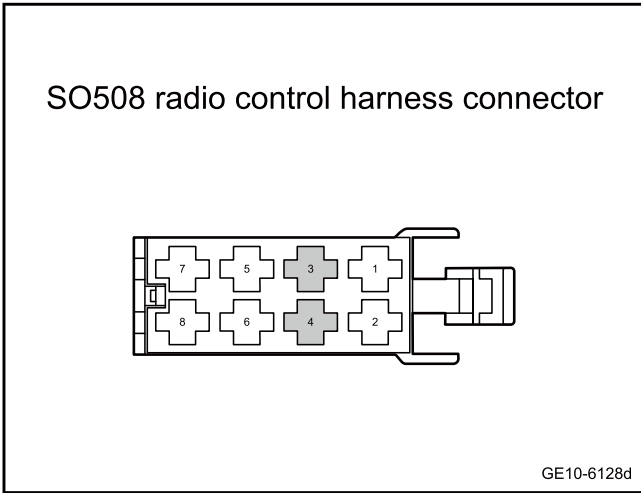
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the head unit and the front passenger side door speaker is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the woofer harness connector DR16c at front passenger side door.
- C. Disconnect the harness connector IP163a of FR tweeter speaker
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

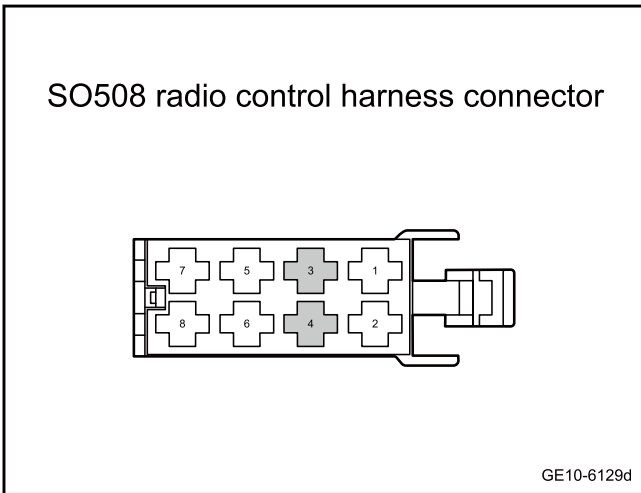
Measure terminal 1	Measure terminal 2	Standard value
SO508(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO508(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Overhaul whether the line between head unit and front passenger side door speaker is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the woofer harness connector DR16c at front passenger side door.
- C. Disconnect the harness connector IP163a of FR tweeter speaker
- D. Disconnect the head unit harness connector SO508.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(4)	Vehicle body is grounded.	Standard voltage: 0V
SO508(3)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the FR tweeter speaker.

- A. Replace the FR tweeter speaker, refer to the [Replacement of the FR tweeter](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the front passenger's side door woofer.

- A. To replace the woofer of the front passenger side door, please refer to [Replacement of the Woofer of the Front Passenger Side Door](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.2.6.13 RL speaker fault(Type I)

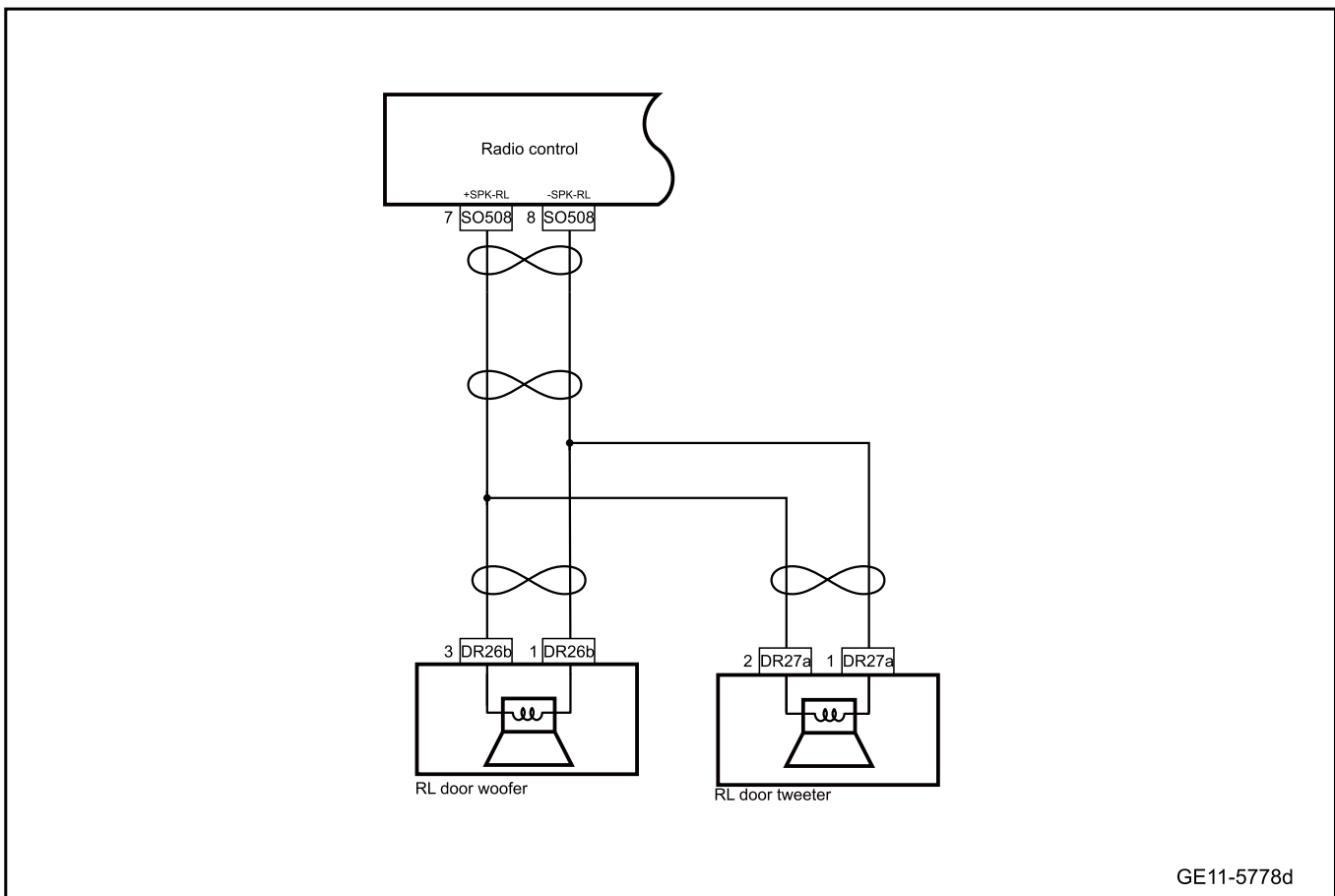
1. DTC description:

Diagnostic Trouble Code	Description
B138811	Power amplifier RL short to GND
B138812	Power amplifier RL short to power supply
B138813	Power amplifier RL open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138811	Short-circuited to ground or overloaded for 1200 milliseconds	1. The power supply voltage is 9V -16V 2. MMI is started	1. Circuit 2. Head unit 3 Loudspeaker
B138812	Current is short-circuited to the battery for 1,200 ms		
B138813	The amplifier is turned on for 300 ms		

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

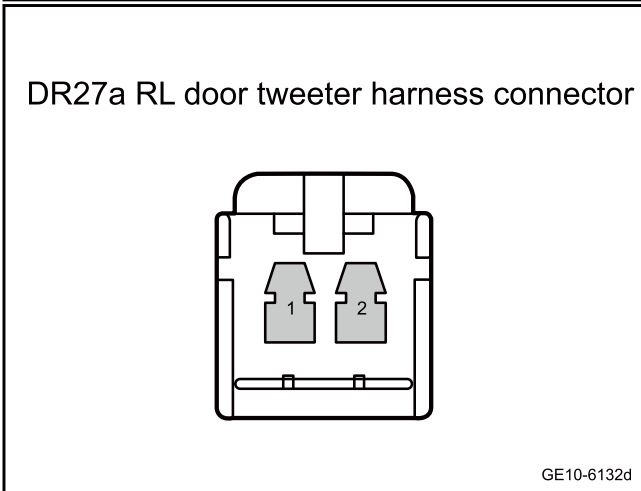
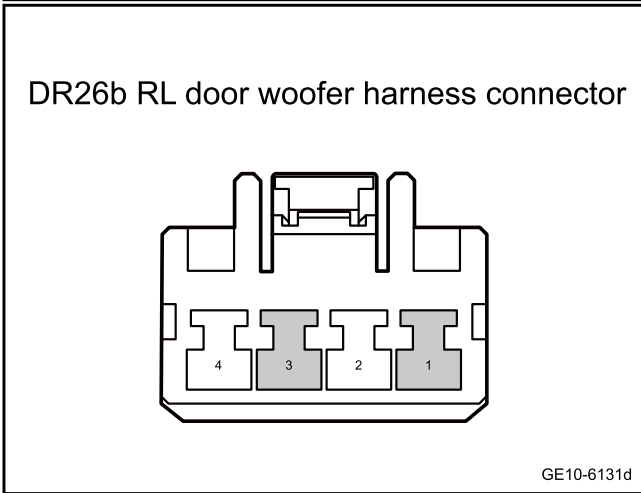
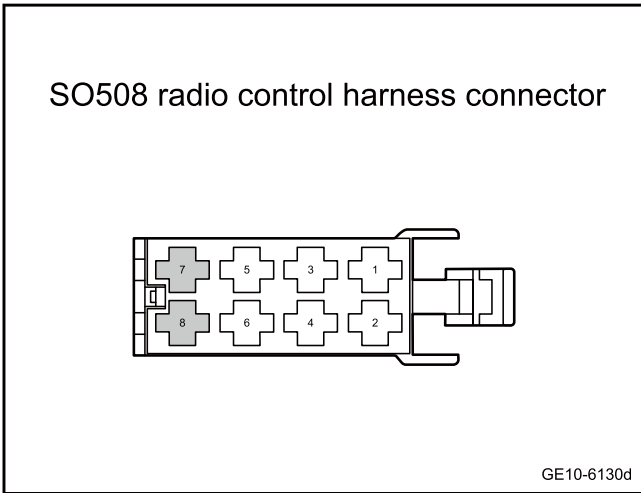
Step 2	Primary check.
--------	----------------

- A. Check the RL speaker for signs of frame damage or cone damage.
- B. Check the head unit and RL speaker harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check whether the line between head unit and RL speaker is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR27a of RL door tweeter.
- C. Disconnect the harness connector DR26b of RL door woofer.
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(7)	DR26b(3)	Standard resistance: less than 1Ω
SO508(8)	DR26b(1)	
SO508(7)	DR27a(2)	
SO508(8)	DR27a(1)	

- F. Confirm whether the measured value meets the standard.

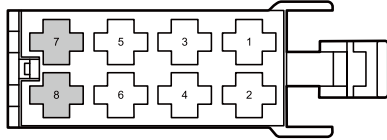
No

Repair or replace the harness.

Yes

Step 4 Overhaul whether the line between head unit and RL speaker is short to GND.

SO508 radio control harness connector



GE10-6133d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR26b of RL door woofer.
- C. Disconnect the harness connector DR27a of RL door tweeter.
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO508(7)		

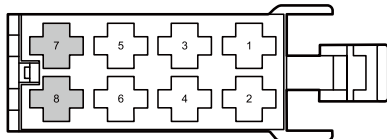
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Overhaul whether the line between head unit and RL speaker is short to power supply.

SO508 radio control harness connector



GE10-6134d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector DR26b of RL door woofer.
- C. Disconnect the harness connector DR27a of RL door tweeter.
- D. Disconnect the head unit harness connector SO508.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(8)	Vehicle body is grounded.	Standard voltage: 0V
SO508(7)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the RL door tweeter.

- A. Replace the RL door tweeter, refer to [replacement of RL door tweeter](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the RL door woofer.

- A. Replace the RL door woofer, refer to [Replacement of RL door woofer](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

11.2.6.14 RR speaker fault(Type I)

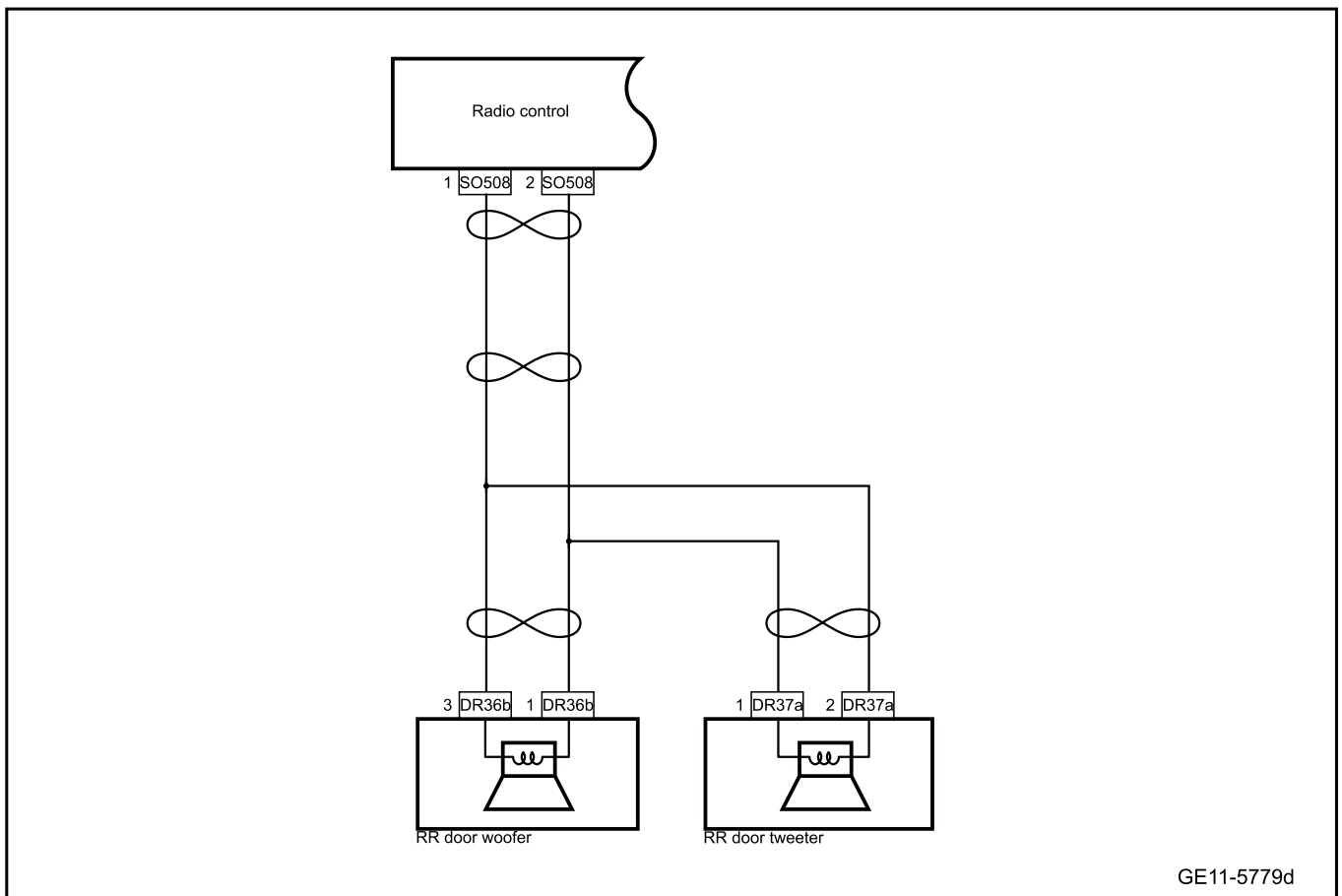
1. DTC description:

Diagnostic Trouble Code	Description
B138711	Power amplifier RR is short to GND.
B138712	Power amplifier RR is short to power supply.
B138713	Power amplifier RR is open.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138711	Short-circuited to ground or overloaded for 1200 milliseconds	1. The power supply voltage is 10V -15V 2. MMI is started	1. Circuit 2. Head unit 3 Loudspeaker
B138712	Current is short-circuited to the battery for 1,200 ms		
B138713	The amplifier is turned on for 300 ms		

3. Circuit diagram:



GE11-5779d

4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

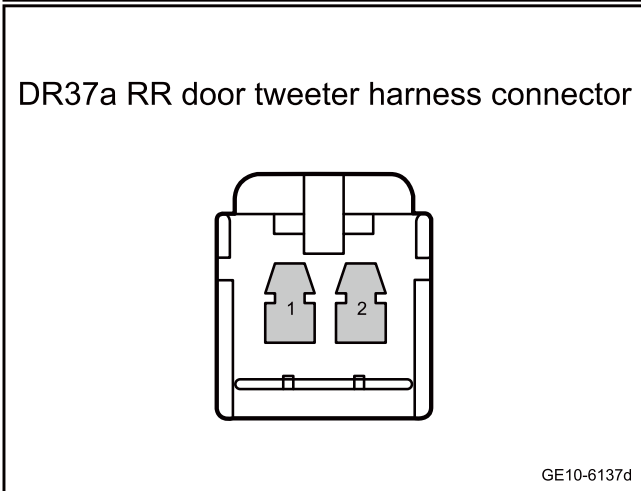
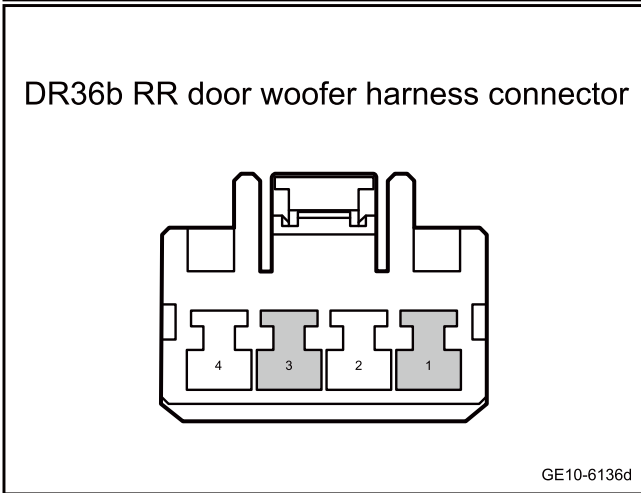
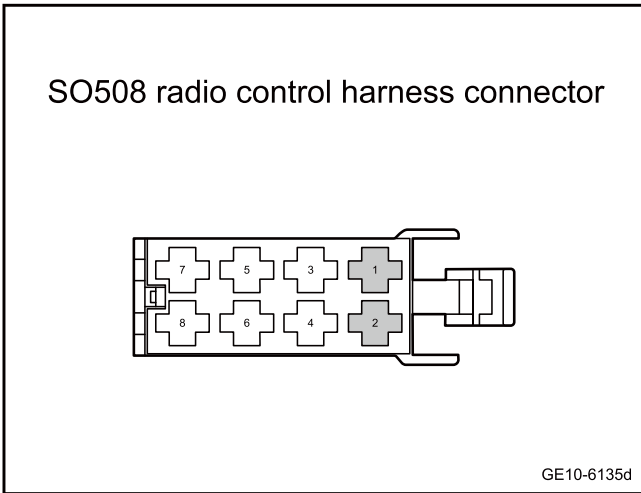
Step 2	Primary check.
--------	----------------

- A. Check the right rear speaker for signs of the damage of the frame and cone.
- B. Check the harness connector of the right rear speaker and head unit and the right rear amplifier for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the head unit and the right rear amplifier is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR 37 of the tweeter of the right rear door.
- C. Disconnect the harness connector DR36b of the woofer of rear right door.
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(1)	DR36b(3)	Standard resistance: less than 1Ω
SO508(2)	DR36b(1)	
SO508(1)	DR37a(2)	
SO508(2)	DR37a(1)	

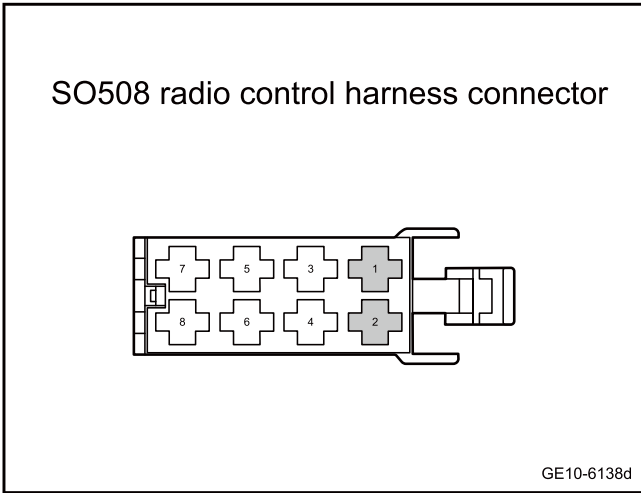
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the head unit and the right rear amplifier is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR36b of the woofer of rear right door.
- C. Disconnect the harness connector DR 37 of the tweeter of the right rear door.
- D. Disconnect the head unit harness connector SO508.
- E. Use a multimeter to measure:

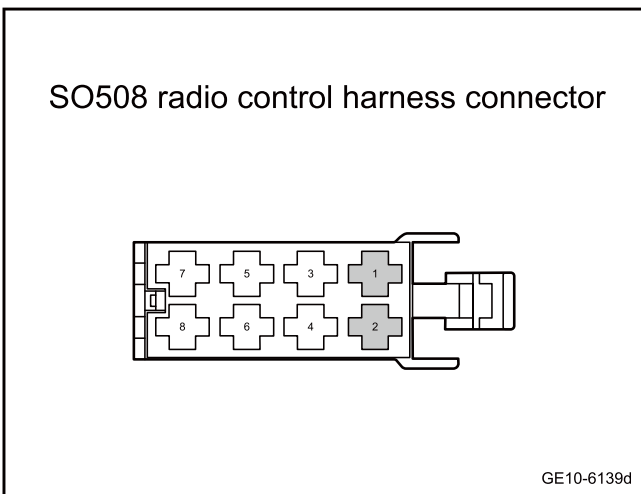
Measure terminal 1	Measure terminal 2	Standard value
SO508(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO508(1)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Overhaul whether the line between head unit and RL speaker is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR36b of the woofer of rear right door.
- C. Disconnect the harness connector DR 37 of the tweeter of the right rear door.
- D. Disconnect the head unit harness connector SO508.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure:

Measure terminal 1	Measure terminal 2	Standard value
SO508(2)	Vehicle body is grounded.	Standard voltage: 0V
SO508(1)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the tweeter of the right rear door.

- A. Replace the tweeter of the right rear door. Refer to [Replacement of tweeter of right rear door](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the woofer of the right rear door.

- A. Replace the RL door woofer, refer to [Replacement of RL door woofer](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.2.6.15 Camera fault

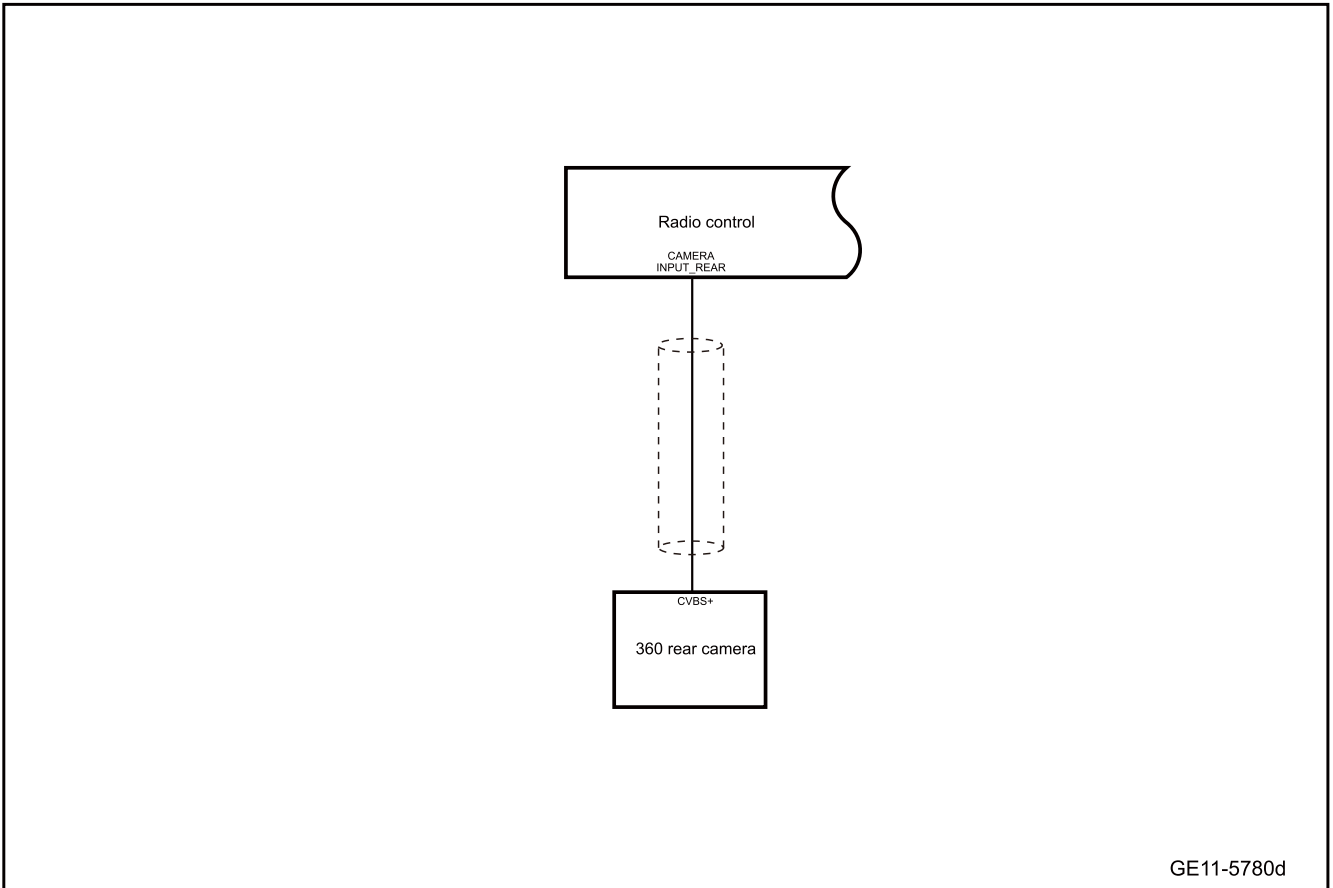
1. DTC description:

Diagnostic Trouble Code	Description
B138211	Camera power supply is short to GND.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138211	$V < 9V$ or $V > 16V$	1. Voltage is 9V–16V.	1. Circuit 2. Head unit 3. 360 front camera 4. 360 rear camera 5. 360 left camera 6. 360 right camera

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of 360 rear camera of the model of head unit. The diagnosis of other camera fault is the same as that of 360 rear camera fault of the model of head unit.

4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the 360 rear cameras for signs of damage, deformation, stain, loosening, etc.
- B. Check the 360 rear camera and head unit harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Replace rear camera.

- A. To replace the rear camera, please refer to [Replacement of 360 Rear Camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the audio control unit

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 5 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

11.2.6.16 Internal fault of head unit

1. DTC description:

DTC	Trouble description
B13A94B	MMI is of high temperature
B13B719	HOST USB interface 1 circuit is overcurrent
B13C104	IHUSOC video signal conversion chip (MIPI to LVDS) works abnormally
B13C204	IHUSOC heartbeat pack is abnormal
B13C304	EEPROM data error of IHU (including configuration word damage)
B13C541	CSD received video signal is abnormal (host side DTC)

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13A94B	The temperature exceeds 80°C for 5 seconds or the temperature is lower than 40°C for 5 seconds	Power supply voltage range is 9V-16V	1. Head unit 2. Circuit
B13B719	Control unit USB is short to GND		
B13C104	SOC video signal conversion chip communication error (I◀)	1. The power supply voltage is 9V-16V 2. MMI energization	
B13C204	SOC heartbeat packet data is not detected for more than 30 seconds (more than 30 seconds before the vehicle is restarted)		
B13C304	EEPROM configuration word data CRC check error		
B13C541	The serializer at the IHU side detects the data state of the unserializer locking positive channel at the CSD side. When the losing lock state is true for 2 seconds, it confirms that the signal is losing lock	1. The power supply voltage is 9V-16V 2. CSD power on	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

- A. Check the head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Perform a controller reset.

- A. Perform a controller reset, refer to [controller reset](#)
- B. Whether the fault remains after resetting.

No

System is normal.

Yes

Step 4 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Change the head unit.
--------	-----------------------

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 6	Write controller data.
--------	------------------------

- A. Write controller data, refer to [write controller data](#)
- B. Confirm that the repair is completed.

Next step

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 8	System is normal.
--------	-------------------

11.2.6.17 Rear left radar probe fault

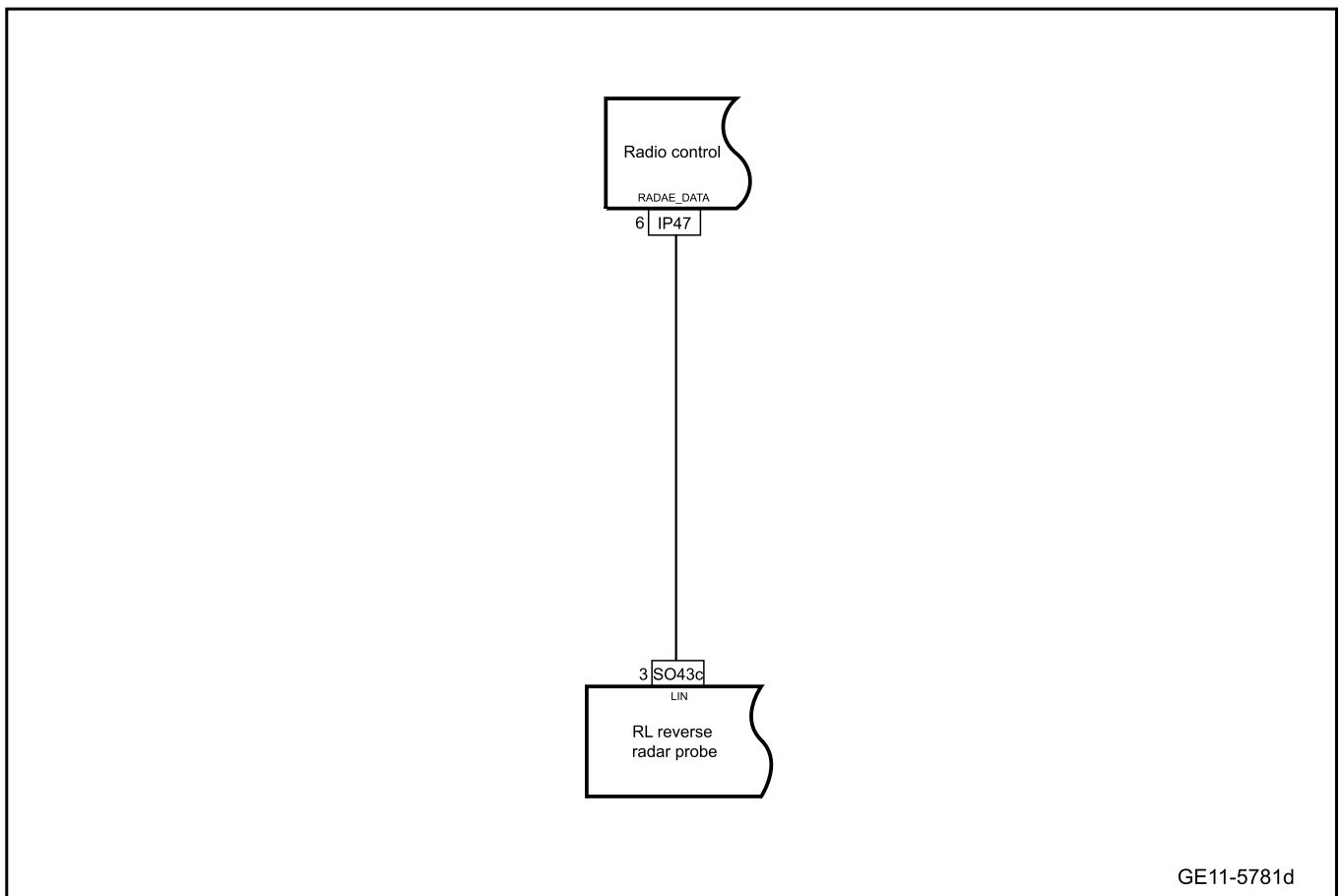
1. DTC description:

Diagnostic Trouble Code	Description
B13AE96	Rear left radar probe fault (UART radar)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13AE96	The second byte BIT3 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Head unit 3. Rear left radar probe

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

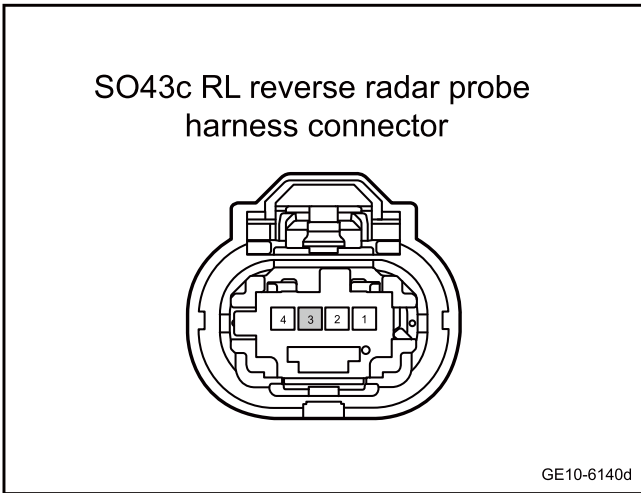
Step 2	Primary check.
--------	----------------

- A. Check the rear left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of rear left reverse radar probe and head unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

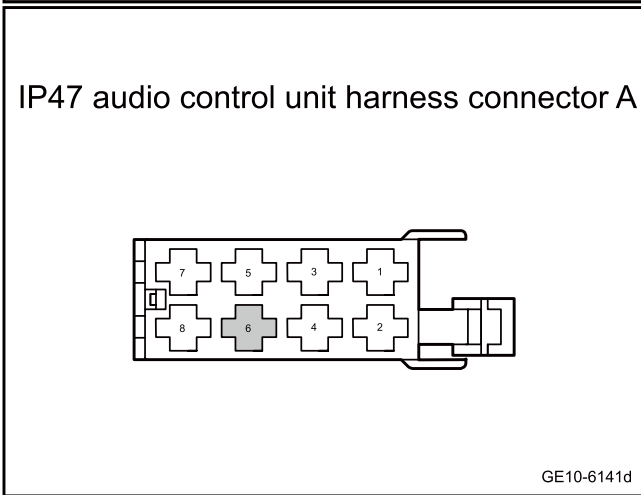
Yes

Step 3 Check whether the line between the left rear probe harness parking sensor and the head unit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left reverse radar probe SO43c
- C. Disconnect the head unit harness connector IP47.
- D. Use a multimeter to measure the resistance between terminal 3 of the left rear probe harness parking sensor harness connector SO43c and terminal 6 of the head unit harness connector IP47:

Standard resistance value: less than 1Ω
- E. Confirm whether the measured value meets the standard.

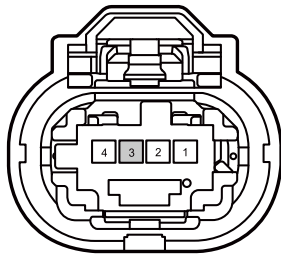


No Repair or replace the harness.

Yes

Step 4 Check whether the line between the left rear probe harness parking sensor and the head unit is short to grounding.

SO43c RL reverse radar probe harness connector



GE10-6142d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left reverse radar probe SO43c
- C. Disconnect the head unit harness connector IP47.
- D. Use a multimeter to measure the resistance between terminal 3 of the left rear probe harness parking sensor harness connector SO43c and body grounding:

Standard resistance value: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

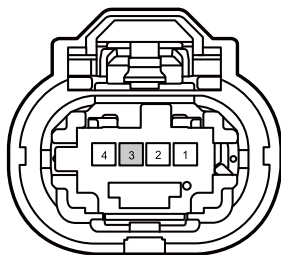
No

Repair or replace the harness.

Yes

Step 5 Check whether the line between the left rear probe harness parking sensor and the head unit is short to power supply.

SO43c RL reverse radar probe harness connector



GE10-6143d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left reverse radar probe SO43c
- C. Disconnect the head unit harness connector IP47.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between terminal 3 of the left rear probe harness parking sensor harness connector SO43c and body grounding:

Standard value of voltage: 0V
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the rear left reverse radar probe.

- A. Replace the rear left reverse radar probe. Refer to [Replacement of Rear Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Change the head unit.

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 8	Reprogram and reset the head unit.
--------	------------------------------------

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

11.2.6.18 Right middle rear radar probe fault

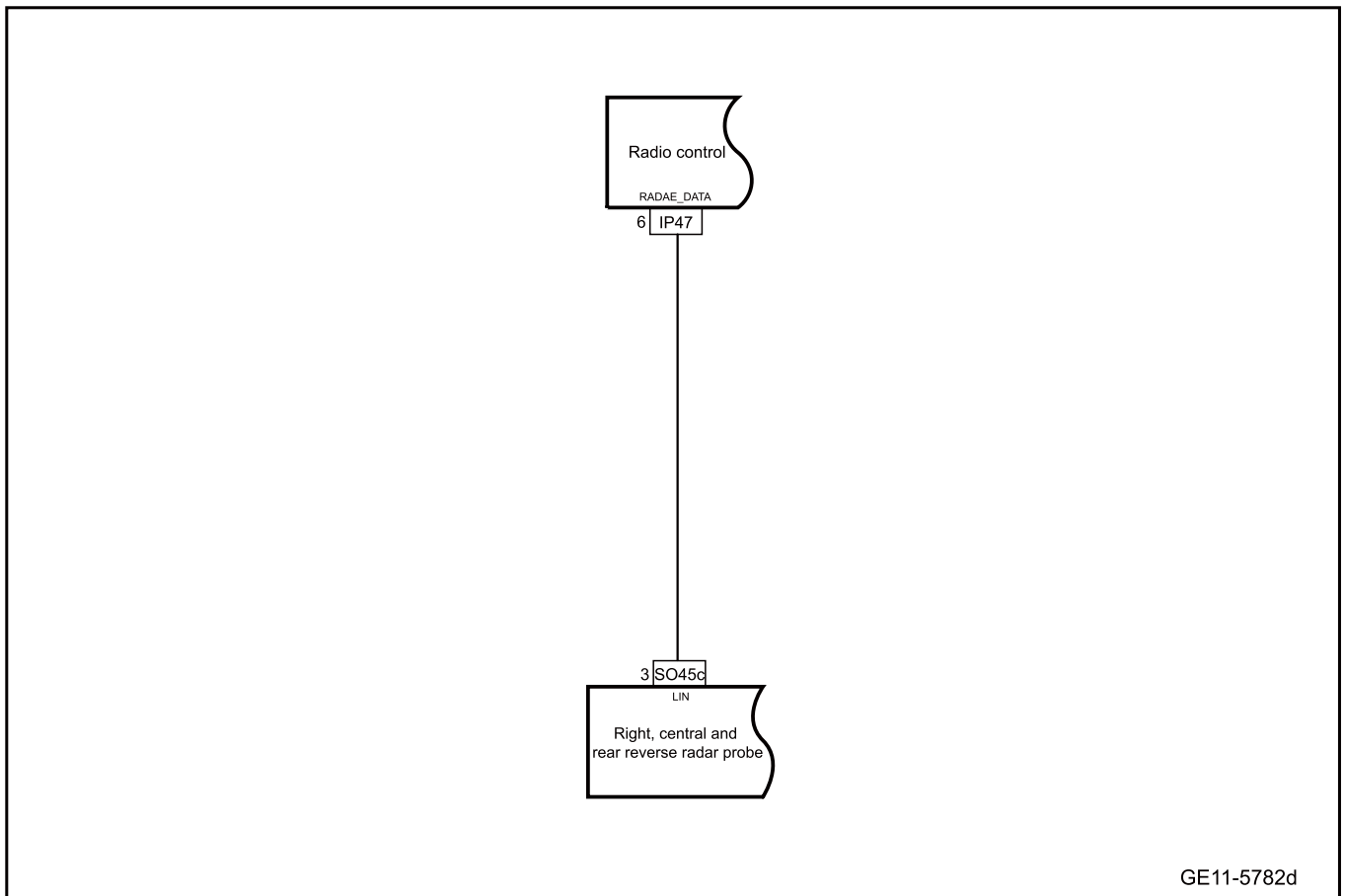
1. DTC description:

Diagnostic Trouble Code	Description
B13B096	Right middle rear radar probe fault (UART sensor)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13B096	The second byte BIT1 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Head unit 3. Right middle rear reverse radar probe

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

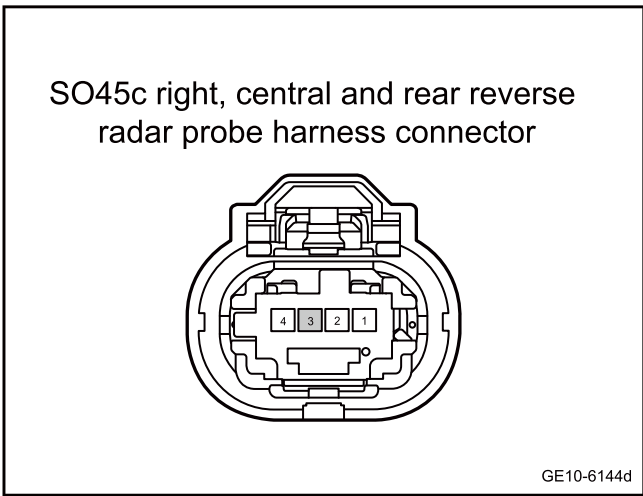
- A. Check right middle rear reverse radar probe for signs of loosening, wear, breakage, etc.
- B. Check the harness connector of right middle rear reverse radar probe and head unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

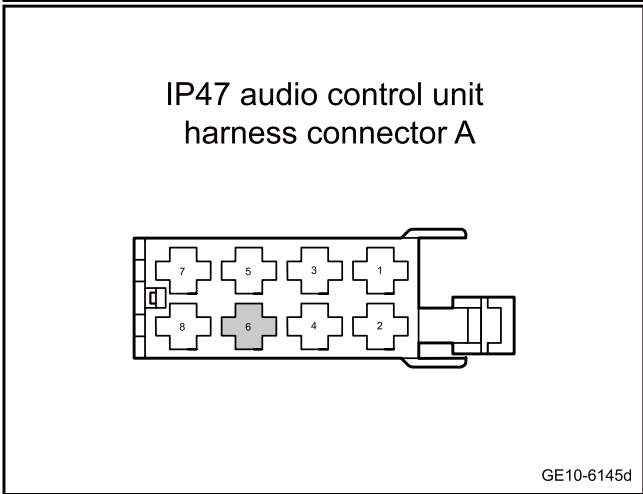
Step 3 Check whether the line between the RRM reverse radar probe and head unit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45c.
- C. Disconnect the head unit harness connector IP47.
- D. Use a multimeter to measure the resistance between terminal 3 of the RRM reverse radar probe harness connector SO45c and terminal 6 of head unit harness connector IP47:

Standard resistance value: less than 1Ω

- E. Confirm whether the measured value meets the standard.



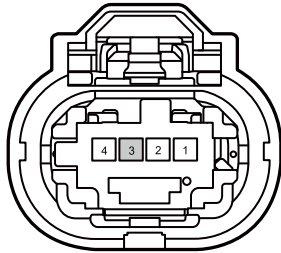
No

Repair or replace the harness.

Yes

Step 4 Check whether the line between RRM reverse radar probe and head unit is shorted to GND.

SO45c right, central and rear reverse radar probe harness connector



GE10-6146d

- Multimedia settings from vehicle power supply to OFF.
- Disconnect the harness connector of right middle rear probe of parking sensor SO45c.
- Disconnect the head unit harness connector IP47.
- Use a multimeter to measure the resistance between terminal 3 of the RRM reverse radar probe harness connector SO45c and body ground terminal:

Standard resistance value: 10KΩ or higher

- Confirm whether the measured value meets the standard.

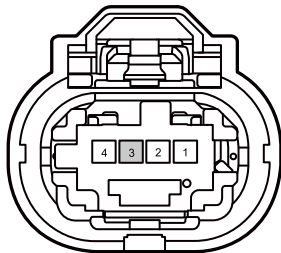
No

Repair or replace the harness.

Yes

Step 5 Check whether the line between RRM reverse radar probe and head unit is shorted to power supply.

SO45c right, central and rear reverse radar probe harness connector



GE10-6147d

- Multimedia settings from vehicle power supply to OFF.
- Disconnect the harness connector of right middle rear probe of parking sensor SO45c.
- Disconnect the head unit harness connector IP47.
- The key activates the power supply of the vehicle to ON.
- Use a multimeter to measure the voltage between terminal 3 of the RRM reverse radar probe harness connector SO45c and body ground terminal:

Standard value of voltage: 0V

- Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the right middle rear probe of parking sensor.

- Replace the right middle rear probe of parking sensor. Refer to [Replacement of Right Middle Rear Reverse Radar Probe](#)
- Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Change the head unit.

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 8	Reprogram and reset the head unit.
--------	------------------------------------

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 10	System is normal.
---------	-------------------

11.2.6.19 Rear right radar probe fault

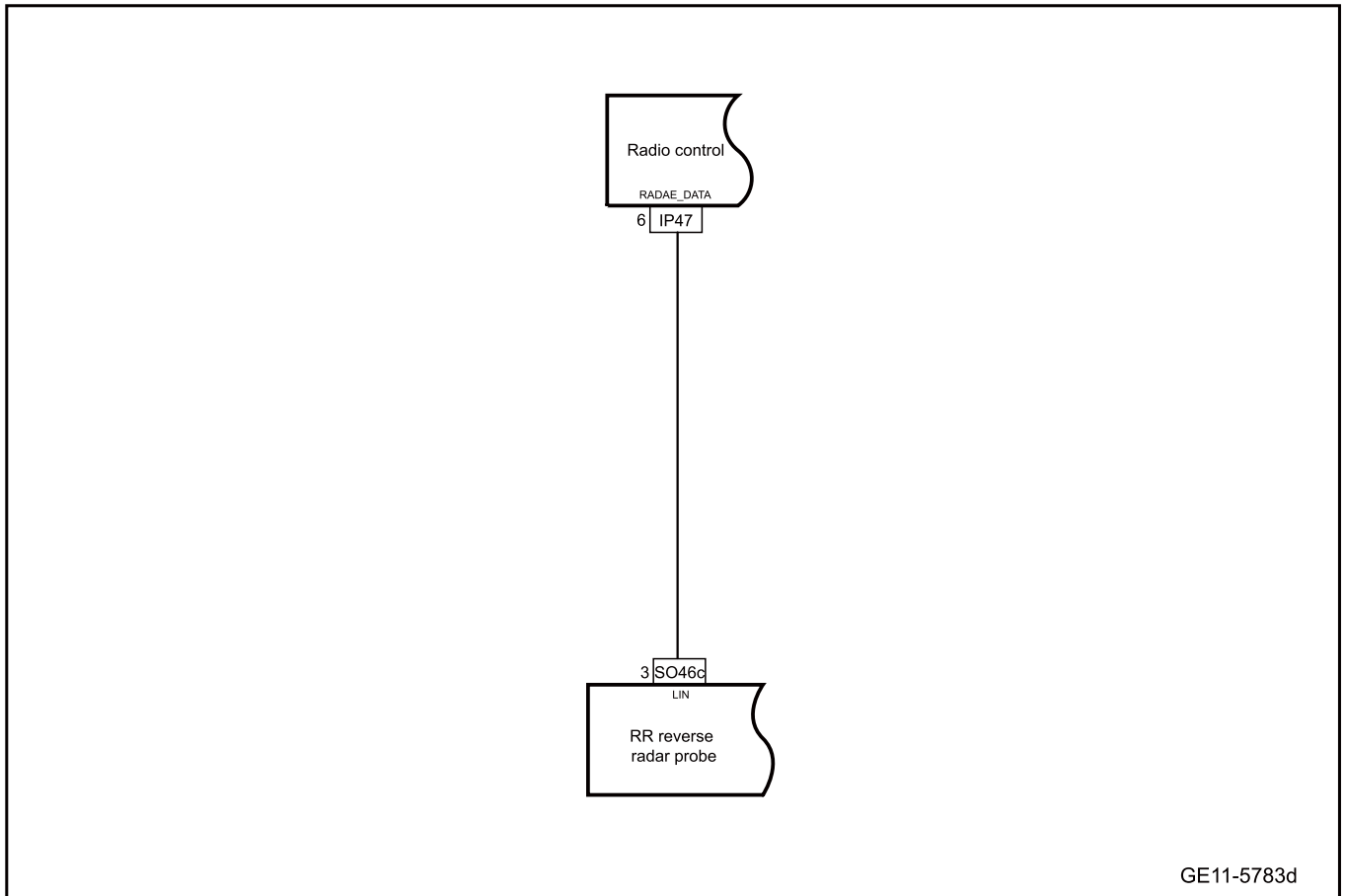
1. DTC description:

Diagnostic Trouble Code	Description
B13B196	Rear right radar probe fault (UART sensor)

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13B196	The second byte BIT0 of the self-test packet is 1.	1. The power supply voltage is in the range of 9-16V. 2. The vehicle is in R gear.	1. Circuit 2. Head unit 3. Right rear reverse radar probe

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

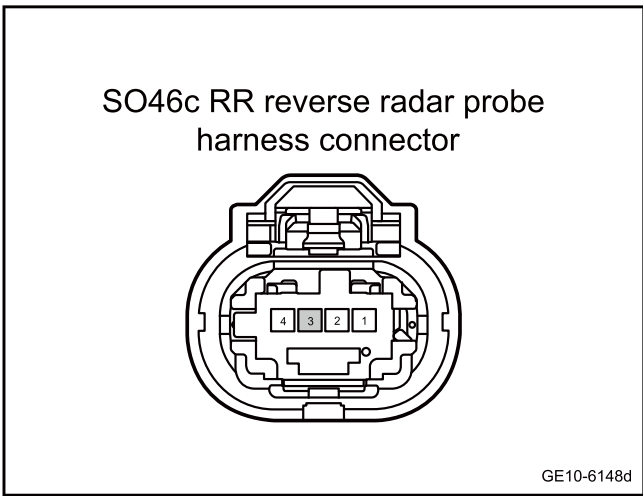
- A. Check the probe of the rear right reverse radar probe for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the rear right reverse radar probe and head unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

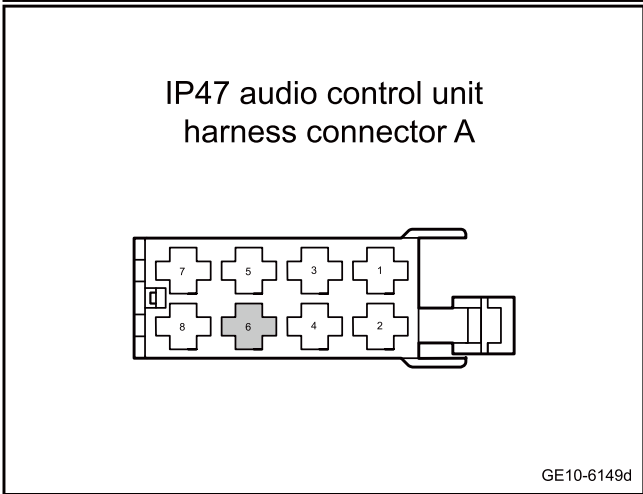
Yes

Step 3 Check whether the line between RR reverse radar probe and head unit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO46c of the probe of the rear parking sensor.
- C. Disconnect the head unit harness connector IP47.
- D. Use a multimeter to measure the resistance between terminal 3 of RR reverse radar probe harness connector SO46c and terminal 6 of head unit harness connector IP47:

Standard resistance value: less than 1Ω
- E. Confirm whether the measured value meets the standard.



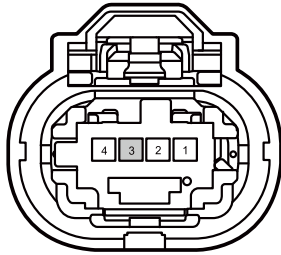
No

Repair or replace the harness.

Yes

Step 4 Check whether the line between RR reverse radar probe and head unit is shorted to GND.

SO46c RR reverse radar probe harness connector



GE10-6150d

- Multimedia settings from vehicle power supply to OFF.
- Disconnect the harness connector SO46c of the probe of the rear parking sensor.
- Disconnect the head unit harness connector IP47.
- Use a multimeter to measure the resistance between terminal 3 of RR reverse radar probe harness connector SO46c and body ground terminal:

Standard resistance value: 10KΩ or higher
- Confirm whether the measured value meets the standard.

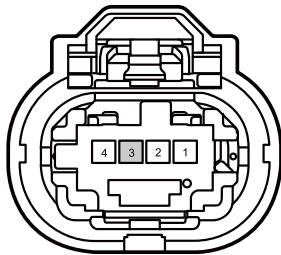
No

Repair or replace the harness.

Yes

Step 5 Check whether the line between RR reverse radar probe and head unit is shorted to power supply.

SO46c RR reverse radar probe harness connector



GE10-6151d

- Multimedia settings from vehicle power supply to OFF.
- Disconnect the harness connector SO46c of the probe of the rear right reverse radar.
- Disconnect the head unit harness connector IP47.
- The key activates the power supply of the vehicle to ON.
- Use a multimeter to measure the voltage between terminal 3 of RR reverse radar probe harness connector SO46c and body ground terminal:

Standard value of voltage: 0V
- Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the probe of the rear right reverse radar.

- Replace the probe of the rear right reverse radar. Refer to [Replacement of Rear Right Reverse Radar Probe](#)
- Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Change the head unit.

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 8 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes → Diagnose according to the output trouble code.

No

Step 10 | System is normal.

11.2.6.20 Steering wheel buttons circuit fault

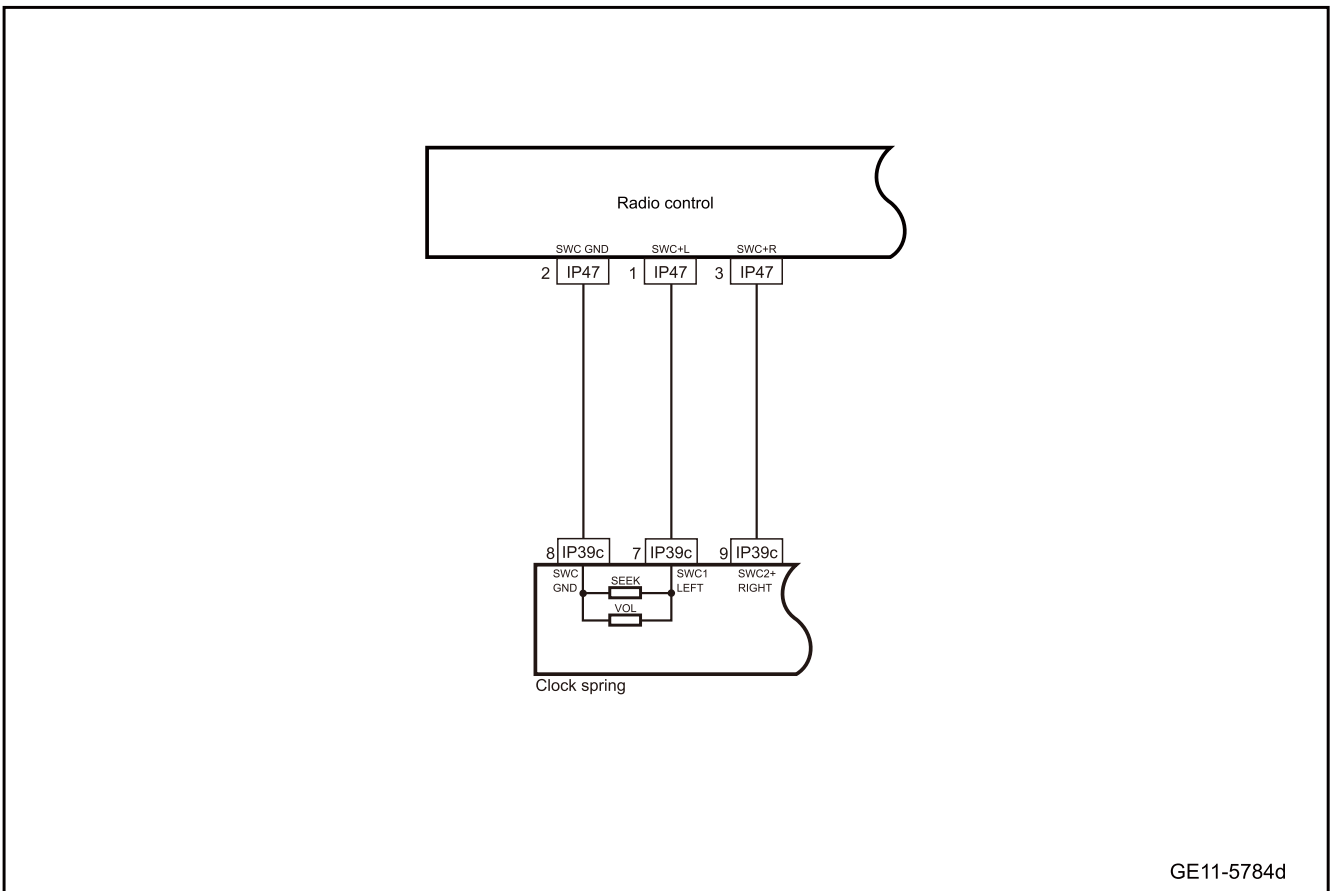
1. DTC description:

DTC	Trouble description
B138411	Steering wheel buttons are shorted to ground
B138412	Steering wheel buttons are shorted to power supply
B13BE71	Multimedia Control buttons on Steering Wheel are stuck

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138411	Hold for 300 ms to MCU terminal 0V	1. The supply voltage is 9V-16V.	1. Head unit 2. Circuit 3. Steering wheel buttons
B138412	To MCU end 3.3V for 300 ms		
B13BE71	The message of pressing the button is continuously detected for more than 120 seconds (executed according to project specifications, item 9.4.1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Primary check.
--------	----------------

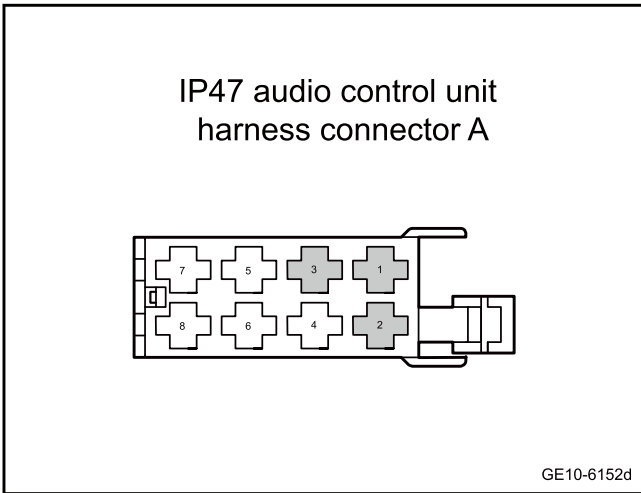
- A. Check the appearance of the clock spring for signs of damage, rust, dirt, etc.
- B. Check the clock spring harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

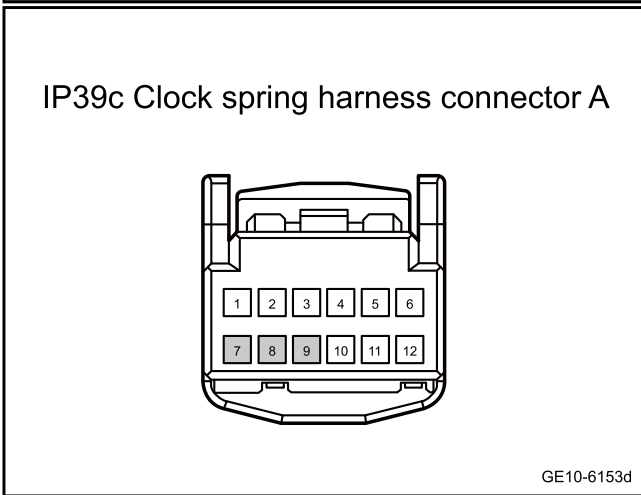
Step 2 Check whether the circuit between the head unit and clock spring is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP47.
- C. Disconnect the clock spring harness connector IP39c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP47(2)	IP39c(8)	Standard resistance: less than 1Ω
IP47(1)	IP39c(7)	
IP47(3)	IP39c(9)	

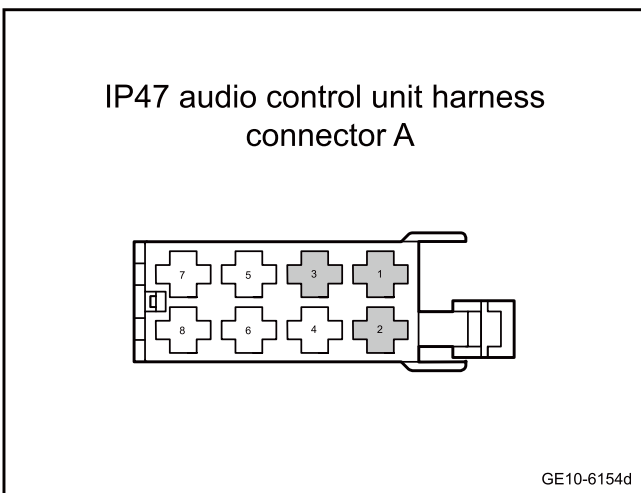
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the head unit and clock spring is short to the power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP47.
- C. Disconnect the clock spring harness connector IP39c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP47(2)	Vehicle body is grounded.	Standard voltage: 0V
IP47(1)		

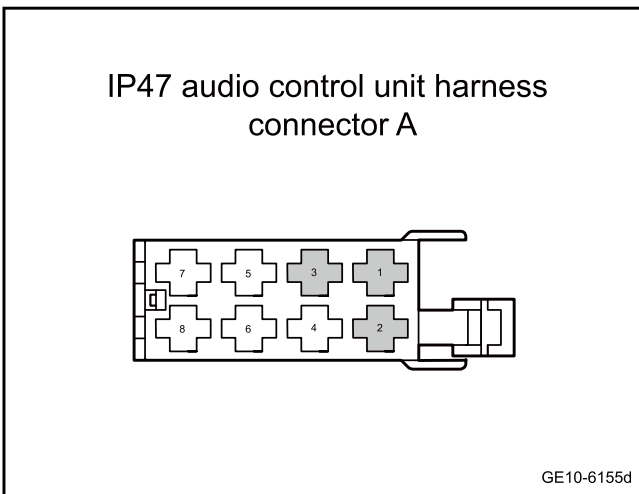
Measure terminal 1	Measure terminal 2	Standard value
IP47(3)		

F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the head unit and clock spring is short to grounding.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP47.
- C. Disconnect the clock spring harness connector IP39c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP47(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP47(1)		
IP47(3)		

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace clock spring.

- A. To replace the clock spring, please refer to [Replacement of Clock Spring](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 Change the head unit.

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [11.2.6.7 Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 7 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 System is normal.

11.2.6.21 FL loudspeaker fault(Type II)

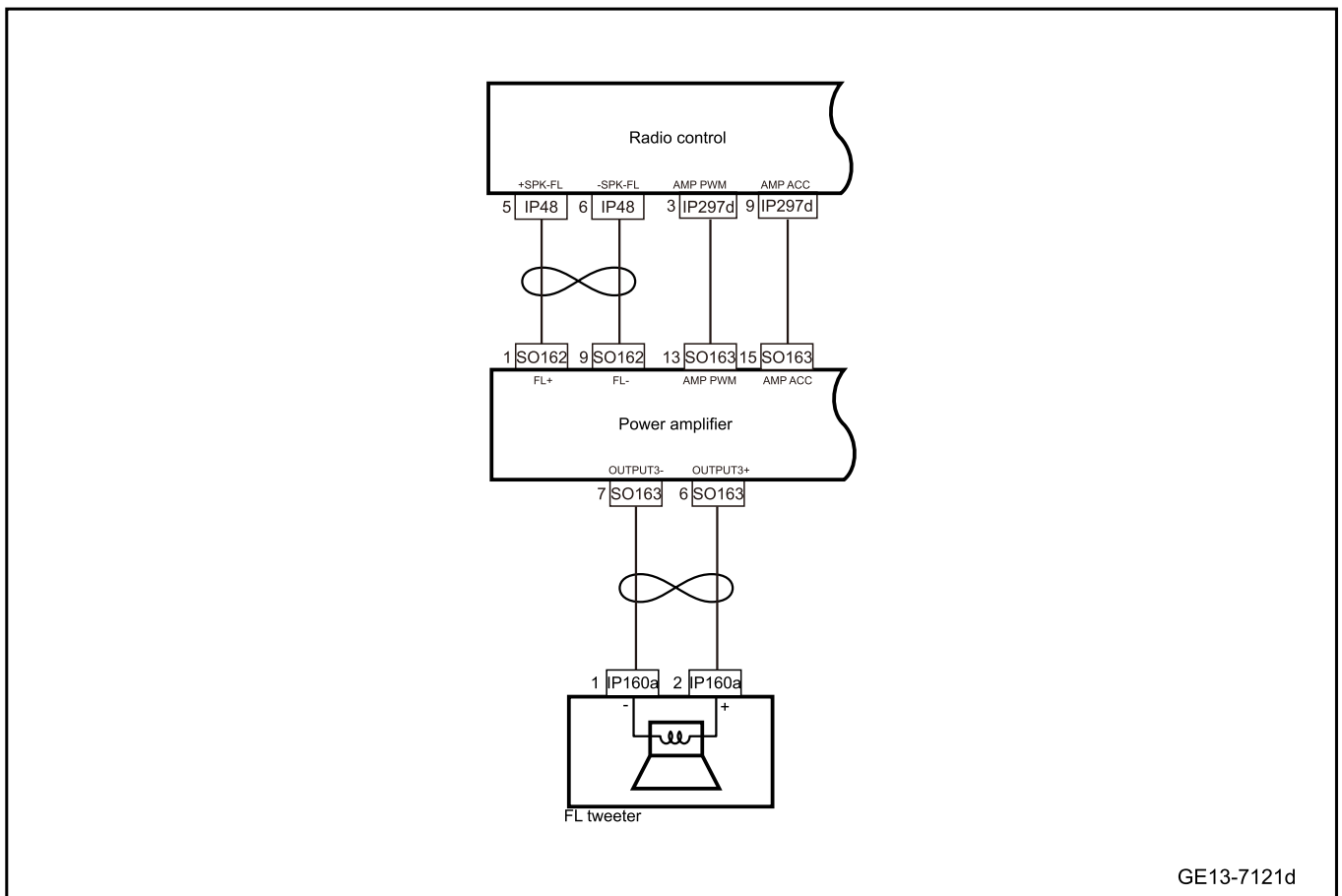
1. DTC description:

DTC	Trouble description
B138611	Power amplifier FL short circuit to ground
B138612	Power amplifier FL short circuit to power supply
B138613	Power amplifier FL circuit open

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138611	Short-circuited to ground or overloaded for 1200 milliseconds	1. The power supply voltage is 9V -16V 2. MMI is started	1. Circuit 2. FL tweeter 3. Power amplifier 4. Head unit
B138612	Current is short-circuited to the battery for 1,200 ms		
B138613	The amplifier is turned on for 300 ms		

3. Circuit diagram:



This manual is only used to diagnose the fault of the front left tweeter configured with power amplifier. Please refer to this manual for diagnosis of the fault of the speaker of other configured models.

4. Diagnosis steps:

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the front left tweeter for signs of basin frame damage and sound basin damage.
- B. Check the FL tweeter, head unit and power amplifier harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

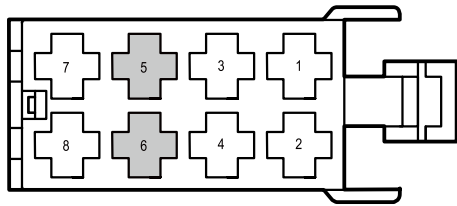
No

Repair or replace the faulty part.

Yes

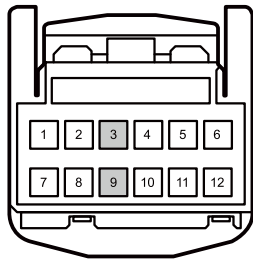
Step 3	Check the circuit between the power amplifier and the head unit.
--------	--

IP48 radio control harness connector



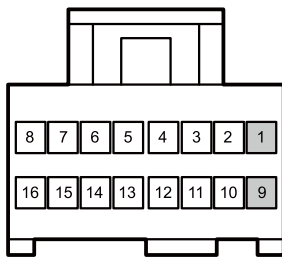
GE02-7365d

IP297d radio control harness connector



GE11-7927d

SO162 power amplifier harness connector



GE11-7926d

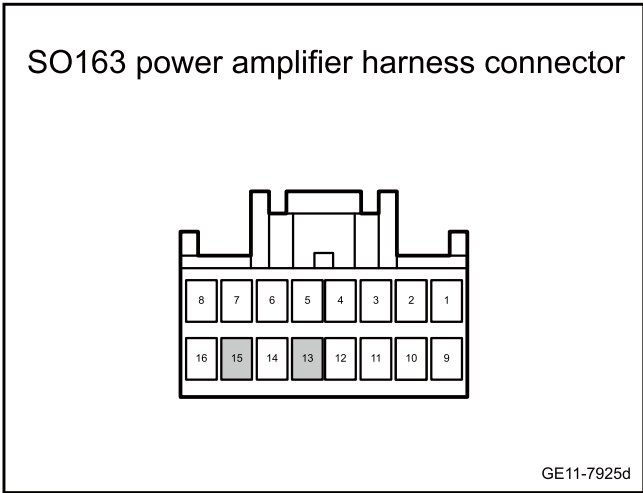
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the power amplifier harness connectors SO162 and SO163.
- C. Disconnect the head unit harness connector IP48 and IP297d.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP48(5)	SO162(1)	Standard resistance: less than 1Ω
IP48(6)	SO162(9)	
IP297d(3)	SO163(13)	
IP297d(9)	SO163(15)	
IP48(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP48(6)		
IP297d(3)		
IP297d(9)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP48(5)	Vehicle body is grounded.	Standard voltage: 0V
IP48(6)		
IP297d(3)		
IP297d(9)		

- G. Confirm whether the measured value meets the standard.

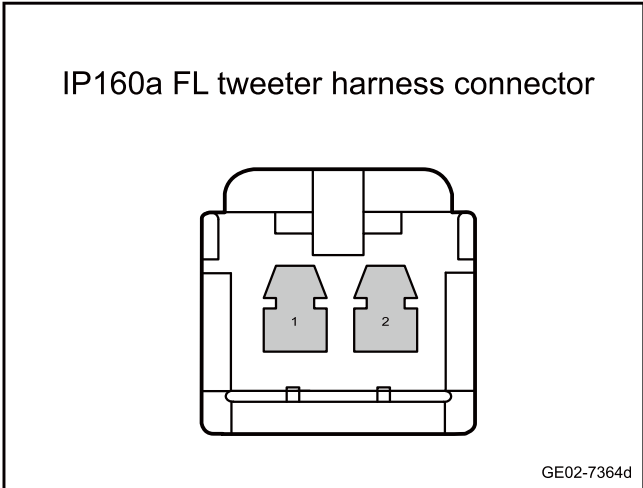


No

Repair or replace the harness.

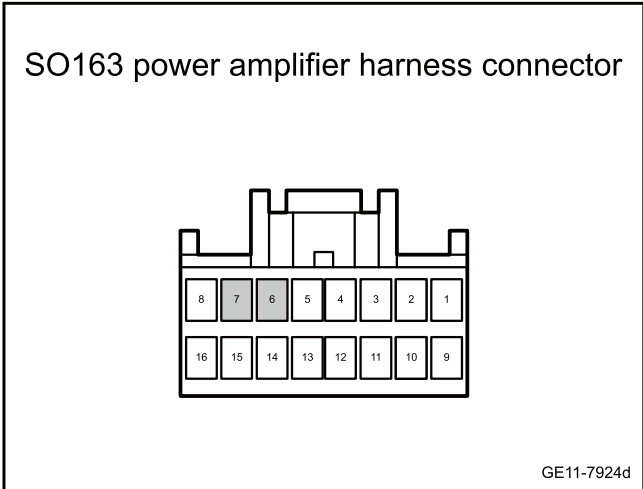
Yes

Step 4 Check the circuit between the left front tweeter and the power amplifier.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect harness connector of front left tweeter IP160a
- C. Disconnect the power amplifier harness connector SO163.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO163(6)	IP160a(2)	Standard resistance: less than 1Ω
SO163(7)	IP160a(1)	
SO163(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO163(7)		



- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO163(6)	Vehicle body is grounded.	Standard voltage: 0V

Measure terminal 1	Measure terminal 2	Standard value
SO163(7)		

G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace front left tweeter

A. Replace front left tweeter, refer to [Replacement of front left tweeter](#)

B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replacement of power amplifier

A. To replace the BMS, please refer to [Replacement of Power Amplifier](#)

B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Reprogram and reset the head unit.

A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)

B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Change the head unit.

A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

11.2.6.22 FR loudspeaker fault(Type II)

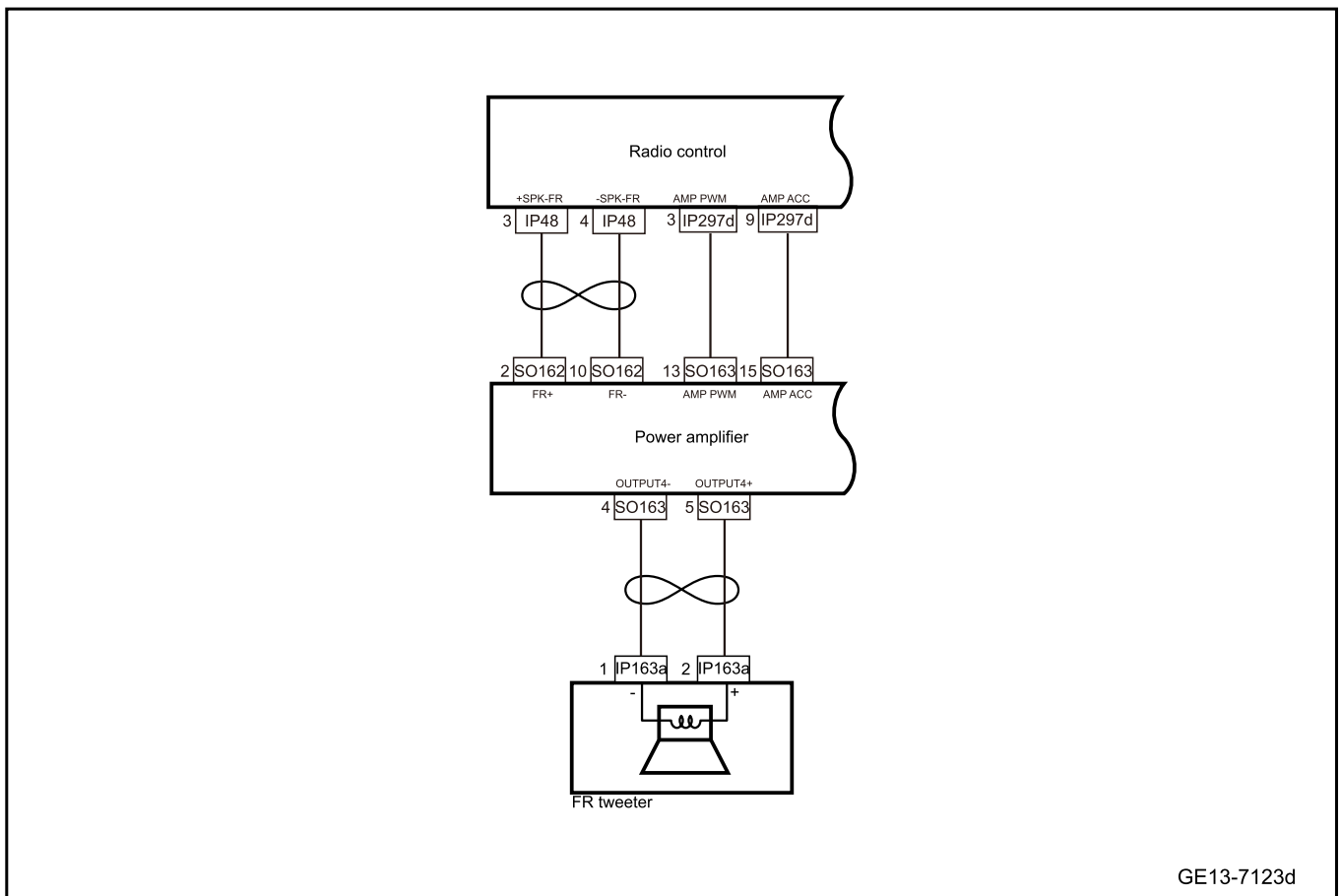
1. DTC description:

DTC	Trouble description
B138511	Power amplifier FR is short to GND
B138512	Power amplifier FR is short to power supply
B138513	Power amplifier FR is open

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138511	Short-circuited to ground or overloaded for 1200 milliseconds	1. The power supply voltage is 9V -16V 2. MMI is started	1. Circuit 2. FR tweeter 3. Power amplifier 4. Head unit
B138512	Current is short-circuited to the battery for 1,200 ms		
B138513	The amplifier is turned on for 300 ms		

3. Circuit diagram:



GE13-7123d

This manual is only used to diagnose the fault of the right front tweeter configured with power amplifier. For the fault of other configured models, please refer to this manual for diagnosis.

4. Diagnosis steps:

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the FR tweeter for the signs of frame damage and cone damage, etc.
- B. Check the power amplifier, right front tweeter and head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

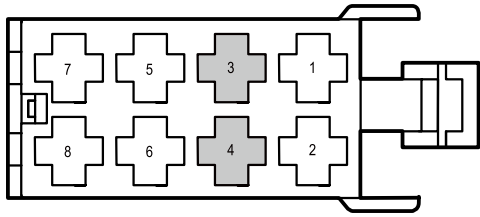
No

Repair or replace the faulty part.

Yes

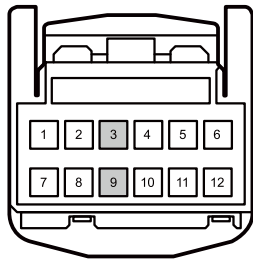
Step 3	Check the circuit between the power amplifier and the head unit.
--------	--

IP48 radio control harness connector



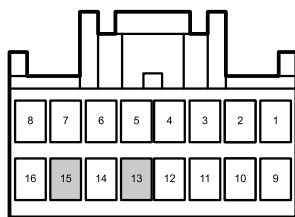
GE02-7368d

IP297d radio control harness connector



GE11-7927d

SO163 power amplifier harness connector



GE11-7925d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the power amplifier harness connectors SO162 and SO163.
- C. Disconnect the head unit harness connector IP48.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP48(3)	SO162(2)	Standard resistance: less than 1Ω
IP48(4)	SO162(10)	
IP297d(3)	SO163(13)	
IP297d(9)	SO163(15)	
IP48(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP48(4)		
IP297d(3)		
IP297d(9)		

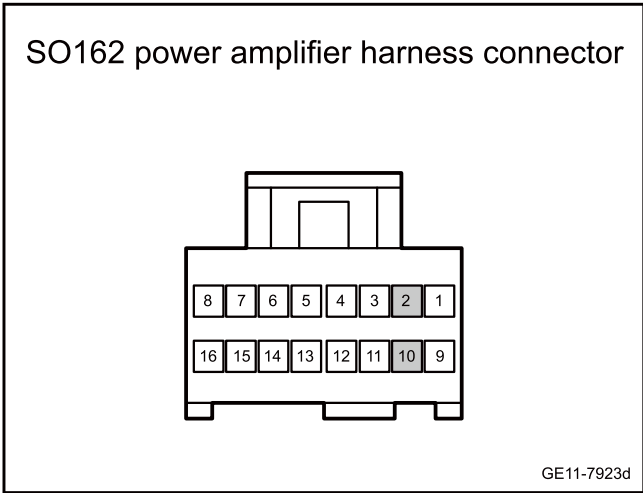
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP48(3)	Vehicle body is grounded.	Standard voltage: 0V
IP48(4)		
IP297d(3)		
IP297d(9)		

- G. Confirm whether the measured value meets the standard.

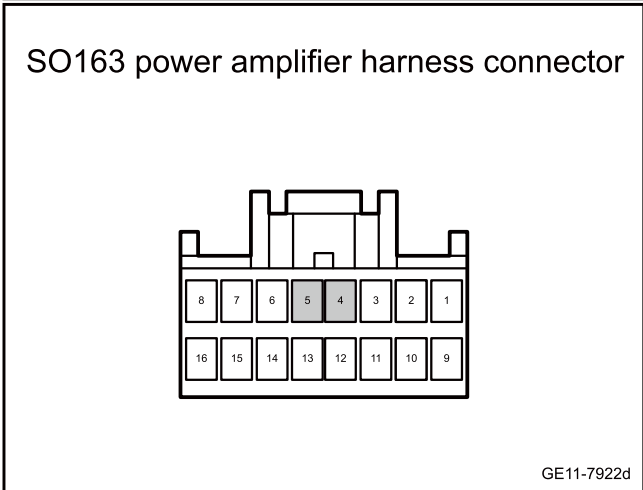
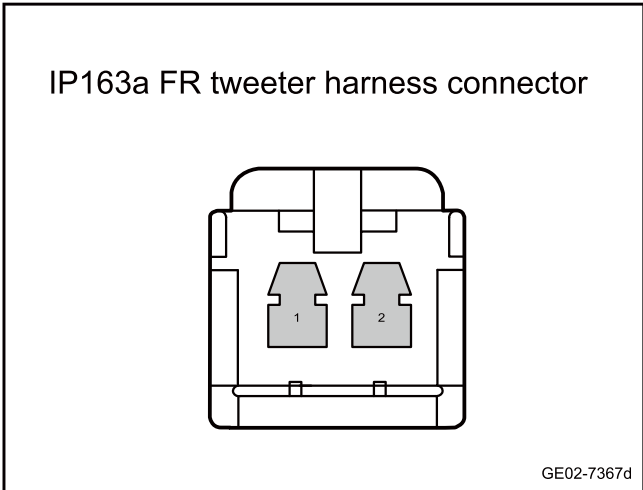
No

Repair or replace the harness.



Yes

Step 4 Overhaul whether the circuit between the radio control unit and FR tweeter is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector IP163a of FR tweeter speaker
- C. Disconnect the power amplifier harness connector SO163.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO163(4)	IP163a(1)	Standard resistance: less than 1Ω
SO163(5)	IP163a(2)	
SO163(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO163(5)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP163a(1)	Vehicle body is grounded.	Standard voltage: 0V
IP163a(2)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the FR tweeter speaker.

- A. Replace the left and right front tweeter, refer to [Replacement of the Front Tweeter](#).
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replacement of Power Amplifier

- A. To replace the Power Amplifier, please refer to [Replacement of Power Amplifier](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Change the head unit.

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.2.6.23 RL loudspeaker fault(Type II)

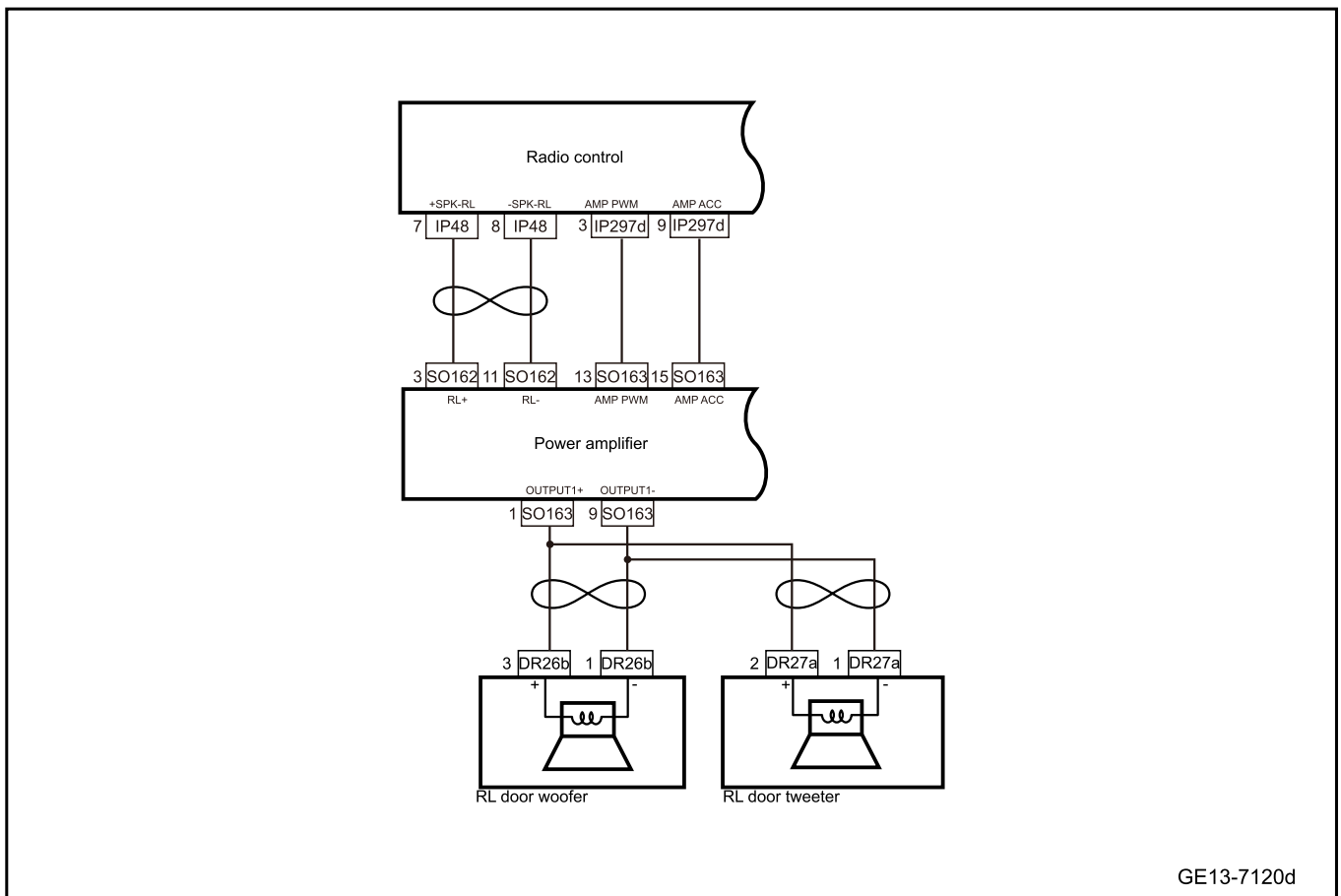
1. DTC description:

DTC	Trouble description
B138811	Power amplifier RL short to GND
B138812	Power amplifier RL short to power supply
B138813	Power amplifier RL open circuit

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138811	Short-circuited to ground or overloaded for 1200 milliseconds	1. The power supply voltage is 9V -16V 2. MMI is started	1. Circuit 2. RL speaker 3. Power amplifier 4. Head unit
B138812	Current is short-circuited to the battery for 1,200 ms		
B138813	The amplifier is turned on for 300 ms		

3. Circuit diagram:



This manual is only used to diagnose the fault of the left rear speaker equipped with a power amplifier. Please refer to this manual for diagnosis of the fault of the left rear speaker of other configured models.

4. Diagnosis steps:

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the RL tweeter and woofer for signs of frame damage or cone damage.
- B. Check the head unit and RL tweeter and woofer, head unit and power amplifier harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

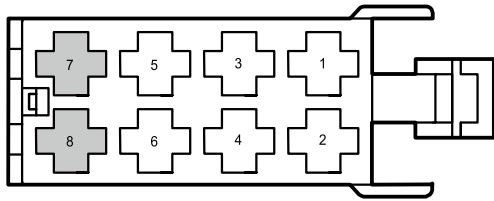
No

Repair or replace the faulty part.

Yes

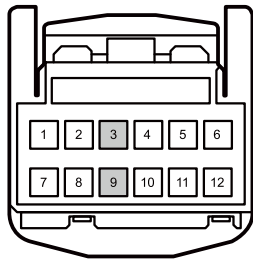
Step 3	Check the circuit between the power amplifier and the head unit.
--------	--

IP48 radio control harness connector



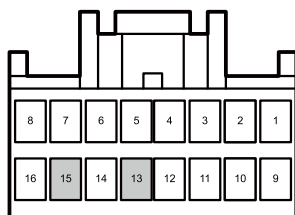
GE02-7371d

IP297d radio control harness connector



GE11-7927d

SO163 power amplifier harness connector



GE11-7925d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power amplifier harness connectors SO162 and SO163.
- C. Disconnect the head unit harness connector IP48 and IP297d.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP48(7)	SO162(3)	Standard resistance: less than 1Ω
IP48(8)	SO162(11)	
IP297d(3)	SO163(13)	
IP297d(9)	SO163(15)	
IP48(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP48(8)		
IP297d(3)		
IP297d(9)		

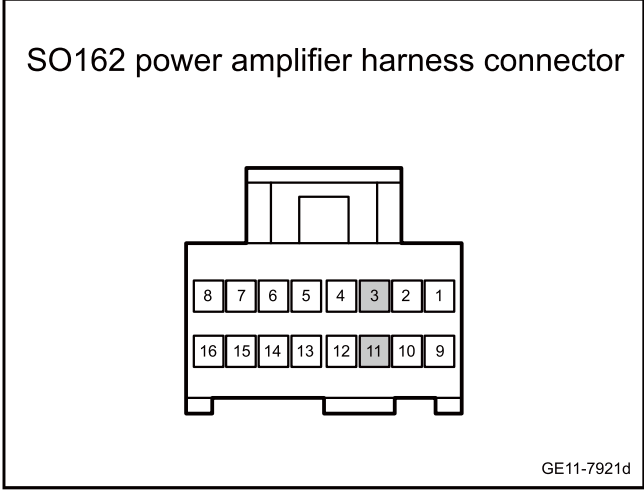
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP48(7)	Vehicle body is grounded.	Standard voltage: 0V
IP48(8)		
IP297d(3)		
IP297d(9)		

- G. Confirm whether the measured value meets the standard.

No

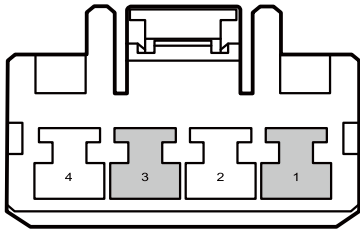
Repair or replace the harness.



Yes

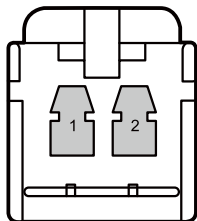
Step 4 | Check whether the line between power amplifier and RL speaker is open.

DR26b RL door woofer harness connector



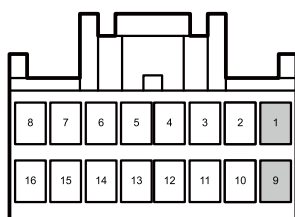
GE02-7369d

DR27a RL door tweeter harness connector



GE02-7370d

SO163 power amplifier harness connector



GE11-7920d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR26b of RL door woofer.
- C. Disconnect the harness connector DR27a of RL door tweeter.
- D. Disconnect the power amplifier harness connector SO163.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO163(1)	DR26b(3)	Standard resistance: less than 1Ω
SO163(9)	DR26b(1)	
SO163(1)	DR27a(2)	
SO163(9)	DR27a(1)	Standard resistance: 10KΩ or higher
SO163(1)	Vehicle body is grounded.	
SO163(9)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO163(1)	Vehicle body is grounded.	Standard voltage: 0V
SO163(9)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 5 Replace the RL door woofer.

- A. Replace the RL door woofer, refer to [Replacement of RL door woofer](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the RL door tweeter.

- A. Replace the RL door tweeter, refer to [Replacement of RL door tweeter](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replacement of power amplifier

- A. To replace the power amplifier, please refer to [Replacement of power amplifier](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Change the head unit.

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

11.2.6.24 RR loudspeaker fault(Type II)

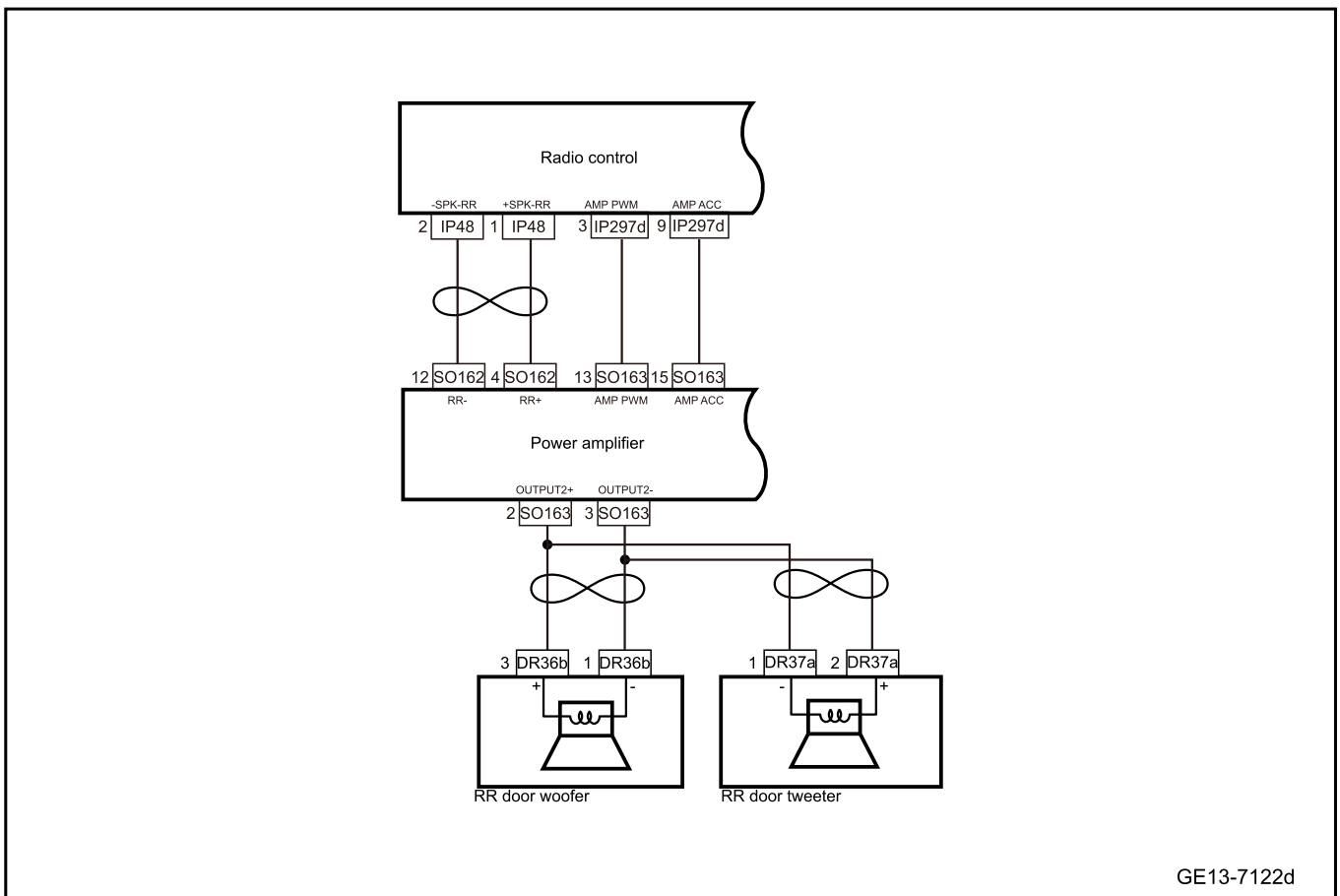
1. DTC description:

Diagnostic Trouble Code	Description
B138711	Power amplifier RR is short to GND.
B138712	Power amplifier RR is short to power supply.
B138713	Power amplifier RR is open.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138711	Short-circuited to ground or overloaded for 1200 milliseconds	1. The power supply voltage is 9V -16V 2. MMI is started	1. Circuit 2. Right rear amplifier 3. Power amplifier 4. Head unit
B138712	Current is short-circuited to the battery for 1,200 ms		
B138713	The amplifier is turned on for 300 ms		

3. Circuit diagram:



This manual is only used to diagnose the fault of the right rear speaker equipped with a power amplifier. Please refer to this manual for diagnosis of the fault of the right rear speaker of other configured models.

4. Diagnosis steps:

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the right rear woofer and tweeter for signs of the damage of the frame and cone.
- B. Check the harness connector of the head unit and the right rear woofer and tweeter and power amplifier for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

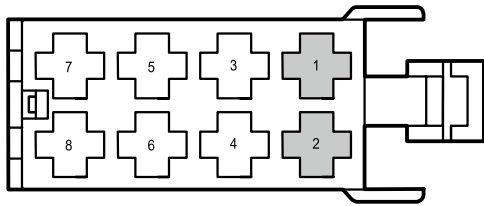
No

Repair or replace the faulty part.

Yes

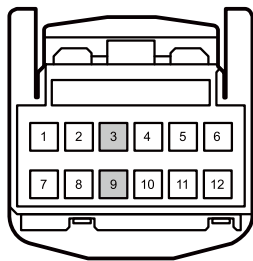
Step 3	Check the circuit between the power amplifier and the head unit.
--------	--

IP48 radio control unit harness connector



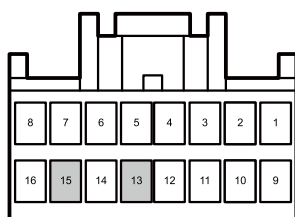
GE02-7374d

IP297d radio control harness connector



GE11-7927d

SO163 power amplifier harness connector



GE11-7925d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the power amplifier harness connectors SO162 and SO163.
- C. Disconnect the head unit harness connector IP48.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP48(1)	SO162(4)	Standard resistance: less than 1Ω
IP48(2)	SO162(12)	
IP297d(3)	SO163(13)	
IP297d(9)	SO163(15)	
IP48(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP48(2)		
IP297d(3)		
IP297d(9)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

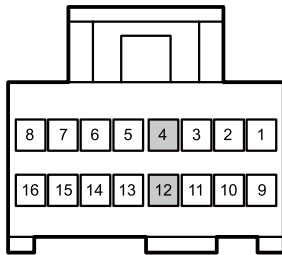
Measure terminal 1	Measure terminal 2	Standard value
IP48(1)	Vehicle body is grounded.	Standard voltage: 0V
IP48(2)		
IP297d(3)		
IP297d(9)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

SO162 power amplifier harness connector



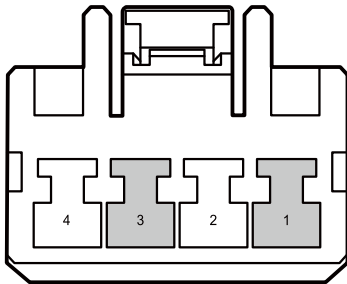
GE11-7919d

Yes

Step 4

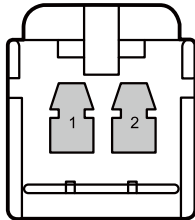
Check whether the circuit between the power amplifier and the right rear loudspeaker is open.

DR36b RR door woofer harness connector



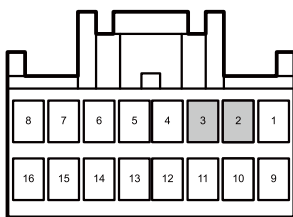
GE02-7372d

DR37a RR door tweeter harness connector



GE02-7373d

SO163 power amplifier harness connector



GE11-7918d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR36b of the woofer of rear right door.
- C. Disconnect the harness connector DR 37 of the tweeter of the right rear door.
- D. Disconnect the power amplifier harness connector SO163.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO163(2)	DR36b(3)	Standard resistance: less than 1Ω
SO163(3)	DR36b(1)	
SO163(2)	DR37a(2)	
SO163(3)	DR37a(1)	Standard resistance: 10KΩ or higher
SO163(2)	Vehicle body is grounded.	
SO163(3)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO163(2)	Vehicle body is grounded.	Standard voltage: 0V
SO163(3)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the woofer of the right rear door.

- A. Replace the RL door woofer, refer to [Replacement of RL door woofer](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Replace the tweeter of the right rear door.
--------	---

- A. Replace the RL door tweeter, refer to [Replacement of RL door tweeter](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replacement of power amplifier
--------	--------------------------------

- A. To replace the power amplifier, please refer to [Replacement of Power Amplifier](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Reprogram and reset the head unit.
--------	------------------------------------

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Change the head unit.
--------	-----------------------

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

11.2.6.25 Microphone does not work (Type II)

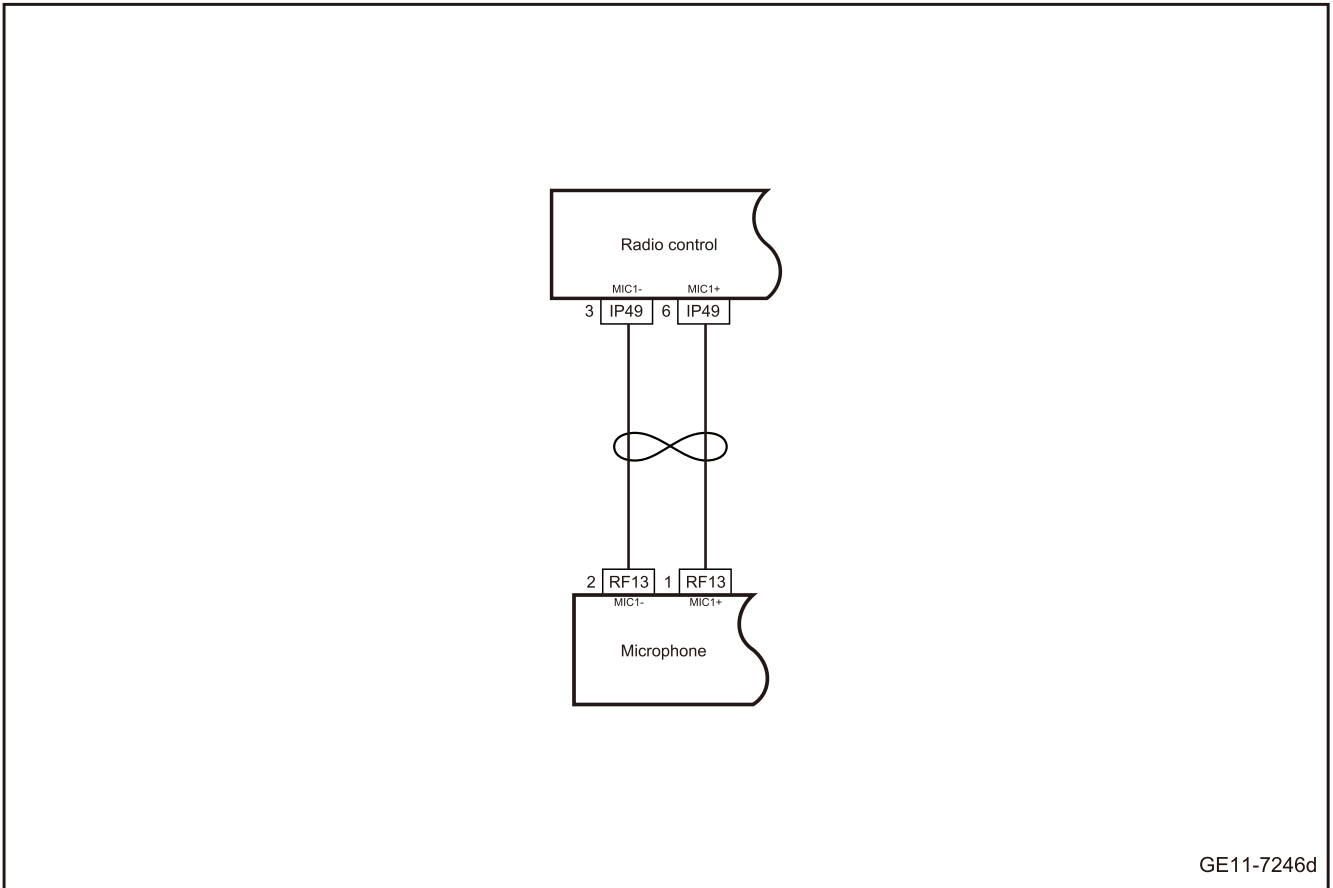
1. DTC description:

DTC	Trouble description
B138111	MIC is short to GND
B138112	MIC is short to power supply
B138113	MIC open circuit

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B138111	Microphone is short-circuited to GND for 300ms	1. The supply voltage is 9V-16V.	1. Circuit 2. Microphone 3. Head unit
B138112	Microphone is short-circuited to battery for 300ms		
B138113	Microphone output circuit is open for 300ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent fault check](#)

Yes

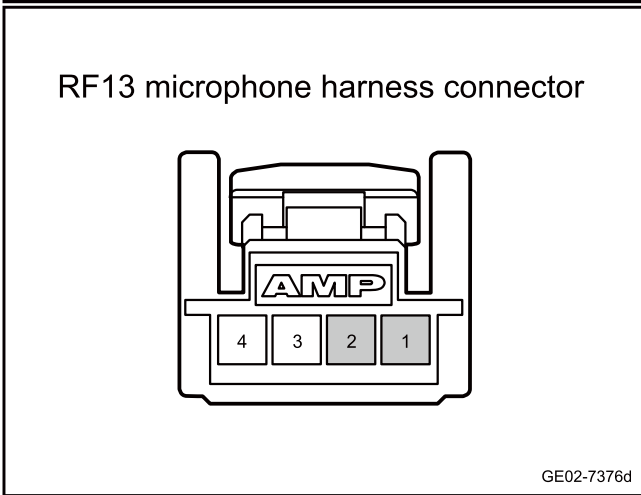
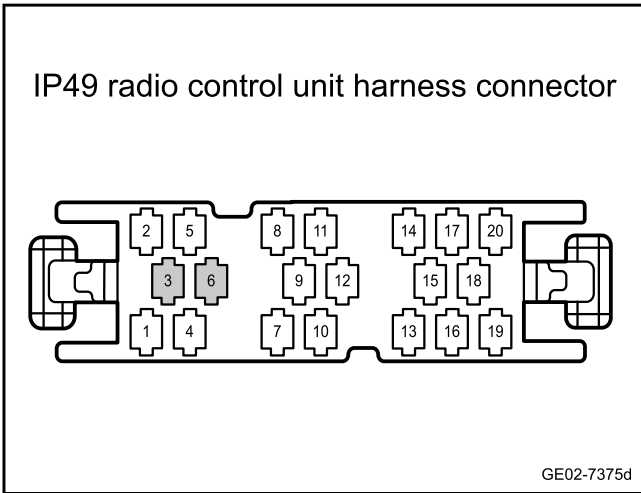
Step 2	Primary check.
--------	----------------

- A. Check the appearance of microphone for signs of damage, rust, dirt, etc.
- B. Check the microphone harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the head unit and microphone is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP49(3)	RF13(2)	Standard resistance: less than 1Ω
IP49(6)	RF13(1)	
IP49(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP49(6)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP49(3)	Vehicle body is grounded.	Standard voltage: 0V
IP49(6)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Replace the microphone.

- A. Replace microphone, refer to [Replacement of microphone](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 5 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Change the head unit.

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 7 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 System is normal.

11.2.6.26 AVM camera circuit fault

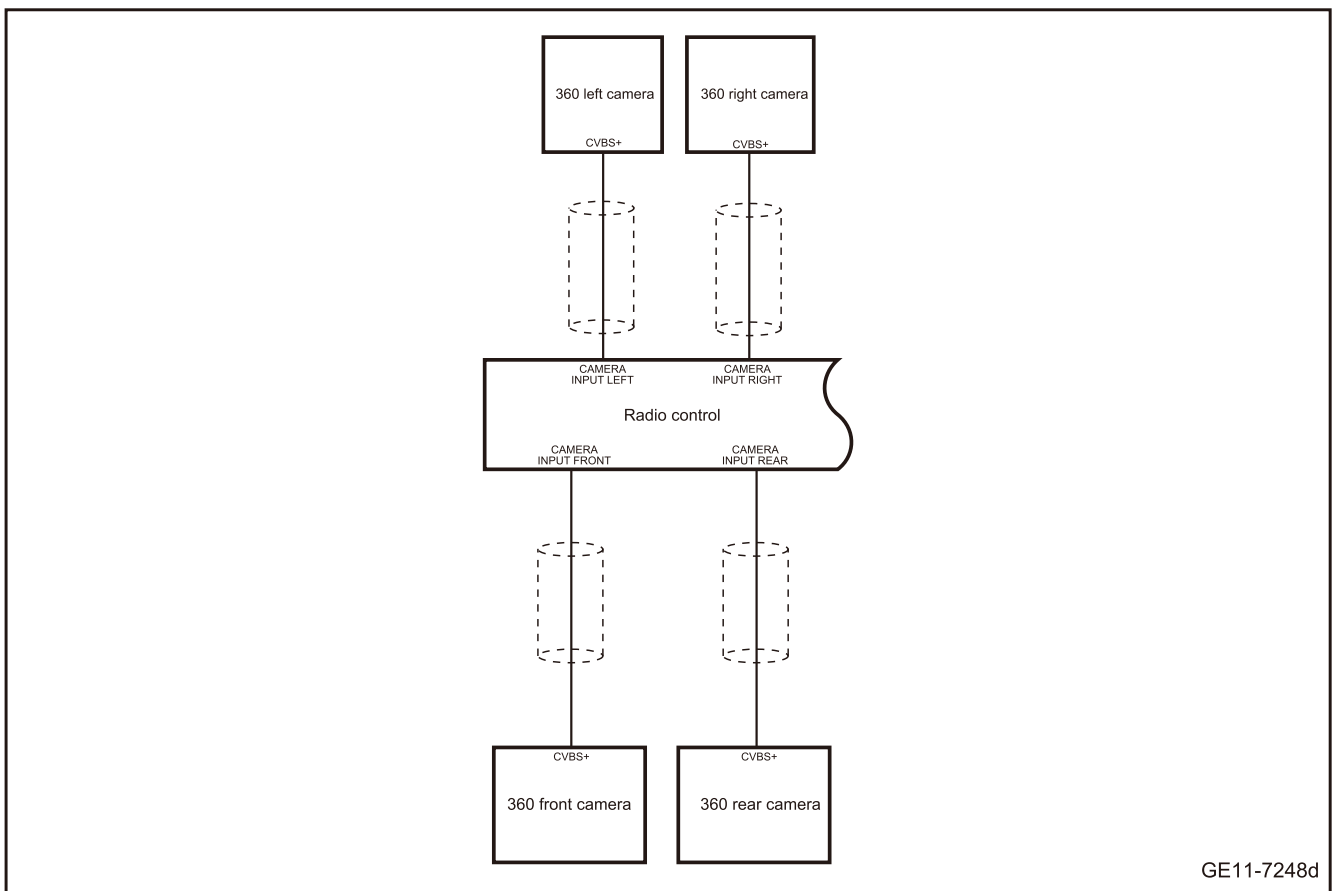
1. DTC description:

DTC	Trouble description
B1D0013	AVM front camera harness open circuit
B1D0113	AVM left camera harness open circuit
B1D0213	AVM right camera harness open circuit
B1D0313	AVM rear camera harness open circuit

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0013	Open LVDS cable of AVM front camera for 300ms	Power supply voltage range is 9V-16V and MMI power on	1. Circuit 2. Head unit 3.360. front camera 4.360. rear camera 5.360. left camera 6.360. right camera
B1D0113			
B1D0213			
B1D0313			

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of 360 rear camera of the model of head unit. The diagnosis of other camera fault is the same as that of 360 rear camera fault of the model of head unit.

4. Diagnosis steps:

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent fault check](#)

Yes

Step 2 Primary check.

- A. Check the 360 rear cameras for signs of damage, deformation, stain, loosening, etc.
- B. Check the 360 rear camera and head unit harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Replace 360 rear camera.

- A. To replace the 360 rear camera, please refer to [Replacement of 360 Panoramic Parking Assist Rear Camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the audio control unit

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 | System is normal.

11.2.6.27 360 AVM calibration

AVM module manual configuration

Function description

Use the host interface to execute special function procedures according to the following descriptions:

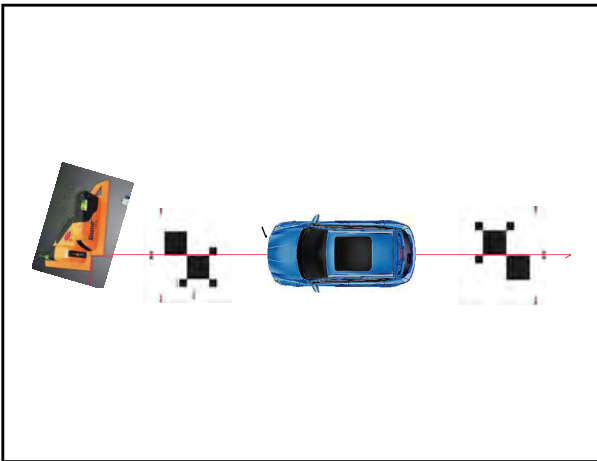
Special function	Object	Execution condition
1. 360 system calibration	In the Model 360 look-around system, 4 wide-angle cameras covering all field ranges of vehicle surroundings are established near the vehicle to process multi-channel video image collected at the same time to be a 360° body vertical view of vehicle surroundings, which is finally displayed at the vehicle screen. This helps the driver expressly check whether barriers exist in the vehicle surroundings, know the relative orientations and distances of barriers, and easily park the vehicle. The system is not only intuitive, but also improves the driver's steering and controlling vehicle parking leisurely or passing complicated pavements, effectively reducing accidents such as shaving, collision, and sinking.	<ul style="list-style-type: none"> - When replacing with a new AVM module - When replacing with new front/rear/right/left panoramic cameras

Vehicle preparation

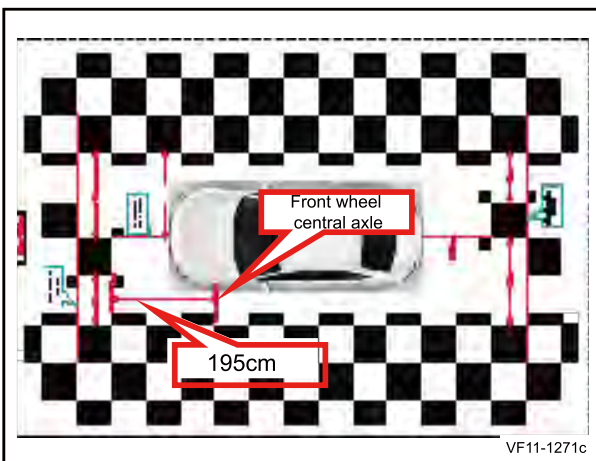
Caution

- (1) Equipment installation and calibration can only be performed by trained staffs.
- (2) It is required to ensure that the vehicle position is correct before starting calibration procedures.
- (3) It is needed to ensure that the calibration pad conforms to norms.

1. The minimum dimension of a nominal site: 6400X1000mm.
2. Ground condition: the overall nominal site is smooth and even.
3. Layout material: non-reflecting material (nonwoven) painting disposal.
4. Average illumination: illumination of more than 200 lux above each layout.
5. Lighting condition: there is no light source leading to the reflection of other grounds.

Automatic calibration**Step I: vehicle placement**

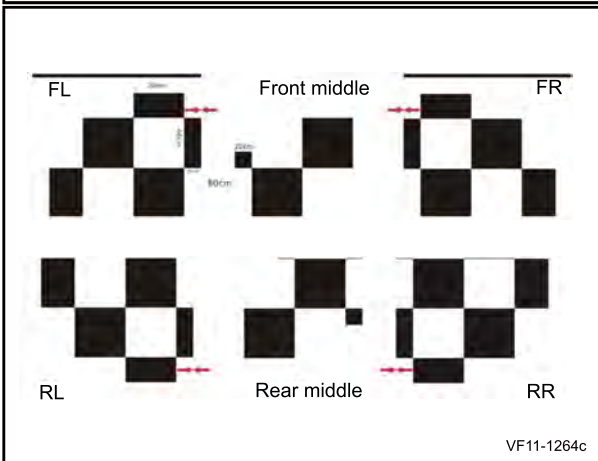
1. A hammer is used to confirm the central position in front of and behind the vehicle and marks on the ground.
2. Place a laser ruler at the front and rear mark.

Step II: Establishment of a calibration layout

1. Set up center front/center rear layout: put the front and rear layout at the position a certain distance away from the vehicle, and align the central line of the layout with the laser line.



2. Set up left/right layout: care shall be taken to left-right and front-rear directions when the left-right layout is set up. After it is completed, red arrow of the rear left and right layout shall overlap with the fixed point of the arrow on front-rear layout.

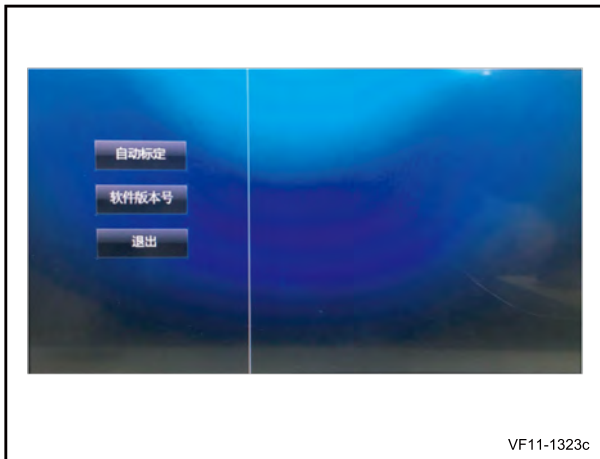


Step III: Enter factory pattern

1. When the vehicle is put into R gear/click 360 icon on the screen.
2. Click the left-side 3D button to enter 3D mode.
3. Continuously click the top right corner of 3D picture for 4 times.



Step IV: Select/start auto-calibration



1. Click the “automatic calibration” button and enter the automatic calibration picture.

In the calibration process, all left-side icons are set ash and cannot be operated.

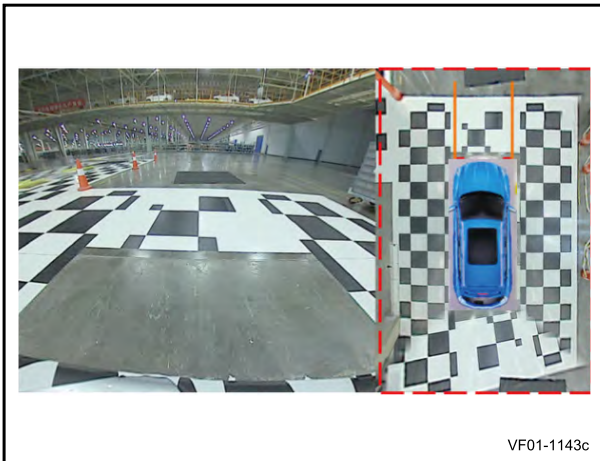
By this time, prevent the camera from being interrupted by substances in the outside world, and do not disconnect the power supply or open the door for entry or exit. The calibration will complete in a few seconds.

Step V: Selection of calibration results

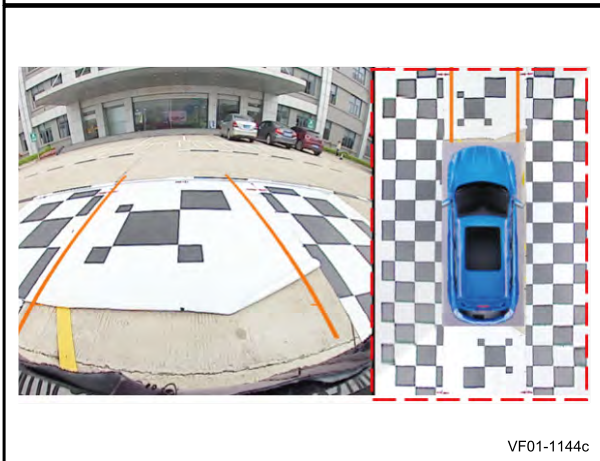


1. After the automatic calibration is completed, it will be shown whether the calibration result is successful. “application” or “cancel” will be displayed if the calibration succeeds. If “application” is clicked, the system will conduct reset and current calibration data will be applied. If “cancel” is clicked, it will return to the automatic calibration interface. If the calibration is not successful, “Calibration Again” or “Exit” is popped out. If “Calibration Again” is selected, AVM will re-enter auto-calibration. If “exit” is clicked, it will go back to the automatic calibration interface

Step VI: Check of calibration results



VF01-1143c



VF01-1144c

1. When the calibration “calibration is successful” or “calibration fails” is displayed after the automatic calibration is completed, the calibration picture within the red dashed box of panoramic image will change:

If the calibration is successful, all 4 calibration patterns are displayed intact and evenly distributed.

The calibration pattern is displayed clearly.

Black and white blocks in the center of the same calibration pattern are the same size.

After auto-calibration is completed, if “Successful Calibration” or “Unsuccessful Calibration” is displayed, the calibration pattern in the red dotted box on the panorama screen will change. The user can select "Apply" or "Cancel" depending on the calibration results.

Fault elimination prompt

1. Blank screen of channels on single or multiple video cameras:

Cable harness or joint error-check whether the cable harness connection (switch-on and switch-off) joint from the camera to the host is inserted or poorly contacted.

Camera error-hold the camera corresponding to the blank screen with hands to check whether the image and luminance change. Replace the camera and recalibrate AVM system.
2. Blank screen of the whole channel:

Check whether the AVM electronic control unit is powered on (Wire joining is connected to battery and grounding).

Check whether the electronic control unit is too hot.

Check whether video cables are connected to the host.

Check that the host function is normal. Connect external monitors to check if there is an image.

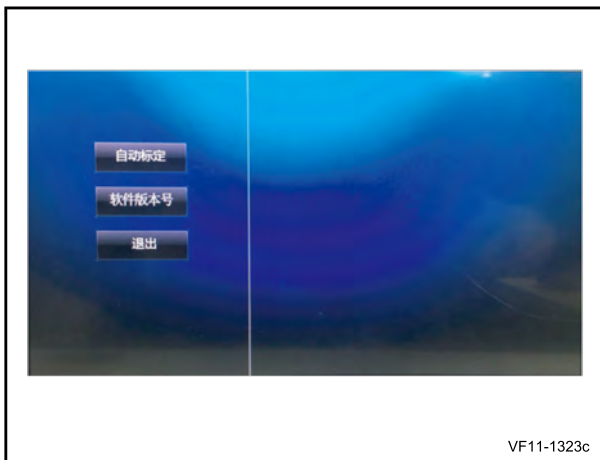
If no problem is found in the above steps, disconnect the 12V battery and conduct reconnection to check whether AVM is normal.

Step I: Enter manual-calibration

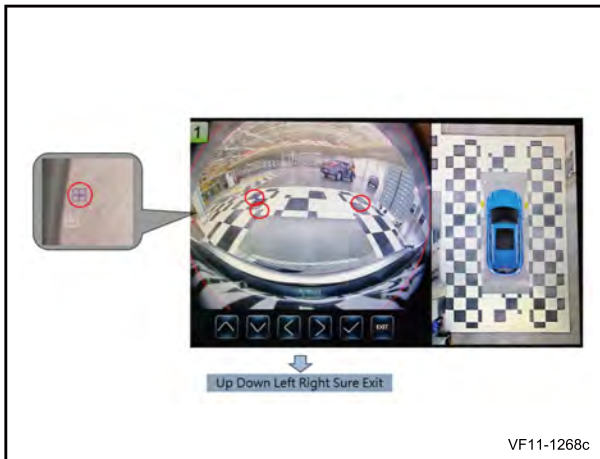
1. Park the vehicle on the fixed site, lay the calibration cloth, and then under the 3D interface, continuously click the red box area in the upper right corner to enter the calibration interface. After entering the calibration interface, click the manual-calibration button to enter the manual-calibration function.
2. When the vehicle is put into R gear/click 360 icon on the screen.
3. Click the left-side 3D button to enter 3D mode.
4. Continuously click the top right corner of 3D picture for 4 times.



5. Click the “manual calibration” button and enter the calibration picture.



Step II: Selection and adjustment of the manual-calibration interface



1. Enter the auto-calibration interface and click on the four areas around the right side of the car model to select, and enter the manual-calibration interface of a single camera display area. Click on the black box on the left side of the image below to perform a manual-calibration. When entering manual-calibration, the screen around the calibration point will be enlarged locally for the slightest movement of the calibration point.

Step III: Correspondence of manual-calibration points



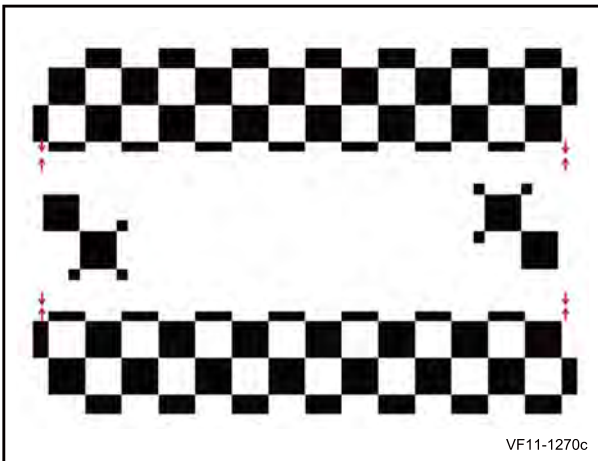
1. Upon calibration, the upper left corner of the single-channel view will display the serial number of the calibration point. In this case, it is required to move by touching the selected calibration point to the location near the numbered triangle that corresponds to the "upright" on the single-channel display screen, then move in the locally enlarged pattern, and move the calibration point to the intersection of the two nearest black squares.

Step IV: Save and application of calibration



1. Click "✓" after the fine-tuning of the calibration of single-channel view is completed, it will jump to the next calibration point for calibration, and then the panoramic splicing screen will be changed accordingly. Click the "Exit" button when 4-channel cameras are all adjusted and the effect of panorama image is OK. A prompt box will pop up at this time to remind whether to save the manual-calibration data. Click "✓", AVM will apply the new calibration data and restart. Click "×", AVM will directly restart.

Calibration point diagram



1. The calibration points are numbered so that when the camera is calibrated in different directions, the two black squares with the nearest opposite top corners of the "upright" numbers under the corresponding screen will be used as calibration points. During calibration, the serial number of the current calibration point is displayed in the upper left corner of the single-channel screen.

11.2.6.28 Wireless charging function fault

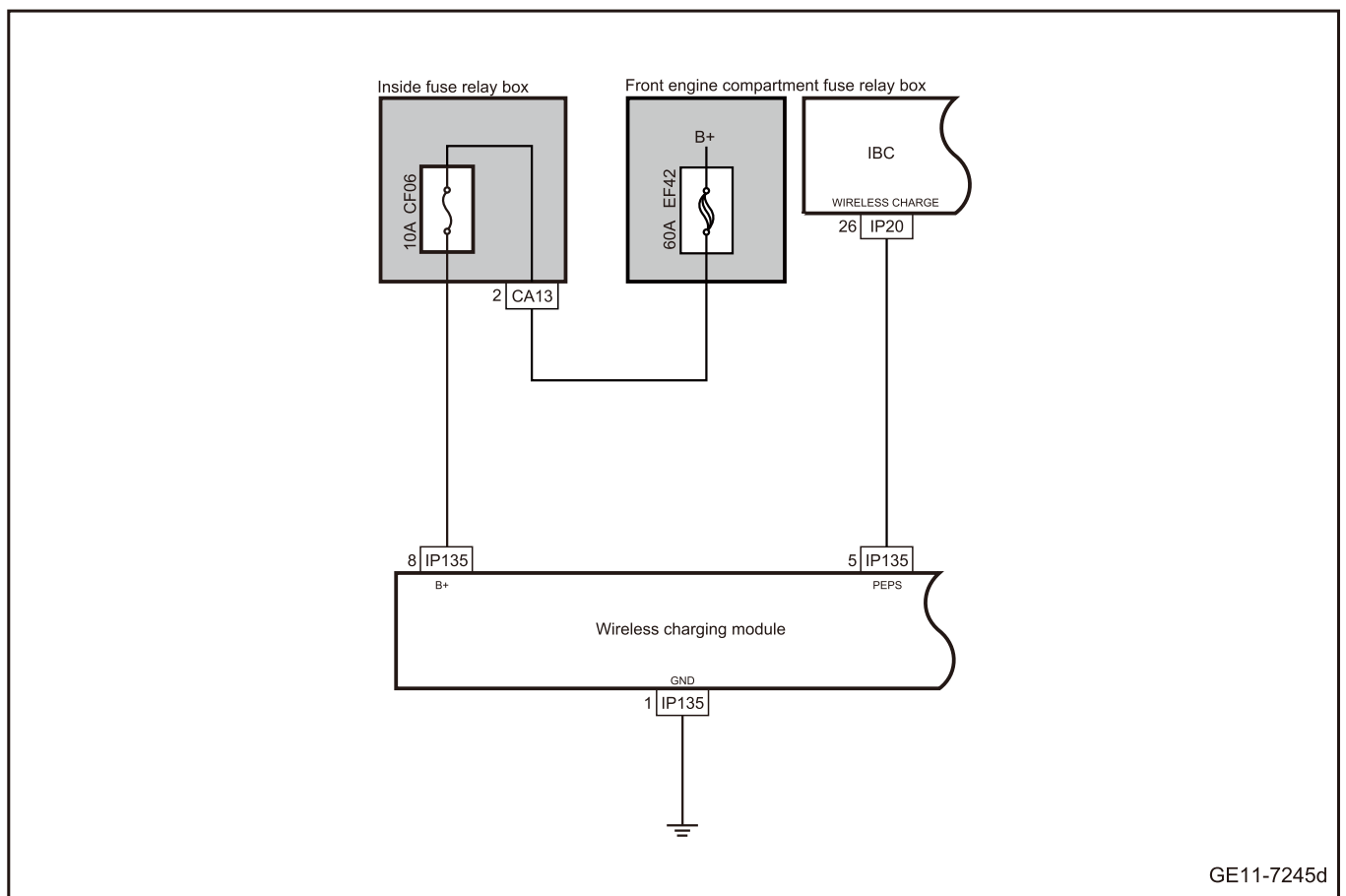
1. DTC description:

DTC	Trouble description
B13A787	Communication with wireless charging device is lost
B13A896	Wireless charging error

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B13A787	Message from WCM is lost for 600 milliseconds	<ol style="list-style-type: none"> 1. The power supply voltage is 9V-16V 2. The ignition status should be IGN ON 3. Meet the TDiagEnable condition. 	<ol style="list-style-type: none"> 1. Circuit 2. Right rear amplifier 3. Power amplifier 4. Head unit
B13A896	In wireless charging devices: turn on one of them by ignition: <ol style="list-style-type: none"> 1. Reset counter ≥ 3 2. Check and error counter ≥ 3 3. Count of Tx bit error ≥ 3 4. Byte field frame error ≥ 3 5. ID parity check error ≥ 3 	Power supply voltage is 9V-16V WCM communication normal ignition status should be ACC	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent fault check](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the rear wireless charging module for signs of damage, dirt, rust, etc.
- B. Check the wireless charging module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 3 Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 Inspect wireless charging module power supply fuse

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Check whether the fuse is blown according to the below table.

Fuse Position	Fuse Code	Fuse Rated Capacity
Front engine compartment fuse relay box	EF42	60A
Indoor fuse relay box	CF06	10A

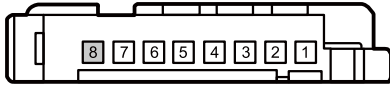
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check power circuits of wireless charging control module.

IP135 wireless charging module harness connector



GE02-7377d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(8)	Vehicle body is grounded.	Standard voltage: 11-14V

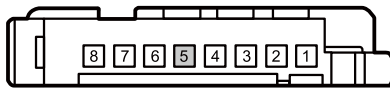
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check the circuit between the wireless charging module and the IBC.

IP135 wireless charging module harness connector



GE02-7378d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the terminals according to the table below:

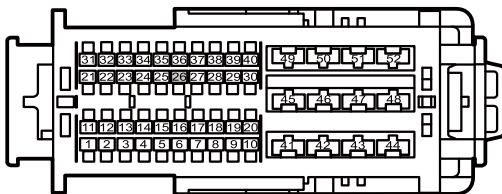
Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	IP20(26)	Standard resistance: less than 1Ω
IP135(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

IP20 IBC harness connector



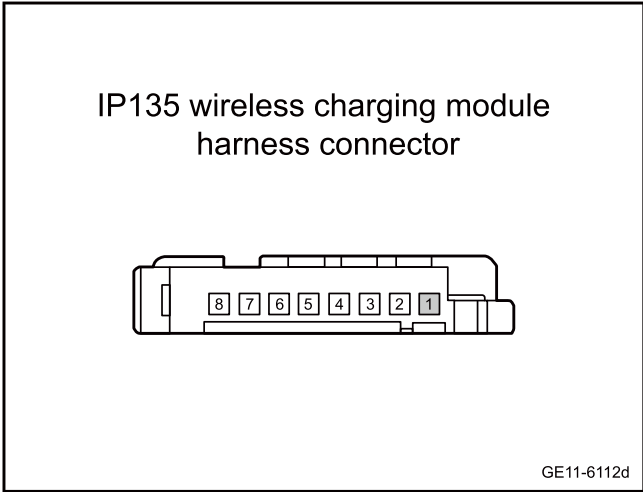
GE02-7379d

No

Repair or replace the harness.

Yes

Step 7 Inspect wireless charging module ground circuit



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace wireless charging module.

- A. To replace the wireless charging module, please refer to [Replacement of wireless charging Module](#)

Yes

System is normal.

No

Step 9 Program and set the IBC.

- A. Program and set the IBC. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Replace the IBC

- A. Replace the IBC Refer to [Replacement of IBC](#)

Next step

Step 11	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

11.2.7 Removing and installing

11.2.7.1 Replacement of woofer

Removal procedure

Caution

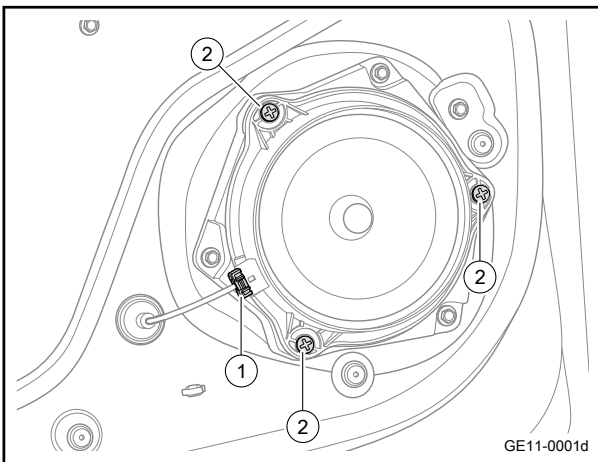
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

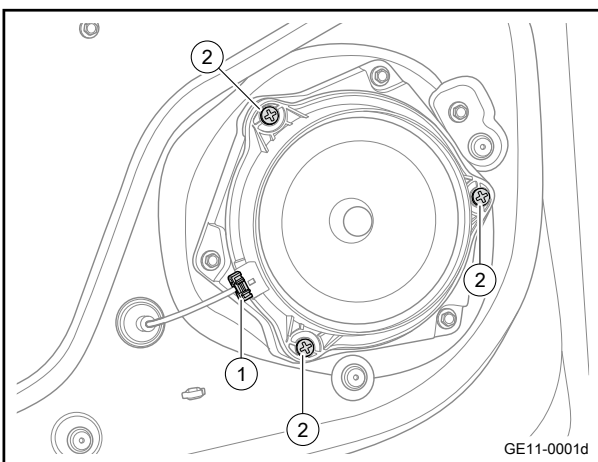
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. Refer to [Replacement of Left Front Door Exterior Trim Panel Assembly](#)
- 3 Disconnect woofer harness connector 1 of front door woofer.
- 4 Install the 3 fixing screws 2 of the front door woofer.
- 5 Remove the front door woofer.



Installation procedure

- 1 Pose the front door woofer to the installing position.
- 2 Install the 3 fixing screws 2 of the front door woofer.
Torque: 1.5N·m (metric system) 1.0lb-ft (Imperial system)
- 3 Connect the harness connector 1 of woofer of front door.



- 4 Install the interior trim panel assembly of left front door.
- 5 Connect the negative cable of battery.

11.2.7.2 Replacement of the rear left door woofer

Removal procedure

Caution

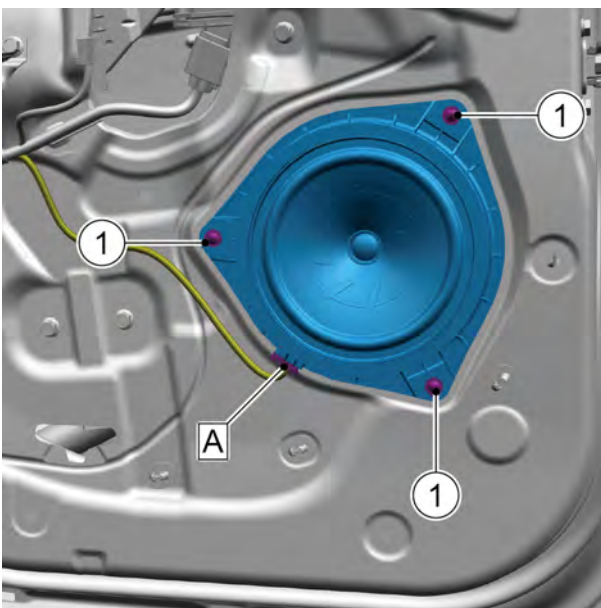
The removing and installing methods of woofer of rear doors left and right side are similar.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the interior trim panel assembly of the left rear door. Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)
- 3 Disconnect the 1 harness connector A connecting the rear door harness and the left rear door woofer.
- 4 Use the rivet removal tool to remove the 3 fixing rivets 1 connecting the left rear door woofer with the rear door inner panel.

Caution

Do not use brute force when removing rivets to avoid damage to components.

- 5 RL door woofer is taken down.



Installation procedure

- 1 Move the front left door woofer to the installing position.
- 2 Use a rivet gun to install 3 fixing rivets 1 connecting the left rear door woofer with the rear door inner panel.

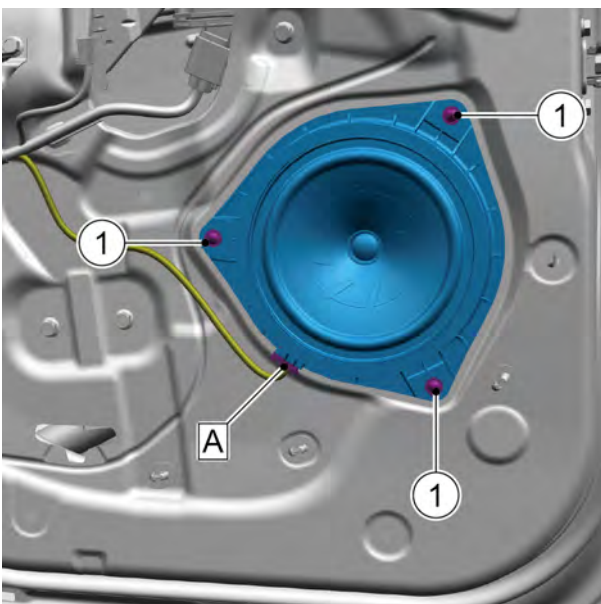
Caution

Check whether the rivets are firm after installation.

- 3 Connect the 1 harness connector A between the rear door harness and rear left door woofer.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



- 4 Install the rear door interior trim shield assembly.
- 5 Connect the negative cable of battery.

11.2.7.3 Replacement of front tweeter

Removal procedure

Caution

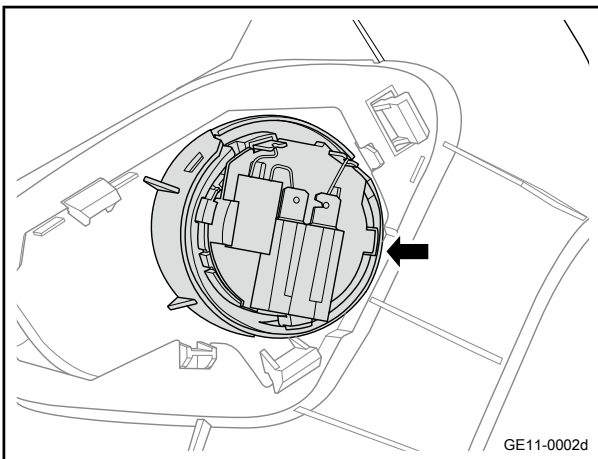
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

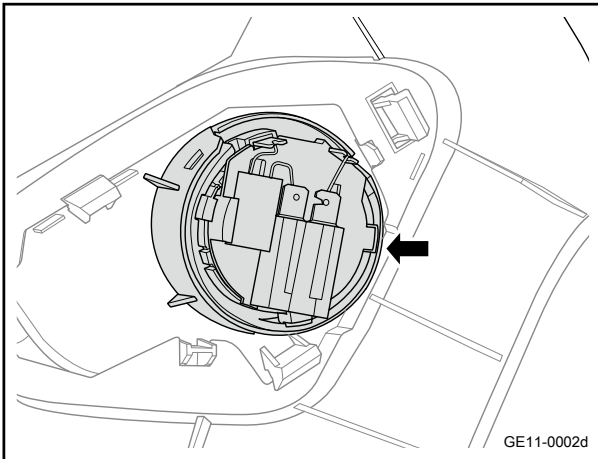
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left pillar A upper trim panel assembly. Refer to [Replacement of Left Pillar A Upper Trim Panel Assembly](#)
- 3 Front tweeter is pried.



Installation procedure



- 1 Front tweeter is installed.

- 2 Install the A-pillar upper trim panel assembly.
- 3 Connect the negative cable of battery.

11.2.7.4 Replacement of rear tweeter

Removal procedure

Caution

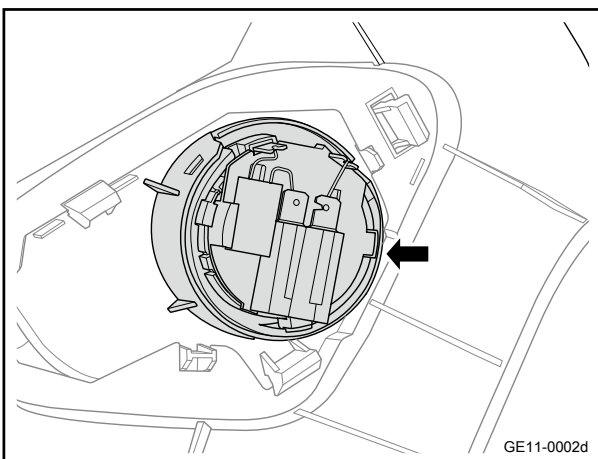
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

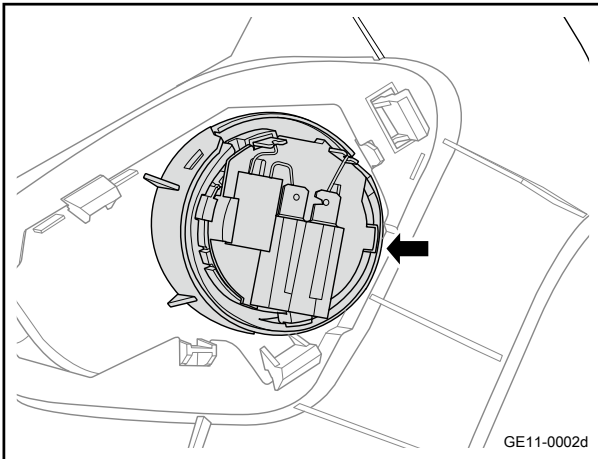
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door interior trim shield. Refer to [Replacement of Left Rear Door Interior Trim Shield](#)
- 3 Rear tweeter is pried off.



Installation procedure



1 Install the rear tweeter.

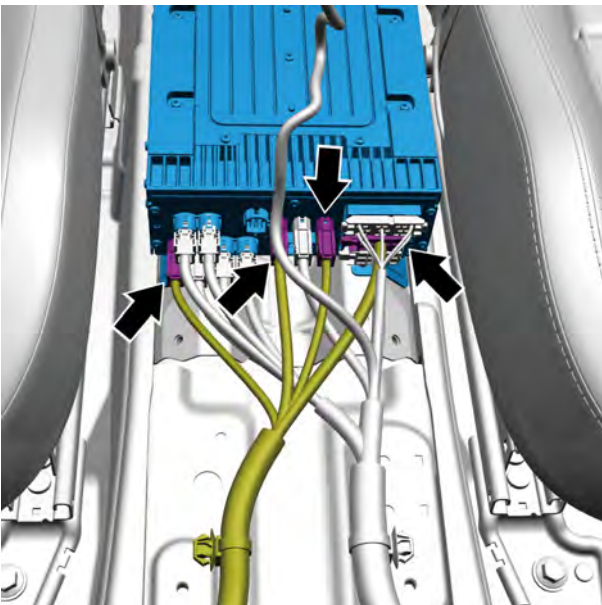
2 Install the left rear door interior trim shield.

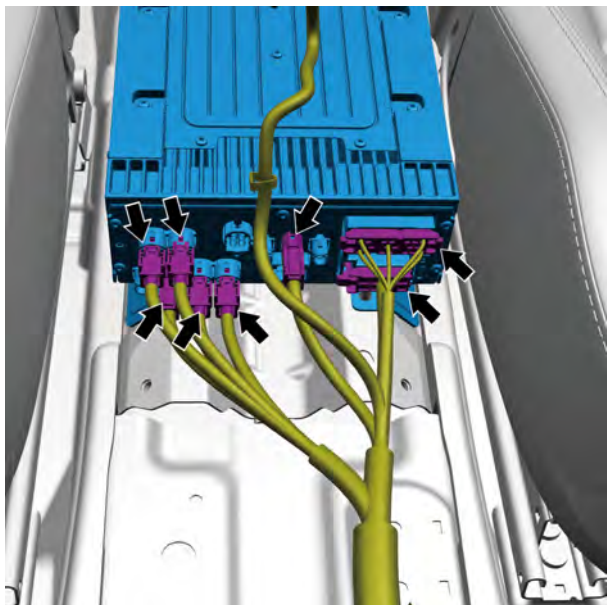
3 Connect the negative cable of battery.

11.2.7.5 Replacement of head unit

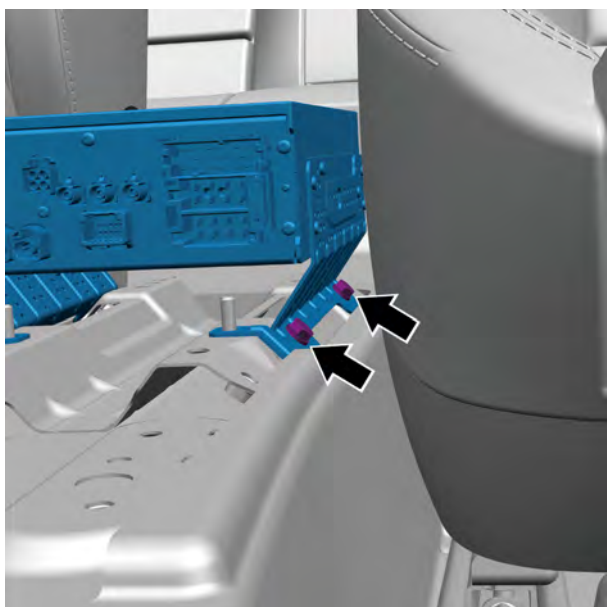
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the middle mounting bracket auxiliary fascia console. Refer to [Replacement of middle mounting bracket of the auxiliary fascia console](#)
- 3 Disconnect the 4 harness connectors of and floor harness and the head unit.

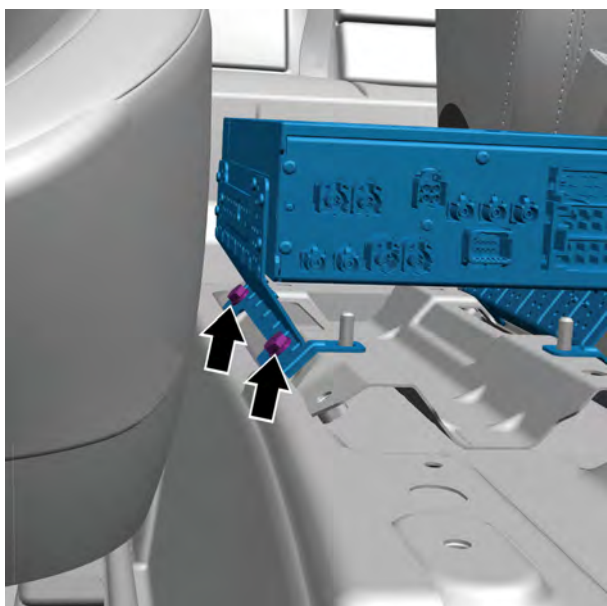




- 4 Disconnect the 8 harness connectors of the instrument harness and head unit.

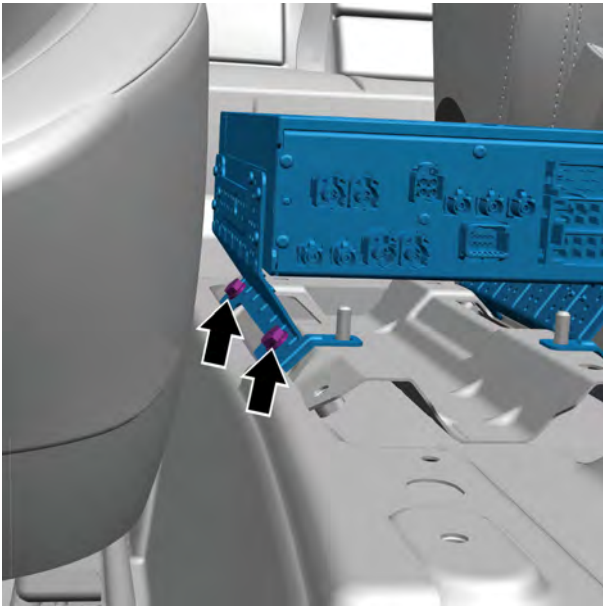


- 5 Remove the 2 fixing bolts connecting the head unit with the left side of auxiliary fascia console rear mounting bracket
Torque: 10N·m

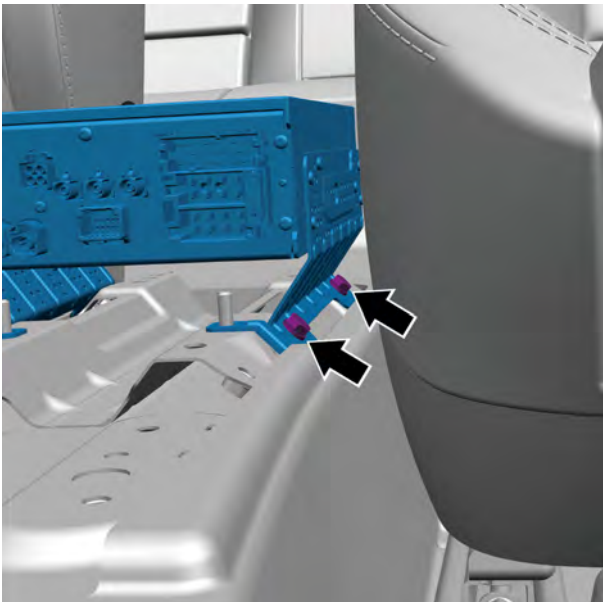


- 6 Remove the 2 fixing bolts connecting the head unit with the right side of auxiliary fascia console rear mounting bracket
Torque: 10N·m
- 7 Remove the head unit.

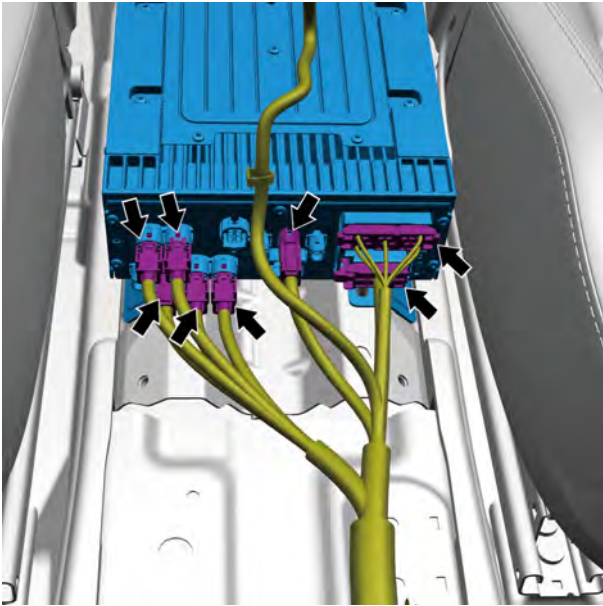
Installation procedure



- 1 Move the head unit to the installation position.
- 2 Install the 2 fixing bolts connecting the head unit with the right side of auxiliary fascia console mounting bracket



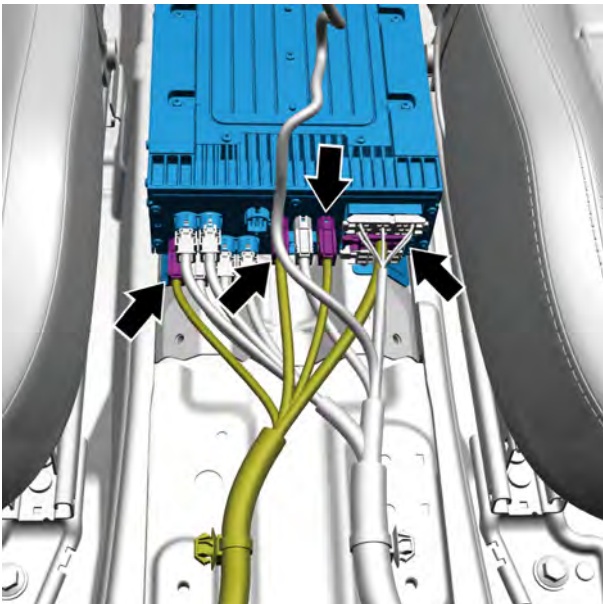
- 3 Install the 2 fixing bolts connecting the head unit with the left side of auxiliary fascia console mounting bracket



- 4 Connect the 8 harness connectors connecting floor harness and the head unit.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 5 Connect the 4 harness connectors connecting floor harness and the head unit.

Caution

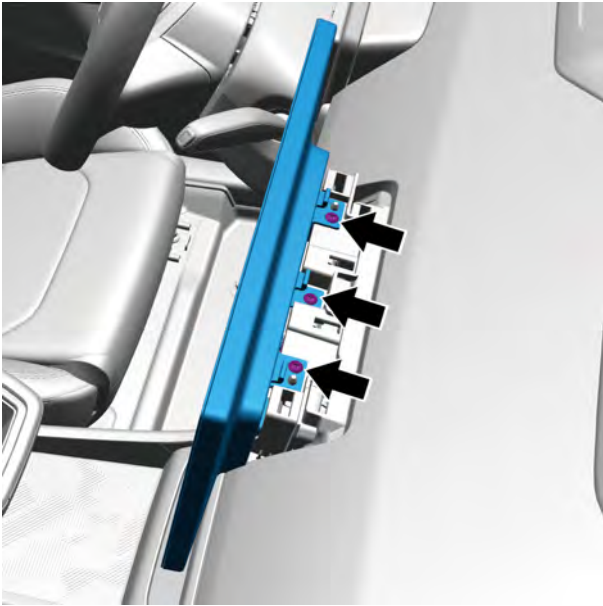
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 6 Install the middle mounting bracket of the auxiliary fascia console.
- 7 Connect the negative cable of battery.

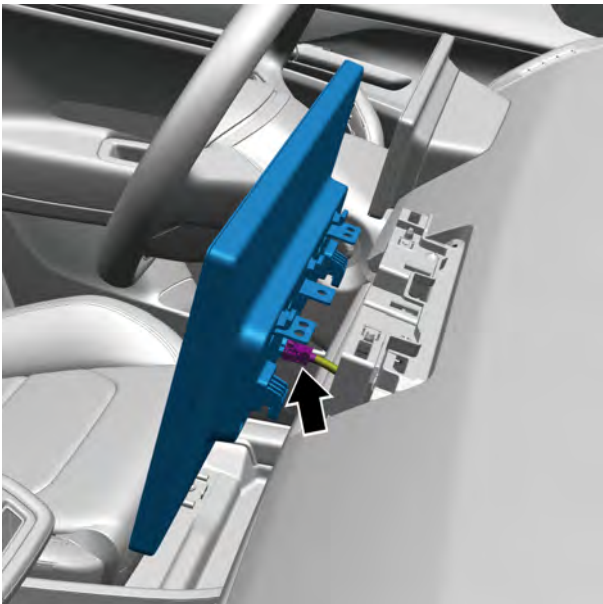
11.2.7.6 Replacement of Multimedia display screen(Type I)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the mounting bracket cover plate of the center console screen Refer to [Replacement of mounting bracket cover plate of the center console screen](#)

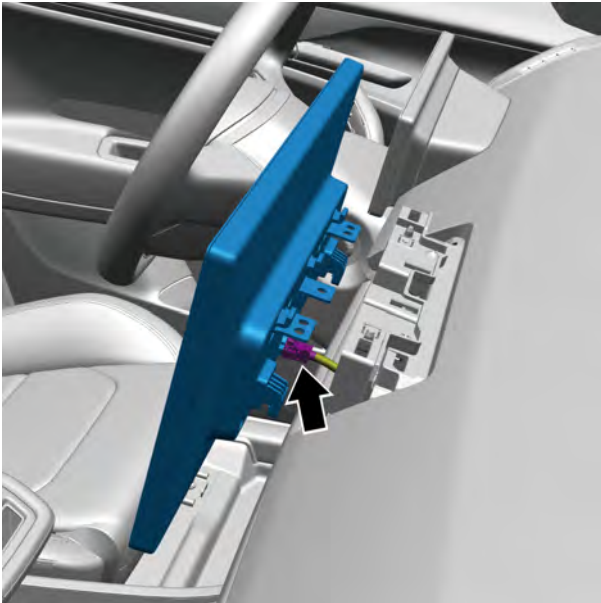


- 3 Remove the 3 fixing screws connecting the multimedia display screen with the screen mounting bracket of the center console.



- 4 Disconnect the 1 harness connector connecting the instrument harness and the multimedia display screen.
- 5 Multimedia screen is taken down.

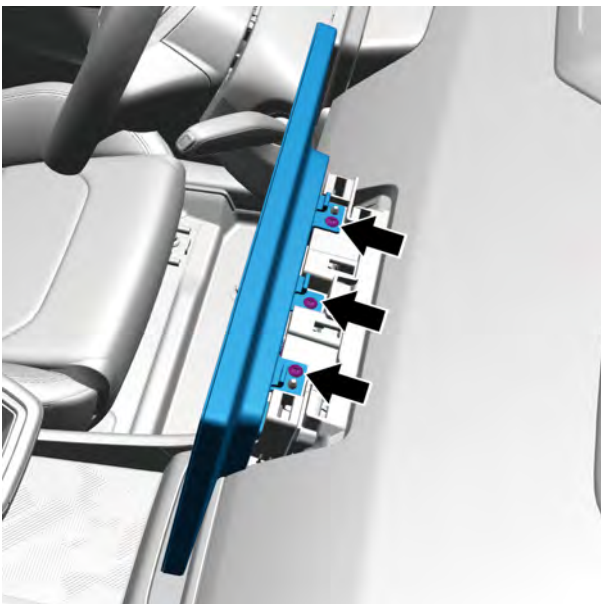
Installation procedure



- 1 Move the multimedia display screen to the installation position.
- 2 Connect the 1 harness connector A connecting the transmission harness and the multimedia display screen.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



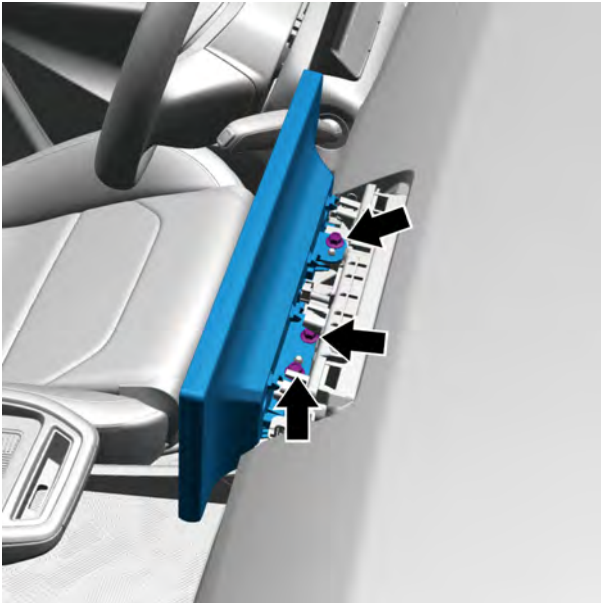
- 3 Install the 3 set screws on the multimedia display screen and screen mounting bracket of the center console.
Torque: 3N·m

- 4 Install mounting bracket cover plate of the center console screen
- 5 Connect the negative cable of battery.

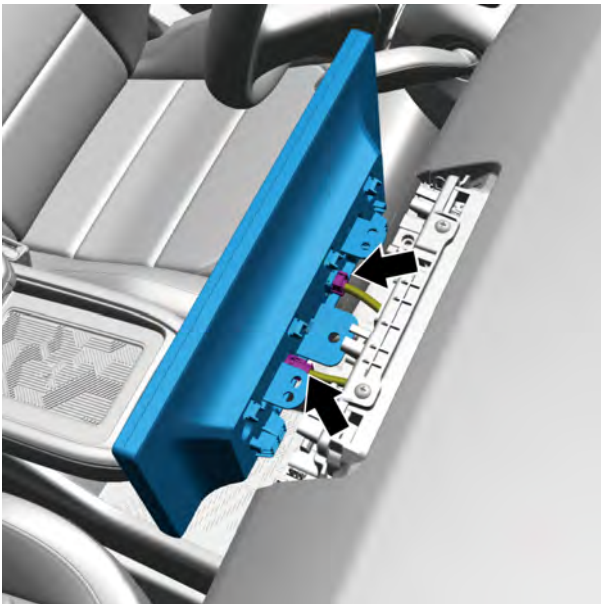
11.2.7.7 Replacement of multimedia display screen(Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove mounting bracket cover plate of the center console screen Refer to [Replacement of mounting bracket cover plate of the center console screen](#)

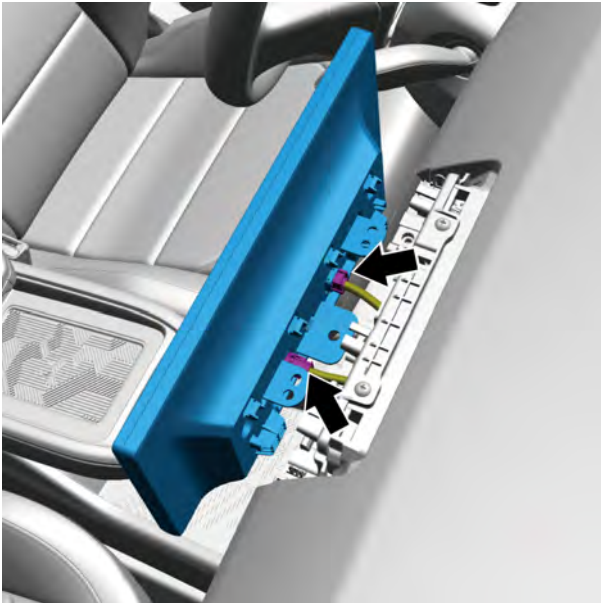


- 3 Remove the 3 fixing bolts connecting the multimedia display screen with the center console screen mounting bracket.



- 4 Disconnect the 2 harness connectors connecting the instrument harness and the multimedia display screen.
- 5 Multimedia screen is taken down.

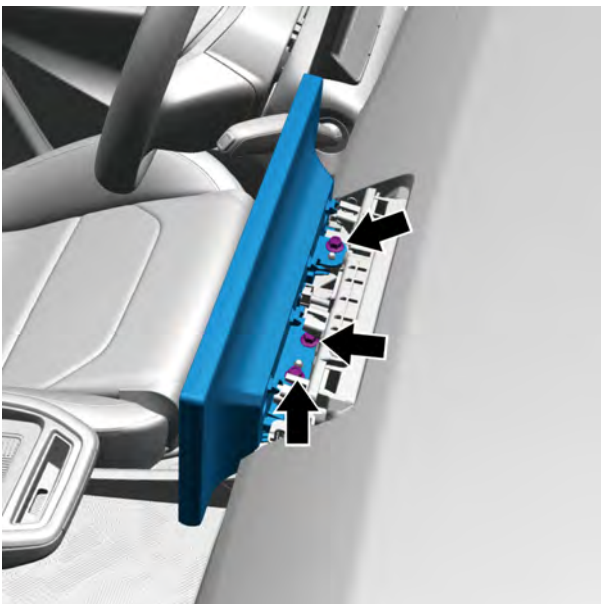
Installation procedure



- 1 Move the multimedia display screen to the installation position.
- 2 Connect the 2 harness connectors A connecting the instrument harness and the multimedia display screen.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



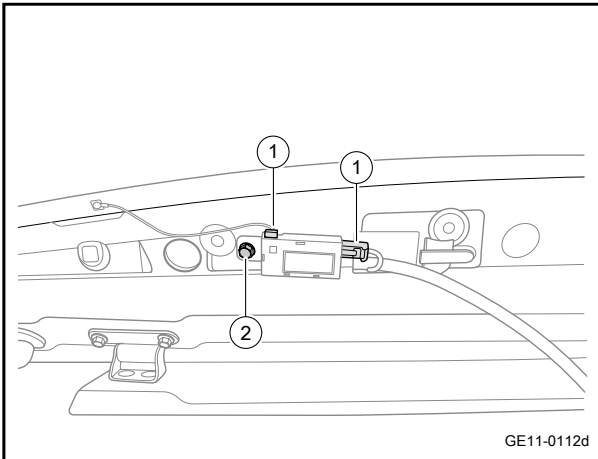
- 3 Install and tighten 3 fixing bolts 3 connected the multimedia display screen and mounting bracket cover plate of the center console screen.

- 4 Install mounting bracket cover plate of the center console screen
- 5 Connect the negative cable of battery.

11.2.7.8 Replacement of Antenna Amplifier Assembly

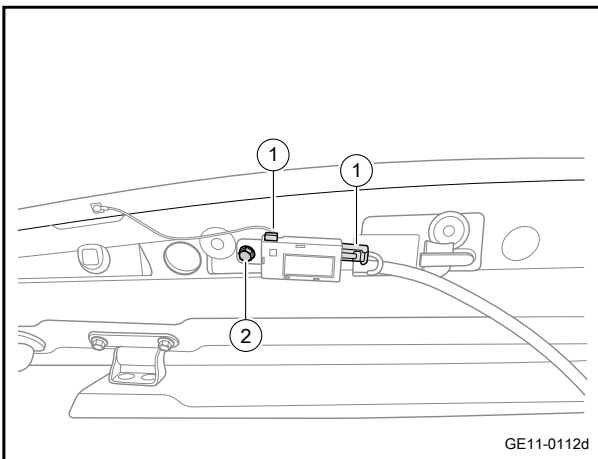
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the middle upper interior trim panel of the tailgate
Refer to [Replacement of upper middle interior trim panel assembly of the tailgate](#)
- 3 Remove harness connector 1 of antenna amplifier assembly.
- 4 Remove antenna amplifier assembly fixing bolt 2.
- 5 Take off the antenna amplifier assembly.



Installation procedure

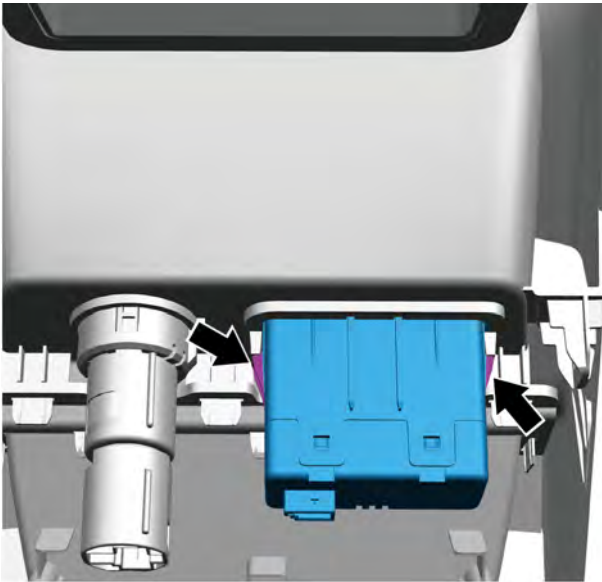
- 1 Move the antenna amplifier assembly to the installation position.
 - 2 Install the antenna amplifier assembly fixing bolt 2.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
 - 3 Connect harness connector of 1 antenna amplifier assembly.
- 4 Install the upper middle interior trim panel assembly of tailgate.
 - 5 Connect the negative cable of battery.



11.2.7.9 Replacement of rear USB box

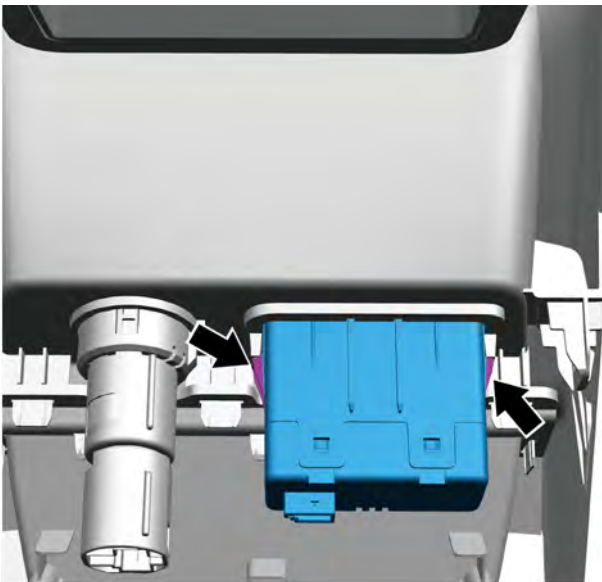
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console rear panel assembly. Refer to [Replacement of Rear Panel Assembly of Auxiliary Fascia Console](#)
- 3 Disconnect the 2 fixing clips connecting the two sides of the rear USB box with the rear panel assembly of the auxiliary fascia console.
- 4 Rear USB box is taken off.



Installation procedure

- 1 Move the rear USB box to the installation position.
- 2 Install both sides of the rear USB box to the auxiliary fascia console rear panel assembly, and ensure that the clips on both sides are installed in place.



- 3 Install the auxiliary fascia console rear panel assembly.
- 4 Connect the negative cable of battery.

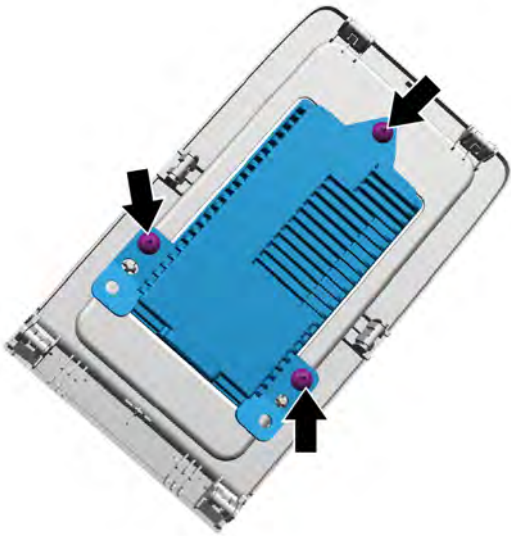
11.2.7.10 Replacement of wireless charging module

Removal procedure

Caution

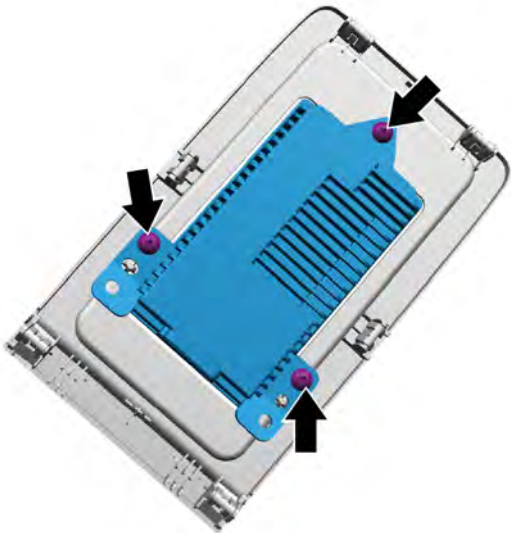
Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the trim panel.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Replace wireless charging cover plate. Refer to [Replacement of Wireless Charging Cover Plate](#)
- 3 Remove the 3 fixing screws connecting the wireless charging module and the wireless charging cover plate.
- 4 Wireless charging module is taken down.



Installation procedure

- 1 Move the wireless charging module to the installation position.
- 2 Install and tighten the 3 fixing screws connecting the wireless charging module and the wireless charging cover plate.
Torque: 1.5N·m



- 3 Installing
- 4 Connect the negative cable of battery.

11.2.7.11 Replacement of audio power amplifier

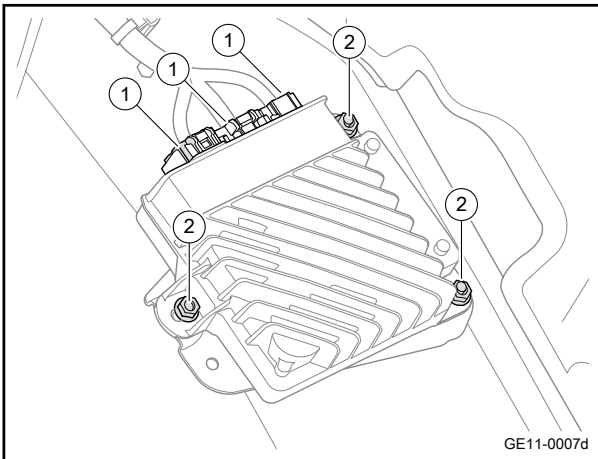
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

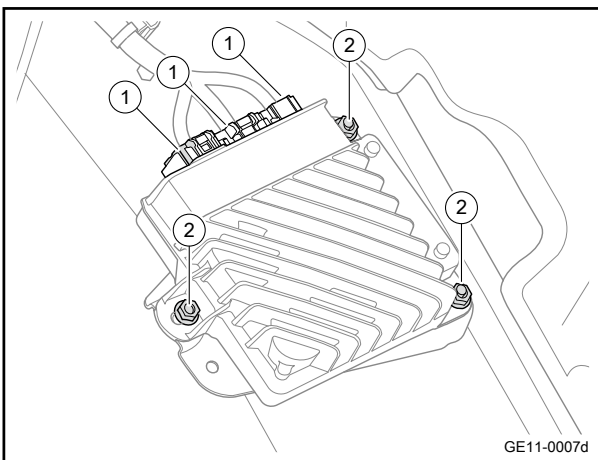
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Install the trunk carpet assembly. Refer to [Replacement of trunk carpet assembly](#)
- 3 Remove the trunk right trim panel assembly. Refer to [Replacement of left trim panel assembly of trunk](#)
- 4 Remove the right mounting liner of the trunk carpet. Refer to [Replacement of Trunk Carpet Left Mounting Liner](#)
- 5 Disconnect the harness connector 1 of audio power amplifier.
- 6 Remove 3 fixing nuts 2 of the audio amplifier.
- 7 Take off the vehicle audio amplifier.



Installation procedure

- 1 Move the audio power amplifier to the installation position.
- 2 Install 3 fixing nuts 2 of the audio amplifier.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)
- 3 Connect the audio power amplifier harness connector 1.



- 4 Install the trunk carpet right mounting liner.
- 5 Install the trunk right trim panel assembly.

- 6 Install the trunk carpet assembly.
- 7 Connect the negative cable of battery.

11.2.7.12 Replacement of subwoofer

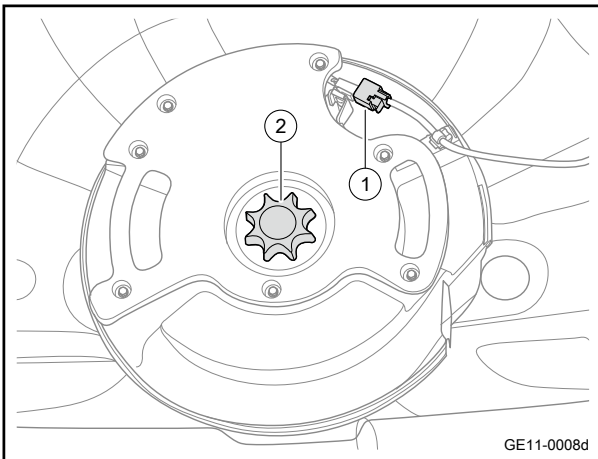
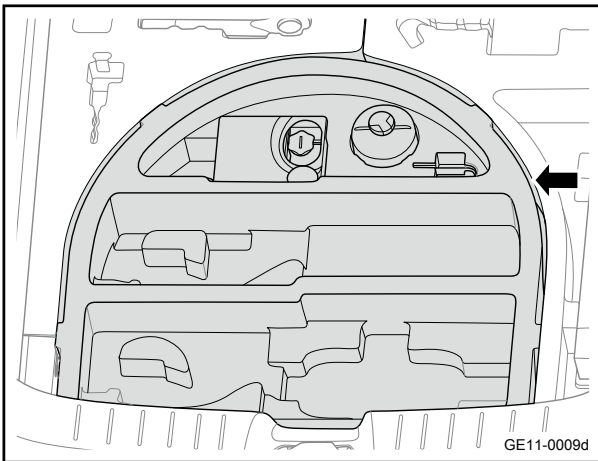
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

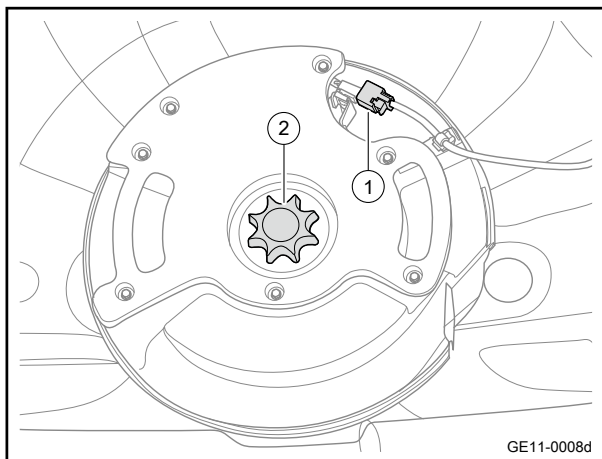
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the trunk carpet assembly. Refer to [Replacement of trunk carpet assembly](#)
- 3 Remove the tool kit foam box.

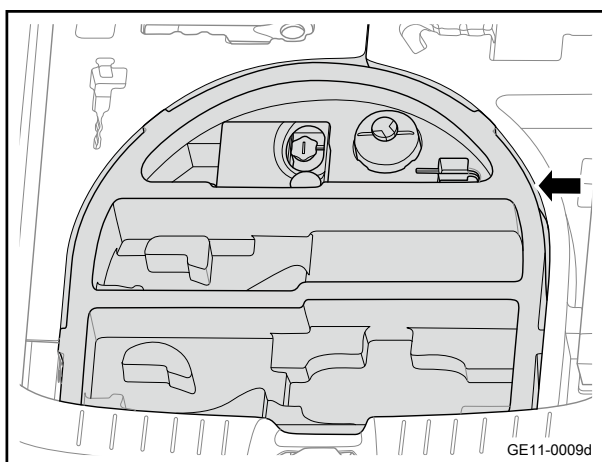


- 4 Disconnect the harness connector 1 of subwoofer.
- 5 Remove the spare tire pressure plate assembly 2.
- 6 Take off the subwoofer.

Installation procedure



- 1 Move the subwoofer to the installation position.
- 2 Install the spare tire pressure plate assembly 2.
- 3 Connect the harness connector 1 of subwoofer.



- 4 Install the tool kit foam box.

- 5 Install the trunk carpet assembly.
- 6 Connect the negative cable of battery.

11.2.7.13 Replacement of Microphone

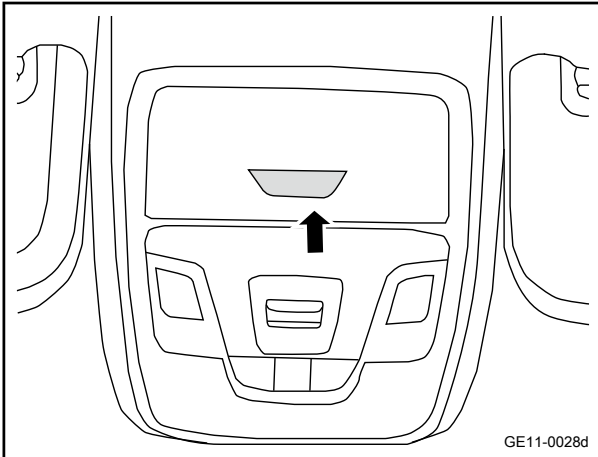
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

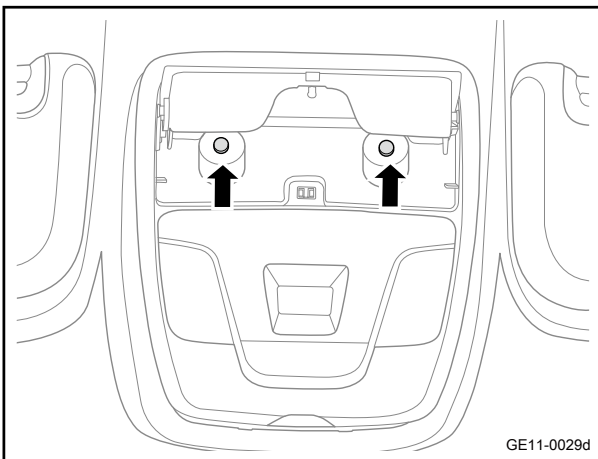
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Open the glasses box panel.



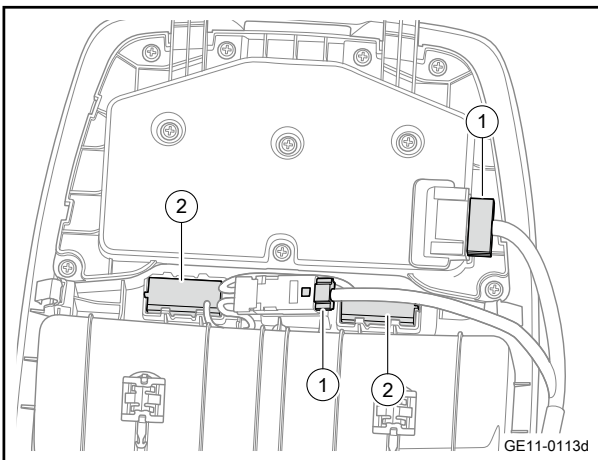
- 3 Remove the 2 fixing screws of the front reading lamp.

- 4 Remove the front reading lamp.

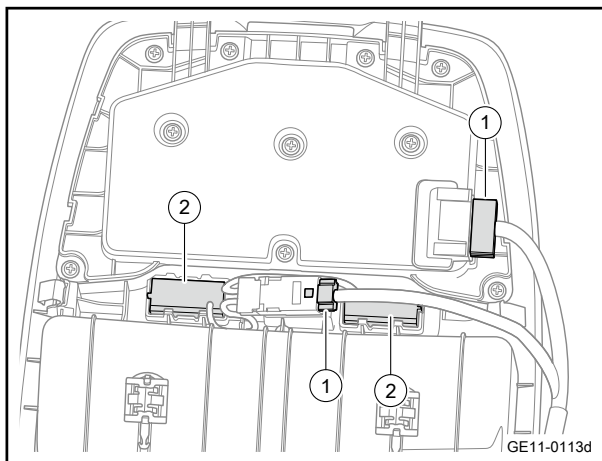


- 5 Disconnect the harness connector 1 of the front reading lamp.

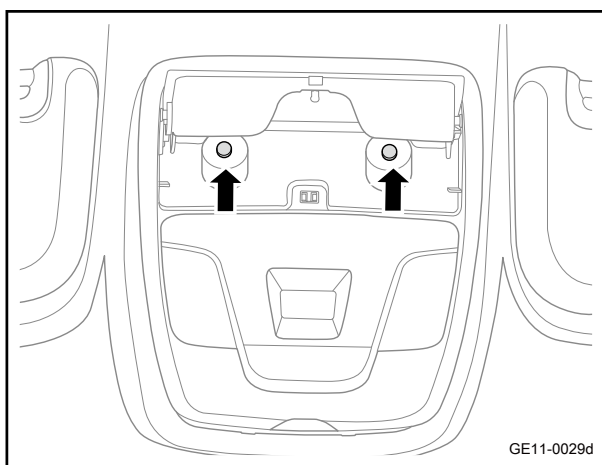
- 6 Pry off MIC 2.



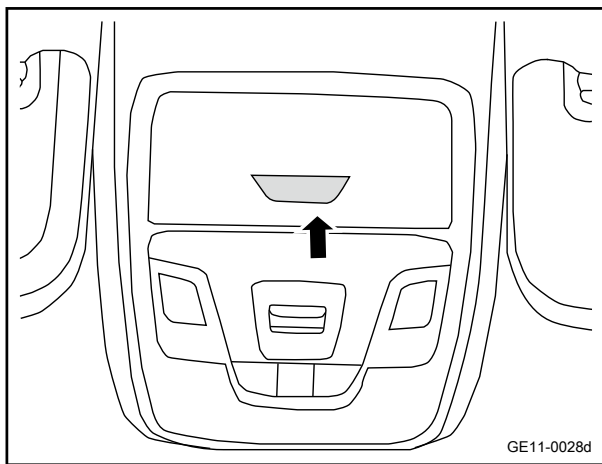
Installation procedure



- 1 Install MIC 2
- 2 Connect the front reading lamp harness connector 1



- 3 Install the 2 fixing screws of the front reading lamp.
Torque: 4.5N·m (metric system) 3.3lb-ft (Imperial system)



- 4 Close the glass box panel.

- 5 Connect the negative cable of battery.

11.2.7.14 Replacement of Microphone(low figuration)

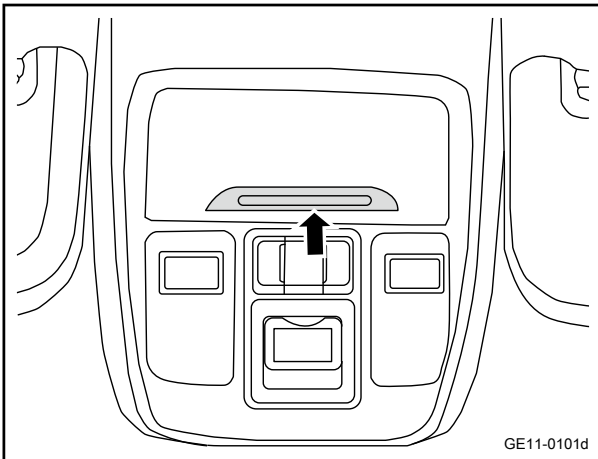
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

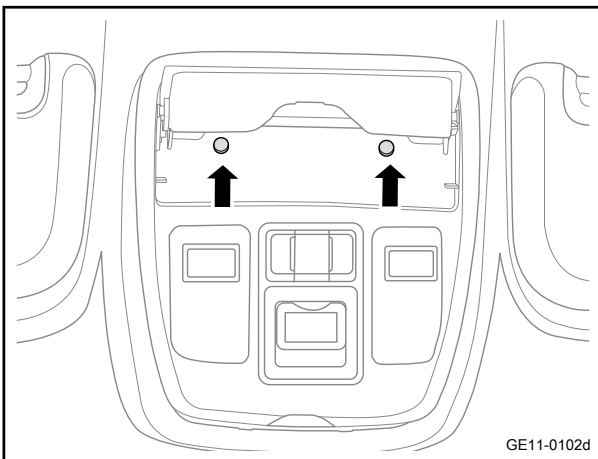
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Open the glasses box panel.



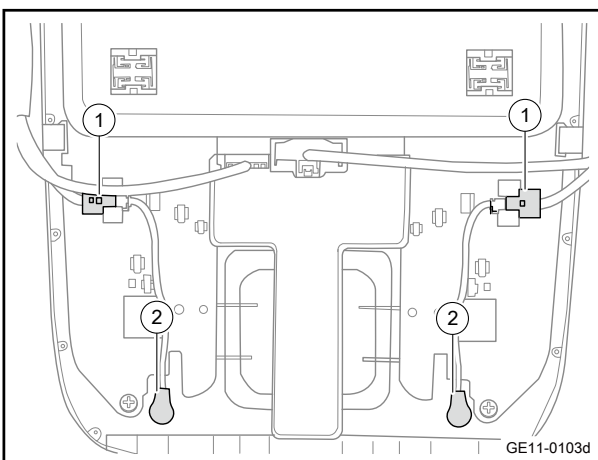
- 3 Remove the 2 fixing screws of the front reading lamp.

- 4 Remove the front reading lamp.

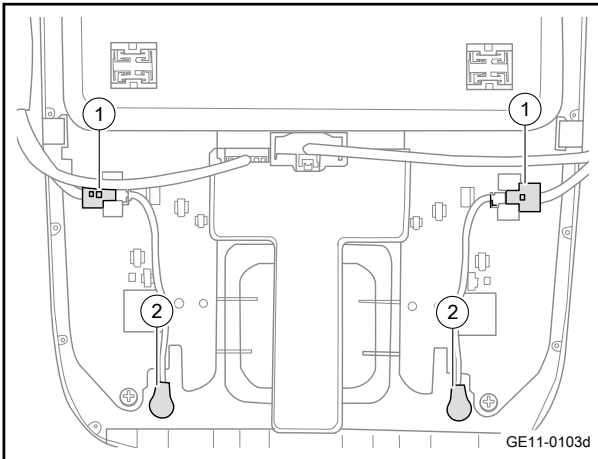


- 5 Disconnect the harness connector 1 of the front reading lamp.

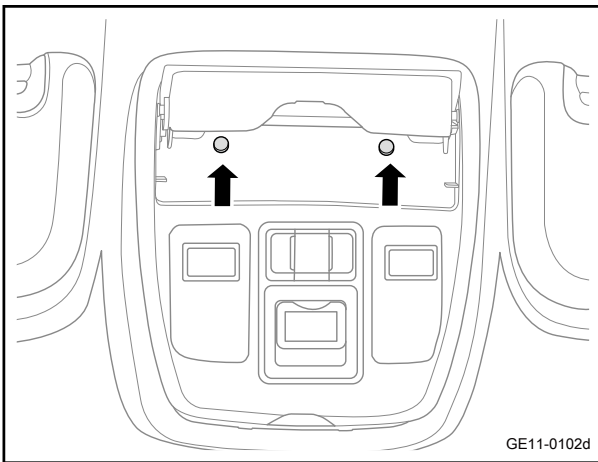
- 6 Pry off MIC 2.



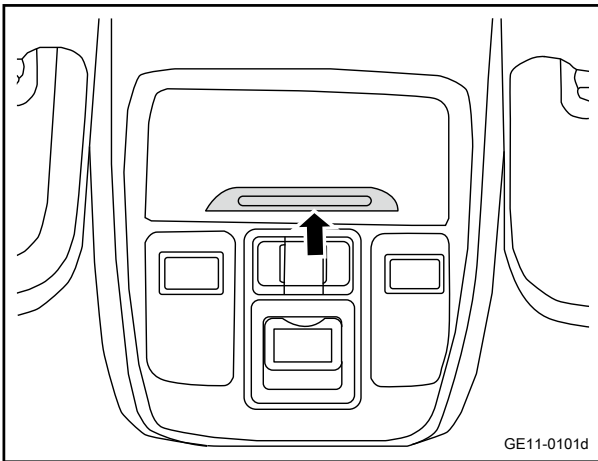
Installation procedure



- 1 Install MIC 2.
- 2 Connection to front reading lamp harness connector 1.



- 3 Install the 2 fixing screws of the front reading lamp.



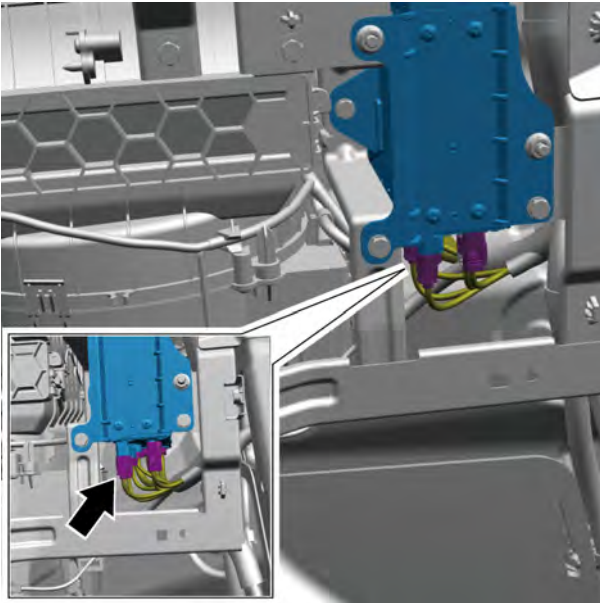
- 4 Close the glass box panel.

- 5 Connect the negative cable of battery.

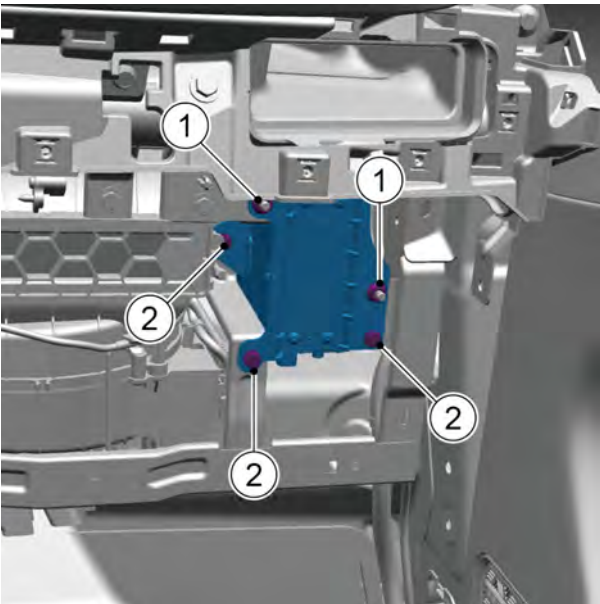
11.2.7.15 Replacement of vehicle-mounted infotainment assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the dashboard lower body assembly. Refer to [Replacement of Dashboard Lower Body Assembly](#)

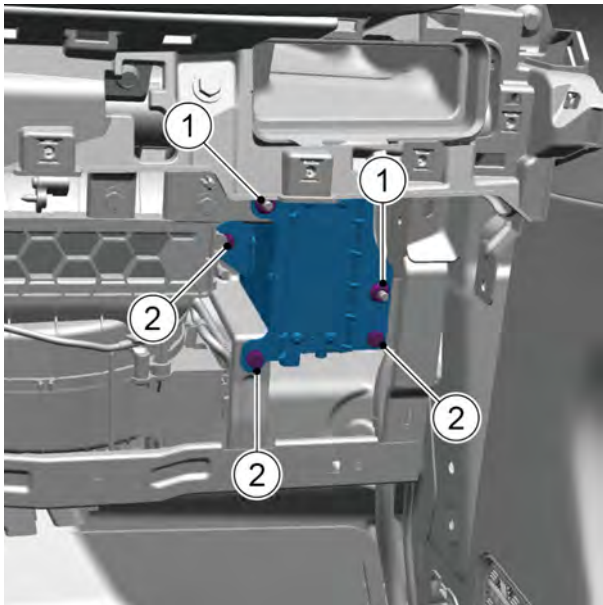


- 3 Disconnect the 9 harness connectors connecting instrument harness and the vehicle infotainment assembly.

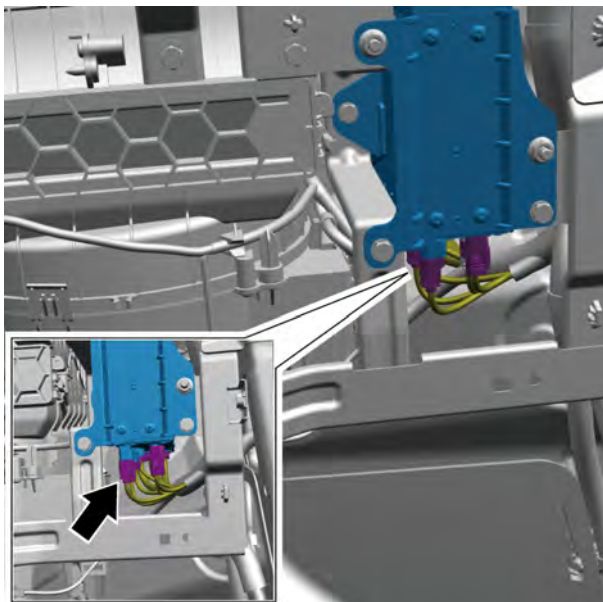


- 4 Remove the 2 fixing nuts 1 connecting the vehicle infotainment assembly and cross beam of instrument panel.
- 5 Remove the 3 fixing bolts 2 connecting the vehicle infotainment assembly and cross beam of instrument panel.
- 6 Remove the vehicle-mounted infotainment assembly.

Installation procedure



- 1 Move the vehicle infotainment assembly to the installation positions.
- 2 Install 3 fixing bolts 2 connecting the instrument panel cross member and the vehicle infotainment assembly.
- 3 Install the 2 fixing nuts 1 connecting the vehicle infotainment assembly and cross beam of instrument panel.



- 4 Connect the 9 harness connectors of the vehicle infotainment assembly and instrument harness.

Caution

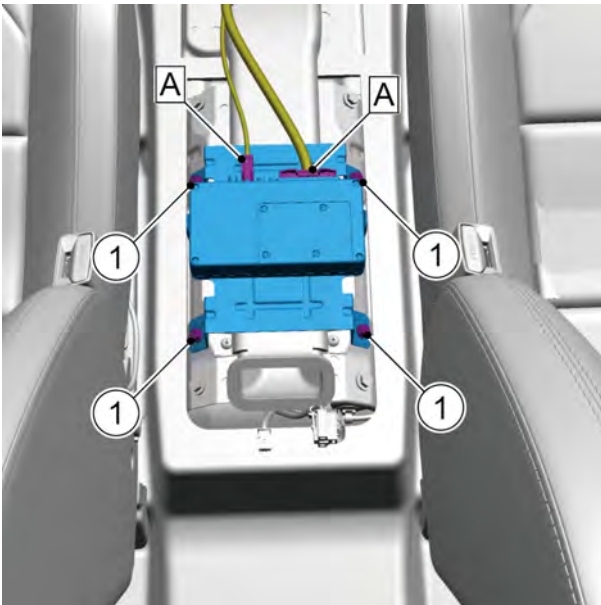
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 5 Install the dashboard lower body assembly.
- 6 Connect the negative cable of battery.

11.2.7.16 Replacement of emergency call system controller

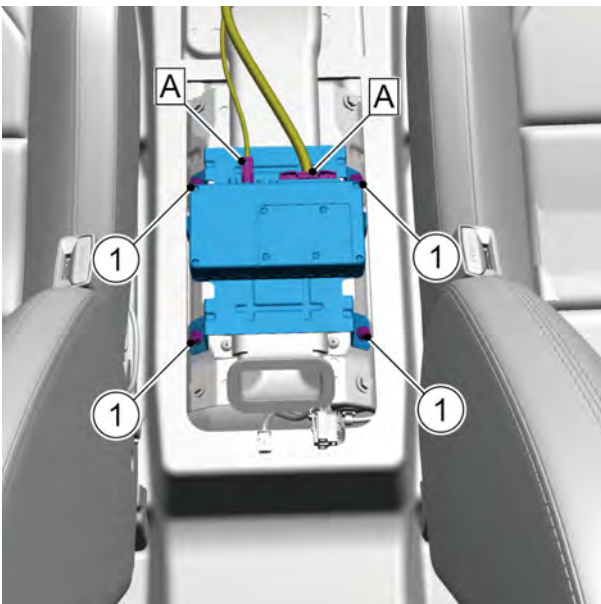
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the middle trim panel of auxiliary fascia console. Replacement of [Middle mounting bracket of the auxiliary fascia console](#)



- 3 Disconnect the 2 harness connectors A connecting the instrument harness with the emergency call system controller.
- 4 Remove the 4 fixing bolts 1 connecting emergency call system controller with the rear fixing bracket of the auxiliary fascia console.
- 5 Take off the emergency call system controller.

Installation procedure



- 1 Move the emergency call system controller to the installation position.
- 2 Install and tighten the 4 fixing bolts 1 connecting the emergency call system controller and the auxiliary fascia console rear mounting bracket.
- 3 Connect the 2 harness connectors A connecting the instrument harness with the emergency call system controller.

Caution

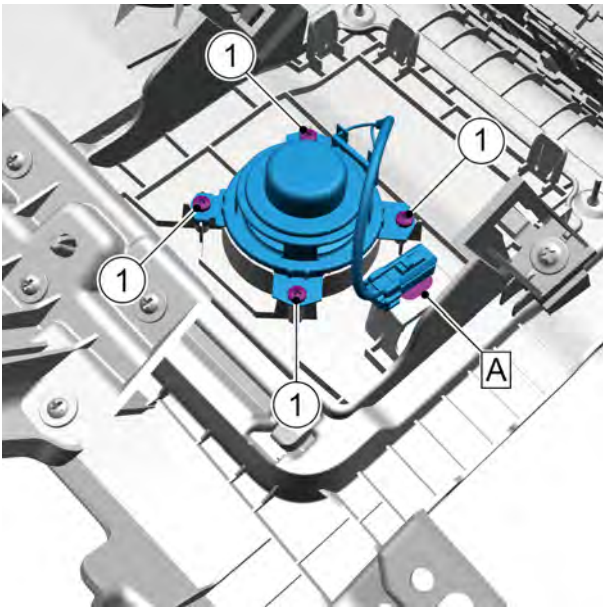
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the middle mounting bracket of the auxiliary fascia console.
- 5 Connect the negative cable of battery.

11.2.7.17 Replacement of vehicle-mounted mobile terminal loudspeaker

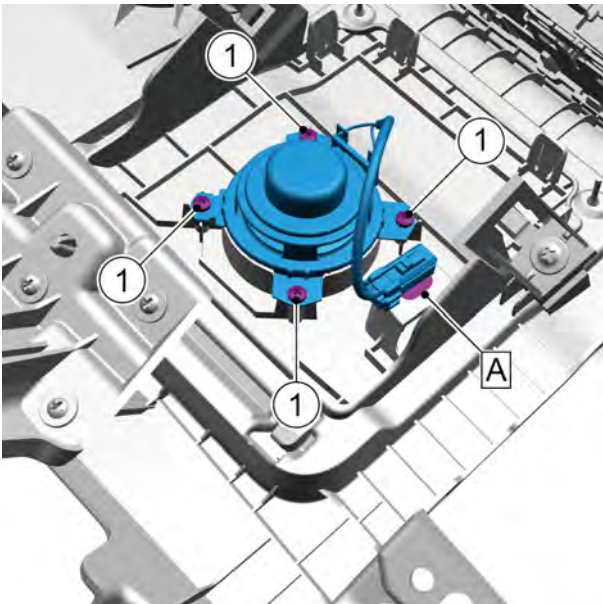
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)



- 3 Disconnect the 1 clip A connecting the vehicle-mounted mobile terminal loudspeaker and the left lower shield assembly of the instrument panel.
- 4 Remove the 4 fixing screws 1 connecting the speaker of the vehicle-mounted mobile terminal loudspeaker with the left lower shield assembly of the instrument panel.
- 5 Take off the vehicle-mounted mobile terminal loudspeaker.

Installation procedure



- 1 Move the vehicle-mounted mobile terminal loudspeaker to the installation position.
- 2 Install the 4 fixing screws 1 connecting the loudspeaker of the vehicle-mounted mobile terminal with the left lower shield assembly of the instrument panel.
- 3 Connect the 1 clip A connecting the vehicle-mounted mobile terminal speaker and the left lower shield assembly of the instrument panel.
- 4 Install the left lower shield assembly of the dashboard.
- 5 Connect the negative cable of battery.

11.3 Navigation

11.3.1 Specification

11.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing bolts connecting the GPS4G antenna and the instrument panel body assembly.	ST4.2×13	1.3-1.7

11.3.2 Description and operation

11.3.2.1 General

Vehicle-mounted navigation system consists of GPS receiver, self-discipline navigation device, vehicle speed sensor, self-contained gyroscope, LCD display screen, etc. GPS is the abbreviation of “Global Positioning System”, which is developed for military purpose by the United States. Its meaning is to utilize navigational satellites to measure time and distance, and thus form a global navigation system.

The navigation system of this vehicle adopts the design mode of separating the navigation console from the display screen. The map data base is stored in the MMI flash memory chip. In the former case, the map data base was stored on an optical disc, and the data read by the chip storage method is faster than the map optical disc, and the map optical disc player is reduced. Therefore, the structure is easy, so the possibility of failure is also greatly reduced. When a new navigation map data base needs to be updated, it is only necessary to use a computer to update the data in the flash memory chip. If the traditional map disc is to upgrade the map database, it can only be replaced with a new one.

Vehicle-mounted navigation mainly has the following functions:

1. Retrieval of the beat route to the destination;
2. Instantaneous re-retrieval;
3. Rich menu and record function for easy retrieval;
4. Real-time voice prompt during appropriate time;
5. Extended functions.

11.3.2.2 GPS system introduction

GPS is mainly composed of three parts: space, ground control and user equipment.

Space:

It consists of 21 satellites and 3 standby satellites, like a constellation, hanging 000 km high in the air. It is evenly distributed in 6 orbital planes with an orbit angle of 55 ° and the distance between each orbital plane is 60 °. 4 satellites are distributed in each orbit. This kind of distribution structure can ensure that more than 4 satellites can be seen at any place in the world.

Ground control:

For navigation and orientation, it is needed to figure out the position of the satellite first. The position of the satellite is calculated based on the movement of the satellite and its orbital parameters. The ground monitoring station observes each satellite for many years continuously. On the basis of the

observed satellite status parameters, it is needed to adjust the satellite to the predetermined orbit promptly and correct the satellite’s posture. When one of the satellites is faulty, back-up satellite can also be used to cover the position.

User receiving system:

The user receiving system includes hardware such as power supply, antenna, receiver, microprocessor, control display equipment as well as internal software and data processing software package.

11.3.2.3 Brief introduction to extended function

FM radio function

With FM radio function, users can select their own favorite channels. Users can save their favorite frequency rate to preset channels, totally 6 preset channels are provided. When users introduce frequency rate by other means, in case the current FM or AM frequency rate is the same as the preset channel frequency rate, the corresponding preset channel number will be displayed. After the battery negative cable is disconnected, all radio information in the storage list is cleared.

Bluetooth telephone

The system is equipped with bluetooth chip, which supports wireless bluetooth technology. It can connect the surrounding bluetooth devices wirelessly and realize the telephone hands-free function.

Caution

When the “travel limit” is activated, the machine will automatically screen the video frame during driving. For your safety, it is recommended to activate this function.

Multimedia

The system supports multimedia functions, such as USB, iPod audio, bluetooth music, AUX, etc.

Settings

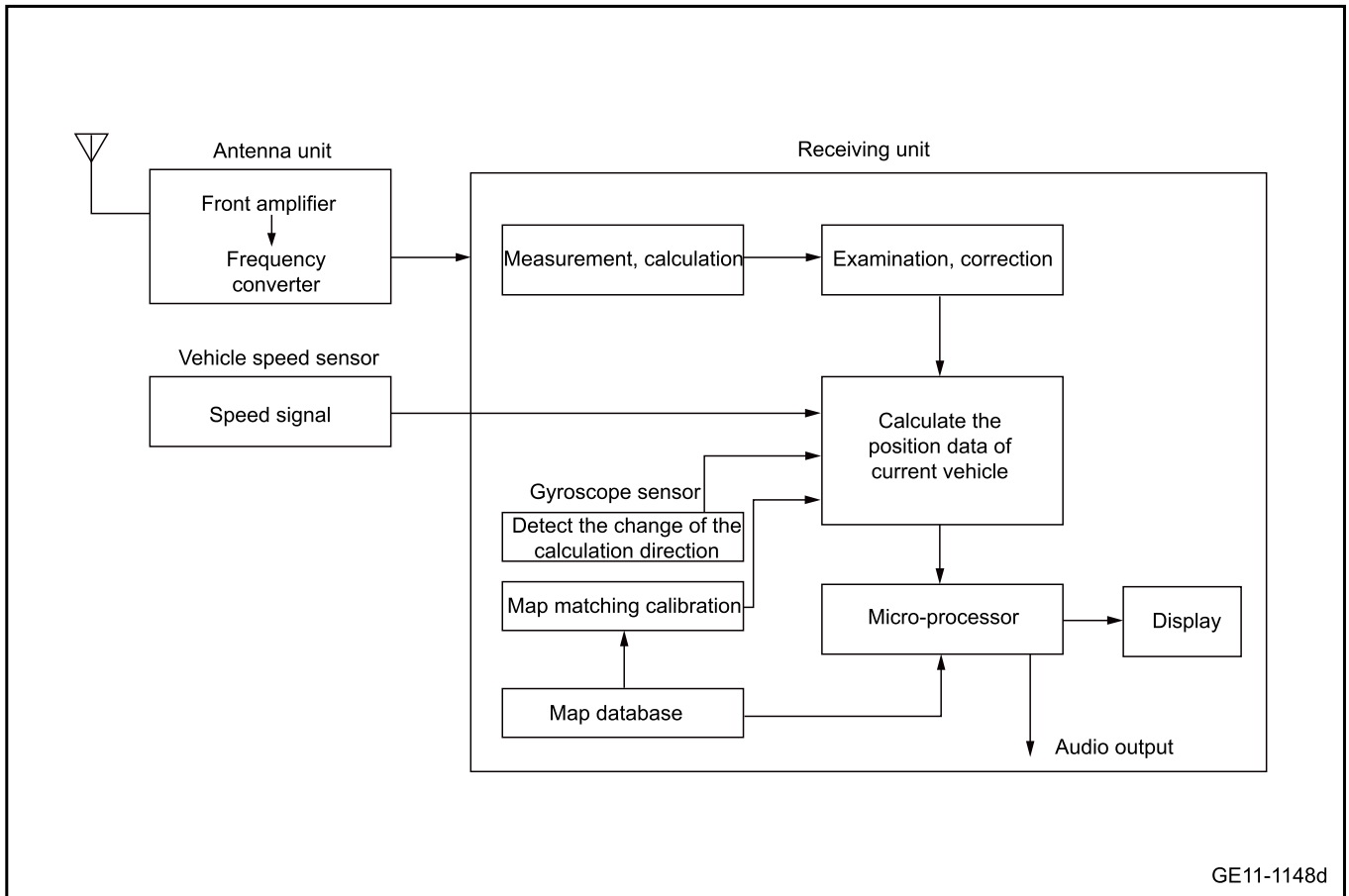
Users can set some information according to their own requirements in the system settings menu.

Parking assist

When the driver turns the gear to “R”, the media center will introduce to the reversing camera system to provide reversing information for the driver.

11.3.3 System working principles

11.3.3.1 Navigation system principle schematic diagram



11.3.3.2 Positioning principle of the GPS system

The GPS system is used to determine user's exact position on earth. Because each satellite orbits the earth twice a day, any region on the earth will simultaneously receive signals from more than four satellites. The computer can calculate the user's current position in the earth coordinate system according to these signals (longitude and latitude). The three

dimension positions, three dimension orientations and velocity of movement and time, and other information are calculated after the receiver received these signals. Generally, the GPS receiver will be subject to pseudo-range measuring, carrier phase measuring, satellite radio interference measuring, Doppler measuring and other measuring methods.

11.3.3.3 Self-discipline navigation

When the driver drives the vehicle into underground tunnels, high-level buildings, highways and other hidden objects and cannot receive the signal from GPS satellites, the system can automatically enter self-discipline navigation. At this time, the vehicle speed sensor can detect vehicle speed from vehicle forward speed, and calculate vehicle forward distance from vehicle microprocessor. Gyro sensor can directly detect the change of forward direction and driving status. For instance,

at the time of driving the vehicle on trench mountain pass, circular disc bridge or slip in situ sections on ski track, the error between all these curve distances and latitude and longitude coordinates of satellite navigation occurs. Only through gyro sensor detection and microprocessor calculation, can we get the correct vehicle position. But its position accuracy is much lower than GPS positioning accuracy.

11.3.3.4 Map matching technique

Because there are some errors between the position coordinates and the direction of the vehicle measured by GPS satellite navigation and self-regulating navigation devices and the actual track of the vehicle. To correct the errors between

them and unify them with the route on the map, map matching technique is needed to be adopted. At this time, the microprocessor performs real-time relevant matching and

automatic correction for the road error between the route of the vehicle and that of the electronic map.

There are vehicle traffic trunk line, highway map and city traffic map stored in the map database. Before driving, the driver should tell the processor the city, street and place name to go through the input interface. The processor will use the signal of the satellite system and determine the orientation of the place to go according to the measured data such as speed sensor and gyroscope sensor, and indicate the best route to the place to go according to the route planning process. In the process of driving, the driver can use the display screen in the car to observe the map of the area where the vehicle is and the vehicle's position on the map at any time on the screen. The remaining distance to the destination can be shown on the display screen. At the same time, the relevant information is also prompted to the driver through audio output and voice.

11.3.4 Part position

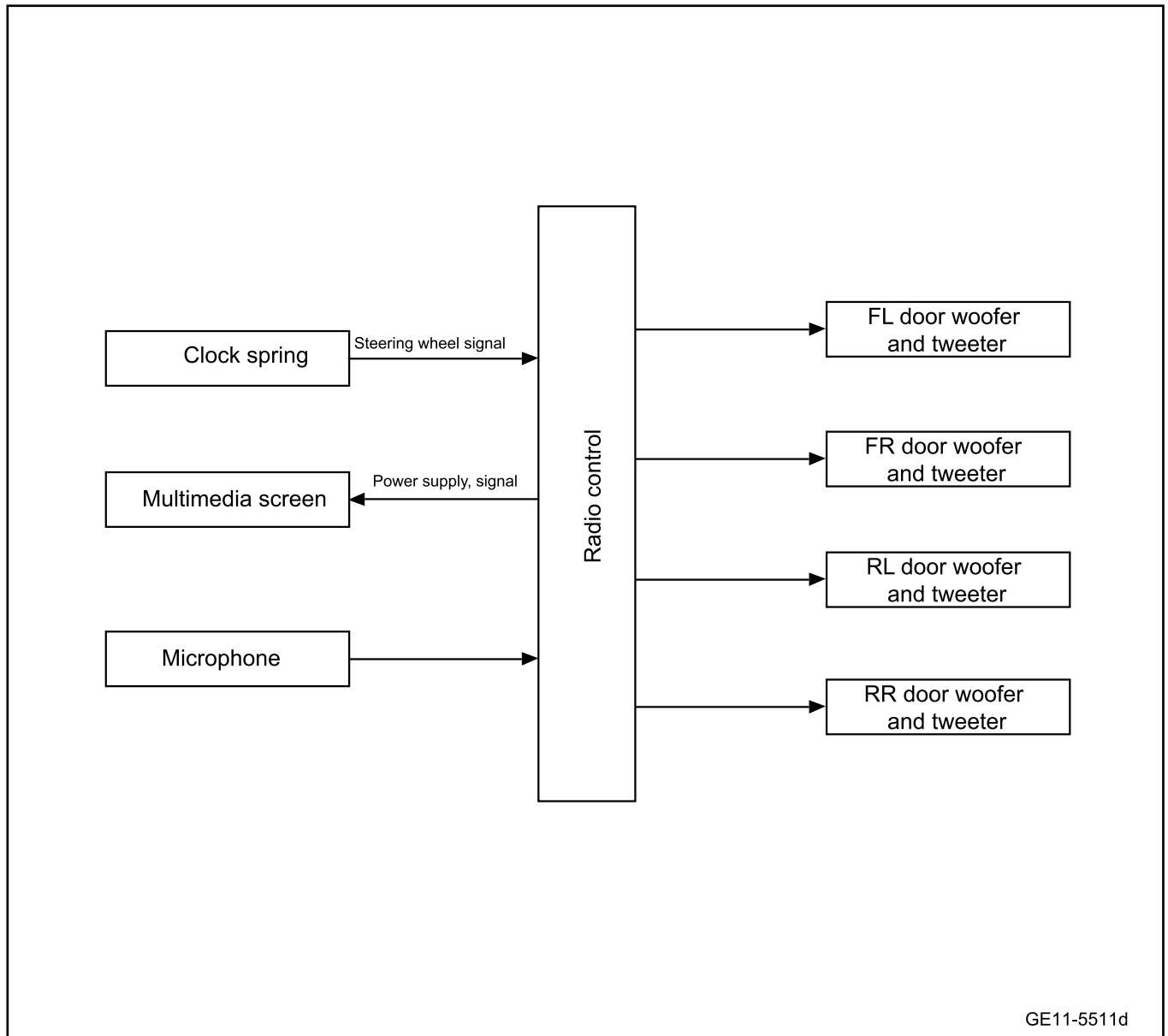
11.3.4.1 Part Position



1. GPS4G antenna

11.3.5 Electrical block diagram

11.3.5.1 Electrical Schematic Diagram of Navigation System



11.3.6 Diagnosis steps

11.3.6.1 Diagnosis Description

Before diagnosis of faults of navigation, refer to the Description and Operation and System Working Principle.

11.3.6.2 Visual Check

- Check the after-sales installations that may affect operations of navigation to ensure that they cannot affect operations of navigation.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.3.6.3 System diagnosis description

1. When the vehicle is running, the driver is requested not to watch the video, and it is strictly prohibited to operate the navigation system to avoid affecting the driving safety due to inattention.
2. At the time of running on rough roads, severe turbulence may lead to sound jumping.
3. The GPS positioning of the car entertainment navigation system will be affected by the weather and the place of use (high-rise buildings/tunnels/underpasses/woods). Most GPS cannot be positioned indoors and basements, and GPS signals cannot penetrate high-rise buildings and metal-containing car heat insulation films or similar products.
4. The GPS positioning results of the car entertainment navigation system are only for the driver's reference. Please drive according to the actual road conditions if there is any abnormal situation.
5. The navigation electronic map data provided by the car entertainment navigation system only provides general reference and cannot provide high-precision positioning and path planning. Voice prompt and intersection information are the suggested results calculated by the best path according to the electronic map database, and the results are only for the reference of drivers, who must abide by the local traffic rules.
6. Keep the volume indicated by the voice at an appropriate level so as to be able to be aware of the conditions of the road and vehicles and ensure driving safety when driving.
7. Avoid excessive moisture and dust. Do not let the navigation control unit get wet, which will cause electric shock, fire or other damage.
8. Extremely high or extremely low temperatures can interfere with normal functions. If the vehicle motor is turned off and parked in direct sunlight or cold places for too long, the vehicle may become particularly hot or cold, and the entertainment navigation system may work abnormally in this environment. Once the temperature in the car returns to the normal range, the normal function can be restored. Please contact authorized after-sales service center of Geely Automotive for overhaul if it cannot be recovered.
9. Please do not open the casing, disassemble the body or lubricate the rotating parts without permission, if the car entertainment navigation system fails (power failure, no image, no sound) or is in an abnormal state (foreign matter, water inflow, smoke, or peculiar smell inside). Immediately cut off the power supply and contact authorized after-sales service center of Geely Automotive for overhaul.

11.3.6.4 Cautions for navigation use

1. Because there are differences between vehicles, during the 1st use of the navigation system, a period of adaptive calibration is required, which can make the positioning of vehicles more accurate. During driving, the system will automatically and dynamically conduct the calibration.
2. It takes a longer time for the navigation system to receive the GPS signal and reposition the vehicle when it is started long after it was stalled. Usually, the positioning will be successful within 3 min in places with good signals.
3. In places with a masking effect on the GPS signal reception, such as a road with tall buildings on both sides, roadside with trees, under a flyover, an underground parking, and a tunnel, GPS signal cannot be received and the positioning may suffer deviation.

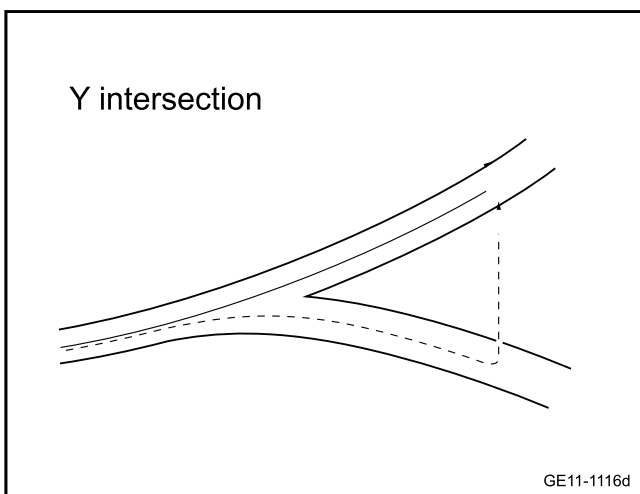
4. Sometimes, whether the vehicle is on an elevated road or the ground cannot be identified. The vehicle will be correctly repositioned after the roads diverge.
5. To avoid excessive invalid voices, there is no voice prompt in some turn roads: If there is no fork junction or roads at the fork are of significantly different levels.
6. While turning, if there is a parallel road (leading to the same direction) next to the target road, the voice will prompt “Turn to Y at the Xth junction” to help the driver select the correct turning road. Side road are frequently seen. The prompt will regard a side road intersection as an intersection, too.
7. While they vehicle is counting the roads, inputting the address, switching among languages, switching between the day and night modes, searching point of interest, or performing multimedia search operation, lots of system resources and a certain period of waiting are required. It is suggested not to ignite, switch among interfaces, plug/unplug the SD card or perform other operations during this period, otherwise, the system stability will be affected and the system will be reactivated in severe cases.

11.3.6.5 Positioning correction of navigation in non-fault status and under special road conditions

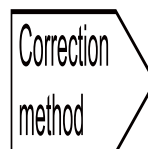
Caution

The above phenomena listed are not the symptoms of navigation. It is available to explain them to distributors reasonably after vehicle test verification in the case of similar problems encountered during repair.

Step 1	Y type sideways.
--------	------------------

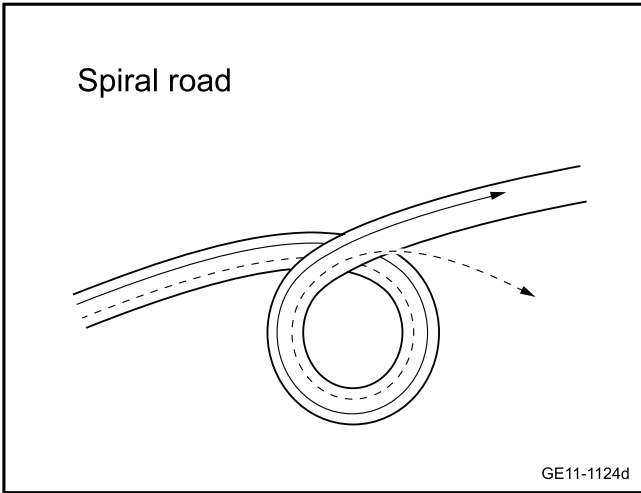


On Y type sideways or similar transitional sideways, errors accumulated about driving direction by the sensor may lead to that current location marks are marked on the wrong roads.



After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 2	Spiral roads.
--------	---------------

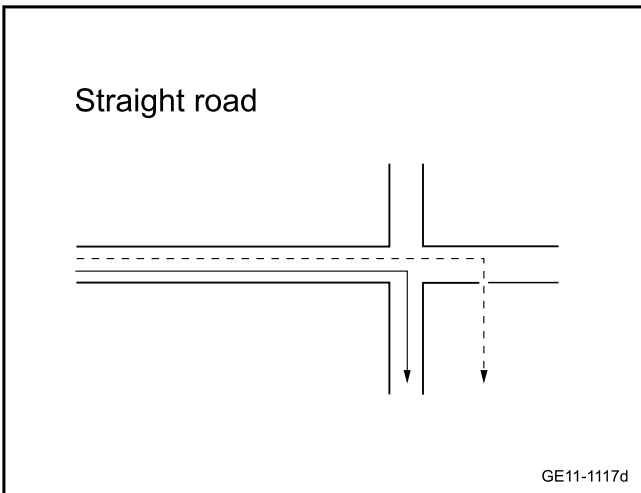


When the vehicle travels on a rather large and continuous spiral road (e.g. circular flyover), turning angle errors will be accumulated and location marks will deviate from current locations.

Correction
method

After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 3 | Turn after straightway driving.

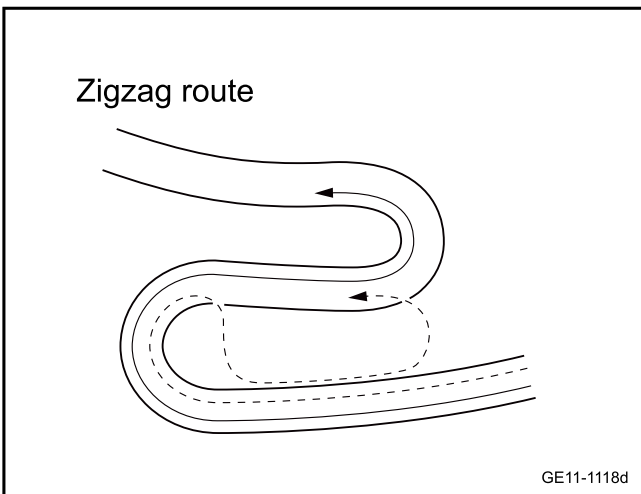


When the vehicle travels on a long and straight road with a small degree of deflection, map matching cannot operate effectively, thus leading to accumulative distance errors. When the vehicle turns, the location marks may deviate from current locations.

Correction
method

After driving for a while, the vehicle will be subject to re-positioning with differences in roads. Such problems can be avoided if the vehicle runs slowly during turning.

Step 4 | Zigzag round routes.

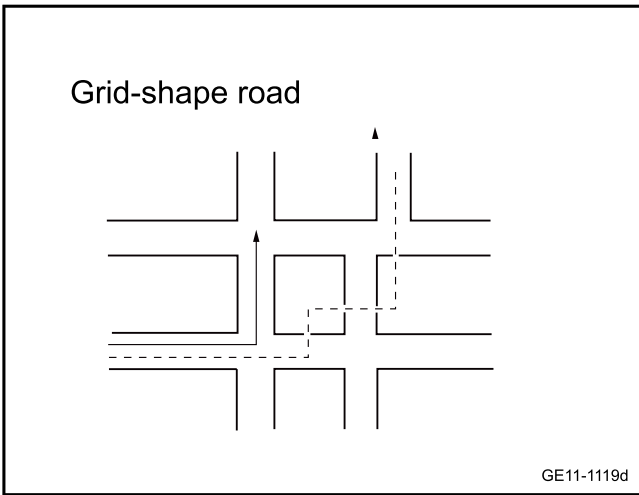


When a vehicle runs on the zigzag road, during each turning, the map will match other roads with the same direction nearby and the location marks are likely to deviate from the current locations.

Correction
method

After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 5 | Latticed roads.

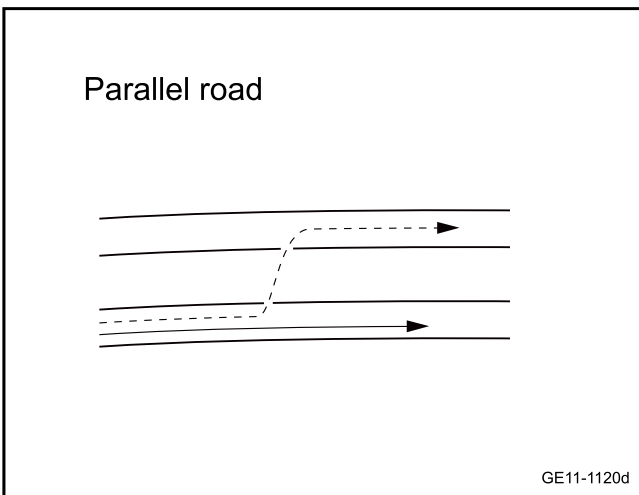


When a vehicle runs on the latticed road and there are many roads with the same direction nearby, the map is likely to match other roads and the location marks are likely to deviate from the current locations.

Correction method

After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 6 Parallel roads.

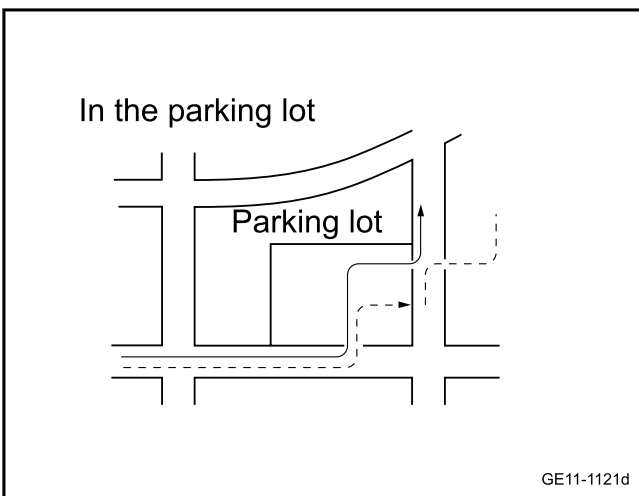


When two roads are parallel (side road along the expressway), the map may wrongly match other roads and the location marks are likely to deviate from the current locations.

Correction method

After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 7 In the parking lot.

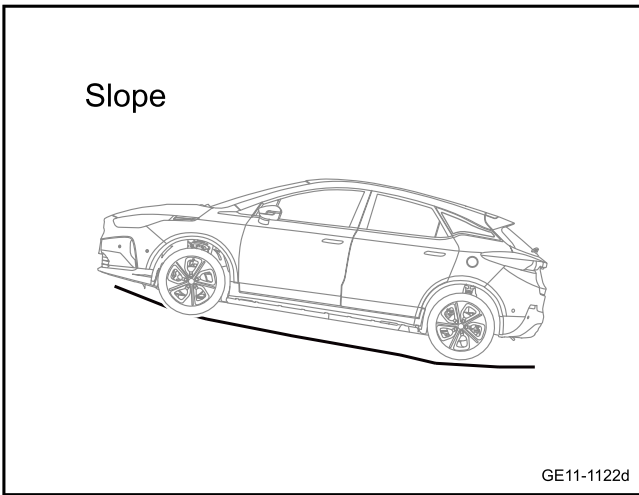


A. When a vehicle stops in the parking lot or runs on a road that cannot be found on the map, the current location marks are likely to be marked on the surrounding roads. When a vehicle returns on a road, the location markers are likely to deviate from the correct locations.

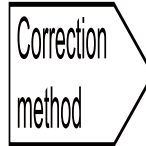
Correction method

After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 8 Steep hillside and slopes.



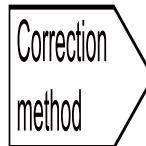
When a vehicle stops on a steep road or the vehicle is oblique, turning angle error will occur and the location markers are likely to deviate from the correct locations.



After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

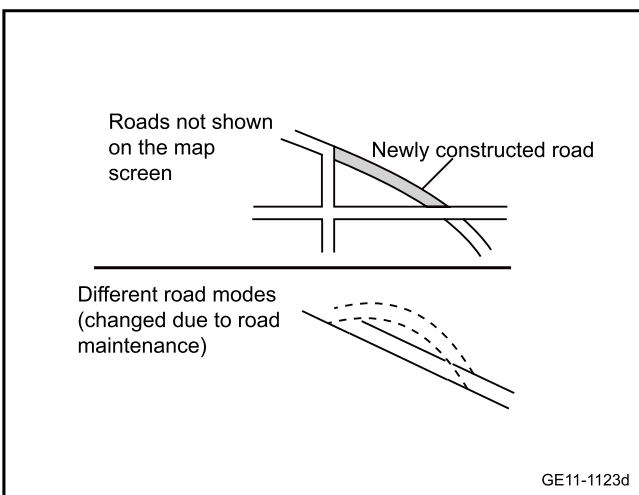
Step 9	Irregular running route.
--------	--------------------------

When a vehicle changes traffic lanes frequently during running, then the location markers are likely to deviate from the correct locations.

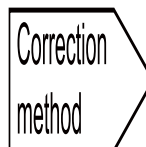


After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

Step 10	Information related map data.
---------	-------------------------------



- A. When a vehicle runs on a new road or a road that is not displayed on the map screen, map matching cannot work normally and will match other roads nearby. Then, the location markers are likely to deviate from the correct locations.
- B. If the road form stored in map data is different from that of actual roads, map matching cannot work normally and will match other roads nearby. Then, the location markers are likely to deviate from the correct locations.



After driving for a while, the vehicle will be subject to re-positioning with differences in roads.

11.3.6.6 Navigation common fault symptom table

Fault Symptom	Reasons	Treatment method
Map cannot be activated successfully	1. When the activation code is generated, the incorrect host serial number was input.	Update data of the navigation map correctly

Fault Symptom	Reasons	Treatment method
	2. When the map disc is equipped with more than two versions, with the wrong map disc used, it may result that the map version that generated the activation code does not conform to that of copied from the SD card and result in the mismatch map version. Activation operation cannot be performed.	
GPS signal can be received by the navigation. But GPS does not move synchronously as the vehicle moves.	Vehicle navigation is installed internally with devices such as gyro. A certain driving distance is required for matching with the map data.	Vehicle navigation is installed internally with devices such as gyro. A certain driving distance is required for matching with the map data.
The destination on the map cannot be found	1. Input the inaccurate address, such as XXX Grand Hotel is mis-inputted for XXX Hotel, etc..	Refer to the navigation manual, and carry out the correct operation.
	2. Input the old name, and the old name also on the map. However, the organization has been renamed or the position has been changed.	
	3. Map information involving national security is not shown on the map, such as the embassy, waterworks, military unit, etc.	

11.3.6.7 The navigation control unit cannot be started

Refer to [Head unit power supply fault](#)

11.3.6.8 Navigation control unit can be powered on but the navigation interface is not accessible

Fault definition: It means that the vehicle is in any position (including the open ground), and GPS cannot retrieve any satellite signals.

Step 1	Check whether any covering is in the front windshield.
--------	--

A. Is there any covering in the front windshield?

Yes

Remove the covering.

No

Step 2	Check the antenna connector.
--------	------------------------------

A. Remove navigation control unit, refer to [Replacement of head unit](#)

B. Check whether the antenna is normal.

No

Reconnect the antenna.

Yes

Step 3	Replace the antenna.
--------	----------------------

- A. Take down the antenna, refer to [Replacement of antenna](#)
- B. Confirm whether the navigation system is working normally.

Yes

System is normal.

No

Step 4	Replace the navigation control unit.
--------	--------------------------------------

- A. Check whether the navigation control unit power supply and the grounding harness are normal. Refer to [Head unit power supply fault](#)
- B. Replace the navigation master device, refer to [replacement of the navigation control unit](#)
- C. Confirm whether the navigation system is working normally.

Yes

System is normal.

No

Step 5	Reprogram and reset the navigation control unit.
--------	--

- A. Reprogram and reset the navigation control unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6	System is normal.
--------	-------------------

11.3.6.9 Navigation interface can be entered, but the navigation control unit cannot retrieve the satellite signal

Step 1	Check the power circuit of the navigation control unit.
--------	---

- A. For diagnosis steps, refer to [Head unit power supply fault](#)
- B. Confirm whether the navigation system is working normally.

Yes

System is normal.

No

Step 2	Replace the navigation control unit.
--------	--------------------------------------

- A. Refer to [Replacement of head unit](#)
- B. Check whether the navigation system works properly.

Yes

System is normal.

No

Step 3	Reprogram and reset the navigation control unit.
--------	--

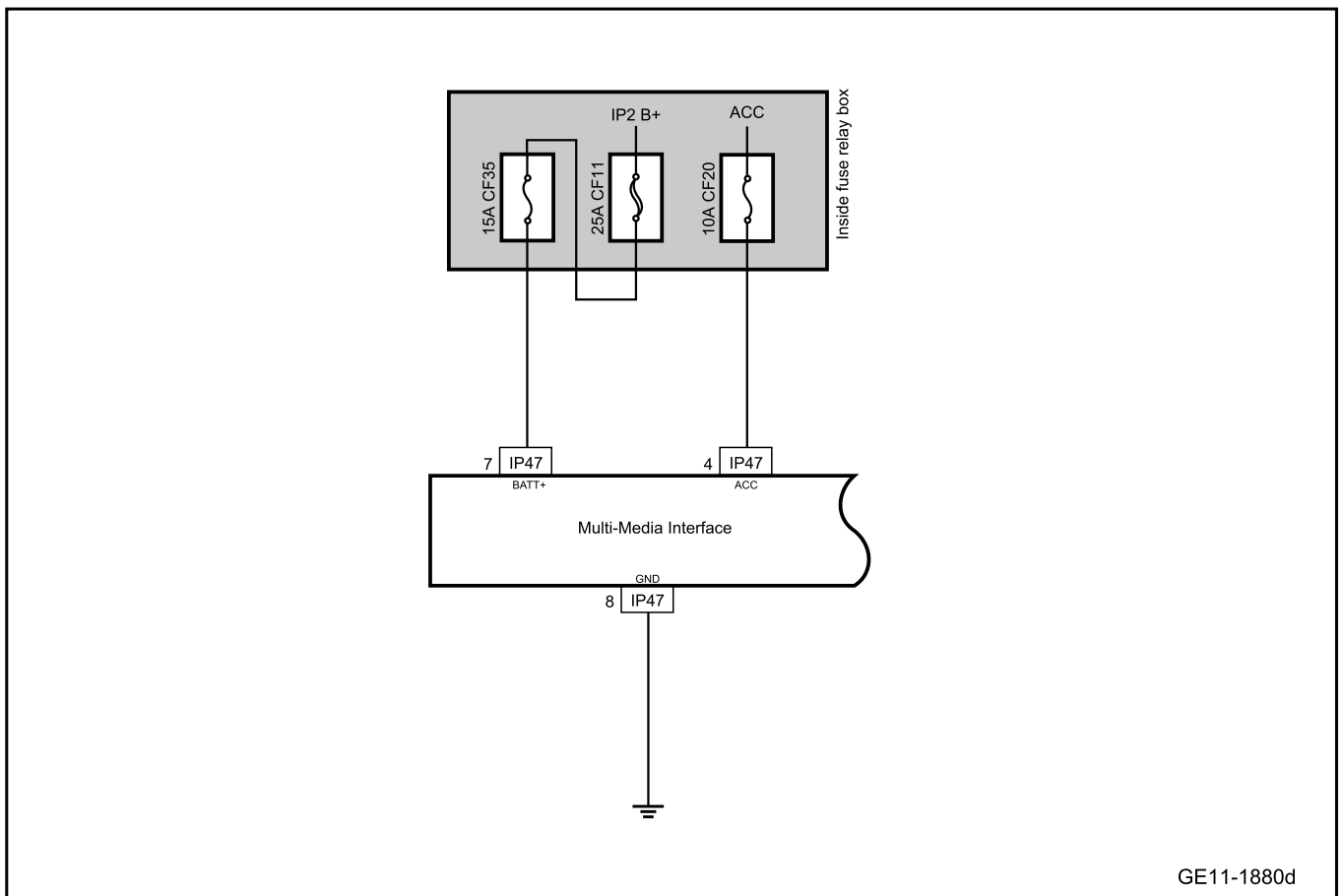
- A. Reprogram and reset the navigation control unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 4	System is normal.
--------	-------------------

11.3.6.10 Navigation host cannot be turned off

1. Circuit diagram:



2. Diagnosis steps:

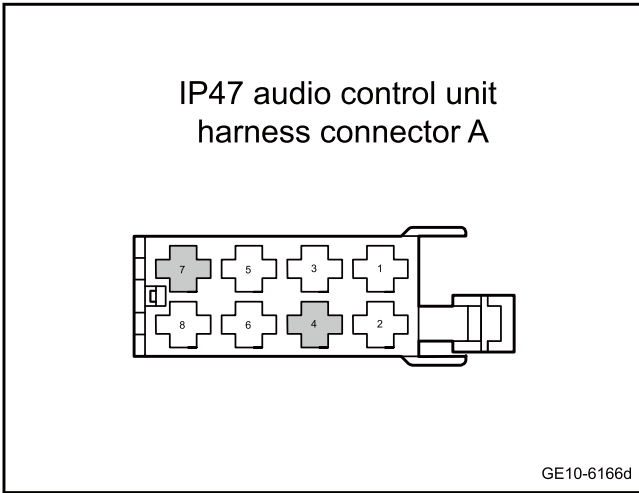
Step 1	Primary check.
--------	----------------

- A. Check the head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 2	Check the power circuit of head unit.
--------	---------------------------------------



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP47.
- C. The key activates the power supply of the vehicle to ON.
- D. Measure the voltage between the following terminals:

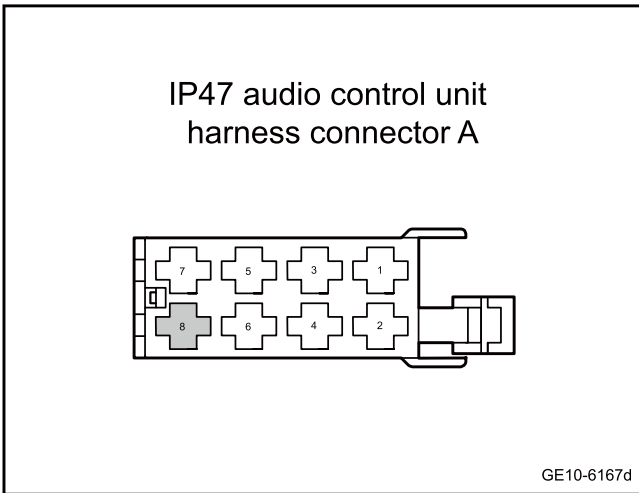
Measure terminal 1	Measure terminal 2	Standard voltage value
IP47(4)	Vehicle body is grounded.	Standard voltage: 11-14V
IP47(7)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 | Check the grounding circuit of head unit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the head unit harness connector IP47.
- C. Use a multimeter to measure the resistance between IP47 terminal 8 and the vehicle body ground.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Change the head unit.

- A. Change the head unit. Refer to [Replacement of head unit](#)

Next step

Step 5 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 6	System is normal.
--------	-------------------

11.3.6.11 Brief introduction to extended function

1. FM radio function

With FM radio function, users can select their own favorite channels. Users can save their favorite frequency rate to preset channels, totally 6 preset channels are provided. When users introduce frequency rate by other means, in case the current FM or AM frequency rate is the same as the preset channel frequency rate, the corresponding preset channel number will be displayed. After the battery negative cable is disconnected, all radio information in the storage list is cleared.

2. Bluetooth telephone

The system is equipped with bluetooth chip, which supports wireless bluetooth technology. It can connect the surrounding bluetooth devices wirelessly and realize the telephone hands-free function.

Caution

When the “travel limit” is activated, the machine will automatically screen the video frame during driving. For your safety, it is recommended to activate this function.

3. Multimedia

The system supports multimedia functions, such as USB, iPod audio, bluetooth music, AUX, etc.

4. Settings

Users can set some information according to their own requirements in the system settings menu.

5. Parking assist

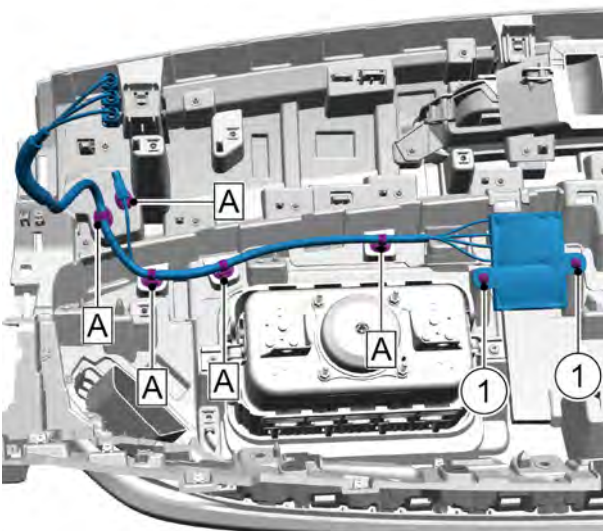
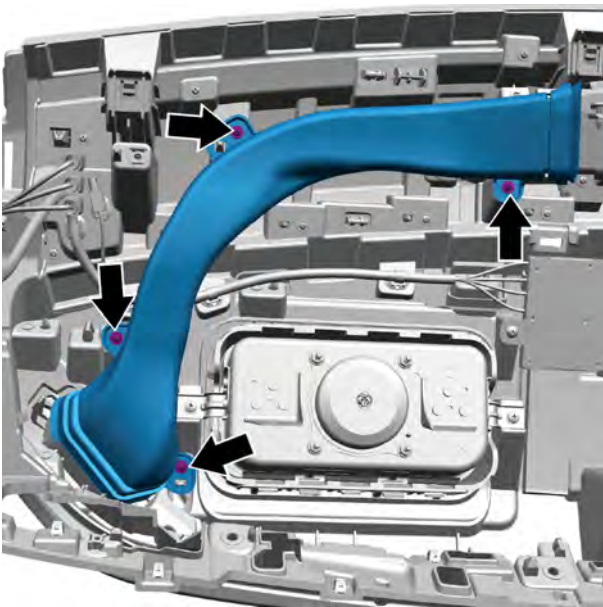
When the driver turns the gear to “R”, the media center will introduce to the reversing camera system to provide reversing information for the driver.

11.3.7 Removing and installing

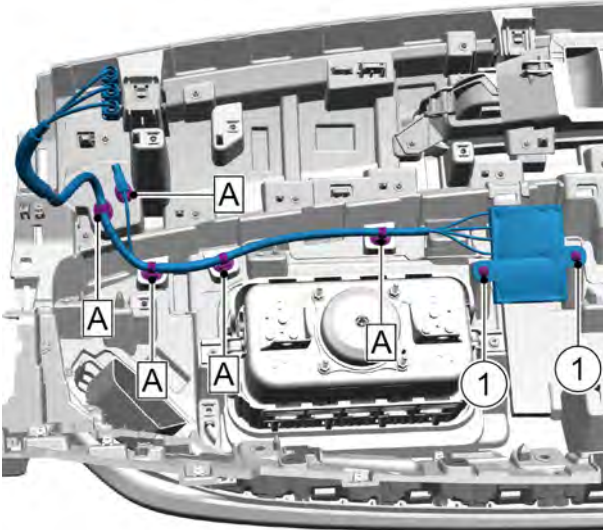
11.3.7.1 Replacement of GPS4G Antenna

Removal procedure

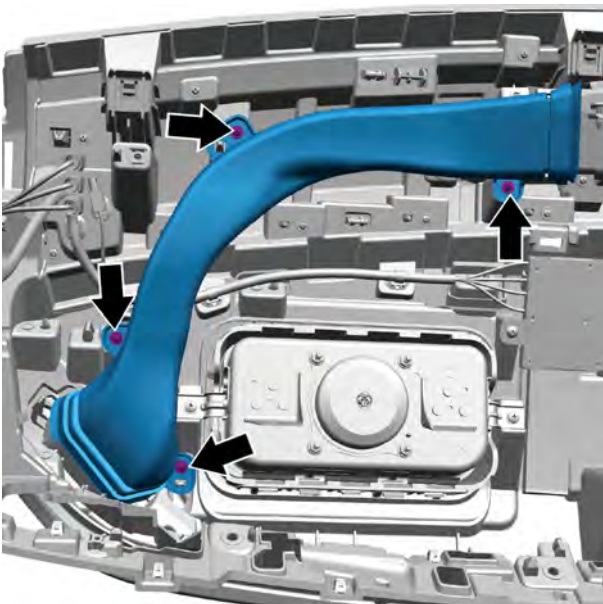
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the dashboard body assembly. Refer to [Replacement of Dashboard Body Assembly](#)
- 3 Replace connecting pipe of middle vent duct Refer to [Replacement of Connecting Pipe of Middle Vent Duct](#)
- 4 Remove the 4 fixing screws connecting the right auxiliary defrosting duct assembly and the body assembly of the dashboard.
- 5 Remove the right auxiliary defrosting duct assembly.
- 6 Remove the 2 fixing screws 1 of the GPS4G antenna and the dashboard body assembly.
- 7 Disconnect the 5 fixing clips A of the GPS4G antenna and the dashboard body assembly.
- 8 Take off the GPS4G antenna.



Installation procedure



- 1 Move the GPS+4G antenna to the installation position.
- 2 Install the 5 fixing clips A connecting the GPS4G antenna and the dashboard body assembly.
- 3 Install the 2 fixing bolts connecting the GPS4G antenna and the dashboard body assembly.
Torque: 1.5N·m



- 4 Move the right auxiliary defrosting duct assembly to the installation position.
- 5 Install the 4 fixing bolts connecting the auxiliary auxiliary defrosting duct assembly and the the dashboard body assembly.

- 6 Install connecting pipe of middle vent duct
- 7 Install the dashboard body assembly.
- 8 Connect the negative cable of battery.

11.3.7.2 Refer to Replacement of GPS Host

Refer to [Replacement of head unit](#)

11.3.7.3 Replacement of Emergency Rescue module

Refer to [Replacement of head unit](#)

11.4 Lighting system

11.4.1 Specification

11.4.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing bolt of combination switch	M5×10	2.5-3.5
Middle rear fog lamp assembly fixing screw	ST4.8×16	1.3-1.7
Install fixing nuts of high mounted stop lamp assembly	M5	2-3
Front combination lamp assembly fixing bolt	M6×25	4-5
Tailgate combination lamp fixing nut	M5	2-3
Fixing bolts of the side wall combination lamp	M5	2-3
Tailgate through lamp fixing screw	ST4.8×16	1.3-1.7
Front reading lamp assembly	ST4.8×16	1.3-1.7
Fix bolt for connecting front middle position lamp and front bump middle bracket	M6×25	4-5
Fixing screws for connecting the front bumper upper trim strip assembly and the middle bracket of the front bumper	ST4.8×16	1.3-1.7

11.4.2 Description and operation

11.4.2.1 Description and operation of exterior lighting system

Headlamp

The headlamp is controlled by the multi-functional control lever on the left of steering column. When the headlamp switch is turned to the first position, the position lamp, number plate lamp and fascia lamp will be illuminated. When the headlamp switch is turned to the second position, all lamps mentioned above will be lightened. The headlamp will be lightened, too. When the switch turns to OFF position, all lamps are switched off.

The high beam and low beam of the headlamp are also controlled by this control lever. When the headlamp is switched on, push the control lever forward away from the driver until a sound of click is heard. Then the low beam is switched to high beam. When the headlamp high beam is switched on, the indicator light on the instrument cluster display screen is illuminated. Pull back the control lever toward the driver. Then the high beam is switched to low beam. If continue to pull the control lever toward the driver, the low beam can still become the high beam. But when your hand is released, the control lever will return to low beam position automatically.

The headlamp must undergo beam calibration to achieve proper road lighting. When new headlamp assembly is being installed or the headlamp assembly or its mounting seat is influenced by the maintenance of front area possibly, the beam of headlamp should be checked and calibrated.

Headlight on reminding buzzer

When the headlight switch is in the headlight ON position or position lamp ON position, the power mode is not in the "ACC", "ON" or "START" position. At this time, the body control module monitors the status of the driver's door. If the left front door is opened, the body control module will make the buzzer sound. If the headlight is turned off, the BCM will not detect that the headlamp switch is on and the buzzer will not sound.

Position lamp and turn signal lamp

Turn the lighting switch to the first position, the position lamp will be illuminated. Multimedia settings from vehicle power supply to OFF gear to close position lamp. When turn signal lamp is enabled, the front/rear turn signal lamps and side turn signal lamp flash to give a turning signal. Turn signal lamp only works when the power is under ON status. Turn signal lamp is controlled by the lamp switch on the left of steering column. Pull up or pull down the control lever (beyond the stop point). The front/rear turn signal lamps and side turn

signal lamp will be illuminated. After turning is completed, the control lever returns to horizontal position. The turn signal lamp will stop flashing.

During lane changes or a small turning, the turn signal may not be cancelled due to small rotating angle of steering wheel. Therefore, only turn signal control lever to a stop point and remain in the position. When the control lever is released and returns to horizontal position, the turn signal will be cancelled.

When remote anti-theft system is working, IBC can control the turn signal indicator light to flash to indicate the working status of the remote anti-theft system.

Fog Lamp

The vehicle is not equipped with front fog lamps, only with rear fog lamps. The rear fog lamp switch is located on the multi-function lever on the left side of the steering column. When using the rear fog lamps, you must first turn on the low beam or high beam, and turn the multi-function lever to the rear fog lamp gear. The indicator lamps on the instrument will turn on, indicating that the rear fog lamps have been turned on. Switch off rear fog lamp, and the indicator light is off as well.

daytime running light

The daytime running lights should automatically come on when the electric drive system rotates; this function should be configurable through the diagnosis instrument. The daytime running lights should automatically go out when the headlights are turned on, but do not go out when the headlights are only flashing intermittently at short intervals. (The high beam lighting time is less than 700ms, which is regarded as intermittent flashing warning).

Rear combination lamps

The rear combination lamp A contains position lamp, turn lamp, brake lamp grounding The rear combination lamp B contains position lamps, turn signals and reverse lamps.

The high-mounted stop lamp is located at the top of the rear windshield. When the brake pedal is depressed, the brake light switch transmits the brake signal to IBC. After IBC receives the signal, it turns on the brake light and the high-mounted stop lamp at the same time.

Reverse lamp

The reverse lamp is located in the rear combination lamp B. When the driver puts the shift lever in reverse, the electronic gear shifter uses the CAN line to transmit the gear signal to

the IBC through the gateway, and the IBC drives the reverse lamp to turn on according to the received signal.

Number plate lamp

Number plate lamp will be illuminated when the headlamp or the position lamp is illuminated. The number plate lamp is mounted above the number plate.

Charging status indicator light

The charging status indicator lamps are located on the left and right front fenders of the vehicle to indicate different charging states.

The definition of charging status indicator lamp is as follows:

Status	Description
Breather at a frequency of 2 seconds	Charging, the power is less than or equal to 50%
Breather at a frequency of 4 seconds	Charging, the battery is greater than 50%
Turn off after 2 minutes of always on	Charge finished
Flash (lighted for 2 seconds, turned off for 2 seconds)	Charge heating

11.4.2.2 Description and operation of internal lighting system

Internal courtesy lamp

The courtesy light switch is located on the front reading lamp. When the switch is in DOOR gear, open the door and the courtesy light will turn on; when the door is closed, the courtesy light will go out with a delay of several seconds.

Reading lamp

The front reading lamp is in the middle of the front roof. Press the switch to turn on the bulb. Press it again to turn off the bulb.

Trunk Lamp

The trunk lamp is located on the trim panel of the left side of trunk. As long as the tailgate is opened, the light will be on.

Backlight lamp

The backlight lamp is located inside the button. When the position lamp is turned on, the backlight is turned on synchronously, and the brightness of the backlight lamp can be adjusted through the display screen.

11.4.2.3 Comfortable Lighting Control

Follow me home function

Within 10min after the multimedia sets the vehicle power supply to the OFF, rotate the light switch from the OFF position to the mini light position, or the headlight position, or the automatic light position, and then return to the OFF position. After the Follow Me Home light function is activated, the low beam can not light up within 30s.

When the Follow Me Home light function is activated, if one door is opened, the low beam can not light up within 180s. (the delay is reset).

Automatic lightening function

1. The key activates the power to ON status. When the front lamp knob on lamp lightening switch handle is in AUTO mode and signal of ambient light intensity sensor received by IBC control unit is in on-status (low light), then IBC connects position lamp and headlamp relay, and lightens position lamp or headlamp.
2. The key activates the power to ON status. When the front lamp knob on lamp lightening switch handle is under AUTO mode and signal of ambient light level sensor received by IBC control unit is in disconnected-status (bright light), then IBC disconnects location position lamp or headlamp relay, and extinguishes position lamp or headlamp. (If the automatic lightening function is valid before, then IBC disconnects position lamp or headlamp relay after 2s of delay, and extinguishes position lamp or headlamp).
3. When the combination switch is in the AUTO position, multimedia sets the vehicle power supply to OFF state, if the status of the headlight or position lamp is on, they will keep on for 60s. If the locking signal is received within 60s, this function will be turned off.

Bulb inspection function

Under turning status, if one of directional indicators is damaged, other directional indicators of the same side flash at a double-frequency in normal mode.

Fade-in lightening function

The external condition for IBC to control the interior lamps is that the interior lamp switch is turned to "DOOR" gear.

If one of the following conditions is met, the interior ceiling lamp will fade in for about 0.7 seconds:

- Any one of doors is open
- Multimedia settings from the vehicle power supply to the OFF position;

- When setting the power supply level of the vehicle to OFF by multimedia, issue an unlock request (including remote and internal requests);

Fade-in shut off function

The external condition for IBC to control the interior lamps is that the interior lamp switch is turned to "DOOR" gear.

If one of the following conditions is met, the interior ceiling lamp will fade in for about 1.7 seconds:

- The key activates the power supply of the vehicle to the ON gear and all doors are closed;
- When multimedia sets the power mode to OFF and all doors are closed, issue a locking request (including remote and internal requests)
- The central control door is unlocked, and the multimedia sets the power mode OFF. After the last door is closed, it is delayed for 15 seconds
- The interior light is on for 15 seconds and there is no condition to activate it again
- All doors are closed and the central control is locked

Courtesy lights

Open the left front door, the left front door courtesy lamp will turn on, open the right front door, and the right front door courtesy lamp will turn on. If the door is still open after 10 minutes, the courtesy lamp will go out, and any door will be opened within 10 minutes, and the timer will be reset.

Multimedia is to set the power supply of the vehicle to OFF, and all doors are closed, and the courtesy lamp goes out.

Intelligent courtesy system

The courtesy lamp function is the function that when the end user approaches the vehicle with the smart key, the predefined internal or external lights are lit.

The end user enters the courtesy lamp area with a valid smart key. PEPS will wake up the network and send a request to turn on the courtesy lamp and start the timer. When receiving the request to turn on the courtesy lamp, the IBC needs to turn on the courtesy lamp. If PEPS detects that all keys leave the courtesy lamp area beyond the delay time, a request to turn off the courtesy lamp is sent.

11.4.2.4 Light adjustment of front headlamp

Equipment and site preparation

1. Tools: Phillips screwdriver and Allen wrench.
2. Tape measure or laser range finder (electronic ruler).
3. Site: The dark environment site should be level, sized to allow vehicle entry, with the headlight reference center at least 10m away from the screen.

4. Test screen: thick white paper or white wall (the width of the test screen should be greater than the vehicle width by no less than 2m to facilitate the observation of light patterns).

Vehicle preparation

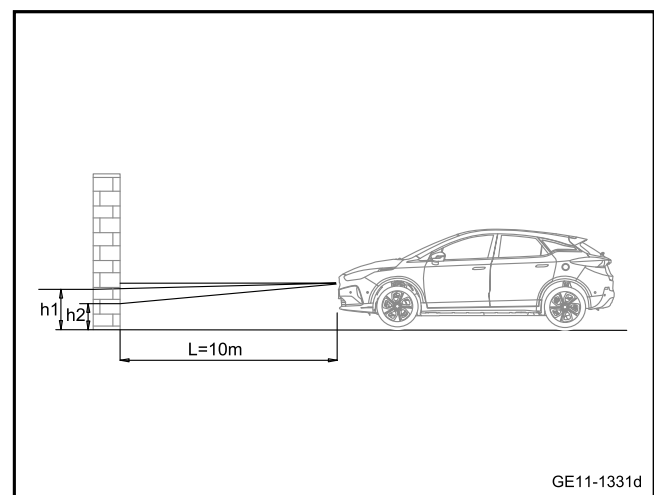
1. Tyre pressure is adjusted to the full load tyre pressure value, refer to tyre specifications. [Tire Specification\(Type I\)](#) [Tire Specification\(Type II\)](#)

Replenish coolant and lubricating oil, and prepare all accessories and tools (spare tires, tools, etc.) for testing vehicles.

3. A load of 75kg is placed on the driver's seat to simulate the driver's ride.
4. Prior to measurement, the vehicle should be at a natural standstill state with the vehicle traveling backward for at least one wheel circle distance and then forward for the same distance.
5. Make sure the outside cover of the headlamp is clean.
6. Start the vehicle.

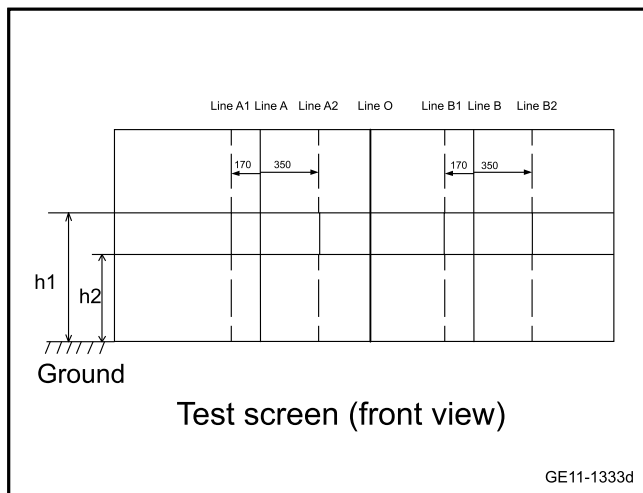
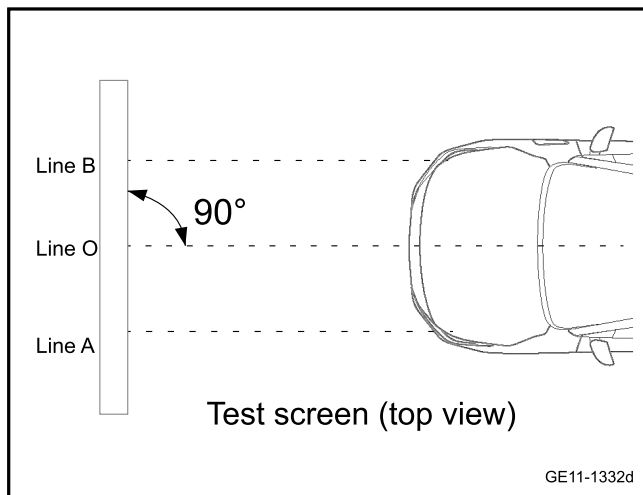
Light measurement

1. Park the vehicle as shown in the diagram, with a distance L between the headlight reference center and the screen of 10m.



For vehicles subject to manual light height adjustment, turn the height adjustment switch to the "0" position.

3. Draw Line O, Line A, Line A1, Line A2, Line B, Line B1, and Line B2 on the screen.



- Line O: Draw a vertical line in the center of the test screen aligned with the center of the vehicle.
- Line A: Draw a line to the left of Line O, parallel to Line O, with a distance of 662.5mm from Line O (solid red line).
- Line A1: Draw a line to the left of Line A, parallel to Line A, with a distance of 170mm from Line A (dashed red line).
- Line A2: Draw a line to the right of Line A, parallel to Line A, with a distance of 350mm from Line A (dashed red line).
- Line B: Draw a line to the right of Line O, parallel to Line O, with a distance of 662.5mm from Line O (solid red line).
- Line B1: Draw a line to the left of Line B, parallel to Line B, with a distance of 170mm from Line B (dashed red line).
- Line B2: Draw a line to the right of Line B, parallel to Line B, with a distance of 350mm from Line B (dashed red line).

4. Draw Line h1 and h2 on the screen.

- Line h2: Draw a horizontal line parallel to the ground at a distance of 655mm from the ground.
- Line h1: Draw a horizontal line parallel to the ground at a distance of 695mm from the ground.

5. The green box shown in the diagram is formed after all lines are completed.

Light adjustment

1. Adjustment of low beam lamp

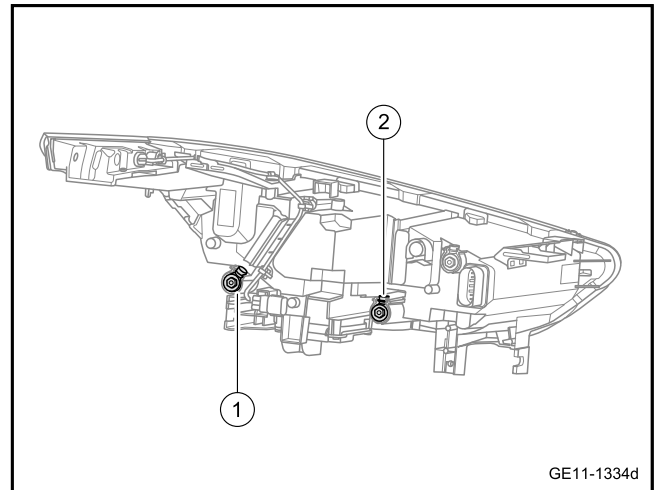
- a. Turn on the low beam lamp
- b. Lights on the left: Insert a Phillips screwdriver or Allen wrench into the dimmer port of low beam lamp. Rotate the front headlamp dimmer handle 1 to adjust the front headlamp in the vertical (up and down) direction. Rotate the front headlamp dimmer handle 2 to adjust the front headlamp in the horizontal (left and right) direction.

Note

Adjust the lights on the right with the same method as that on the left.

Caution

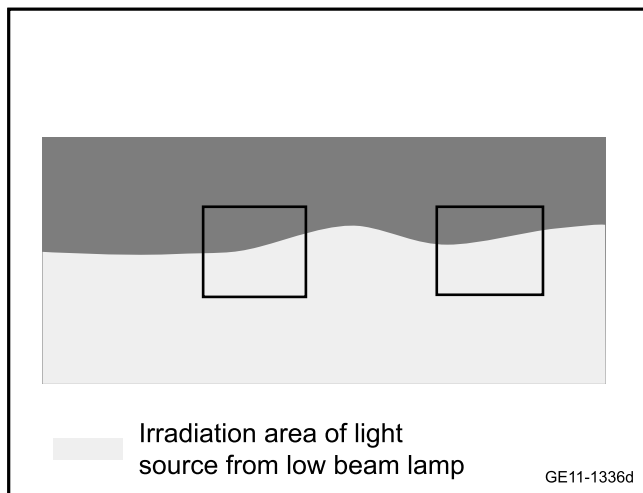
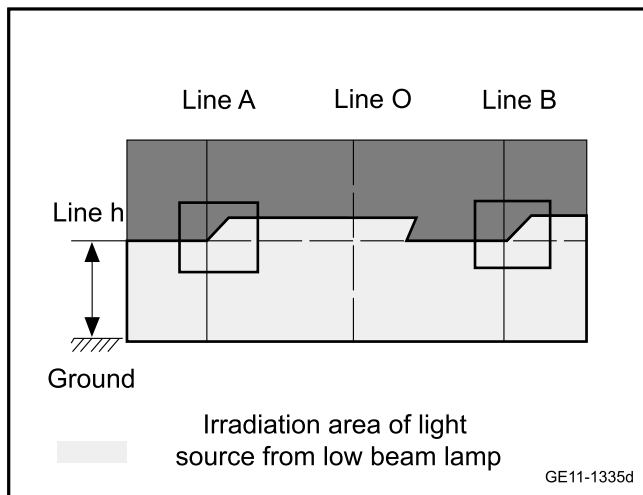
In order to observe the effect of light adjustment, the light on one side may be adjusted while the light on the other side is shielded.



- c. The light adjustment is completed when the turning point of light and dark cutoff line of source for low beam lamp is located in the green box.

Caution

After commissioning, the light height on left and right sides should be consistent.



2. High beam lamp adjustment

This model integrates the high and low beams.

Caution

For the lamps integrating high and low beams, only the low beam needs to be adjusted.

11.4.3 System working principles

11.4.3.1 System Working Principles

Working principles of the headlamp

Low beam: when the light combination switch is adjusted to the low beam position, the low beam ON signal sent by the light combination switch is transmitted to the IBC through the harness, and then the IBC controls to turn on the low beam.

High beam lamp: Low beam: when the light combination switch is adjusted to the low beam position, the low beam ON signal sent by the light combination switch is transmitted to the IBC through the harness, and then the IBC controls to turn on the low beam.

Headlamp height adjustment: the headlamp height adjustment switch sends a signal and transmits it to the stepper motor in the front combination lamp, that is, the headlamp height adjustment motor. The motor makes corresponding actions according to the control signal, and changes the irradiation angle of the headlamp through the mechanical device between the motor output shaft and the headlamp.

Caution

Too frequent toggling of the key may cause damage or no operation to the motor.

When the IBC detects that the vehicle is in the "AUTO" (automatic lamp) mode, it will control the headlight on and off according to the received signals from the environment and sunlight sensor. When the ambient light is weak, the IBC controls to turn on the low beam; when the ambient light is strong, the IBC controls to turn off the low beam.

Working principles of the position lamp

When the light combination switch is adjusted to the position lamp position, the "position lamp ON" signal sent by the combination switch is transmitted to the IBC through the CAN network, and then the IBC sends a position lamp control signal to turn on the vehicle position lamp and number plate lamp.

Working principles of the daytime running light

The daytime running light is controlled to turn on through IBC, and the switch can be freely turned on and off in the multimedia host.

Working principles of the fog lamp

When the combination switch is adjusted to the rear fog lamp gear, the "rear fog lamp ON" signal sent by the combination switch is transmitted to the IBC through the CAN network, and

then the IBC sends the rear fog lamp control signal to turn on the rear fog lamp of the vehicle.

Working principles of the turn signal lamp

When the light combination switch is adjusted to the left/right turn signal gear, the "left/right turn signal" signal sent by the combination switch is transmitted to the IBC through the CAN network, and then the IBC sends out the left/right turn signal control, turning on the left/right turn signal of the vehicle and flashes regularly.

Caution

When the hazard warning lamp button is pressed, the IBC outputs voltage to both circuits at the same time, turning on all turn signals at the same time and they flash regularly.

Working principles of the brake lamp

Depress the brake pedal, the brake switch outputs the brake signal, and the IBC will output the brake lamp control signal when it receives the brake signal, turning on the vehicle brake lamp and the high-mounted stop lamp.

Working principles of the reverse lamp

When the driver shifts to the reverse gear, the combination switch (mobile gear) outputs a reversing signal and transmits it to the gateway controller, and then the gateway controller transmits it to the IBC through the harness. After the IBC receives the reversing signal, it outputs a reversing lamp control signal to turn on the reversing lamp of the vehicle.

Working principles of the interior top light

When the reading lamp switch is at DOOR, the power supply of the reading lamp comes from the IBC harness connector. When the door is open, the courtesy switch sends the signal to IBC, and IBC lights up the reading lamp after receiving the signal.

The power supply of the courtesy lamp comes from the fuse. When the door is open, the courtesy switch sends the signal to IBC, and IBC lights up the courtesy lamp after receiving the signal.

The power supply of the trunk lamp comes from the fuse. When the trunk door is open, the courtesy switch transmits the signal to the IBC, and the IBC lights up the trunk lamp after receiving the signal.

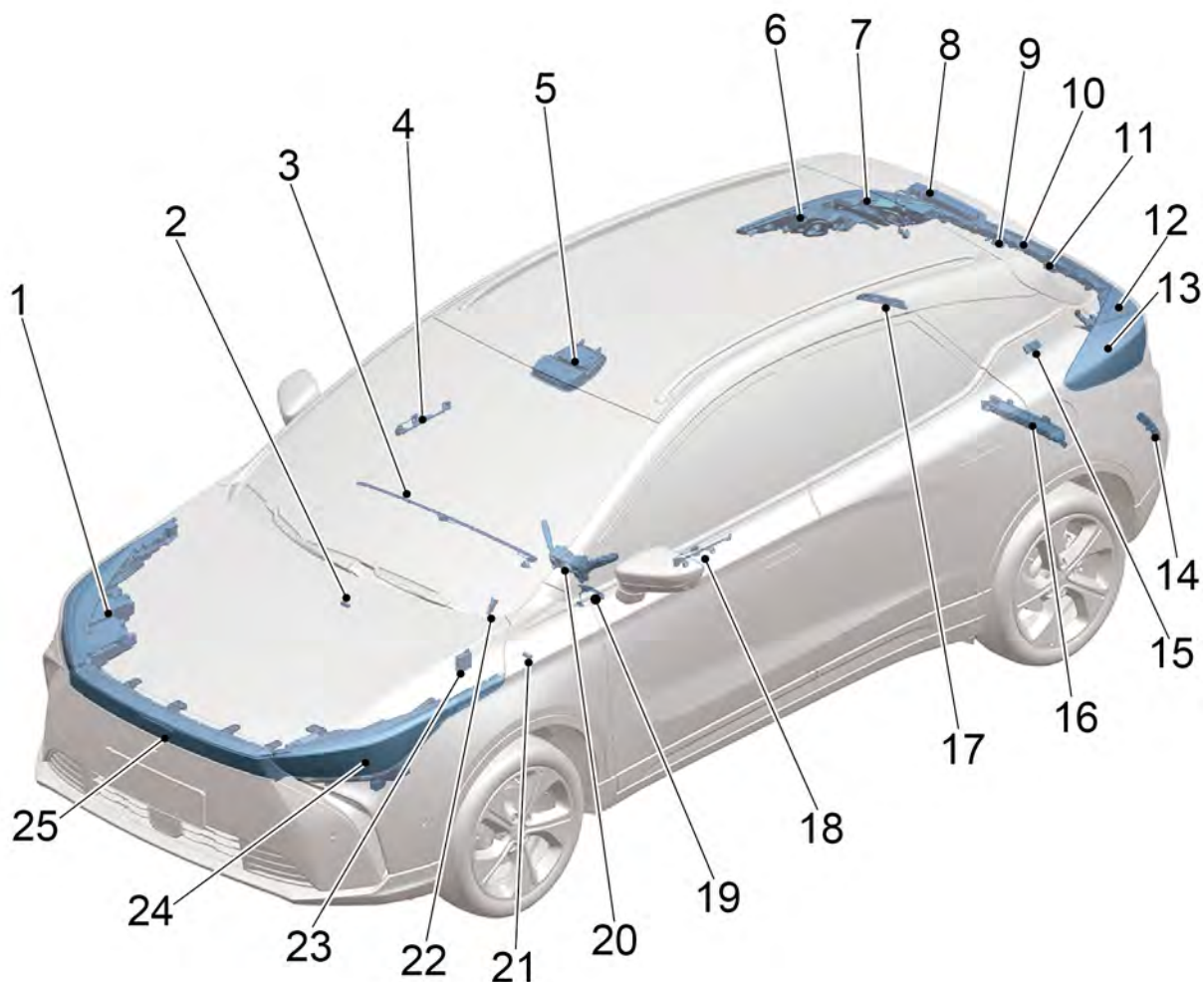
Working principles of the backlight lamp

The power supply of the backlight lamp comes from IBC.

When the position lamp is turned on, the switch transmits the signal to the IBC, and the IBC lights up the backlight lamp after receiving the signal.

11.4.4 Part position

11.4.4.1 Part Position

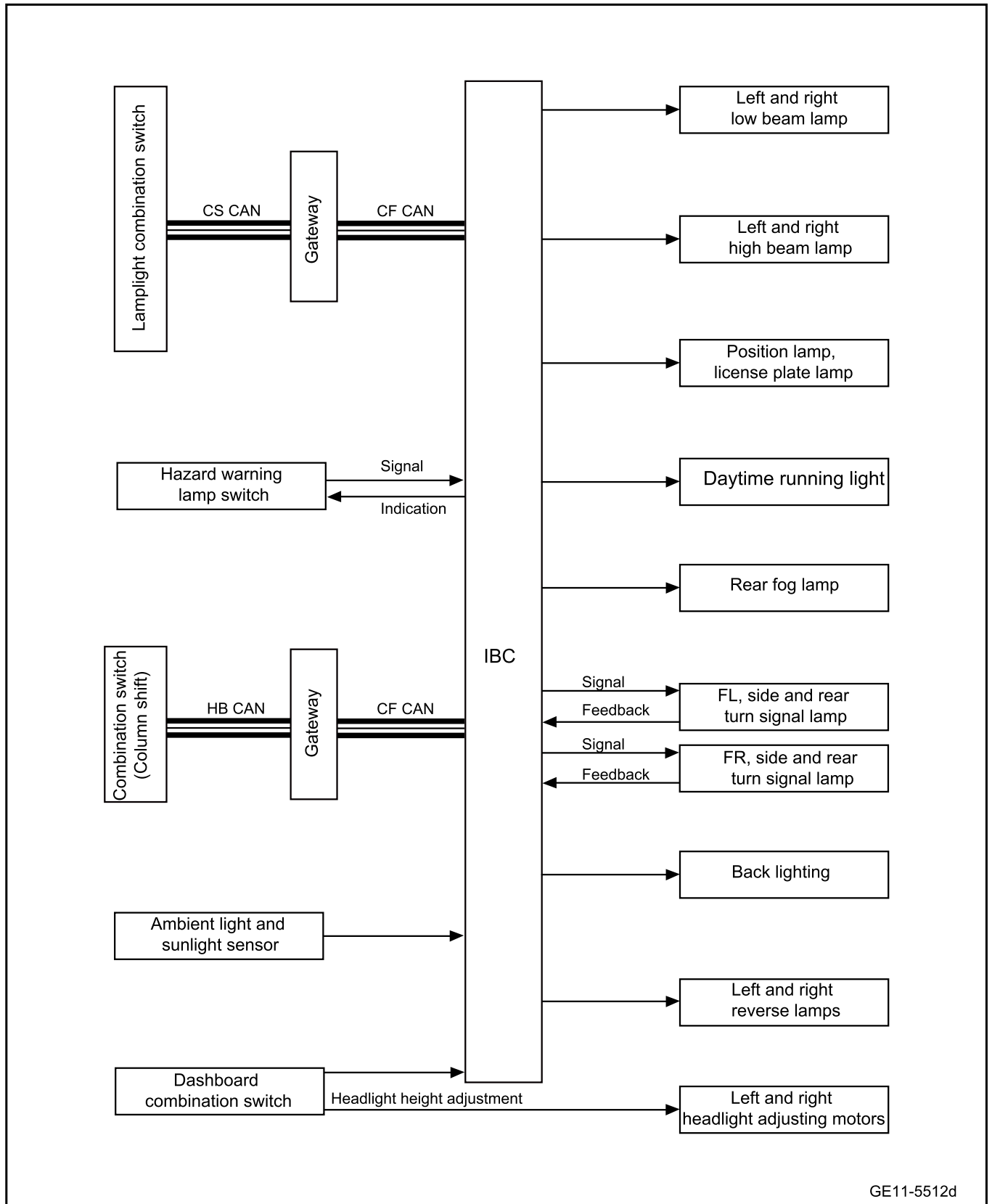


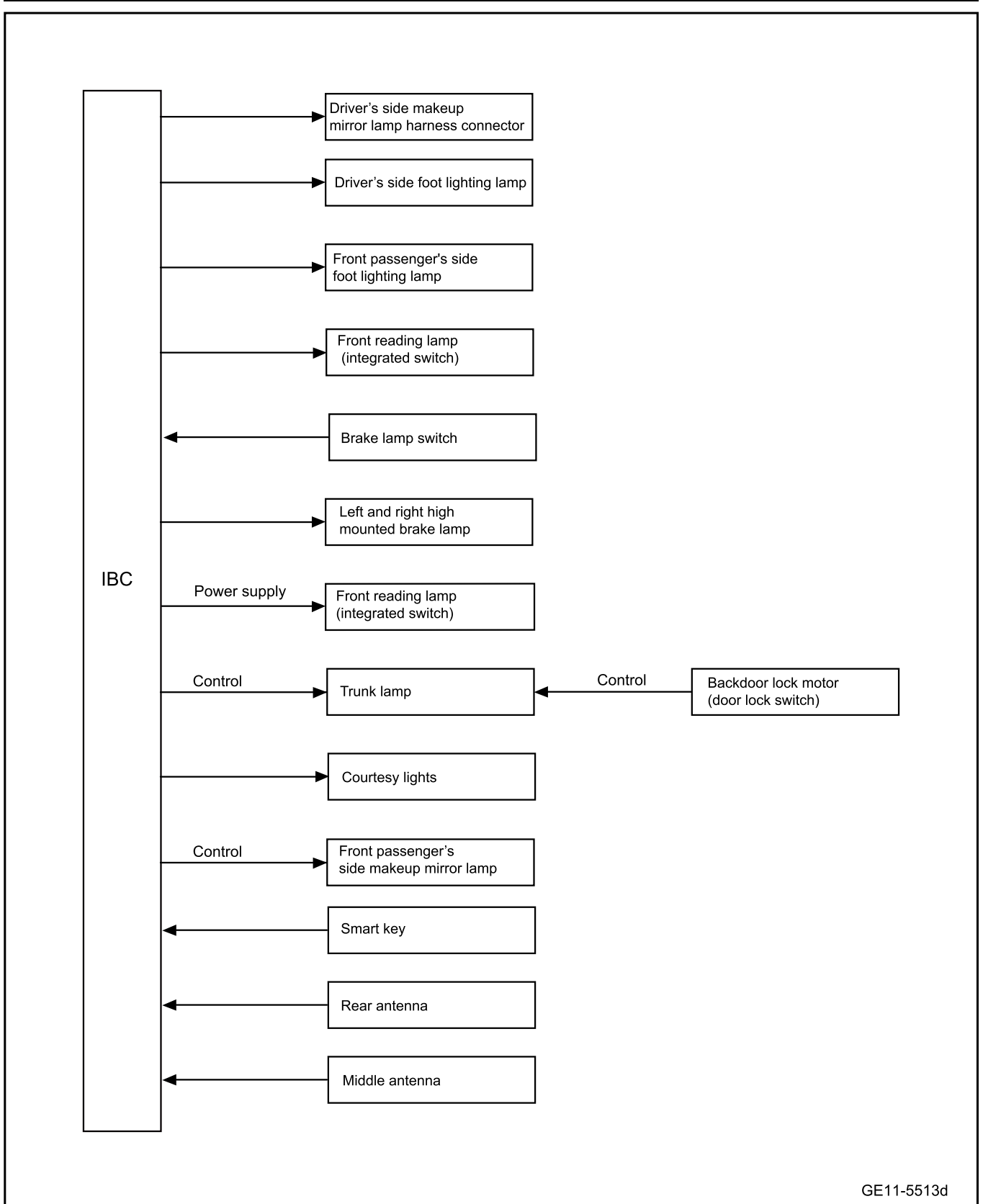
- | | |
|---|--|
| 1. Right front combination lamp assembly | 14. Right rear retro-reflector |
| 2. Foot lights | 15. Trunk lamp |
| 3. Instrument Panel Right Air Outlet Ambient Lamp | 16. Middle rear fog lamp assembly |
| 4. Right front door ambient lamp | 17. Rear right retro-reflector |
| 5. LED front reading lamp | 18. Left front door ambient lamp |
| 6. Rear right body side combination lamp | 19. Left air outlet ambient lamp of the instrument panel |
| 7. Right combination lamp on the tailgate | 20. Combination switch |
| 8. High-mounted stop lamp | 21. Foot lights |
| 9. Rear number plate lamp | 22. Hazard warning lamp switch |
| 10. Tailgate through lamp | 23. Ambient lamp controller |

- | | |
|---|---|
| 11. Rear number plate lamp | 24. Right front combination lamp assembly |
| 12. Left combination lamp on the tailgate | 25. Front middle position lamp |
| 13. Rear left body side combination lamp | |

11.4.5 Electrical block diagram

11.4.5.1 Electrical Schematic Diagram of Lighting System





11.4.6 Diagnostic information and procedures

11.4.6.1 Diagnosis Description

Refer to the Description and Operation and System Working Principle before diagnosing the fault of the lighting system.

11.4.6.2 Routine inspection

- Check after-sales installations to guarantee that these installations will not affect the operation of lighting system.
- Checking system parts that are easily accessible or can be seen to guarantee that there is no obvious damage or situation that may cause a fault.
- If only one bulb is inoperative, check and repair the power supply or poor contact or open circuit fault at the grounding circuit before replacing the bulb.

11.4.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
Low beam is always on or off	1. Fuse fault	Check the low beam lamp fuse and replace it if necessary.
	2. Relay fault	Check the low beam lamp relay and replace it if necessary.
	3. Light combination switch fault	Refer to Low Beam Does Not Work
	4. Low beam lamp is faulty	
	5. IBC fault	Replace the IBC Refer to Replacement of the body control module
High beam is always on or off	1. Fuse fault	Check high beam lamp fuse and replace it if necessary.
	2. Relay fault	Check the high beam lamp relay and replace it if necessary.
	3. Light combination switch fault	Refer to High Beam Lamp Does Not Work
	4. High beam lamp is faulty	
	5. IBC fault	Replace the IBC Refer to Replacement of the body control module
Headlight height adjustment fault	1. Headlamp height adjustment switch fault	Refer to Headlamp Height Adjustment Does Not Work
	2. Height adjusting motor fault	
	3. IBC fault	Replace the IBC Refer to Replacement of the body control module
Position lamp is always on or off	1. Fuse fault	Inspect the fuse and replace it if necessary.
	2. Light combination switch fault	Refer to Position Lamp Does Not Work
	3. Position lamp is faulty	
	4. IBC fault	Replace the IBC Refer to Replacement of the body control module
The rear fog lamp does not work or is always on.	1. Fuse fault	Inspect the fuse and replace it if necessary.
	2. Light combination switch fault	Refer to Rear Fog Lamp Does Not Work

Symptom	Possibility and cause	Measures
	3. Rear fog lamp fault	
	4. IBC fault	Replace the IBC Refer to Replacement of the body control module
Brake lamp is always on or off	1. Fuse fault	Inspect the fuse and replace it if necessary.
	2. Brake lamp switch fault	Refer to Brake Lamp Does Not Work
	3. Brake lamp fault	
	4. IBC fault	Replace the IBC Refer to Replacement of the body control module
The reverse lamp is always on or off	1. Fuse fault	Inspect the fuse and replace it if necessary.
	2. Reverse gear switch fault	Refer to Reverse Lamp Does Not Work
	3. Reverse lamp fault	
	4. IBC fault	Replace the IBC Refer to Replacement of the body control module
Turn signals are always on or off	1. Fuse fault	Inspect the fuse and replace it if necessary.
	2. Light combination switch fault	Refer to Turn Signal Lamp Does not Work
	3. Side turn signal lamp fault	
	4. IBC fault	Replace the IBC Refer to Replacement of the body control module

11.4.6.4 List of Diagnostic Trouble Codes (DTC)

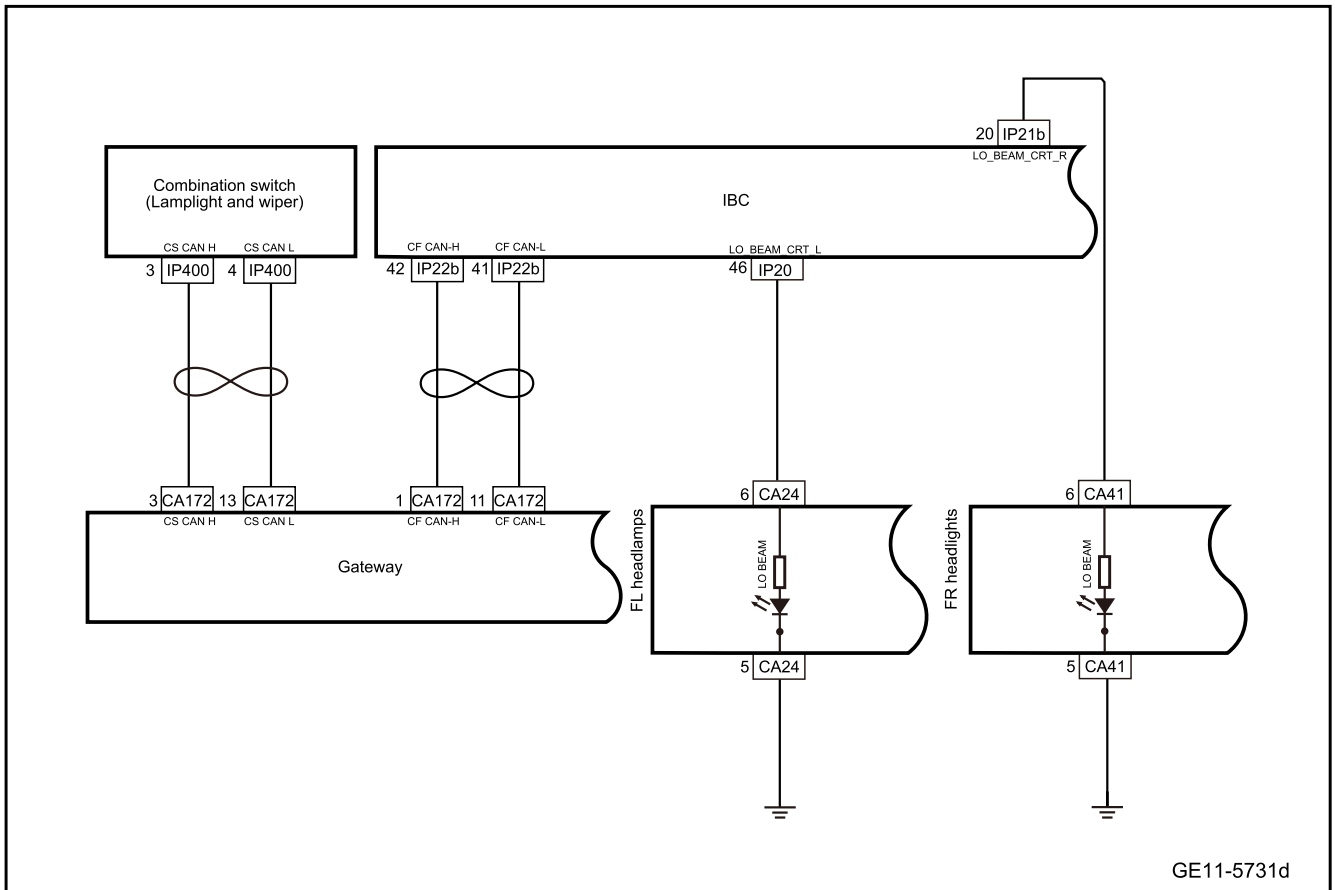
Diagnostic Trouble Code	Description	Fault location/elimination method
B105C01	Right low beam fault	Refer to Low Beam Circuit Fault
B105D01	Left low beam fault	
B100213	Low beam circuit is open circuit	
B107811	Left high beam is short-circuited to ground	Refer to High Beam Circuit Fault
B107911	Right high beam is short-circuited to ground	
B108898	High beam switch detection output circuit is overtemperature	
B100911	Rear fog lamp circuit is short-circuited to ground or overloaded	Refer to Rear Fog Lamp Failure
B100915	Rear fog lamp is short circuited to power supply or open circuit	
B100A11	Reverse lamp circuit is short-circuited to ground or overloaded	Refer to Reverse Lamp Circuit Failure

Diagnostic Trouble Code	Description	Fault location/elimination method
B100A15	Reverse lamp is short circuited to power supply or open circuit	
B100B11	Brake circuit is short-circuited to ground or overloaded	Refer to Brake Lamp Circuit Failure
B100B15	Brake lamp is short circuited to power supply or open circuit	
B100D11	High-mounted stop lamp circuit is short-circuited to ground or overloaded	Refer to High-mounted Stop Lamp Circuit Failure
B108B98	Voice reading lamp control circuit is overtemperature	Refer to Interior Lamp Circuit Failure
B101D11	The power-saving circuit is short-circuited to ground or overloaded	
B100E11	Right turn signal is short-circuited to ground	Refer to Turn Signal Circuit Failure
B100F11	Left turn signal is short-circuited to ground	
B108C98	Turn signal flowing lamp control circuit is overtemperature	
B100E13	The right turn signal is opened or a bulb is damaged	
B100F13	The left turn signal is opened or a bulb is damaged	
B107A11	Left position lamp circuit is short-circuited to ground or overloaded	Refer to Position Lamp Circuit Failure
B107B11	Right position lamp circuit is short-circuited to ground or overloaded	
B100C11	Footlight circuit is shorted to ground or overloaded	Refer to Foot Lighting Circuit Failure
B108311	Courtesy lamp control signal circuit is short-circuited to ground	Refer to Courtesy Lamp Circuit Failure
B108A11	Courtesy lamp control signal circuit is short-circuited to ground	
B108511	Trunk lamp circuit is shorted to ground	Refer to Trunk Lamp Circuit Failure
B101B11	Hazard warning indicator circuit is short-circuited to ground or overloaded	Refer to Hazard Warning Indicator Circuit Failure
B101E11	Left daytime running light circuit is short-circuited to ground or overloaded	Refer to Daytime Running Light Circuit Failure
B101F11	Right daytime running light circuit is short-circuited to ground or overloaded	

Diagnostic Trouble Code	Description	Fault location/elimination method
B106211	Right front turn signal LED feedback line is short-circuited to ground	Refer to Abnormal feedback signal fault of turn signal LED
B106215	Right front turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit	
B106511	Left front turn signal LED feedback line is short-circuited to ground	
B106515	Left front turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit	
B107011	Right rear outer turn signal LED feedback line is short-circuited to ground	
B107015	Right rear outer turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit	
B107111	Left rear outer turn signal LED feedback line is short-circuited to ground	
B107115	Left rear outer turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit	
B107211	Right rear inner turn signal LED feedback line is short-circuited to ground	
B107215	Right rear inner turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit	
B107311	Left rear inner turn signal LED feedback line is short-circuited to ground	
B107315	Left rear inner turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit	

11.4.6.5 Inoperative low beam lamps

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
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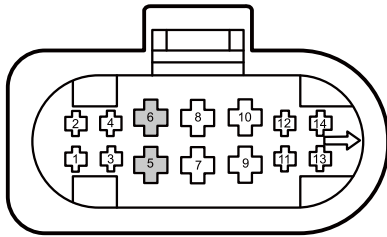
- A. Check the headlamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

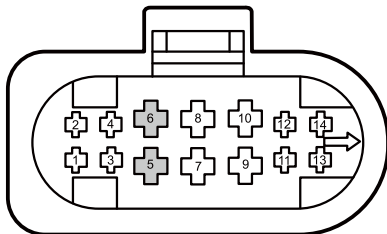
Step 2	Check whether the left and right low beam lamp working voltages are normal.
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CA24 FL headlamp harness connector



GE11-6205d

CA41 FR combination lamp



GE11-6206d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. The key activates the power supply of the vehicle to ON.
- E. Turn on low beam lamps.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	CA24(5)	Standard
CA41(6)	CA41(5)	voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

Yes → Replace the faulty low beam lamp.

No

Step 3 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No → Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4 | Check CS-CAN bus integrity.

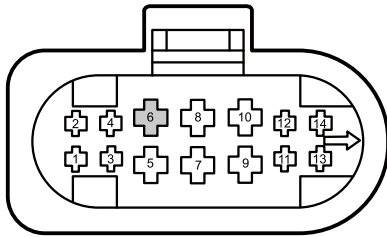
- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No → Priority should be given to excluding the integrity fault of the CAN bus.

Yes

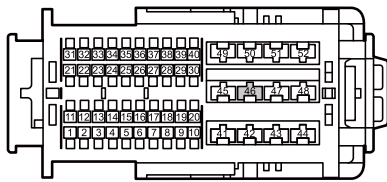
Step 5	Check the circuit between low beam and IBC.
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CA24 FL headlamp harness connector



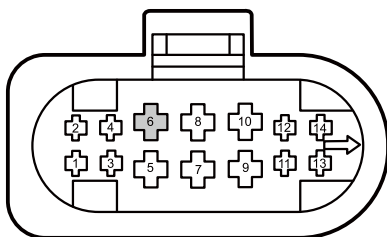
GE11-6207d

IP20 body control module harness connector 1



GE11-6208d

CA41 FR combination lamp



GE11-6209d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect the IBC harness connectors IP20 and IP21b.
- E. Use a multimeter to measure each terminal according to the table below:

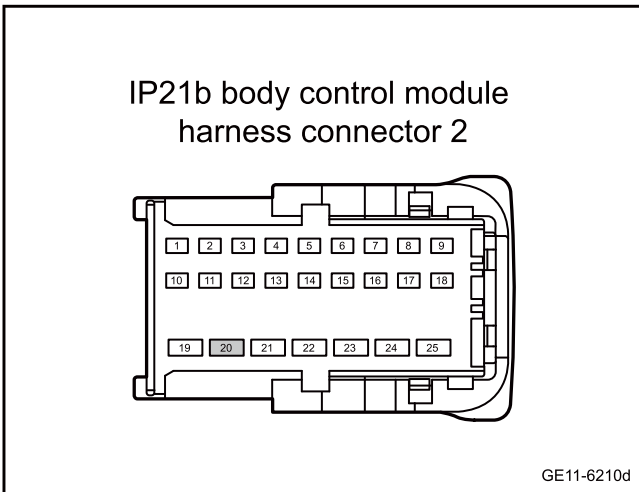
Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	IP20(46)	Standard resistance: less than 1Ω
CA41(6)	IP21b(20)	

- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
CA41(6)		

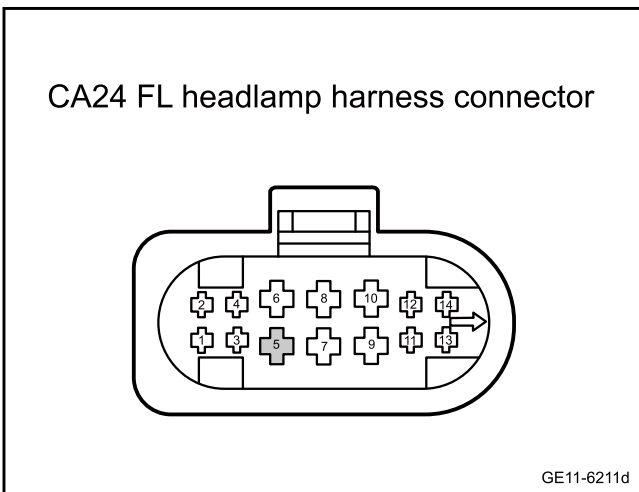
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.



Yes

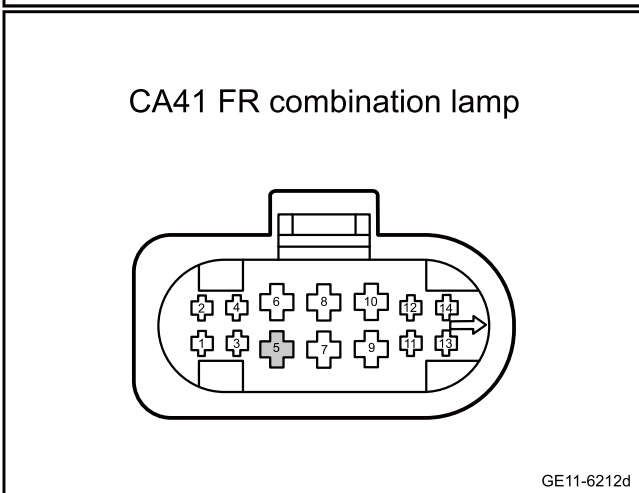
Step 6 Check whether the low beam grounding circuit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA41(5)		

- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 7 Replace the lighting combination switch.

- A. Replace the lighting combination switch. Refer to [Replacement of Light Combination Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 9 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

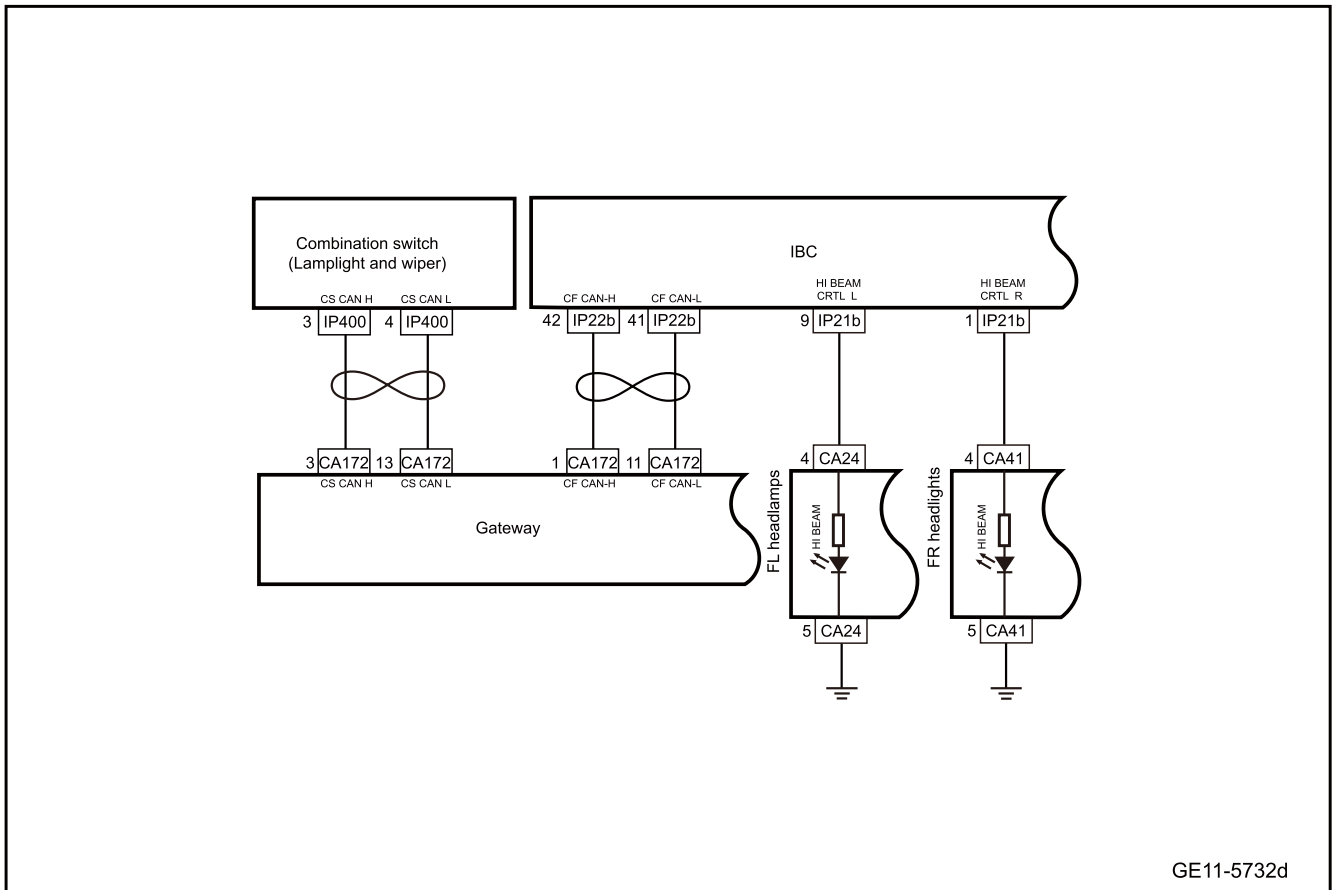
System is normal.

No

Step 11 System is normal.

11.4.6.6 Inoperative high beam lamp

1. Schematic circuit diagram:



GE11-5732d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

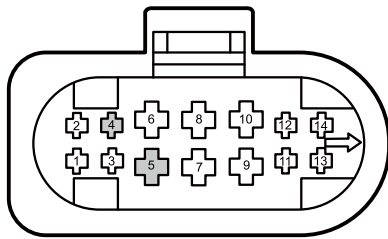
- A. Check the headlamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

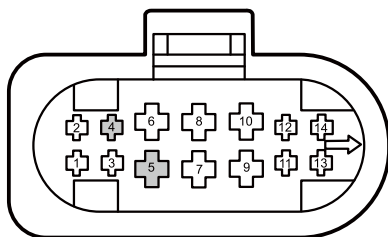
Step 2	Check whether the voltage of the left and right high beam lamp is functioning properly.
--------	---

CA24 FL headlamp harness connector



GE11-6213d

CA41 FR combination lamp



GE11-6214d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. The key activates the power supply of the vehicle to ON.
- E. Turn on the high beam lamp.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	CA24(5)	Standard
CA41(4)	CA41(5)	voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

Yes → Replace the faulty high beam lamp bulb.

No

Step 3 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No → Priority should be given to excluding the integrity fault of the CAN bus.

Yes

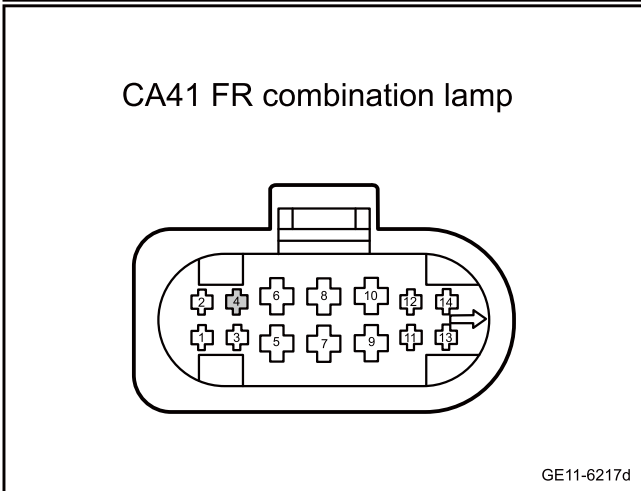
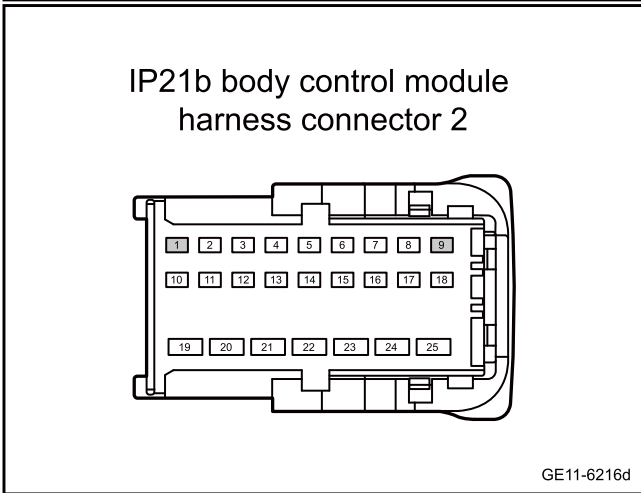
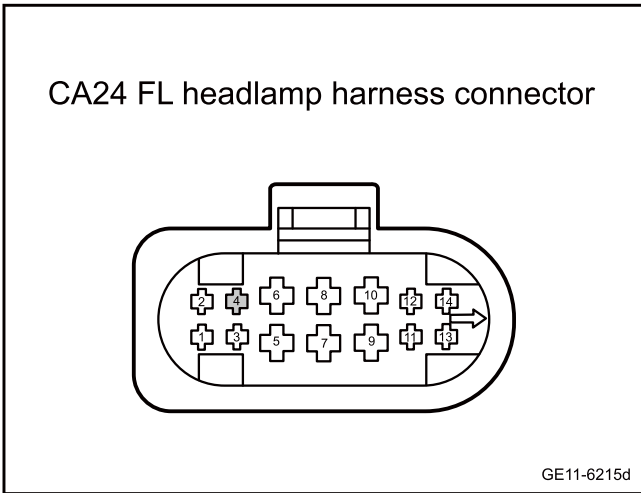
Step 4 | Check CS-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No → Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 Check the circuit between high beam lamp and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect the IBC harness connector IP21b.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	IP21b(9)	Standard resistance: less than 1Ω
CA41(4)	IP21b(1)	

- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
CA41(4)		

- G. Confirm whether the measured value meets the standard.

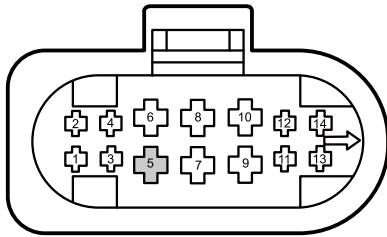
No

Repair or replace the harness.

Yes

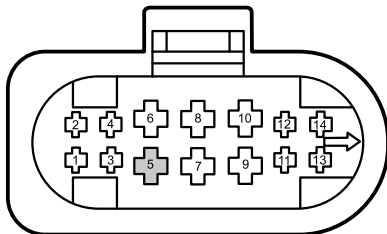
Step 6 Check whether the grounding circuit of high beam lamp is opened.

CA24 FL headlamp harness connector



GE11-6218d

CA41 FR combination lamp



GE11-6219d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA41(5)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace the lighting combination switch.

- A. Replace the lighting combination switch. Refer to [Replacement of Light Combination Switch](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 8 | Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes → Trouble is removed.

No

Step 9	Replace the IBC
--------	-----------------

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10	Reprogram and reset the IBC.
---------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

→

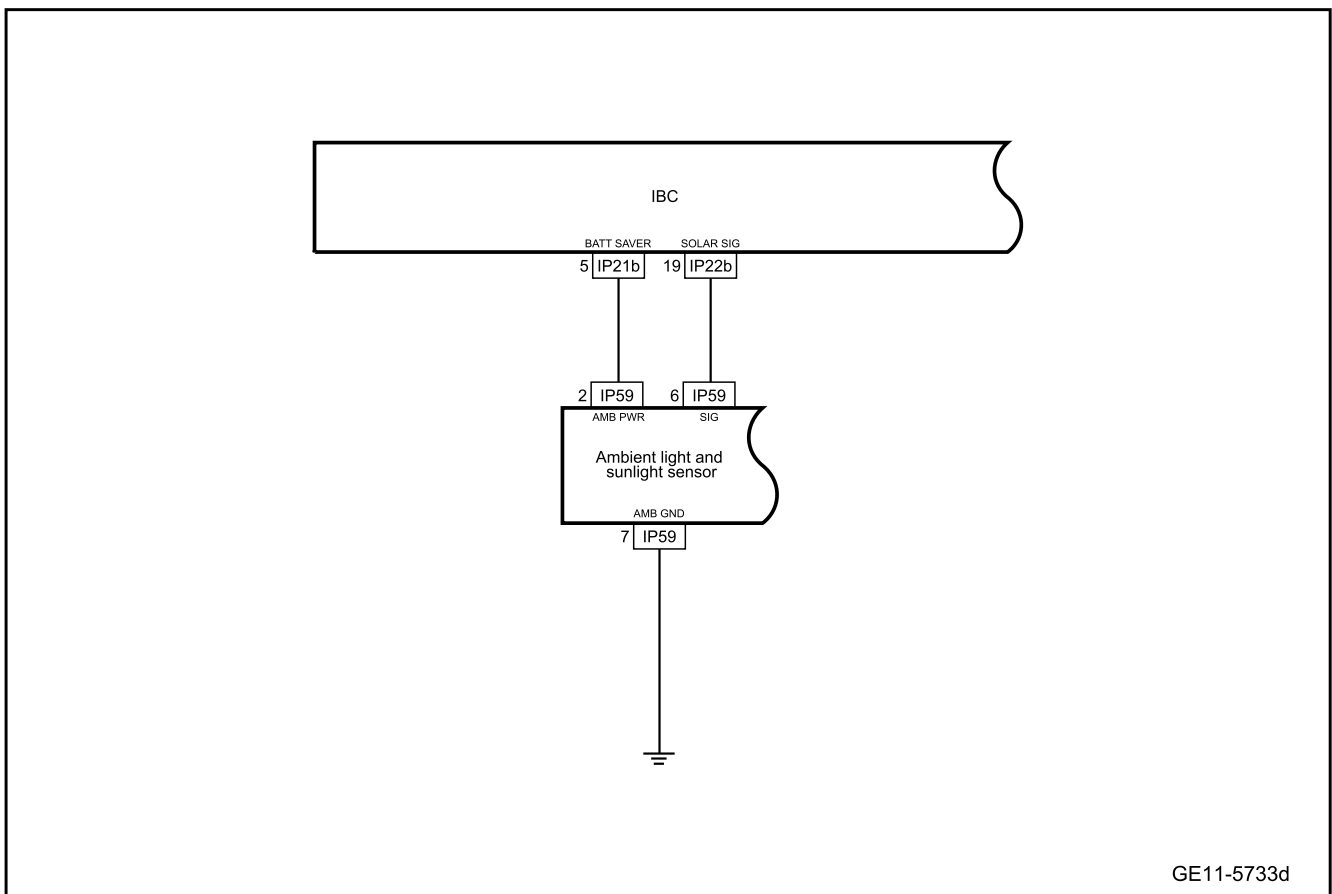
System is normal.

No

Step 11	System is normal.
---------	-------------------

11.4.6.7 Headlight automatically turns on and does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the appearance damage of ambient light and sunlight sensor.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

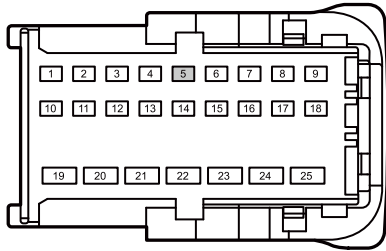
No

Repair or replace the faulty part.

Yes

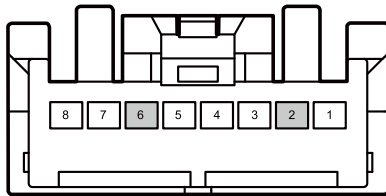
Step 2	Check whether the circuit of the IBC with ambient light and sunlight sensor is normal.
--------	--

IP21b body control module harness connector 2



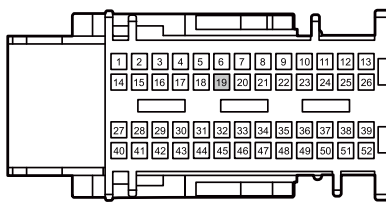
GE11-6220d

IP59 ambient light and sunlight sensor harness connector



GE11-6221d

IP22b body control module harness connector 3



GE11-6222d

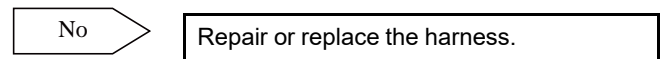
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP22b and IP21b.
- C. Disconnect the ambient light and sunlight sensor IP59.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	IP59(2)	Standard resistance: less than 1Ω
IP22b(19)	IP59(6)	
IP21b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(19)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the following table:

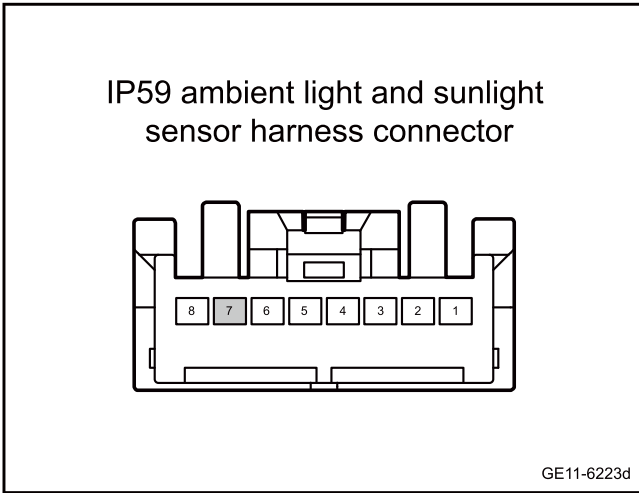
Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(19)		

- G. Confirm whether the measured value meets the standard.



Yes

Step 3 Check whether the grounding circuit of the ambient light and sunlight sensor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the ambient light and sunlight sensor IP59.
- C. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP59(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 | Replace the ambient light and sunlight sensor.

- A. Replace the ambient light and sunlight sensor. Refer to [Replacement of Ambient Light and Sunlight Sensor](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 5 | Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 6 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

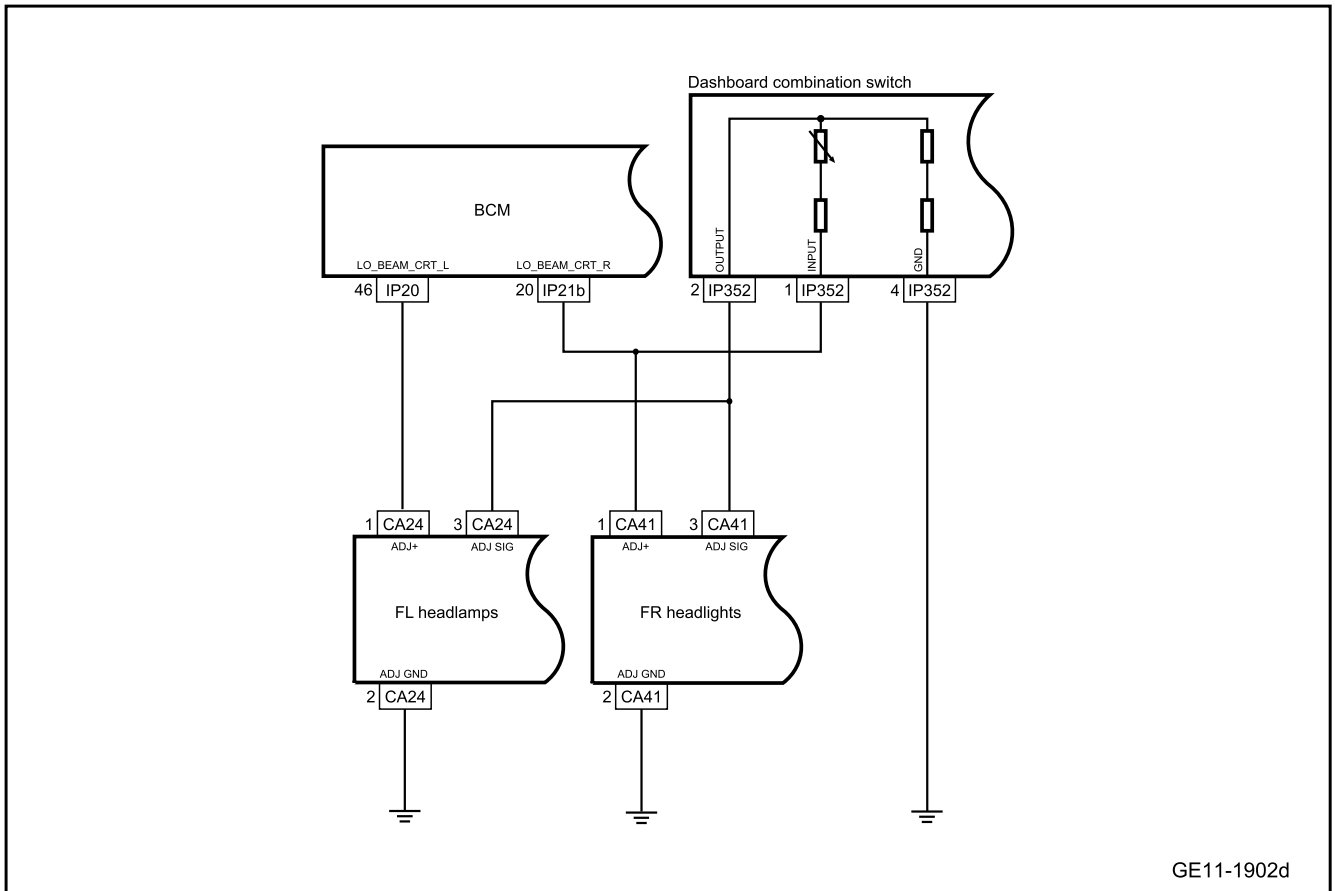
Yes → System is normal.

No

Step 7 | System is normal.

11.4.6.8 Headlight height adjustment is inoperative

1. Schematic circuit diagram:



GE11-1902d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

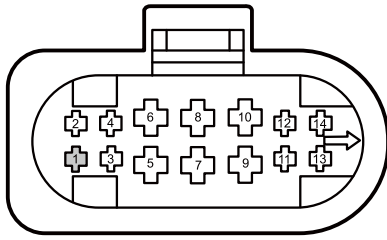
- A. Check the headlamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

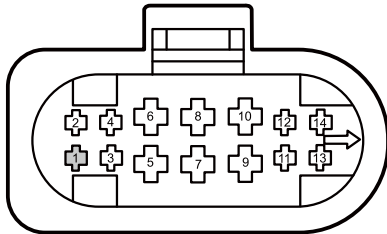
Step 2	Check whether the working voltage of left, right regulating motors is normal.
--------	---

CA24 FL headlamp harness connector



GE11-6224d

CA41 FR combination lamp



GE11-6225d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. The key activates the power supply of the vehicle to ON.
- E. Turn on the regulating motor switch.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(1)	Vehicle body is grounded.	Standard voltage: 11-14V
CA41(1)		

- G. Confirm whether the measured value meets the standard.

Yes → Replace the faulty regulating motor.

No

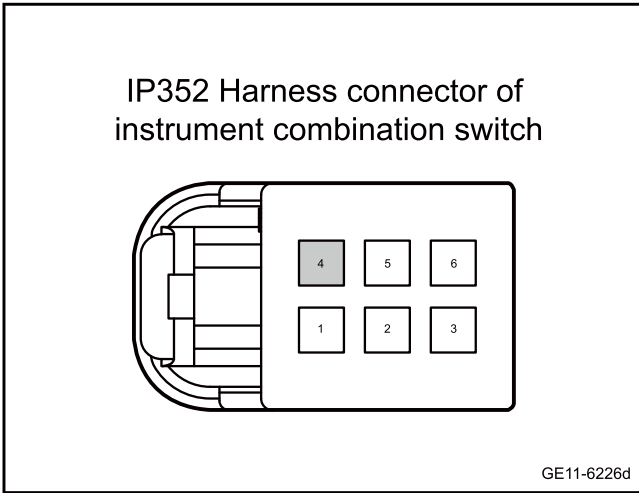
Step 3 | Check whether the instrument cluster switch is caught.

- A. Operate the instrument cluster switch.
- B. Check whether the switch is caught.

Yes → To replace the instrument cluster switch, please refer to [Replacement of Instrument Cluster Switch](#)

No

Step 4 | Check the grounding circuit of the instrument cluster switch.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect instrument cluster switch harness connector IP352.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP352(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

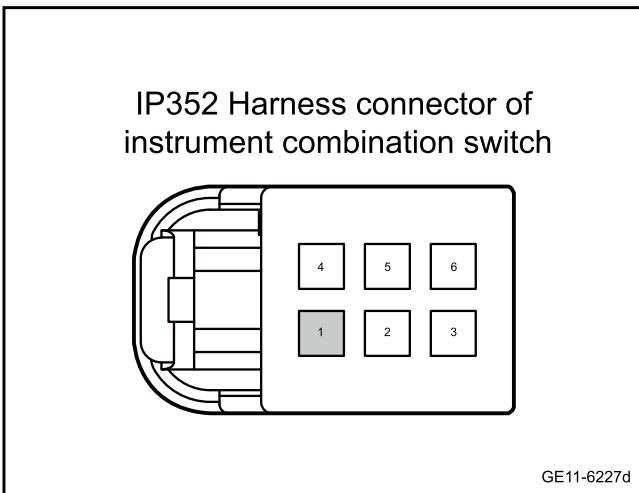
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the IBC and the wiper instrument cluster switch is open.



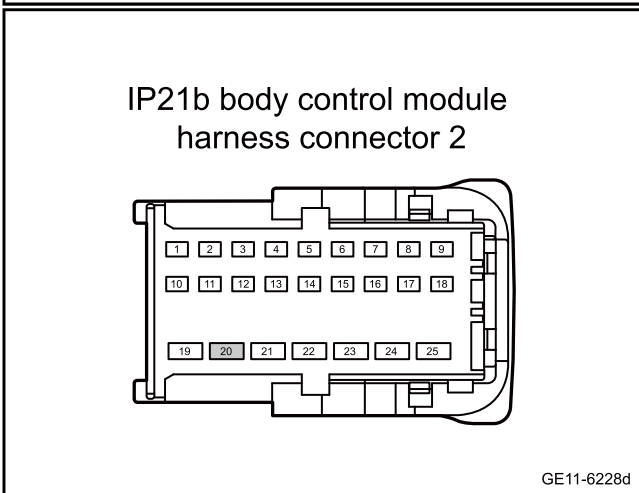
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect instrument cluster switch harness connector IP352.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP352(1)	IP21b(20)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

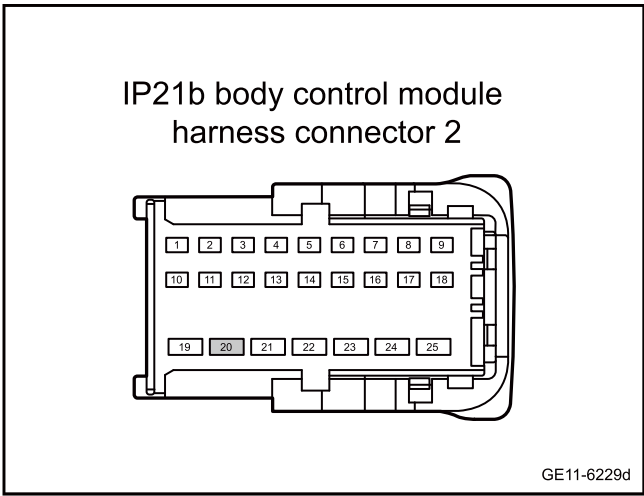
No

Repair or replace the harness.



Yes

Step 6 Check whether the line between IBC and instrument cluster is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect instrument cluster switch harness connector IP352.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(20)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω

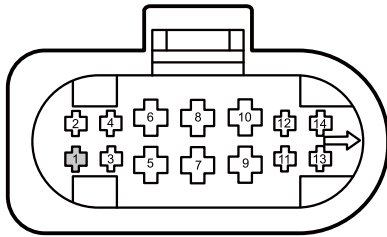
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

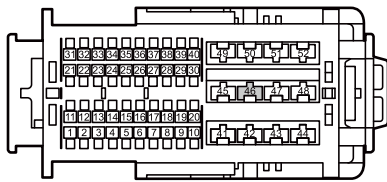
Step 7 Check whether the power supply circuit of regulating motor is normal.

CA24 FL headlamp harness connector



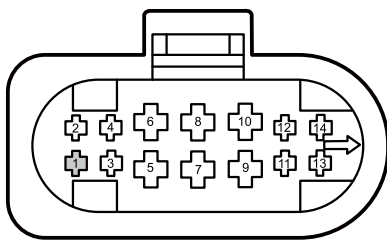
GE11-6230d

IP20 body control module harness connector 1



GE11-6231d

CA41 FR combination lamp



GE11-6232d

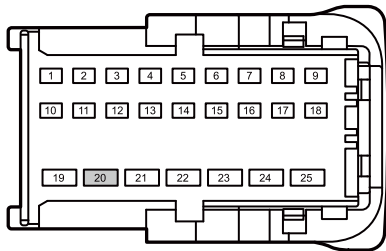
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect the IBC harness connectors IP20 and IP21b.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(1)	IP20(46)	Standard resistance: less than 1Ω
CA41(1)	IP21b(20)	
CA24(1)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
CA41(1)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

IP21b body control module harness connector 2

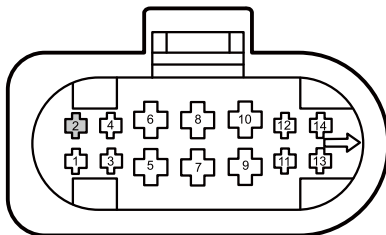


GE11-6233d

Yes

Step 8 Check whether the grounding circuit of regulating motor is open.

CA24 FL headlamp harness connector



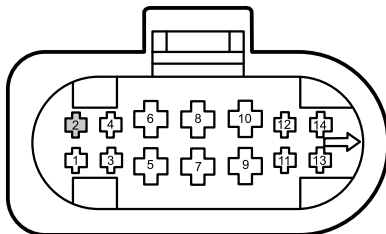
GE11-6234d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA41(2)		

- E. Confirm whether the measured value meets the standard.

CA41 FR combination lamp



GE11-6235d

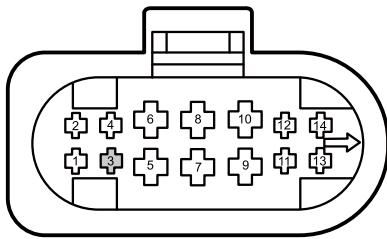
No

Repair or replace the harness.

Yes

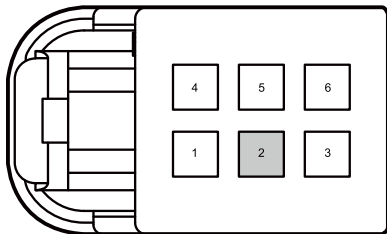
Step 9 Check whether the circuit between the regulating motor and the instrument cluster switch is normal.

CA24 FL headlamp harness connector



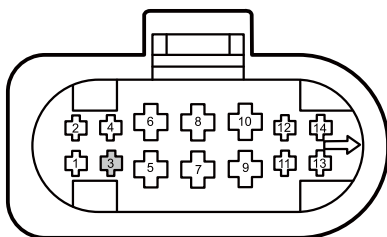
GE11-6236d

IP352 Harness connector of instrument combination switch



GE11-6237d

CA41 FR combination lamp



GE11-6238d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Disconnect instrument cluster switch harness connector IP352.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(3)	IP352(2)	Standard resistance: less than 1Ω
CA41(3)	IP352(2)	
CA24(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA41(3)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(3)	Vehicle body is grounded.	Standard voltage: 0V
CA41(3)		

- H. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 10	Replace the instrument cluster switch
---------	---------------------------------------

- A. Replace the instrument cluster switch Refer to [Replacement of instrument cluster Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Check the IBC power supply and grounding circuit.
---------	---

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 12	Replace the IBC.
---------	------------------

- A. Replace the IBC. Refer to [Replacement of the body control module](#)

Next step

Step 13	Reprogram and reset the IBC.
---------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

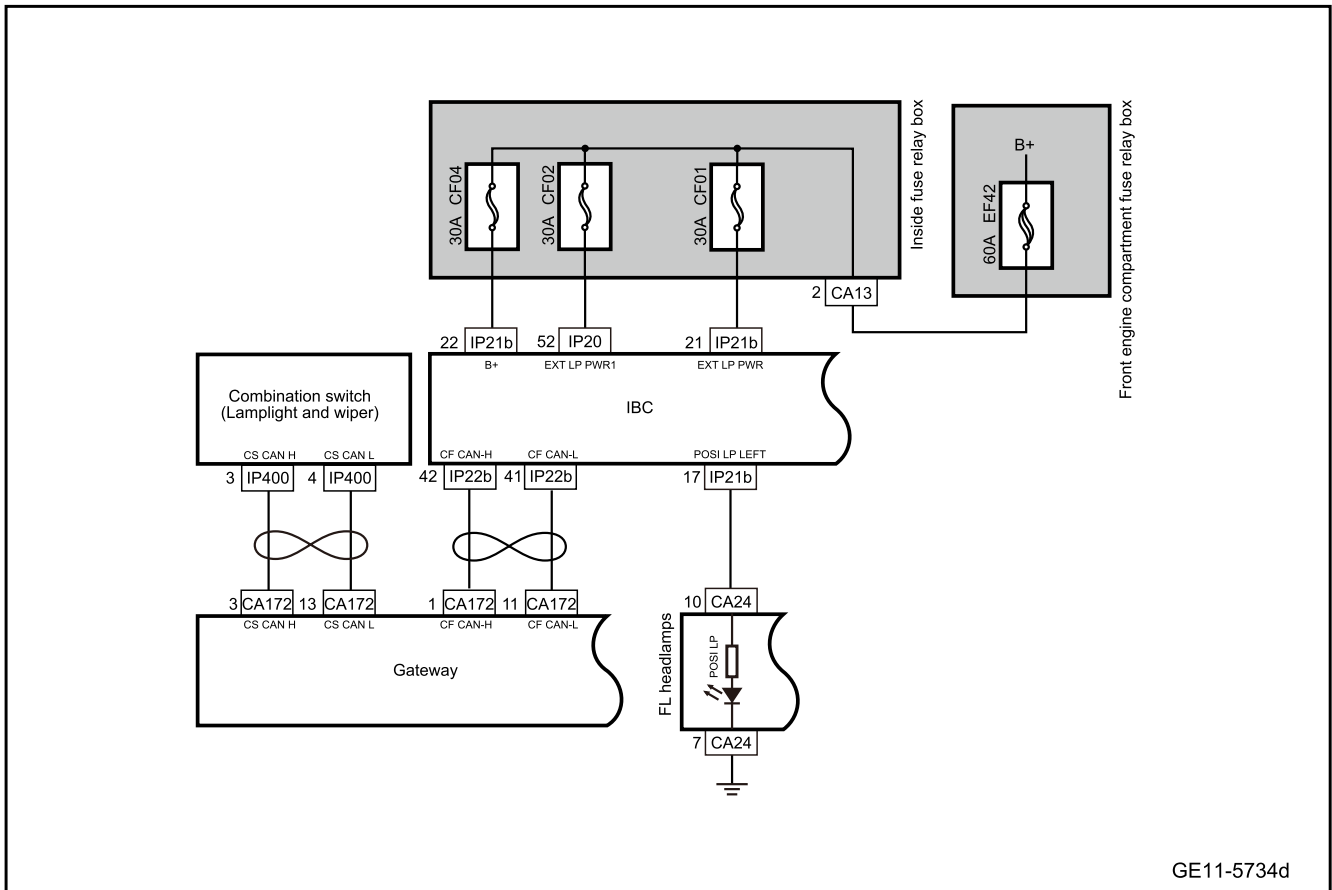
System is normal.

No

Step 14	System is normal.
---------	-------------------

11.4.6.9 Position lamp is inoperative

1. Schematic circuit diagram:



GE11-5734d

2. Diagnosis steps

This manual is only used to diagnose the fault of left front combination lamp (position lamp). The diagnosis of other position lamps is the same as that of left front combination lamp (position lamp).

Step 1	Primary check.
--------	----------------

- A. Check whether the position lamp has apparent damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 2	Check whether the lighting combination switch is caught.
--------	--

- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes → To replace the lighting combination switch, please refer to [Replacement of Lighting Combination Switch](#)

No

Step 3 Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4 Check CS-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

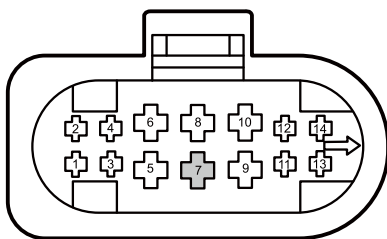
No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 Check the grounding harness of the left front combination lamp (position lamp).

CA24 FL headlamp harness connector



GE11-6239d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

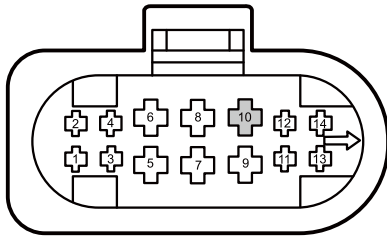
No

Repair or replace the harness.

Yes

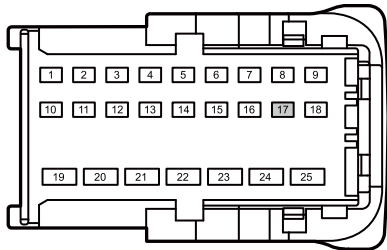
Step 6 Check whether the circuit between IBC and left front combination lamp(position lamp) is open circuit.

CA24 FL headlamp harness connector



GE11-6240d

IP21b body control module harness connector 2



GE11-6241d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(10)	IP21b(17)	Standard resistance: less than 1Ω

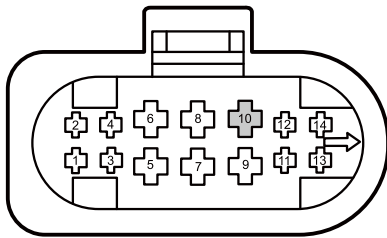
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the line between IBC and left front combination lamp(position lamp) is short to GND.

CA24 FL headlamp harness connector



GE11-6242d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure the terminals according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA24(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 Replace the lighting combination switch.

- A. Replace the lighting combination switch. Refer to [Replacement of Light Combination Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 11 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 12 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

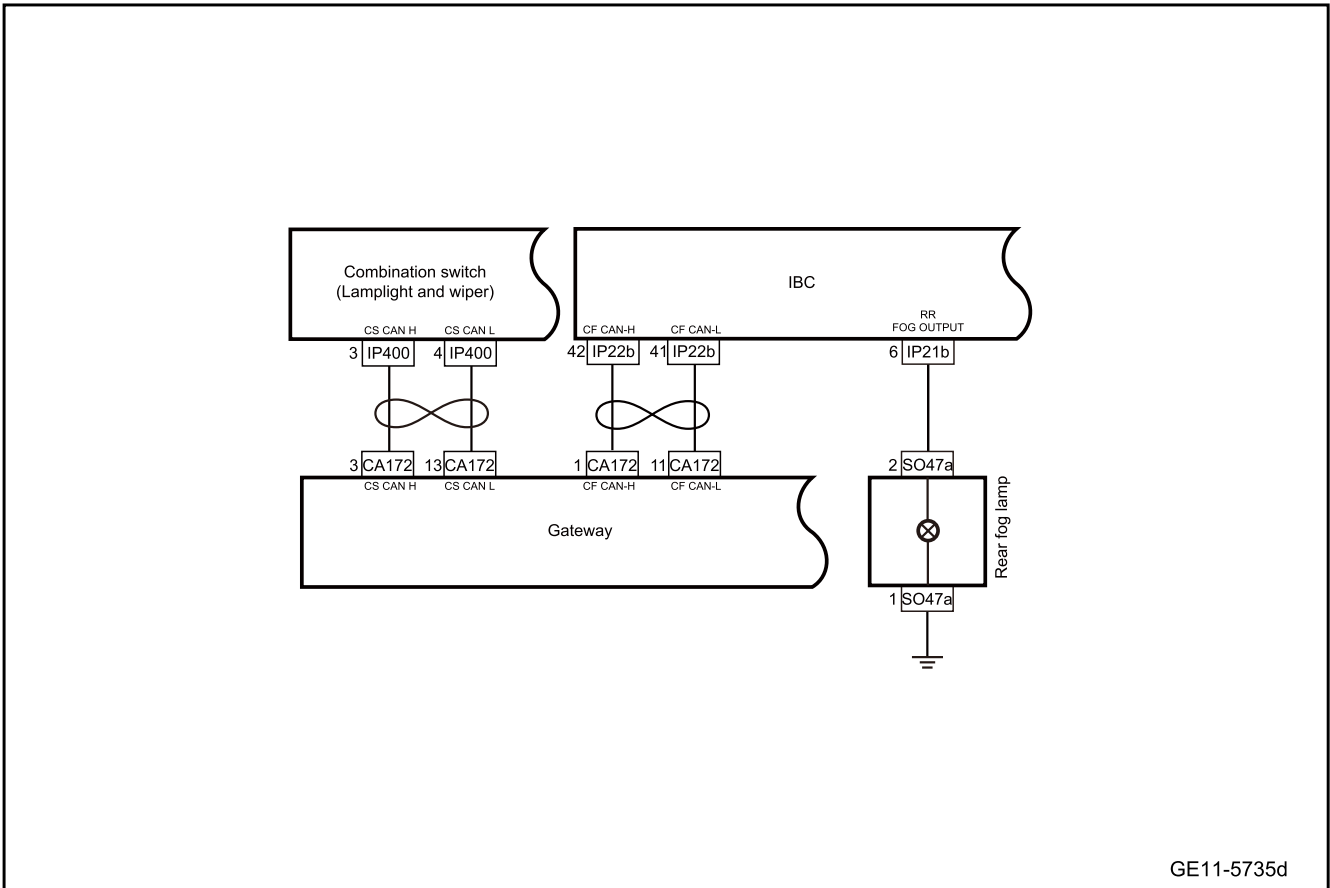
System is normal.

No

Step 13	System is normal.
------------	-------------------

11.4.6.10 Rear fog lamp does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the fog lamp is damaged in appearance.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check whether the lighting combination switch is caught.
--------	--

- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes

To replace the lighting combination switch, please refer to [Replacement of Lighting Combination Switch](#)

No

Step 3 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4 | Check CS-CAN bus integrity.

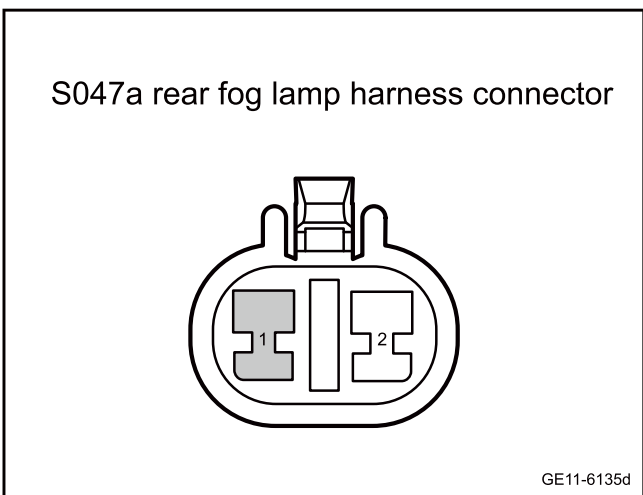
- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 | Check the grounding circuit of the rear fog lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear fog lamp harness connector SO47a.
- C. Use a multimeter to measure the resistance between the terminal 1 of rear fog lamp harness connector SO47a and body grounding

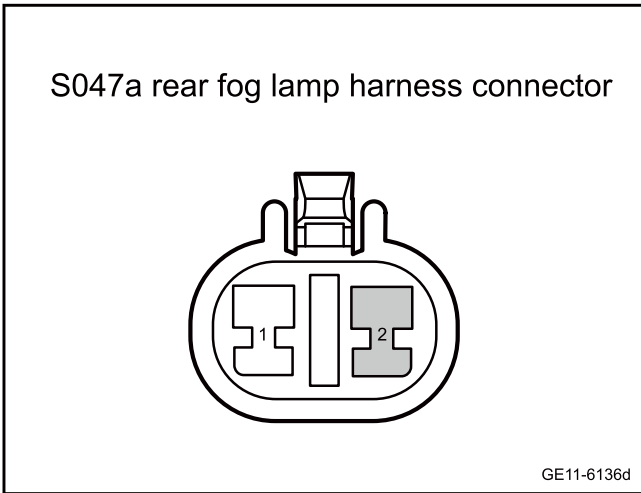
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

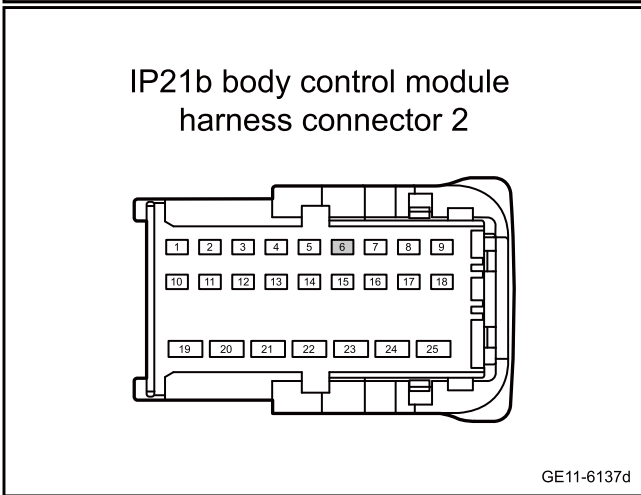
Step 6 Check whether the line between IBC and left rear fog lamp is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the rear fog lamp harness connector SO47a.
- D. Use a multimeter to measure the resistance between terminal 2 of the rear fog lamp harness connector SO47a and terminal 6 of the IBC harness connector IP21b.

Standard resistance: less than 1Ω

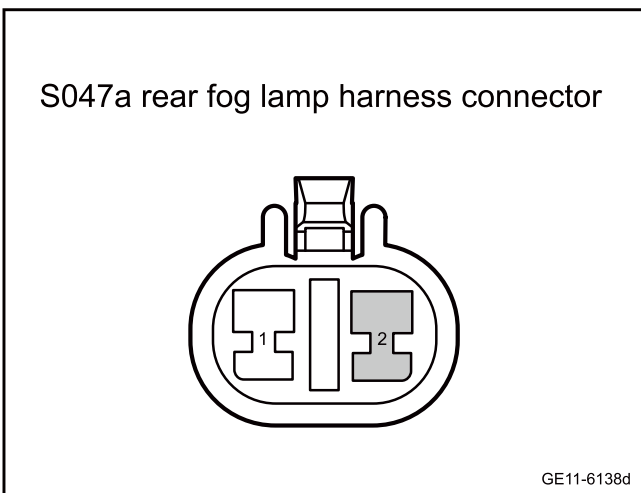
- E. Confirm whether the measured value meets the standard.



No → Repair or replace the harness.

Yes

Step 7 Check whether the line between IBC and left rear fog lamp is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the rear fog lamp harness connector SO47a.
- D. Use a multimeter to measure the resistance between the terminal 2 of rear fog lamp harness connector SO47a and body grounding

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8	Replace the lighting combination switch.
--------	--

- A. Replace the lighting combination switch. Refer to [Replacement of Light Combination Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Replace the rear fog lamp.
--------	----------------------------

- A. Replace the rear fog lamp. Refer to [Replacement of Rear Fog Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Check the IBC power supply and grounding circuit.
---------	---

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 11	Replace the IBC
---------	-----------------

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 12	Reprogram and reset the IBC.
---------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

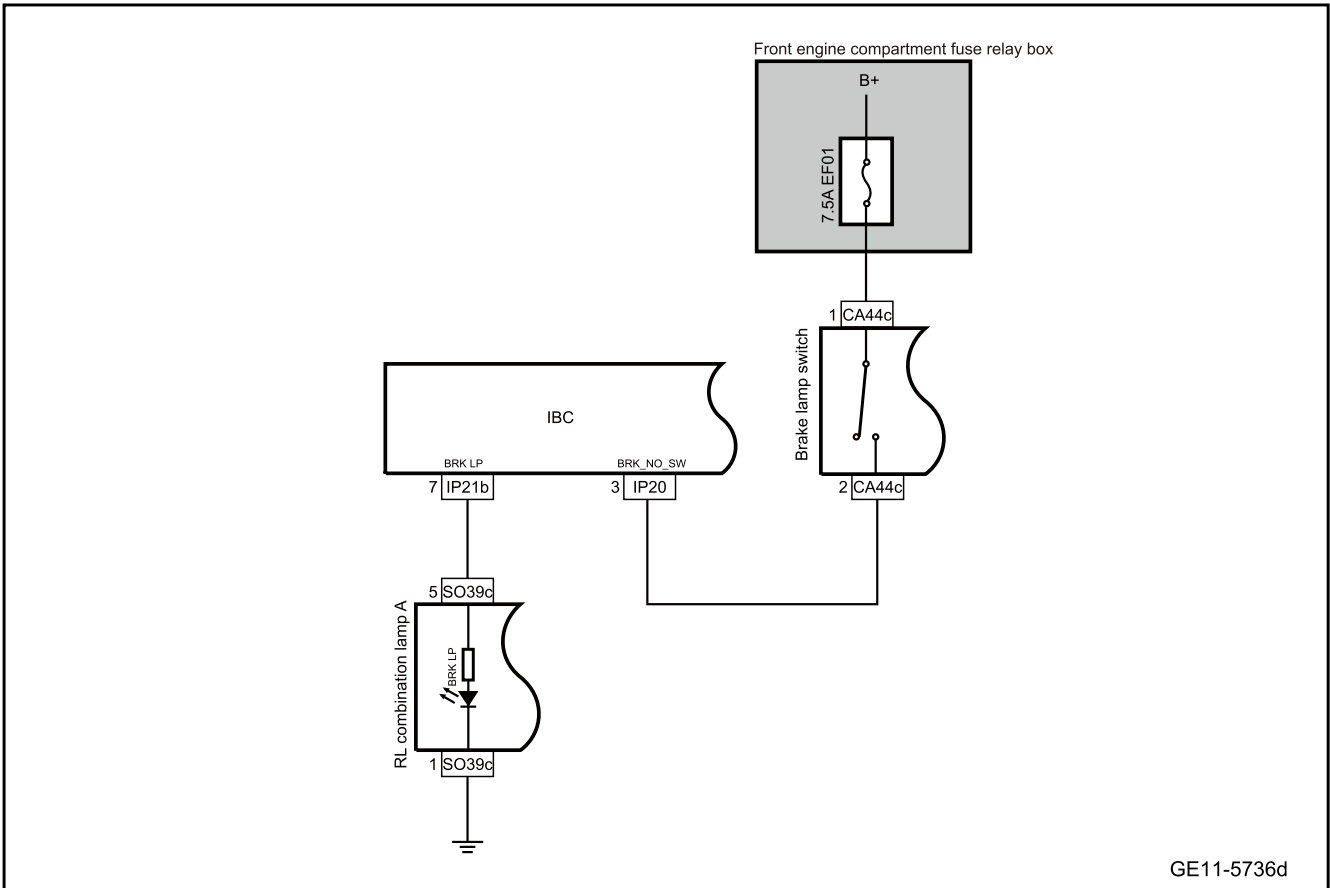
System is normal.

No

Step 13	System is normal.
------------	-------------------

11.4.6.11 Brake lamp does not work

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only used to diagnose the fault of left rear combination lamp A (brake lamp). The diagnosis of other brake lamps is the same as that of left rear combination lamp A (brake lamp).

Step 1	Primary check.
--------	----------------

- A. Check the brake lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2 Check the brake pedal for hysteresis.

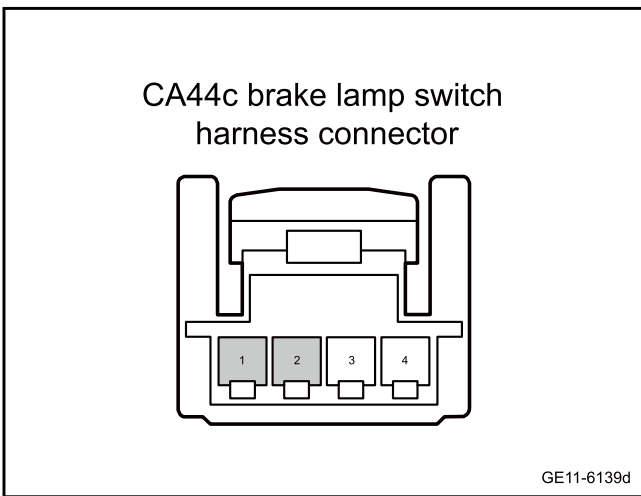
- A. Step on the brake pedal.
- B. Check the brake pedal for hysteresis.

Yes

To replace the brake lamp switch, please refer to [Replacement of Brake Lamp Switch](#)

No

Step 3 Check whether the brake lamp switch is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the brake lamp switch harness connector CA44c.
- C. Turn on brake lamp switch
- D. Use a multimeter to measure the resistance between terminal 2 and terminal 1 of the brake lamp switch harness connector CA44c.

Switch position	Measure terminal 1	Measure terminal 2	Standard value
Open	CA44c(2)	CA44c(1)	Standard resistance: less than 1Ω
Disabling	CA44c(2)	CA44c(1)	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

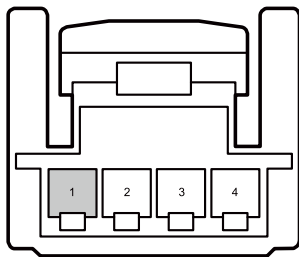
No

Replace the brake lamp switch.

Yes

Step 4 Check the power supply circuit of the brake lamp switch.

CA44c brake lamp switch harness connector



GE11-6140d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the brake lamp switch harness connector CA44c.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

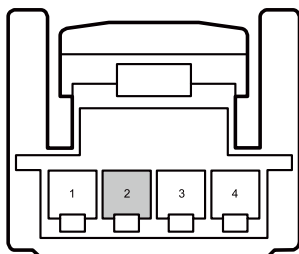
No

Repair or replace the harness.

Yes

Step 5 Check the harness between IBC and brake lamp switch to be open.

CA44c brake lamp switch harness connector



GE11-6141d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure each terminal according to the following table:

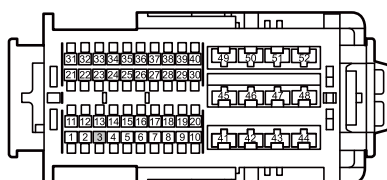
Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	IP20(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

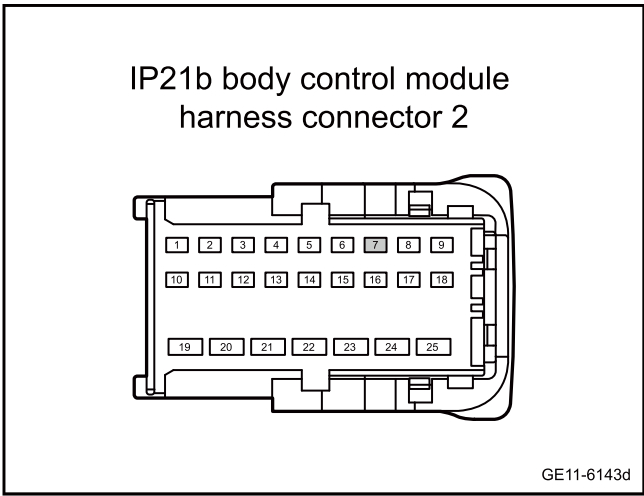
IP20 body control module harness connector 1



GE11-6142d

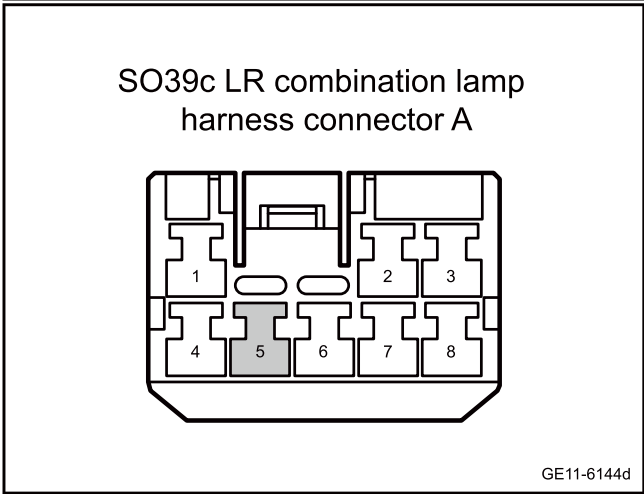
Yes

Step 6 Check the harness between IBC and brake lamp to be open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect harness connector SO39c of the left rear combination lamp A.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(7)	SO39c(5)	Standard resistance: less than 1Ω

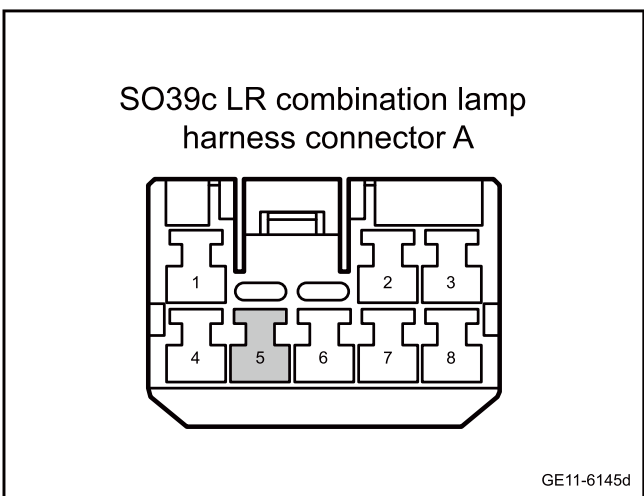


- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Check the harness between IBC and brake lamp for short circuit to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect harness connector SO39c of the left rear combination lamp A.
- D. Use a multimeter to measure each terminal according to the following table:

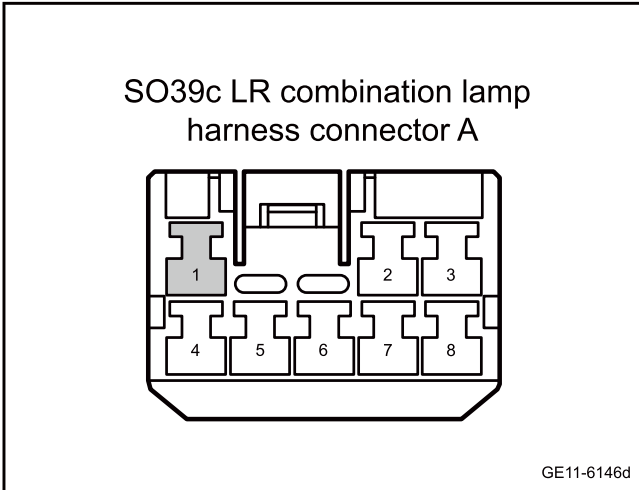
Measure terminal 1	Measure terminal 2	Standard value
SO39c(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Check the brake lamp ground line for an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector SO39c of the left rear combination lamp A.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO39c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the brake lamp.

- A. Replace the brake lamp. Refer to [Replacement of brake lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 11 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 12	Reprogram and reset the IBC.
------------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

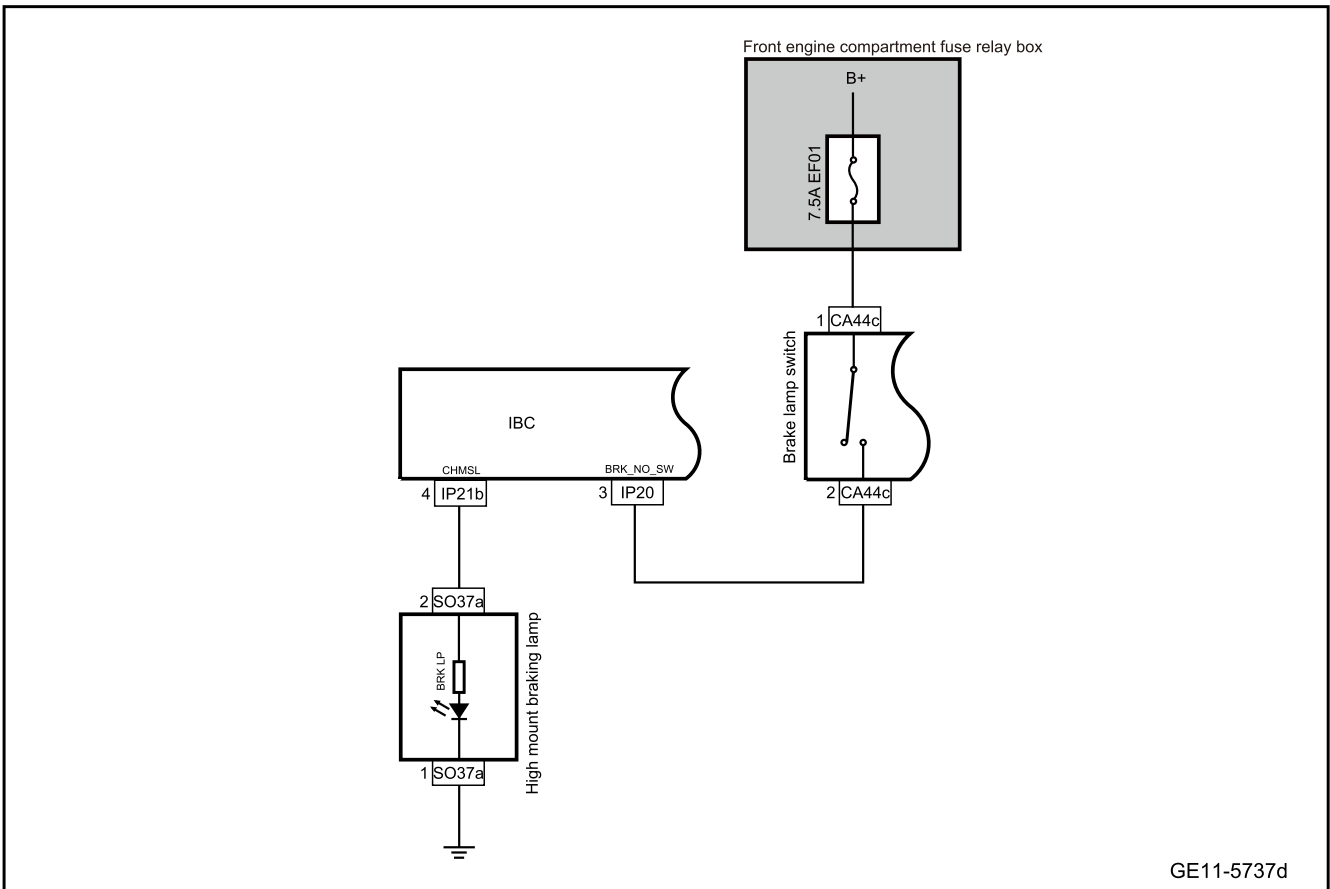
Yes System is normal.

No

Step 12	System is normal.
------------	-------------------

11.4.6.12 Inoperative high-mounted stop lamp

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the high-mounted stop lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

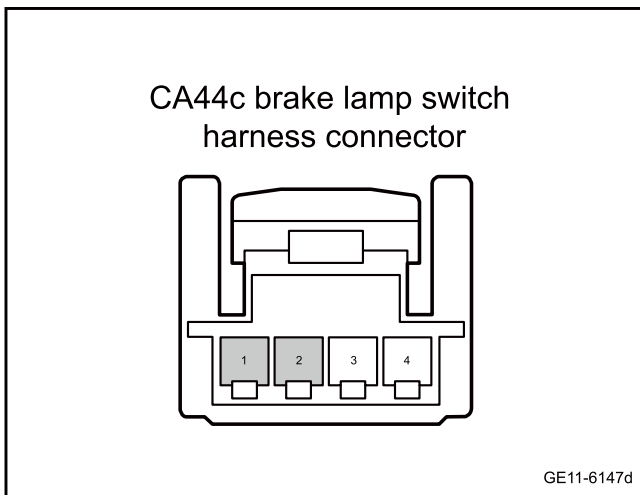
Step 2 Check the brake pedal for hysteresis.

- A. Step on the brake pedal.
- B. Check the brake pedal for hysteresis.

Yes → To replace the high-mounted stop lamp, please refer to [Replacement of High-mounted Stop Lamp](#)

No

Step 3 Check whether the high-mounted stop lamp switch is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high mounted stop lamp harness connector CA44c.
- C. Turn on high-mounted stop lamp switch.
- D. Use a multimeter to measure the resistance between terminal 2 and terminal 1 of the high-mounted stop lamp switch harness connector CA44c.

Switch position	Measure terminal 1	Measure terminal 2	Standard value
Open	CA44c(2)	CA44c(1)	Standard resistance: less than 1Ω
Disabling	CA44c(2)	CA44c(1)	Standard resistance: 10KΩ or higher

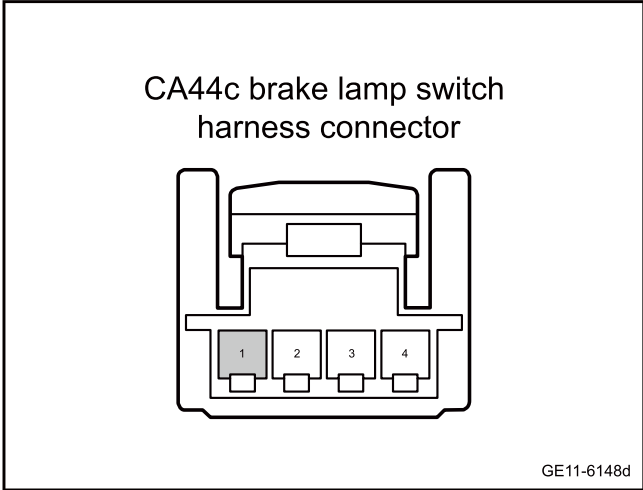
- E. Confirm whether the measured value meets the standard.

No

Replace high mounted stop lamp switch.

Yes

Step 4 Check the power supply circuit of the brake lamp switch.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the brake lamp switch harness connector CA44c.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

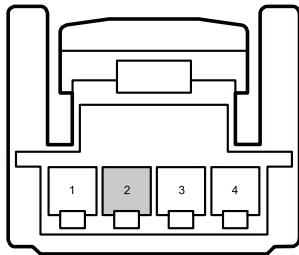
No

Repair or replace the harness.

Yes

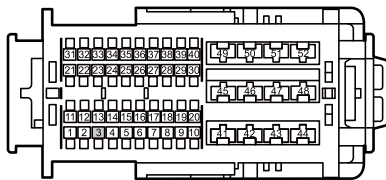
Step 5 Check the harness between IBC and brake lamp switch to be open.

CA44c brake lamp switch harness connector



GE11-6149d

IP20 body control module harness connector 1



GE11-6150d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the brake lamp switch harness connector CA44c.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
CA44c(2)	IP20(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

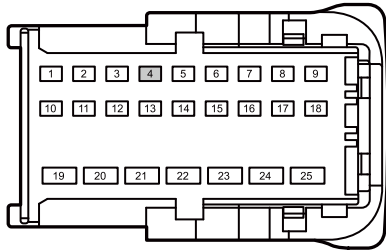
No

Repair or replace the harness.

Yes

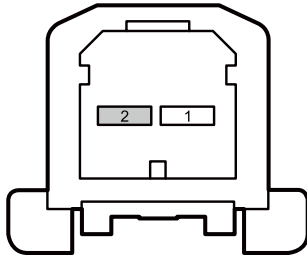
Step 6 | Check whether the circuit between IBC and the high mounted stop lamp is open.

IP21b body control module harness connector 2



GE11-6151d

SO37a high mount brake lamp harness connector



GE11-6152d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the high mounted stop lamp harness connector SO37a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(4)	SO37a(2)	Standard resistance: less than 1Ω

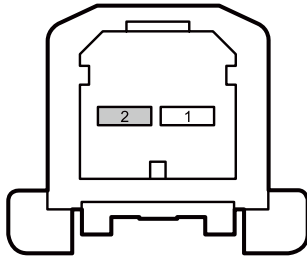
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the circuit between the IBC and the high mounted stop lamp is shorted to GND.

SO37a high mount brake lamp harness connector



GE11-6153d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the high mounted stop lamp harness connector SO37a.
- D. Use a multimeter to measure each terminal according to the following table:

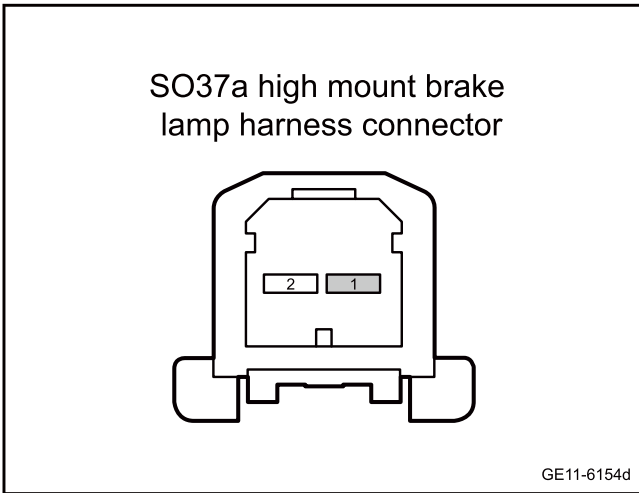
Measure terminal 1	Measure terminal 2	Standard value
SO37a(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 Check whether grounding circuits of the high mounted stop lamp are open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high mounted stop lamp harness connector SO37a.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO37a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 Replace high mounted stop lamp.

- A. Replace high mounted stop lamp. Refer to [Replacement of High-mounted Stop Lamp](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 10 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes → Trouble is removed.

No

Step 11 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 12	Reprogram and reset the IBC.
------------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

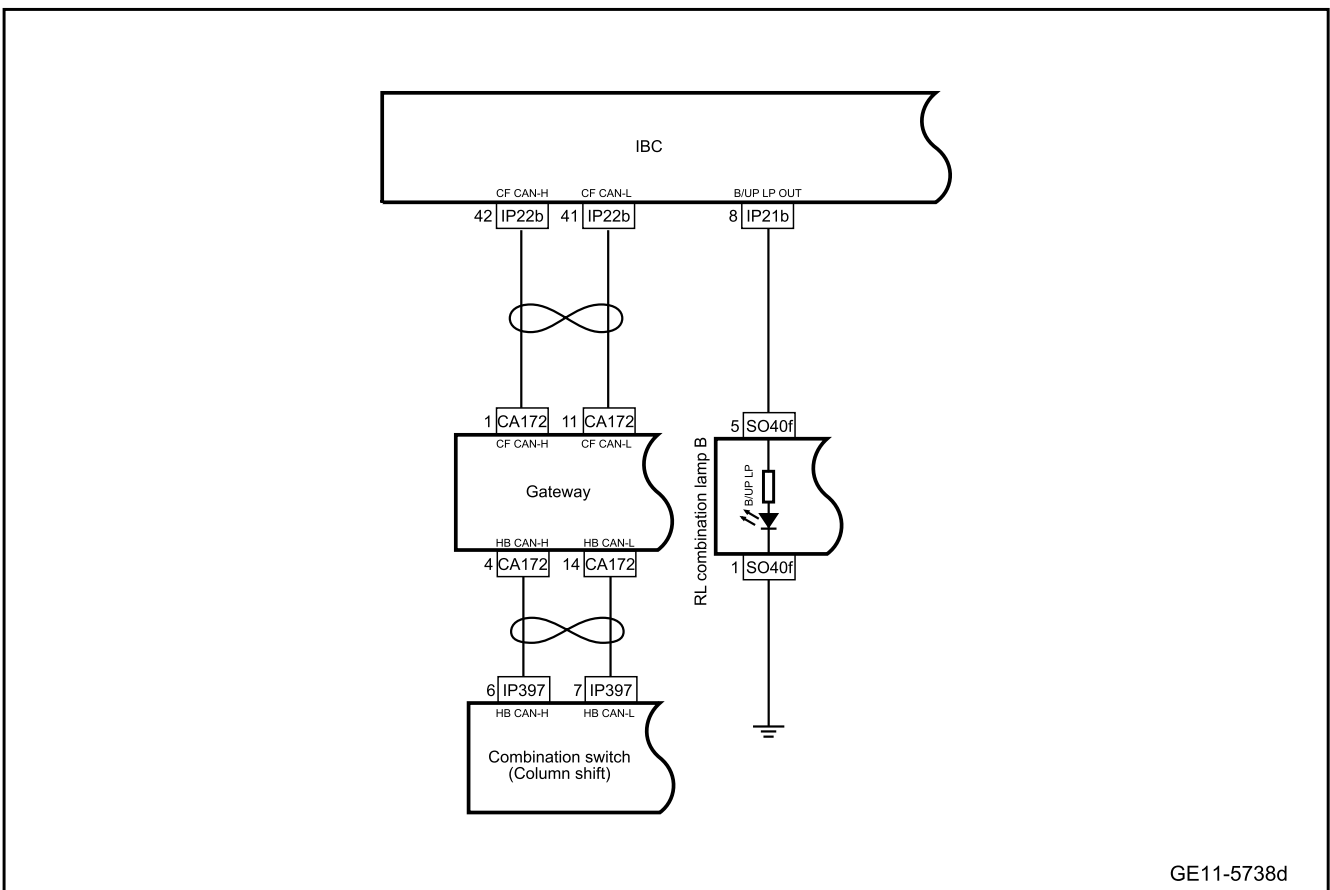
Yes System is normal.

No

Step 13	System is normal.
------------	-------------------

11.4.6.13 Inoperative reverse lamp

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only used to diagnose the fault of left and right combination lamps (reverse lamps). The diagnosis of other lamps is the same as that of left and right combination lamps (reverse lamps).

Step 1	Primary check.
--------	----------------

- A. Check reverse lamps for the sign of damages to appearance.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 2	Check the HB-CAN network integrity.
--------	-------------------------------------

- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm that the HB-CAN network is functioning properly.

No	Check or repair HB-CAN bus communication faults and replace or repair harness as necessary.
----	---

Yes

Step 3	Check the CF-CAN network integrity.
--------	-------------------------------------

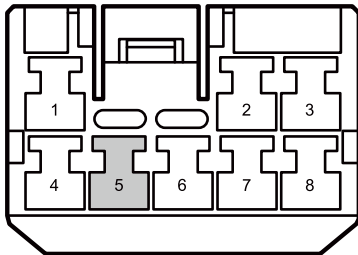
- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm that the CF-CAN network is functioning properly.

No	Check or repair CF-CAN bus communication faults and replace or repair harness as necessary.
----	---

Yes

Step 4	Check whether the circuit between IBC and rear left combination lamp(reverse lamp) is open circuit.
--------	---

SO40f LR combination lamp harness connector B

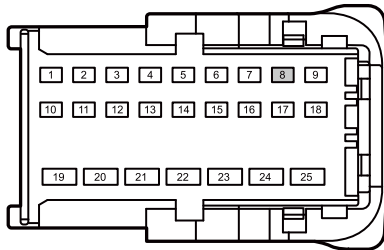


GE11-6155d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the harness connector SO40f of the left rear combination lamp.
- D. Use a multimeter to measure the resistance between the terminal 5 of BCM harness connector SO40f and the terminal 8 of left rear combination lamp harness connector IP21b.

Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

IP21b body control module harness connector 2



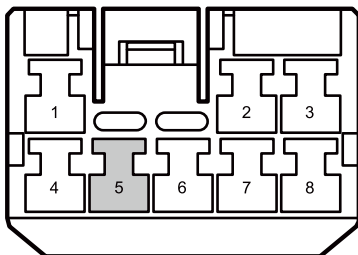
GE11-6156d

No → Repair or replace the harness.

Yes

Step 5 | Check whether the line between IBC and rear left combination lamp(reverse lamp) is short to GND.

SO40f LR combination lamp harness connector B



GE11-6157d

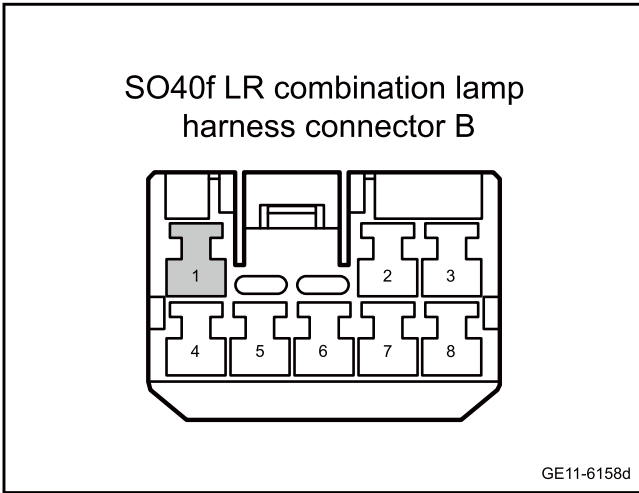
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the harness connector SO40f of the left rear combination lamp.
- D. Use a multimeter to measure the resistance between the terminal 5 of the harness connector of rear left combination lamp A SO40f and the vehicle body ground.

Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Check whether grounding circuits of rear left combination lamp(reverse lamp) are open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO40f of the left rear combination lamp.
- C. Use a multimeter to measure the resistance between the terminal 1 of the harness connector of rear left combination lamp A SO40f and the vehicle body ground.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Replace the left rear combination lamp.

- A. Replace the left rear combination lamp. Refer to [Replacement of Left Rear Combination Lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 9 | Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

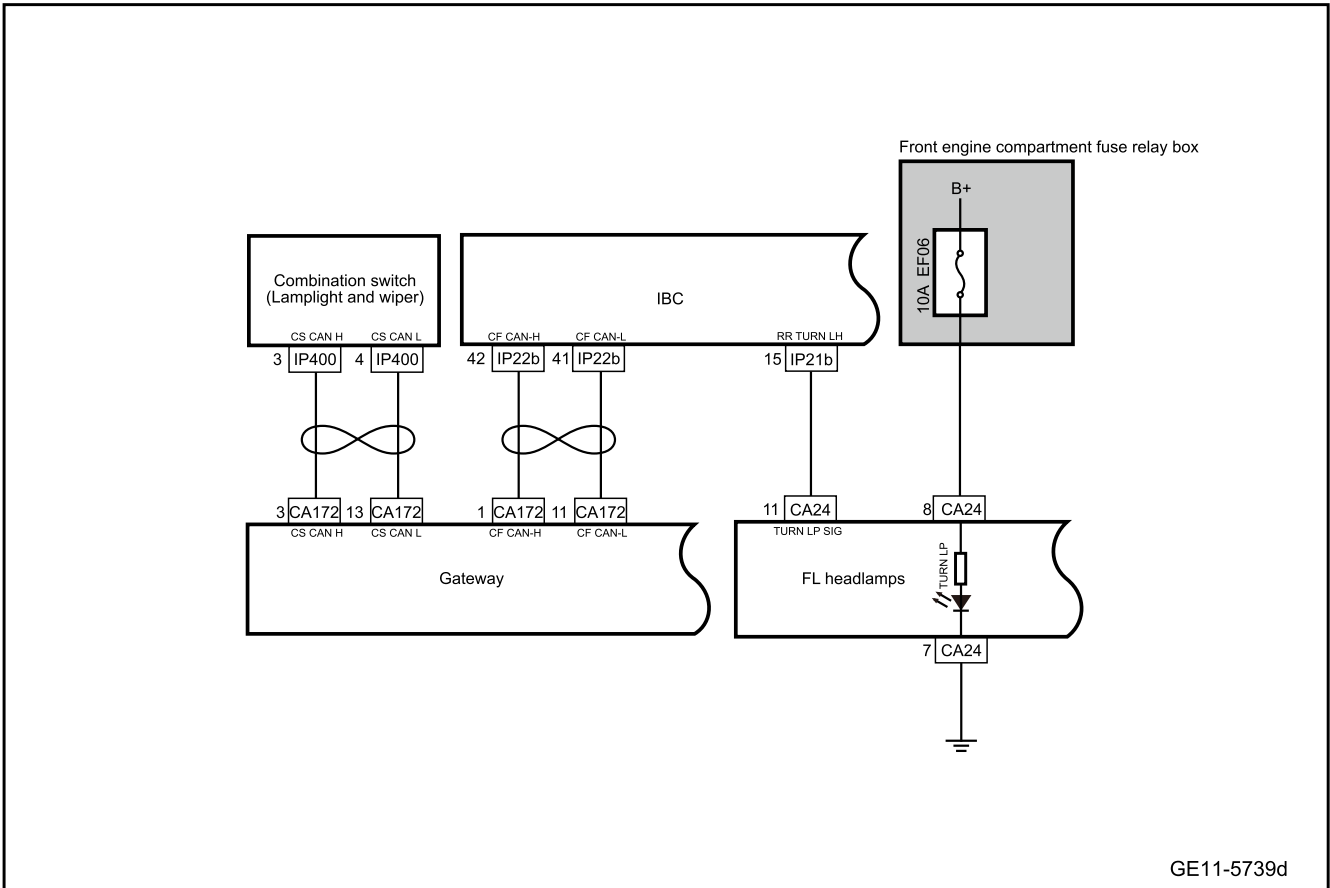
System is normal.

No

Step 11 System is normal.

11.4.6.14 Inoperative turn signal lamp

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only used to diagnose the fault of left front combination lamp (turn signal). The diagnosis of other brake lamps is the same as that of left front combination lamp (turn signal).

Step 1 Primary check.

- A. Check the left front combination lamps for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse and check whether the fuse EF06 in the front engine compartment fuse relay box is blown.

Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 | Check whether the lighting combination switch is caught.

- A. Operate the lighting combination switch.
- B. Check whether the switch is caught.

Yes

To replace the lighting combination switch, please refer to [Replacement of Lighting Combination Switch](#)

No

Step 4 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 | Check CS-CAN bus integrity.

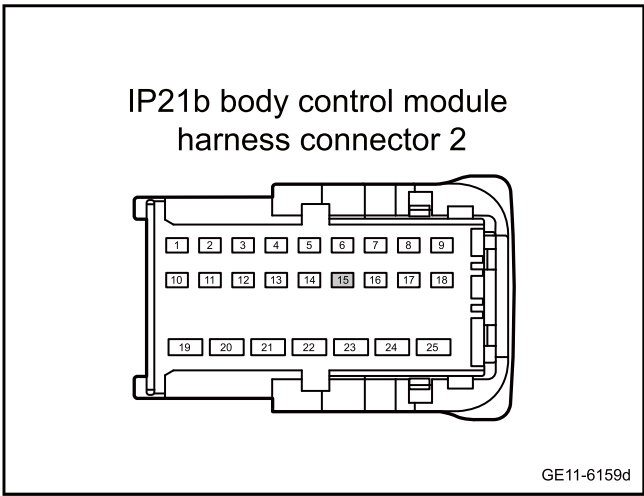
- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

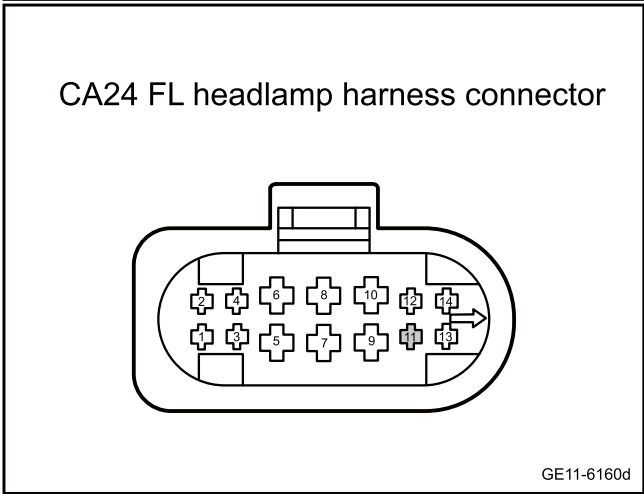
Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 6 Check whether the circuit between IBC and left front combination lamp(turn signal lamp) is open circuit.



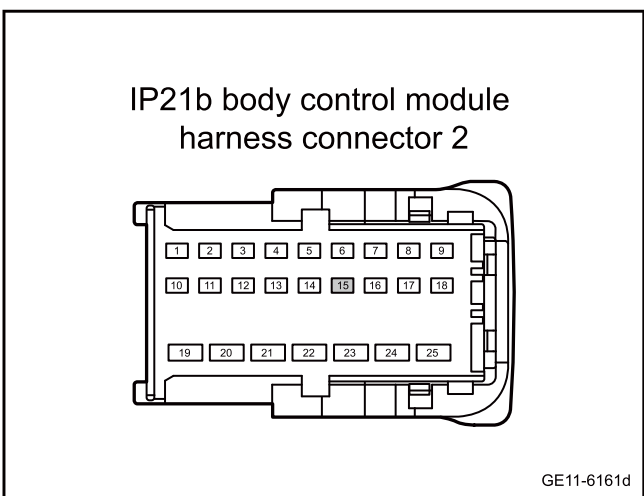
- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the IBC harness connector IP21b.
 - C. Disconnect the left front combination lamp harness connector CA24.
 - D. Use a multimeter to measure the resistance between the terminal 15 of IBC harness connector IP21b and the terminal 11 of If combination lamp harness connector CA24.
- Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 7 Check whether the line between IBC and left front combination lamp(turn signal lamp) is short to power supply.

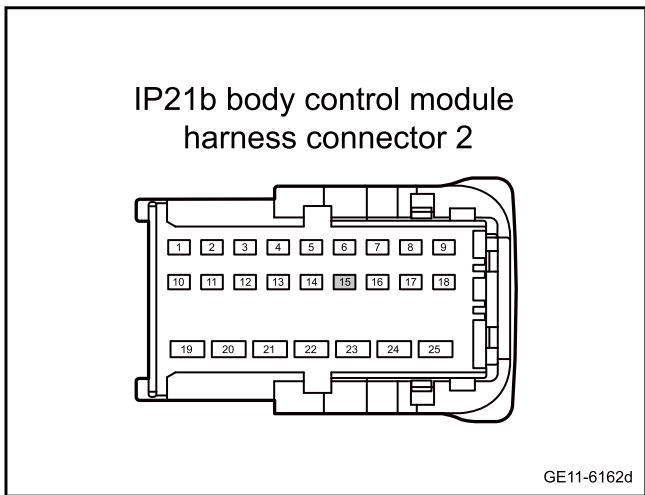


- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the IBC harness connector IP21b.
 - C. Disconnect the left front combination lamp harness connector CA24.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between terminal 15 of IBC harness connector IP21b and body grounding.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Check whether the line between IBC and left front combination lamp(turn signal lamp) is short to GND.

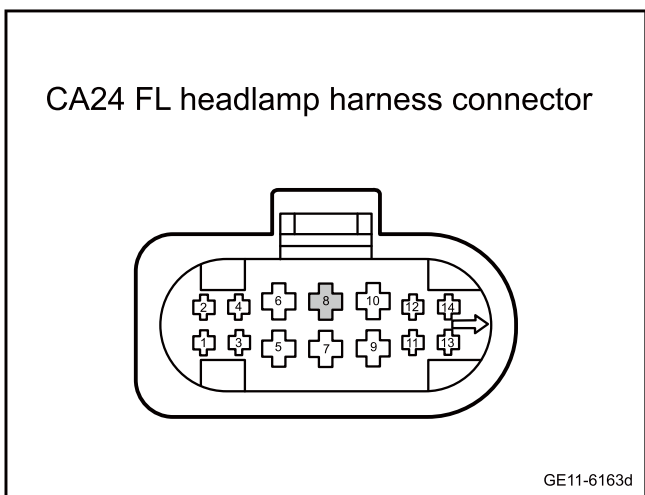


- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure the resistance between the terminal 15 of IBC harness connector IP21b and body grounding
Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Check whether the turn signal power supply circuit of the left front combination lamp (turn signal lamp) is open.



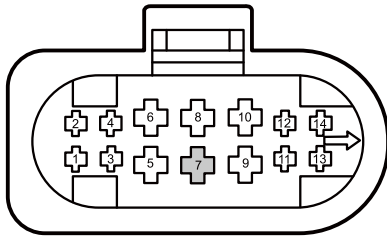
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between the terminal 8 of the LF combination lamp harness connector CA24 and the body grounding.
Standard voltage: 11-14V
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 10 Check whether the left front combination lamp (turn signal lamp) grounding lamp is open.

CA24 FL headlamp harness connector



GE11-6164d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure the resistance between the terminal 7 of the LF combination lamp harness connector CA24 and the body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 11 Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 13 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 14 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

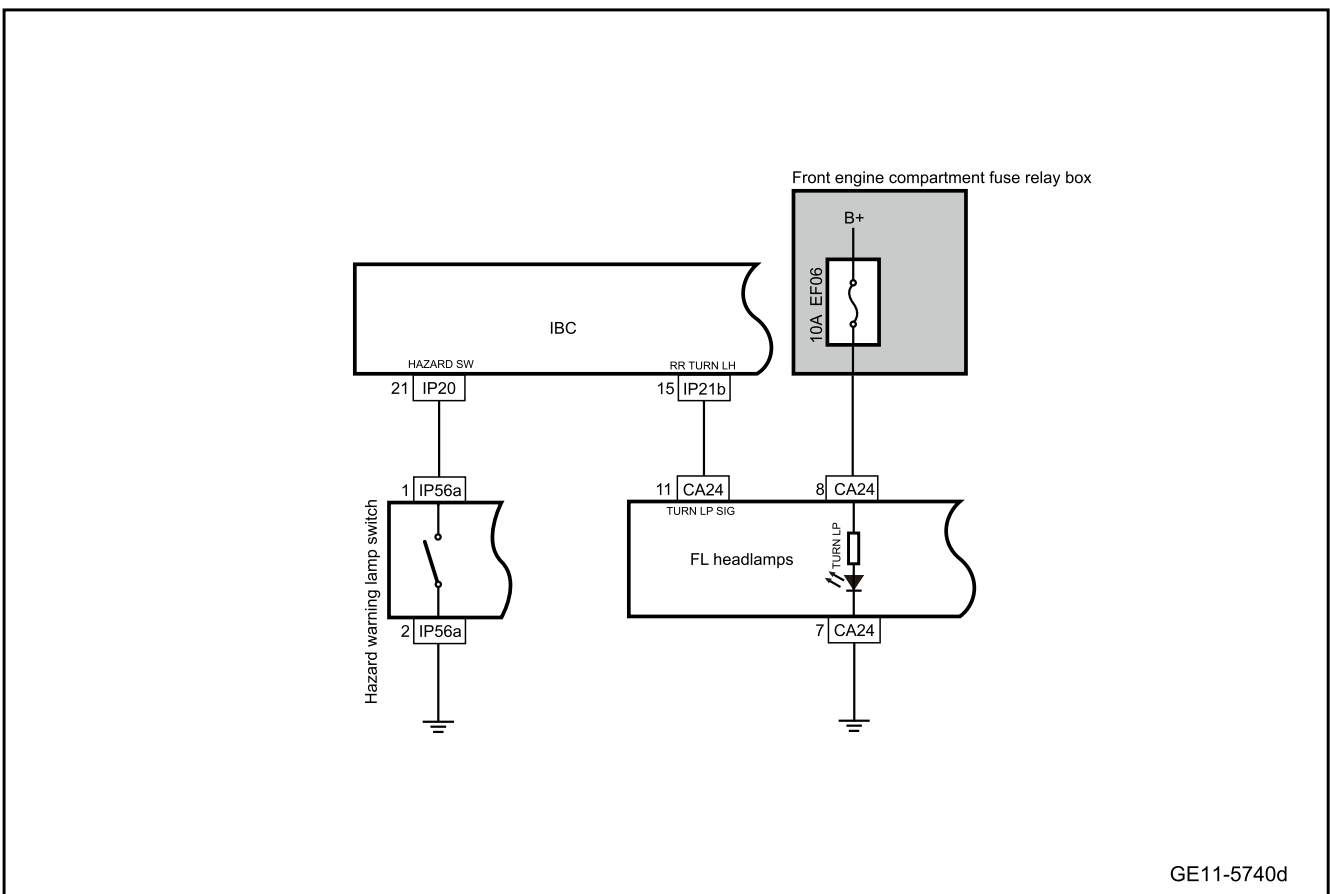
Yes System is normal.

No

Step 15	System is normal.
------------	-------------------

11.4.6.15 Inoperative hazard warning light

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only used to diagnose the fault of left front combination lamp (hazard warning lamp). The diagnosis of other position lamps is the same as that of left front combination lamp (hazard warning lamp).

Step 1	Primary check.
--------	----------------

- A. Check the left front combination lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the fuse and check whether the fuse EF06 in the front engine compartment fuse relay box is blown.

Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the hazard warning switch is caught.

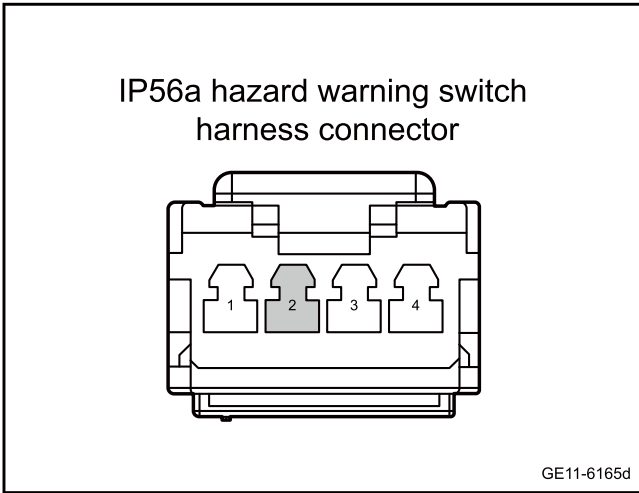
- A. Operate the hazard warning switch.
- B. Check whether the switch is caught.

Yes

To replace the hazard warning lamp switch, please refer to Replacement of Hazard Warning Lamp Switch

No

Step 4 Check whether the grounding circuit of hazard warning lamp switch is open.



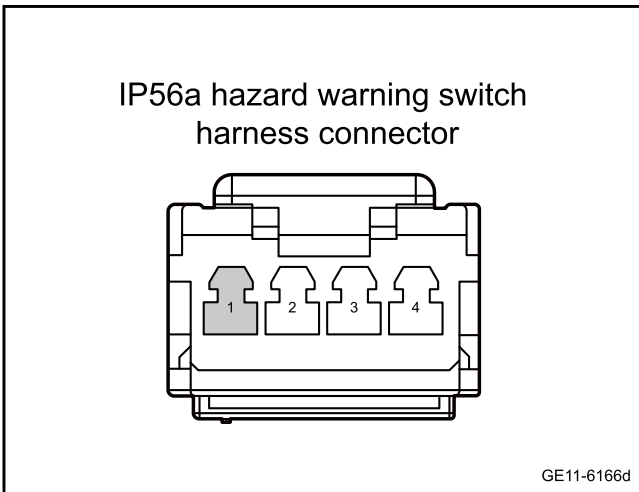
- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the hazard warning switch harness connector IP56a.
- C. Use a multimeter to measure the resistance between terminal 2 of the hazard warning switch harness connector IP56a and body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

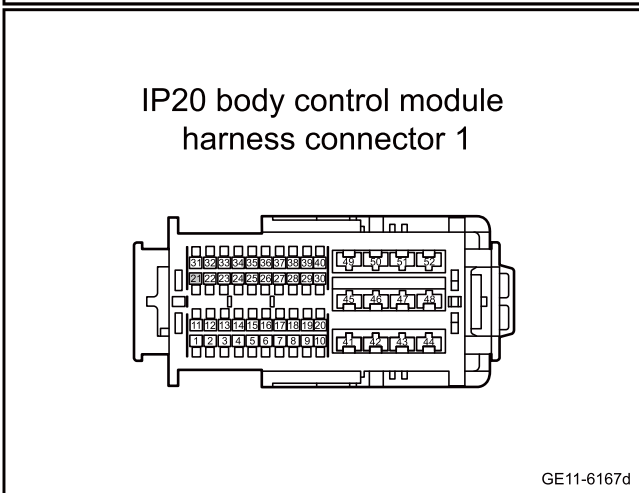
Step 5 | Check whether the circuit between IBC and the hazard warning switch is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the hazard warning switch harness connector IP56a.
- D. Use a multimeter to measure the resistance between terminal 1 of the hazard warning switch harness connector IP56a and terminal 21 of the IBC harness connector IP20.

Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

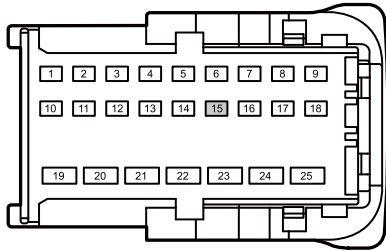
No Repair or replace the harness.



Yes

Step 6 | Check whether the circuit between IBC and left front combination lamp(hazard warning lamp) is open circuit.

IP21b body control module harness connector 2

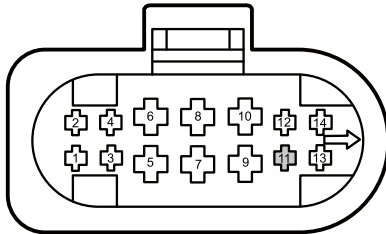


GE11-6168d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure the resistance between the terminal 15 of IBC harness connector IP21b and the terminal 11 of left front combination lamp harness connector CA24.

Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

CA24 FL headlamp harness connector



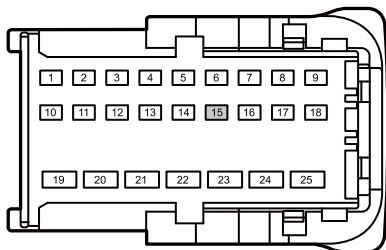
GE11-6169d

No → Repair or replace the harness.

Yes

Step 7 Check whether the line between IBC and left front combination lamp(hazard warning lamp) is short to power supply.

IP21b body control module harness connector 2



GE11-6170d

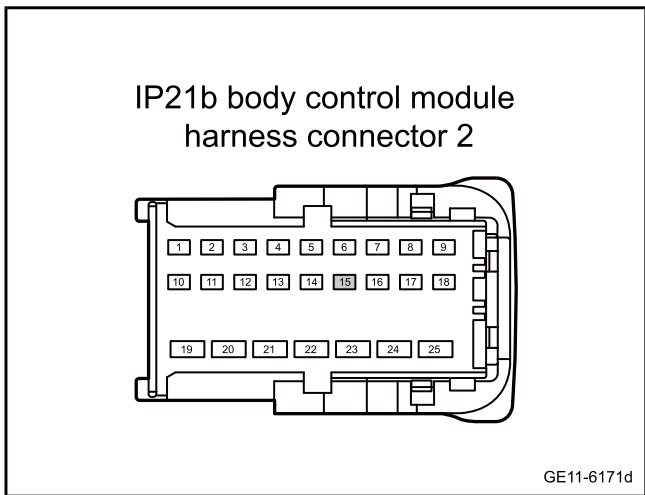
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between terminal 15 of IBC harness connector IP21b and body grounding.

Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 Check whether the line between IBC and left front combination lamp(hazard warning lamp) is short to GND.

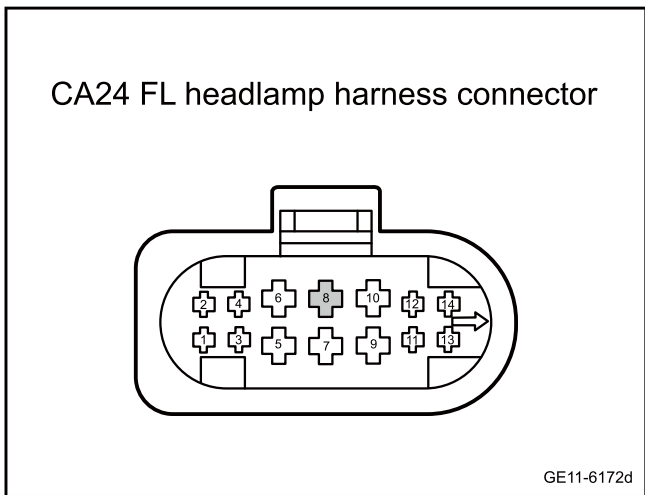


- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure the resistance between the terminal 15 of IBC harness connector IP21b and body grounding
Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 Check whether the voltage of left front combination lamp(hazard warning lamp) power supply circuit is normal.



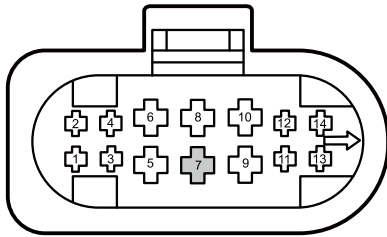
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between the terminal 8 of the LF combination lamp harness connector CA24 and the body grounding.
Standard voltage: 11-14V
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 10 Check whether the grounding circuit of left front combination lamp(hazard warning lamp) is open.

CA24 FL headlamp harness connector



GE11-6173d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure the resistance between the terminal 7 of the LF combination lamp harness connector CA24 and the body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 11 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 13 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 14 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

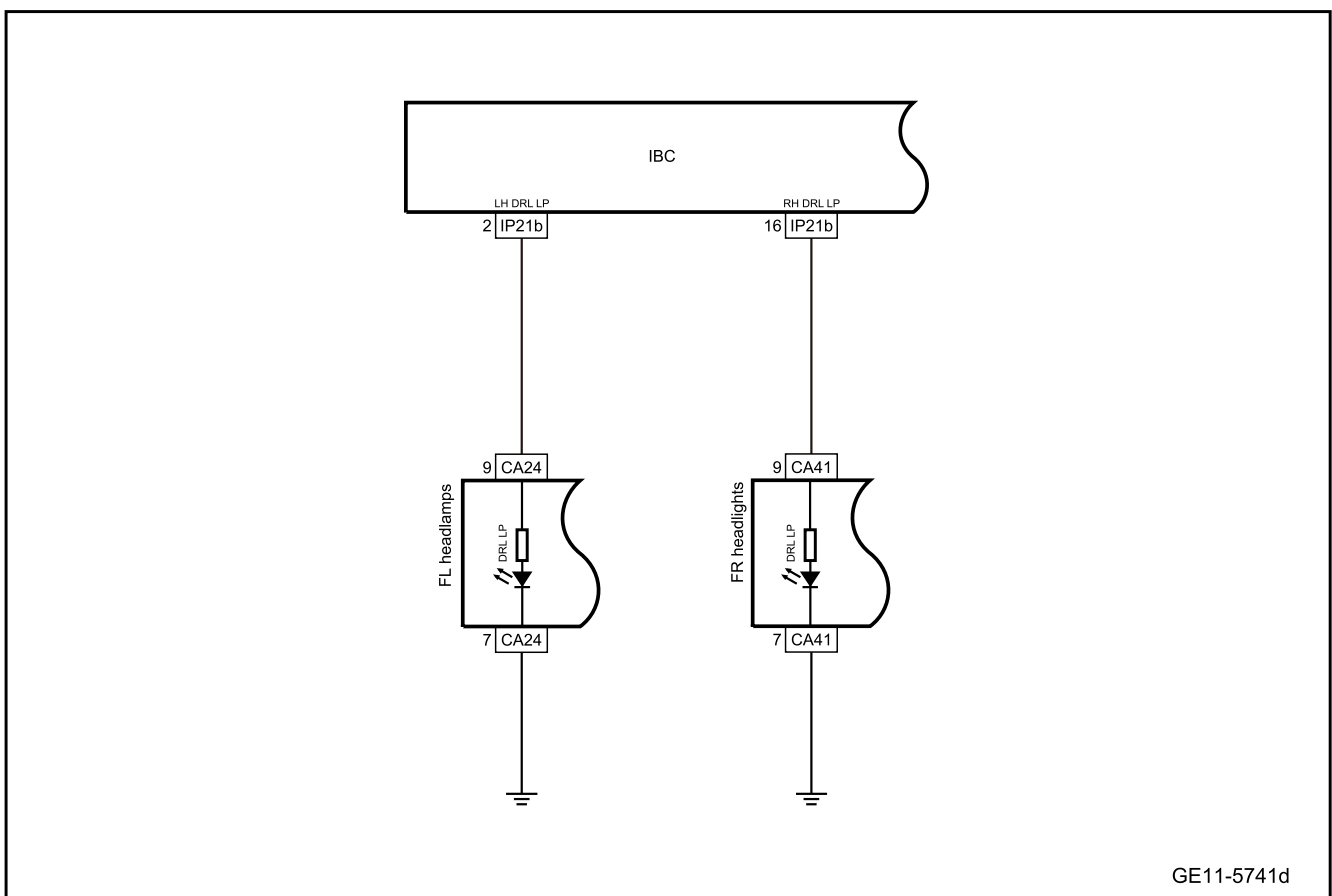
Yes System is normal.

No

Step 14	System is normal.
------------	-------------------

11.4.6.16 Inoperative daytime running light

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

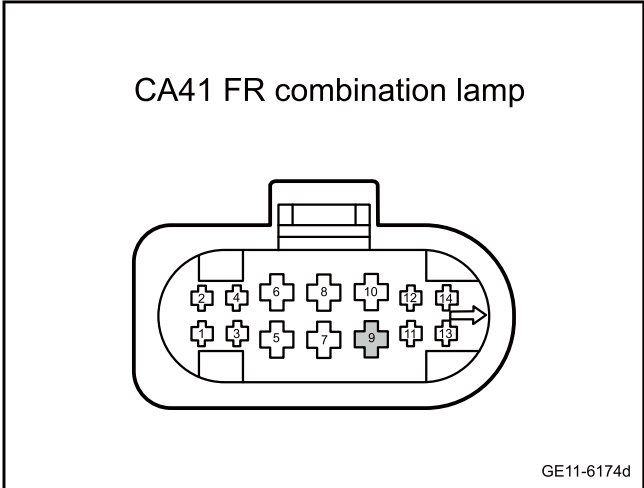
- A. Check whether there is appearance damage of the daytime running light.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

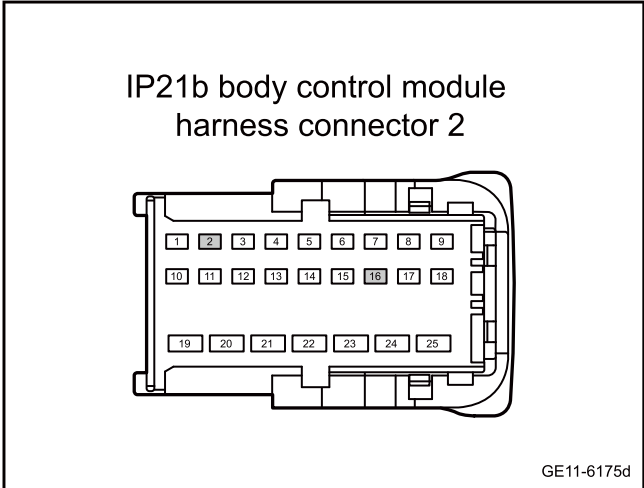
Yes

Step 2 Check whether the circuit between the IBC and the daytime running light is open.

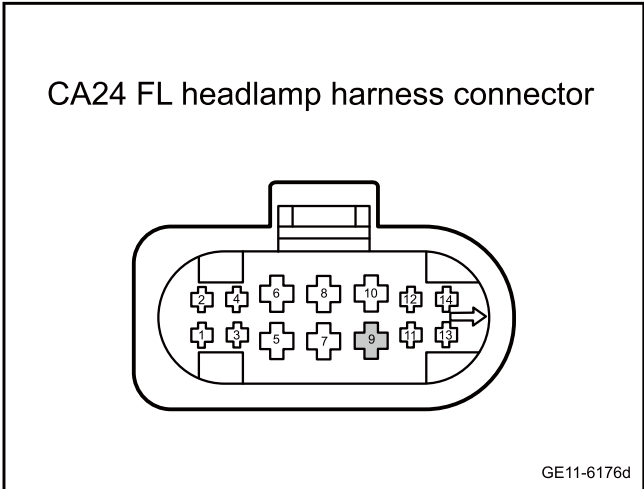


- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Disconnect the harness connector CA41 of RF combination lamp.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA41(9)	IP21b(16)	Standard resistance: less than 1Ω
CA24(9)	IP21b(2)	



- F. Confirm whether the measured value meets the standard.

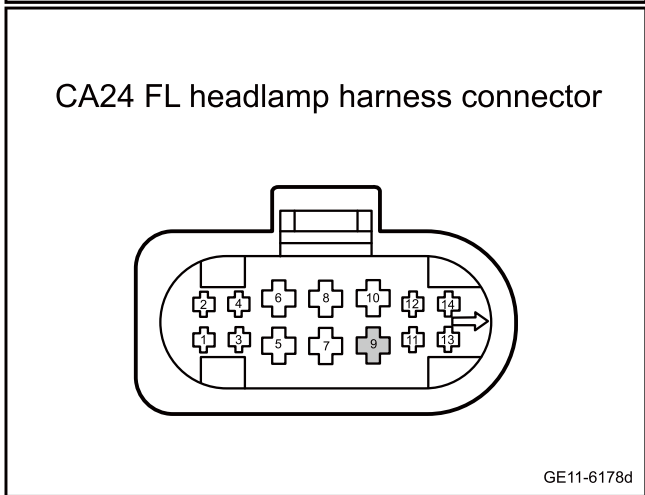
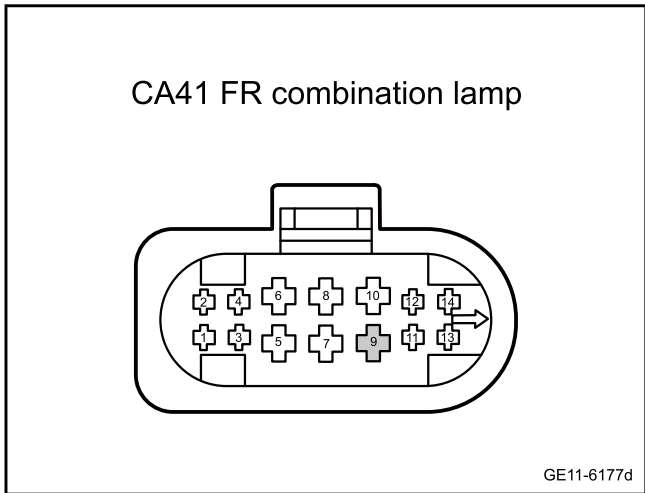


No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the IBC and the daytime running light is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Disconnect the harness connector CA41 of RF combination lamp.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA41(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(9)		

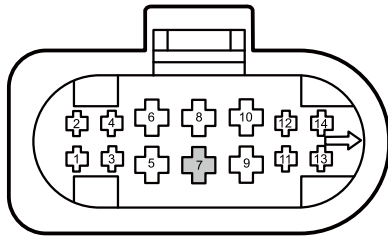
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

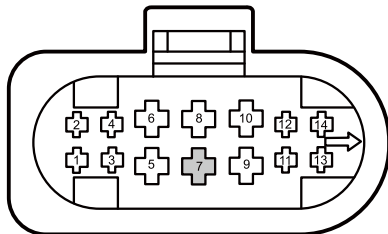
Step 4 Check whether the grounding circuit of the daytime running light is open

CA41 FR combination lamp



GE11-6179d

CA24 FL headlamp harness connector



GE11-6180d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA41(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA24(7)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Replace daytime running light

- A. Replace daytime running light Refer to [replacement of daytime running light](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 6 | Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes → Trouble is removed.

No

Step 7	Replace the IBC.
--------	------------------

- A. Replace the IBC. Refer to [Replacement of the body control module](#)

Next step

Step 8	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	System is normal.
--------	-------------------

11.4.6.17 Background lighting circuit failure

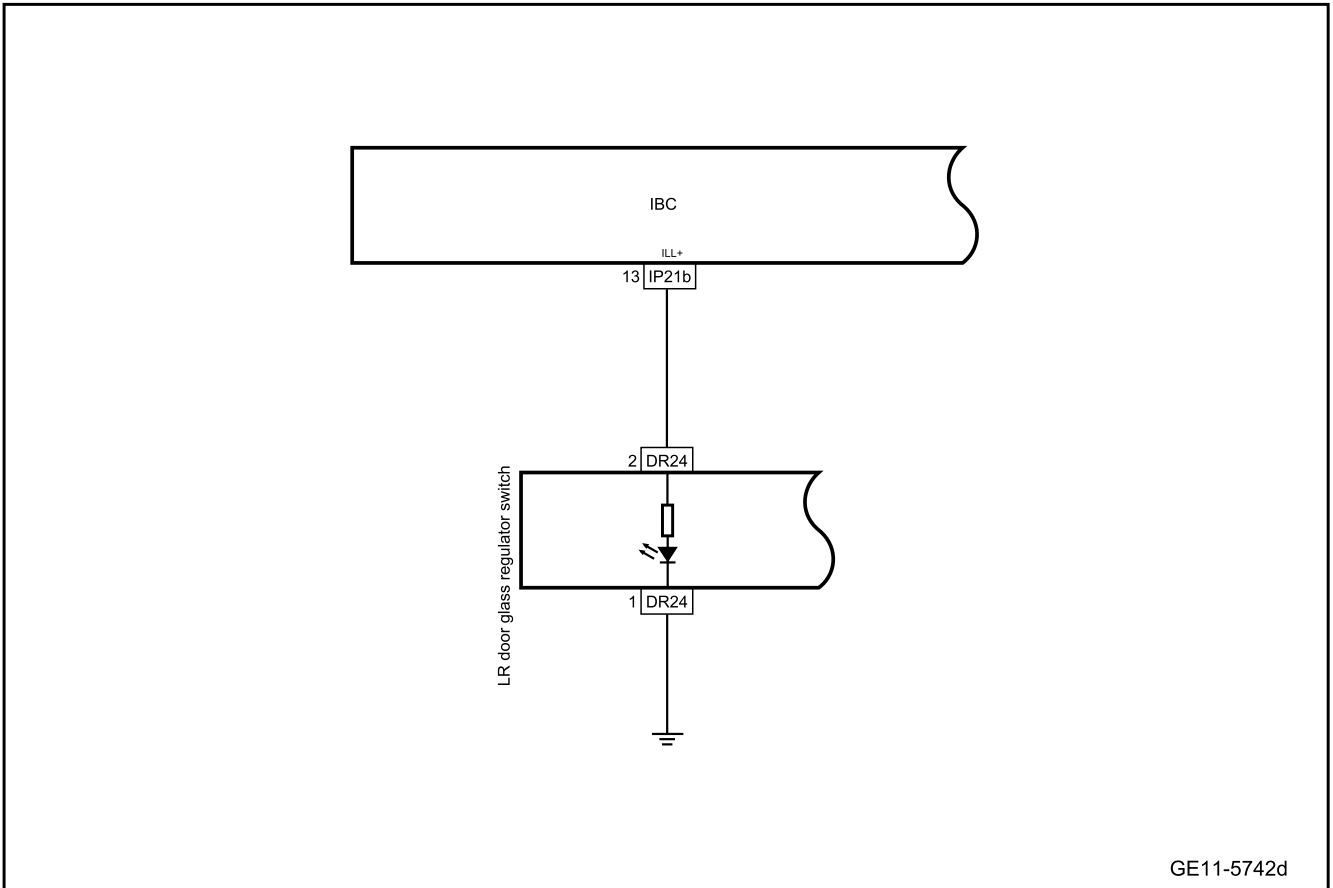
1. DTC description:

Diagnostic Trouble Code	Trouble description
B104F4B	The button backlight circuit is overloaded or overheated

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B104F4B	The overload or overtemperature fault is monitored by detecting the output current. When the current is greater than a specific HW threshold, it is considered as an overload or overtemperature fault. Backlight circuit overload 200ms	1. power supply voltage is within the range of 9-16V2. The backlight function is activated for 100ms	1. Circuit 2. IBC 3. Left rear glass regulator switch

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only for diagnosing the fault of the left rear door glass regulator switch background light. The diagnosis of other background lights is the same as this.

Step 1	Primary check.
--------	----------------

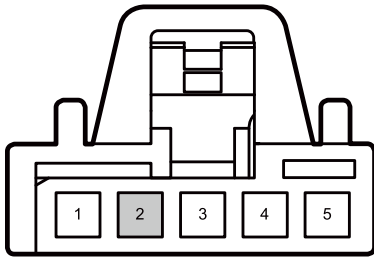
- A. Left rear door glass regulator switch is inspected for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

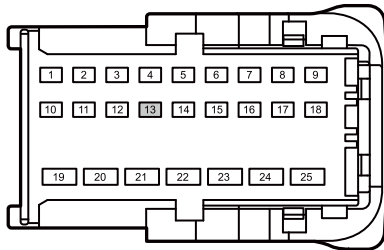
Step 2	Check whether the circuit between the left rear door glass regulator and the IBC is normal.
--------	---

DR24 RL door window regulator switch harness connector



GE11-6181d

IP21b body control module harness connector 2



GE11-6182d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- C. Disconnect the IBC harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR24(2)	IP21b(13)	Standard resistance: less than 1Ω
DR24(2)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω

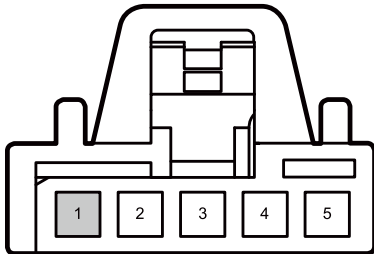
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 3 Check whether the left rear glass regulator switch is open to ground.

DR24 RL door window regulator switch harness connector



GE11-6183d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR24(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Replace the left rear glass regulator switch.
--------	---

- A. Replace the left rear glass regulator switch. Refer to [Replacement of left rear door glass window switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 5	Check the IBC power supply and grounding circuit.
--------	---

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 6	Replace the IBC
--------	-----------------

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 7	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

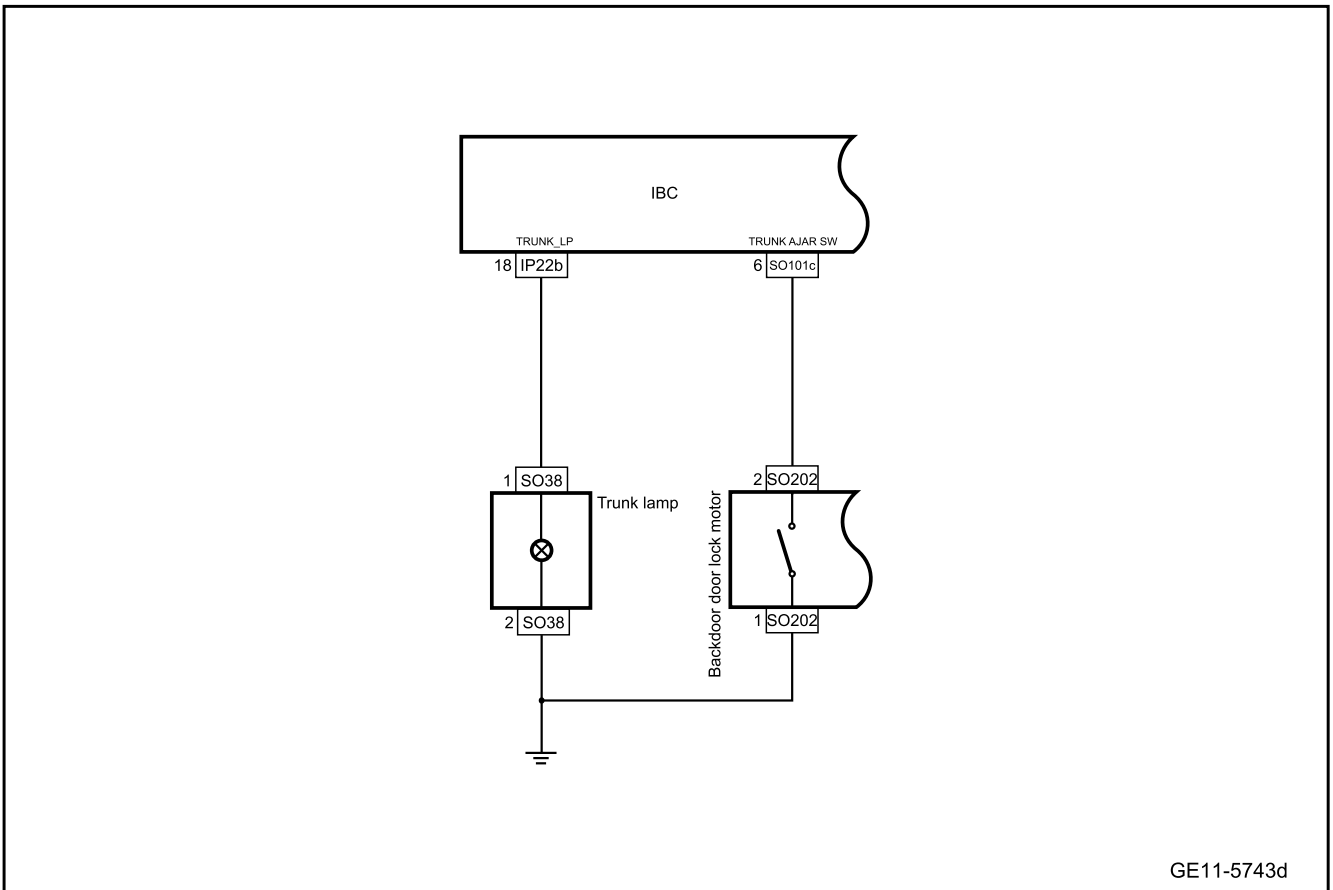
Yes System is normal.

No

Step 8	System is normal.
--------	-------------------

11.4.6.18 Inoperative trunk lamp

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

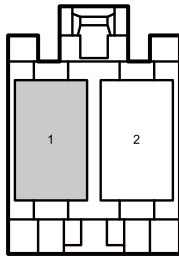
- A. Check the trunk lamp for appearance damage.
- B. Check the harness connector for signs of damage, poor contact, aging, loosening, corrosion, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

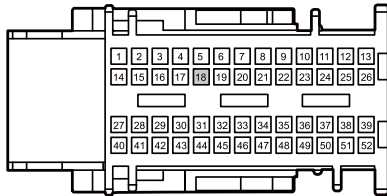
Step 2	Check whether the circuit between the IBC and the trunk lamp is normal.
--------	---

SO38 trunk lamp harness connector



GE11-6184d

IP22b body control module harness connector 3



GE11-6185d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the harness connector SO38 of the trunk lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	IP22b(18)	Standard resistance: less than 1Ω
SO38(1)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω

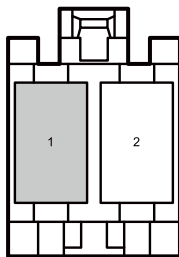
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 3 Check whether the circuit between the IBC and the trunk lamp is short to power supply.

SO38 trunk lamp harness connector



GE11-6186d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the harness connector SO38 of the trunk lamp.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	Vehicle body is grounded.	Standard voltage: 0V

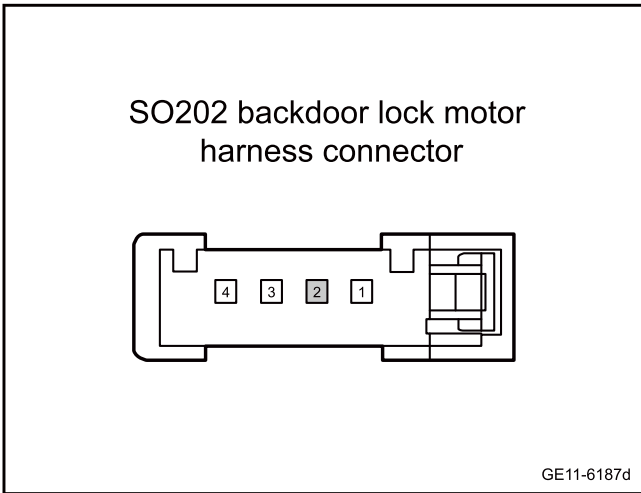
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

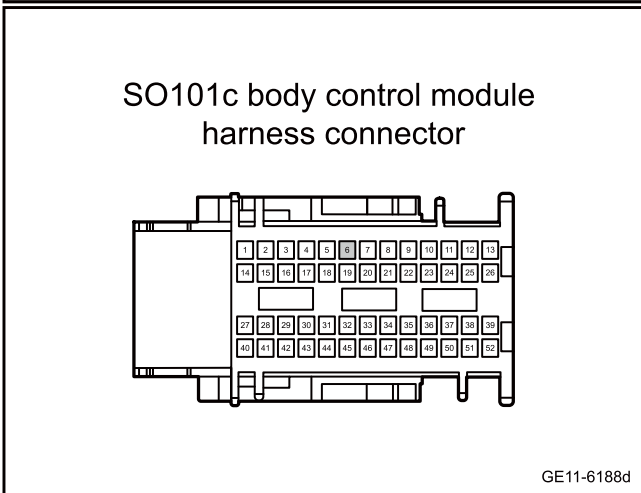
Step 4 Check whether the line between IBC and tailgate lock motor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect tailgate lock motor harness connector SO202.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	SO101c(6)	Standard resistance: less than 1Ω

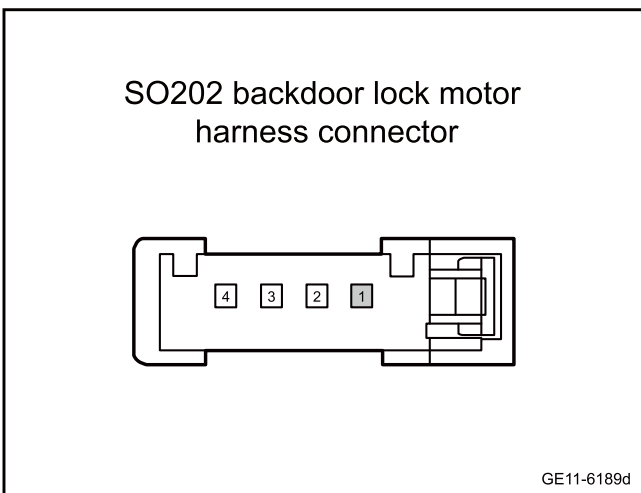
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 5 Check the tailgate lock motor grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect tailgate lock motor harness connector SO202.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO202(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the trunk lamp.

- A. Replace the trunk lamp. Refer to [Replacement of trunk lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace tailgate lock motor.

- A. Replace tailgate lock motor. Refer to [Replacement of Tailgate Lock Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 9 Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

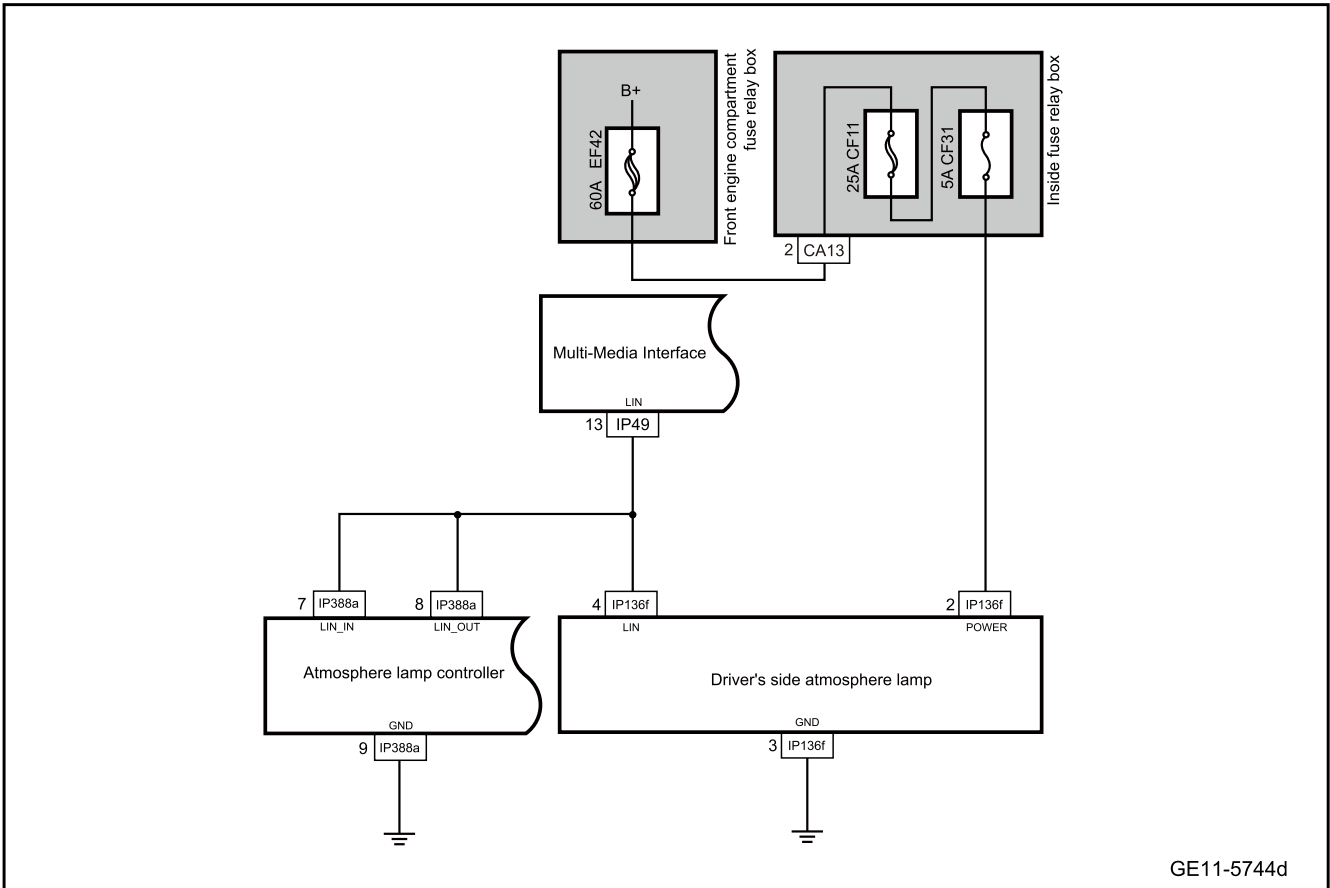
Yes → System is normal.

No

Step 11 | System is normal.

11.4.6.19 Ambient lamp does not work

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only for diagnosing the fault of the driver's side ambient lamp. The diagnosis of other ambient lamps is the same as this.

Step 1 | Primary check.

- A. Check the ambient lamp and head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 2 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF11 and check whether the fuse is blown.

Rated capacity of fuse: 30A

Unplug the indoor fuse CF31 and check whether the fuse is blown.

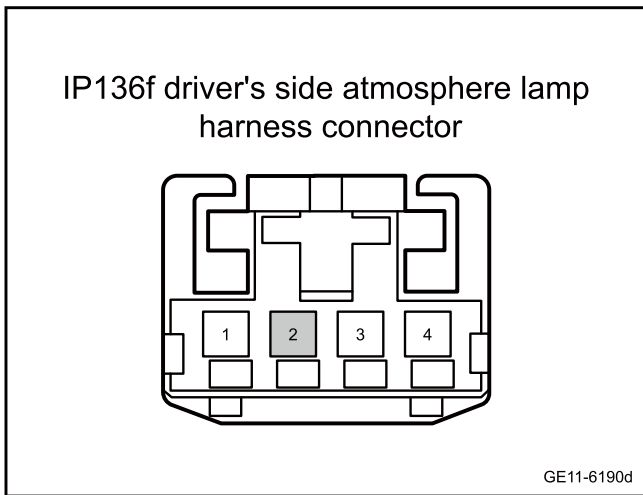
Rated capacity of fuse: 5A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the power supply circuit of the driver's side ambient lamp



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side ambient lamp harness connector IP136f.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP136f(2)	Vehicle body is grounded.	Standard voltage: 9~14V

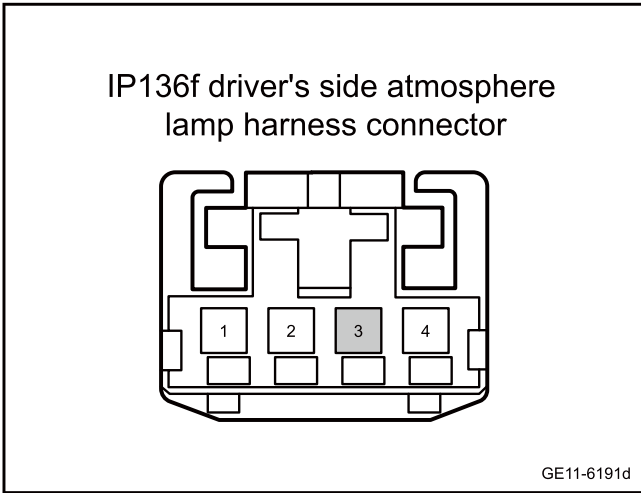
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the grounding harness of the driver side ambient lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side ambient lamp harness connector IP136f.
- C. Use a multimeter to measure each terminal according to the table below:

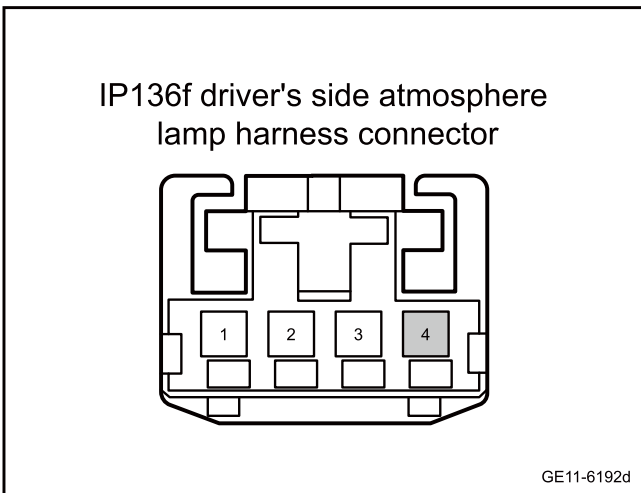
Measure terminal 1	Measure terminal 2	Standard value
IP136f(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between head unit and the driver side ambient lamp is open.

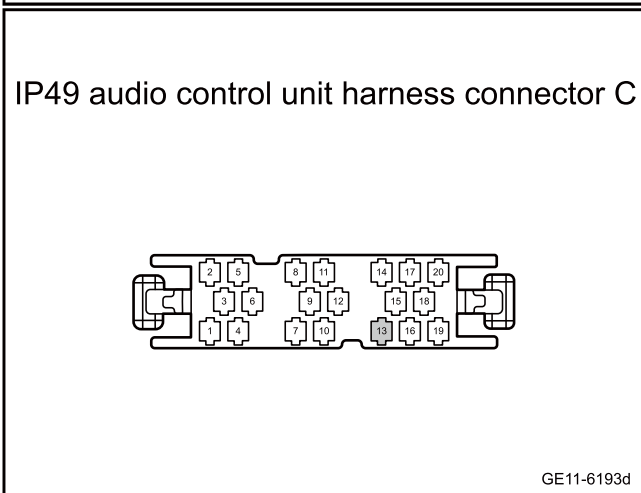


- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the driver side ambient lamp harness connector IP136f.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP136f(4)	IP49(13)	Standard resistance: less than 1Ω

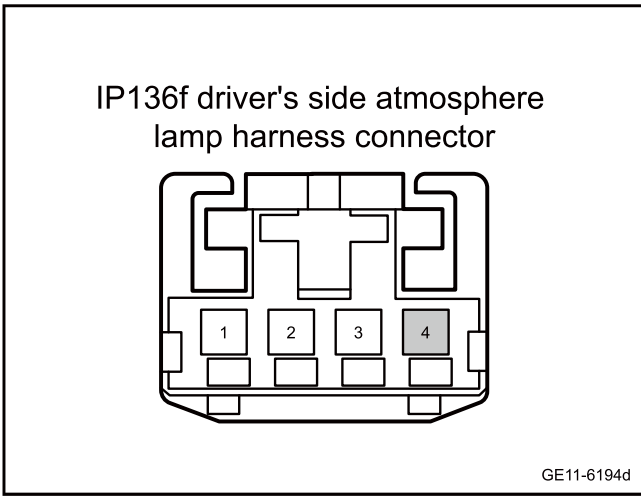
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.



Yes

Step 6 Check whether the circuit between head unit and the driver side ambient lamp is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the driver side ambient lamp harness connector IP136f.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

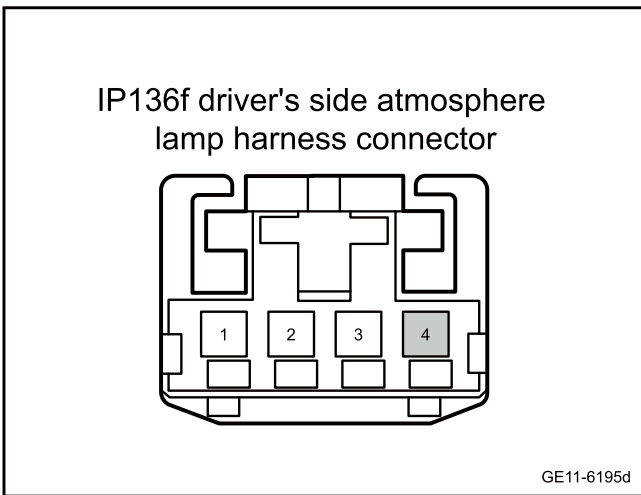
Measure terminal 1	Measure terminal 2	Standard value
IP136f(4)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Check whether the circuit between head unit and the driver side ambient lamp is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the driver side ambient lamp harness connector IP136f.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP136f(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

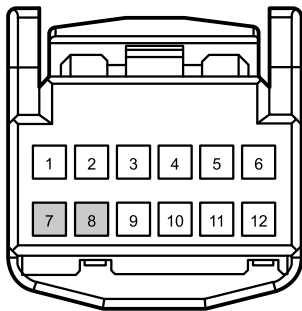
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

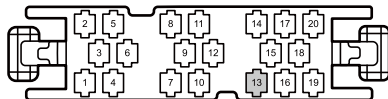
Step 8 Check whether the harness between the ambient lamp controller and the head unit is normal.

IP388a atmosphere lamp controller harness connector



GE11-6379d

IP49 audio control unit harness connector C



GE11-6193d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the ambient lamp controller harness connector IP388a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP388a(7)	IP49(13)	Standard resistance: less than 1Ω
IP388a(8)		

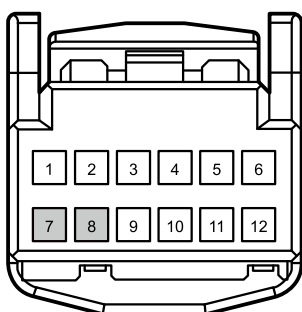
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 Check whether the harness between the ambient lamp controller and head unit is shorted to power supply.

IP388a atmosphere lamp controller harness connector



GE11-6379d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the ambient lamp controller harness connector IP388a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

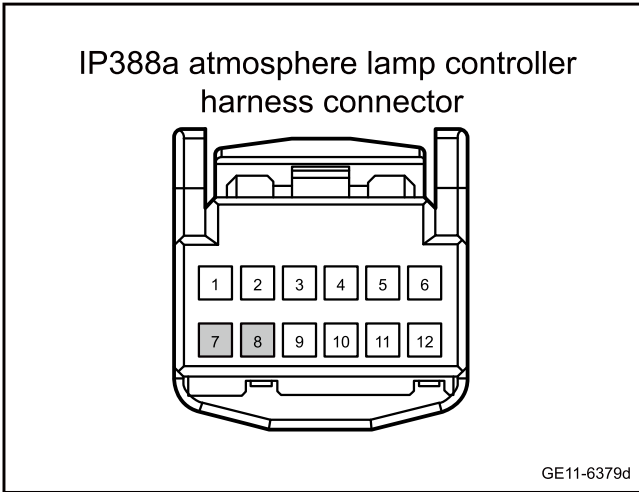
Measure terminal 1	Measure terminal 2	Standard value
IP388a(7)	Vehicle body is grounded.	Standard voltage: 0V
IP388a(8)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 10 Check whether the harness between the ambient lamp controller and head unit is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the ambient lamp controller harness connector IP388a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP388a(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP388a(8)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 11 Replace the driver side ambient lamp.

- A. Replace the driver side ambient lamp. Refer to [Replacement of Driver's Ambient Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12 Replacement of ambient lamp controller

- A. Replacement of ambient lamp controller Refer to replacement of the ambient lamp controller

Next step

Step 13 Reprogram and reset the ambient lamp controller.

- A. Reprogram and reset the ambient lamp controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 14	Change the head unit.
------------	-----------------------

- A. Check whether the head unit grounding harness is normal. Refer to [Head unit power supply fault](#)
- B. Replace the head unit. Refer to [Replacement of Body Control Module](#)

Next step

Step 15	Reprogram and reset the head unit.
------------	------------------------------------

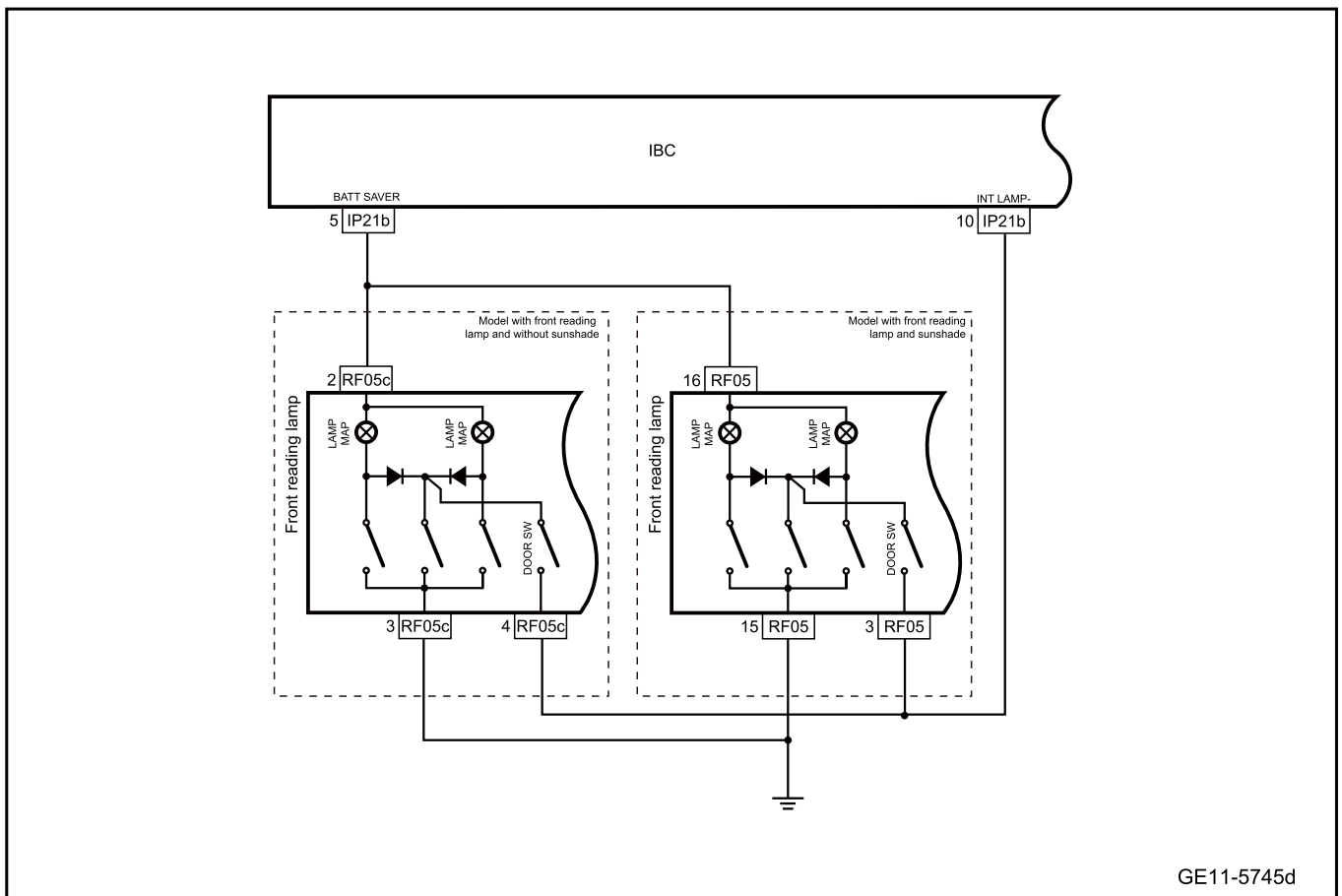
- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 16	System is normal.
------------	-------------------

11.4.6.20 Front Reading Lamp Does Not Work

1. Schematic circuit diagram:



GE11-5745d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the front reading lamp for appearance damage.
- B. Check the harness connector of front reading lamp for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

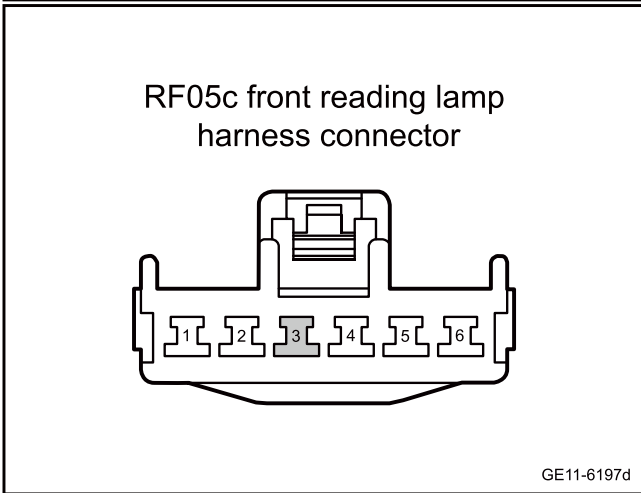
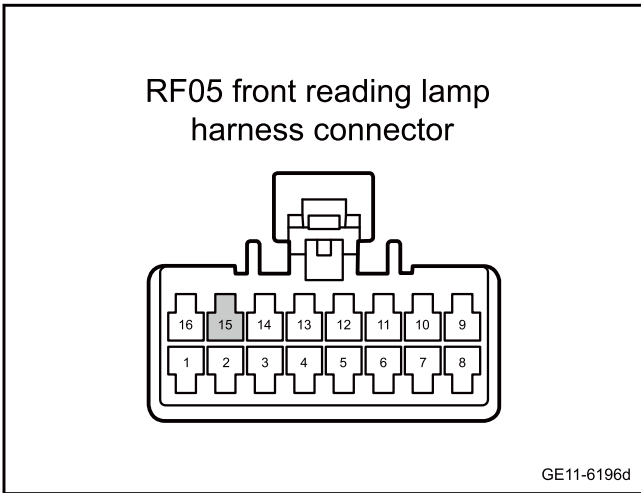
Step 2	Check whether switch of the front reading lamp is catching.
--------	---

- A. Operate the switch of the front reading lamp,
- B. Check whether the switch is caught.

Yes → Replace the front reading lamp. Refer to [Replacement of Front Reading Lamp \(Type I\)](#) [Replacement of Front Reading Lamp \(Type II\)](#)

No

Step 3 Check whether the front reading lamp grounding circuit is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front reading harness connector RF05.
- C. Disconnect the front reading harness connector RF05c.
- D. Use a multimeter to measure the terminals according to the table below:

Configura- tion	Measure terminal 1	Measure terminal 2	Standard value
Model without electric sunshade	RF05(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω
Model with electric sunshade curtain	RF05c(3)		

- E. Confirm whether the measured value meets the standard.

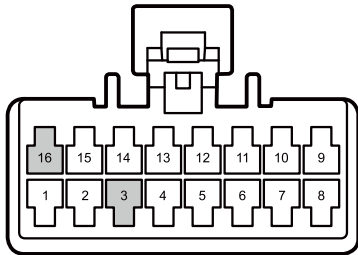
No

Repair or replace the harness.

Yes

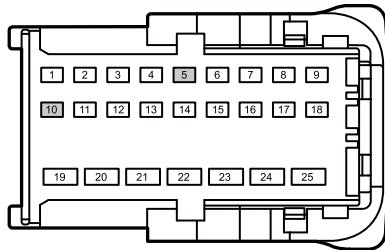
Step 4 Check whether the circuits between the front reading lamp and IBC are open.

RF05 front reading lamp harness connector



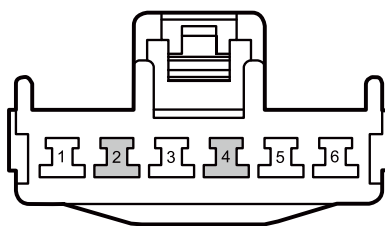
GE11-6198d

IP21b body control module harness connector 2



GE11-6199d

RF05c front reading lamp harness connector



GE11-6200d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front reading harness connector RF05c.
- C. Disconnect the front reading harness connector RF05.
- D. Disconnect the IBC harness connector IP21b.
- E. Use a multimeter to measure the terminals according to the table below:

Configuration	Measure terminal 1	Measure terminal 2	Standard value
Model without electric sunshade	RF05(16)	IP21b(5)	Standard resistance: less than 1Ω
	RF05(3)	IP21b(10)	
Model with electric sunshade curtain	RF05c(2)	IP21b(5)	
	RF05c(4)	IP21b(10)	

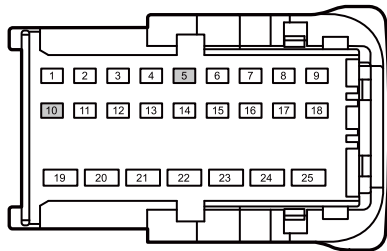
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check whether the line between the front reading lamp and IBC is shorted to power supply.

IP21b body control module harness connector 2



GE11-6201d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front reading harness connector RF05c.
- C. Disconnect the front reading harness connector RF05.
- D. Disconnect the IBC harness connector IP21b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard voltage: 0V
IP21b(10)		

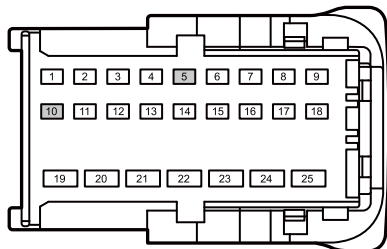
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the front reading lamp and IBC is shorted to GND.

IP21b body control module harness connector 2



GE11-6202d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front reading harness connector RF05c.
- C. Disconnect the front reading harness connector RF05.
- D. Disconnect the IBC harness connector IP21b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP21b(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP21b(10)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the front reading lamp.

- A. Replace the front reading lamp. Refer to [Replacement of Front Reading Lamp \(Type I\)](#) [Replacement of Front Reading Lamp \(Type II\)](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Check the IBC power supply and grounding circuit.

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 9 | Replace the IBC

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

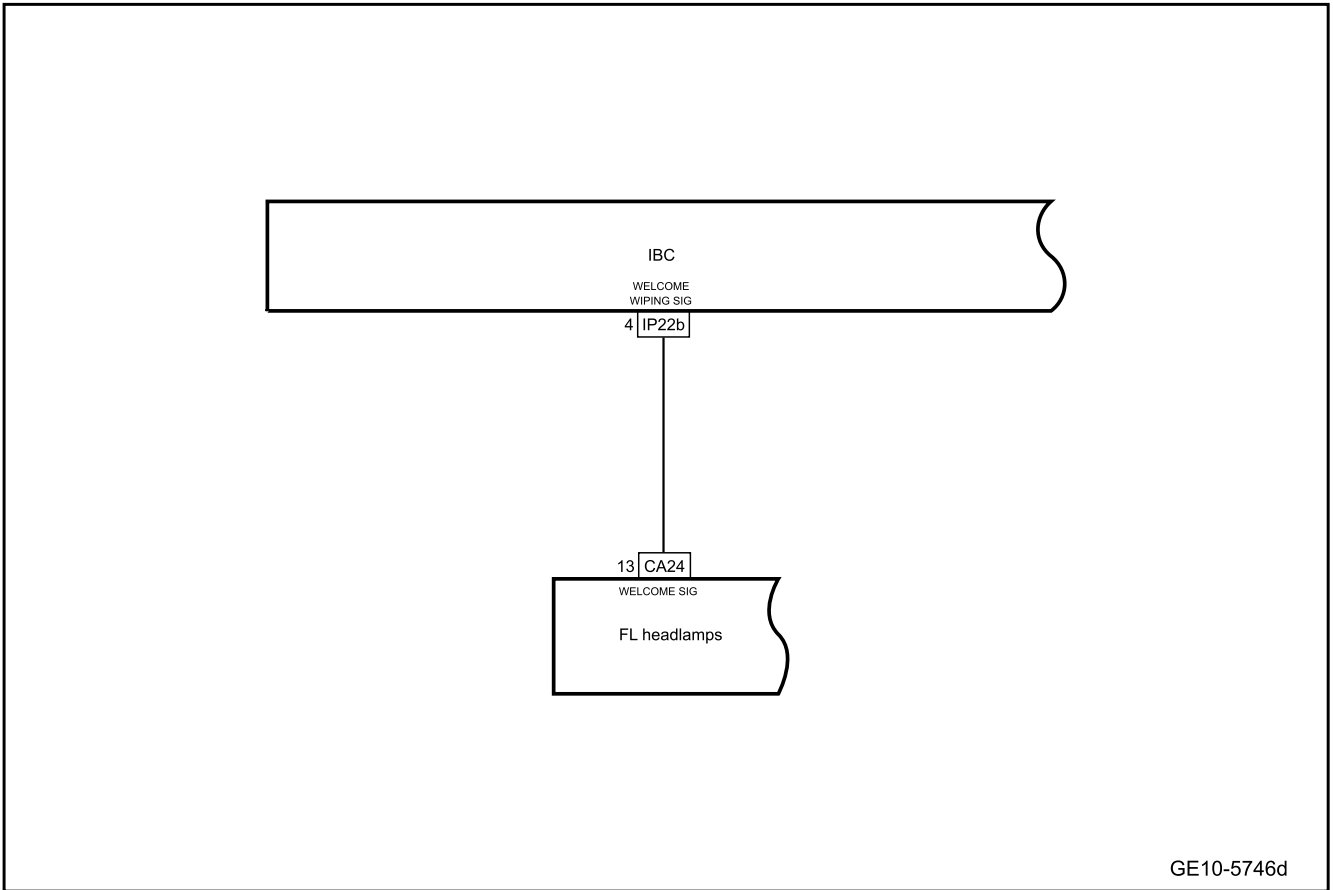
Yes System is normal.

No

Step 11 | System is normal.

11.4.6.21 Courtesy lights do not work

1. Schematic circuit diagram:



This manual is only used to diagnose the fault of left front combination lamp (courtesy lamp). The diagnosis of other turn signals is the same as that of left front combination lamp (courtesy lamp).

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

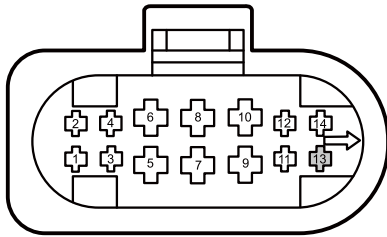
- A. Check the left front combination lamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

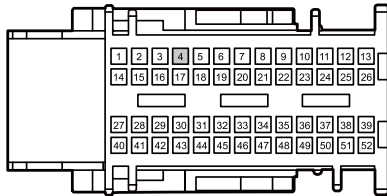
Step 2	Check the circuit between the left front combination lamp(courtesy lamp) and the IBC.
--------	---

CA24 FL headlamp harness connector



GE11-6203d

IP22b body control module harness connector 3



GE11-6204d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(13)	IP22b(4)	Standard resistance: less than 1Ω
CA24(13)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(13)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 4 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. [Refer to Replacement of Body Control Module](#)

Next step

Step 5 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 System is normal.

11.4.6.22 Low beam lamp circuit fault

1. DTC description:

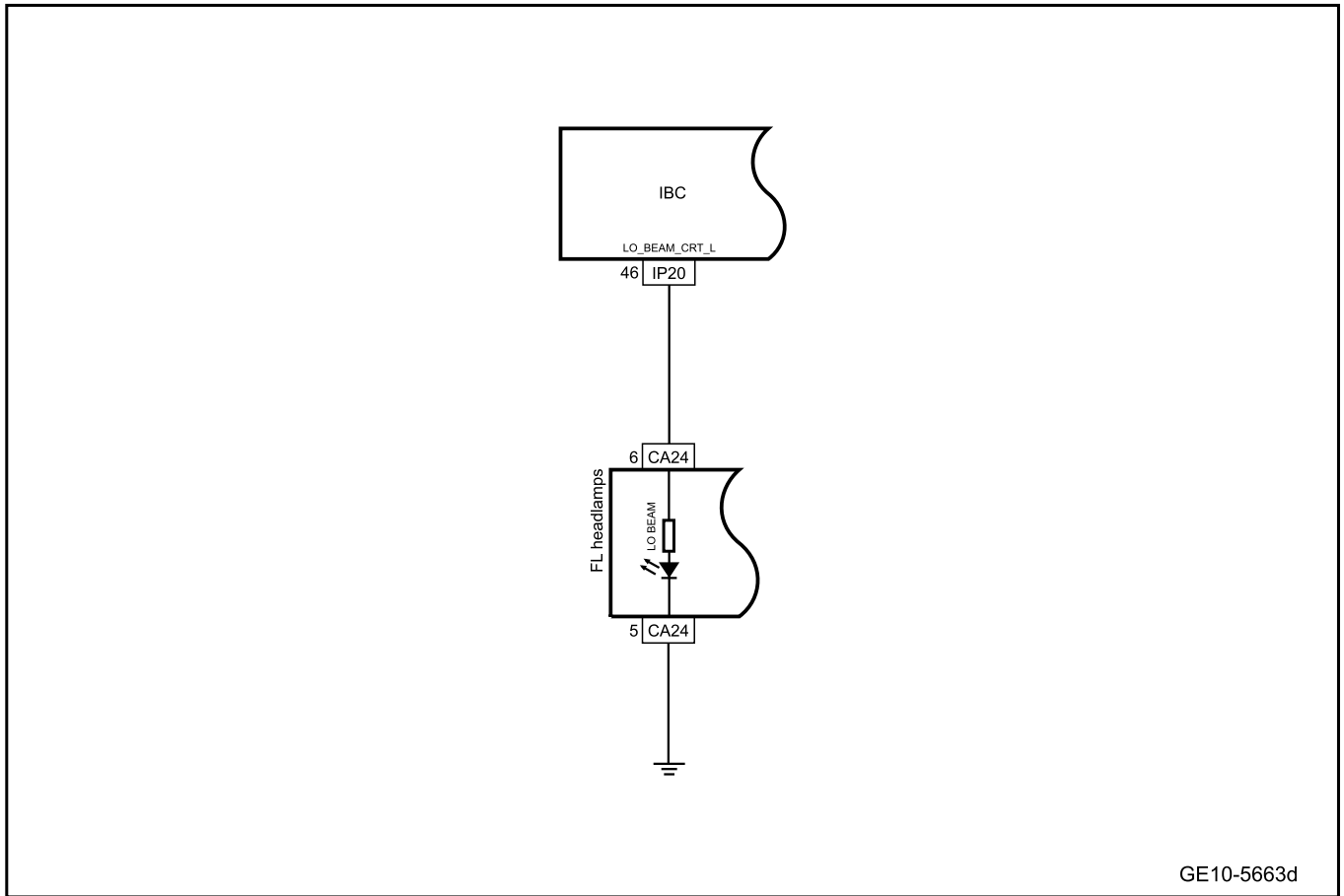
Diagnostic Trouble Code	Trouble description
B105C01	Right low beam fault
B105D01	Left low beam fault
B100213	Low beam circuit is open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B105C01	The output current is checked to monitor for faults, and if the current is above a certain power threshold (hardware-based), it is considered a fault. Low beam is short-circuited to ground or overloaded for 200ms	1. Supply voltage of IBC is within the range of 9-16V 2. The low beam function is activated within 100ms	1. Circuit 2. IBC 3. Low beam lamp
B105D01	The output current is checked to monitor for faults, and if the current is above a certain power threshold (hardware-based), it is considered a fault. Low beam is short-circuited to ground or overloaded for 200 milliseconds		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100213	The IBC power supply voltage range is 9-16V Detection strategy: When an IBC is received, the CAN signal "ADB_LowBeamLampsFailure" is 0 x 1 (fault), then this fault flag should be set	The ignition status is IGN ON (PhyTccStsBody==ON) and should meet the TdiagEnable condition. cfgNodeAFS/adbooption=1	

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of left front combination lamp (low beam). The diagnosis of other low beams is the same as that of left front combination lamp (low beam).

4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the left headlamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

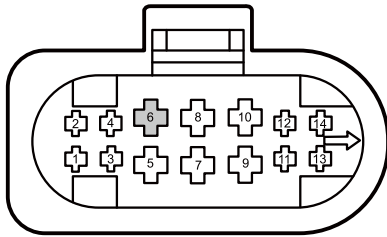
No

Repair or replace the faulty part.

Yes

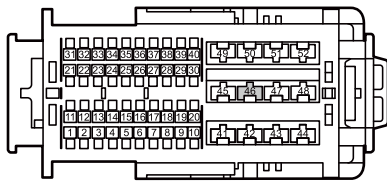
Step 3 Check the circuit between the left front combination lamp (low beam) and the IBC.

CA24 FL headlamp harness connector



GE10-5878d

IP20 body control module harness connector 1



GE10-5879d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	IP20(46)	Standard resistance: less than 1Ω
CA24(6)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(6)	Vehicle body is grounded.	Standard voltage: 0V

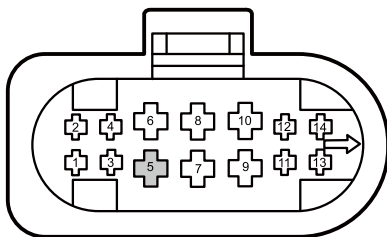
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Check the grounding harness of the left front combination lamp (low beam).

CA24 FL headlamp harness connector



GE10-5880d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.23 High beam lamp circuit fault

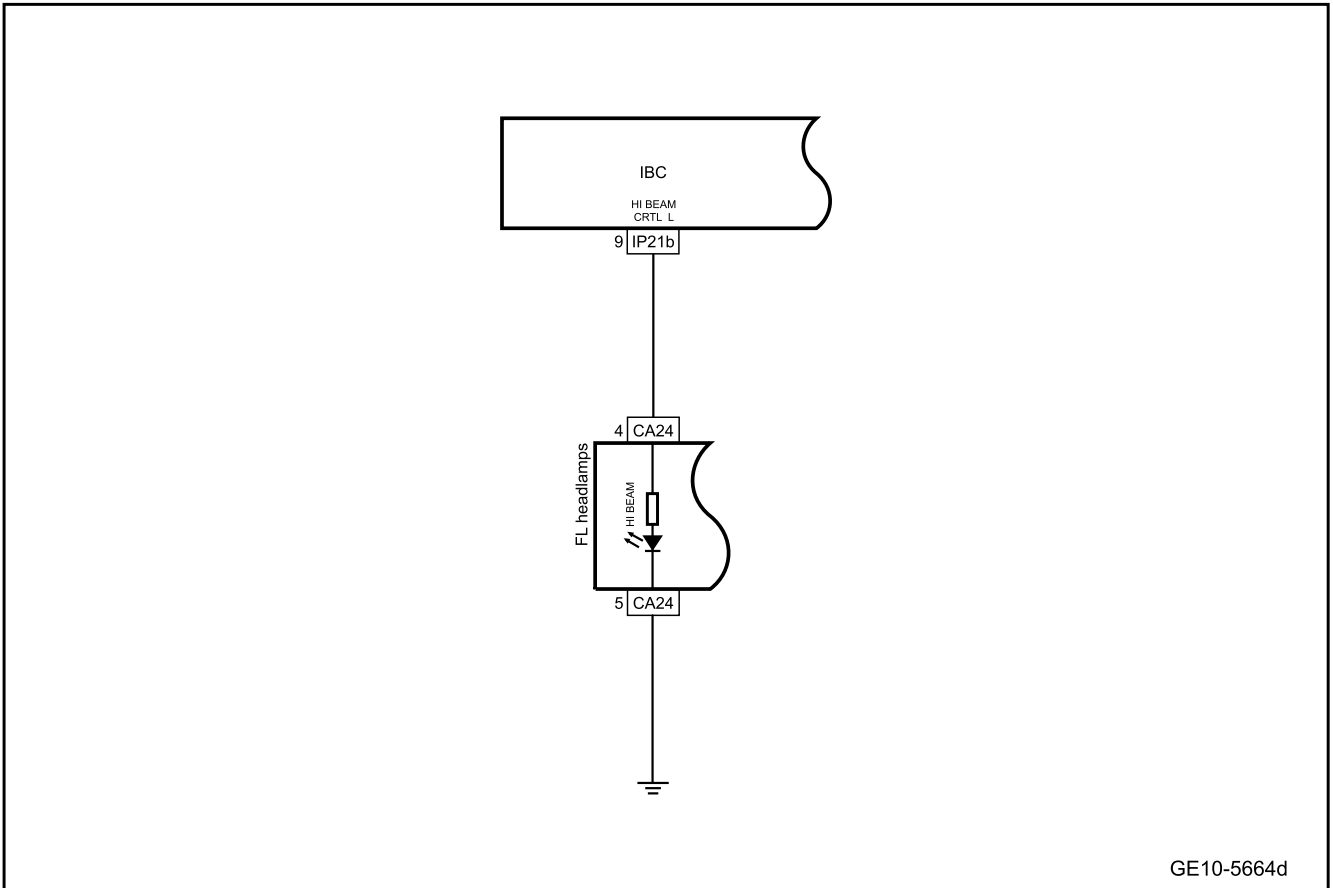
1. DTC description:

Diagnostic Trouble Code	Trouble description
B107811	Left high beam is short-circuited to ground
B107911	Right high beam is short-circuited to ground
B108898	High beam switch detection output circuit is overtemperature

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107811	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. High beam is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The high beam function is activated for 100ms	1. Circuit 2. Fuse 3. IBC 4. High beam lamp
B107911	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. High beam is short-circuited to ground or overloaded for 200 milliseconds		
B108898	The output current is detected to monitor overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overtemperature fault. High beam switch detection output circuit is overloaded for 200ms		

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of left front combination lamp (high beam). The diagnosis of other low beams is the same as that of left front combination lamp (high beam).

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

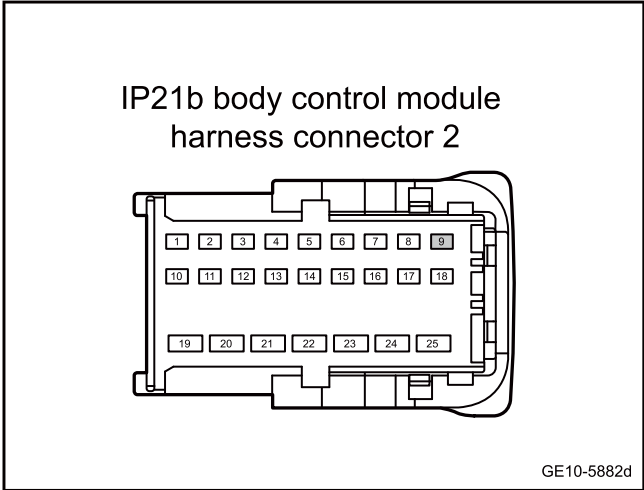
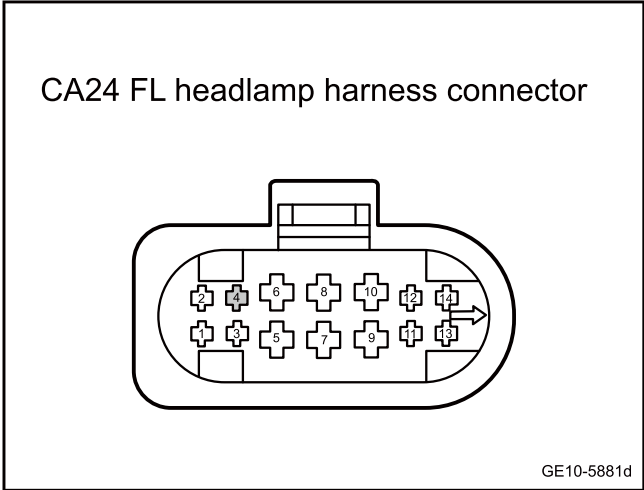
- A. Check the left front combination lamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the left front combination lamp (high beam) and the IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the IBC harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	IP21b(9)	Standard resistance: less than 1Ω
CA24(4)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(4)	Vehicle body is grounded.	Standard voltage: 0V

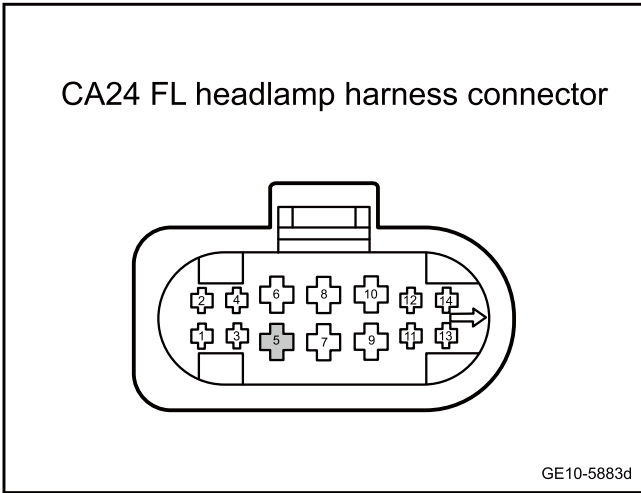
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the grounding harness of the left front combination lamp (high beam).



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.24 Rear fog lamp circuit fault

1. DTC description:

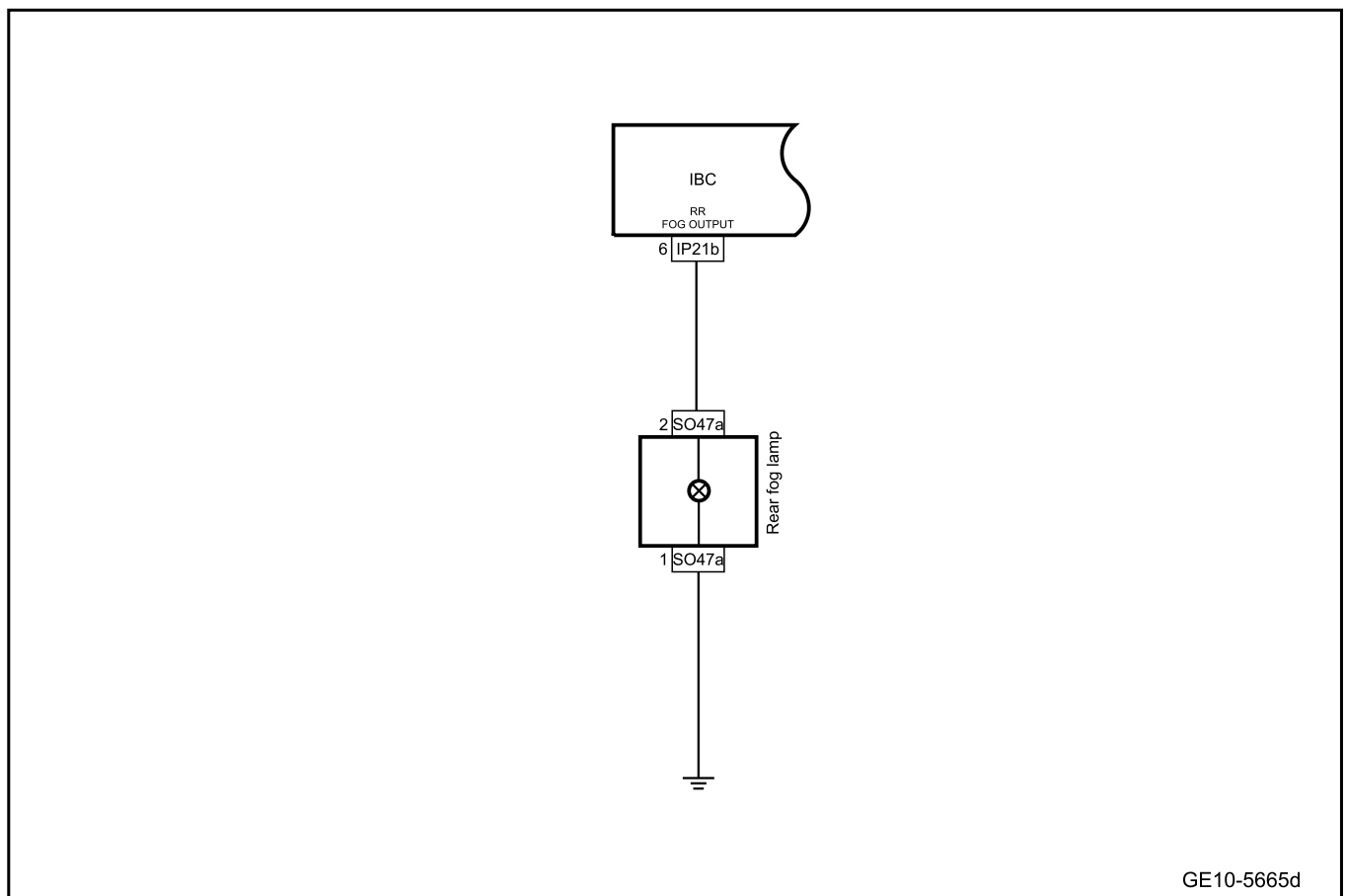
Diagnostic Trouble Code	Trouble description
B100911	Rear fog lamp circuit is short-circuited to ground or overloaded
B100915	Rear fog lamp is short circuited to power supply or open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100911	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Rear fog lamp is short-circuited to ground or overloaded for 200ms	1.IBC Power supply The supply voltage is within the range of 9-16V 2. The rear fog lamp function is activated for 100ms	1. Circuit 2.IBC 3. Rear fog lamp

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100915	The output current will be checked to monitor for such faults as open-circuit load or short circuit to battery, and if the current is below a certain hardware threshold, it is considered an OL fault or an STB fault. Then when the output is not active, check again to confirm the OL failure. The rear fog lamp turns on and load or shorts the battery for 200 milliseconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

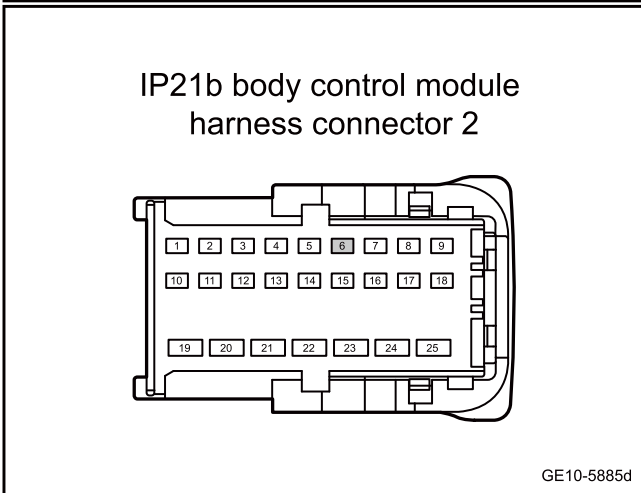
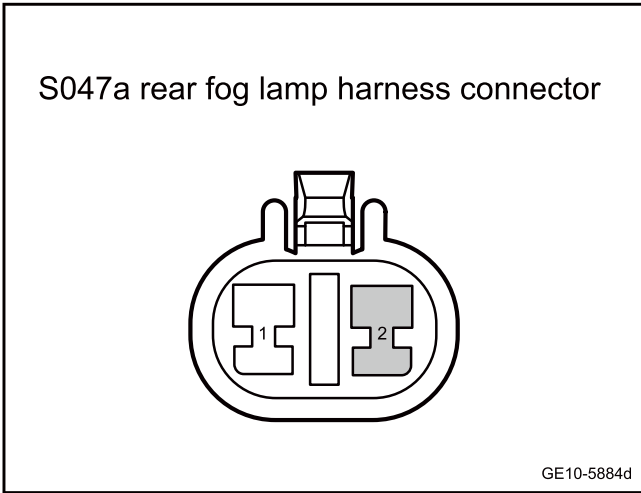
- A. Check the rear fog lamps and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the power harness of rear fog lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the rear fog lamp harness connector SO47a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO47a(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO47a(2)	IP21b(6)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure voltage between the terminal 2 of the rear fog lamp harness connector SO47a and the vehicle body ground terminal.

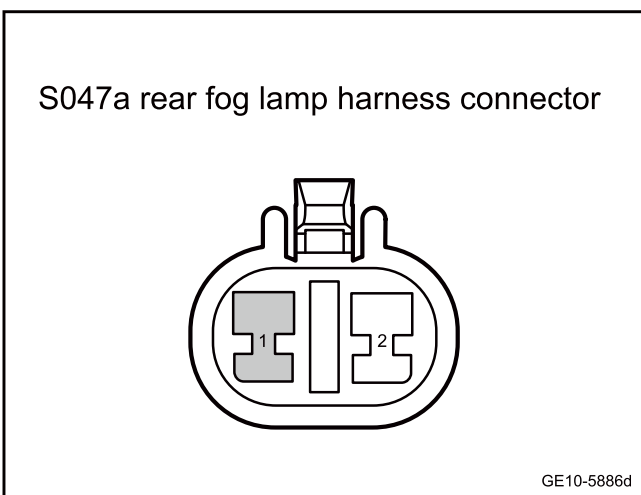
Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check the grounding harness of the rear fog lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear fog lamp harness connector SO47a.
- C. Use a multimeter to measure the resistance between terminal 1 of the harness connector SO47a of rear fog lamp and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the rear fog lamp.

- A. Replace the rear fog lamp. Refer to [Replacement of Rear Fog Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.25 Reverse Lamp Circuit Failure

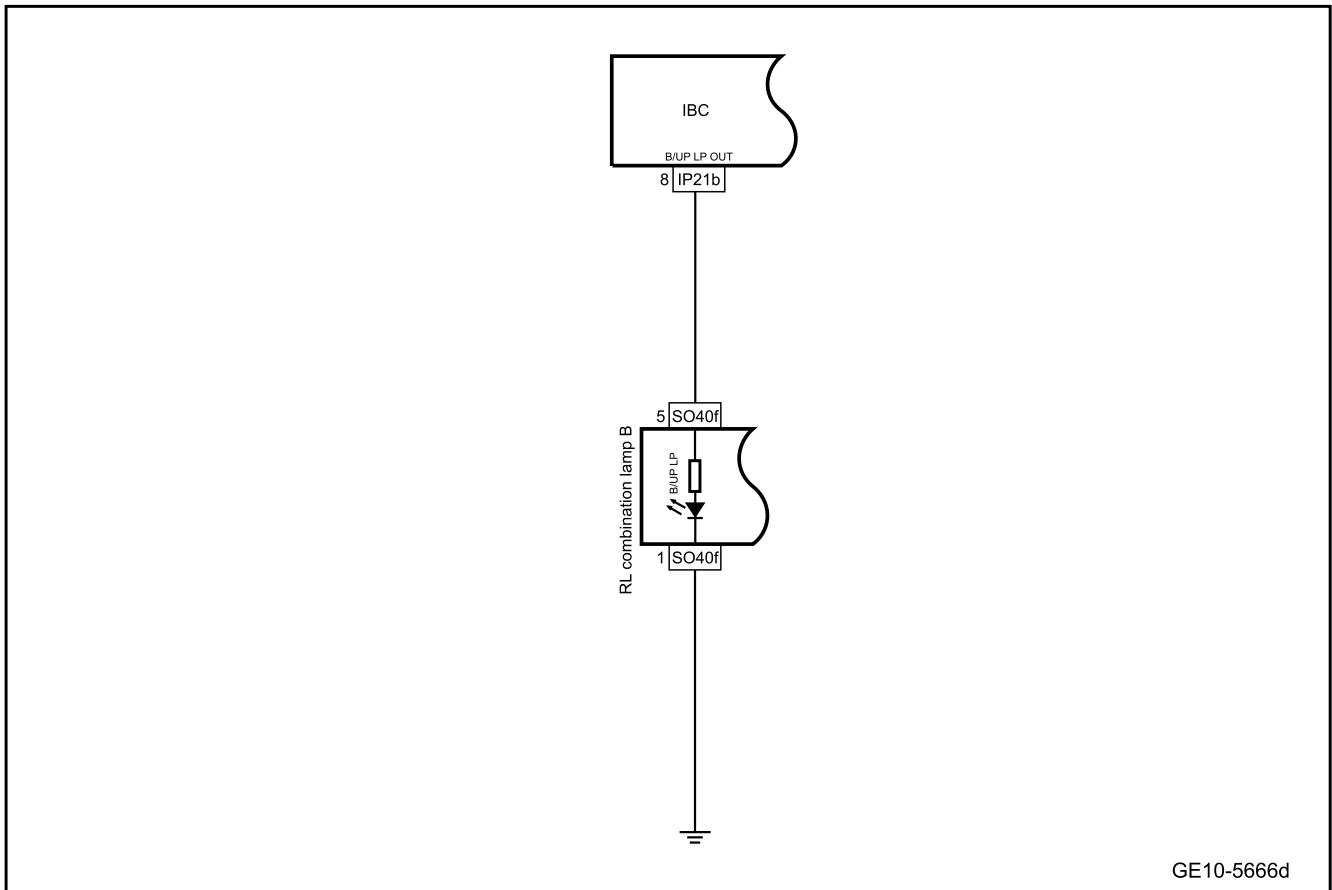
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100A11	Reverse lamp circuit is short-circuited to ground or overloaded
B100A15	Reverse lamp is short circuited to power supply or open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100A11	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Reverse lamp is short-circuited to ground or overloaded for 200ms	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The reverse lamp function is activated for 100ms	1. Circuit 2. IBC 3. Left rear reverse lamp
B100A15	The output current will be checked to monitor for such faults as open-circuit load or short circuit to battery, and if the current is below a certain hardware threshold, it is considered an OL fault or an STB fault. Then when the output is not active, check again to confirm the OL failure. The reverse lamp turns on and load or shorts the battery for 200 milliseconds		

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of left and right combination lamps (reverse lamps). The diagnosis of other lamps is the same as that of left and right combination lamps (reverse lamps).

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

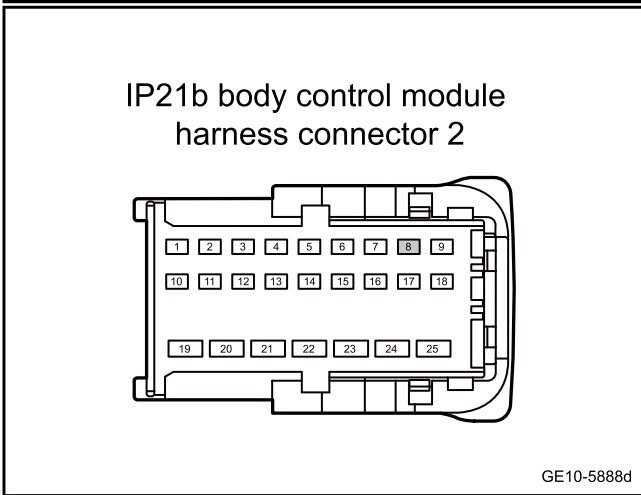
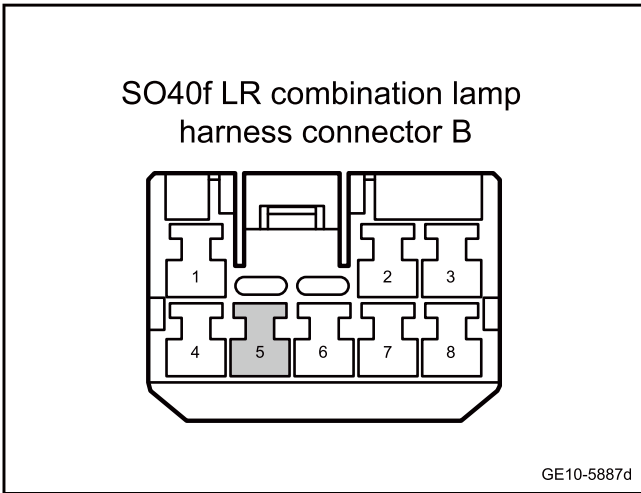
- A. Check the left reverse lamps, IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the reverse lamp power harness.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the harness connector SO40f of the left rear combination lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO40f(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO40f(5)	IP21b(8)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between the terminal 5 of the harness connector SO40f of rear left combination lamp and the vehicle body ground.

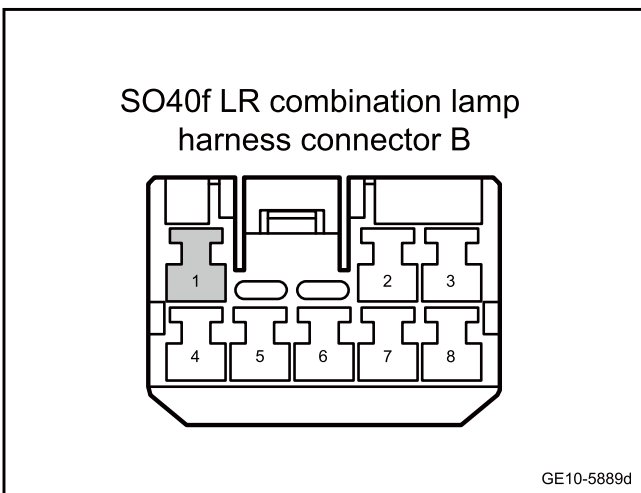
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the grounding harness of the reverse lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO40f of the left rear combination lamp.
- C. Use a multimeter to measure the resistance between the terminal 1 of the harness connector SO40f of rear left combination lamp and the vehicle body ground.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the reverse lamp.

- A. Replace the reverse lamp. Refer to [Replacement of Reverse Lamps](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.26 Brake Lamp Circuit Failure

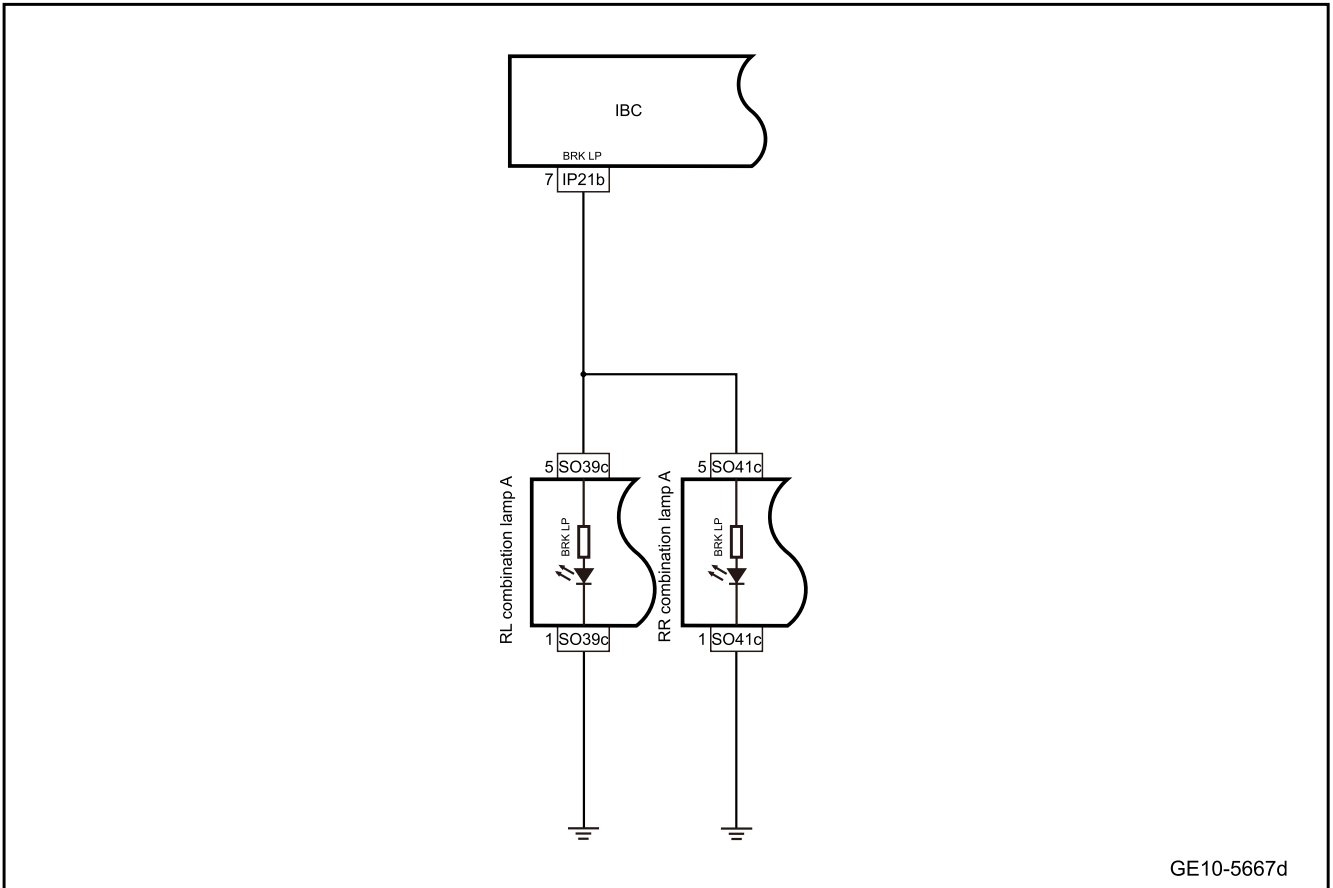
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100B11	Brake circuit is short-circuited to ground or overloaded
B100B15	Brake lamp is short circuited to power supply or open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100B11	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Brake lamp is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The brake lamp function is activated for 100ms	1. Circuit 2. IBC 3. Left rear combination lamp A 4. Right rear combination lamp A
B100B15	The output current will be checked to monitor for such faults as open-circuit load or short circuit to battery, and if the current is below a certain hardware threshold, it is considered an OL fault or an STB fault. Then when the output is not active, check again to confirm the OL failure. The brake lamp turns on and load or shorts the battery for 200 milliseconds		

3. Schematic circuit diagram:



GE10-5667d

4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

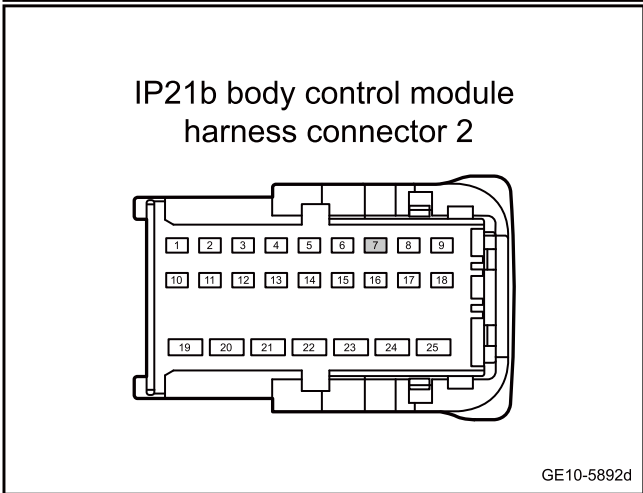
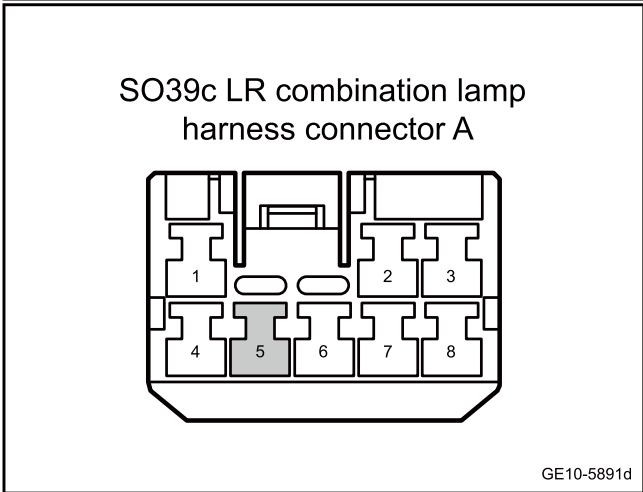
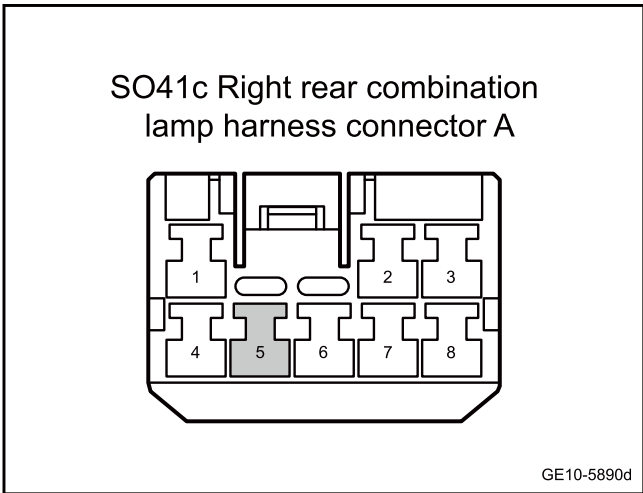
- A. Check the left rear combination lamp A, right rear combination lamp A and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 | Check the power harness of the brake lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the harness connector SO39c of the left rear combination lamp A.
- D. Disconnect the harness connector SO41c of the rear right combination lamp A.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO39c(5)	Vehicle body is grounded.	
SO41c(5)	IP21b(7)	Standard resistance: less than 1Ω
SO39c(5)	IP21b(7)	

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(5)	Vehicle body is grounded.	Standard voltage: 0V
SO39c(5)		

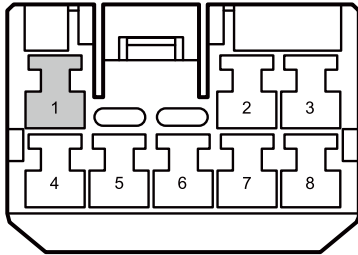
- H. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

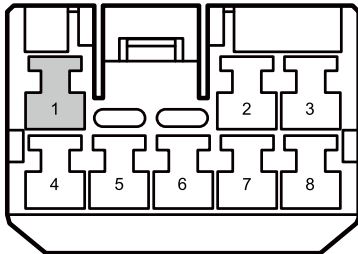
Step 4 | Check the grounding harness of brake lamp.

SO41c Right rear combination lamp harness connector A



GE10-5893d

SO39c LR combination lamp harness connector A



GE10-5894d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO39c of the left rear combination lamp A.
- C. Disconnect the harness connector SO41c of the rear right combination lamp A.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO41c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO39c(1)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Replace the brake lamp.

- A. Replace the brake lamp. Refer to [replacement of brake lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.27 Circuit fault of high-mounted stop lamp

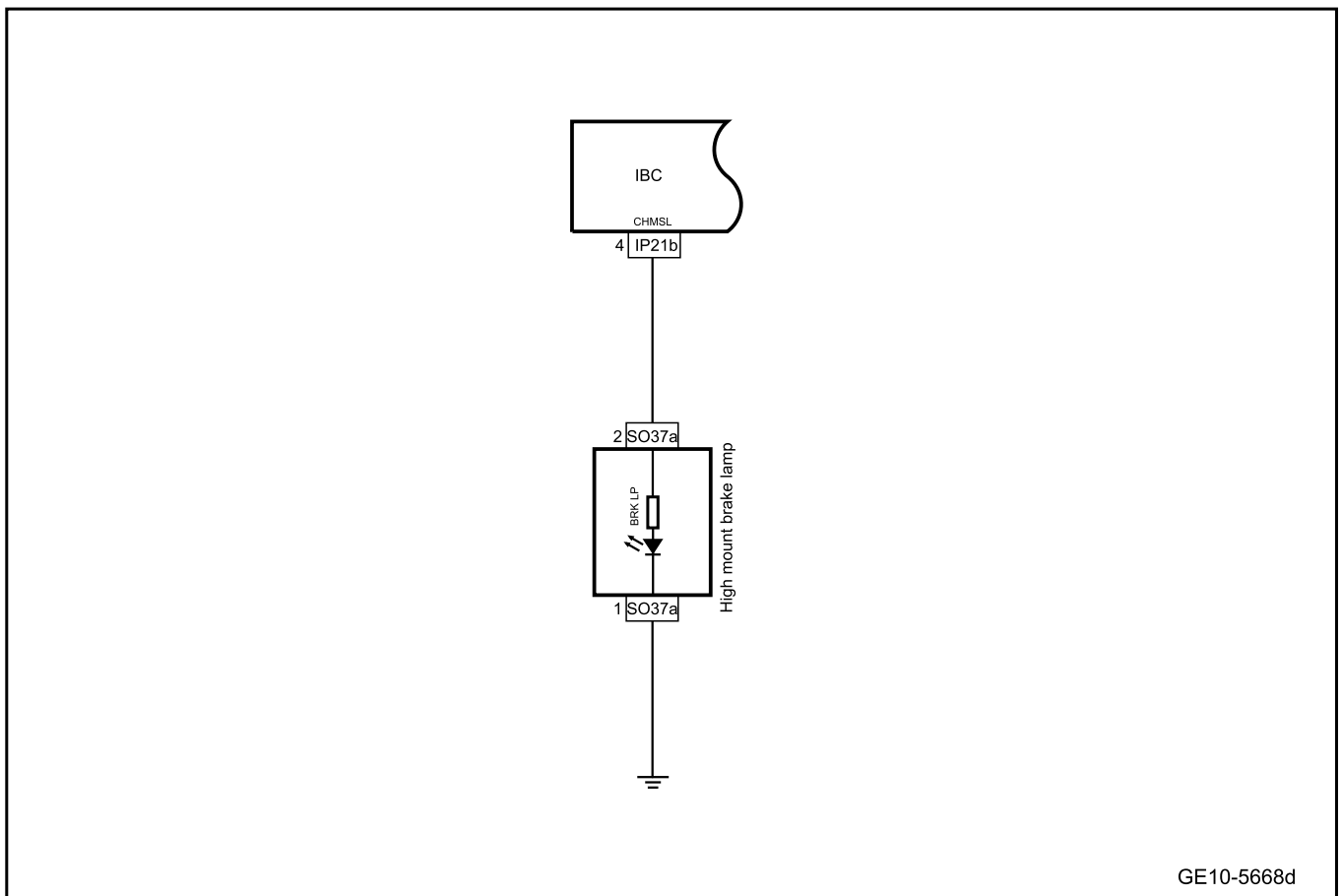
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100D11	High-mounted stop lamp circuit is short-circuited to ground or overloaded

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100D11	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. CHMSL is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The CHMSL function is activated for 100ms	1. Circuit 2. IBC 3. High-mounted stop lamp

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

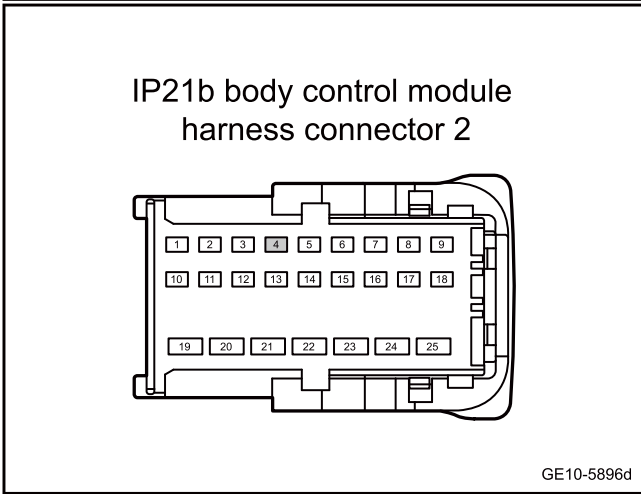
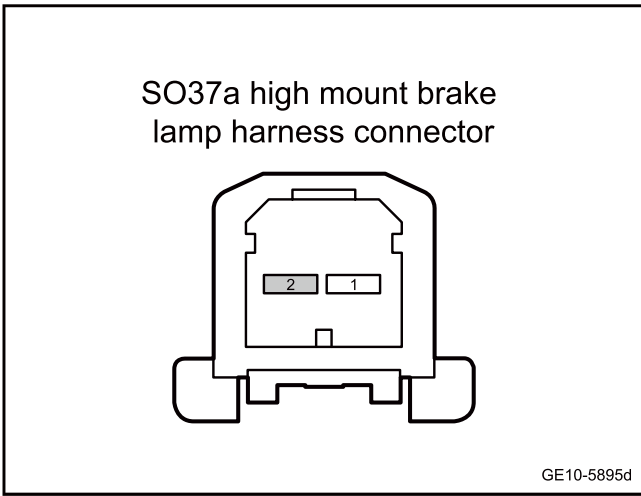
Step 2	Primary check.
--------	----------------

- A. Check the high-mounted stop lamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes ➤

Step 3 Check the power harness of high-mounted stop lamp



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the high-mounted stop lamp harness connector SO37a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO37a(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO37a(2)	IP21b(4)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO37a(2)	Vehicle body is grounded.	Standard voltage: 0V

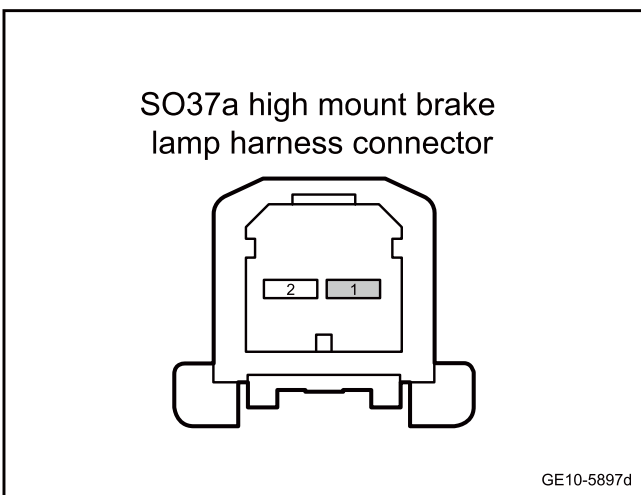
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the grounding harness of brake lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the high-mounted stop lamp harness connector SO37a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO37a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace high-mounted stop lamp.
--------	---------------------------------

- A. Replace high-mounted stop lamp. Refer to [Replacement of High-Mounted Stop Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

11.4.6.28 Interior Lamp Circuit Failure

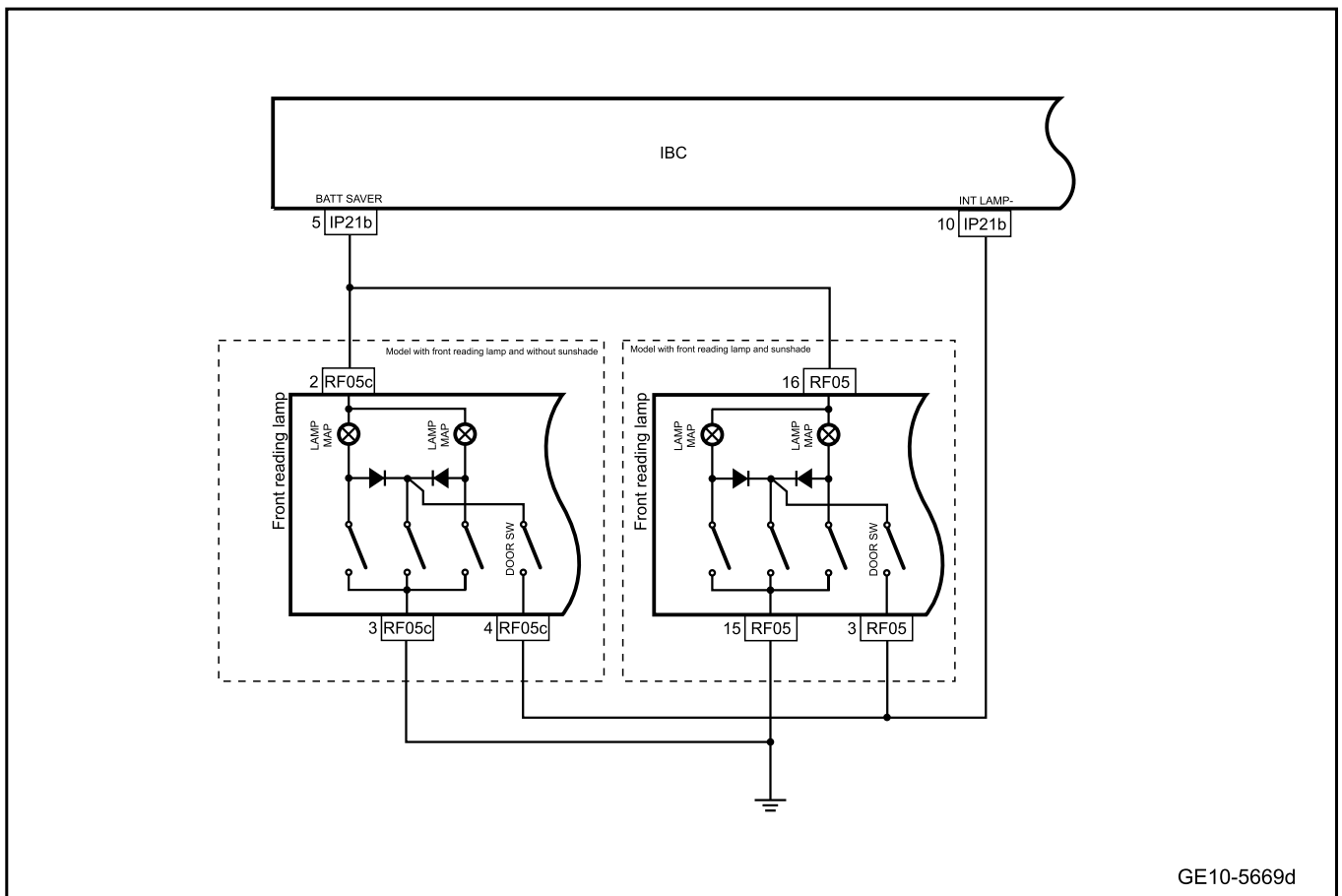
1. DTC description:

Diagnostic Trouble Code	Description
B100112	Interior lamp is short-circuited to power supply
B108B98	Voice reading lamp control circuit is overtemperature
B101D11	The power-saving circuit is short-circuited to ground or overloaded

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100112	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short circuit fault of the battery; the interior lamp circuit is short to the battery for 200 milliseconds	<ol style="list-style-type: none"> The power supply voltage is 9V-16V The interior lamp function is activated for 100ms 	<ol style="list-style-type: none"> Harness Front reading lamp IBC
B108B98	The output current is detected to monitor overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overtemperature fault. Audio PWM load control 200ms	<ol style="list-style-type: none"> IBC Power supply The supply voltage is within the range of 9-16V Audio PWM control function is activated for 100ms 	
B101D11	The output current is detected to monitor the output error, and when the current is greater than a specific hardware threshold, it is treated as an output error. WPC mute output circuit is overloaded for 200ms	<ol style="list-style-type: none"> Power supply voltage is within the range of 9-16V. The power saving function is activated for 100ms 	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

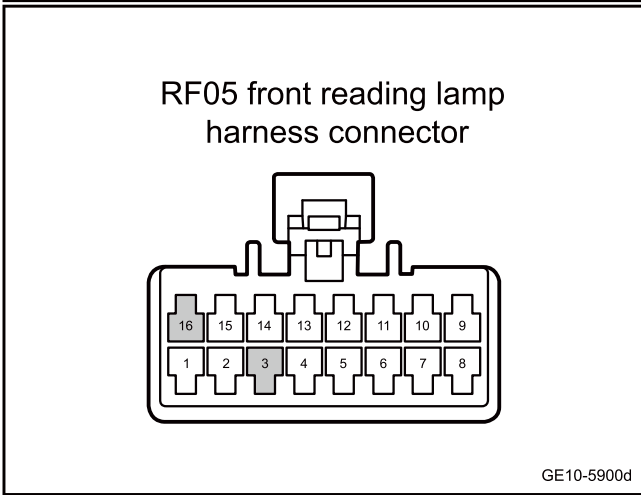
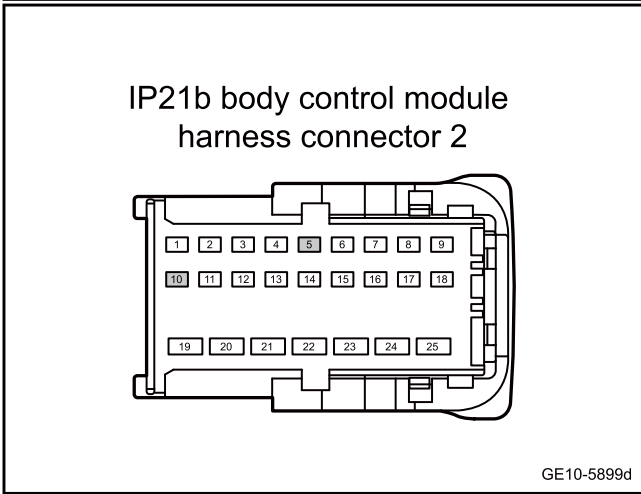
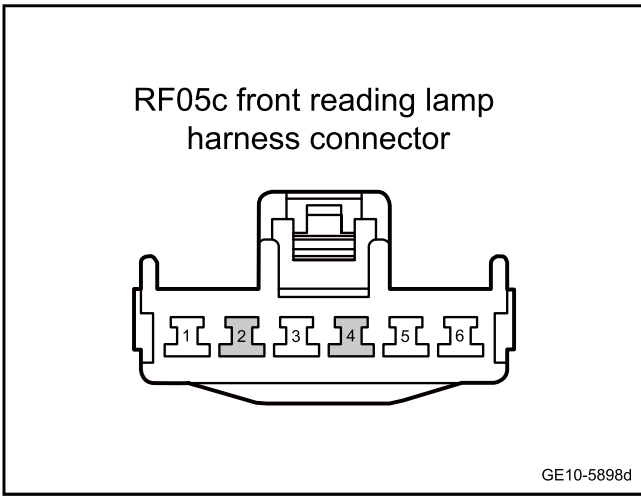
Step 2	Primary check.
--------	----------------

- A. Check the front reading lamp and IBC harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the front reading lamp and IBC is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front reading harness connector RF05 and RF05c.
- C. Disconnect the IBC harness connector IP21b.
- D. Use a multimeter to measure the terminals according to the table below:

Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Model without sunshade	RF05c(2)	IP21b(5)	Standard resistance: less than 1Ω
	RF05c(4)	IP21b(10)	
	RF05c(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
	RF05c(4)	Vehicle body is grounded.	
Model equipped with sunshade	RF05(16)	IP21b(5)	Standard resistance: less than 1Ω
	RF05(3)	IP21b(10)	
	RF05(16)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
	RF05(3)	Vehicle body is grounded.	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

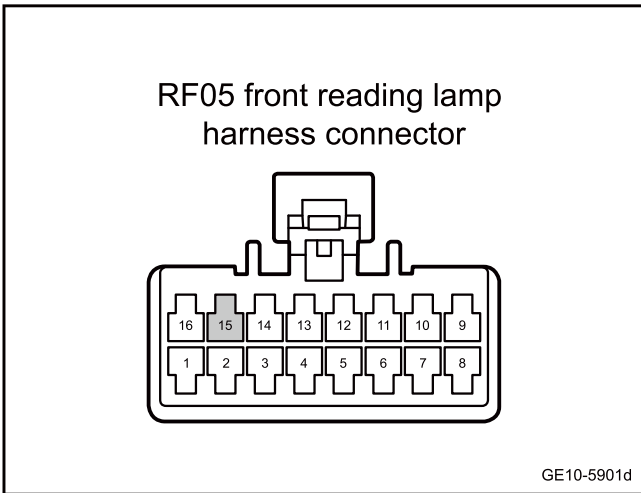
Configura-tion	Measure terminal 1	Measure terminal 2	Standard value
Model without sunshade	RF05c(2)	Vehicle body is grounded.	Standard voltage: 0V
	RF05c(4)		
Model equipped with sunshade	RF05(16)		
	RF05(3)		

G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Check ground circuit of the front reading lamp.

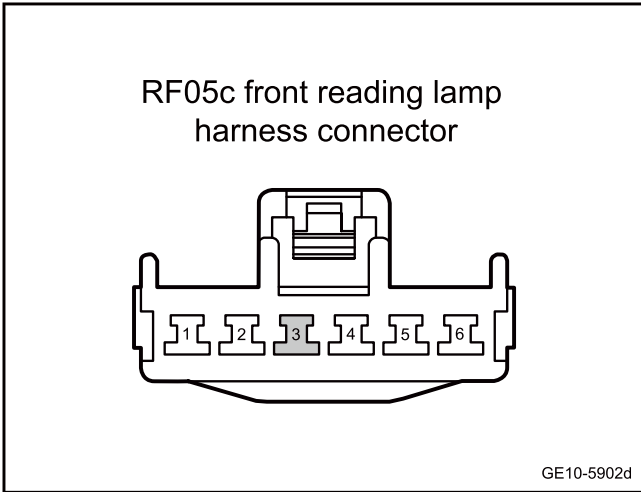


- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front reading harness connector RF05.
- C. Disconnect the front reading harness connector RF05c.
- D. Use a multimeter to measure the terminals according to the table below:

Configuration	Measure terminal 1	Measure terminal 2	Standard value
Model equipped with sunshade	RF05(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω
Model without sunshade	RF05c(3)		

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.



Yes

Step 5 | Replace the front reading lamp.

- A. Replace the front reading lamp. Refer to [Replacement of Front Reading Lamp \(Type I\)](#) [Replacement of Front Reading Lamp \(Type II\)](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 8	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 9	System is normal.
--------	-------------------

11.4.6.29 Turn signal circuit fault

1. DTC description:

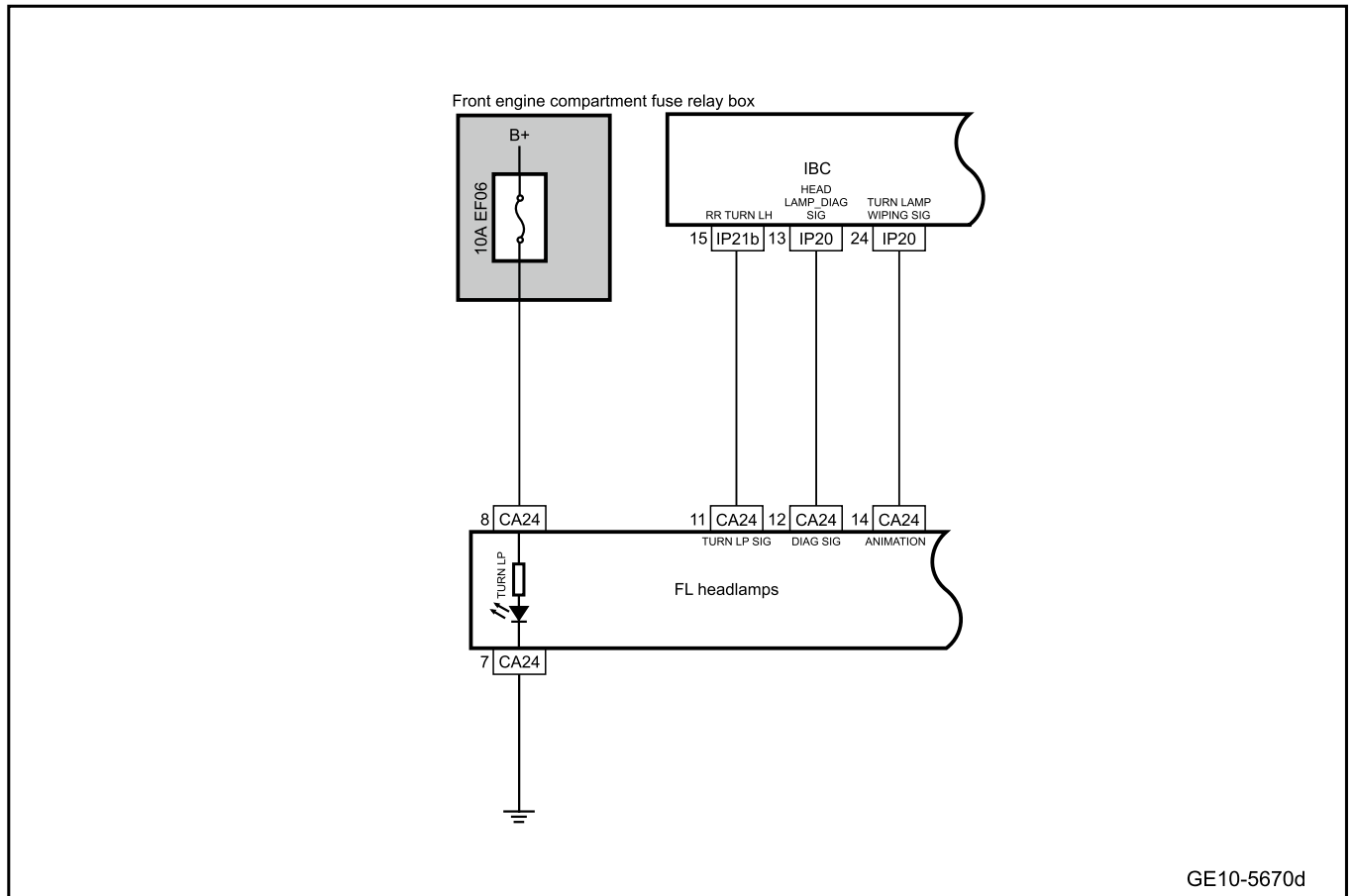
Diagnostic Trouble Code	Trouble description
B100E11	Right turn signal is short-circuited to ground
B100F11	Left turn signal is short-circuited to ground
B108C98	Turn signal flowing lamp control circuit is overtemperature
B100E13	The right turn signal is opened or a bulb is damaged
B100F13	The left turn signal is opened or a bulb is damaged

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100E11	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Right turn signal is short-circuited to ground or overloaded for 200 milliseconds	IBC power supply voltage is in the range of 9-16V. The right turn signal is activated for 100 ms when the turn signal flashes or the lane-changing function is activated	1. Circuit 2. IBC 3. Side turn signal lamp
B100F11	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Left turn signal is short-circuited to ground or overloaded for 200 milliseconds	IBC power supply voltage is in the range of 9-16V. The left turn signal is activated for 100 ms when the turn signal flashes or the lane-changing function is activated	
B108C98	The output current is detected to monitor overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overtemperature fault. Overload animation control output for 200ms	The IBC power supply voltage is within the range of 9-16v, and the animation control function is activated for 100ms	
B100E13	Check the output current to monitor whether a bulb is powered off, open circuit or short-circuited to the battery. If the current is below a certain power threshold (based on HW), the sampling time is 30 ms, and the error counter is 10, it is considered that a bulb is powered off, open circuit or short-circuited to the battery	IBC power supply voltage is in the range of 9-16V. The right turn signal is activated for 100 ms when the turn signal flashes or the lane-changing function is activated	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100F13	Check the output current to monitor whether a bulb is powered off, open circuit or short-circuited to the battery. If the current is below a certain power threshold (based on HW), the sampling time is 30 ms, and the error counter is 10, it is considered that a bulb is powered off, open circuit or short-circuited to the battery	IBC power supply voltage is in the range of 9-16V. The left turn signal is activated for 100 ms when the turn signal flashes or the lane-changing function is activated	

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of left front combination lamp (turn signal). The diagnosis of other turn signals is the same as that of left front combination lamp (turn signal).

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left headlamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the front engine bay fuse relay box and check whether the fuse EF06 is blown out.

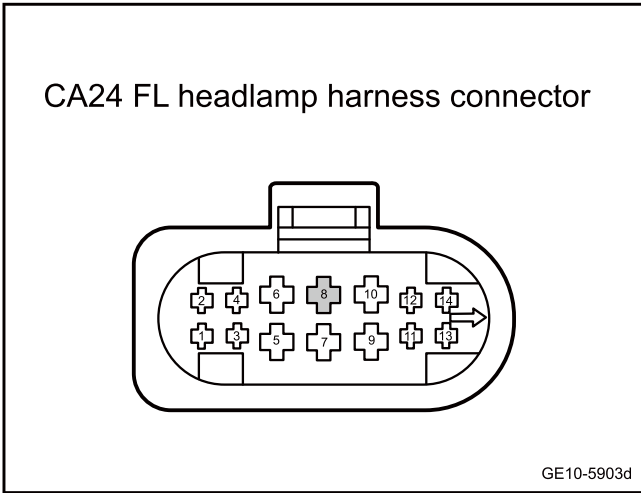
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the power supply circuit of left front combination lamp.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(8)	Vehicle body is grounded.	Standard voltage: 11-14V

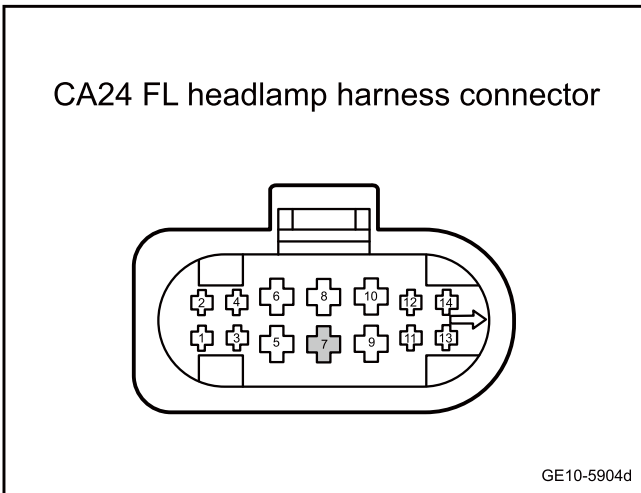
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

No

Step 5 | Check the grounding line of left front combination lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

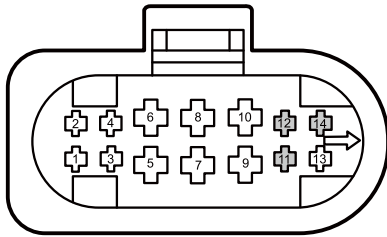
No

Repair or replace the harness.

Yes

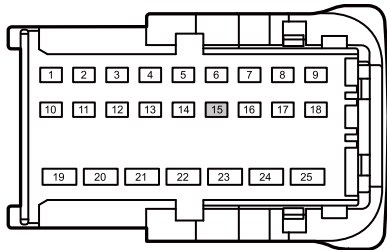
Step 6 | Check the circuit between the left front combination lamp and the body control module.

CA24 FL headlamp harness connector



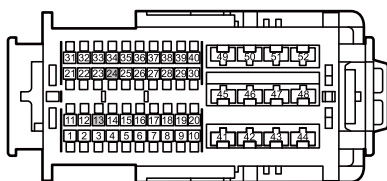
GE10-5905d

IP21b body control module harness connector 2



GE10-5906d

IP20 body control module harness connector 1



GE10-5907d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP20 and IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(12)		
CA24(14)		
CA24(11)	IP21b(15)	Standard resistance: less than 1Ω
CA24(12)	IP20(13)	
CA24(14)	IP20(24)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(11)	Vehicle body is grounded.	Standard voltage: 0V
CA24(12)		
CA24(14)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 | Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 | System is normal.

11.4.6.30 Fault of the position lamp circuit

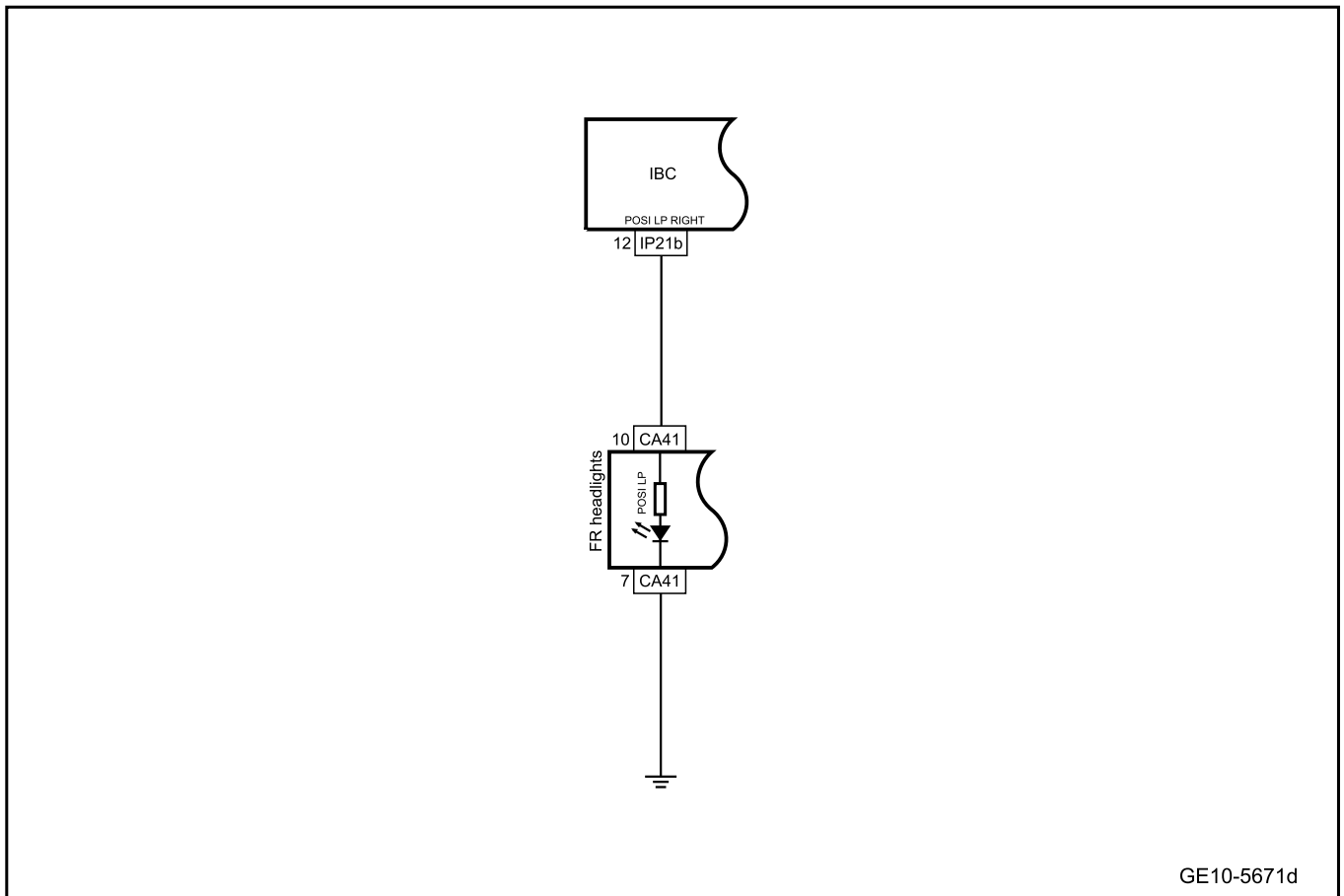
1. DTC description:

Diagnostic Trouble Code	Trouble description
B107A11	Left position lamp circuit is short-circuited to ground or overloaded
B107B11	Right position lamp circuit is short-circuited to ground or overloaded

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107A11	Current feedback is larger than or equal to the maximum load threshold value.	Output valid.	1. Circuit 2. IBC 3. Position lamp
B107B11	Current feedback is larger than or equal to the maximum load threshold value.	Output valid.	

3. Schematic circuit diagram:



This manual only diagnoses the faults of the RF combination lamp (position lamp). The diagnosis of other position lamps is the same as that of the FR combination lamp (position lamp).

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the FR combination lamp and the IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

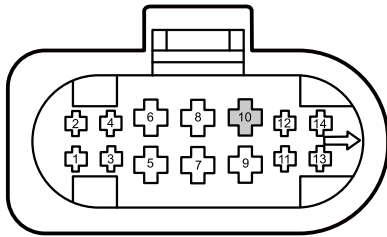
No

Repair or replace the faulty part.

Yes

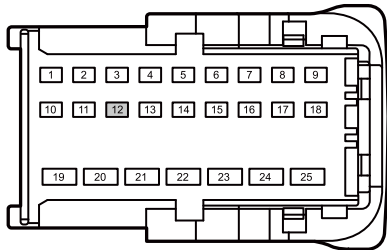
Step 3	Check the power supply harness of the FR combination lamp (position lamp).
--------	--

CA41 FR combination lamp



GE10-5908d

IP21b body control module harness connector 2



GE10-5909d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the harness connector CA41 of RF combination lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA41(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA41(10)	IP21b(12)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA41(10)	Vehicle body is grounded.	Standard voltage: 0V

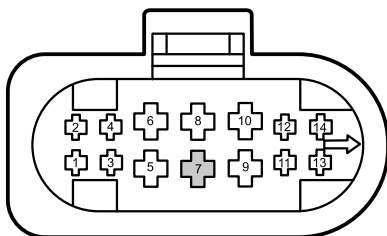
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 | Check the grounding harness of the right front combination lamp (position lamp).

CA41 FR combination lamp



GE10-5910d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA41 of RF combination lamp.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA41(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the FR combination lamp

- A. Replace the FR combination lamp Refer to [Replacement of FR Combination Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.31 Foot Lamp Circuit Failure

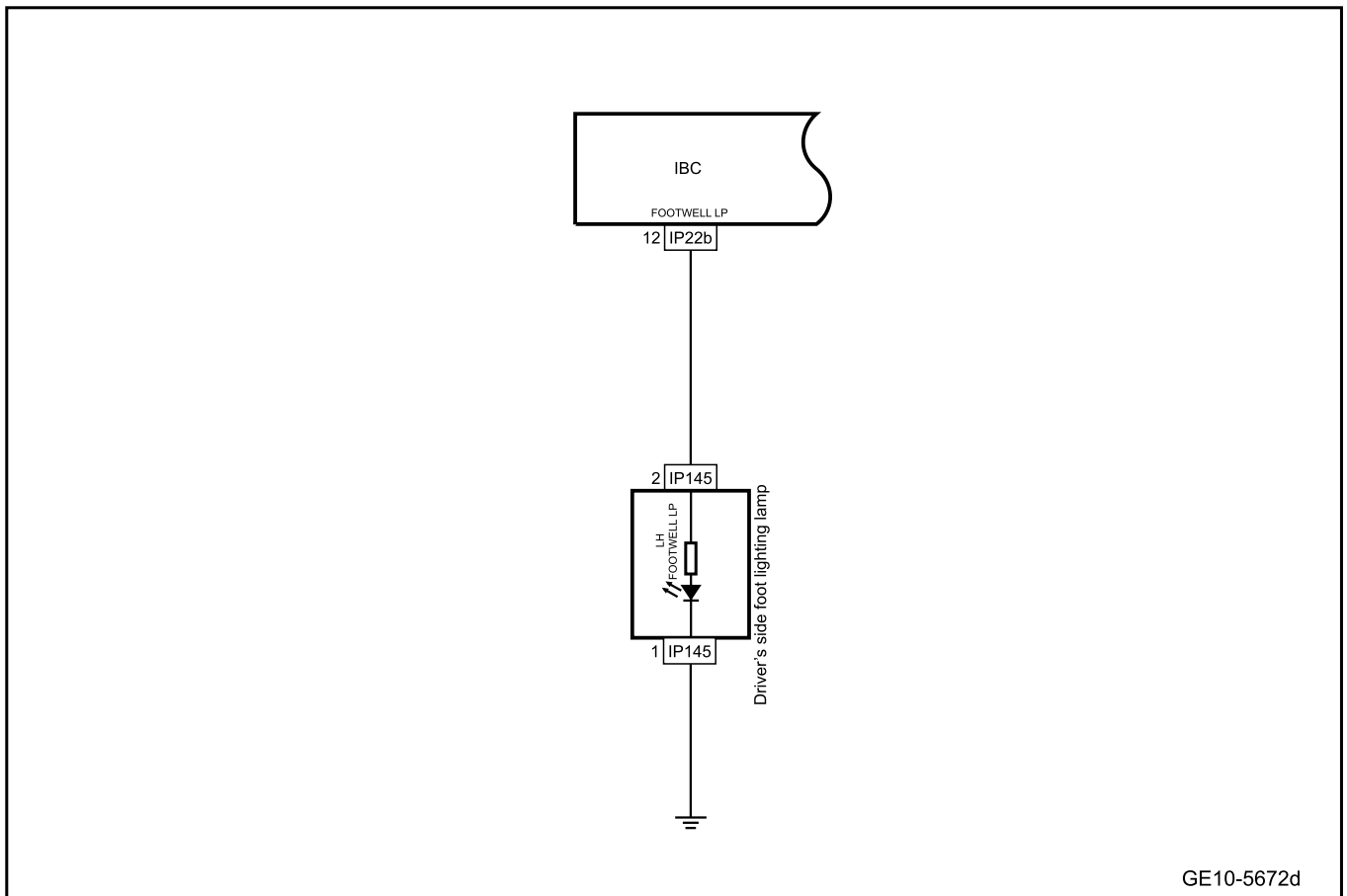
1. DTC description:

Diagnostic Trouble Code	Trouble description
B100C11	Footlight circuit is shorted to ground or overloaded

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B100C11	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Feet light is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The feet light function is activated for 100ms	1. Circuit 2. IBC 3. Driver side foot lamp

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of driver side foot lamp. The diagnosis of other foot lamps is the same as that of driver side foot lamp.

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of the driver side foot lamp and IBC for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

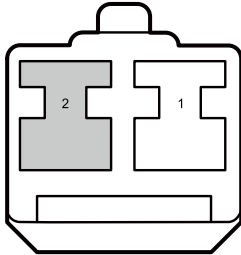
No

Repair or replace the faulty part.

Yes

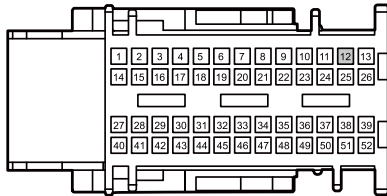
Step 3	Check the power supply harness of driver's foot lamp.
--------	---

IP145 driver's side foot lighting lamp harness connector



GE10-5911d

IP22b body control module harness connector 3



GE10-5912d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the driver side foot lamp harness connector IP145.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP145(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP145(2)	IP22b(12)	Standard resistance: less than 1Ω

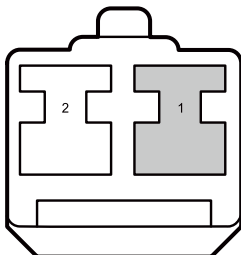
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure voltage between the terminal 2 of the driver side foot lamp harness connector IP145 and the vehicle body ground terminal.
Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Check the grounding harness of the driver side foot lamp.

IP145 driver's side foot lighting lamp harness connector



GE10-5913d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side foot lamp harness connector IP145.
- C. Use a multimeter to measure the resistance between terminal 1 of the harness connector IP145 of foot lamp and the body grounding:
Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 5 Replace the driver's foot lamp.

- A. Replace the driver's foot lamp. Refer to [Replacement of Driver's Foot Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.32 Courtesy Lamp Circuit Failure

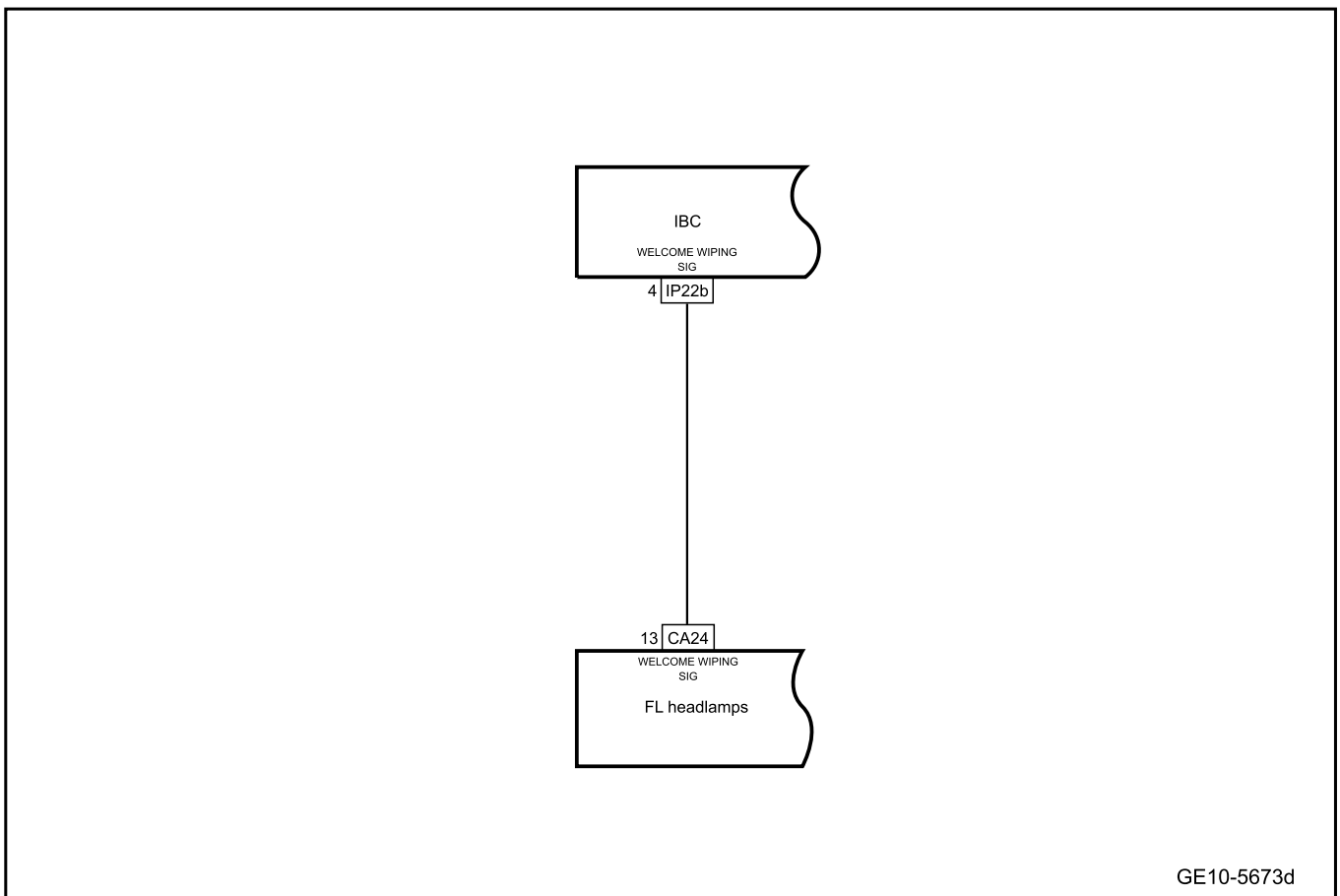
1. DTC description:

Diagnostic Trouble Code	Trouble description
B108311	Courtesy lamp control circuit is short-circuited to ground
B108A11	Courtesy lamp control signal circuit is short-circuited to ground

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108311	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Courtesy lamp is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V 2. The courtesy lamp function is activated for 100ms	1. Circuit 2. IBC 3. Courtesy lights
B108A11	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Courtesy lamp is short-circuited to ground or overloaded for 200 milliseconds		

3. Schematic circuit diagram:



GE10-5673d

This manual is only used to diagnose the fault of left front combination lamp (courtesy lamp). The diagnosis of other courtesy lamps is the same as that of left front combination lamp (courtesy lamp).

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

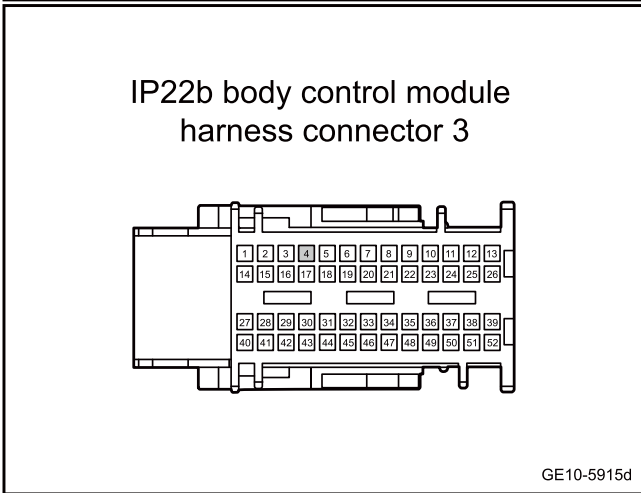
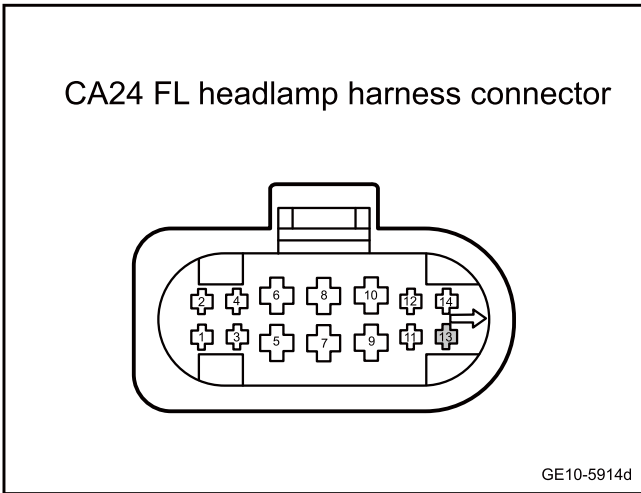
- A. Check the left headlamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the power supply circuit of left front combination lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(13)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(13)	IP22b(4)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between the terminal 13 of the LF combination lamp harness connector CA24 and the body grounding.

Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace the left headlamp.

- A. Replace the left headlamp. Refer to [Replacement of left headlamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 7	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

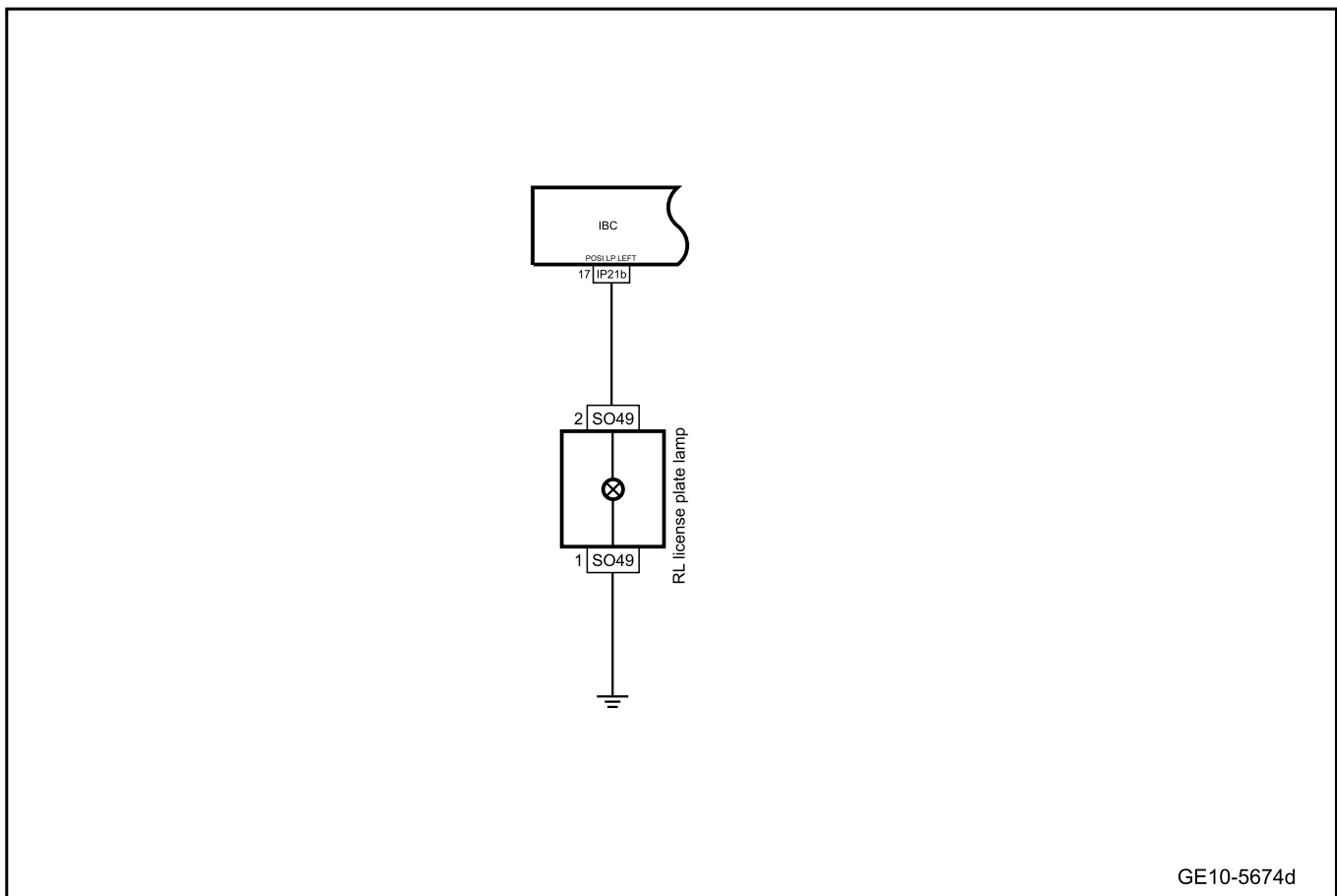
Yes	Diagnose according to the output trouble code.
-----	--

No

Step 8	System is normal.
--------	-------------------

11.4.6.33 Number Plate Lamp Circuit Failure

1. Schematic circuit diagram:



This manual is only used to diagnose the fault of left rear number plate lamp. The diagnosis of other number plate lamps is the same as that of left rear number plate lamp.

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

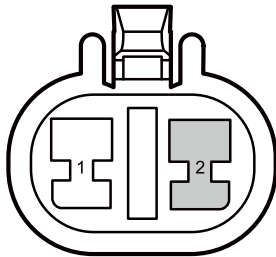
- A. Check the left rear number plate lamp and IBC harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

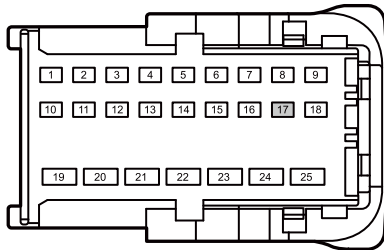
Step 2	Check the power harness of the left rear number plate lamp.
--------	---

SO49 RL license plate lamp harness connector



GE10-5916d

IP21b body control module harness connector 2



GE10-5917d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left rear number plate lamp harness connector SO49.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO49(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO49(2)	IP21b(17)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO49(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

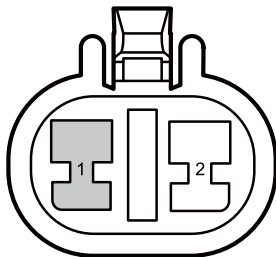
No

Repair or replace the harness.

Yes

Step 3 Check the grounding harness of the left rear number plate lamp.

SO49 RL license plate lamp harness connector



GE10-5918d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left rear number plate lamp harness connector SO49.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO49(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Replace the left rear number plate lamp.
--------	--

- A. Replace the left rear number plate lamp. Refer to [Replacement of Left Rear Number Plate Lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	System is normal.
--------	-------------------

11.4.6.34 Trunk Lamp Circuit Failure

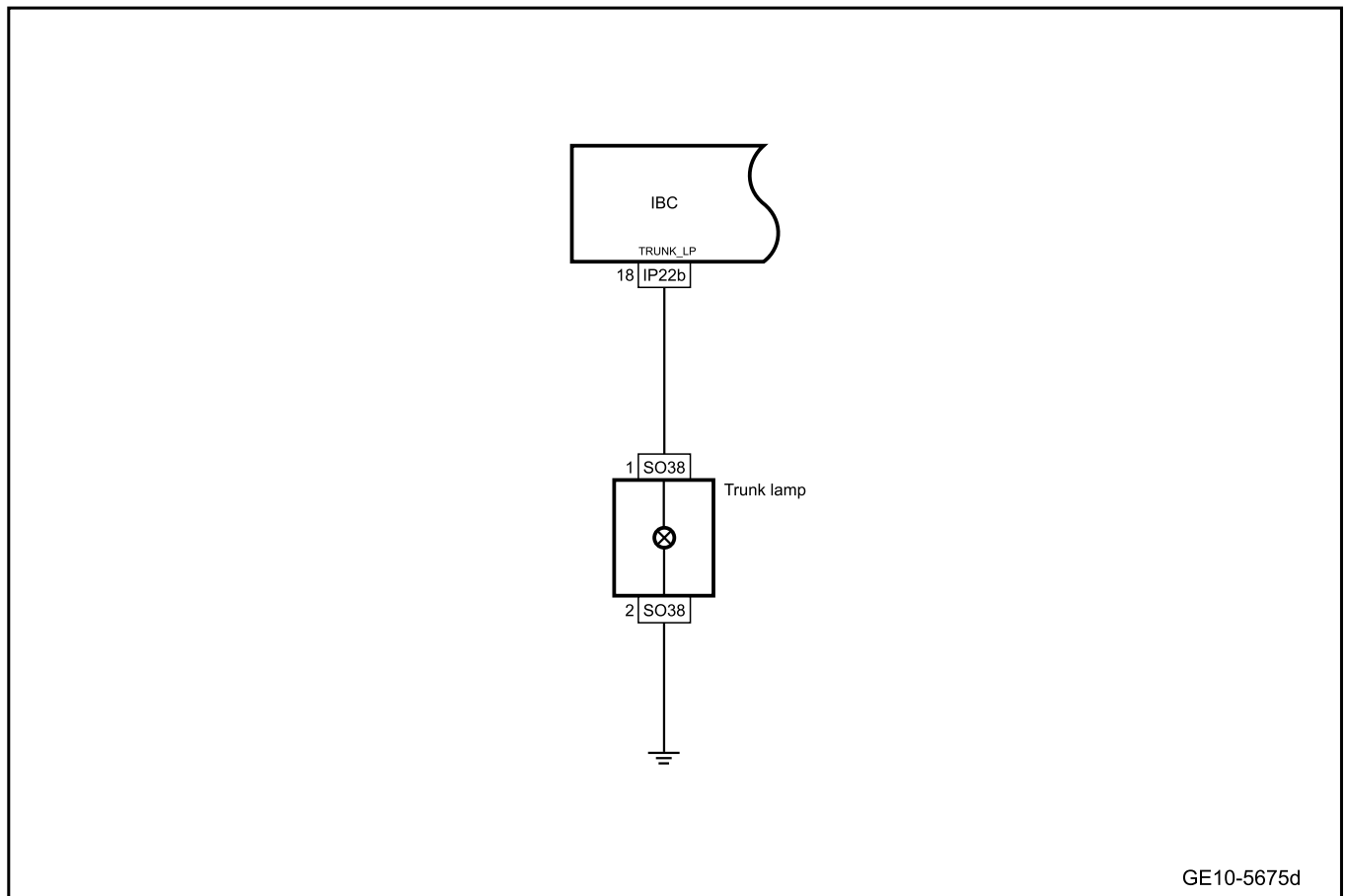
1. DTC description:

Diagnostic Trouble Code	Trouble description
B108511	Trunk lamp circuit is shorted to ground

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108511	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Trunk lamp is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply voltage is within the range of 9-16V 2. The trunk lamp function is activated for 100ms	1. Circuit 2. IBC 3. trunk lamp

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the trunk lamp and IBC harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

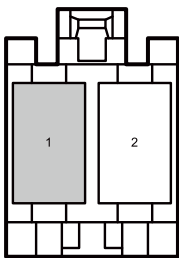
No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the IBC and the trunk lamp is normal.

SO38 trunk lamp harness connector



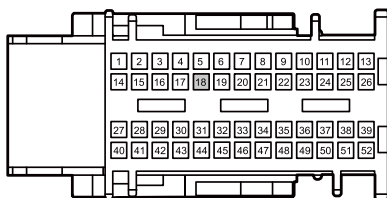
GE10-5919d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the harness connector SO38 of the trunk lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	IP22b(18)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

IP22b body control module harness connector 3



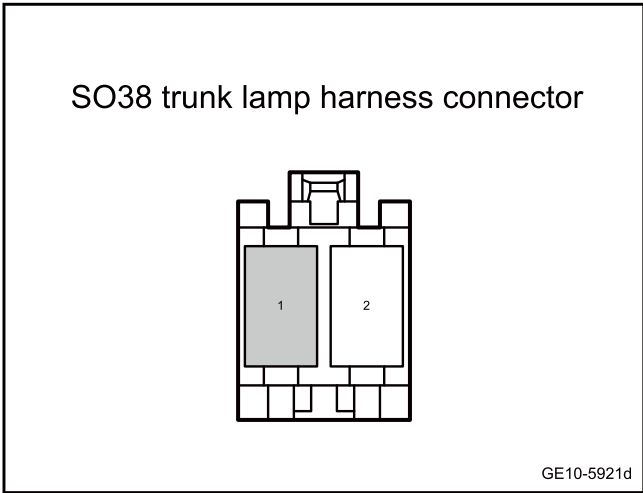
GE10-5920d

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between IBC and trunk lamp is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the harness connector SO38 of the trunk lamp.
- D. Use a multimeter to measure each terminal according to the table below:

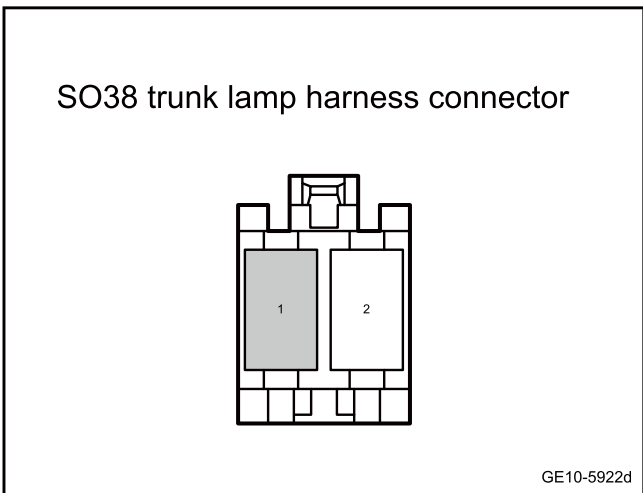
Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between the IBC and the trunk lamp is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the harness connector SO38 of the rear compartment lamp.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

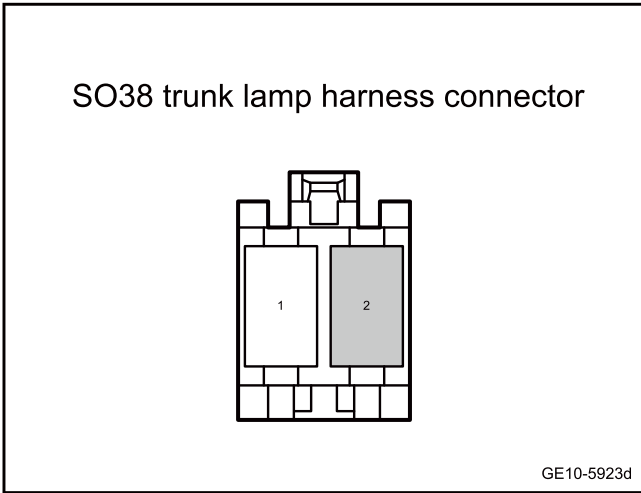
Measure terminal 1	Measure terminal 2	Standard value
SO38(1)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check the trunk lamp ground circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the harness connector SO38 of the rear compartment lamp.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO38(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Replace the rear compartment lamp.

- A. Replace the rear compartment lamp. Refer to [Replacement of trunk lamp](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.4.6.35 Hazard Warning Indicator Circuit Failure

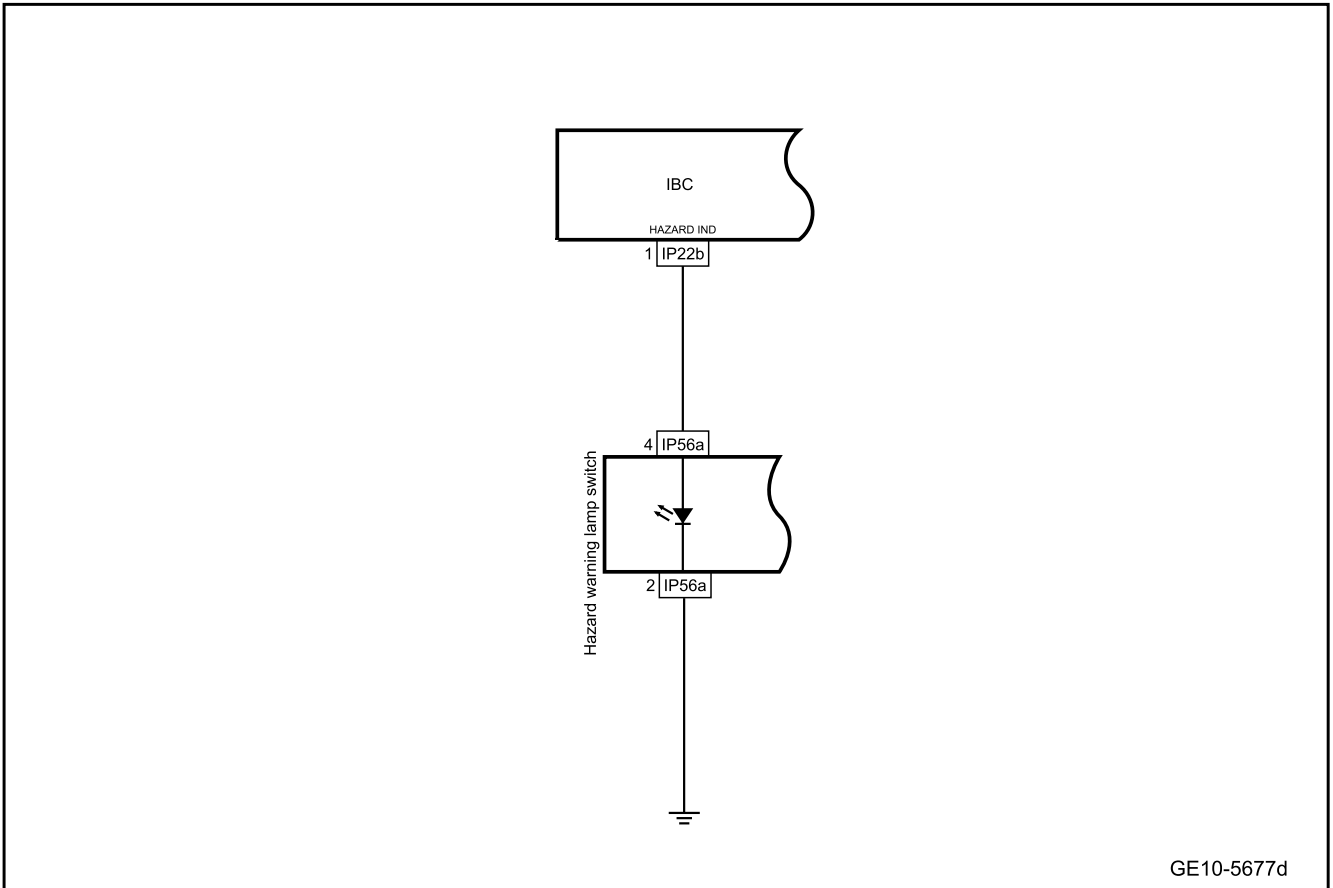
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101B11	Hazard warning indicator circuit is short-circuited to ground or overloaded

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101B11	The output current will be checked to monitor the short circuit to ground or overload, and if the current is higher than a certain hardware threshold, it is considered a short circuit to ground or overload. The hazard LED is short-circuited to ground for 200ms	1. The power supply voltage is 9V-16V 2. The hazard LED function is activated for 100ms	1. Circuit 2. IBC 3. Hazard warning lamp switch

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

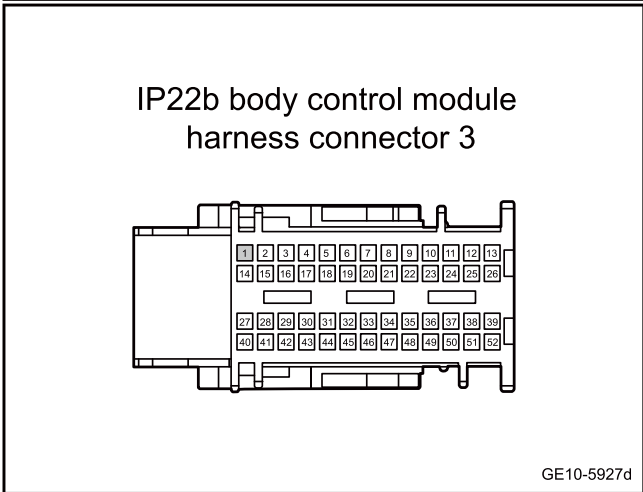
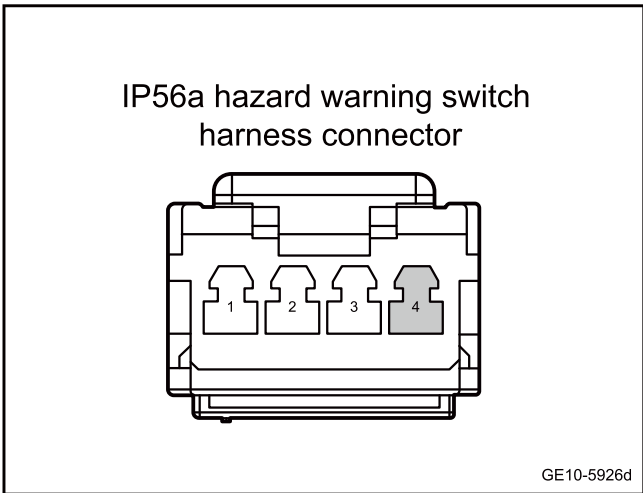
Step 2	Primary check.
--------	----------------

- A. Check the hazard warning lamp switch and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check the power circuit of hazard warning lamp switch.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the hazard warning switch harness connector IP56a.
- D. Use a multimeter to measure each terminal according to the table below:

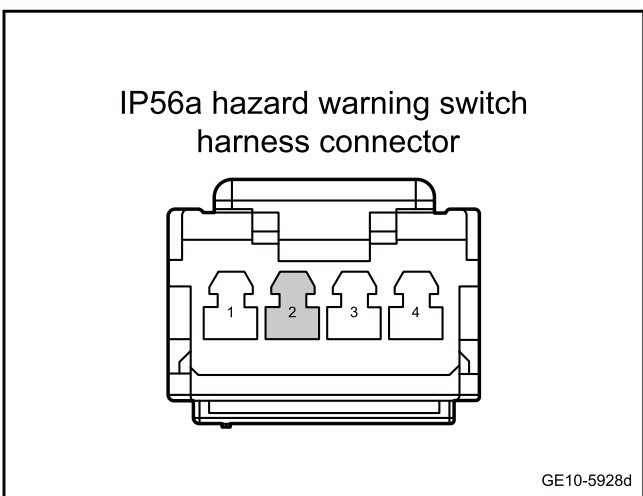
Measure terminal 1	Measure terminal 2	Standard value
IP56a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP56a(4)	IP22b(1)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
 - F. Use a multimeter to measure the resistance between terminal 4 of the hazard warning switch harness connector IP56a and body grounding.
- Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check the grounding circuit of hazard warning lamp switch.



- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the hazard warning switch harness connector IP56a.
 - C. Use a multimeter to measure the resistance between terminal 2 of the hazard warning switch harness connector IP56a and body grounding.
- Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the hazard warning switch.

- A. Replace the hazard warning switch. Refer to [Replacement of Hazard Warning Lamp Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.4.6.36 Daytime running light circuit fault

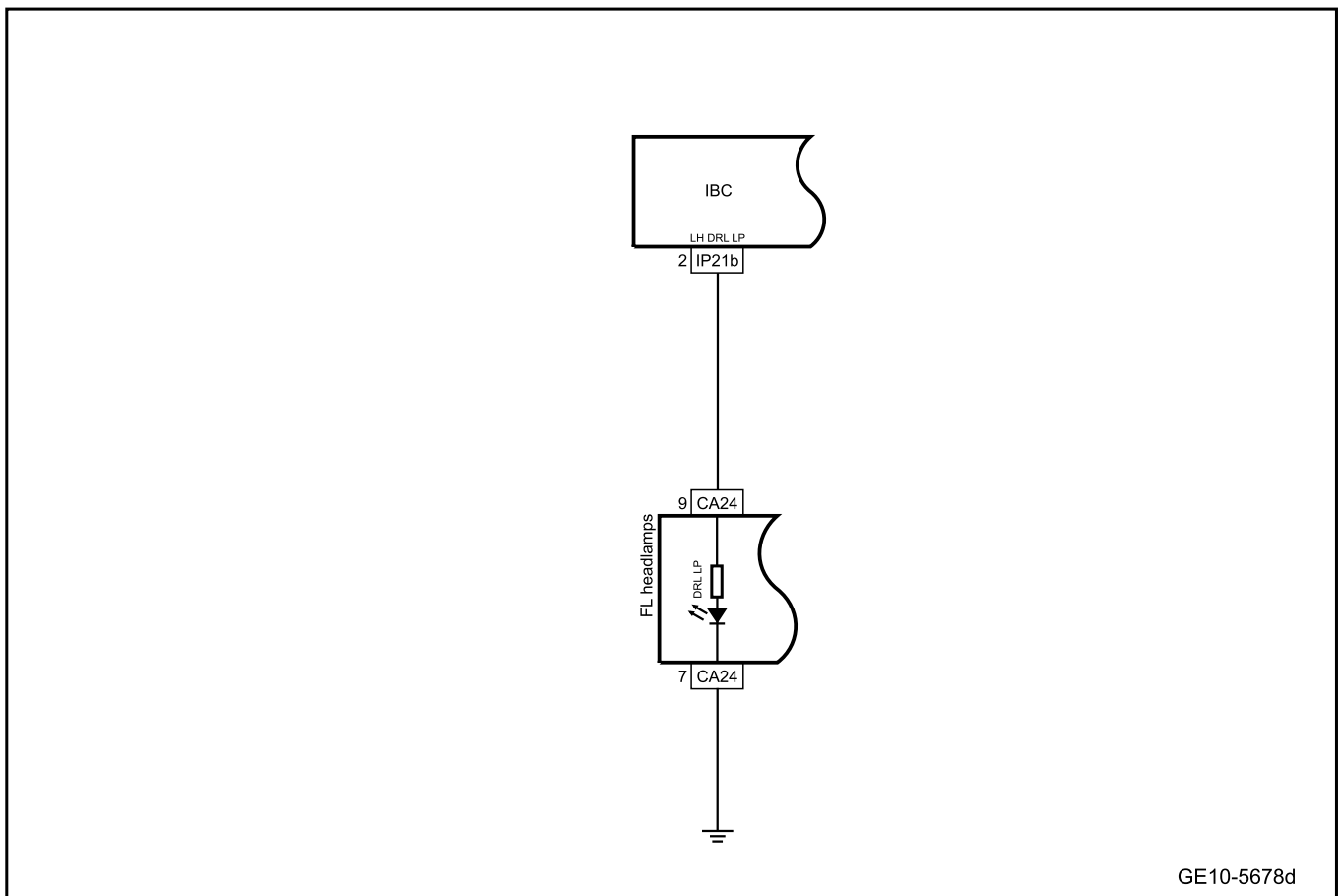
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101E11	Left daytime running light circuit is short-circuited to ground or overloaded
B101F11	Right daytime running light circuit is short-circuited to ground or overloaded

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101E11	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Left daytime running light is short-circuited to ground or overloaded for 200 milliseconds	1. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit
B101F11	Check the output current to monitor short circuit to ground or overload, and if the current is higher than a certain threshold (based on hardware), it is considered a short circuit to ground. Right daytime running light is short-circuited to ground or overloaded for 200 milliseconds	2. The left daytime running light function is activated for 100ms	2. IBC 3. Left front combination lamp

3. Schematic circuit diagram:



This manual only specifies the diagnosis of the faults of the front left combination lamp(daytime running light). The diagnosis of the other daytime running lights is the same as that of the front left combination lamp (daytime running light).

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

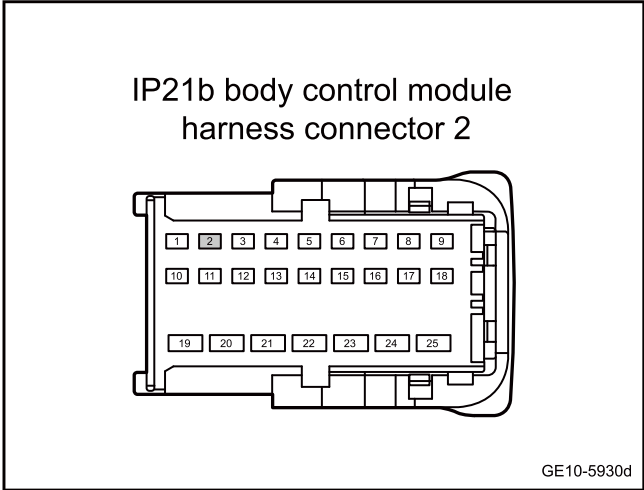
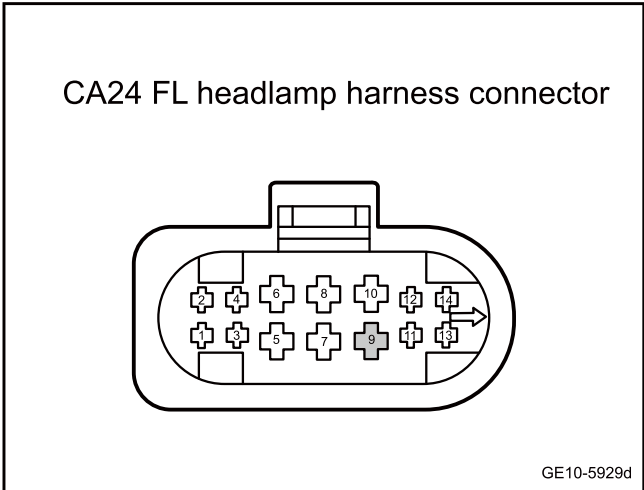
- A. Check the left headlamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the power harness of left front combination lamp.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the left front combination lamp harness connector CA24.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA24(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA24(9)	IP21b(2)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the voltage between the terminal 9 of the LF combination lamp harness connector CA24 and the body grounding.

Standard voltage: 0V
- G. Confirm whether the measured value meets the standard.

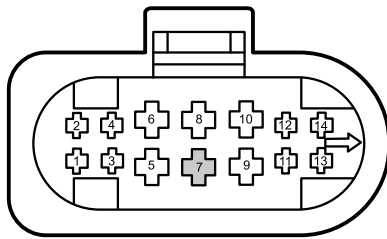
No

Repair or replace the harness.

Yes

Step 4 Check the grounding harness of the left front combination lamp.

CA24 FL headlamp harness connector



GE10-5931d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Use a multimeter to measure the resistance between the terminal 7 of the LF combination lamp harness connector CA24 and the body grounding.

Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Replace the left front combination lamp.
--------	--

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 | System is normal.

11.4.6.37 Abnormal feedback signal fault of turn signal LED

1. DTC description:

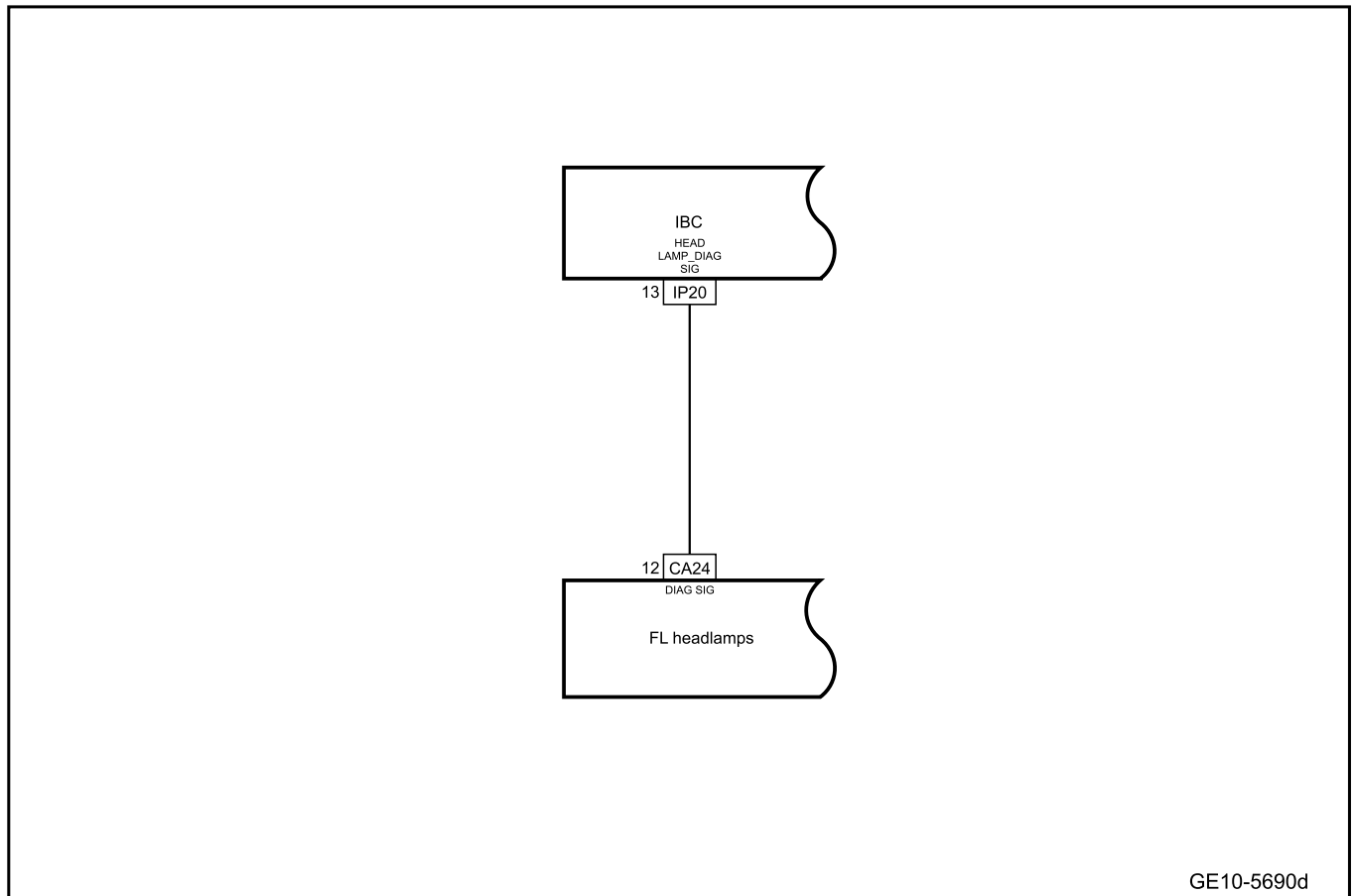
Diagnostic Trouble Code	Description
B106211	Right front turn signal LED feedback line is short-circuited to ground
B106215	Right front turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit
B106511	Left front turn signal LED feedback line is short-circuited to ground
B106515	Left front turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit
B107011	Right rear outer turn signal LED feedback line is short-circuited to ground
B107015	Right rear outer turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit
B107111	Left rear outer turn signal LED feedback line is short-circuited to ground
B107115	Left rear outer turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit
B107211	Right rear inner turn signal LED feedback line is short-circuited to ground
B107215	Right rear inner turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit
B107311	Left rear inner turn signal LED feedback line is short-circuited to ground
B107315	Left rear inner turn signal LED is damaged, or the feedback line is short-circuited to power supply, or the feedback line is an open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B106211	Right turn signal relevant phase is broken in 200 ms. Abnormal feedback state counter reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn lamps or lane change function is started 3. Right turn signal output is not faulty(right turn signal is short circuit to ground)	1. Left headlamp 2. Circuit 3. IBC
B106215	Right turn signal appearance 200 ms ON phase abnormal feedback state counter reaches 3		
B106511	Left turn signal relevant phase 200 ms phase break abnormal feedback state counter reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn lamps or lane change function is started 3. Left turn signal output is not faulty(left turn signal is short circuit to ground)	
B106515	Left turn signal appearance 200 ms ON phase abnormal feedback state counter reaches 3		
B107011	Right turn signal relevant phase is broken in 200 ms. Abnormal feedback state counter reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn lamps or lane change function is started 3. Right turn signal output is not faulty(right turn signal is short circuit to ground)	
B107015	Right turn signal appearance 200 ms ON phase abnormal feedback state counter reaches 3		
B107111	Left turn signal relevant phase 200 ms phase break abnormal feedback state counter reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn lamps or lane change function is started 3. Left turn signal output is not faulty(left turn signal is short circuit to ground)	
B107115	Left turn signal appearance 200 ms ON phase abnormal feedback state counter reaches 3		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107211	Right turn signal relevant phase is broken in 200 ms. Abnormal feedback state counter reaches 3	1. IBC Power supply The supply voltage is within the range of 9-16V 2. When the turn lamps or lane change function is started 3. Right turn signal output is not faulty (right turn signal is short circuit to ground)	
B107215	Right turn signal appearance 200 ms ON phase abnormal feedback state counter reaches 3		
B107311	Left turn signal relevant phase 200 ms phase break abnormal feedback state counter reaches 3		
B107315	Left turn signal appearance 200 ms ON phase abnormal feedback state counter reaches 3		

3. Schematic circuit diagram:



4. Diagnosis steps

This manual is only used to diagnose the fault of left front combination lamp (abnormal signal feedback of turn signal LED). The diagnosis of abnormal signal feedback of other LED turn signals is the same as that of left front combination lamp (turn signal).

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left front combination lamp, IBC for signs of damage, deformation, stain, loosening, etc.
- B. Check the left front combination lamp and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

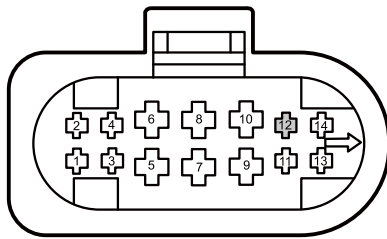
No

Repair or replace the faulty part.

Yes

Step 3	Check the short circuit fault between the left front combination lamp and the IBC.
--------	--

CA24 FL headlamp harness connector



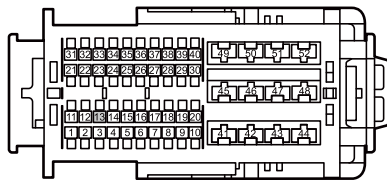
GE10-5992d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the resistance between terminal 12 of the FL combination lamp harness connector CA24 and terminal 13 of the IBC harness connector IP20.

Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

IP20 body control module harness connector 1



GE10-5993d

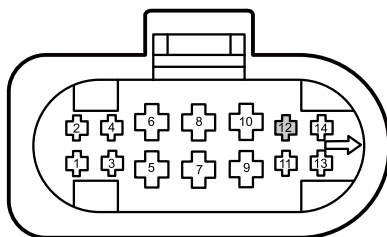
No

Repair or replace the harness.

Yes

Step 4 Check the power supply short circuit fault between the left front combination lamp and the IBC.

CA24 FL headlamp harness connector



GE10-5994d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the IBC harness connector IP20.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between the terminal 12 of the LF combination lamp harness connector CA24 and the body grounding.

Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

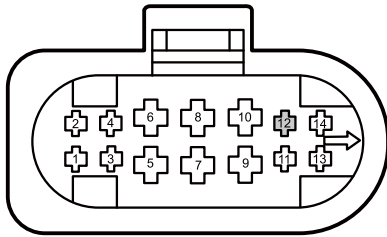
No

Repair or replace the harness.

Yes

Step 5 Check the short circuit fault between the left front combination lamp and the IBC.

CA24 FL headlamp harness connector



GE10-5995d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left front combination lamp harness connector CA24.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the resistance between the terminal 12 of the LF combination lamp harness connector CA24 and the body grounding.

Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 Replace the left front combination lamp.

- A. Replace the left front combination lamp. Refer to [Replacement of left front combination lamp](#)
- B. System is normal.

Next step

Step 8 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

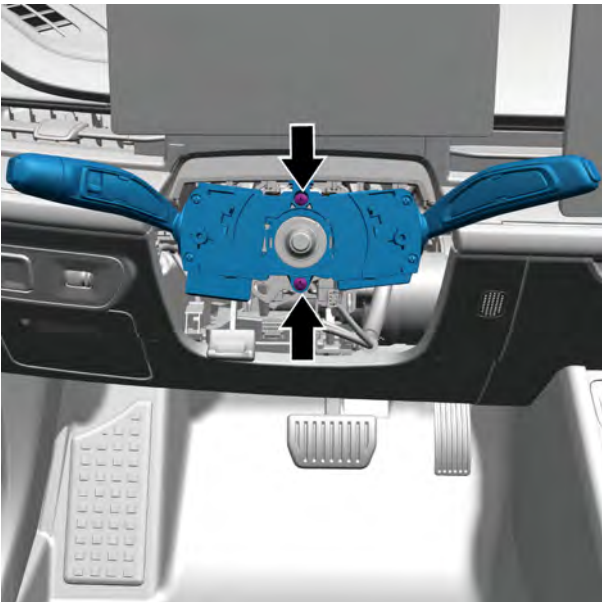
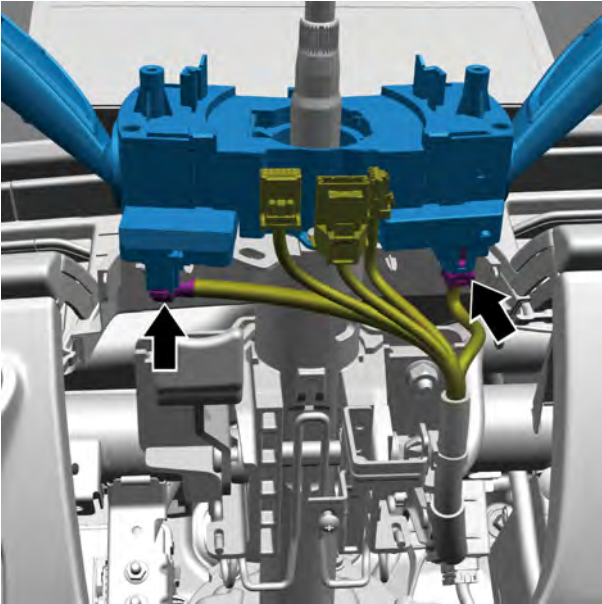
Step 10	System is normal.
------------	-------------------

11.4.7 Removing and installing

11.4.7.1 Replacement of combination switch

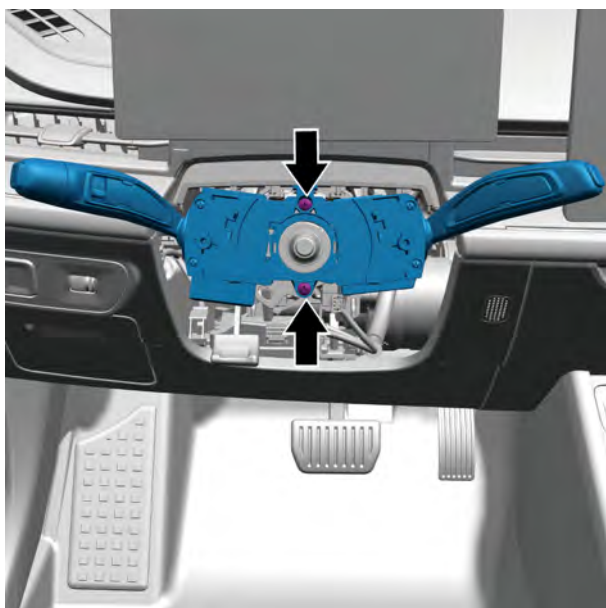
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the clock spring. Refer to [Replacement of Clock Spring](#)
- 3 Disconnect the 2 harness connectors of the instrument harness and combination switch.

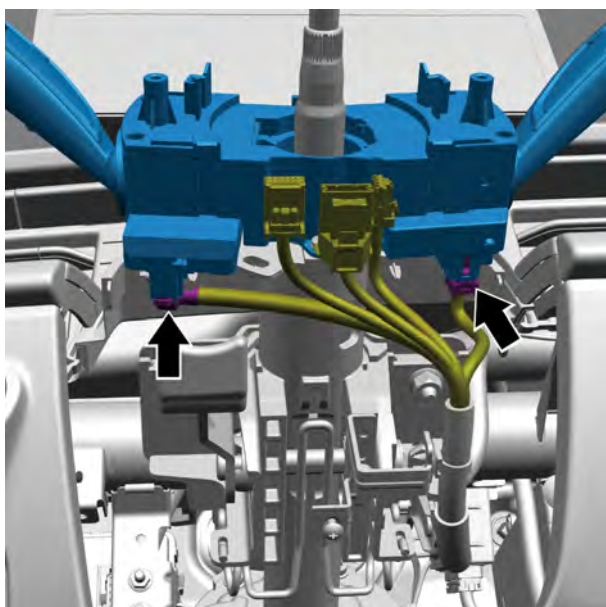


- 4 Remove the 2 fixing screws connecting the combination switch with the electric-assisted steering column c/w intermediate shaft assembly.
- 5 Remove the combination switch.

Installation procedure



- 1 Move the combination switch to the installation position.
- 2 Install fixing screw 2 connecting the combination switch and the electric power steering column c/w intermediate shaft assembly.
Torque: 3N·m



- 3 Connect the 2 harness connectors of the instrument harness and combination switch.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the clock spring.
- 5 Connect the negative cable of battery.

11.4.7.2 Replacement of front reading lamp (Type I)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

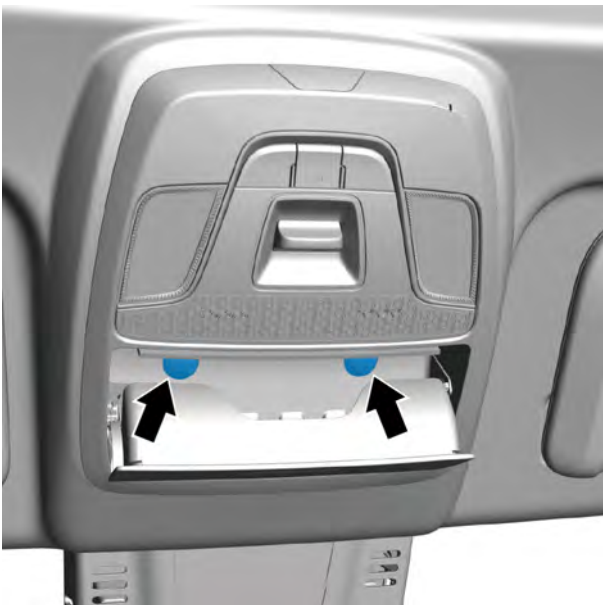
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Open the glasses box panel.



- 3 Pry off 2 screw covers.



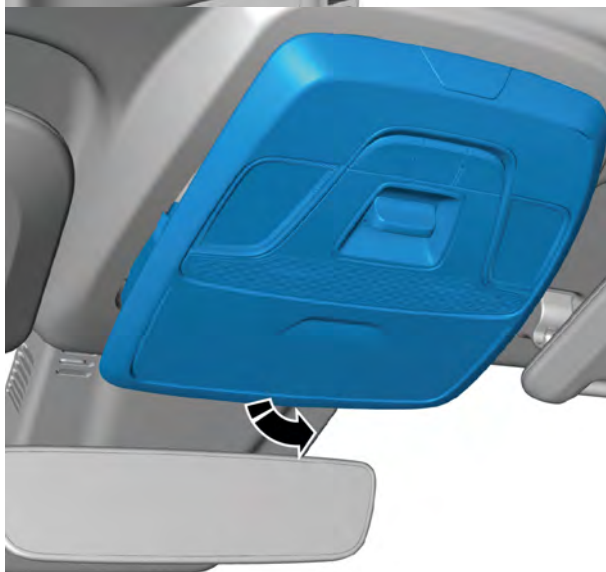


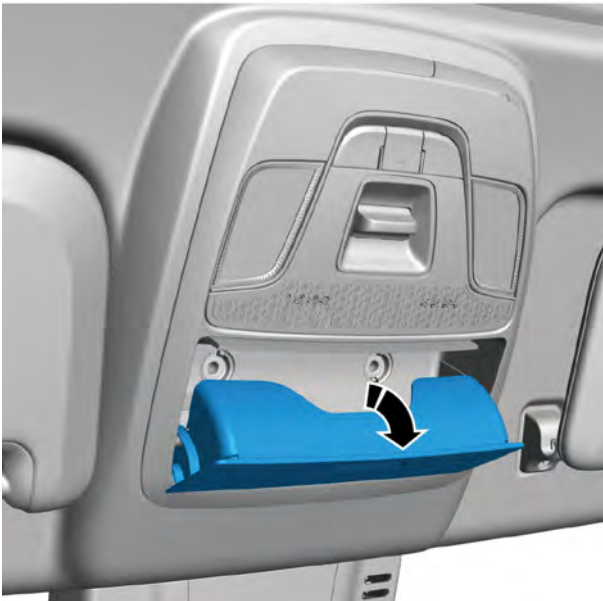
4 Remove the 2 fixing screws of the front reading lamp.



5 Disengage the front reading lamp from the roof.

- A. Insert a straight screwdriver along the matching position between the spring plate (shown in the illustration) of the front reading lamp and the roof to produce clearance in both sides of the reading lamp.
- B. Keep the same clearance, and detach the front reading lamp from the roof by hand in front of the reading lamp.

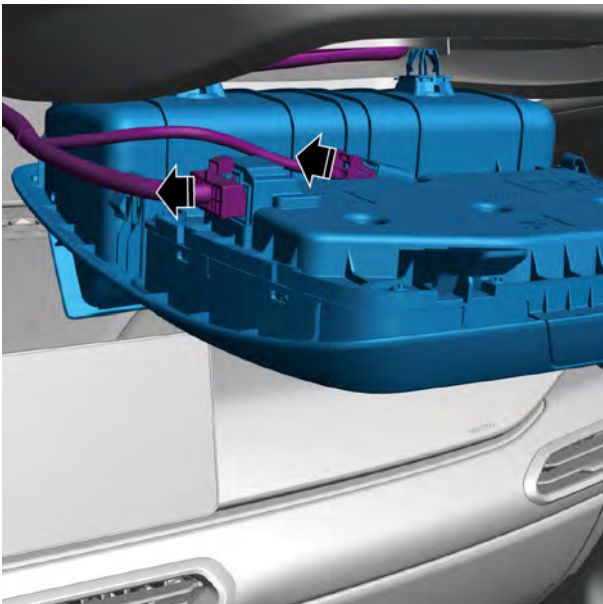




You can try another method to remove the front reading lamp: open the glasses box, pull the glasses box downward, and the front reading lamp is detached from the roof.

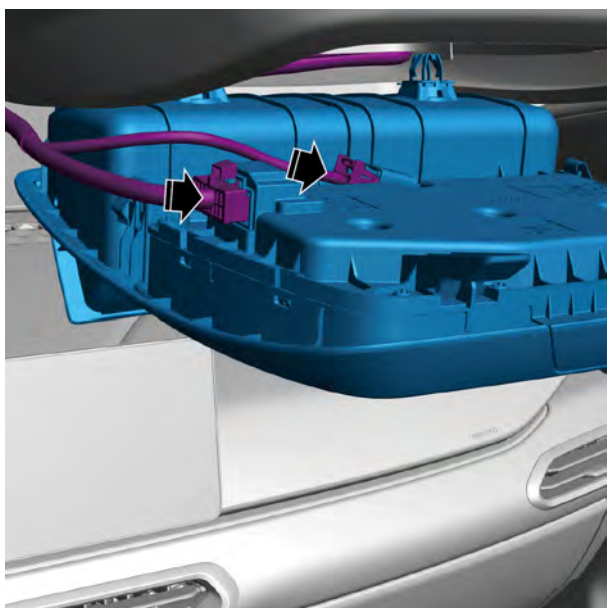
Caution

There is a harness connection on the back of the front reading lamp. Do not pull the glasses box too hard to prevent the harness from breaking.



- 6 Disconnect the harness connector of the front reading lamp.
- 7 Remove the front reading lamp.

Installation procedure



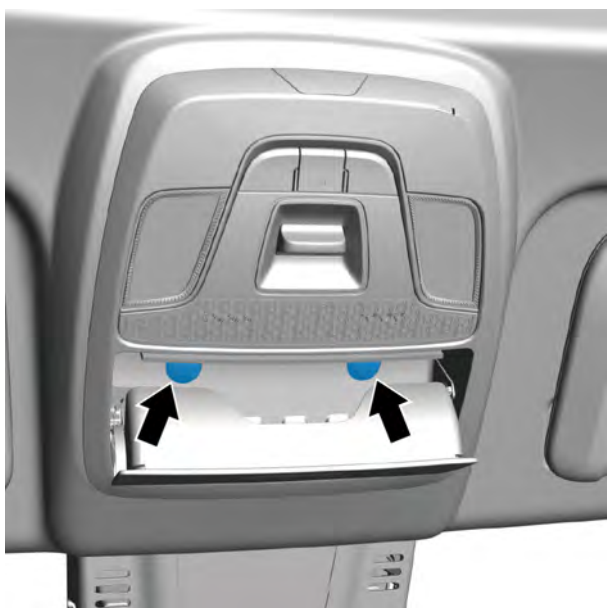
- 1 Connect front reading lamp harness connector.
- 2 Install the front reading lamp to the roof.

Caution

The springs of the front reading lamp after installation have no obvious deformation. After installation, check the flatness of the matching between the front reading lamp and the roof.



- 3 Install the 2 fixing screws of the front reading lamp.
Torque: 1.5 N·m (metric system) 1.1 lb-ft (British system).



- 4 Install the 2 fixing screw caps.

- 5 Close the glass box panel.
- 6 Connect the negative cable of battery.

11.4.7.3 Replacement of front reading lamp (Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

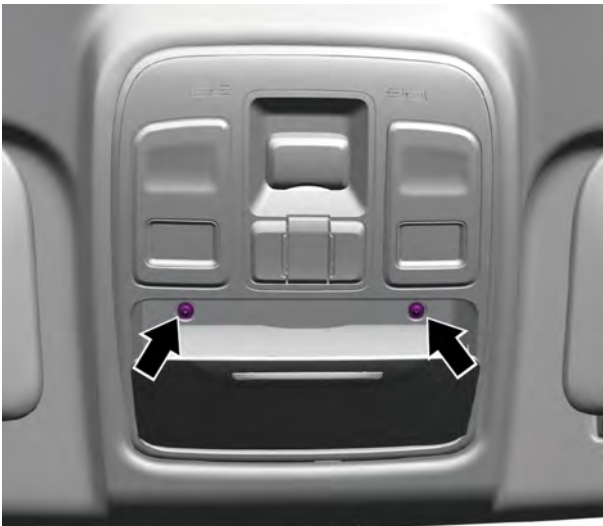
Warning

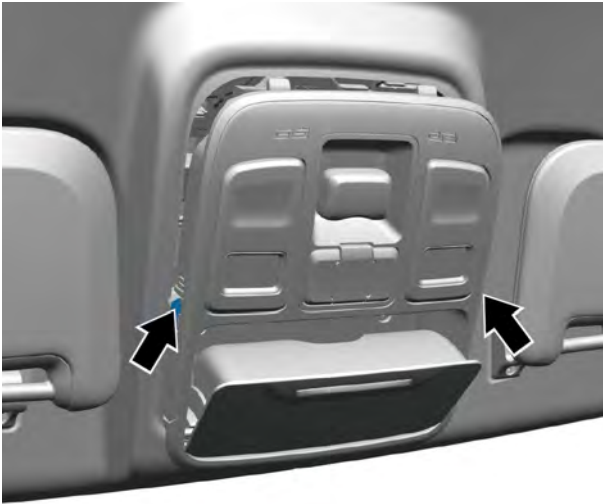
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Open the glasses box panel.

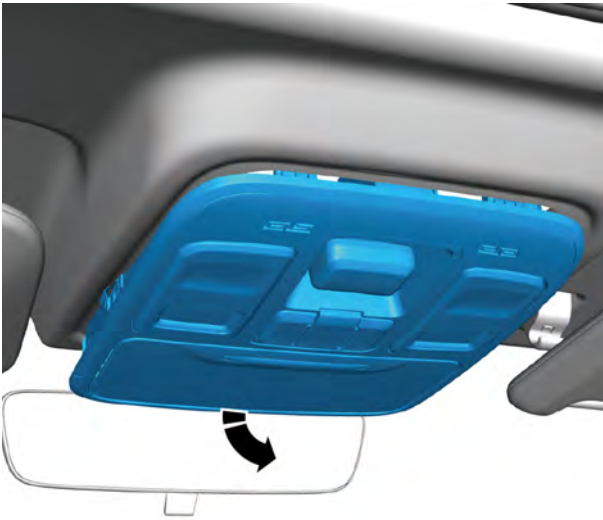


- 3 Remove the 2 fixing screws of the front reading lamp.





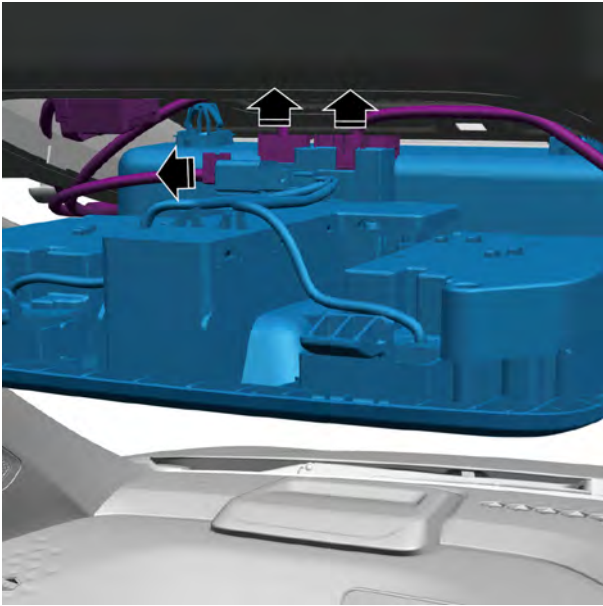
- 5 Disengage the front reading lamp from the roof.
 - A. Insert a straight screwdriver along the matching position between the spring plate (shown in the illustration) of the front reading lamp and the roof to produce clearance in both sides of the reading lamp.
 - B. Keep the same clearance, and detach the front reading lamp from the roof by hand in front of the reading lamp.



You can try another method to remove the front reading lamp: open the glasses box, pull the glasses box downward, and the front reading lamp is detached from the roof.

Caution

There is a harness connection on the back of the front reading lamp. Do not pull the glasses box too hard to prevent the harness from breaking.



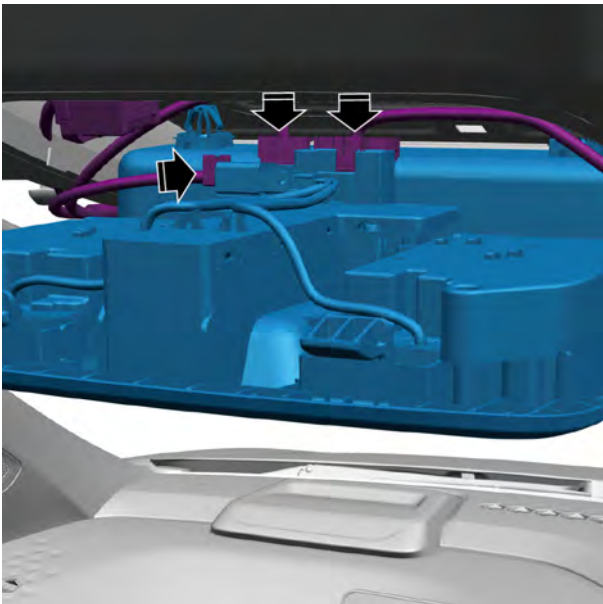
- 5 Disconnect the harness connector of the front reading lamp.
- 6 Remove the front reading lamp.

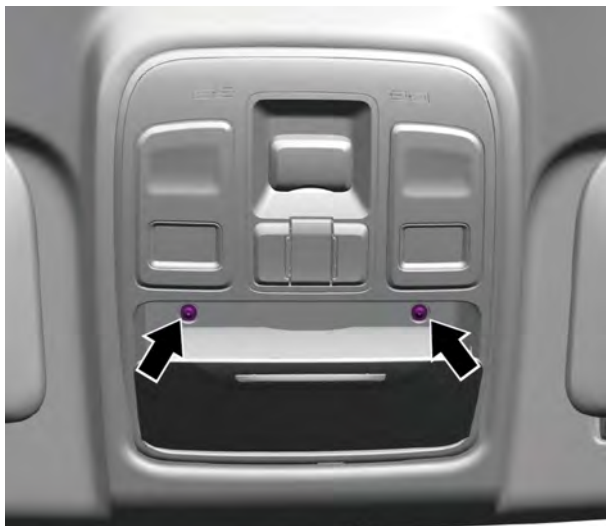
Installation procedure

- 1 Connection to front reading lamp harness connector.
- 2 Install the front reading lamp to the roof.

Caution

The springs of the front reading lamp after installation have no obvious deformation. After installation, check the flatness of the matching between the front reading lamp and the roof.



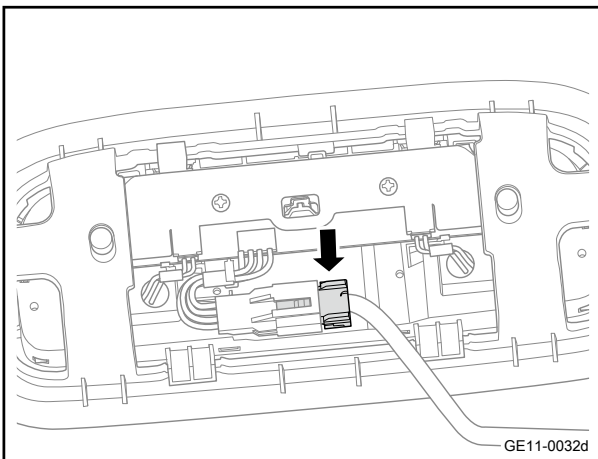
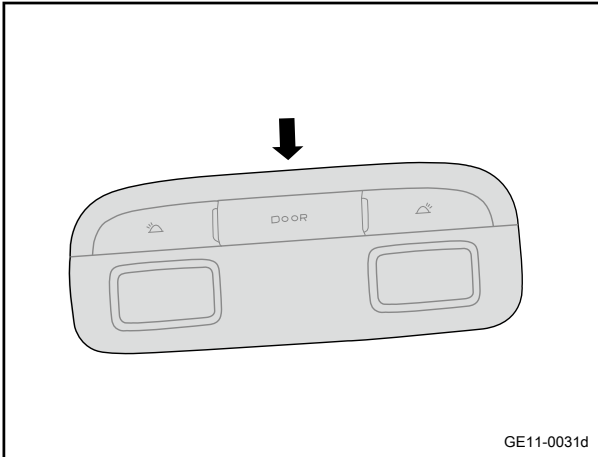


- 3 Install the 2 fixing screws of the front reading lamp.
Torque: 1.5 N·m (metric system) 1.1 lb-ft (British system).

- 4 Close the glass box panel.
- 5 Connect the negative cable of battery.

11.4.7.4 Replacement of rear reading lamp assembly

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

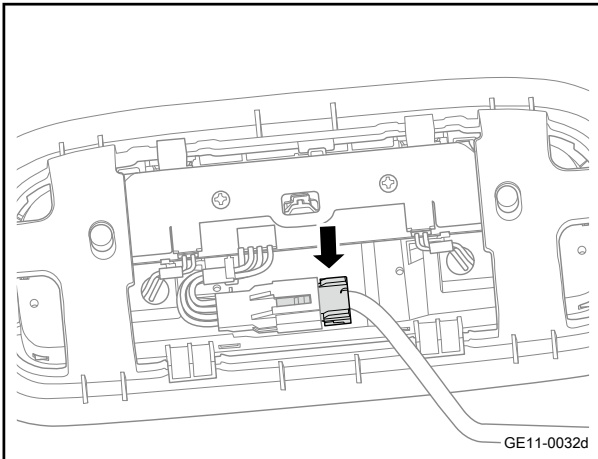
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

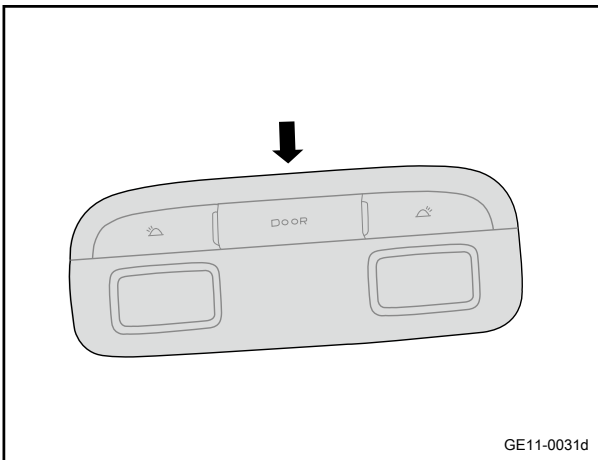
- 2 Remove the rear reading lamp assembly.

- 3 Disconnect the harness connector of the rear reading lamp assembly.

Installation procedure



- 1 Connect the rear reading lamp assembly harness connector.



- 2 Install the rear reading lamp assembly.

- 3 Connect the negative cable of battery.

11.4.7.5 Replacement of Trunk Lamp

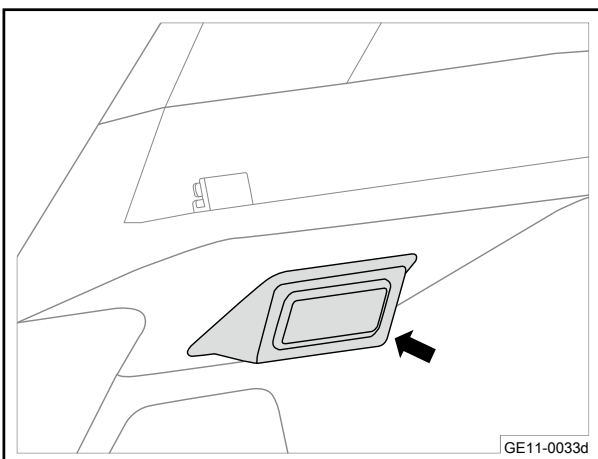
Removal procedure

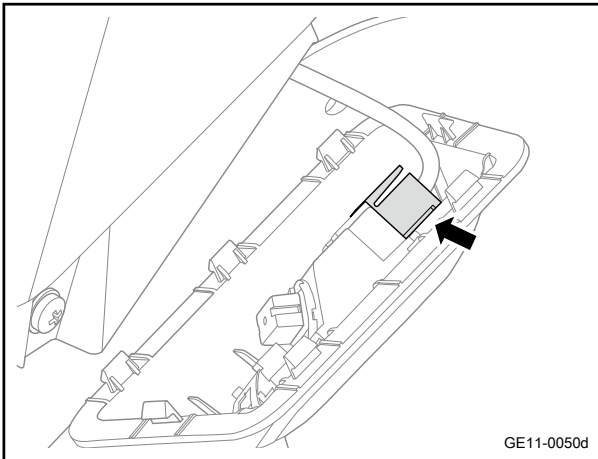
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

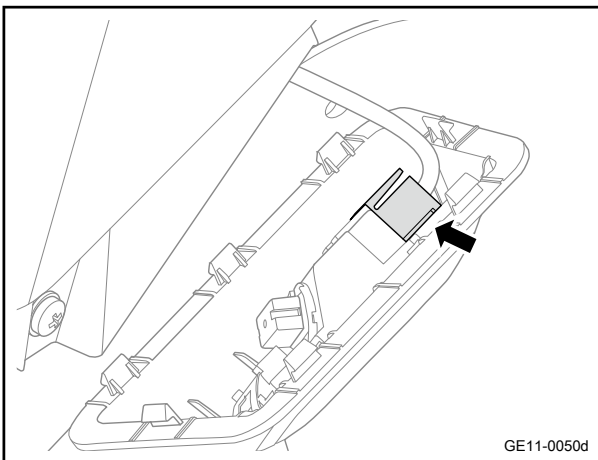
- 2 Use a suitable tool to remove the trunk lamp.



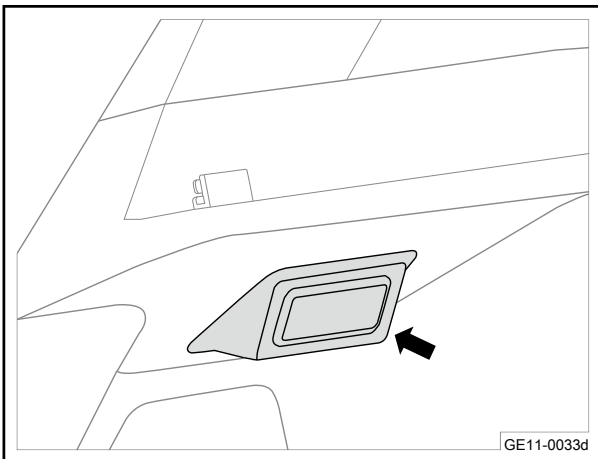


- 3 Disconnect the harness connector of the trunk lamp.
- 4 Remove the trunk lamp.

Installation procedure



- 1 Move the trunk lamp to the installation position.
- 2 Connect the trunk lamp harness connector.



- 3 Install the trunk lamp.

- 4 Connect the negative cable of battery.

11.4.7.6 Replacement of middle rear fog lamp assembly

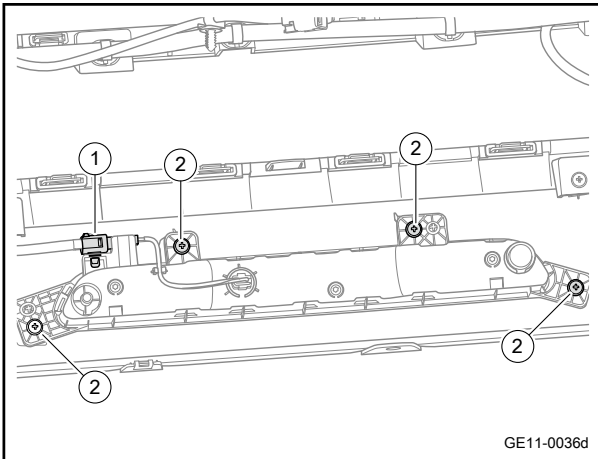
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

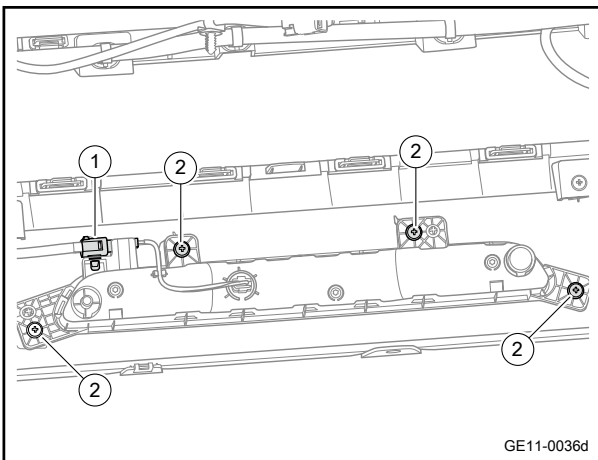
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 3 Disconnect the harness connector 1 of the middle rear fog lamp assembly.
- 4 Remove the 4 fixing screws 2 of the middle rear fog lamp assembly.
- 5 Take off the middle rear fog lamp assembly.



Installation procedure

- 1 Move the rear fog lamp to the installation position.
- 2 Install the 4 fixing screws 2 of the middle rear fog lamp assembly.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 3 Connect the harness connector 1 of the middle rear fog lamp assembly.

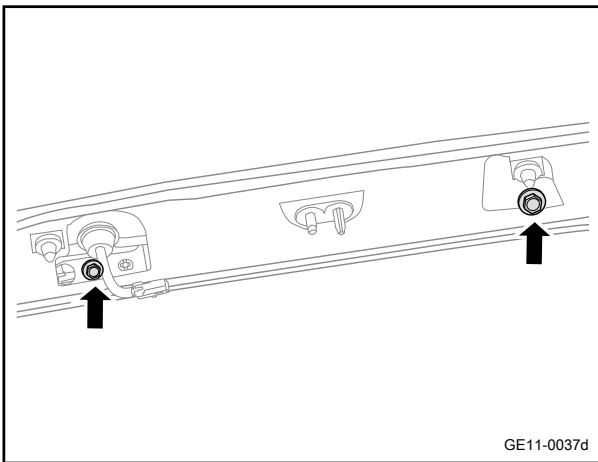


- 4 Install the rear bumper.
- 5 Connect the negative cable of battery.

11.4.7.7 Replacement of high-mounted stop lamp assembly

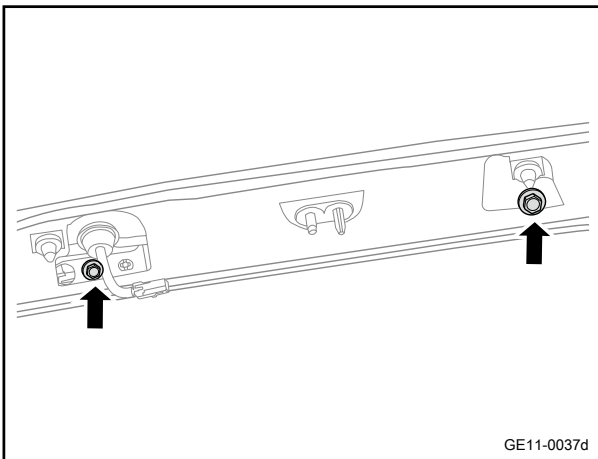
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the middle upper interior trim panel of the tailgate
[Replacement of interior trim panel assembly at the upper middle side of the tailgate](#)
- 3 Remove the spoiler assembly. Refer to [Replace the spoiler assembly](#)
- 4 Remove 2 fixing nuts of high-mounted stop lamp assembly.
- 5 Take off high-mounted stop lamp assembly



Installation procedure

- 1 Move the high-mounted stop lamp assembly to the installation position.
- 2 Install 2 fixing nuts of high-mounted stop lamp assembly.
Torque: 2.5N·m (metric system) 1.8lb·ft (Imperial system)



- 3 Install spoiler assembly.
- 4 Install the upper middle interior trim panel assembly of tailgate.
- 5 Connect the negative cable of battery.

11.4.7.8 Replacement of left front combination lamp

Removal procedure

Caution

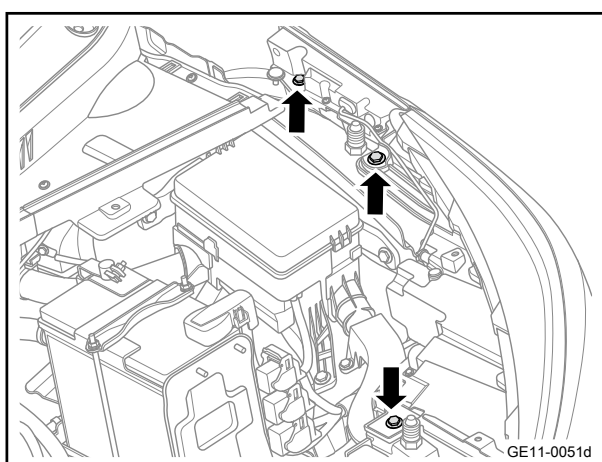
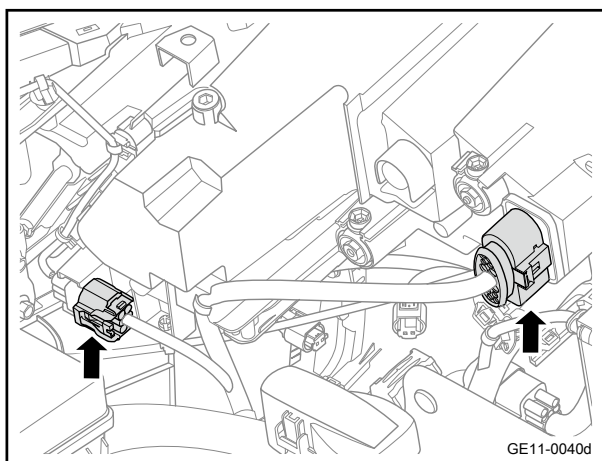
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

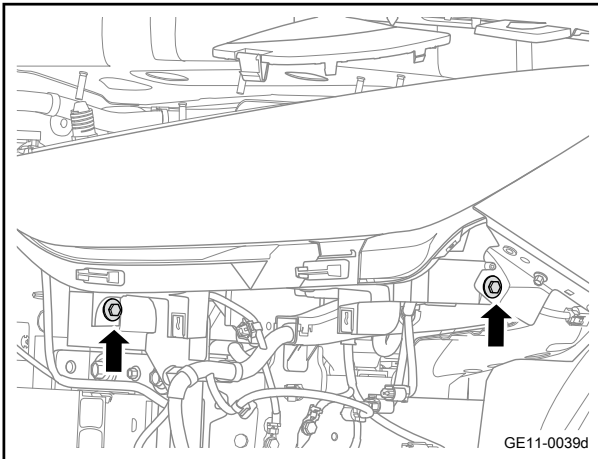
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Remove front bumper left mounting bracket. [Replacement of Left Mounting Bracket of Front Bumper](#)
- 4 Remove the upper trim panel of the left fender. Refer to [Replacement of Upper Trim Panel of the Left Fender](#)
- 5 Disconnect the left front combination lamp harness connector.

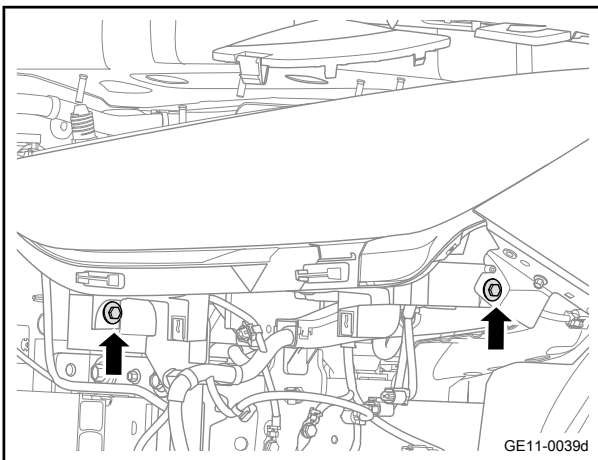


- 6 Remove the 3 fixing bolts of the front left combination lamp assembly upper part.

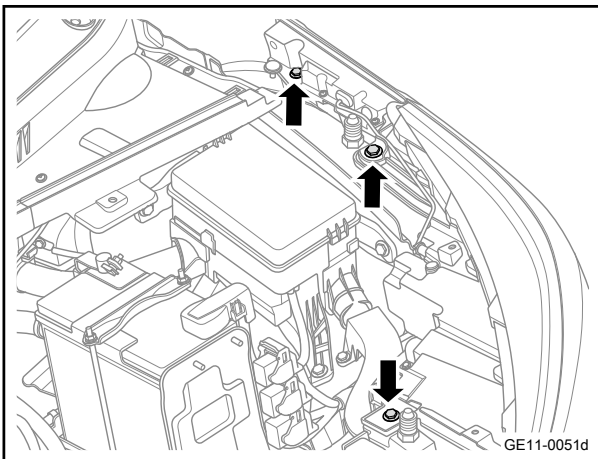


- 7 Remove the 2 fixing bolts of the front left combination lamp lower part.
- 8 Take off the left front combination lamp.

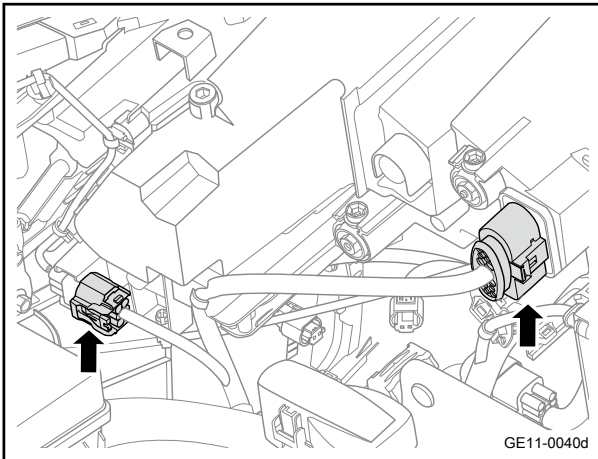
Installation procedure



- 1 Move the left front combination lamp to the installation position.
- 2 Install 2 fixing bolts below left front combination lamp.
Torque: 4.5N·m (metric system) 3.3lb-ft (Imperial system)



- 3 Install 3 fixing bolts in the upper part of left front combination lamp.
Torque: 4.5N·m (metric system) 3.3lb-ft (Imperial system)



- 4 Connect the left front combination lamp harness connector.

- 5 Install the upper trim panel of the left fender.
- 6 Install the front bumper left mounting bracket.
- 7 Install the front bumper assembly.
- 8 Connect the negative cable of battery.

11.4.7.9 Replacement of tailgate left combination lamp

Removal procedure

Caution

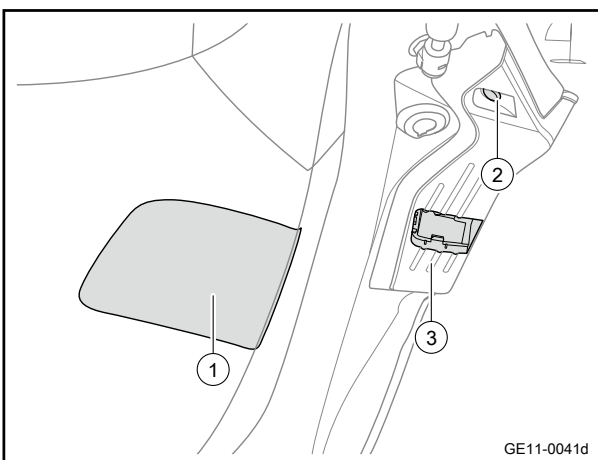
The left and right sides are removed and installed in the same way.

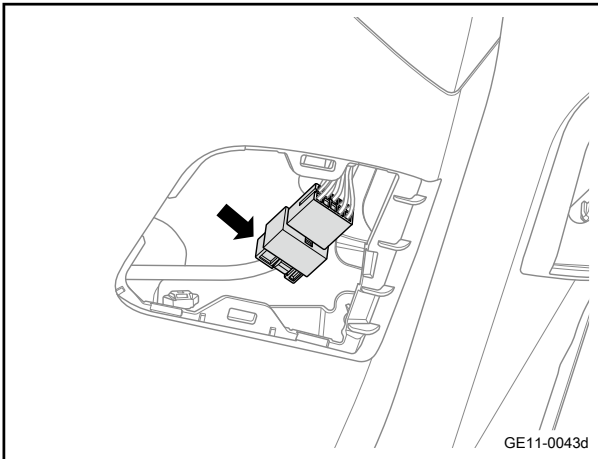
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

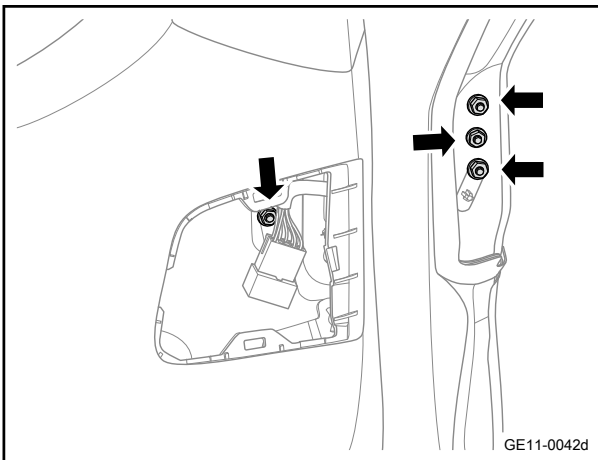
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the tailgate left combination lamp access cover 1.
- 3 Remove the 1 fixing clip 2 of the tailgate left combination lamp trim cover.
- 4 Take down tailgate left combination lamp trim cover 3.

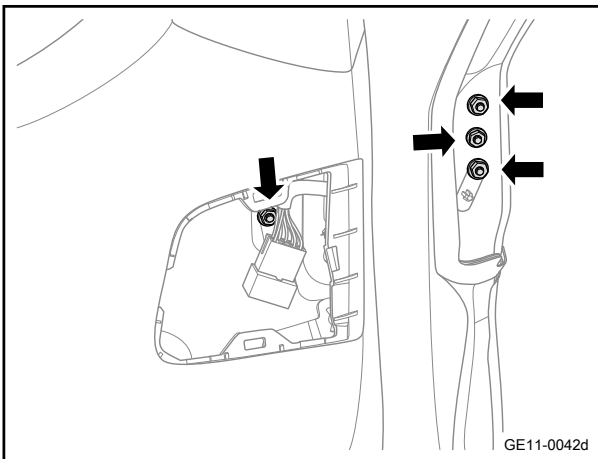




- 5 Disconnect the tailgate left combination lamp harness connector.

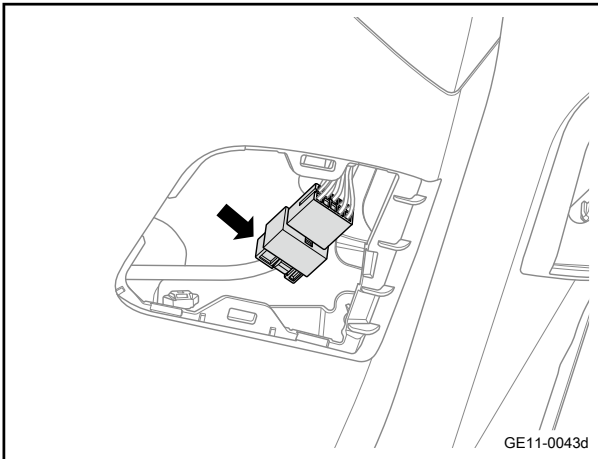


- 6 Remove the 4 fixing nuts on the tailgate left combination lamp.
- 7 Left combination lamp on the tailgate is taken down.

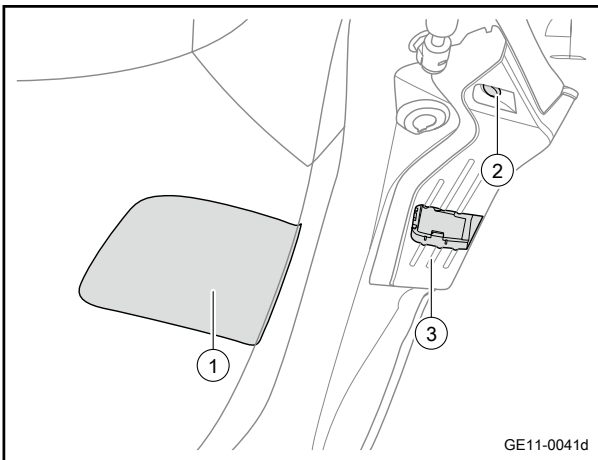


Installation procedure

- 1 Move the tailgate left combination lamp to the installation position.
 - 2 Install the 4 fixing nuts on the tailgate left combination lamp.
- Torque: 2.5N·m (metric system) 1.8lb·ft (Imperial system)



- 3 Connect the tailgate left combination lamp harness connector.



- 4 Install the tailgate left combination lamp trim cover 3.
- 5 Install 1 retaining clip 2 on the tailgate left combination lamp trim cover.
- 6 Install the tailgate left combination lamp access cover 1.

- 7 Connect the negative cable of battery.

11.4.7.10 Replacement of rear left side wall combination lamp

Removal procedure

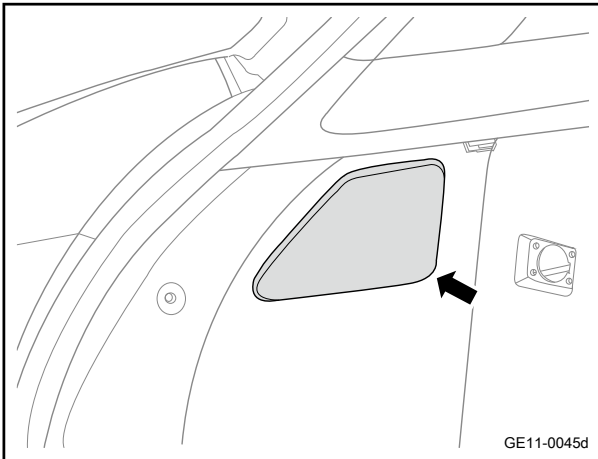
Caution

The left and right sides are removed and installed in the same way.

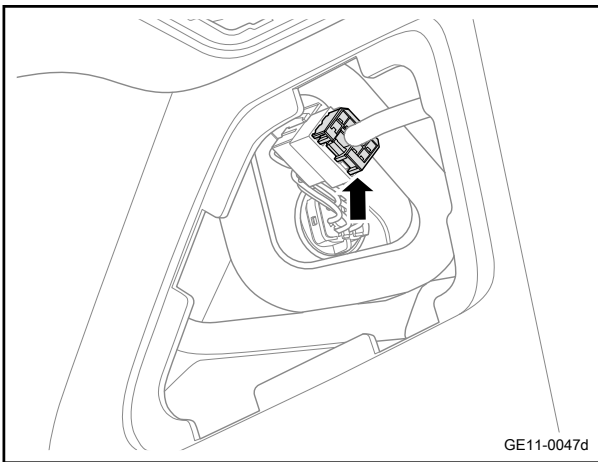
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

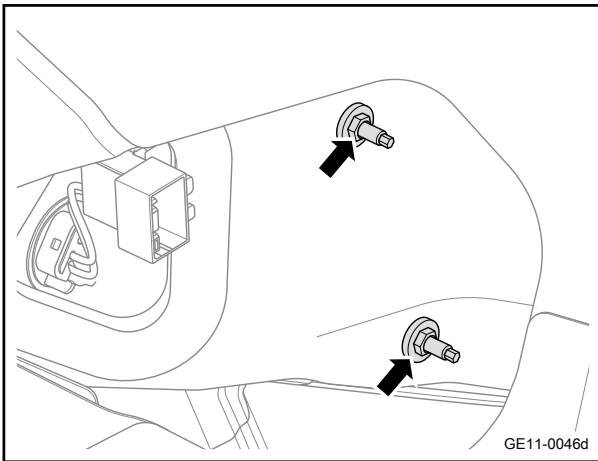
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



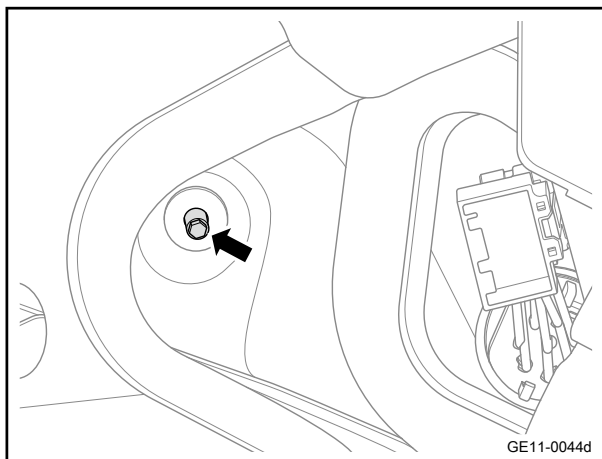
- 2 Remove the access cover of the rear left side wall combination lamp.



- 3 Disconnect the harness connector of the rear left side wall combination lamp.

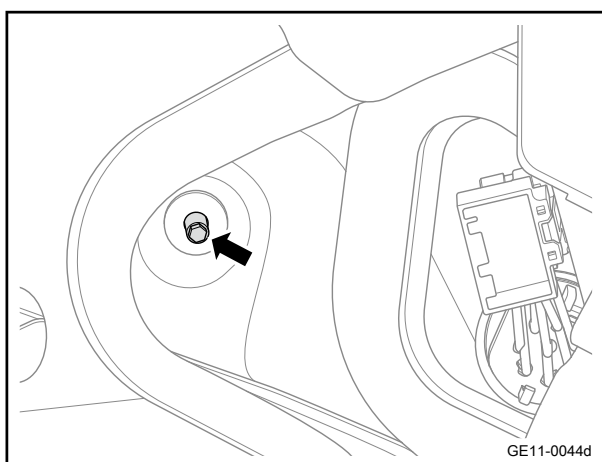


- 4 Remove 2 fixing nuts of the rear left side wall combination lamp front part.

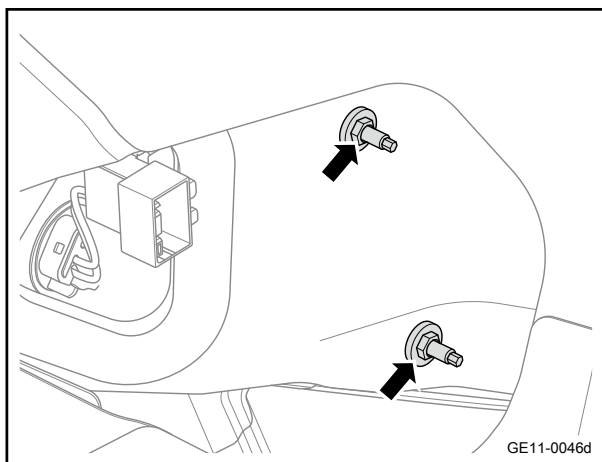


- 5 Remove 1 fixing nut of the rear left side wall combination lamp rear part.
- 6 Take off the left rear side wall combination lamp.

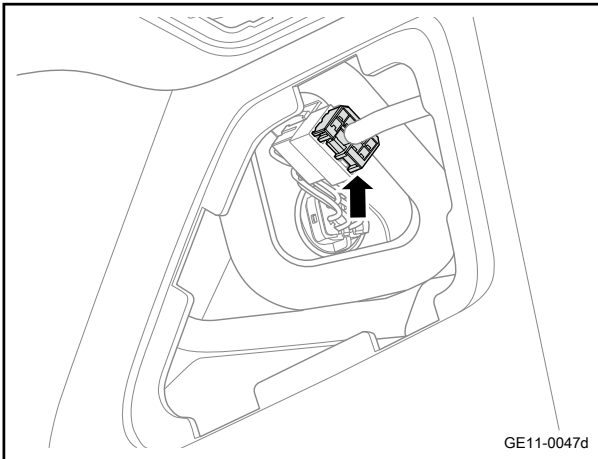
Installation procedure



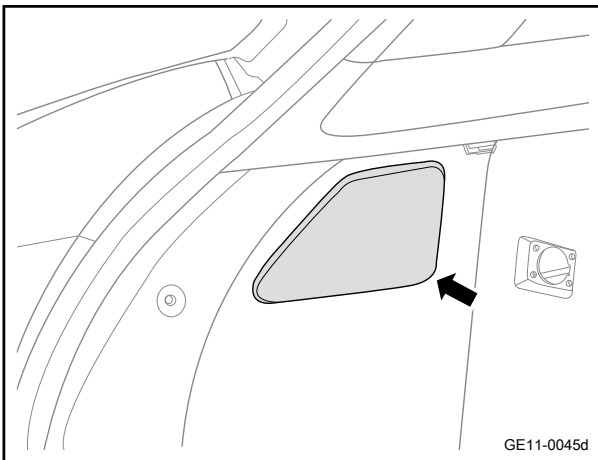
- 1 Move the left rear side wall combination lamp to the installation position.
- 2 Install 1 fixing nut of the rear left side wall combination lamp rear part.
Torque: 2.5N·m (metric system) 1.8lb-ft (Imperial system)



- 3 Install 2 fixing nuts of the rear left side wall combination lamp front part.
Torque: 2.5N·m (metric system) 1.8lb-ft (Imperial system)



- 4 Connect the harness connector of the rear left side wall combination lamp.



- 5 Install the access cover of the rear left side wall combination lamp.

- 6 Connect the negative cable of battery.

11.4.7.11 Replacement of Left Rear Number Plate Lamp

Removal procedure

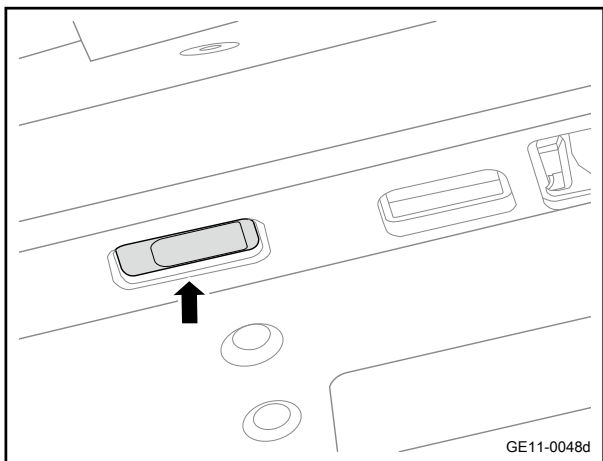
Caution

The left and right sides are removed and installed in the same way.

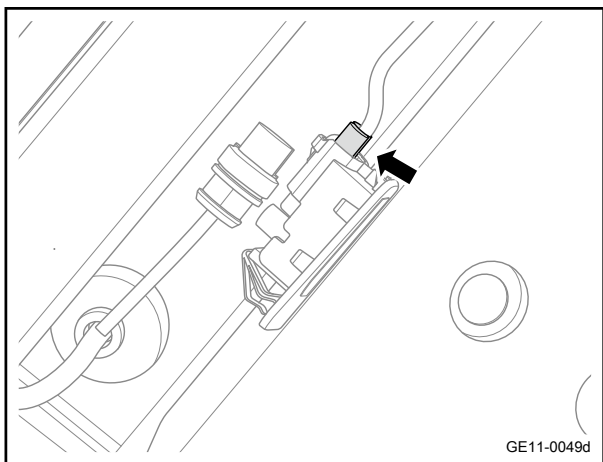
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

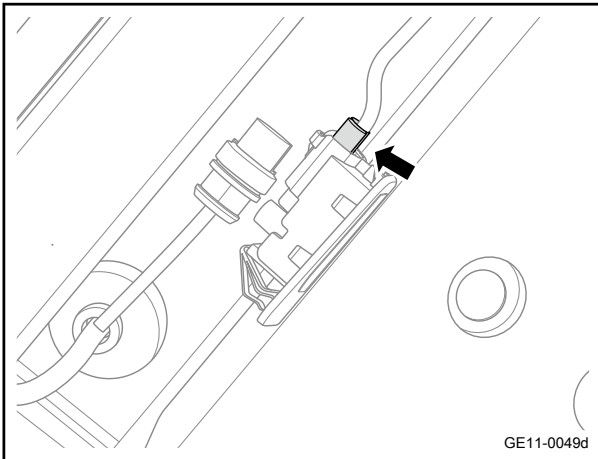


2 Rear left rear number plate lamp is pried off.

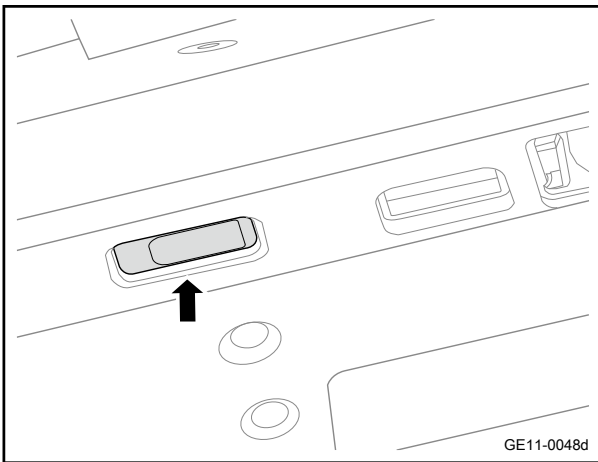


3 Disconnect harness connector of rear left number plate lamp.

Installation procedure



- 1 Connect harness connector of left rear number plate lamp.



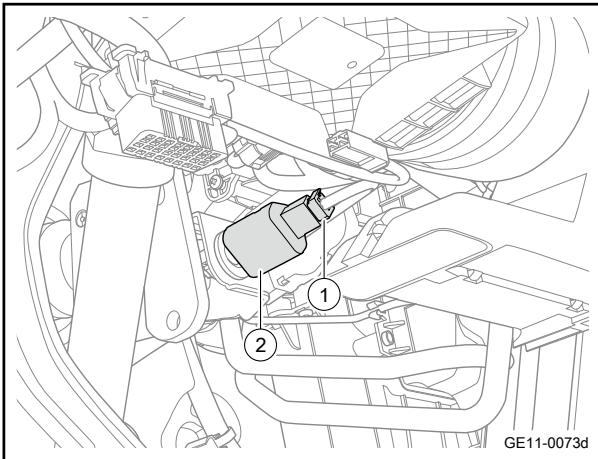
- 2 Install the left rear number plate lamp.

- 3 Connect the negative cable of battery.

11.4.7.12 Replacement of brake lamp switch

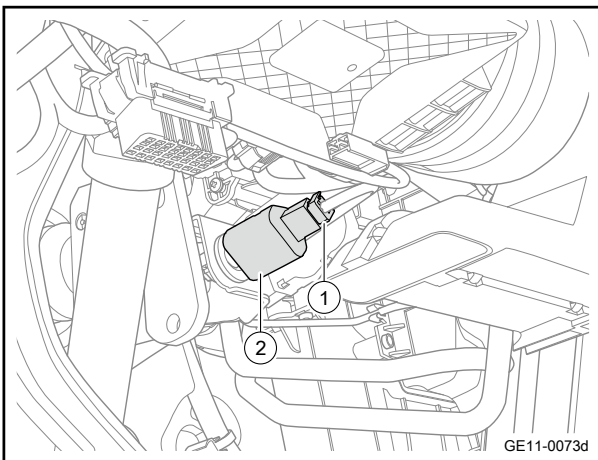
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)



- 3 Disconnect the harness connector 1 of brake lamp switch.
- 4 Remove the brake lamp switch 2 anticlockwise.

Installation procedure



- 1 Move the brake lamp switch to the installation position.
- 2 Install the brake lamp switch 2 clockwise.
- 3 Connect the harness connector 1 of brake lamp switch.

- 4 Install the left lower shield assembly of the dashboard.
- 5 Connect the negative cable of battery.

11.4.7.13 Replacement of left turn signal

Removal procedure

Caution

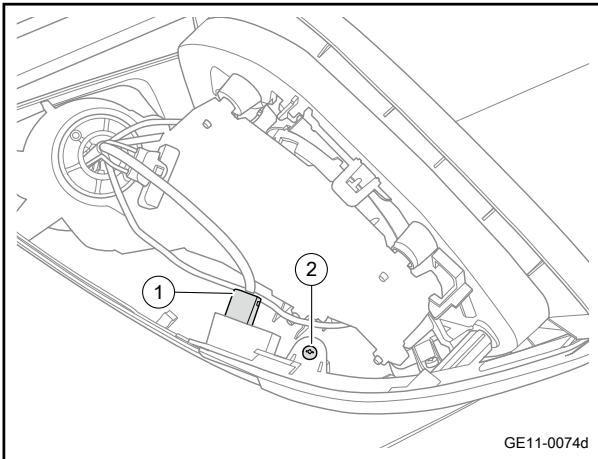
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

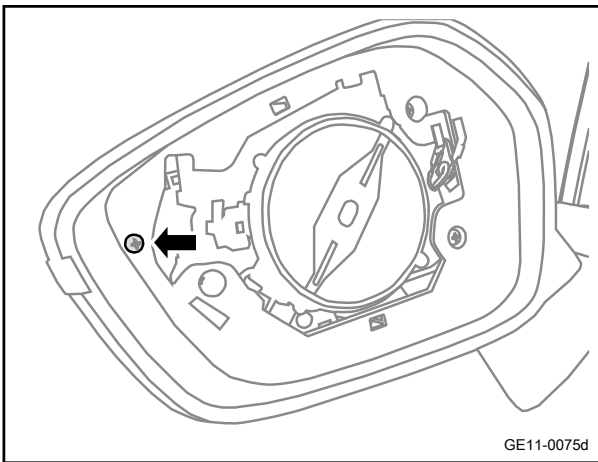
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

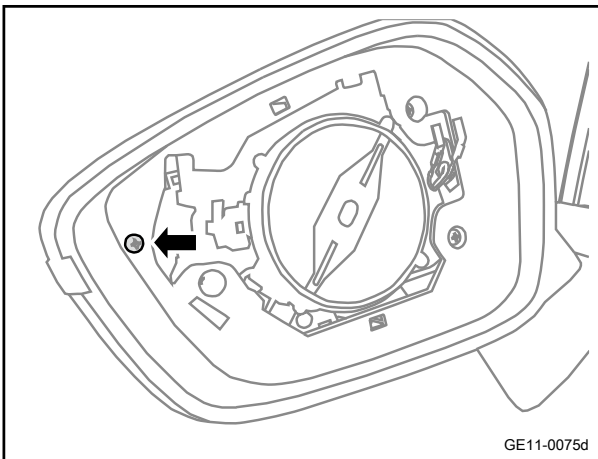
- 2 Replace the left power rearview mirror lens Refer to [Replacement of left power rearview mirror lens](#)



- 3 Disconnect left turn signal lamp harness connector 1.
- 4 Remove left turn signal lamp front part fixing screw 2.

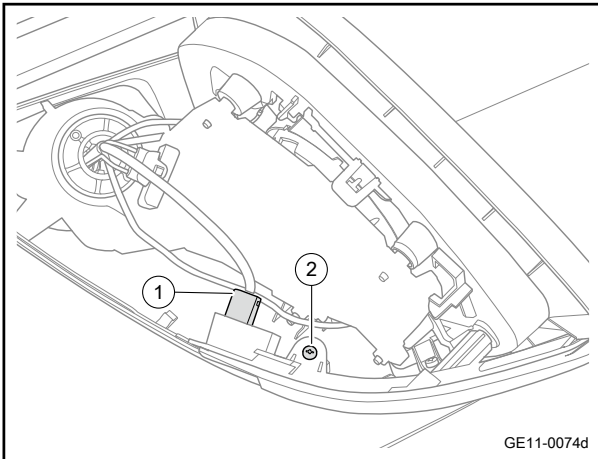


- 5 Remove the 1 set screw at the front of the left turn signal lamp.
- 6 Left turn signal lamp is taken off.



Installation procedure

- 1 Move the left turn signal lamp to the installation position.
- 2 Install the 1 set screw at the rear of the left turn signal lamp
Torque: 0.6N·m (metric system) 0.4lb-ft (Imperial system)



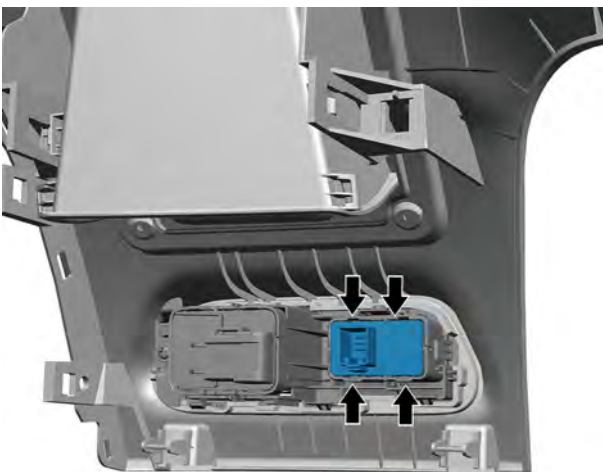
- 3 Install the 1 fixing screw 2 of the left turn signal lamp.
Torque: Nm (metric system) lb-ft (imperial system)
- 4 Connect left turn signal lamp harness connector 1.

- 5 Install the left motor rearview mirror lens.
- 6 Connect the negative cable of battery.

11.4.7.14 Replacement of Headlamp Height Adjustment Switch

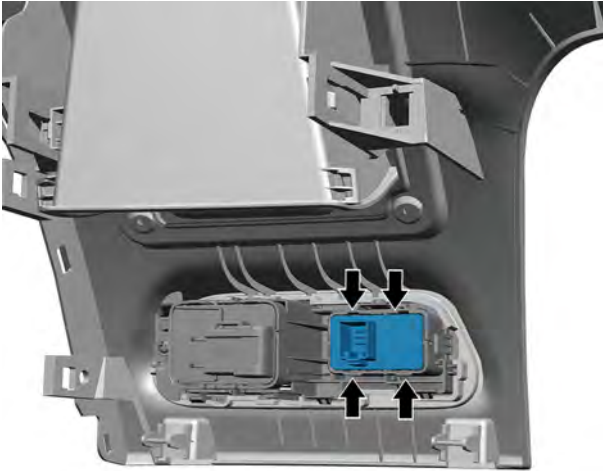
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Disconnect the 4 fixing clips connecting the headlamp adjustment switch assembly and the headlamp adjustment switch bracket.



- 4 Headlight adjustment switch is taken off.

Installation procedure



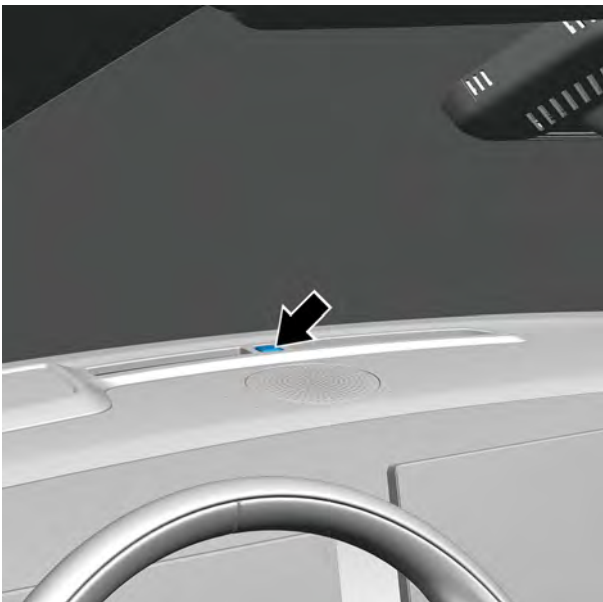
- 1 Move the headlamp adjustment switch assembly to the installation position.
- 2 Install the headlamp adjustment switch assembly onto the headlamp adjustment switch bracket and ensure that it is installed in place.
- 3 Install the left lower shield assembly of the dashboard.

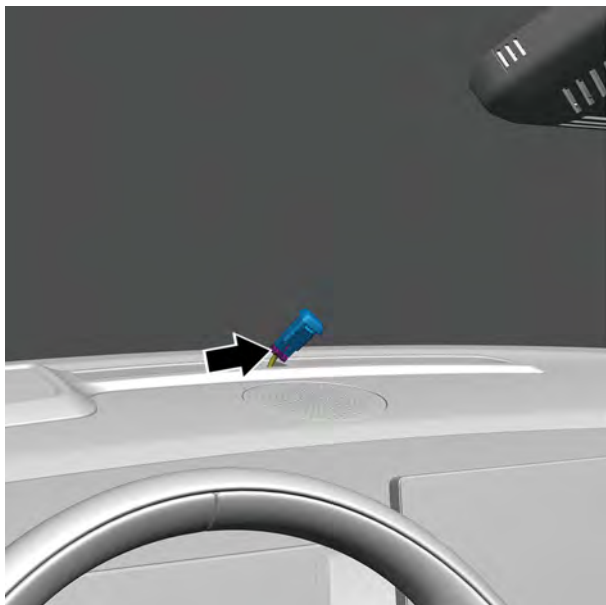
- 4 Connect the negative cable of battery.

11.4.7.15 Replacement of ambient and sun light sensor

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Ambient light and sunlight sensor is pried off by a plastic rocker.





- 3 Take out the ambient light and sunlight sensor and disconnect the 1 harness connector between the instrument harness and the ambient light and sunlight sensor harness.

Caution

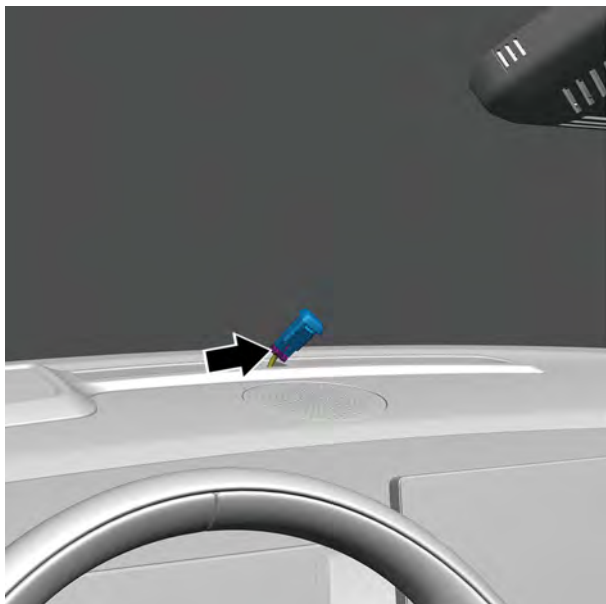
Take out the sensor carefully and avoid pulling the harness.

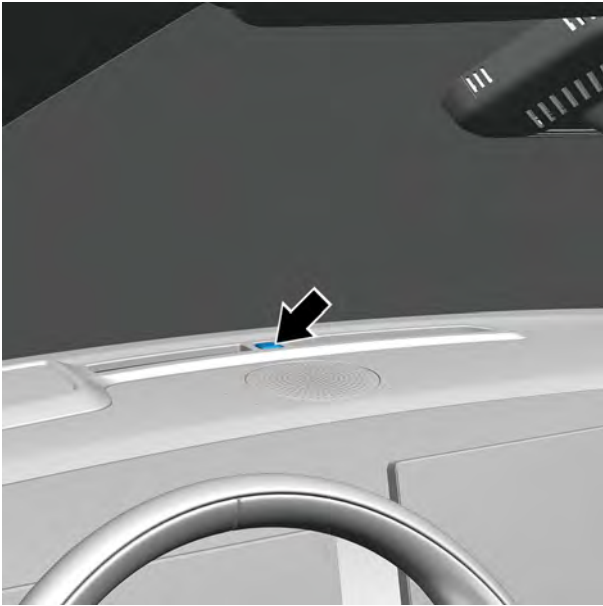
After disconnecting the harness connector, take care to prevent the harness from falling into the instrument panel.

- 4 Ambient light and sunlight sensor is taken off.

Installation procedure

- 1 Ambient light and sunlight sensor is put to the installation location.
- 2 Connect the 1 harness connector connecting the instrument harness and the ambient light and sunlight sensor harness, and place the ambient light and sunlight sensor in the hole position of the instrument panel.





- 3 Press the ambient light and sunlight sensor to snap it into the instrument panel and ensure that it is installed in place.

Caution

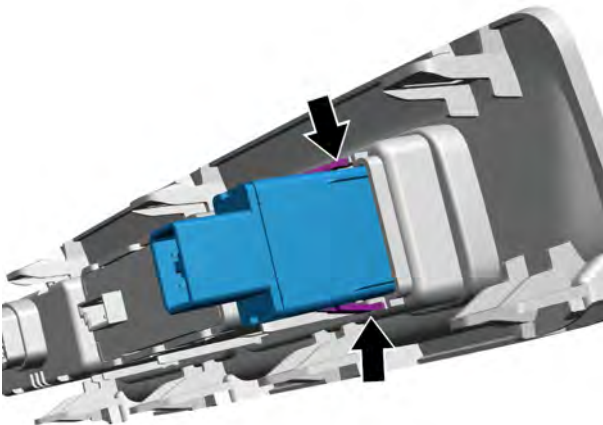
Trim the harness in advance to avoid squeezing the harness during installation.

- 4 Connect the negative cable of battery.

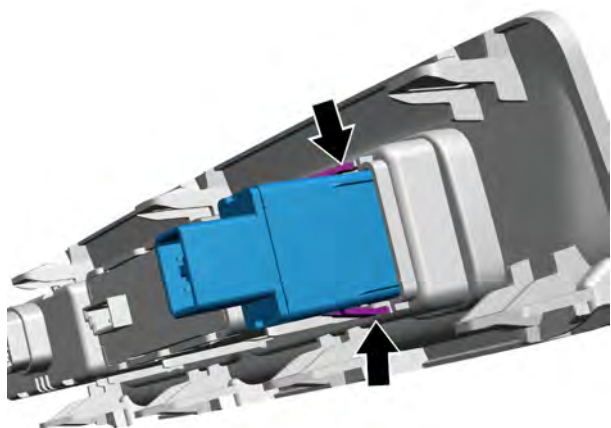
11.4.7.16 Replacement of hazard warning switch

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Dismount the USB cover plate. Refer to [Replacement of USB Cover Plate](#)
- 3 Press the clips on both sides of the hazard warning switch to disconnect the hazard warning switch from the USB cover plate.
- 4 Hazard warning lamp switch is taken off.



Installation procedure



- 1 Move the hazard warning switch to the installation position.
- 2 Install the hazard warning switch onto the USB cover plate and ensure the clips at both sides are installed in place.

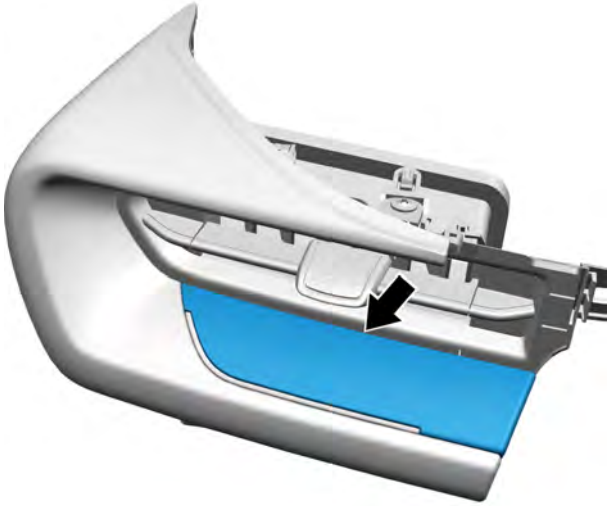
- 3 Mount the USB cover plate.
- 4 Connect the negative cable of battery.

11.4.7.17 Replacement of Driver's Side Ambient Lamp

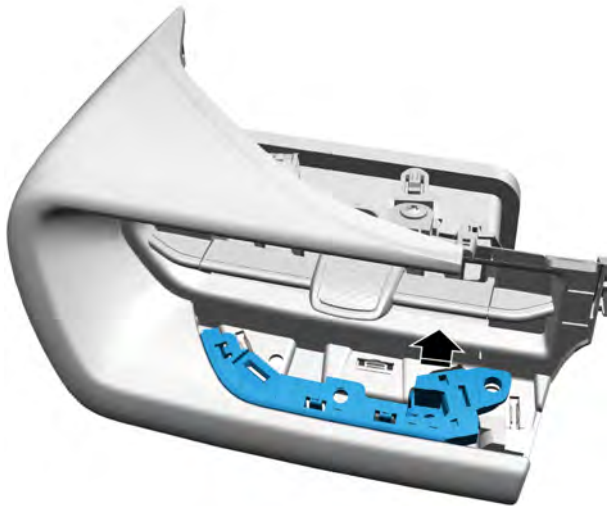
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left trim panel assembly at the left side of the dashboard. Refer to [Replacement of Left Trim Panel Assembly of Dashboard](#)

- 3 Pry off the left trim strip of the dashboard.

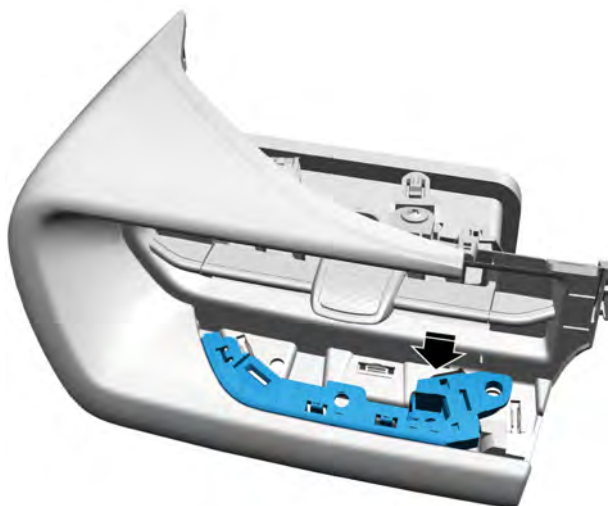


- 4 Take down driver side ambient lamp.

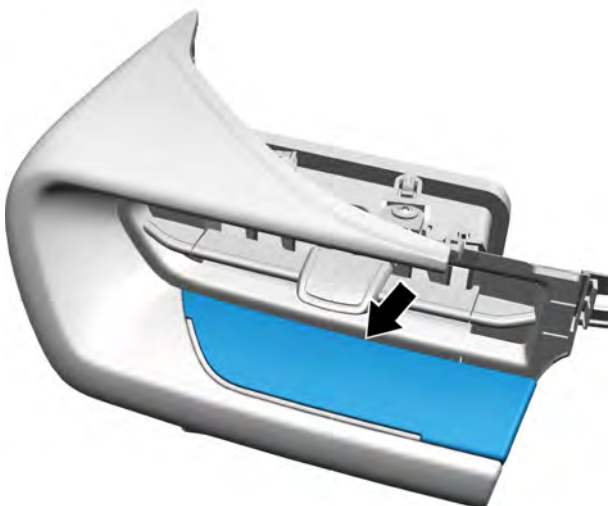


Installation procedure

- 1 Move the driver's side ambient lamp to the installation position.



- 2 Install the left trim strip of the dashboard.

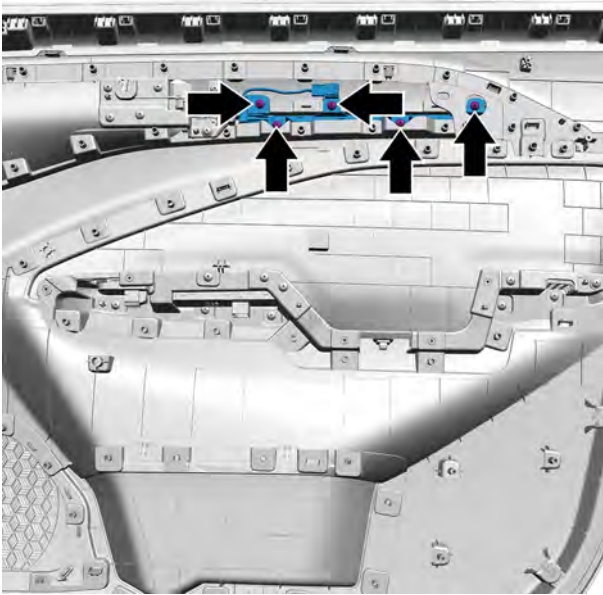


- 3 Install the left trim panel assembly of the dashboard.
- 4 Connect the negative cable of battery.

11.4.7.18 Replacement of Left front Door Ambient Lamps

Removal procedure

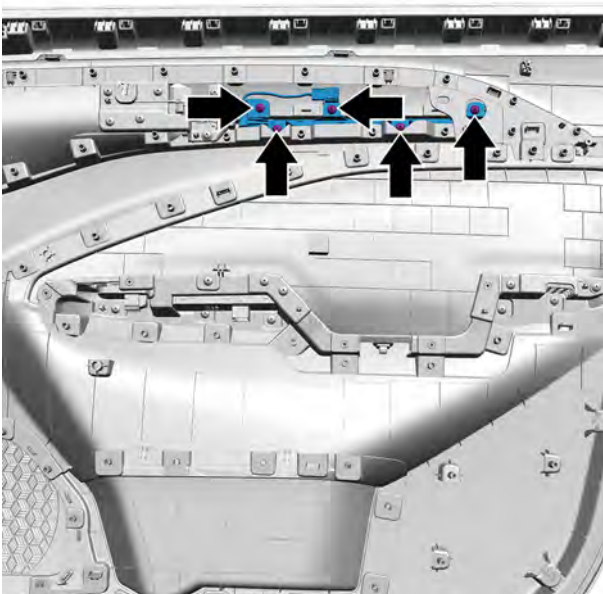
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door interior trim panel. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)



- 3 Remove the 5 fixing screws connecting the left front door ambient lamp with the left front door interior trim panel assembly.
- 4 Use a plastic prying plate to tilt off the front left door ambient lamp.

Installation procedure

- 1 Install the left front door ambient lamp on the left front door interior trim panel.
- 2 Install and tighten the 5 fixing screws connecting the left front door ambient lamp with the left front door inner trim panel.



- 3 Install the left front door interior trim panel.
- 4 Connect the negative cable of battery.

11.4.7.19 Replacement of rear left door ambient lamp

Removal procedure

Caution

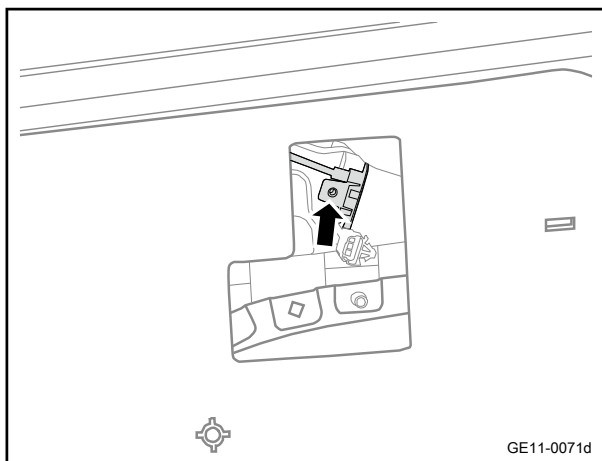
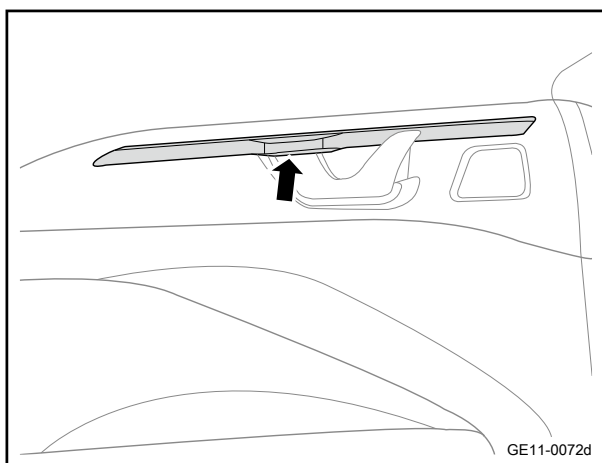
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

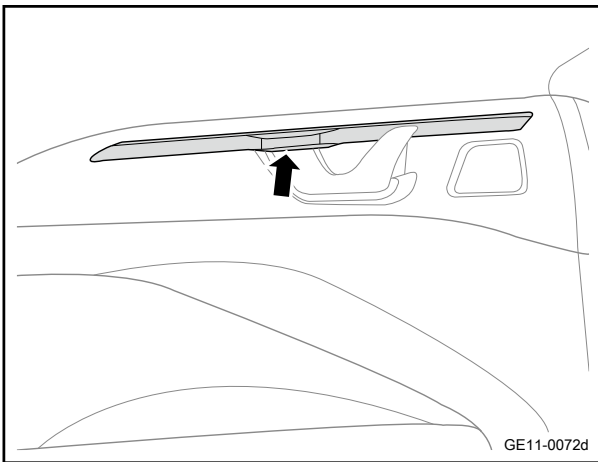
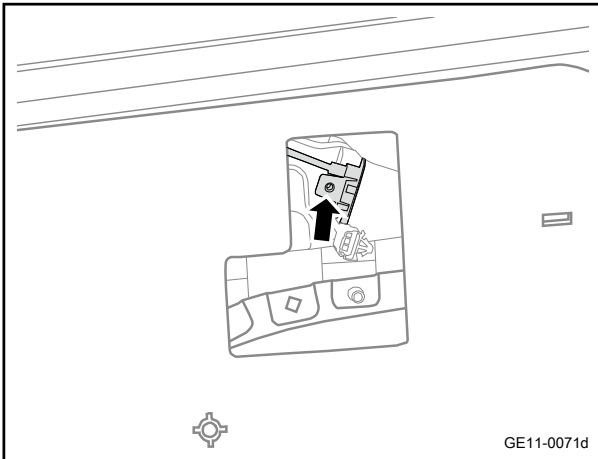
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left rear door interior trim panel assembly. Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)
- 3 Remove the rear left door ambient lamp trim panel.



- 4 Remove 1 fixing screw of rear left door ambient lamp.
- 5 Take off rear left door ambient lamp.

Installation procedure



- 1 Move the rear left door ambient lamp to the installation position.
- 2 Install the 1 fixing screw of the rear left door ambient lamp.
Torque: Nm (metric system) lb-ft (imperial system)

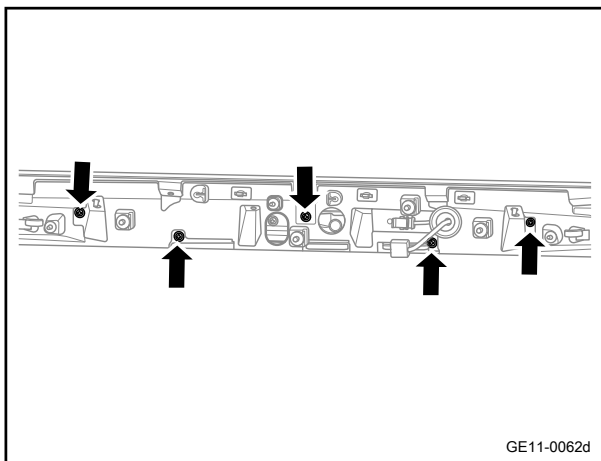
- 3 Install the rear left door ambient lamp trim panel.

- 4 Install the RL door interior trim panel assembly
- 5 Connect the negative cable of battery.

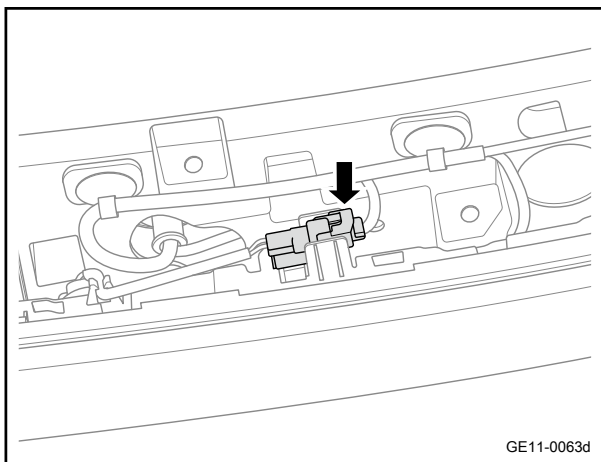
11.4.7.20 Replacement of tailgate through lamps

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the interior lower trim panel of the tailgate.
[Replacement of tailgate lower interior trim panel assembly](#)
- 3 Remove the tailgate exterior trim panel. Refer to [Replacement of Tailgate Exterior Trim Panel](#)



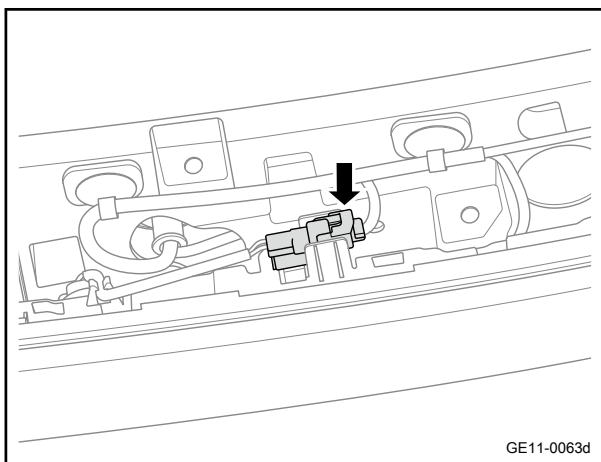
4 Remove 5 fixing screws of tailgate through lamp.



5 Disconnect the tailgate through lamp harness connector.

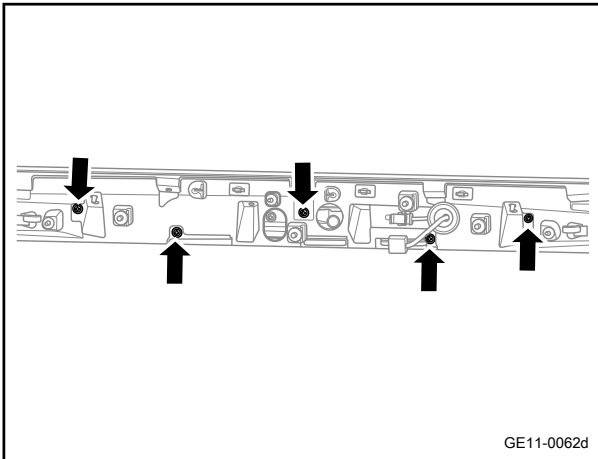
6 Take off the tailgate through lamp.

Installation procedure



1 Move the tailgate through lamp to the installation position.

2 Connect tailgate through lamp harness connector.



- 3 Install the 5 fixing screws of the tailgate through lamp.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

- 4 Install the tailgate exterior trim panel.
- 5 Install the tailgate lower interior trim panel assembly.
- 6 Connect the negative cable of battery.

11.4.7.21 Replacement of foot lamp

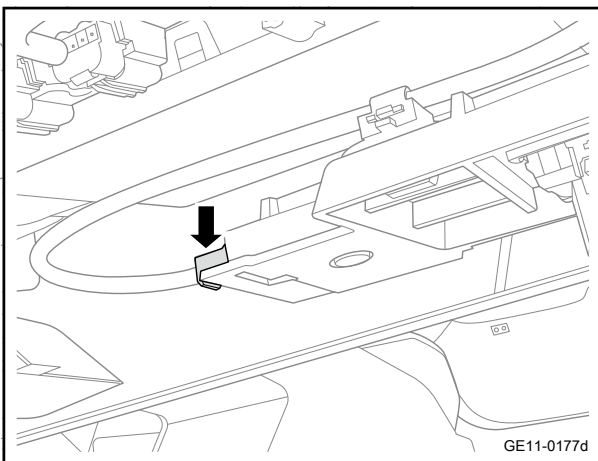
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

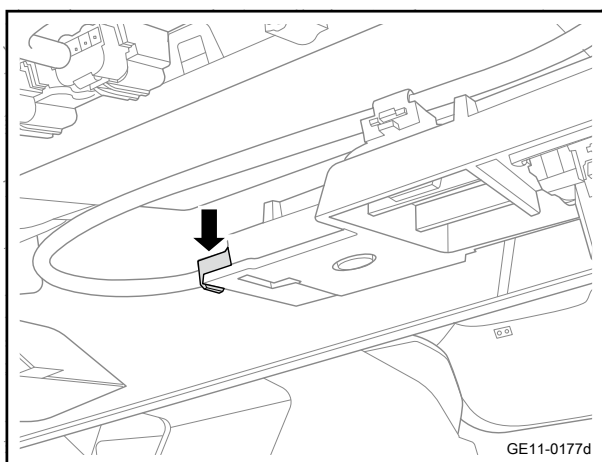
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Disconnect the foot lamp harness connector 1.
- 3 Foot lamp is removed.



Installation procedure



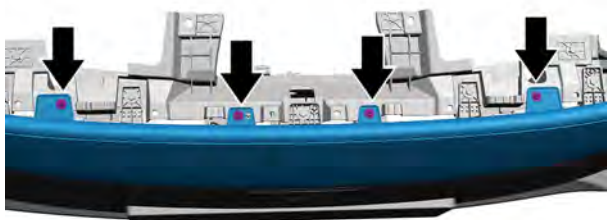
- 1 Move the foot lamp to the installation position.
- 2 Connect harness connector of foot lamp.

- 3 Connect the negative cable of battery.

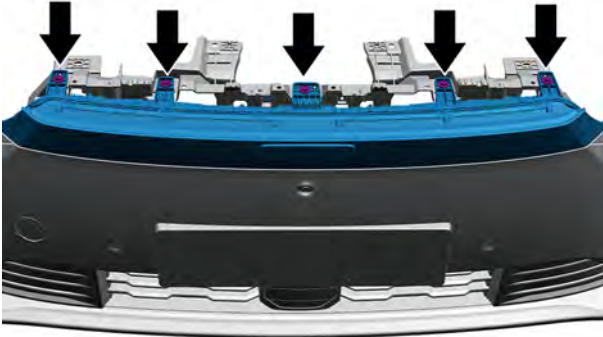
11.4.7.22 Replacement of front middle position lamp

Removal procedure

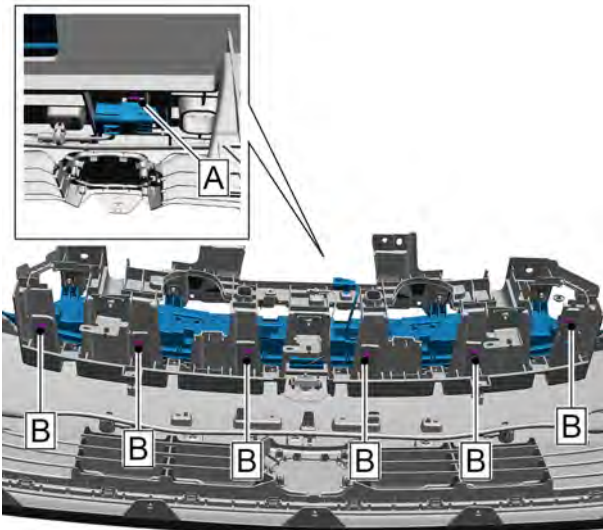
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Remove the 4 fixing screws connecting the upper trim strip of the front bumper and the middle bracket of the front bumper.
- 4 Remove the upper trim strip assembly of the front bumper.



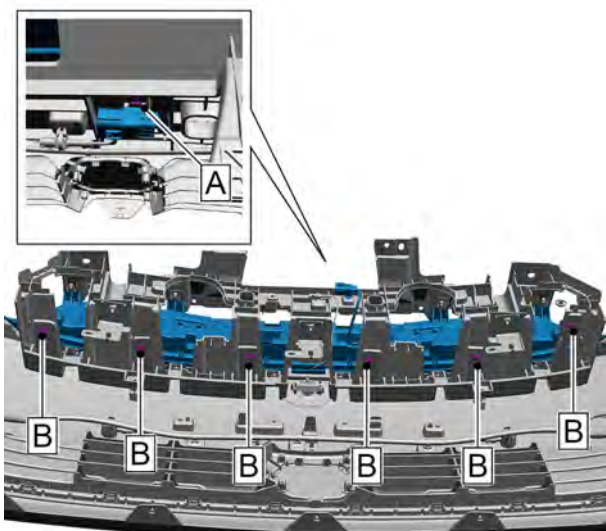
- 5 Remove the 5 fixing bolts connecting the front middle position lamp with the middle bracket of front bumper.



- 6 Disconnect the 1 fixing clip A connecting the front middle position lamp harness connector and the middle bracket of front bumper.
- 7 Disconnect the 5 fastening clips connecting the front middle position lamp with the front bumper middle bracket.
- 8 Front middle position lamp is removed.

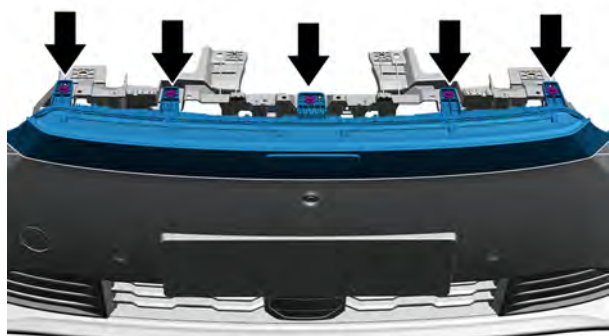


Installation procedure

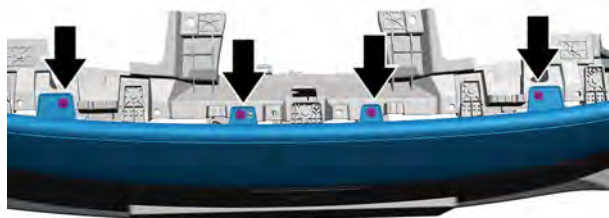


- 1 Move the front middle position lamp to the installation position.
- 2 Install the 6 fastening clips 1 of front middle position lamp the front bumper middle bracket.
- 3 Install the 1 fixing clip connecting the front middle position lamp harness and the front bumper middle bracket.

- 4 Install the 5 fixing bolts connecting the front middle position lamp with the front bumper middle bracket.
Torque: 4.5N·m



- 5 Move the upper trim strip of the front bumper to the installation position.
- 6 Install and tighten the 4 retaining screws connecting the upper trim panel of the front bumper with the front bumper middle bracket.
Torque: 1.5N·m



- 7 Install the front bumper assembly.
- 8 Connect the negative cable of battery.

11.5 Glass/ window/ rearview mirror

11.5.1 Specification

11.5.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left exterior rearview mirror fixing nuts	M6	8 -10
Left front power glass regulator assembly fixing nut	M6	8.5-11.5
Left front power glass regulator assembly fixing bolt	M6×12	8 -10
Left rear power glass regulator assembly fixing nut	M6	8.5-11.5
Left rear power glass regulator assembly fixing bolt	M6×12	8 -10
Front left door glass assembly fixing bolt	M6×12	8 -10
Rear left door glass assembly fixing bolt	M6×12	8 -10
Rear left door glass run channel fixing bolt	M6×12	8 -10
Front left door glass front run channel fixing bolt	M6×12	8 -10

11.5.2 Description and operation

11.5.2.1 Instructions and operations(Type I)

Instruction and operation of door glass regulator

The door glass lift has the following four kinds of operating methods: manual up, manual down, auto up, and auto down.

- Manual up

Pull up the window switch to the manual gear (the first gear) and hold it, and the corresponding window lifter motor moves to make the window glass move up; Release the switch and the window glass stops moving.

- Manual down

Press the window switch to the manual gear (the first gear) and hold it, and the corresponding window lifter motor moves to make the window glass move up; Release the switch and the window glass stops moving.

- The window lifting function is disabled when any of the following conditions is met:

1. 45 s after the multimedia setting is turned off from the power supply of the vehicle to the OFF gear.
2. Within 45 s after the multimedia setting of the vehicle power supply to the OFF gear is closed, any front door is opened.

- Auto up

Fully pull up the window switch to the automatic gear (second gear), and the front left window will automatically rise to the top, or rise until the switch is pressed down or pulled up again; the operations of the remaining windows are the same.

- Auto down

Fully press down the window switch to the automatic gear (second gear), and the front left window will automatically drop to the bottom, or drop until the switch is pressed or pulled up again; the operations of the remaining windows are the same.

- Open/close windows remotely

Multimedia is to set the power supply to OFF of the vehicle. Press and hold the unlocking button on the smart key to open the windows; press and hold the locking button on the smart key to close the windows.

- Window locking switch

The window locking switch is on the driver side door, located in the middle of the window switch. Press window locking switch to disable the open/close operation on the front-passenger side window and the rear window. When the

locking function is activated, the front-passenger side and rear windows can rise/lower by using the driver side window switches. To restore the functions of the front and rear window switches, press this switch again.

- Power window over-temperature protection

If window is repeatedly lifted and lowered in a short time, window switches will temporarily fail to protect the motor service life. To restore the window switch function, wait for 30 minutes to restore the window switch function.

- Anti-pinch function

During the automatic closing operation, if an object is caught between the glass and the window frame, the window will drop and return to the initial state. If the window is violently impacted, this function may work even if no objects are caught. If the anti-pinch function of power windows does not work properly, adaptive-learning of power windows is required.

- Adaptive-learning of Anti-pinch Power Window

If the battery of the vehicle is reconnected or does not work properly after power failure, the power windows will need to re-learn the anti-pinch function.

The self-learning steps are as follows:

1. Pull up the window switch until the window is fully closed, and continue to pull up the switch and hold for 2 seconds, and then release it. Anti-pinch motor will have the functions of automatic lifting and anti-pinch;
2. Press down the window switch to lower the window from the top to the bottom, and continue to press the switch to keep it for at least 2 seconds, and then release it. The anti-pinch motor will have the function of soft stop when lowering;
3. Perform a process that a window rises from the bottom to the top and maintaining for 2s.

Caution

1. Before self-learning, it is necessary to replace the low-voltage battery or recharge the vehicle battery.

- Delay operation function

In the period after the multimedia has set the power supply of the vehicle to OFF, if the following conditions are met, the window glass can still be controlled to go up/down through the window switch.

1. Doors on the driver's side and the front passenger's side are not opened;
2. The vehicle is unlocked/locked without operating the remote control/smart key.

Description and operation of exterior rearview mirror

Without memory function

The up, down, left and right adjustment of the exterior mirror is controlled by the exterior mirror adjustment switch on the driver's door. The left and right selector switches are used to select the rearview mirror to be operated, and the direction button switch is used to adjust the position of the rearview mirror glass.

Memory function

11.5.2.2 Instructions and operations(Type II)

Introduction of automatic angle adjustment function of exterior rearview mirror

When the driver starts the vehicle and the gear is in the R position, the rearview mirror glass will automatically roll down to an adjusted angle, so that the driver can easily understand the ground situation and facilitate the driver to complete parking.

Settings of automatic angle adjustment function of exterior rearview mirror

1. Start the vehicle;
2. Turn the rearview mirror adjustment switch to the L (left) position;
3. Engage the gear in R position, step on the brake, and then use the rearview mirror adjustment switch to adjust the left exterior rearview mirror to a position suitable for the driver's sitting posture;
4. Shift the gear back to P;
5. Turn the rearview mirror adjustment switch to the R (right) position;
6. Engage the gear in R position, step on the brake, and then use the rearview mirror adjustment switch to adjust the right exterior rearview mirror to a suitable position for the driver's sitting posture;
7. Shift the gear back to P;
8. Settings completed.

The up-down, left/right adjustment of exterior rearview mirrors is controlled by the seat module according to the signal of exterior rearview mirror adjustment switch on the driver side door. Adjust the position of the rearview mirror glass according to the desired operation selected by the switch.

Folding of Exterior Rearview Mirrors

The exterior rearview mirror folding is controlled by the IBC module based on the exterior rearview mirror adjustment switch signal on the driver side door.

Defrosting of exterior rearview mirrors*

There is also a heating element in the mirrored glass of the exterior rearview mirrors. The exterior mirror heating elements will also work when the rear windshield defogging switch is pressed.

11.5.3 System working principles

11.5.3.1 Power supply management

Window Control System

- The left front glass regulator and the left rear glass regulator share one power supply (EF4125A or 30A).
- The right front glass regulator and the right rear glass regulator share one power supply (CF1425A or 30A).

Caution

The four glass regulator switches are all small current-controlled and large currents, and have overload current protection functions: each of the four glass regulator motors has a continuous output protection function for 8 s.

Window working principles

1. LIN signal

The LIN input signal includes an input of four windows, including the left front door (driver side) window signal and the right front door, left rear door and right rear door window signal. When the IBC receives HALL sensor faults, motor relay faults, overheat protection activation status, left front door window voltage, left front door window overvoltage, or left front door window switch stuck, the IBC records the DTC of each fault separately;

2. Power window starting control function

When the vehicle power is at the ON position, the power window can be operated. The IBC sends the window enabling signal to the LIN1 network; this function can only open/close the power window lifter through the power window switch in the vehicle.

When the power state of the power window is turned off to the OFF position, if any of the following conditions is met, the IBC sends the window enabling signal to the LIN network, and the power window function is disabled:

- When the power supply status of the vehicle is turned off to the OFF position, the timing starts 1 minute and all windows do not move;
- The door switch state of any of the two doors in the front row changes.
- Unlock/lock the vehicle (including the operation of RKE or PEPS on the boot) through the PEPS control signal or the RKE control signal or the front door key switch.
- IBC records and stores the faults sent by the four power window anti-pinch modules through LIN1 line.
- During the signal receipt, the IBC sends a signal to the LIN network, and the power window function is shielded. L_IBC_WdwEnable then returns to the state before receiving the CRANK signal.

3. Automatic window closing function while vehicle locking*

When the vehicle jumps from other states to enter the ARM₂ alert status, the IBC always sends this enabling window signal through the LIN1 bus, until the four windows send the signal of window closing completely at the same time or the window function fails after 20 seconds. At the same time, the IBC sends the IBC_01 signal to the LIN1 bus 3 times and then resumes the signal of closing all windows.

4. Close/open the whole car windows remotely function

The IBC communicates with PEPS to remotely close or open all windows through the unlock and lock commands in the PEPS signal. When the power windows are remotely closed or opened, all the following conditions should be met:

- Operate the vehicle power supply to the mode OFF;
- All doors, engine compartment covers and trunks are closed.
- In the state of car body anti-theft without ALARM;
- IBC receives PEPS ON/OFF signal.

5. Anti-pinch function

Anti-pinch protection is only required when the power window is rising. When the power window moves, the Hall sensor senses the change of the magnetic field, causing the phase change of the generated pulses. The anti-pinch system continuously judges whether the window is rising. Since the motor rotates around so that the pulse number generated by the Hall sensor is fixed, the input capture function of the microcontroller can be used to record the pulse number of the vehicle window glass during movement to determine whether the glass position is in the anti-pinch area (top 4 mm to 200 mm). There is a linear relationship between the torque and current value of the motor. Therefore, by detecting the current of the motor, we can accurately know whether the clamp resistance exceeds the limit (greater than 100N). When three conditions are met at the same time, the system determines that a foreign matter is pinched, and immediately executes anti-pinch protection measures. The window closing operation will automatically stop and return to the initial state halfway.

After each power failure, the anti-pinch control module needs to learn: manually operate the switch to only the top

of four doors of glass, stop for a few seconds, and block the motor from rotating.

If the window is violently impacted, this function may work even if no objects are caught.

Rearview mirror adjustment system

Without memory function

The power supply for the upward, downward, leftward and right adjustment of the exterior rearview mirrors comes from the fuse of the exterior rearview mirror adjustment switch CF0710A.

With memory function

The power supply for adjusting the upward, downward, leftward and rightward exterior rearview mirrors comes from the seat module EF4025A, CF2510A fuse.

Folding of Exterior Rearview Mirrors

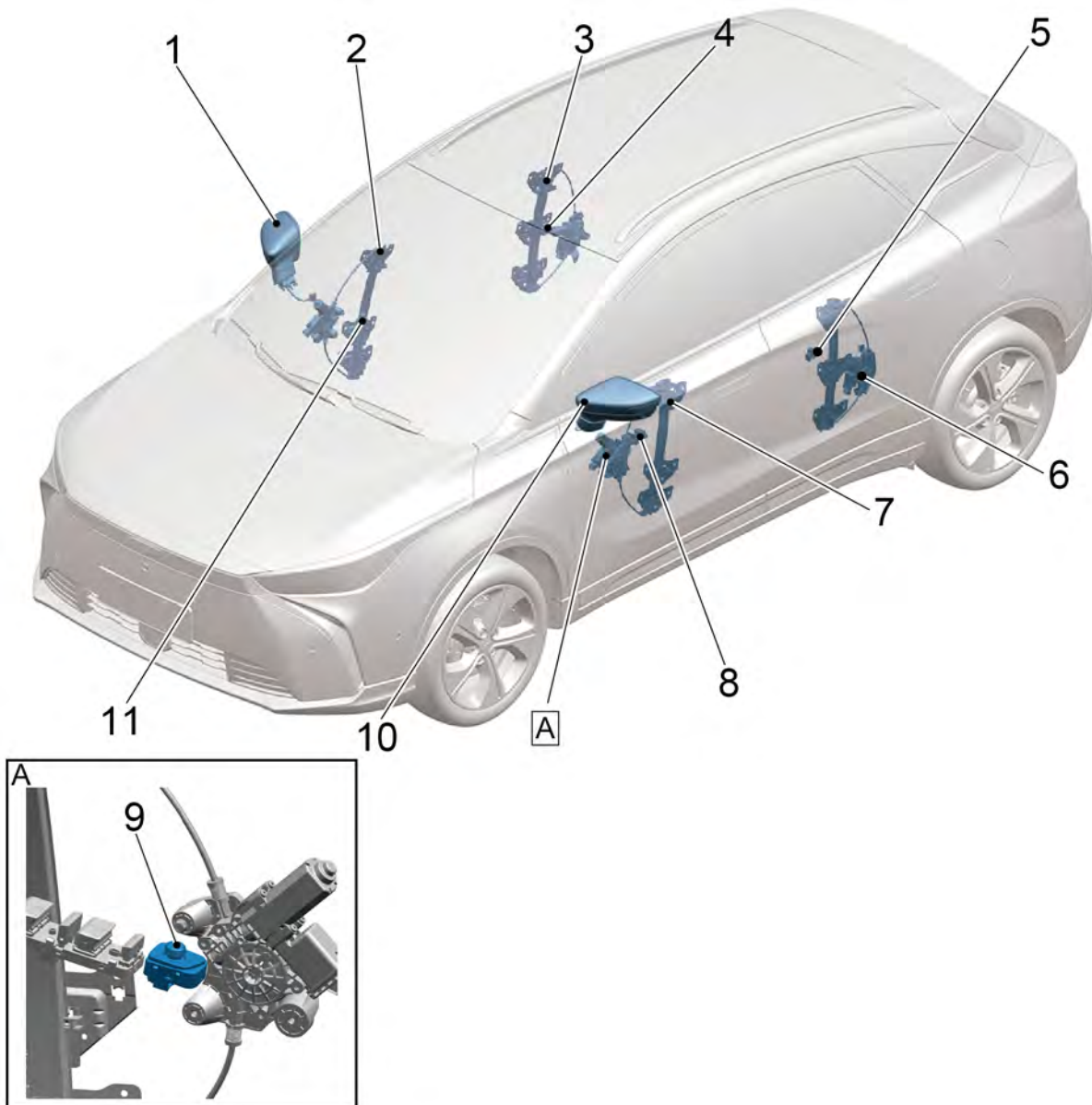
The folding and deployment power supply of the exterior rearview mirrors comes from the IBC module.

Defrosting of exterior rearview mirrors*

The defrosting power supply of the exterior rearview mirror is controlled by the IBC and supplied to the exterior rearview mirror after passing through the rear defrosting relay ER11 and the fuse EF2110A.

11.5.4 Part position

11.5.4.1 Part Position

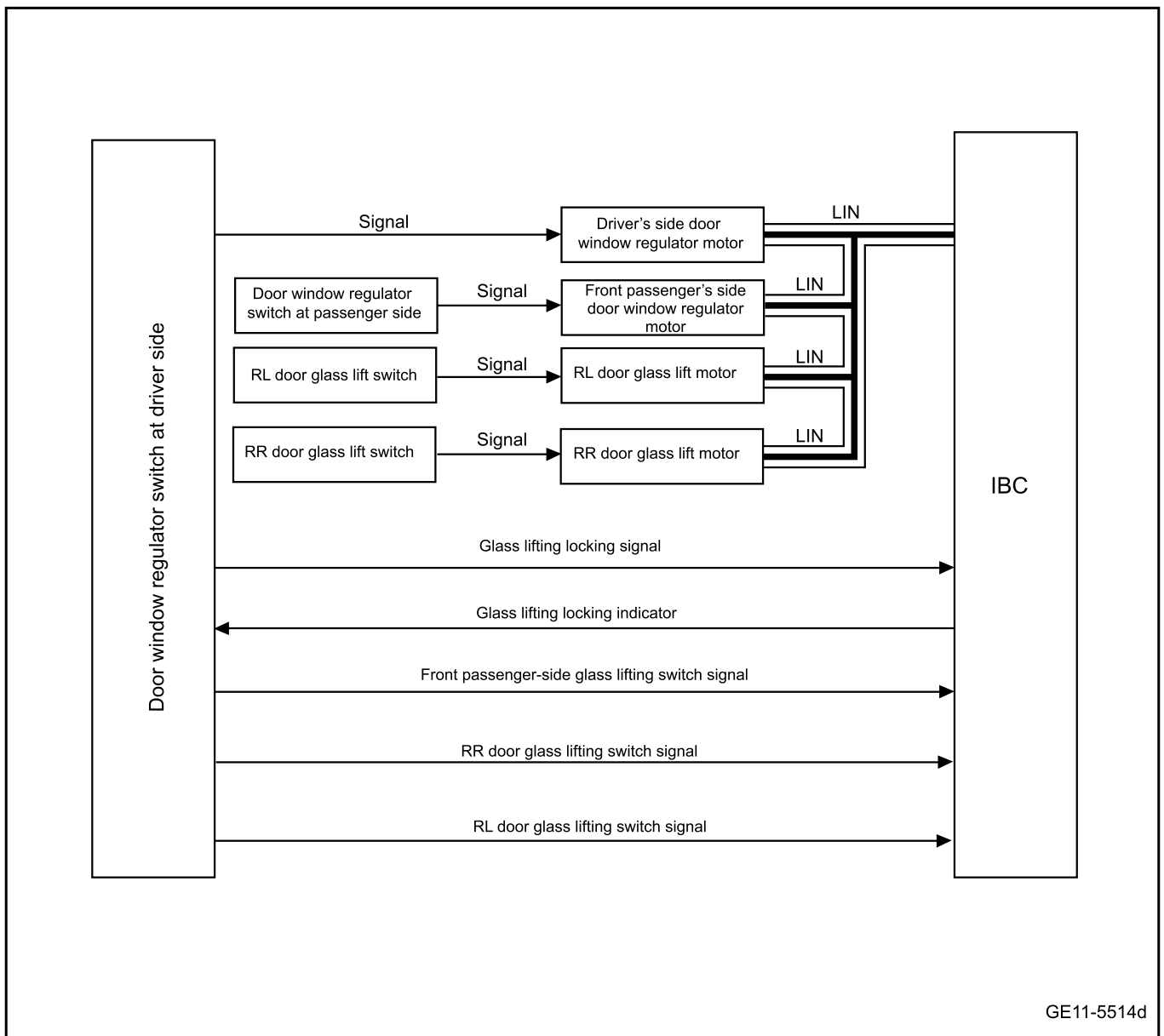


- | | |
|---|--|
| 1. Assembly-exterior rearview mirror RH | 7. Front left door power window regulator assembly |
| 2. Front right door power window regulator assembly | 8. Right front glass regulator switch assembly |
| 3. Rear right door power window regulator assembly | 9. Exterior rearview mirror switch |
| 4. RR door window regulator switch assembly | 10. Assembly-exterior rearview mirror LH |
| 5. RL door window regulator switch assembly | 11. Right front glass regulator switch assembly |
| 6. Rear left door power window regulator assembly | |

11.5.5 Electrical block diagram

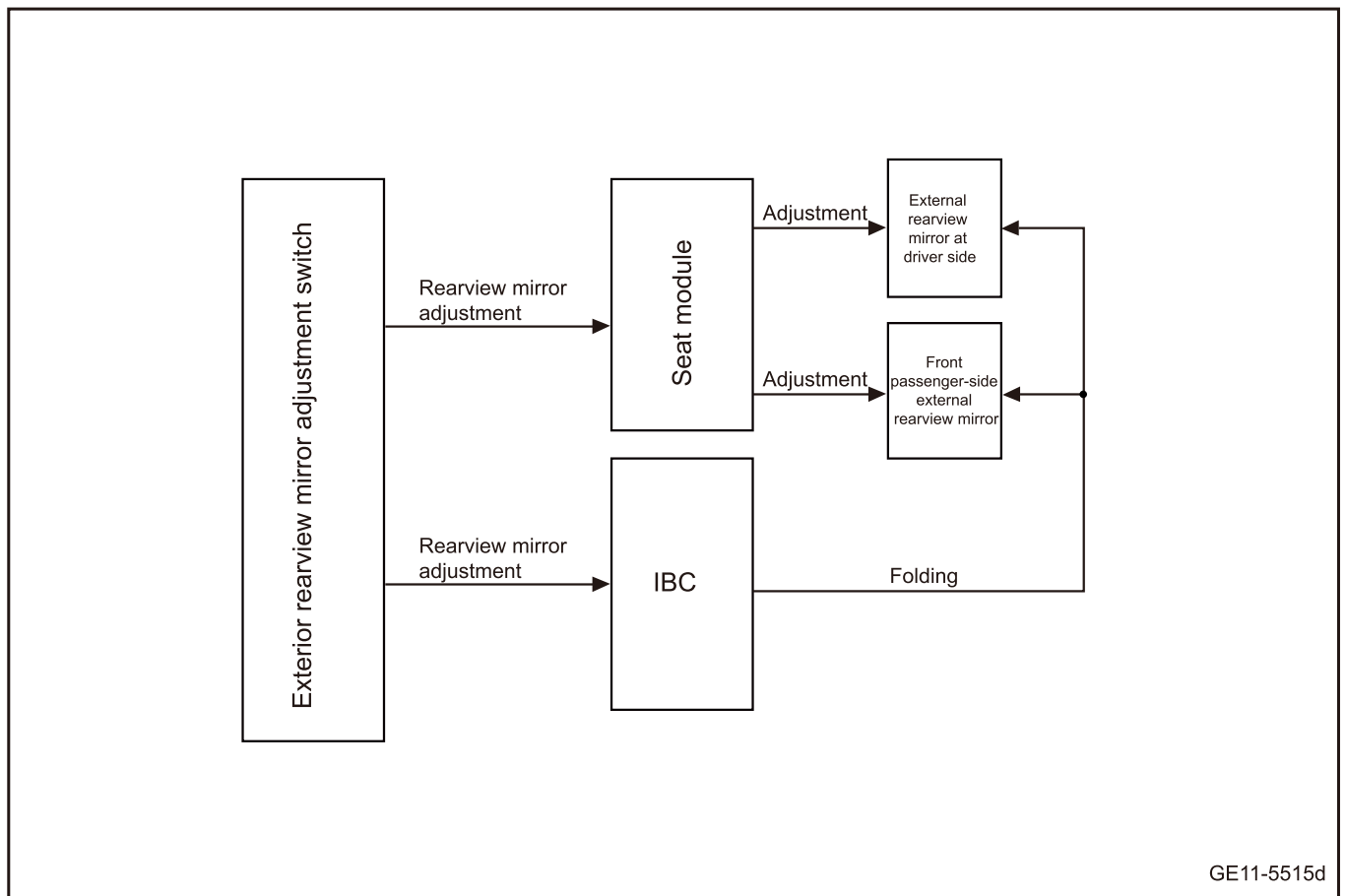
11.5.5.1 Electrical Schematic Diagram of Glass and Rearview Mirrors(Type I)

Glass lifting(anti-pinch)

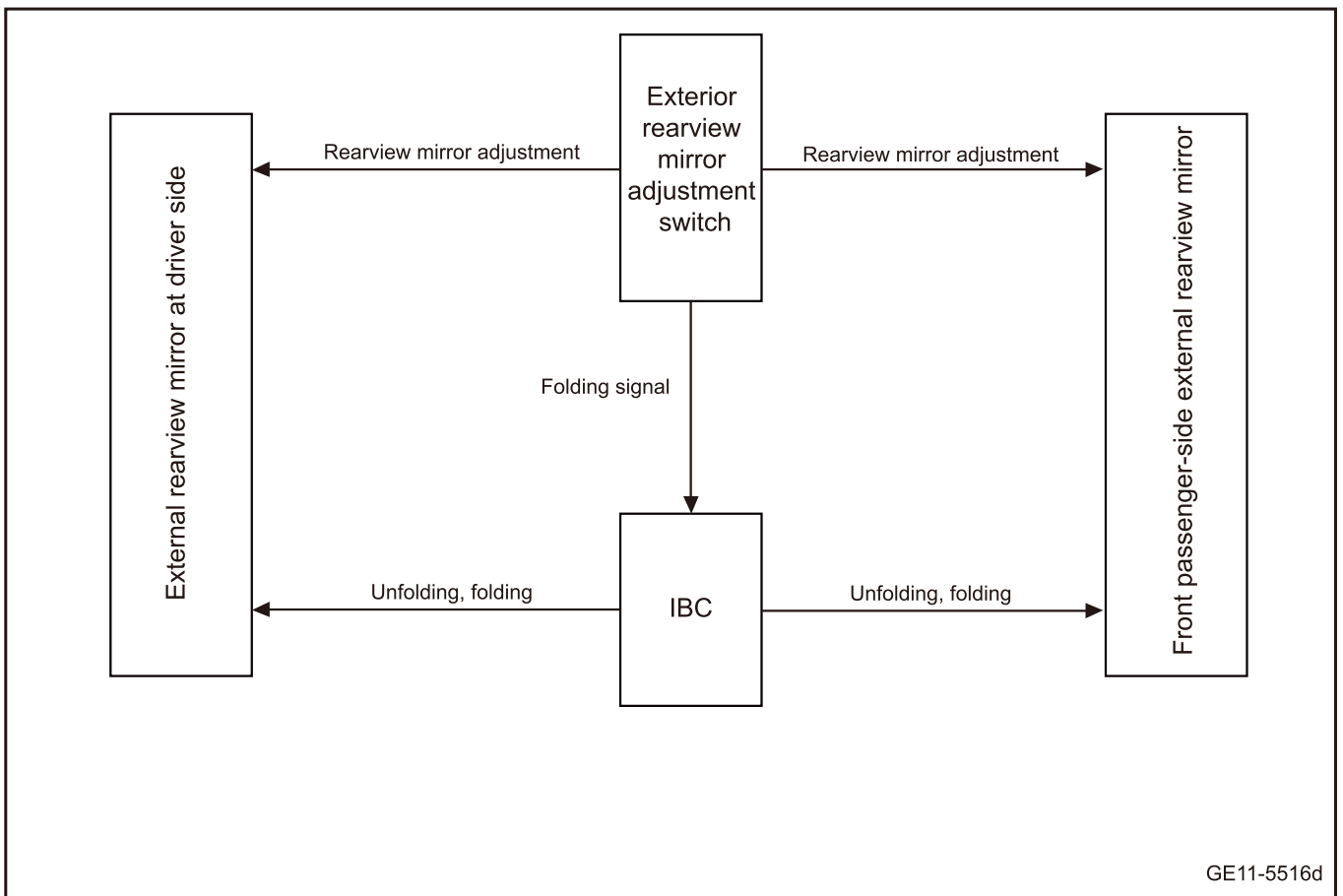


GE11-5514d

Rearview Mirrors(with memory function)

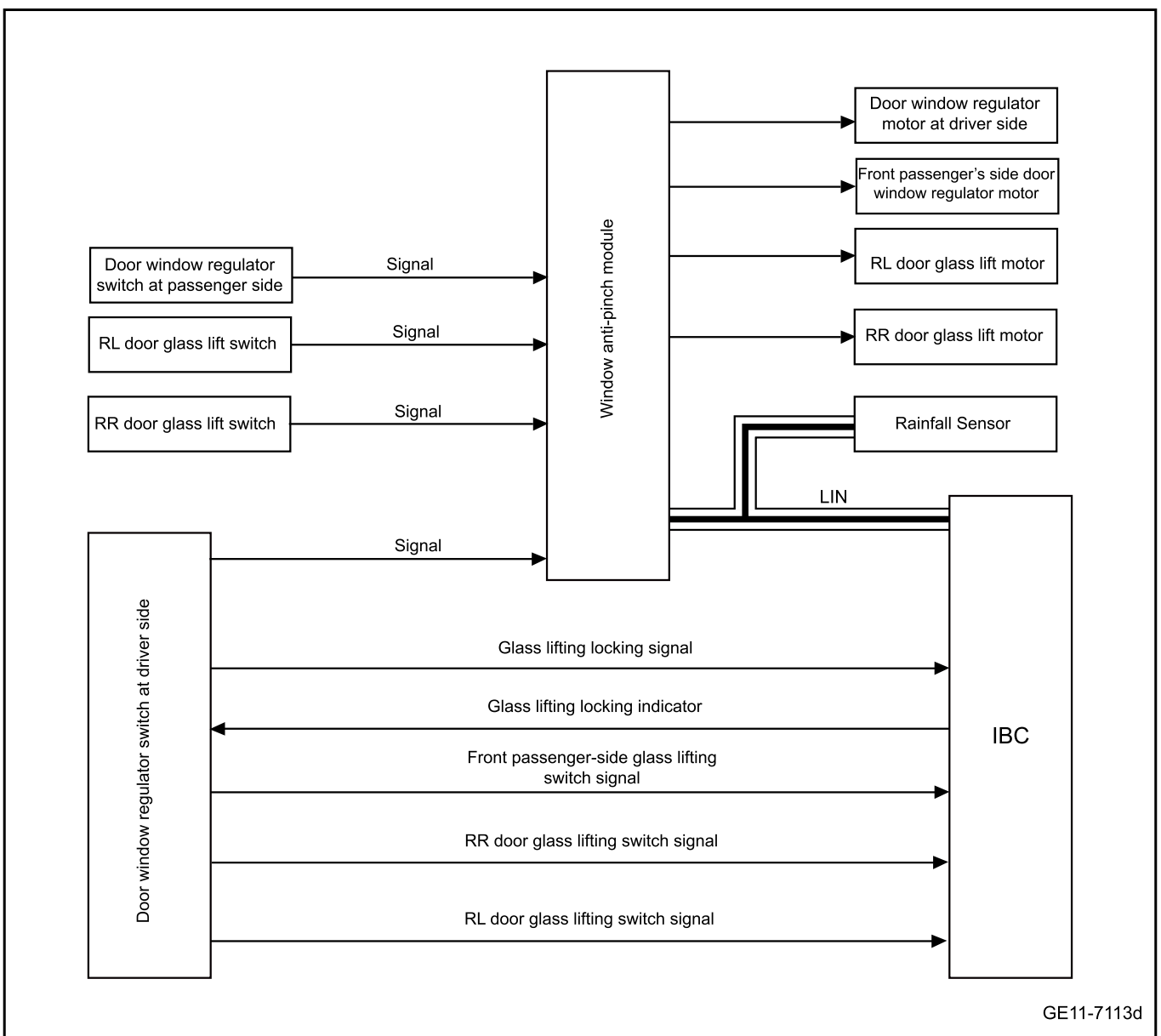


Rearview Mirrors(without memory function)

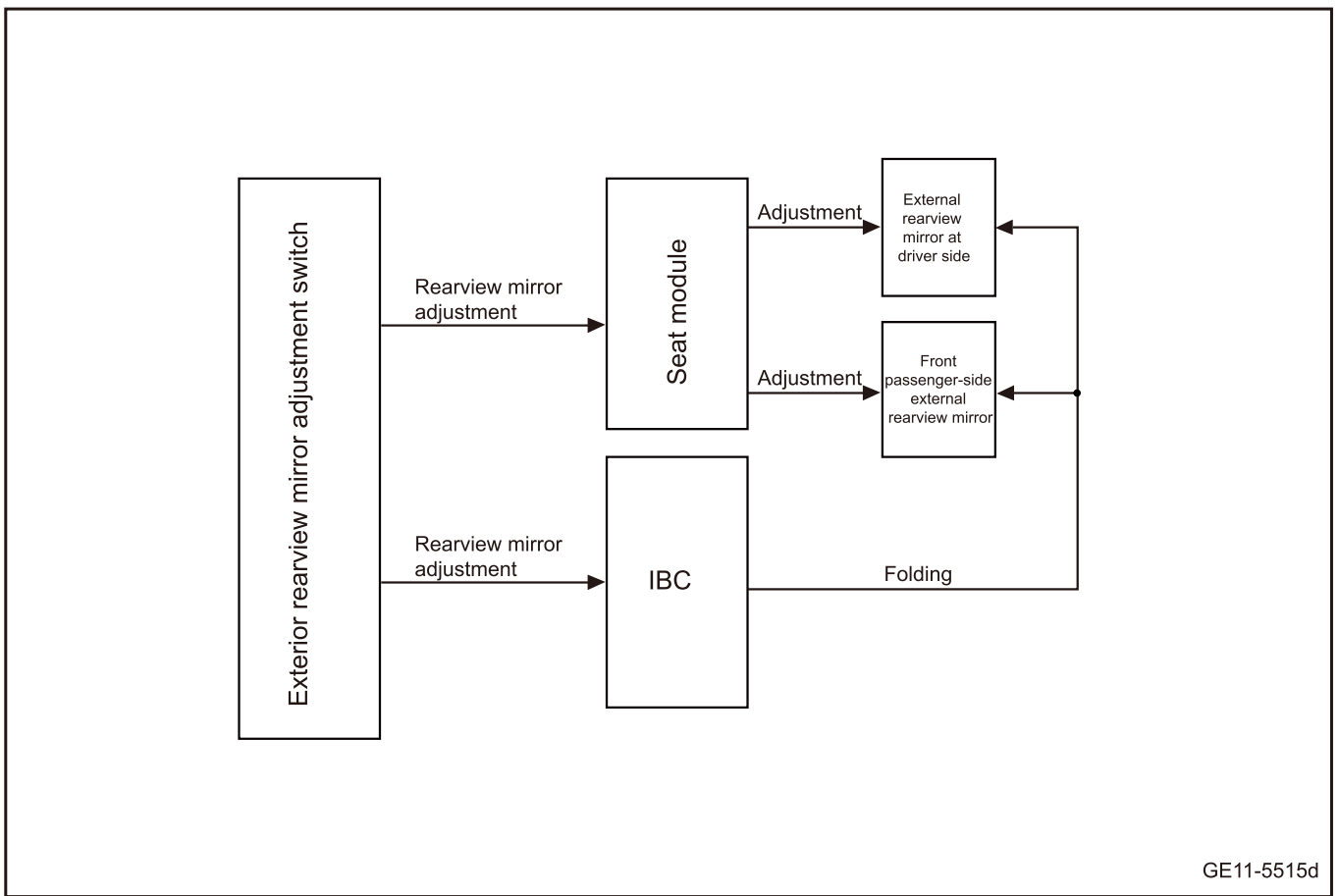


11.5.5.2 Electrical Schematic Diagram of Glass and Rearview Mirrors(Type II)

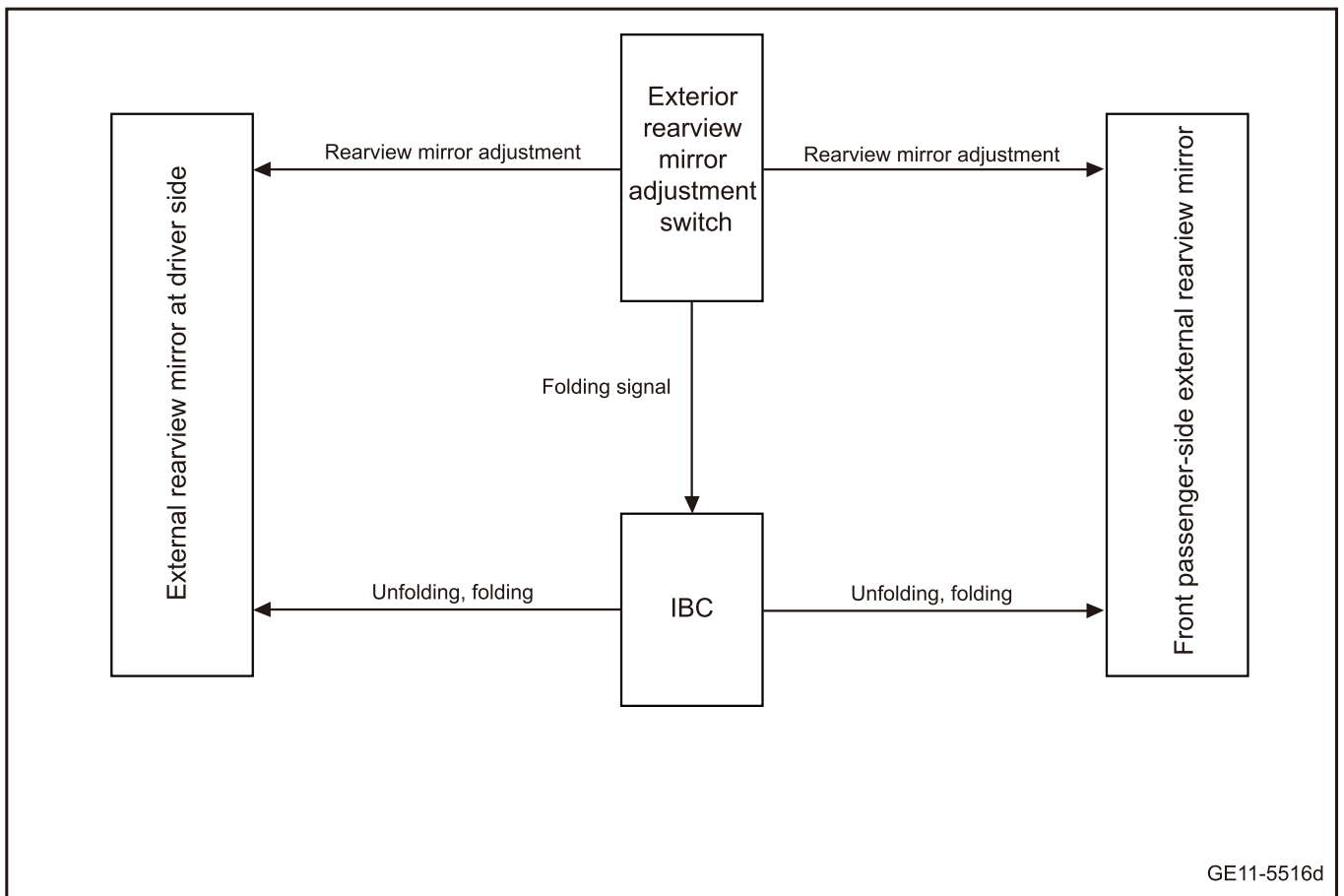
Glass lifting(ripple anti-pinch)



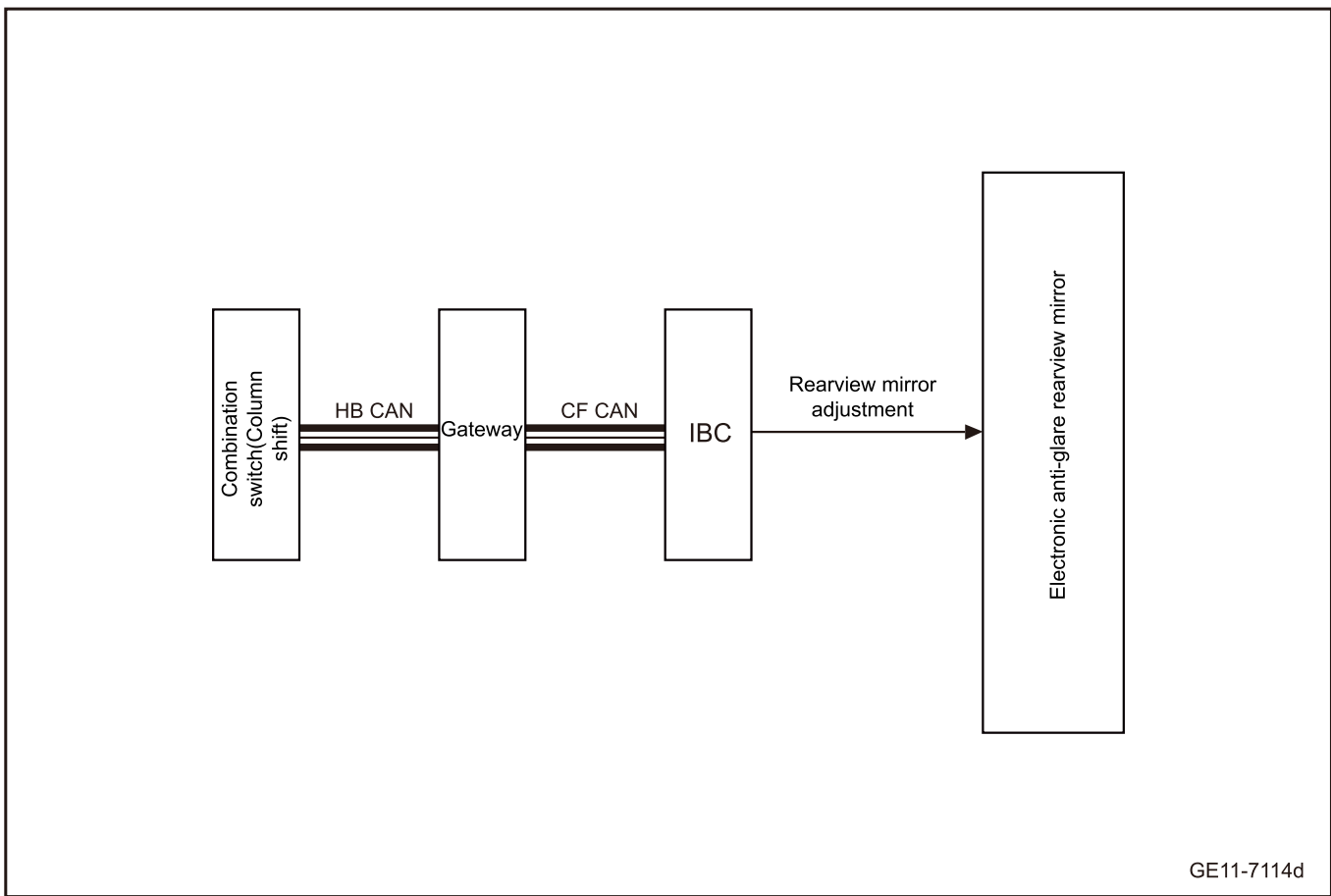
Rearview Mirrors(with memory function)



Rearview Mirrors(without memory function)



Electronic dimming rearview mirrors



11.5.6 Diagnostic information and procedures

11.5.6.1 Diagnosis Description

Before diagnosis is started, refer to description and operation. Be familiar with system functions and operation procedures, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation.

11.5.6.2 Routine inspection

- Check after-sales installations which may influence power windows and power rearview mirror system. Make sure that these installations will have no influence on the operation of power windows and power rearview mirror system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check and make sure the initialization of every window is normal.

11.5.6.3 Diagnostic Information of Control Module

The power window control module reports the following faults via the LIN bus:

- Faults of motor/ Hall sensor
- Thermal protection triggered
- Up button pressed
- Down button pressed

11.5.6.4 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B101216	Fault of low voltage of FL window anti-pinch module	Refer to Driver side glass regulator does not work
B101217	Fault of high voltage of FL window anti-pinch module	
B101249	Fault of motor relay of FL window anti-pinch module	
B10124B	Fault of motor overheating of FL window anti-pinch module	
B101264	Front left window anti-pinch module-switch is stuck	
B101296	Fault of Hall sensor of FL window anti-pinch module	
B101316	Fault of low voltage of FR window anti-pinch module	Refer to Front passenger side glass regulator does not work
B101317	Fault of high voltage of FR window anti-pinch module	
B101349	Fault of motor relay of FR window anti-pinch module	
B10134B	Fault of motor overheating of FR window anti-pinch module	
B101364	Front right window anti-pinch module-switch is stuck	

Diagnostic Trouble Code	Description	Fault location/elimination method
B101396	Fault of Hall sensor of FR window anti-pinch module	
B101416	Fault of low voltage of RL window anti-pinch module	Refer to Left rear glass regulator does not work
B101417	Fault of high voltage of RL window anti-pinch module	
B101449	Fault of motor relay of RL window anti-pinch module	
B10144B	Fault of motor overheating of RL window anti-pinch module	
B101464	Left rear window anti-pinch module - switch is stuck	
B101496	Fault of Hall sensor of RL window anti-pinch module	
B101516	Fault of low voltage of RR window anti-pinch module	Refer to Right rear glass regulator does not work
B101517	Fault of high voltage of RR window anti-pinch module	
B101549	Fault of motor relay of RR window anti-pinch module	
B10154B	Fault of motor overheating of RR window anti-pinch module	
B101564	Rear right window anti-pinch module - switch is stuck	
B101596	Fault of Hall sensor of RR window anti-pinch module	

11.5.6.5 Initialization of glass regulator

Each time the system loses initialization, the initialization must be repeated to restore the anti-pinch function. The initialization operation is as follows

- Pull up the window switch to fully close the window. After releasing the window switch, pull up the window switch again and hold it for more than 2 seconds.
- After pressing down on the window switch to fully open the window, pull up the window switch to completely close the window.
- After opening the window, perform an automatic window closing operation.
- If the window automatically closes to the fully closed position, self-learning is completed, and the window has automatic closing and anti-pinch functions; otherwise, repeat the above steps.
- After initialization, all the specified system functions must be operational.
- During the initialization, the voltage of the control module must not drop below 9V.
- When the power supply voltage on the control module drops momentarily but is still greater than 6V, the initialized status remains effective.

Caution

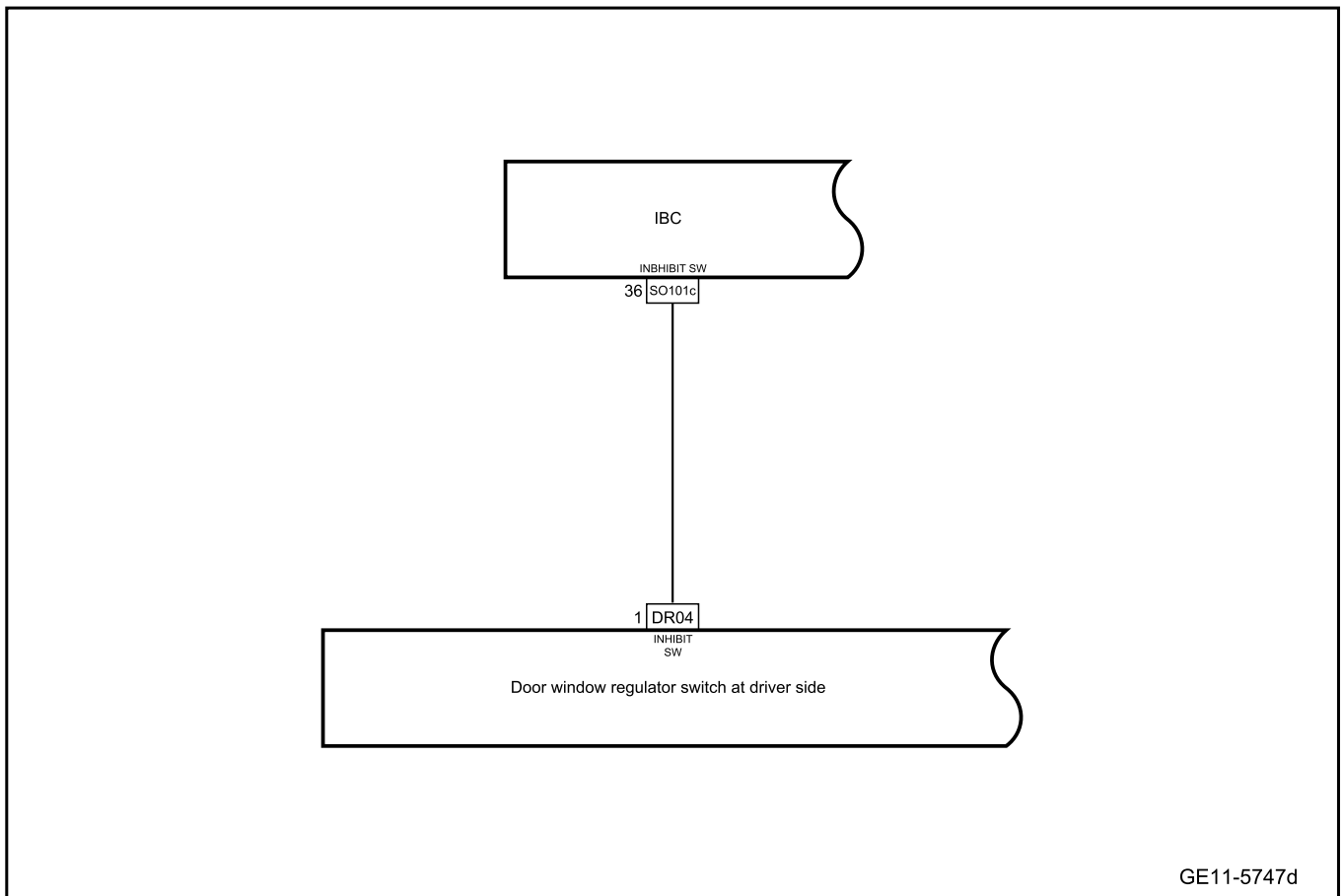
1. Auto up, anti-clamp, and comfort switch off functions are not provided if the initialization procedure has not been executed or is lost. Manual up, down and auto down functions are still available.

The following conditions will cause initialization loss (if equipped with anti-pinch function)

- The power supply is cut off.
- When the regulator moves, the power supply voltage drops below 6V.
- The control module detects an illogical ripple signal.

11.5.6.6 Prohibition function of vehicle windows fails

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check glass lifter switch of driver side door harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2 Check whether the driver side glass regulator switch is catching.

- A. Operate the driver side glass regulator switch.
- B. Check whether the switch is caught.

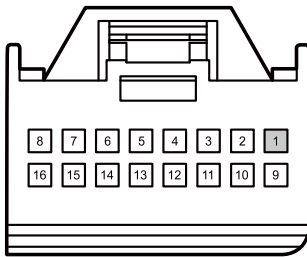
Yes

To replace the driver side glass regulator switch, please refer to [Replacement of Driver Side Door Glass Regulator Switch](#)

No

Step 3 Check whether the line between the glass regulator switch of the driver side door and IBC is circuit open.

DR04 driver's side door window regulator switch harness connector



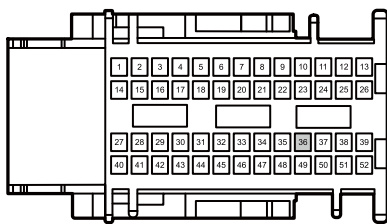
GE11-6277d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(1)	SO101c(36)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

SO101c body control module harness connector



GE11-6278d

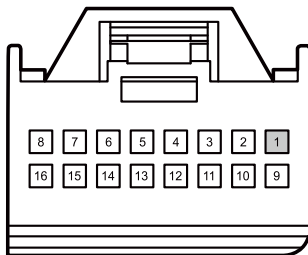
No

Repair faulty lines or replace the harness.

Yes

Step 4 Check whether the line between the glass lifter switch of the driver side door and IBC is shorted to the power supply.

DR04 driver's side door window regulator switch harness connector



GE11-6279d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- C. Disconnect the IBC harness connector SO101c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(1)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

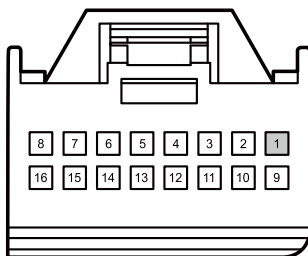
No

Repair faulty lines or replace the harness.

Yes

Step 5 Check whether the line between the glass lifter switch of the driver side door and IBC is shorted to GND.

DR04 driver's side door window regulator switch harness connector



GE11-6280d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair faulty lines or replace the harness.

Yes

Step 6 Replace the driver side door glass regulator switch.

- A. To replace the driver side glass regulator switch, please refer to [Replacement of Driver Side Door Glass Regulator Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Check the IBC power supply and grounding circuit.
--------	---

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes

Trouble is removed.

No

Step 8	Replace the IBC
--------	-----------------

- A. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9	Reprogram and reset the IBC.
--------	------------------------------

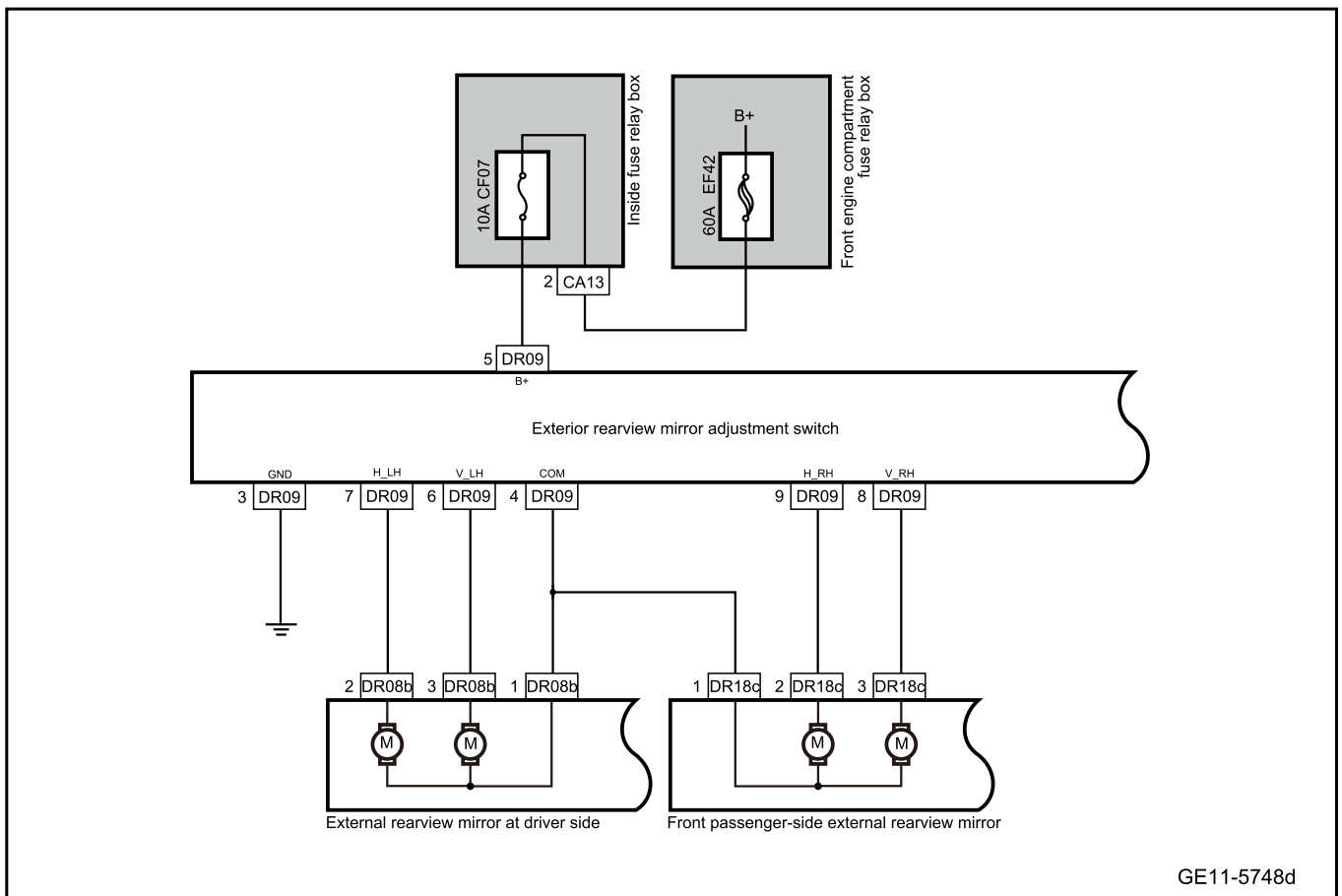
- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 10	System is normal.
------------	-------------------

11.5.6.7 Power rearview mirror cannot be adjusted

1. Circuit diagram:



GE11-5748d

2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse CF07 and check whether the fuse is blown.

Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the exterior rearview mirror adjustment switch is stuck.

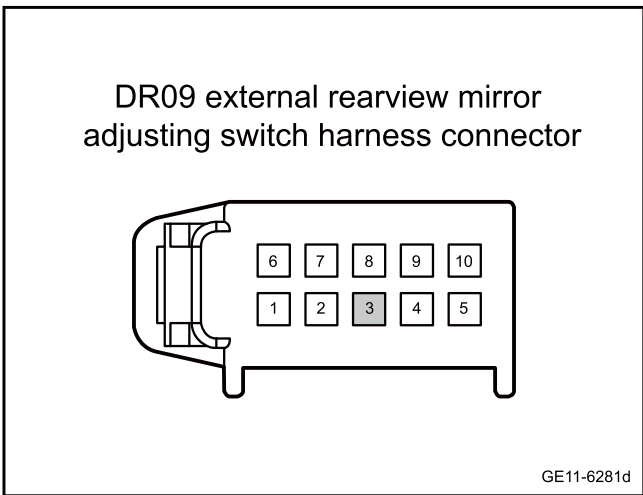
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

Step 4 Check the grounding line of the exterior rearview mirror adjustment switch.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

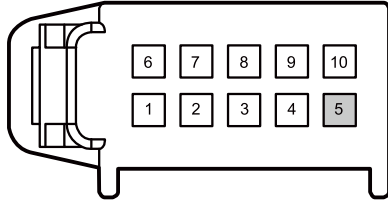
No

Repair or replace the harness.

Yes

Step 5 Check the power supply line of the exterior rearview mirror adjustment switch.

DR09 external rearview mirror adjusting switch harness connector



GE11-6282d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(5)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

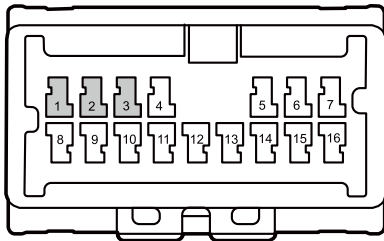
No

Repair or replace the harness.

Yes

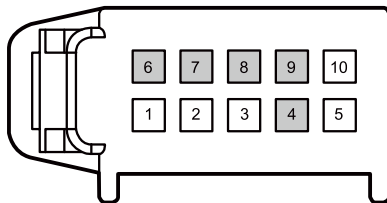
Step 6	Check whether the circuit between the exterior rearview mirror adjusting switch and the exterior rearview mirror is open.
--------	---

DR08b harness connector for exterior rearview mirrors at driver side



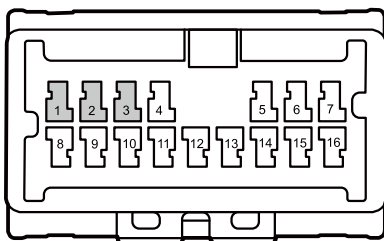
GE11-6283d

DR09 external rearview mirror adjusting switch harness connector



GE11-6284d

DR18c harness connector for external rearview mirror at front passenger side



GE11-6285d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(1)	DR09(4)	Standard resistance: less than 1Ω
DR08b(2)	DR09(7)	
DR08b(3)	DR09(6)	
DR18c(1)	DR09(4)	
DR18c(2)	DR09(9)	
DR18c(3)	DR09(8)	

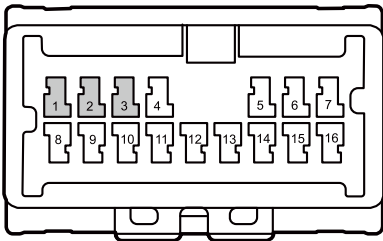
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

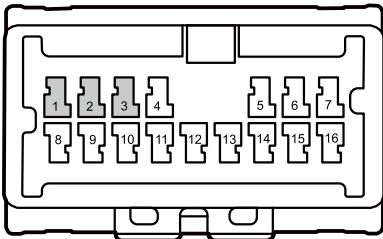
Step 7	Check whether the circuit between the exterior rearview mirror adjustment switch and the exterior rearview mirror is short to GND.
--------	--

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6286d

DR18c harness connector for external rearview mirror at front passenger side



GE11-6287d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
DR08b(2)		
DR08b(3)		
DR18c(1)		
DR18c(2)		
DR18c(3)		

- F. Confirm whether the measured value meets the standard.

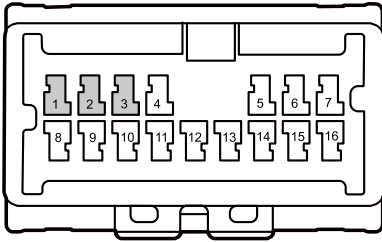
No

Repair or replace the harness.

Yes

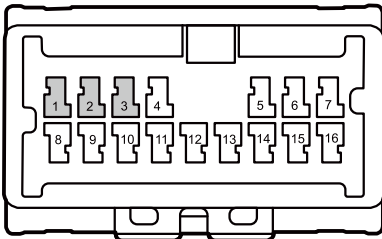
Step 8	Check whether the circuit between the exterior rearview mirror adjustment switch and the exterior rearview mirror is short to power supply.
--------	---

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6288d

DR18c harness connector for external rearview mirror at front passenger side



GE11-6289d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard voltage: 0V
DR08b(2)		
DR08b(3)		
DR18c(1)		
DR18c(2)		
DR18c(3)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the exterior rearview mirror adjustment switch.

- A. To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Replace the exterior rearview mirrors.

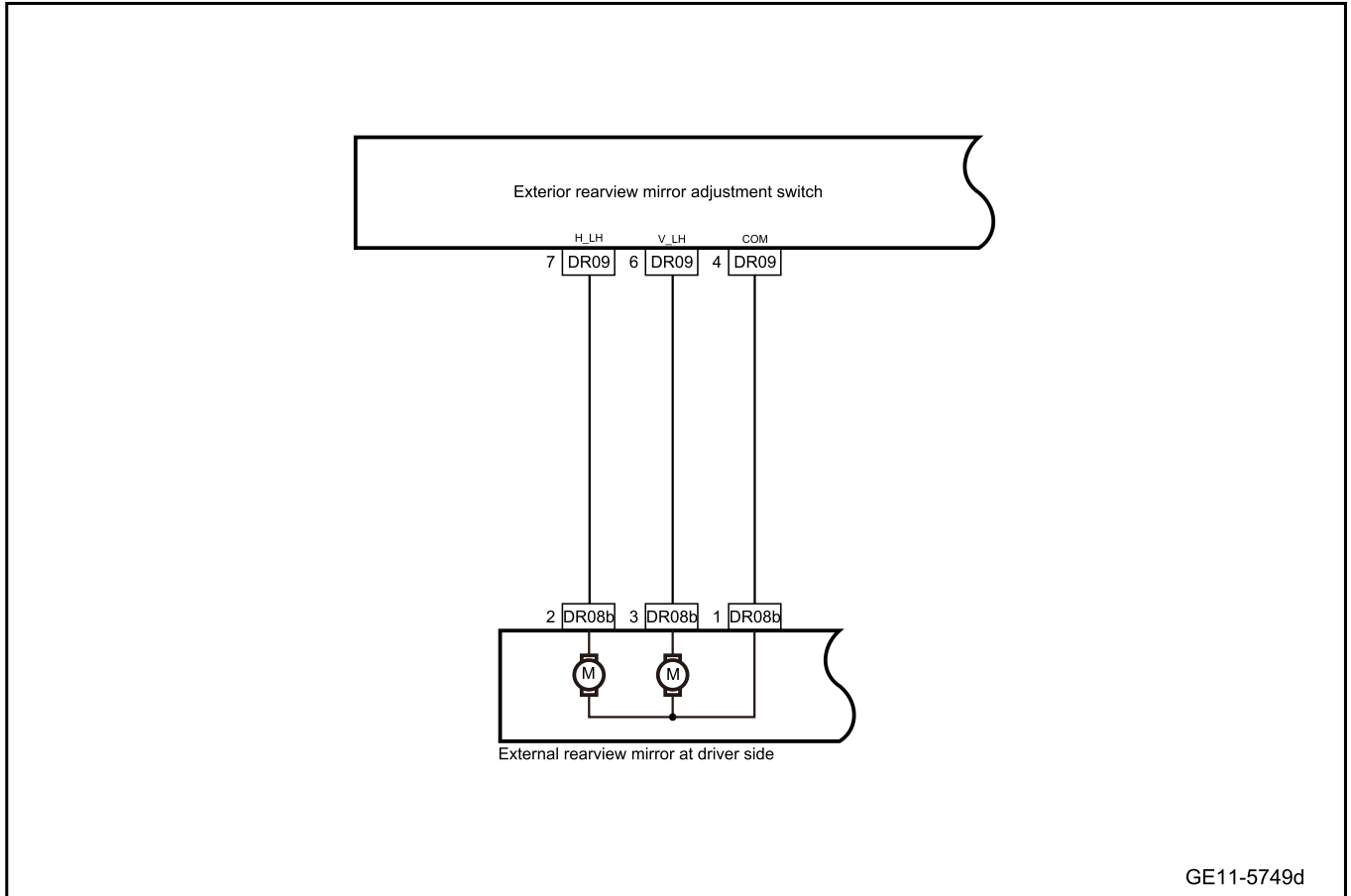
- A. To replace the exterior rearview mirrors, please refer to [Replacement of Exterior Rearview Mirrors](#)
- B. Confirm whether the system is normal.

Next step

Step 11 | System is normal.

11.5.6.8 Driver's exterior rearview mirror cannot be adjusted

1. Circuit diagram:



2. Diagnosis steps:

Step 1 | Primary check.

- A. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 | Check whether the exterior rearview mirror adjustment switch is stuck.

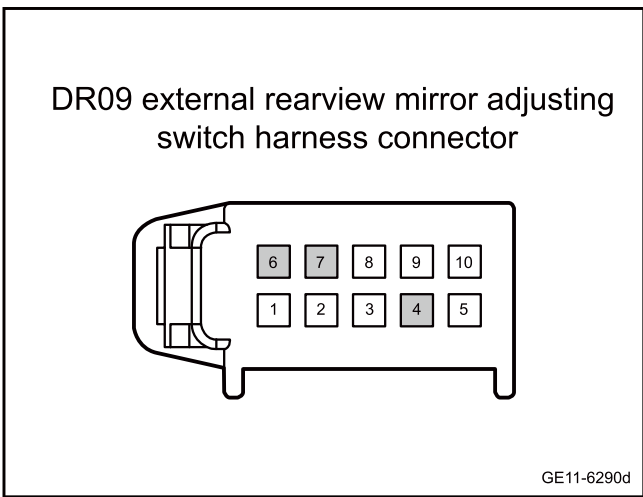
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

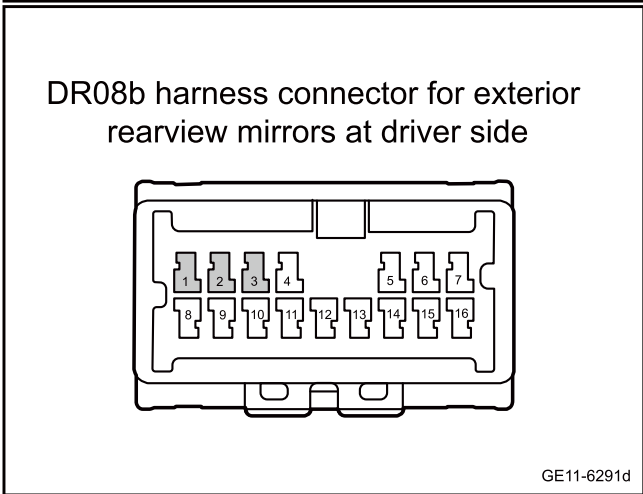
Step 3 Check whether the circuit between the exterior rearview mirror adjustment switch and the driver side exterior rearview mirror is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	DR08b(1)	Standard resistance: less than 1Ω
DR09(7)	DR08b(2)	
DR09(6)	DR08b(3)	

- E. Confirm whether the measured value meets the standard.



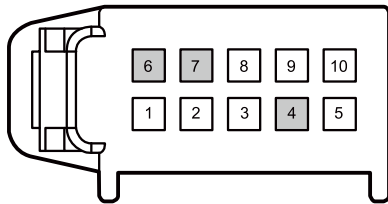
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the exterior rearview mirror adjustment switch and the driver side exterior rearview mirror is short to power supply.

DR09 external rearview mirror adjusting switch harness connector



GE11-6292d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(7)		
DR09(6)		

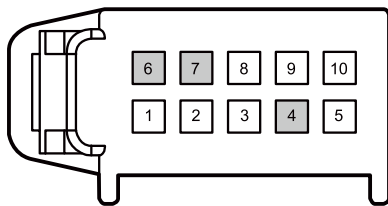
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the exterior rearview mirror adjustment switch and the driver side exterior rearview mirror is short to ground.

DR09 external rearview mirror adjusting switch harness connector



GE11-6293d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(7)		
DR09(6)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the exterior rearview mirror adjustment switch.

- A. To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the driver's side exterior rearview mirror

- A. To replace the driver's side exterior rearview mirror, please refer to [Replacement of Driver's Side Exterior Rearview Mirror](#)
- B. Confirm whether the system is normal.

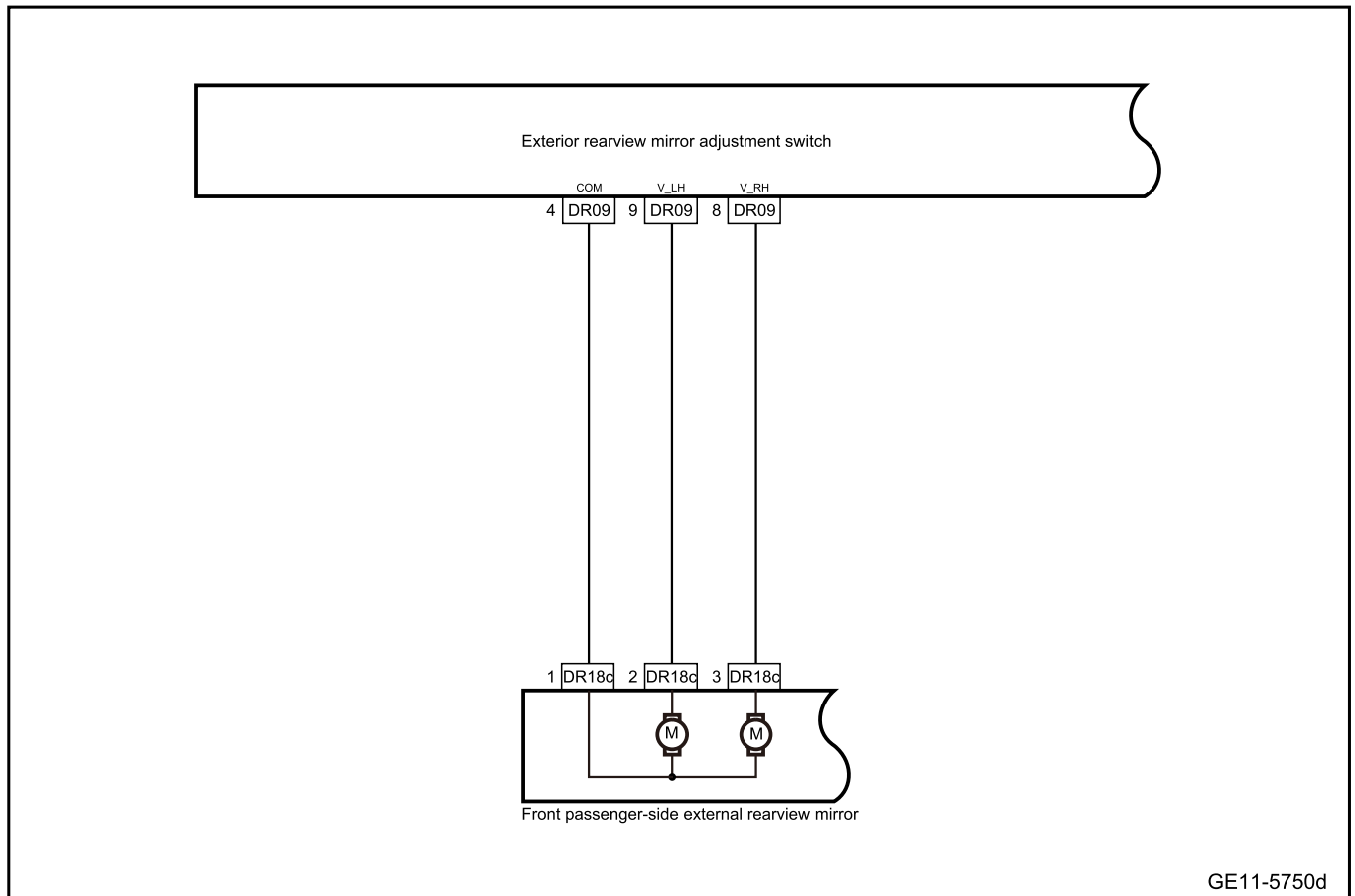
Yes System is normal.

No

Step 8 System is normal.

11.5.6.9 Front passenger side exterior rearview mirror cannot be adjusted

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of front passenger side exterior rearview mirror for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the exterior rearview mirror adjustment switch is stuck.
--------	--

- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

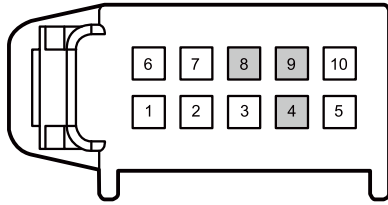
Yes

To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

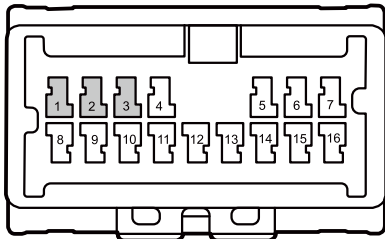
Step 3	Check whether the circuit between exterior rearview mirror adjustment switch and the front passenger side exterior rearview mirror is open.
--------	---

DR09 external rearview mirror adjusting switch harness connector



GE11-6294d

DR18c harness connector for external rearview mirror at front passenger side



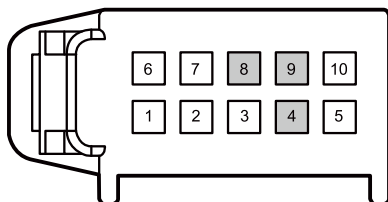
GE11-6295d

Yes

Step 4

Check whether the circuit between the exterior rearview adjustment switch and the front passenger side exterior rearview is short to power supply.

DR09 external rearview mirror adjusting switch harness connector



GE11-6296d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	DR18c(1)	Standard resistance: less than 1Ω
DR09(9)	DR18c(2)	
DR09(8)	DR18c(3)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(9)		
DR09(8)		

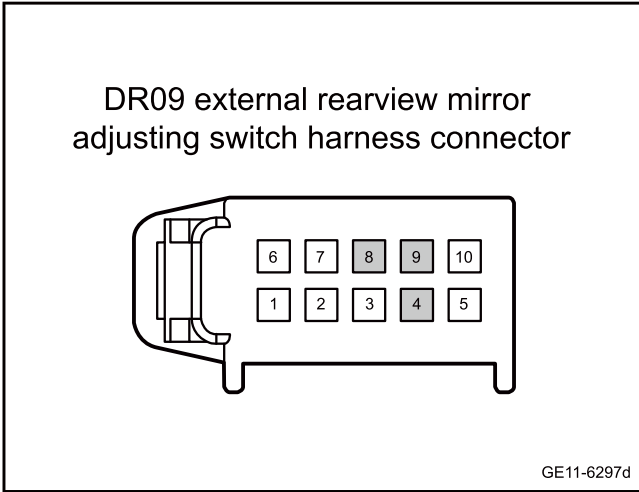
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the exterior rearview adjustment switch and the front passenger side exterior rearview is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(9)		
DR09(8)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the exterior rearview mirror adjustment switch.

- A. To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace front passenger's side exterior rearview mirror.

- A. To replace the front passenger's side exterior rearview mirror, please refer to [Replacement of Front Passenger's Side Exterior Rearview Mirror](#)
- B. Confirm whether the system is normal.

Yes

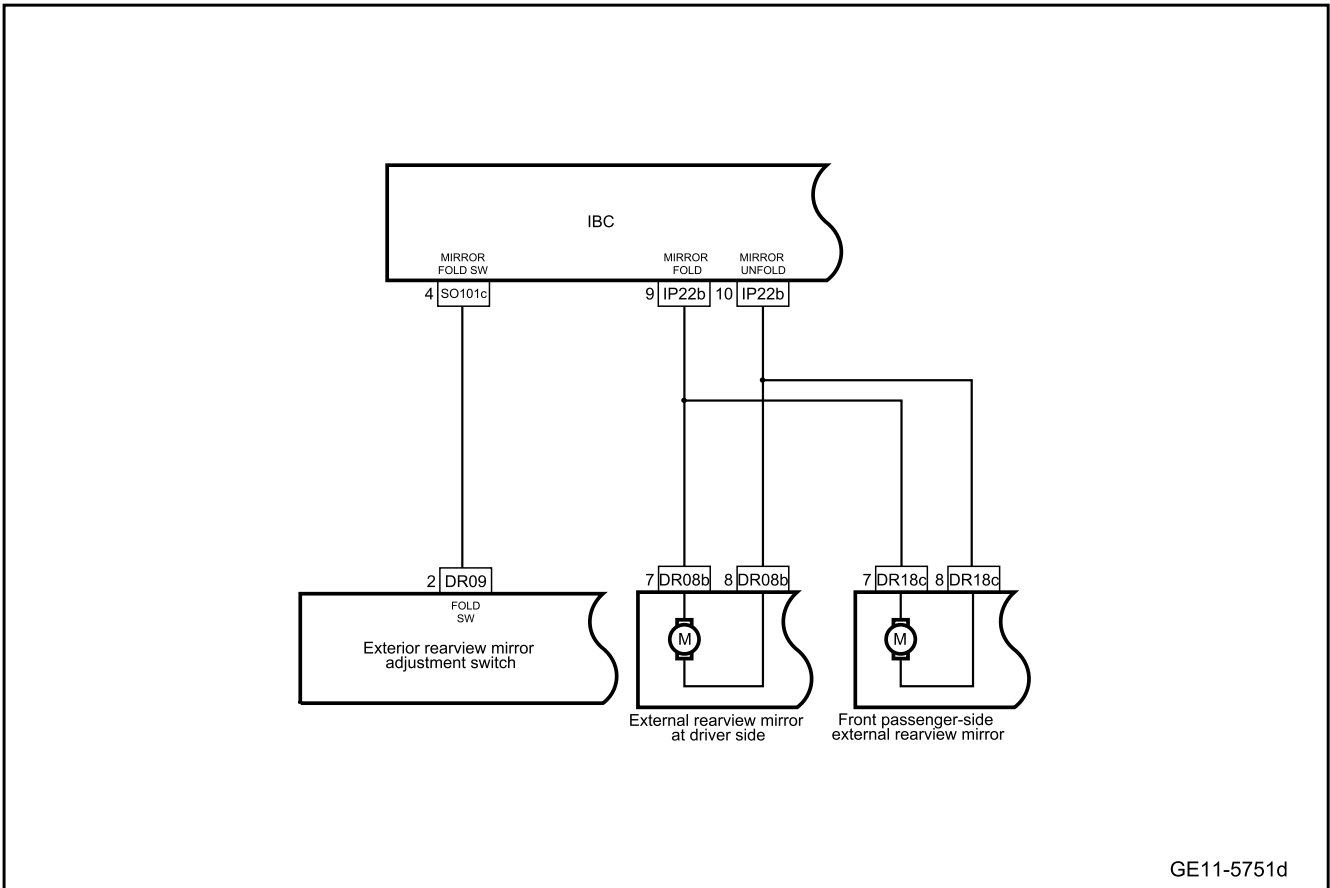
System is normal.

No

Step 8 System is normal.

11.5.6.10 Power rearview mirror cannot be folded up

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check IBC, driver side rear exterior rearview mirror, front passenger side rear exterior rearview mirror, rear exterior rearview mirror adjustment switch harness contractor for any damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2 Check whether the exterior rearview mirror adjustment switch is stuck.

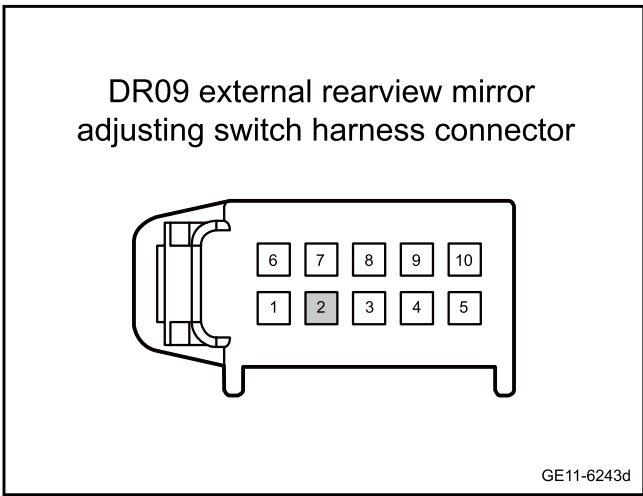
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

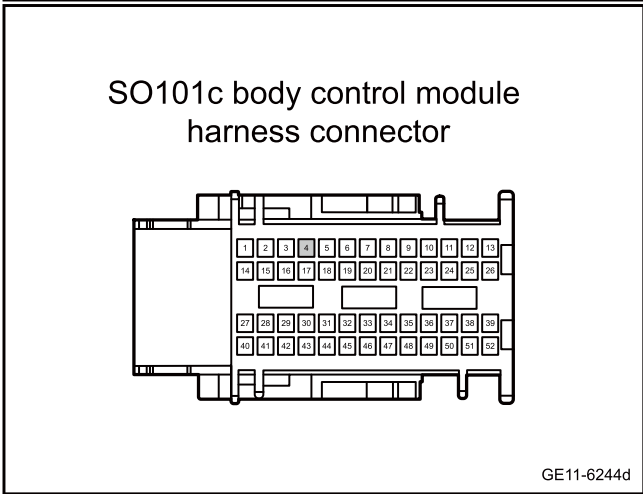
Step 3 Check whether the circuit between IBC and exterior rearview mirror adjustment switch is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(2)	SO101c(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

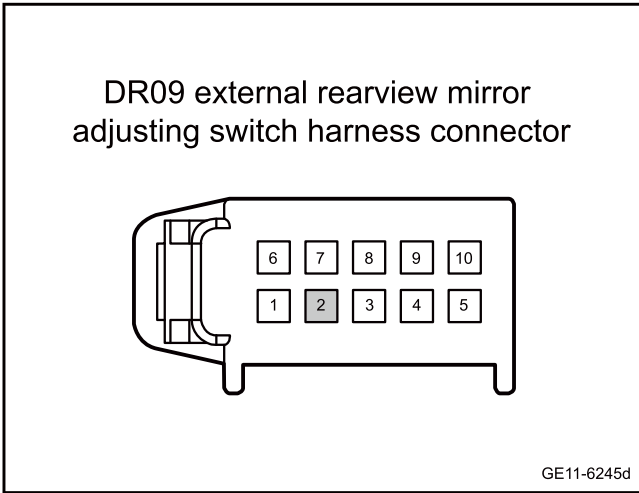


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between IBC and exterior rearview mirror adjustment switch is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

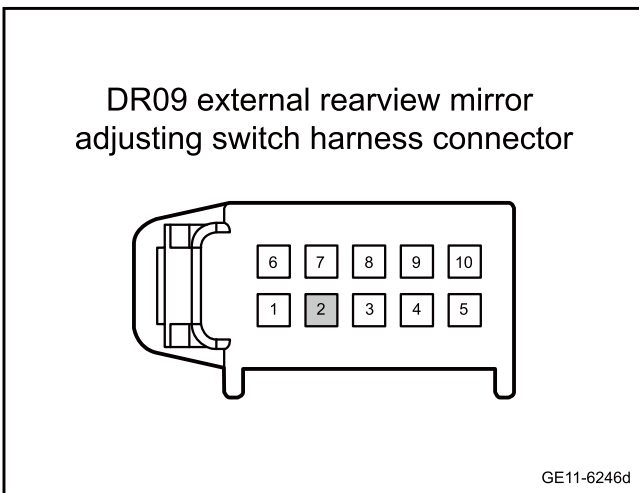
Measure terminal 1	Measure terminal 2	Standard value
DR09(2)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between IBC and exterior rearview mirror adjustment switch is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

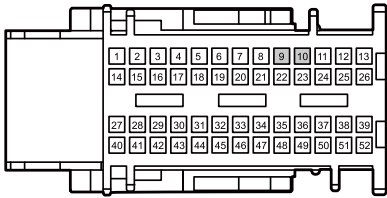
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

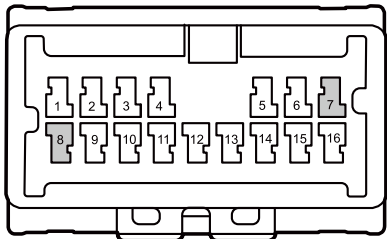
Step 6 | Check whether the circuit between IBC and exterior rearview mirror is open.

IP22b body control module harness connector 3



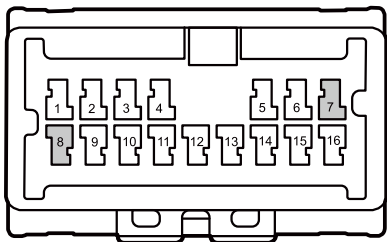
GE11-6247d

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6248d

DR18c harness connector for external rearview mirror at front passenger side



GE11-6249d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(10)	DR08b(8)	Standard resistance: less than 1Ω
IP22b(9)	DR08b(7)	
IP22b(10)	DR18c(8)	
IP22b(9)	DR18c(7)	

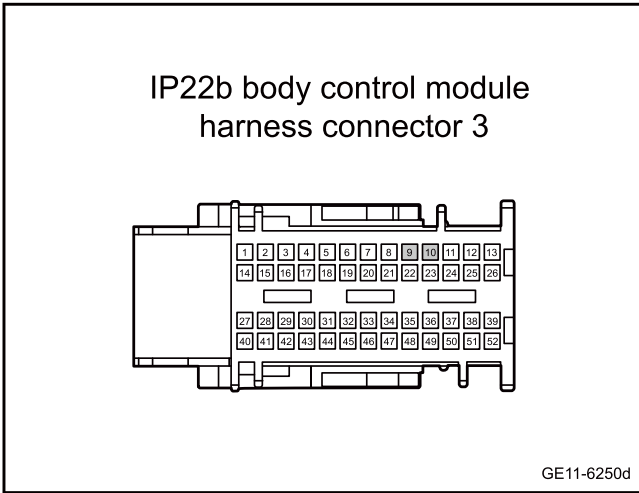
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between IBC and exterior rearview mirror is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure each terminal according to the table below:

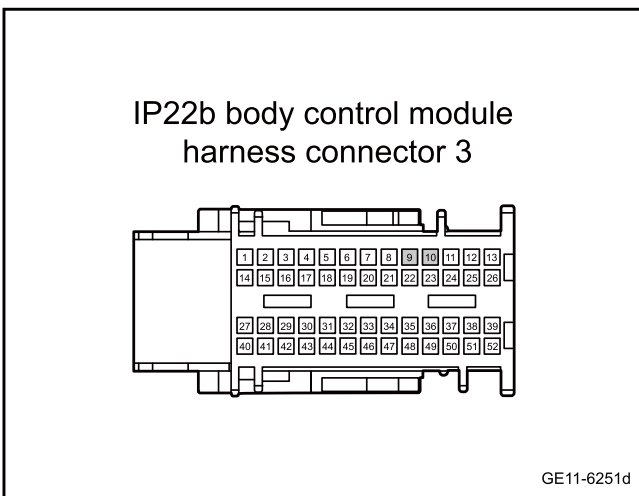
Measure terminal 1	Measure terminal 2	Standard value
IP22b(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(9)		

- F. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 8 | Check whether the circuit between IBC and exterior rearview mirror adjustment switch is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(10)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(9)		

- G. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 9 | Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch. Refer to [Replacement of the Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10	Replace the driver's side exterior rearview mirror
------------	--

- A. Replace the driver's side exterior rearview mirror Refer to [replacement of driver-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Replace front passenger's side exterior rearview mirror.
---------	--

- A. Replace front passenger's side exterior rearview mirror. Refer to [replacement of front passenger-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 12	Check the IBC power supply and grounding circuit.
------------	---

- A. Refer to [IBC Power Failure](#)
- B. Confirm whether the system is working normally.

Yes Trouble is removed.

No

Step 13	Replace the IBC
------------	-----------------

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 14	Reprogram and reset the IBC.
------------	------------------------------

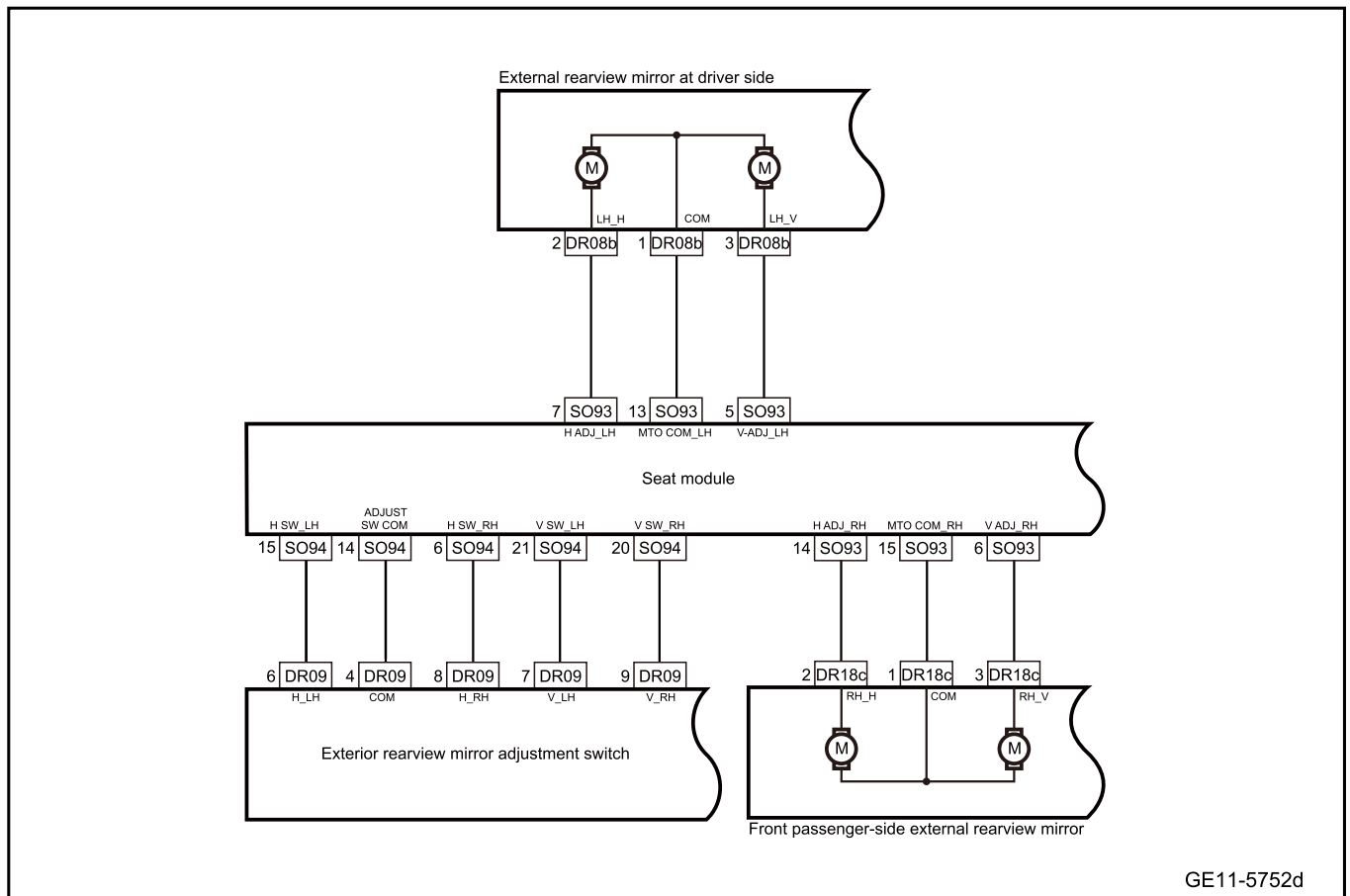
- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 15	System is normal.
------------	-------------------

11.5.6.11 Power rearview mirror cannot be adjusted(memory module)

1. Circuit diagram:



GE11-5752d

2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check whether the exterior rearview mirror adjustment switch is stuck.

- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

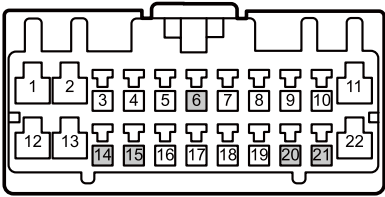
Yes

To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

Step 3 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is open.

SO94 seat module harness connector C

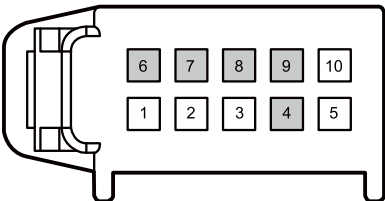


GE11-6252d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO94.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO94(6)	DR09(8)	Standard resistance: less than 1Ω
SO94(14)	DR09(4)	
SO94(15)	DR09(6)	
SO94(20)	DR09(9)	
SO94(21)	DR09(7)	

DR09 external rearview mirror adjusting switch harness connector



GE11-6253d

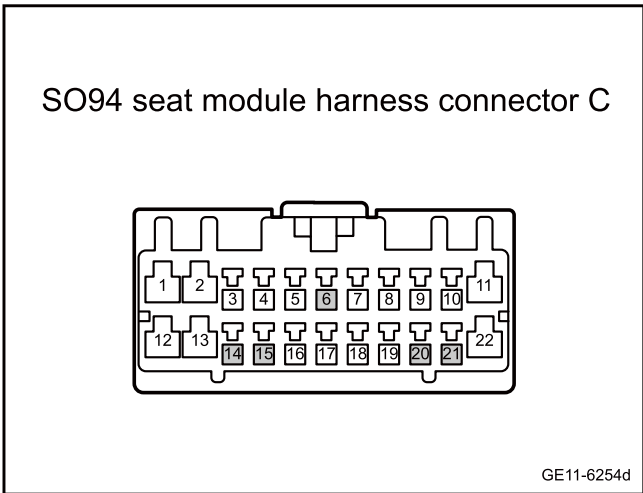
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO94.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. Use a multimeter to measure the terminals according to the table below:

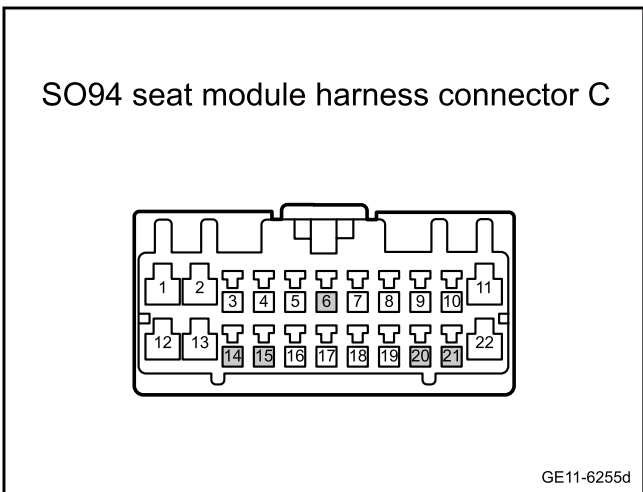
Measure terminal 1	Measure terminal 2	Standard value
SO94(6)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
SO94(14)		
SO94(15)		
SO94(20)		
SO94(21)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO94.
- C. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

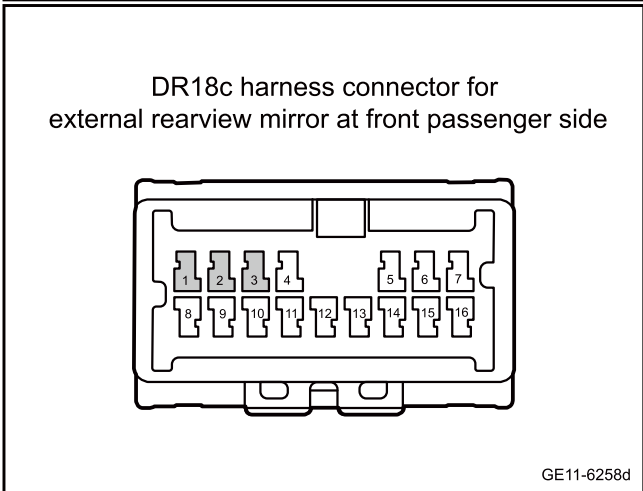
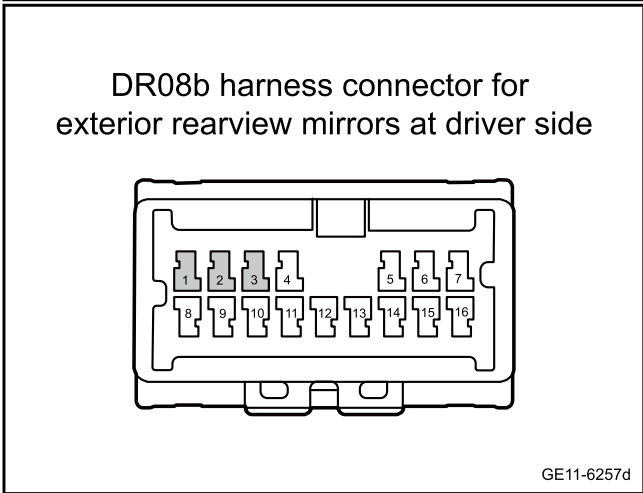
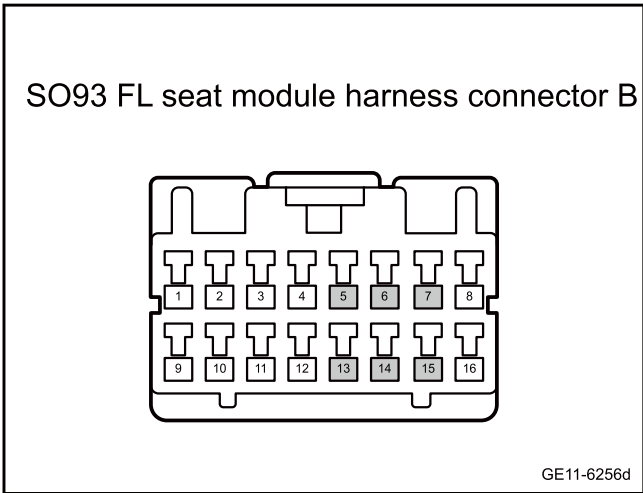
Measure terminal 1	Measure terminal 2	Standard value
SO94(6)	Vehicle body is grounded.	Standard voltage: 0V
SO94(14)		
SO94(15)		
SO94(20)		
SO94(21)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Check whether the circuit between seat and exterior rearview mirror is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO93.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO93(13)	DR08b(1)	Standard resistance: less than 1Ω
SO93(7)	DR08b(2)	
SO93(5)	DR08b(3)	
SO93(15)	DR18c(1)	
SO93(14)	DR18c(2)	
SO93(6)	DR18c(3)	

- F. Confirm whether the measured value meets the standard.

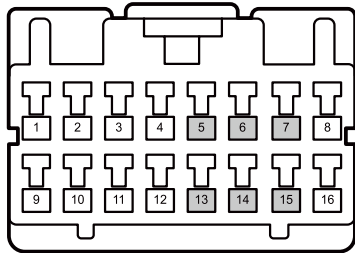
No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between seat module and exterior rearview mirror is shorted to GND.

SO93 FL seat module harness connector B



GE11-6259d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO93.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO93(13)	Vehicle body is grounded.	Standard resistance: greater than 10k Ω
SO93(7)		
SO93(5)		
SO93(15)		
SO93(14)		
SO93(6)		

- F. Confirm whether the measured value meets the standard.

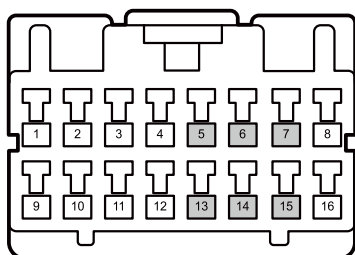
No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to power supply.

SO93 FL seat module harness connector B



GE11-6260d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO93.
- C. Disconnect the driver side exterior rearview mirror harness connector DR08b
- D. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO93(13)	Vehicle body is grounded.	Standard voltage: 0V
SO93(7)		
SO93(5)		
SO93(15)		
SO93(14)		

Measure terminal 1	Measure terminal 2	Standard value
SO93(6)		

G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the exterior rearview mirror adjustment switch.

A. To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Replace the exterior rearview mirrors.

A. To replace the exterior rearview mirrors, please refer to [Replacement of Exterior Rearview Mirrors](#)

B. Confirm whether the system is normal.

Next step

Step 11 Replace the seat module.

A. To replace the seat module, please refer to [Replacement of Seat Module](#)

B. Confirm whether the system is normal.

Yes System is normal.

No

Step 12 Reprogram and reset the seat module.

A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

B. Confirm whether the system is normal.

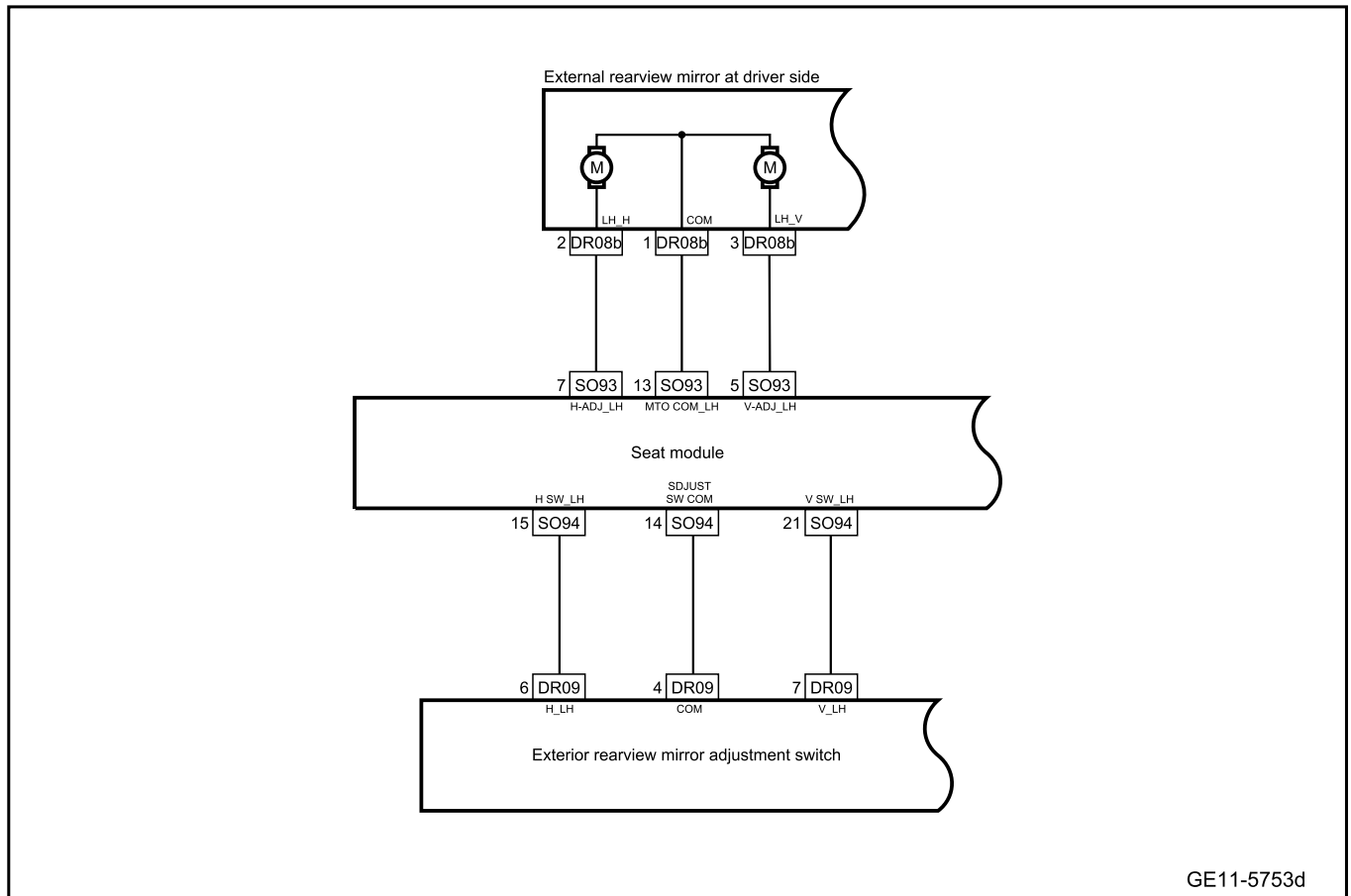
Yes → System is normal.

No

Step 13	System is normal.
---------	-------------------

11.5.6.12 Driver's exterior rearview mirror cannot be adjusted(memory module)

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 2	Check whether the exterior rearview mirror adjustment switch is stuck.
--------	--

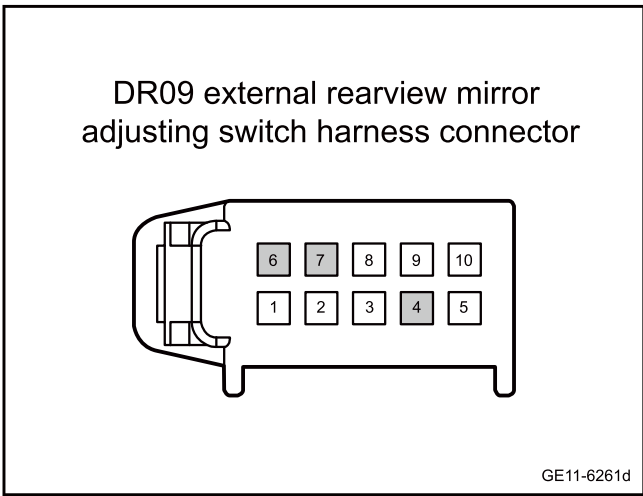
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

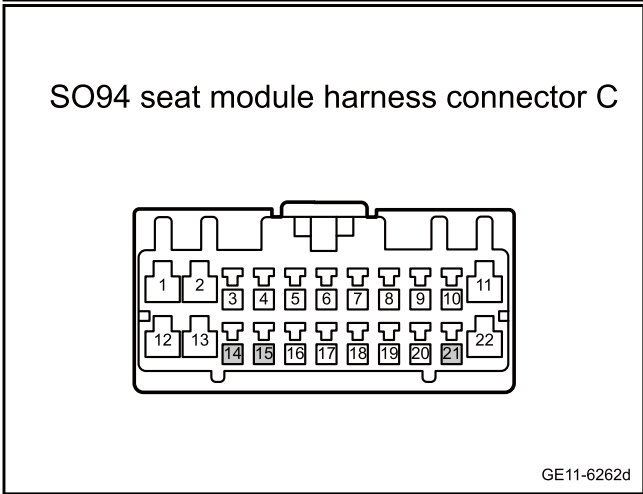
No

Step 3 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	SO94(14)	Standard resistance: less than 1Ω
DR09(7)	SO94(21)	
DR09(6)	SO94(15)	



- E. Confirm whether the measured value meets the standard.

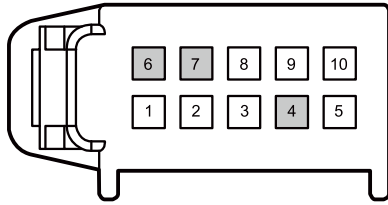
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to power supply.

DR09 external rearview mirror adjusting switch harness connector



GE11-6263d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(7)		
DR09(6)		

- F. Confirm whether the measured value meets the standard.

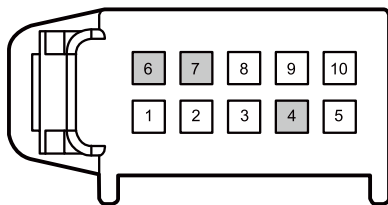
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to GND.

DR09 external rearview mirror adjusting switch harness connector



GE11-6264d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(7)		
DR09(6)		

- E. Confirm whether the measured value meets the standard.

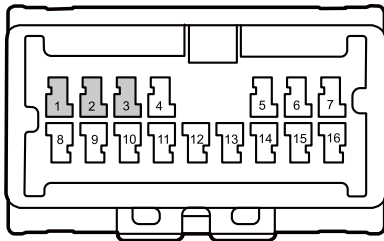
No

Repair or replace the harness.

Yes

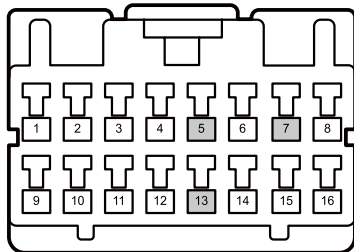
Step 6 Check whether the circuit between the seat module and the driver side exterior rearview mirror is open.

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6265d

SO93 FL seat module harness connector B

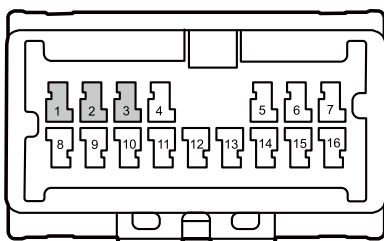


GE11-6266d

Yes

Step 7 Check whether the circuit between the seat module and the driver side exterior rearview mirror is short to power supply.

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6267d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR08b(1)	SO93(13)	Standard resistance: less than 1Ω
DR08b(2)	SO93(7)	
DR08b(3)	SO93(5)	

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard voltage: 0V
DR08b(2)		
DR08b(3)		

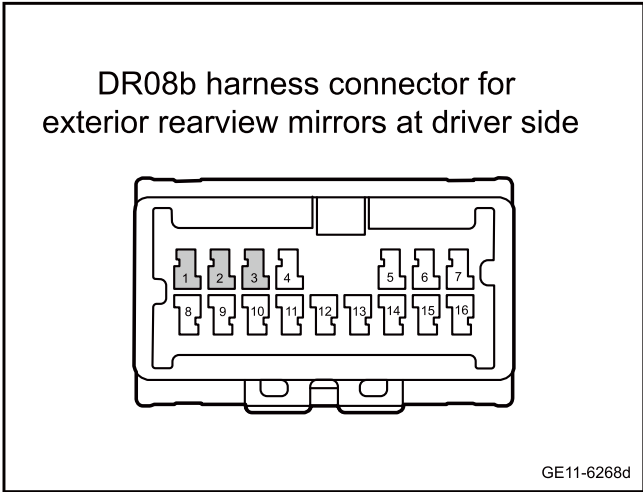
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between the seat module and the driver side exterior rearview mirror is short to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR08b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR08b(2)		
DR08b(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Replace the exterior rearview mirror adjustment switch.

- A. To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Replace the seat module.

- A. To replace the seat module, please refer to [Replacement of Seat Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Reprogram and reset the seat module.
---------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Replace the driver's side exterior rearview mirror
---------	--

- A. To replace the driver's side exterior rearview mirror, please refer to [Replacement of Driver's Side Exterior Rearview Mirror](#)
- B. Confirm whether the system is normal.

Yes

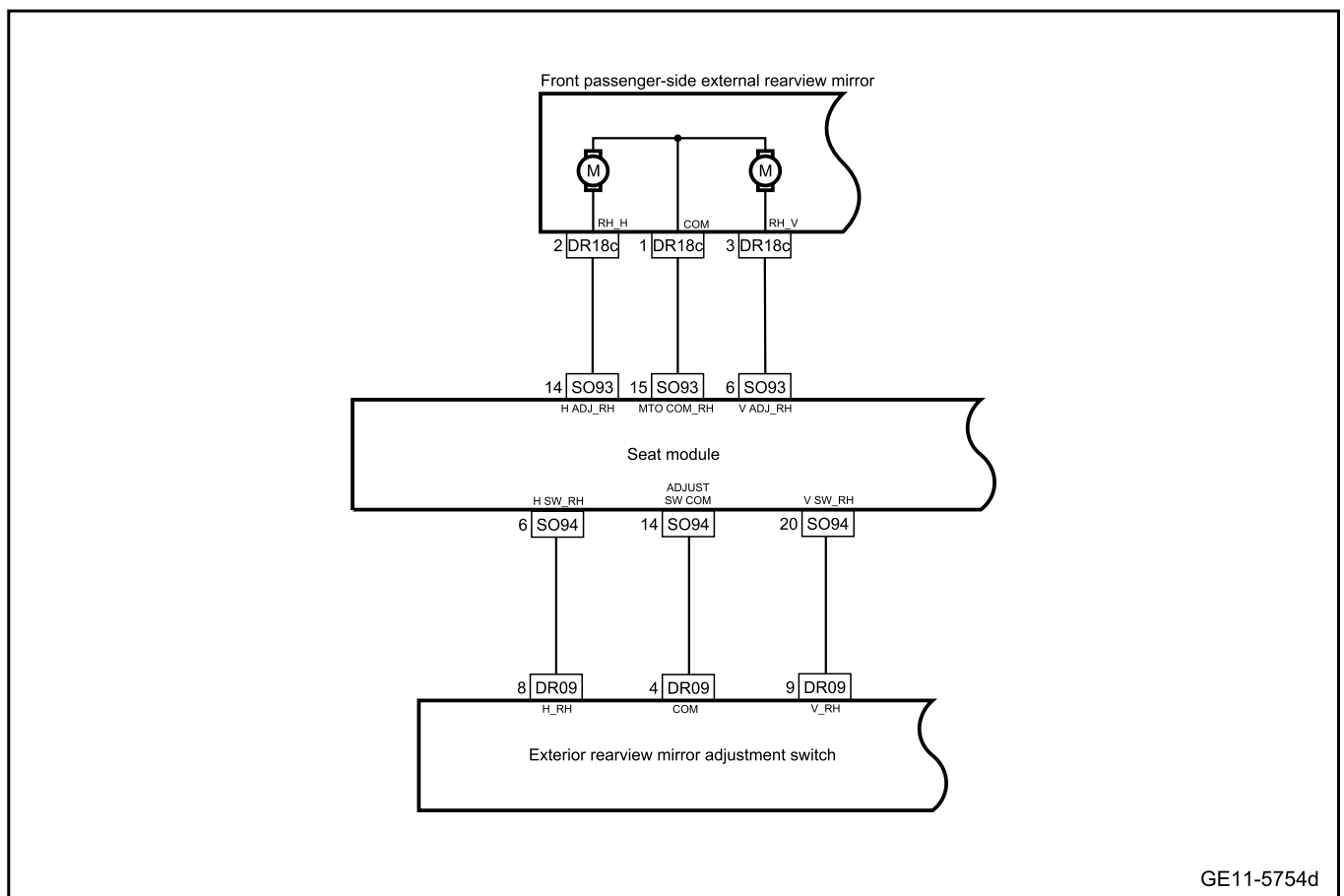
System is normal.

No

Step 13	System is normal.
---------	-------------------

11.5.6.13 Front passenger side exterior rearview mirror cannot be adjusted(memory module)

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

- A. Check the harness connector of front passenger side exterior rearview mirror for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check whether the exterior rearview mirror adjustment switch is stuck.
--------	--

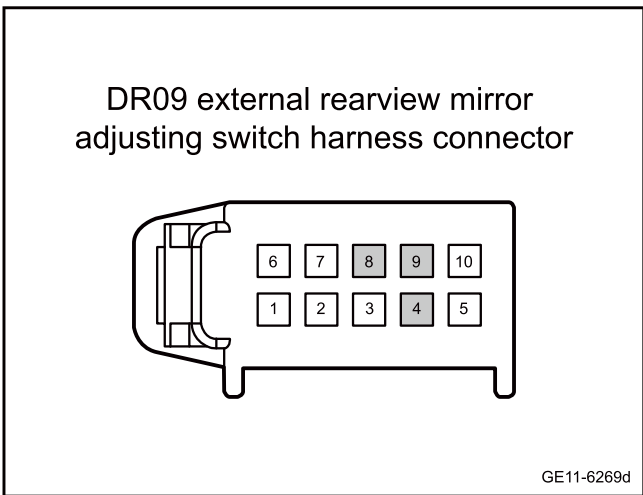
- A. Operate the exterior rearview mirror adjustment switch.
- B. Check whether the switch is caught.

Yes

 To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)

No

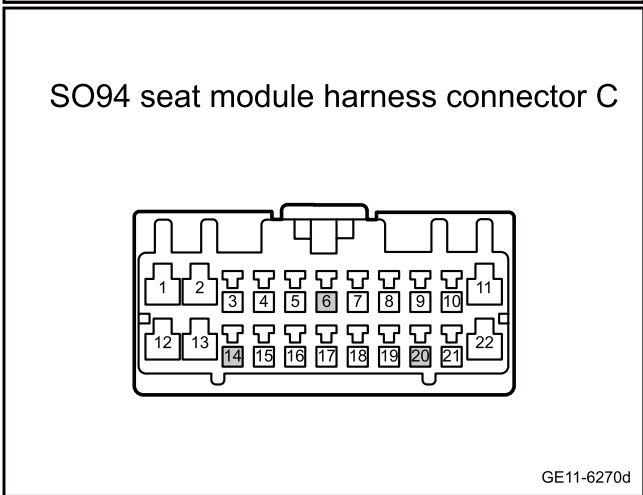
Step 3 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	SO94(14)	Standard resistance: less than 1Ω
DR09(8)	SO94(6)	
DR09(9)	SO94(20)	

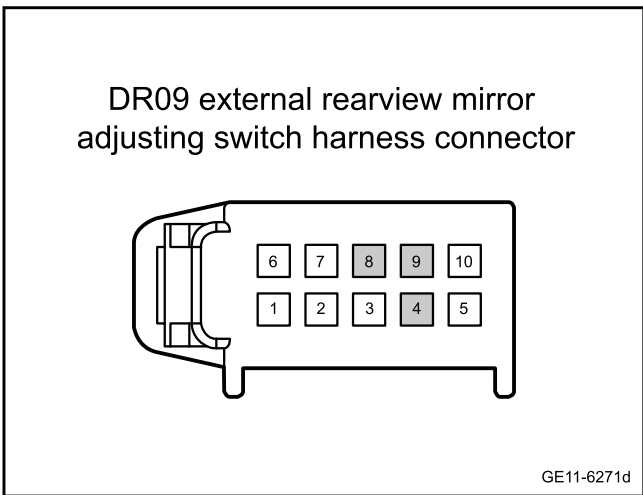
- E. Confirm whether the measured value meets the standard.



No → Repair or replace the harness.

Yes

Step 4 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(8)		

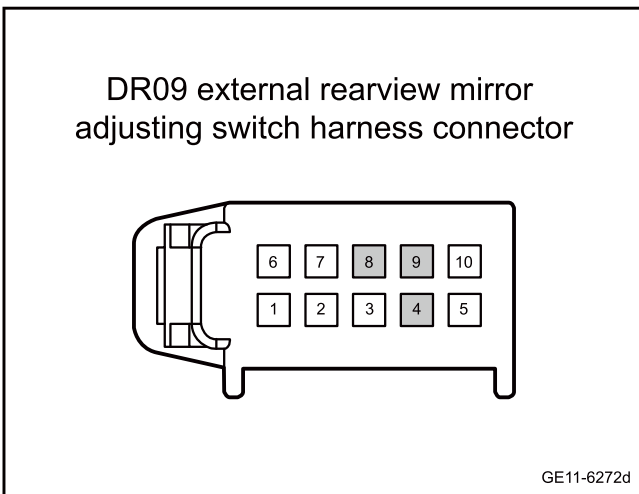
Multimeter connection 1	Multimeter connection 2	Standard value
DR09(9)		

F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(8)		
DR09(9)		

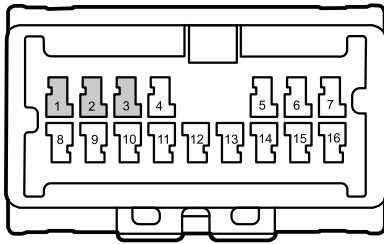
E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

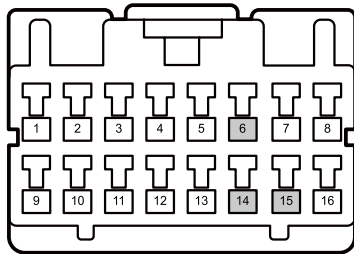
Step 6 Check whether the circuit between seat module and the front passenger side exterior rearview mirror is open.

DR18c harness connector for external rearview mirror at front passenger side



GE11-6273d

SO93 FL seat module harness connector B

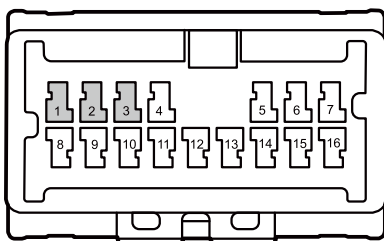


GE11-6274d

Yes

Step 7 Check whether the circuit between the seat module and the front passenger side exterior rearview is short to power supply.

DR18c harness connector for external rearview mirror at front passenger side



GE11-6275d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR18c(1)	SO93(15)	Standard resistance: less than 1Ω
DR18c(2)	SO93(14)	
DR18c(3)	SO93(6)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

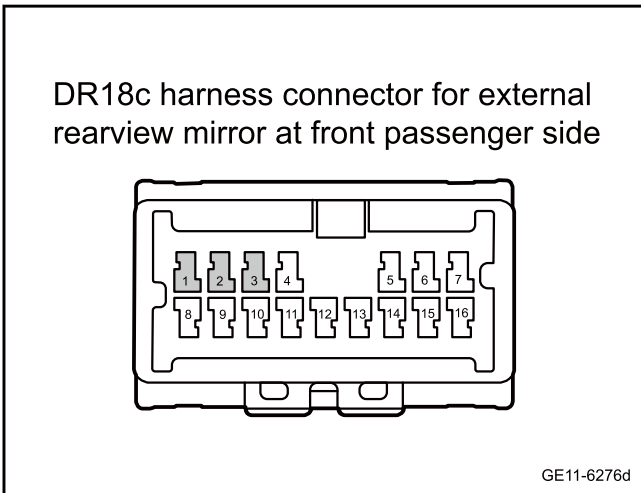
Multimeter connection 1	Multimeter connection 2	Standard value
DR18c(1)	Vehicle body is grounded.	Standard voltage: 0V
DR18c(2)		
DR18c(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Check whether the circuit between the seat module and the front passenger side exterior rearview is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure each terminal according to the table below:

Multimeter connection 1	Multimeter connection 2	Standard value
DR18c(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR18c(2)		
DR18c(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the exterior rearview mirror adjustment switch.

- A. To replace the exterior rearview mirror adjustment switch, please refer to [Replacement of Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Replace the seat module.

- A. To replace the seat module, please refer to [Replacement of Seat Module](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Reprogram and reset the seat module.
---------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Replace front passenger's side exterior rearview mirror.
---------	--

- A. To replace the front passenger's side exterior rearview mirror, please refer to [Replacement of Front Passenger's Side Exterior Rearview Mirror](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	System is normal.
---------	-------------------

11.5.6.14 Door glass regulator at driver side dose not work

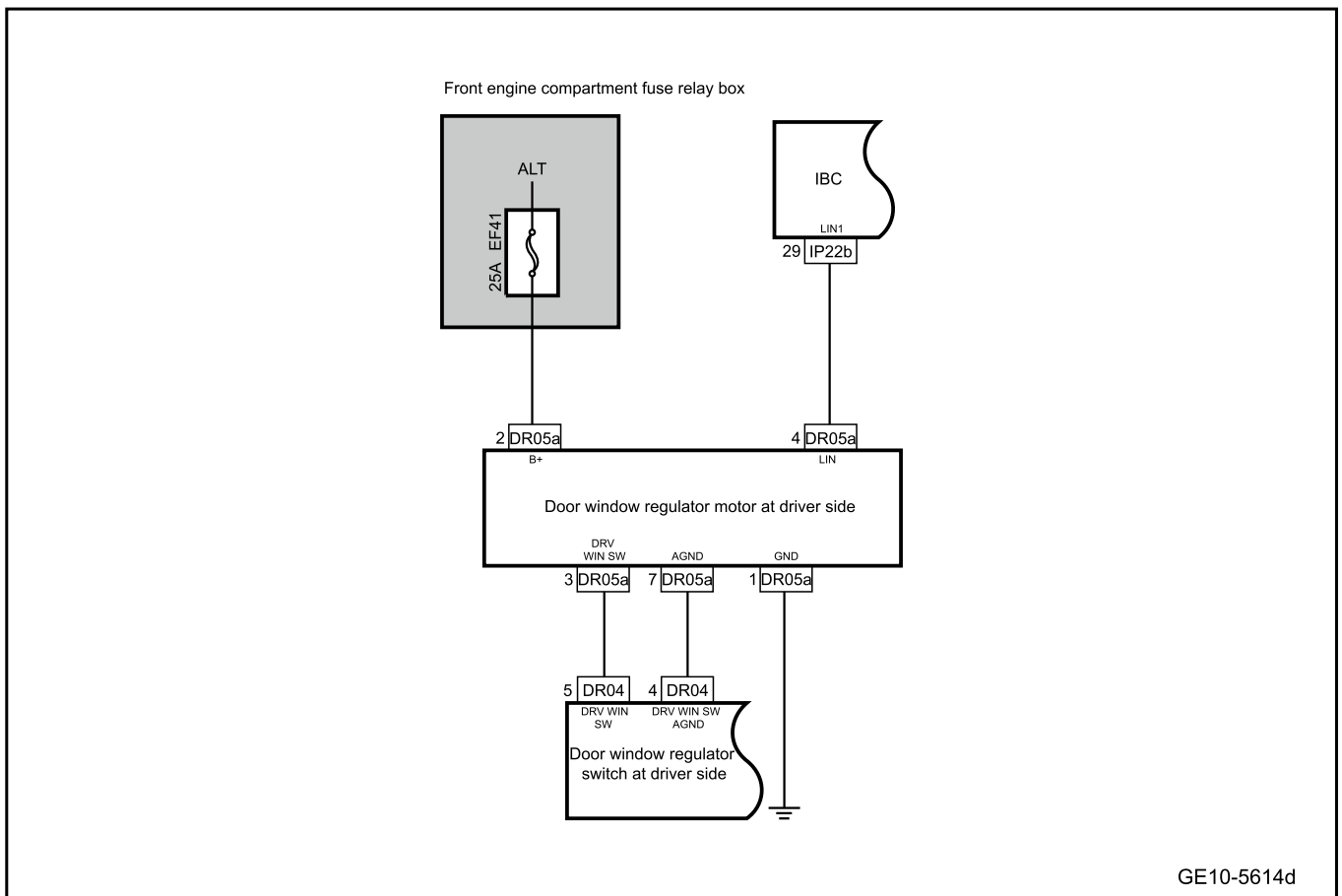
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101216	Fault of low voltage of FL window anti-pinch module
B101217	Fault of high voltage of FL window anti-pinch module
B101249	Fault of motor relay of FL window anti-pinch module
B10124B	Fault of motor overheating of FL window anti-pinch module
B101264	Front left window anti-pinch module-switch is stuck
B101296	Fault of Hall sensor of FL window anti-pinch module

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101216	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage= 1)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Door glass regulator motor at driver side 3. IBC
B101217	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_overnvoltage= 1)		
B101249	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_Motor_Relay_Error= 1)		
B10124B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_overhat_Protect= 1)		
B101264	FLAPWL message is successfully received to indicate this error in the LIN frame (LUDrvUWdWU central switch= 0 x 7)		
B101296	A successfully received FLAPWL message indicates this error in the LIN frame (L_RS_SolarSensorError=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No → Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check glass regulator switch of driver side door harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the EF41 fuse in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 25A

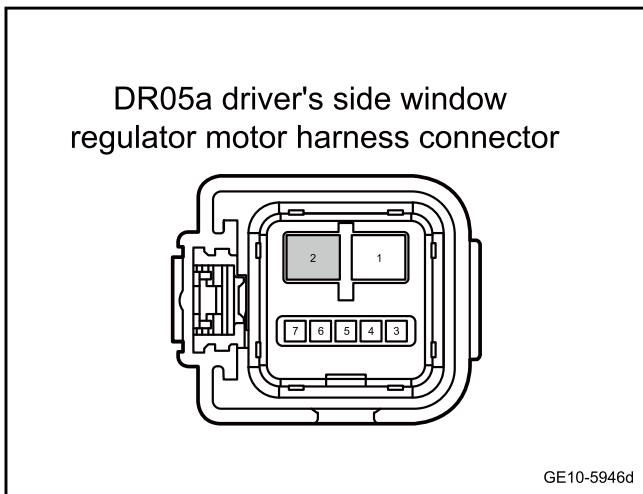
Rated capacity of fuse: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Inspect door side window regulator motor working voltage at driver side



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR05a of the glass regulator motor of the driver side door.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

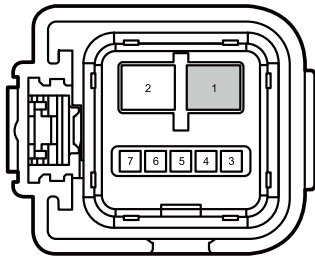
No

Repair or replace the harness.

Yes

Step 5 Check the grounding harness of the glass regulator motor of the driver side door.

DR05a driver's side window regulator motor harness connector



GE10-5947d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR05a of the glass regulator motor of the driver side door.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

No

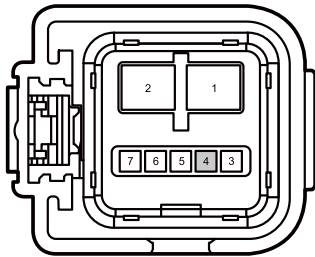
Repair or replace the harness.

Yes

Step 6

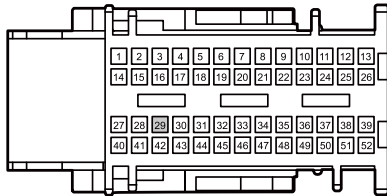
Check the line between the driver side door window regulator motor and IBC.

DR05a driver's side window regulator motor harness connector



GE10-5948d

IP22b body control module harness connector 3



GE10-5949d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR05a of the glass regulator motor of the driver side door.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Disconnect harness connector IP22b of body control module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(4)	IP22b(29)	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

No

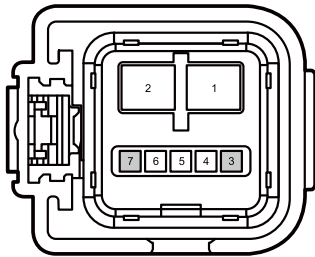
Repair or replace the harness.

Yes

Step 7

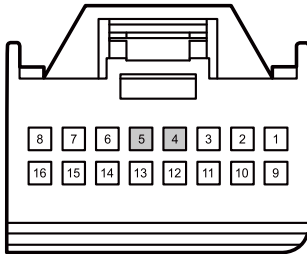
Check the open circuit trouble between the glass regulator motor of the driver side door and the glass regulator switch of the driver side door.

DR05a driver's side window regulator motor harness connector



GE10-5950d

DR04 driver's side door window regulator switch harness connector



GE10-5951d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR05a of the glass regulator motor of the driver side door.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(3)	DR04(5)	Standard resistance: less than 1Ω
DR05a(7)	DR04(4)	

- F. Confirm whether the measured value meets the standard.

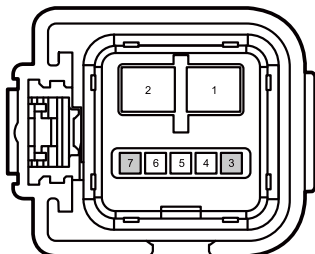
No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between glass regulator motor at driver side and glass regulator switch at driver side is short to power supply.

DR05a driver's side window regulator motor harness connector



GE10-5952d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR05a of the glass regulator motor of the driver side door.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

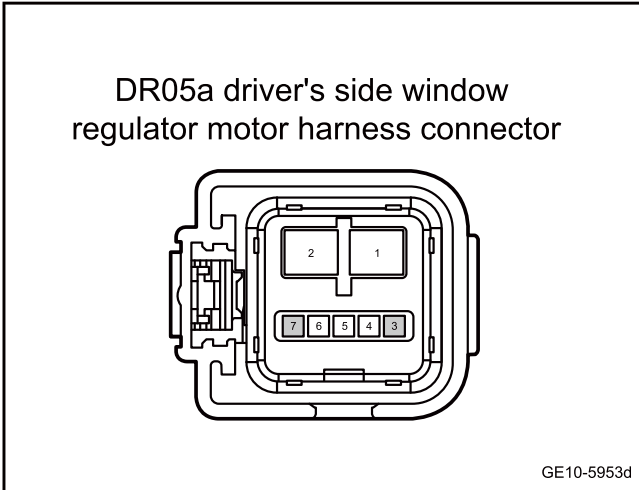
Measure terminal 1	Measure terminal 2	Standard value
DR05a(3)	Vehicle body is grounded.	Standard voltage: 0V
DR05a(7)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Check whether the circuit between glass regulator motor at driver side and glass regulator switch at driver side is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR05a of the glass regulator motor of the driver side door.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR05a(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR05a(7)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

No

Step 10 Replace the glass regulator motor of the driver side door.

- A. Replace the glass regulator motor of the driver side door. Refer to [Replacement of the glass regulator motor of the driver side door](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11 Replace the driver side door glass regulator switch.

- A. Replace the driver side door glass regulator switch. Refer to [Replacement of Driver Side Door Glass Regulator Switch](#)

Next step

Step 12	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

11.5.6.15 Front passenger side glass regulator does not work

1. DTC description:

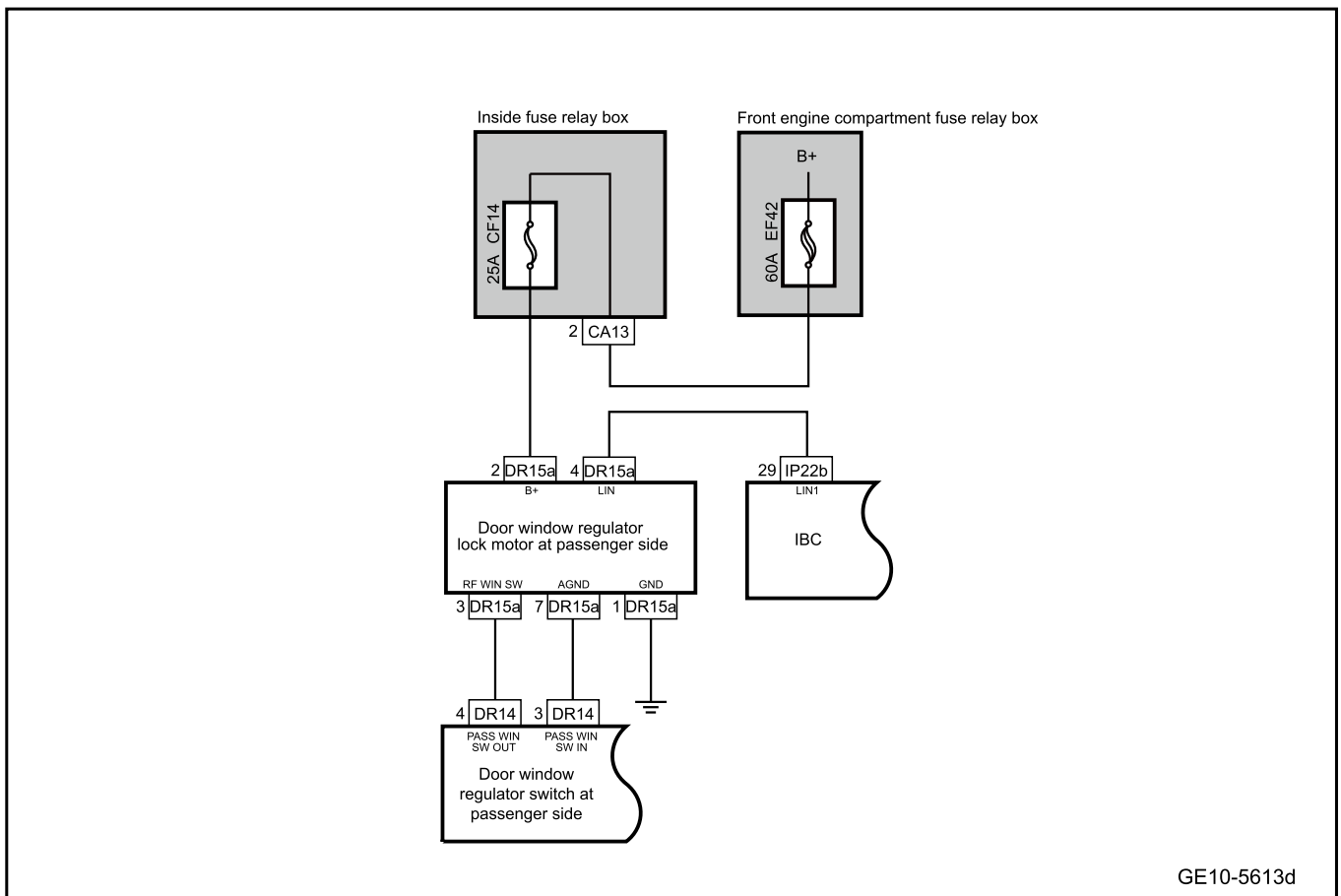
Diagnostic Trouble Code	Trouble description
B101316	Fault of low voltage of FR window anti-pinch module
B101317	Fault of high voltage of FR window anti-pinch module
B101349	Fault of motor relay of FR window anti-pinch module
B10134B	Fault of motor overheating of FR window anti-pinch module
B101364	Front right window anti-pinch module-switch is stuck
B101396	Fault of Hall sensor of FR window anti-pinch module

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101316	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_undervoltage=1)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Door glass regulator motor at front passenger side 3. IBC
B101317	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_undervoltage=1)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101349	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_Motor_Relay_Error= 1)		
B10134B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_overhat_Protect= 1)		
B101364	FLAPWL message is successfully received to indicate this error in the LIN frame (LUPasUWdWU central switch=0 x 7)		
B101396	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_HALL_Error= 1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No → Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check front passenger side door glass regulator motor, front passenger side door glass regulator switch and IBC harness connector of front passenger side door power window switch for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF14 and check whether the fuse is blown.

Rated capacity of fuse: 25A

Rated capacity of fuse: 30A

- C. Unplug the EF42 fuse in the front engine compartment and check whether the fuse is blown out.

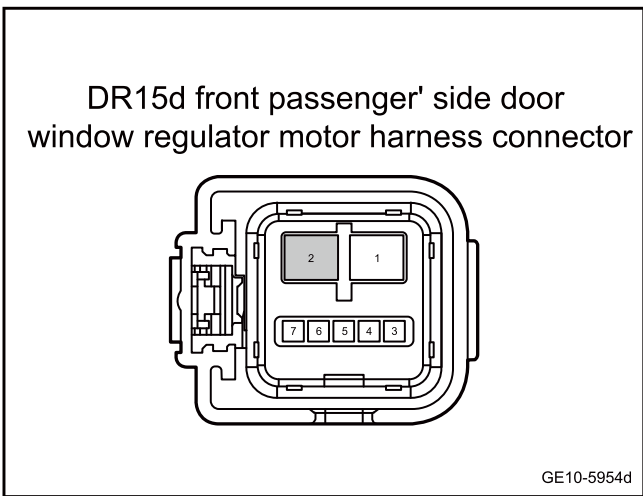
Rated capacity of fuse: 60A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Inspect door window regulator motor working voltage at passenger side



- A. Multimedia sets the vehicle power supply to the mode OFF
- B. Disconnect the harness connector DR15a of the front passenger side door glass regulator motor.
- C. Disconnect the harness connector DR14 of the front passenger side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

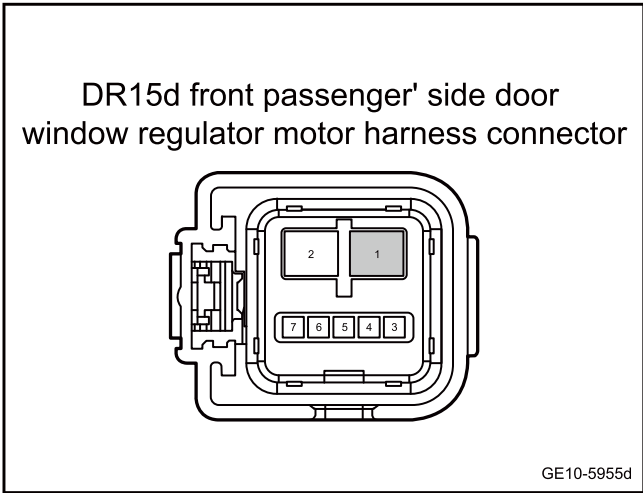
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check the grounding line of front passenger side door window regulator motor.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR15a of the front passenger side door glass regulator motor.
- C. Disconnect the harness connector DR14 of the front passenger side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

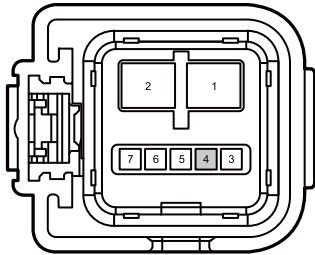
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

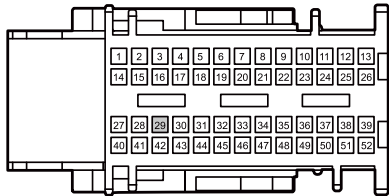
Step 6 | Check the line between front passenger side door glass regulator motor and IBC.

DR15d front passenger' side door window regulator motor harness connector



GE10-5956d

IP22b body control module harness connector 3



GE10-5957d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR15a of the front passenger side door glass regulator motor.
- C. Disconnect the harness connector DR14 of the front passenger side door glass regulator switch.
- D. Disconnect harness connector IP22b of body control module.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(4)	IP22b(29)	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

No

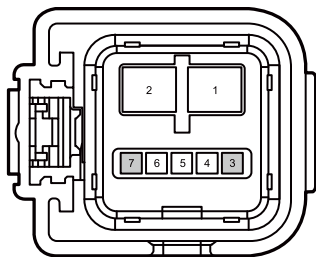
Repair or replace the harness.

Yes

Step 7

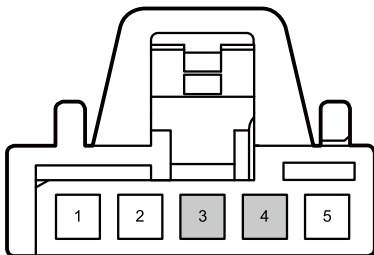
Detect the open circuit fault between the front passenger side door window regulator motor and the front passenger side door window regulator switch.

DR15d front passenger' side door window regulator motor harness connector



GE10-5958d

DR14 front passenger' side door window regulator switch harness connector

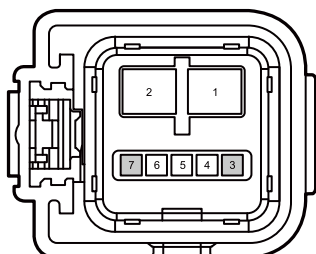


GE10-5959d

Yes

Step 8 Check whether the circuit between glass regulator motor at front passenger side and glass regulator switch at passenger side is short to power supply.

DR15d front passenger' side door window regulator motor harness connector



GE10-5960d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR15a of the front passenger side door glass regulator motor.
- C. Disconnect the harness connector DR14 of the front passenger side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(3)	DR14(4)	Standard resistance: less than 1Ω
DR15a(7)	DR14(3)	

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR15a of the front passenger side door glass regulator motor.
- C. Disconnect the harness connector DR14 of the front passenger side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(3)	Vehicle body is grounded.	Standard voltage: 0V
DR15a(7)		

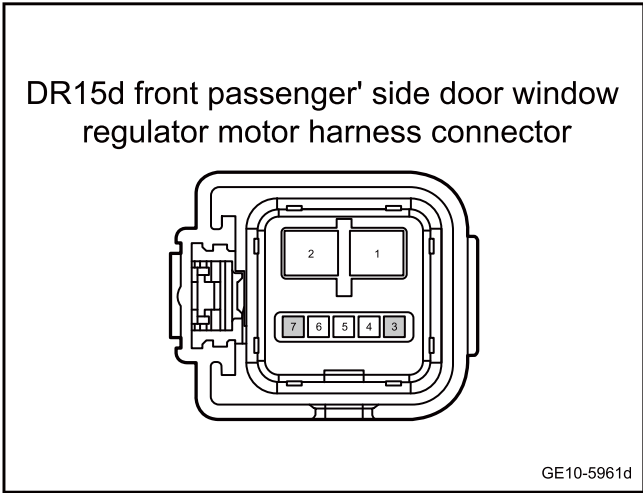
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check the circuit between the front passenger side glass regulator motor and the front passenger side glass regulator switch for short circuit to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR15a of the front passenger side door glass regulator motor.
- C. Disconnect the harness connector DR14 of the front passenger side door glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR15a(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR15a(7)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10 Replace the front passenger side door glass regulator motor.

- A. Replace the front passenger side door glass regulator motor. Refer to [replacement of front passenger side door glass regulator motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Replace the front passenger side door glass regulator switch.

- A. Replace the front passenger side door glass regulator switch. Refer to [Replacement of Driver Side Door Glass Regulator Switch](#)

Next step

Step 12	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 13	System is normal.
------------	-------------------

11.5.6.16 Left rear door glass regulator does not work

1. DTC description:

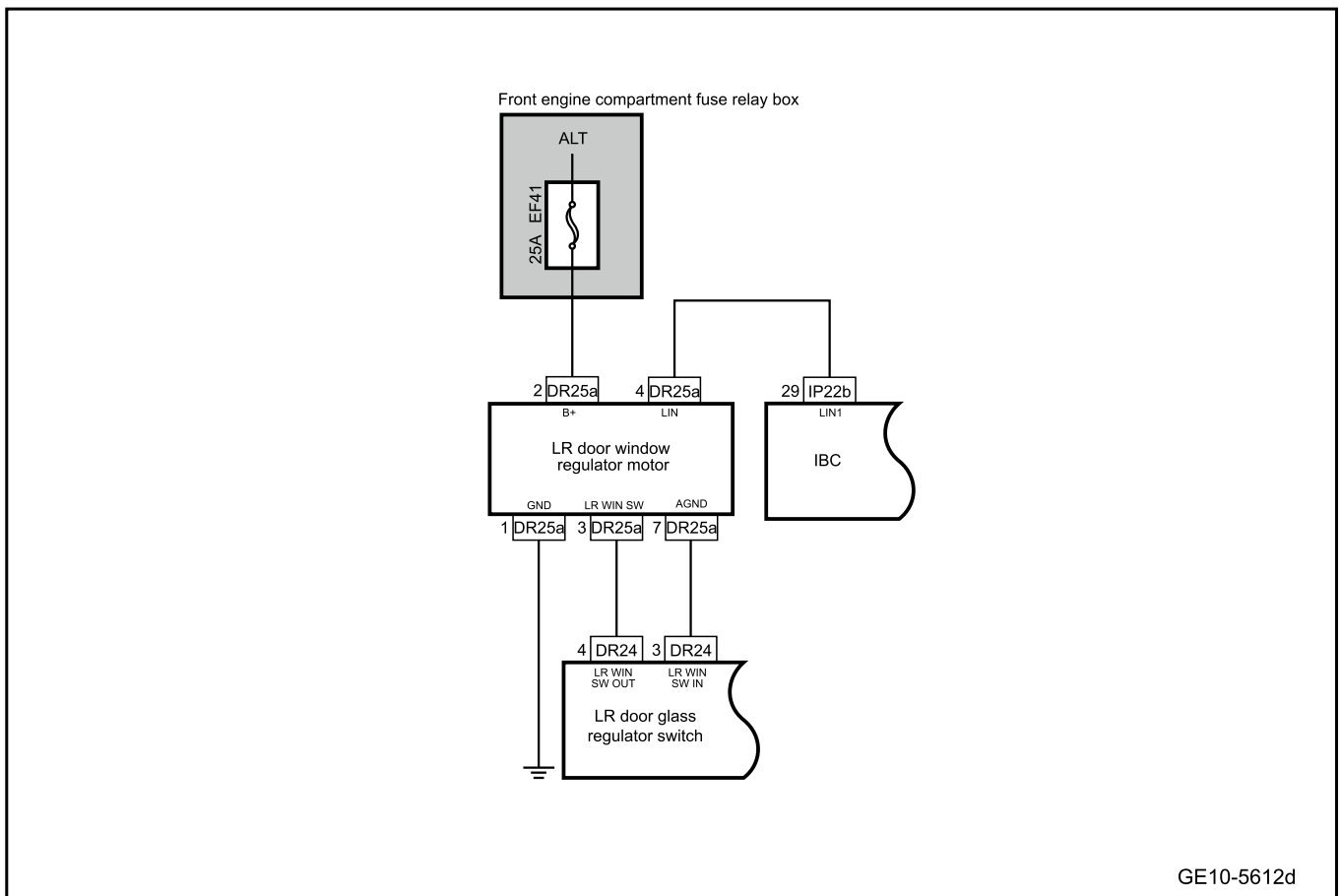
Diagnostic Trouble Code	Trouble description
B101416	Fault of low voltage of RL window anti-pinch module
B101417	Fault of high voltage of RL window anti-pinch module
B101449	Fault of motor relay of RL window anti-pinch module
B10144B	Fault of motor overheating of RL window anti-pinch module
B101464	Left rear window anti-pinch module - switch is stuck
B101496	Fault of Hall sensor of RL window anti-pinch module

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101416	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_undervoltage= 1)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Replace the left rear glass regulator motor 3. IBC
B101417	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_ overvoltage= 1)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101449	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_Motor_Relay_Error= 1)		
B10144B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_overhat_Protect= 1)		
B101464	FLAPWL message is successfully received to indicate this error in the LIN frame (LURLDUWdWU central switch= 0 x 7)		
B101496	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_HALL_Error= 1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the left rear door glass regulator motor, left rear door glass regulator switch, IBC harness and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the EF41 fuse in the front engine compartment and check whether the fuse is blown out.

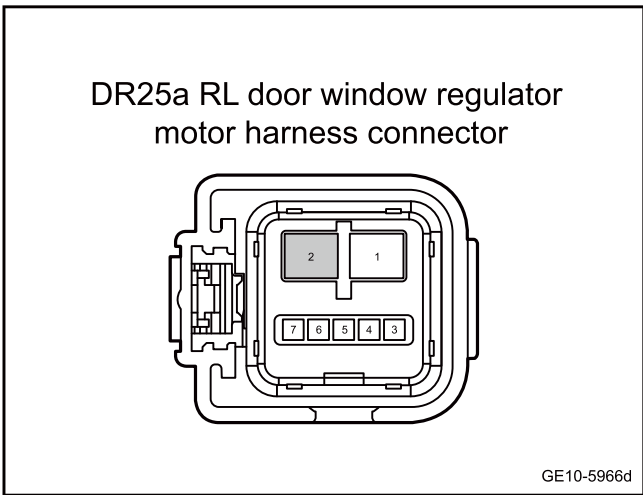
Rated capacity of fuse: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Left rear door window regulator motor is inspected



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR25a of the left rear glass regulator motor.
- C. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

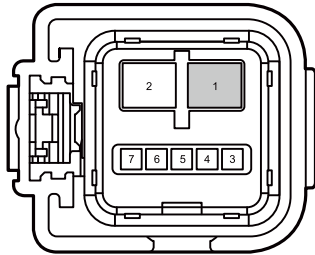
No

Repair or replace the harness.

Yes

Step 5 | Left rear door window regulator motor grounding circuit is inspect

DR25a RL door window regulator motor harness connector



GE10-5967d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR25a of the left rear glass regulator motor.
- C. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

No

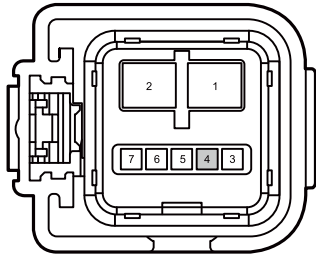
Repair or replace the harness.

Yes

Step 6

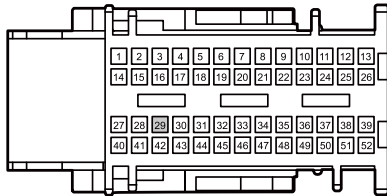
Check the LIN circuit between the left front door glass regulator motor and IBC.

DR25a RL door window regulator motor harness connector



GE10-5968d

IP22b body control module harness connector 3



GE10-5969d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR25a of the left rear glass regulator motor.
- C. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(4)	IP22b(29)	Standard resistance: less than 1Ω

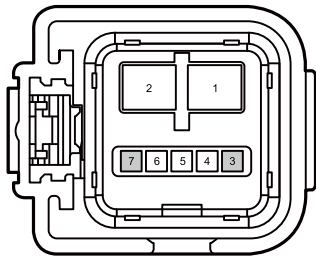
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

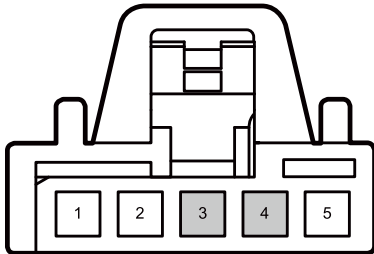
Step 7 | Check the circuit between the left rear glass regulator motor and the glass regulator switch.

DR25a RL door window regulator motor harness connector



GE10-5970d

DR24 RL door window regulator switch harness connector

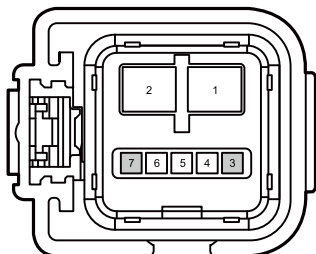


GE10-5971d

Yes

Step 8 Check the circuit between the left rear glass regulator motor and the left rear glass regulator switch for short circuit to power supply.

DR25a RL door window regulator motor harness connector



GE10-5972d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR25a of the left rear glass regulator motor.
- C. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(3)	DR24(4)	Standard resistance: less than 1Ω
DR25a(7)	DR24(3)	

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR25a of the left rear glass regulator motor.
- C. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

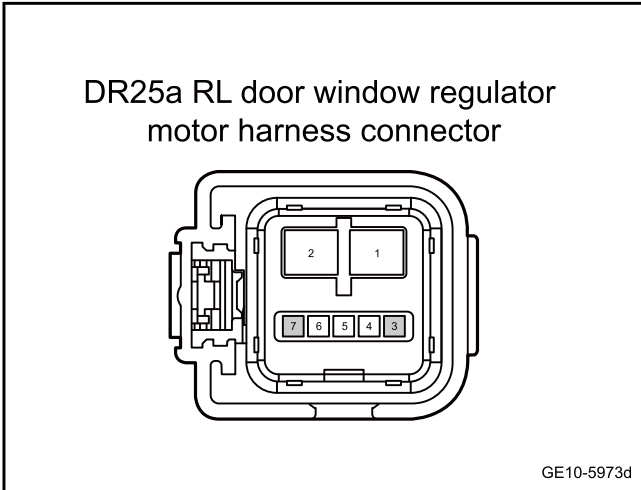
Measure terminal 1	Measure terminal 2	Standard value
DR25a(3)	Vehicle body is grounded.	Standard voltage: 0V
DR25a(7)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Check the circuit between the left rear glass regulator motor and the glass regulator switch.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR25a of the left rear glass regulator motor.
- C. Disconnect the harness connector DR24 of the left rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR25a(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR25a(7)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 10 Replace the left rear glass regulator motor.

- A. Replace the left rear glass regulator motor. Refer to [Replacement of left rear door glass regulator motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

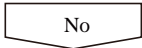
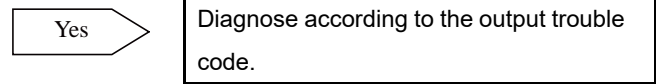
Step 11 Replace the left rear glass regulator switch.

- A. Replace the left rear glass regulator switch. Refer to [Replacement of left rear door glass window switch](#)

Next step

Step 12 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.



Step 13	System is normal.
------------	-------------------

11.5.6.17 Right rear door glass regulator does not work

1. DTC description:

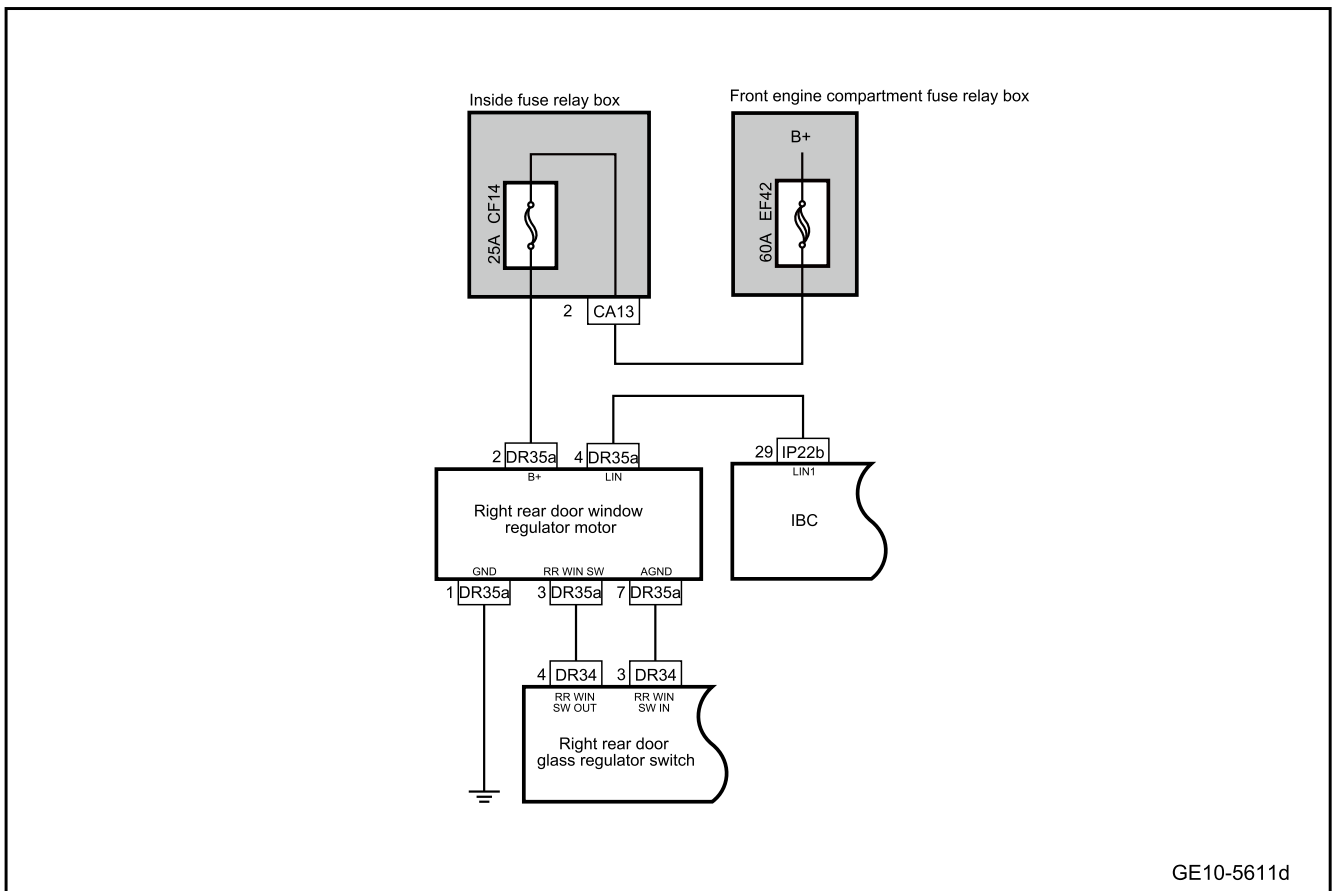
Diagnostic Trouble Code	Trouble description
B101516	Fault of low voltage of RR window anti-pinch module
B101517	Fault of high voltage of RR window anti-pinch module
B101549	Fault of motor relay of RR window anti-pinch module
B10154B	Fault of motor overheating of RR window anti-pinch module
B101564	Rear right window anti-pinch module-switch is stuck
B101596	Fault of Hall sensor of RR window anti-pinch module

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101516	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_undervoltage= 1)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2.IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Replace the right rear glass regulator motor 3.IBC
B101517	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_overnvoltage= 1)		
B101549	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_Motor_Relay_Error= 1)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B10154B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_overhat_Protect= 1)		
B101564	FLAPWL message is successfully received to indicate this error in the LIN frame (LURRUUWdWU central switch= 0 x 7)		
B101596	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_HALL_Error= 1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the right rear door glass regulator motor, right rear door glass regulator switch and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF14 and check whether the fuse is blown.

Rated capacity of fuse: 25A
Rated capacity of fuse: 30A
- C. Unplug the EF42 fuse in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 60A

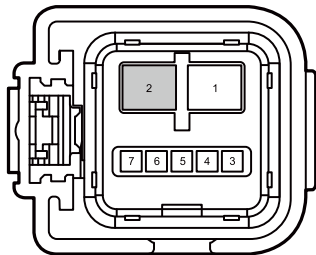
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Right rear door window regulator motor working voltage is inspected.
--------	--

DR35a RR door window regulator motor harness connector



GE10-5974d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR35a of the right rear glass regulator motor.
- C. Disconnect the harness connector DR34 of the right rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(2)	Vehicle body is grounded.	Standard voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

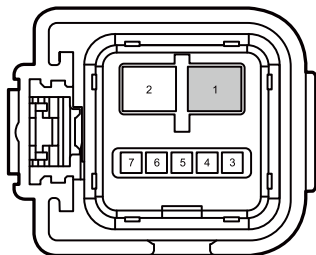
No

Repair or replace the harness.

Yes

Step 5 Inspect right rear door window regulator motor grounding circuit.

DR35a RR door window regulator motor harness connector



GE10-5975d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR35a of the right rear glass regulator motor.
- C. Disconnect the harness connector DR34 of the right rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

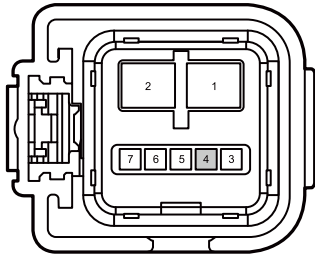
No

Repair or replace the harness.

Yes

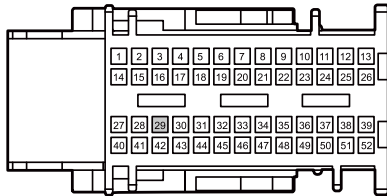
Step 6 Check the LIN circuit between the right front door glass regulator motor and IBC.

DR35a RR door window regulator motor harness connector



GE10-5976d

IP22b body control module harness connector 3



GE10-5977d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR35a of the right rear glass regulator motor.
- C. Disconnect the harness connector DR34 of the right rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(4)	IP22b(29)	Standard resistance: less than 1Ω

- F. Confirm whether the measured value meets the standard.

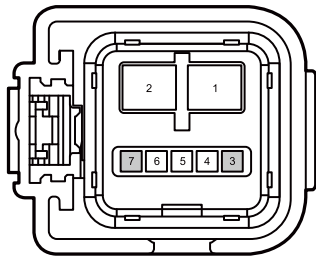
No

Repair or replace the harness.

Yes

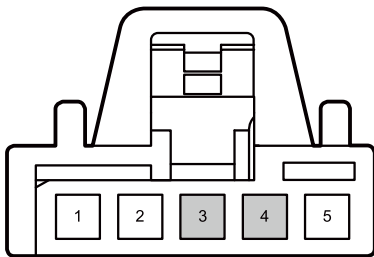
Step 7 Check the circuit between the right front glass regulator motor and the glass regulator switch for open circuit.

DR35a RR door window regulator motor harness connector



GE10-5978d

DR34 RR door window regulator switch harness connector

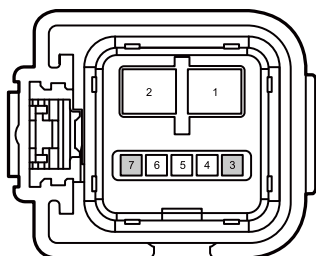


GE10-5979d

Yes

Step 8 Check the circuit between the right rear glass regulator motor and the right rear glass regulator switch for short circuit to power supply.

DR35a RR door window regulator motor harness connector



GE10-5980d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR35a of the right rear glass regulator motor.
- C. Disconnect the harness connector DR34 of the right rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(3)	DR34(4)	Standard resistance: less than 1Ω
DR35a(7)	DR34(3)	

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR35a of the right rear glass regulator motor.
- C. Disconnect the harness connector DR34 of the right rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(3)	Vehicle body is grounded.	Standard voltage: 0V
DR35a(7)		

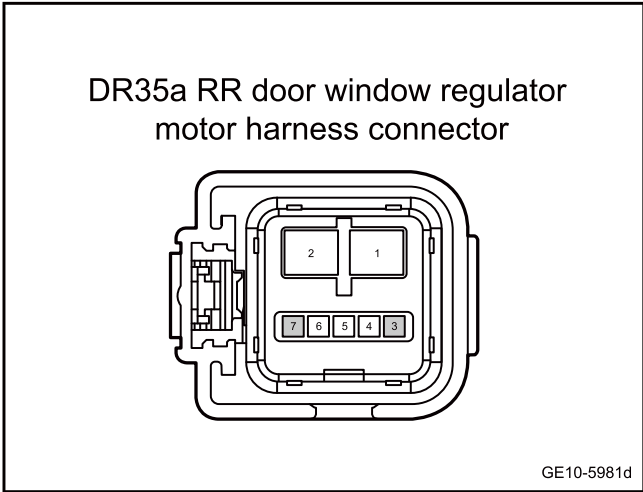
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check the circuit between the right front glass regulator motor and the glass regulator switch.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR35a of the right rear glass regulator motor.
- C. Disconnect the harness connector DR34 of the right rear glass regulator switch.
- D. Disconnect the IBC harness connector IP22b.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR35a(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR35a(7)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10 Replace the right rear glass regulator motor.

- A. Replace the right rear glass regulator motor. Refer to [Replacement of right rear door glass regulator motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

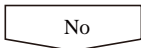
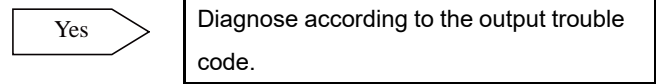
Step 11 Replace the right rear glass regulator switch.

- A. Replace the right rear glass regulator switch. Refer to [Replacement of right rear door glass window switch](#)

Next step

Step 12 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.



Step 15	System is normal.
------------	-------------------

11.5.6.18 Power window regulator motor circuit fault

1. DTC description:

DTC	Trouble description
B101549	Fault of motor relay of RR window anti-pinch module
B10154B	Fault of motor overheating of RR window anti-pinch module
B101596	Fault of Hall sensor of RR window anti-pinch module
B101349	Fault of motor relay of FR window anti-pinch module
B10134B	Fault of motor overheating of FR window anti-pinch module
B101396	Fault of Hall sensor of FR window anti-pinch module
B101449	Fault of motor relay of RL window anti-pinch module
B10144B	Fault of motor overheating of RL window anti-pinch module
B101496	Fault of Hall sensor of RL window anti-pinch module
B101249	Fault of motor relay of FL window anti-pinch module
B10124B	Fault of motor overheating of FL window anti-pinch module
B101296	Fault of Hall sensor of FL window anti-pinch module

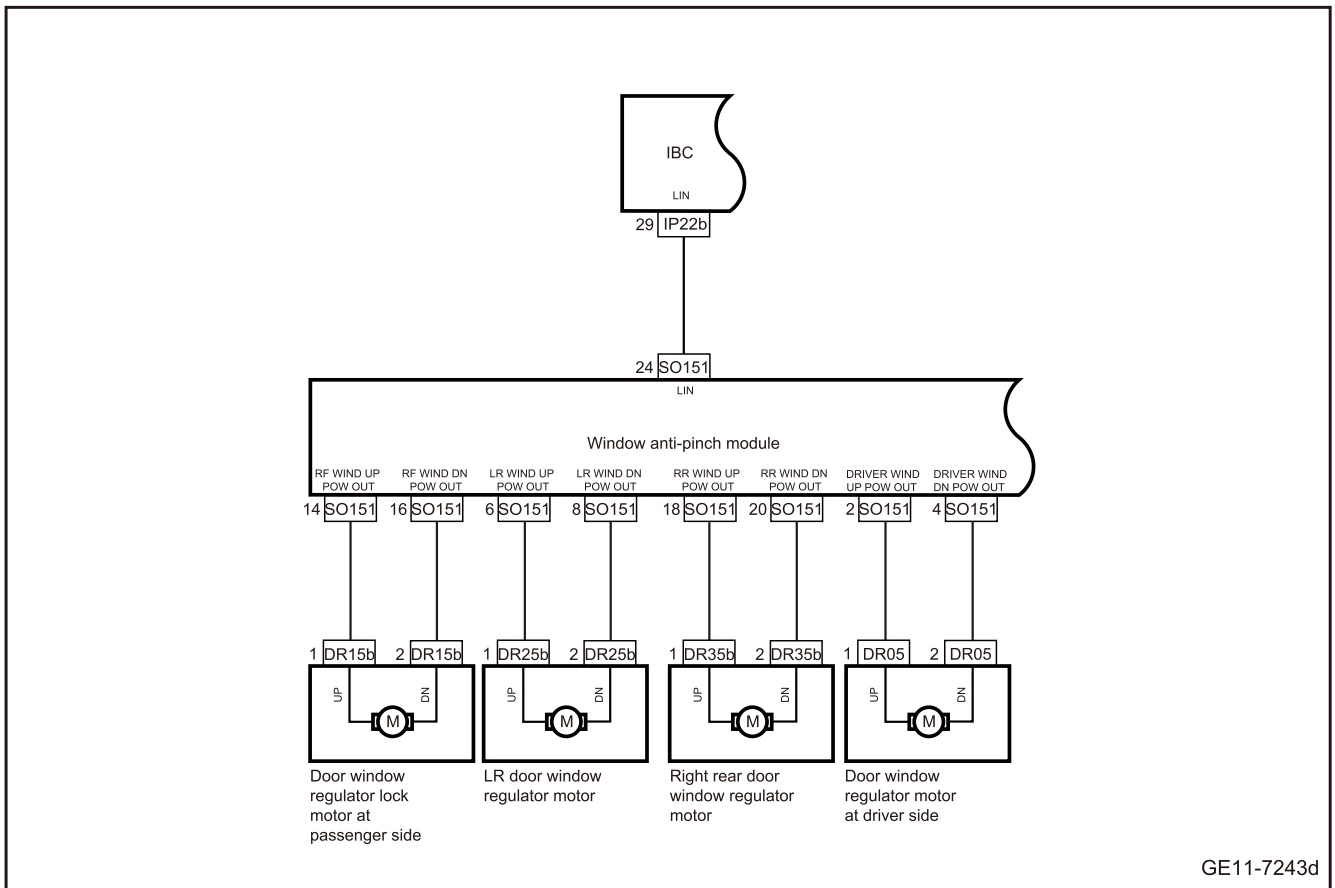
2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101549	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_Motor_Relay_Error= 1)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Power window regulator motor 3. Window anti-pinch module 4. IBC

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B10154B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_overhat_Protect= 1)		
B101596	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RRU_HALL_Error= 1)		
B101349	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_Motor_Relay_Error= 1)		
B10134B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_overhat_Protect= 1)		
B101396	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Pas_HALL_Error= 1)		
B101449	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_Motor_Relay_Error= 1)		
B10144B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_overhat_Protect= 1)		
B101496	FLAPWL message is successfully received to indicate this error in the LIN frame (L_RLD_HALL_Error= 1)		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101249	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_Motor_Relay_Error= 1)		
B10124B	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_overhat_Protect= 1)		
B101296	A successfully received FLAPWL message indicates this error in the LIN frame (L_RS_SolarSensorError=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

This manual only diagnoses the fault of the driver side door glass regulator motor, and the diagnosis of other door glass regulator motors is the same as that of the driver side door glass regulator motor.

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check glass regulator switch of driver side door, glass anti-pinch module, IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

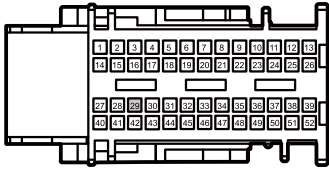
No

Repair or replace the faulty part.

Yes

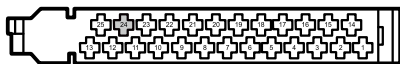
Step 3	Check the LIN communication circuit between the glass anti-pinch module and the IBC.
--------	--

IP22b IBC harness connector



GE11-7951d

SO151 window anti-pinch module harness connector



GE11-7950d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(24)	IP22b(29)	Standard resistance: less than 1Ω
SO151(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(24)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

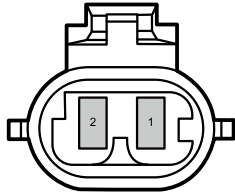
No

Repair or replace the harness.

Yes

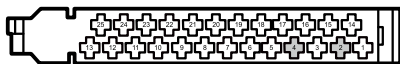
Step 4 Check the circuit between the glass regulator motor of the driver side door and the glass anti-pinch module.

DR05 driver's side window regulator motor harness connector



GE11-7943d

SO151 window anti-pinch module harness connector



GE11-7942d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. Disconnect the harness connector DR05 of the glass regulator motor of the driver side door.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(2)	DR05(1)	Standard resistance: less than 1Ω
SO151(4)	DR05(2)	
SO151(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO151(4)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(2)	Vehicle body is grounded.	Standard voltage: 0V
SO151(4)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the glass regulator motor of the driver side door.

- A. Replace the glass regulator motor of the driver side door. Refer to [Replacement of the glass regulator motor of the driver side door](#)

Yes System is normal.

No

Step 6 Replace the glass anti-pinch module

- A. Replace the glass anti-pinch module Refer to [Replacement of the glass anti-pinch module](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Program and set the IBC.

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Replace the IBC.

- A. To replace the IBC, please refer to [Replacement of IBC](#)

Next step

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.5.6.19 Glass anti-pinch module circuit fault

1. DTC description:

DTC	Trouble description
B101216	Fault of low voltage of FL window anti-pinch module
B101217	Fault of high voltage of FL window anti-pinch module
B101316	Fault of low voltage of FR window anti-pinch module
B101317	Fault of high voltage of FR window anti-pinch module
B101416	Fault of low voltage of RL window anti-pinch module
B101417	Fault of high voltage of RL window anti-pinch module

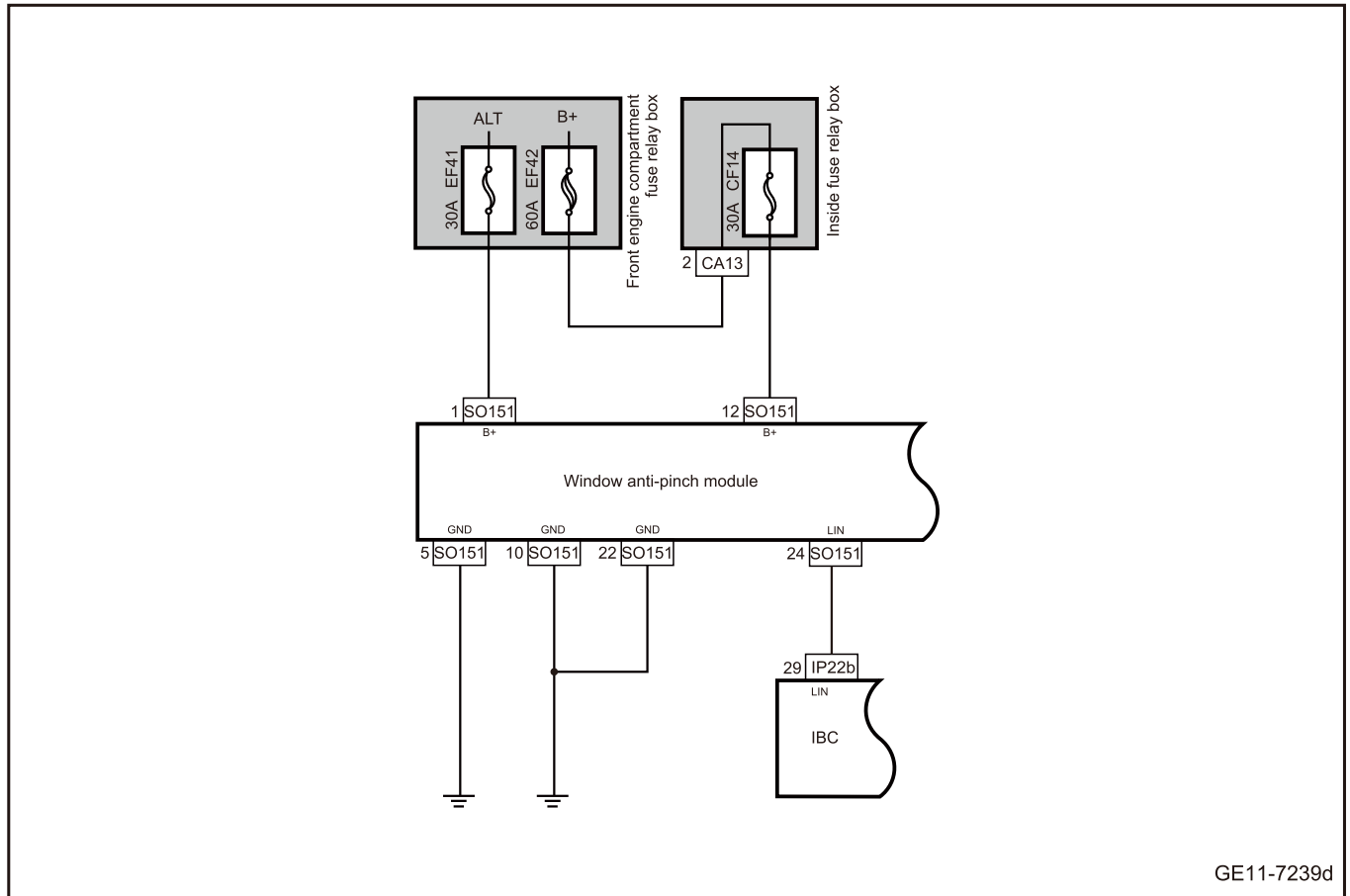
DTC	Trouble description
B101516	Fault of low voltage of RR window anti-pinch module
B101517	Fault of high voltage of RR window anti-pinch module

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101216	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Glass anti-pinch module 3. IBC
B101217	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)		
B101316	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)		
B101317	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)		
B101416	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)		
B101417	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)		
B101516	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_undervoltage=1)		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101517	FLAPWL message is successfully received to indicate this error in the LIN frame (L_Drv_ overvoltage= 1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the door glass anti-pinch module and IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Check whether the fuse is blown according to the below table.

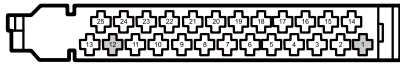
Fuse Position	Fuse Code	Fuse Rated Capacity
Front engine compartment fuse relay box	EF41	30A
Front engine compartment fuse relay box	EF42	60A
Indoor fuse relay box	CF14	30A

Yes
Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the power supply circuit of glass anti-pinch module.
--------	--

SO151 window anti-pinch module harness connector



GE11-7945d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(1)	Vehicle body is grounded.	Standard voltage: 11-14V
SO151(12)		

- E. Confirm whether the measured value meets the standard.

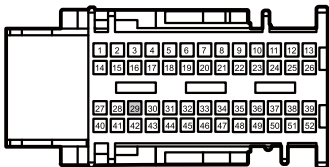
No

Repair or replace the harness.

Yes

Step 5 Check the LIN communication circuit between the glass anti-pinch module and the IBC.

IP22b IBC harness connector



GE11-7951d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the table below:

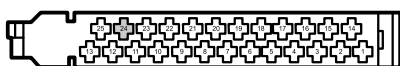
Measure terminal 1	Measure terminal 2	Standard value
SO151(24)	IP22b(29)	Standard resistance: less than 1Ω
SO151(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(24)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

SO151 window anti-pinch module harness connector

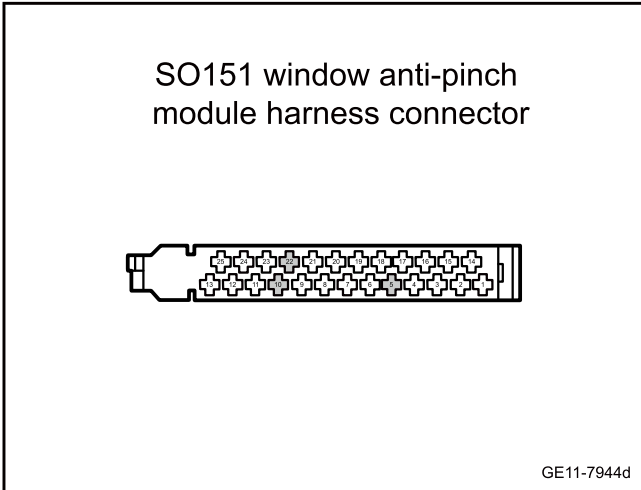


GE11-7950d

No → Repair or replace the harness.

Yes

Step 6 Check whether the grounding harness of glass anti-pinch module is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO151(10)		
SO151(22)		

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Replace glass anti-pinch module

- A. Replace glass anti-pinch module Refer to [Replacement of the glass anti-pinch module](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 8 Program and set the IBC.

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 Replace the IBC.

A. To replace the IBC, please refer to [Replacement of IBC](#)

Next step

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.5.6.20 Power window regulator switch power circuit trouble

1. DTC description:

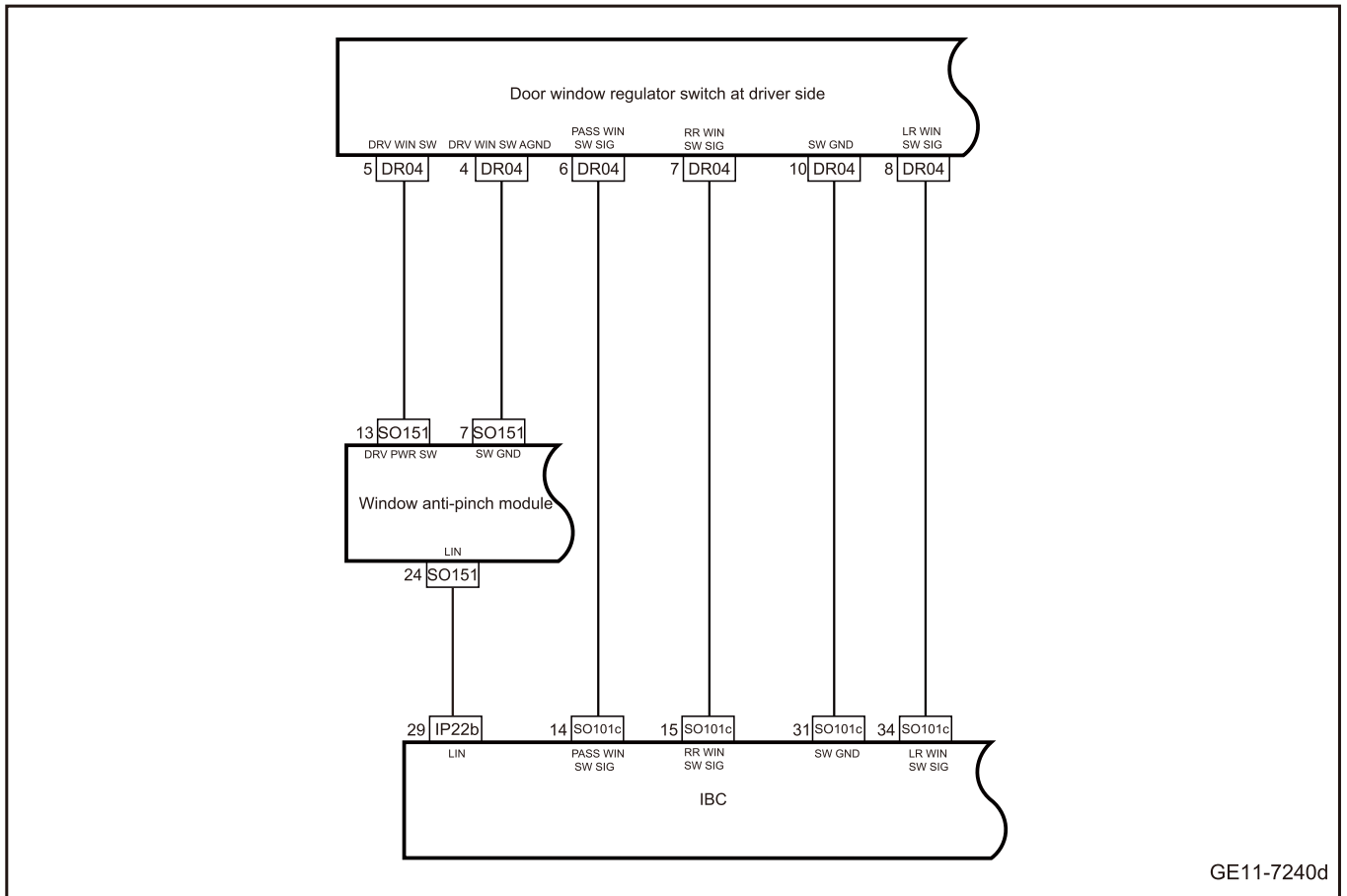
DTC	Trouble description
B101264	Front left window anti-pinch module-switch is stuck
B101364	Front right window anti-pinch module-switch is stuck
B101464	Left rear window anti-pinch module - switch is stuck
B101564	Rear right window anti-pinch module-switch is stuck

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101264	FLAPWL message is successfully received to indicate this error in the LIN frame (LUDrvUWdWU central switch= 0 x 7)	1. LIN1 is in the wake-up state and meets the TdiagEnable condition 2. IBC Power supply The supply voltage is within the range of 9-16V	1. Circuit 2. Power window regulator switch 3. IBC
B101364	FLAPWL message is successfully received to indicate this error in the LIN frame (LUPasUWdWU central switch=0 x 7)		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101464	FLAPWL message is successfully received to indicate this error in the LIN frame (LURRUUWdWU central switch= 0 x 7)		
B101564	FLAPWL message is successfully received to indicate this error in the LIN frame (LURLDUWdWU central switch= 0 x 7)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check glass anti-pinch module, glass regulator switch of driver side door and IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

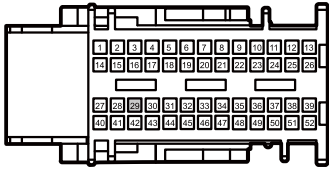
No

Repair or replace the faulty part.

Yes

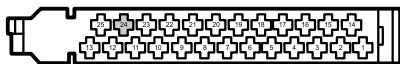
Step 3	Check the LIN line between the glass anti-pinch module and the IBC.
--------	---

IP22b IBC harness connector



GE11-7951d

SO151 window anti-pinch module harness connector



GE11-7950d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(24)	IP22b(29)	Standard resistance: less than 1Ω
SO151(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(24)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

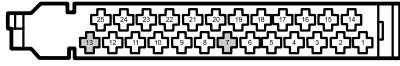
No

Repair or replace the harness.

Yes

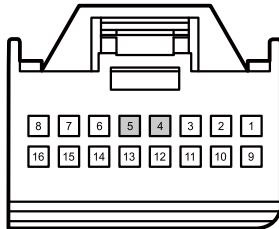
Step 4 Check whether the circuit between glass anti-pinch module and glass regulator switch at driver side is open.

SO151 window anti-pinch module harness connector



GE11-7948d

DR04 driver's side door window regulator switch harness connector



GE11-7949d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO151 of the glass anti-pinch module.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(13)	DR04(5)	Standard resistance: less than 1Ω
SO151(7)	DR04(4)	
SO151(13)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO151(7)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO151(13)	Vehicle body is grounded.	Standard voltage: 0V
SO151(7)		

- G. Confirm whether the measured value meets the standard.

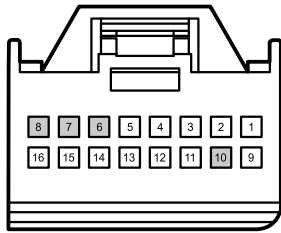
No

Repair or replace the harness.

Yes

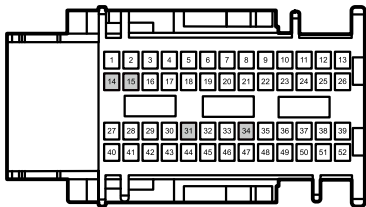
Step 5 Check the circuit between IBC and glass regulator switch at driver side.

DR04 driver's side door window regulator switch harness connector



GE11-7947d

SO101c IBC harness connector



GE11-7946d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(14)	DR04(6)	Standard resistance: less than 1Ω
SO101c(15)	DR04(7)	
SO101c(34)	DR04(8)	
SO101c(31)	DR04(10)	
SO101c(14)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101c(15)		
SO101c(34)		
SO101c(31)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(14)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(15)		
SO101c(34)		
SO101c(31)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Replace the driver side door glass regulator switch.

- A. Replace the driver side door glass regulator switch. Refer to [Replacement of Driver Side Door Glass Regulator Switch](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7	Replace of the glass anti-pinch module
--------	--

- A. Replace of the glass anti-pinch module Refer to [Replacement of the glass anti-pinch module](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Program and set the IBC.
--------	--------------------------

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Replace the IBC.
--------	------------------

- A. To replace the IBC, please refer to [Replacement of IBC](#)

Next step

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

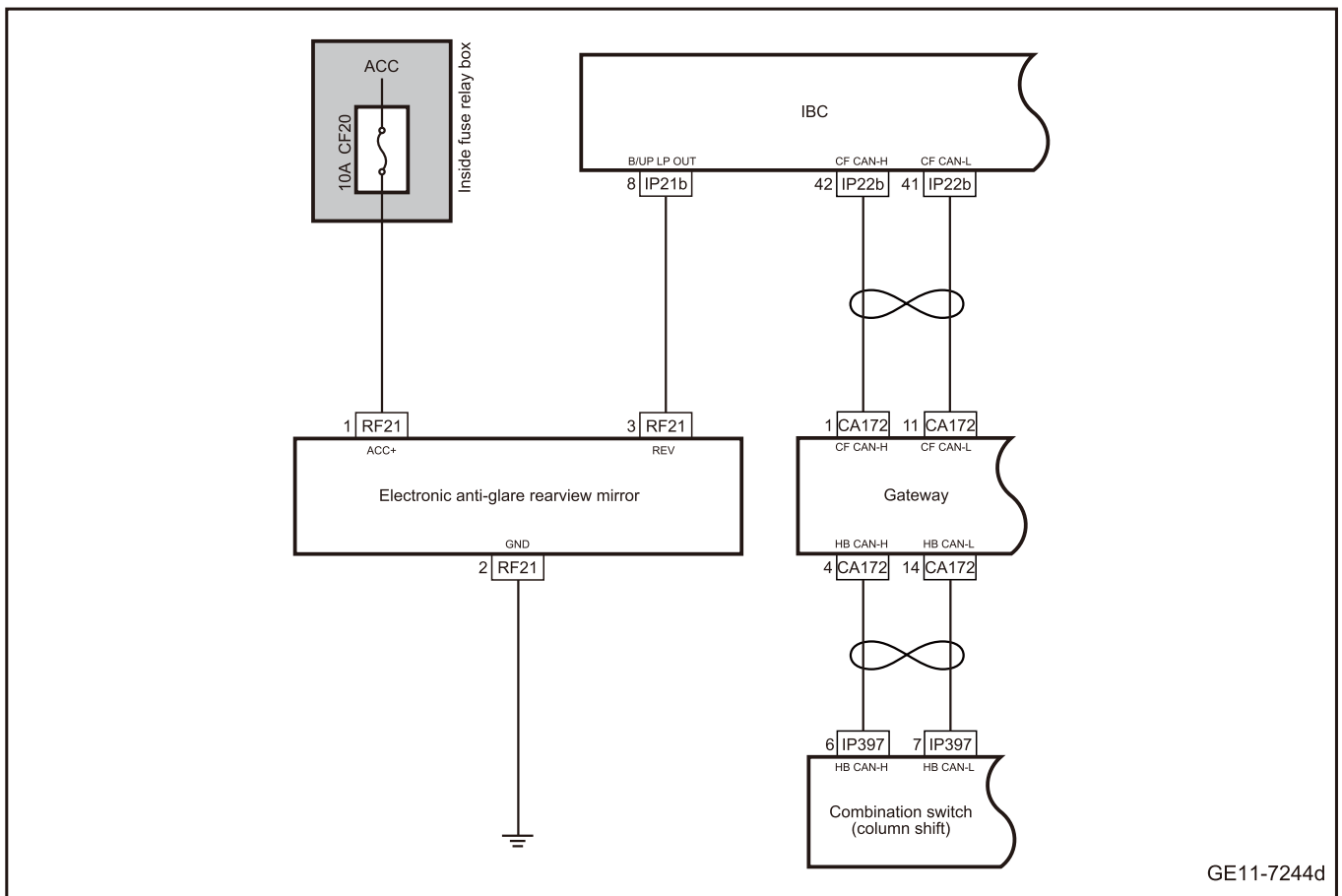
Yes Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.5.6.21 Electronic dimming rearview mirror does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the IBC and electronic dimming rearview mirror for signs of damage, deformation, stain, loosening, etc.
- B. Check the IBC and electronic dimming rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF20	10A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 | Check the integrity of the CF-CAN bus.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm that the CF-CAN network is functioning properly.

No → Check or repair CF-CAN bus communication faults and replace or repair harness as necessary.

Yes

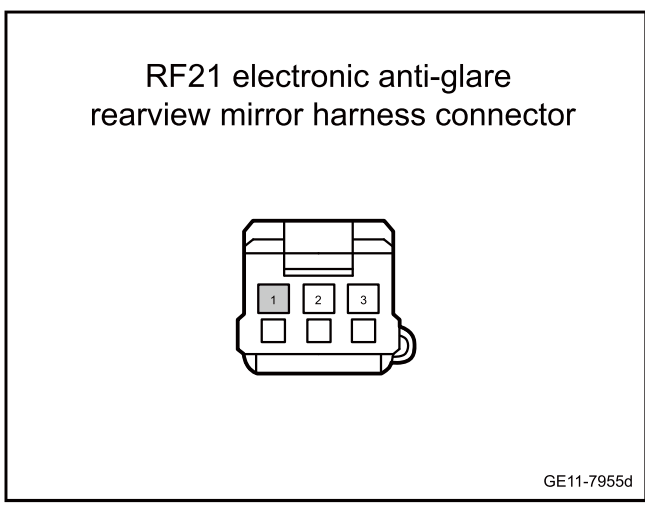
Step 4 | Check the integrity of the HB-CAN bus.

- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm that the HB-CAN network is functioning properly.

No → Check or repair HB-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 5 | Check the power supply circuit of the electronic dimming rearview mirrors.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic dimming rearview mirror harness connector.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF21(1)	Vehicle body is grounded.	Standard voltage: 11-14V

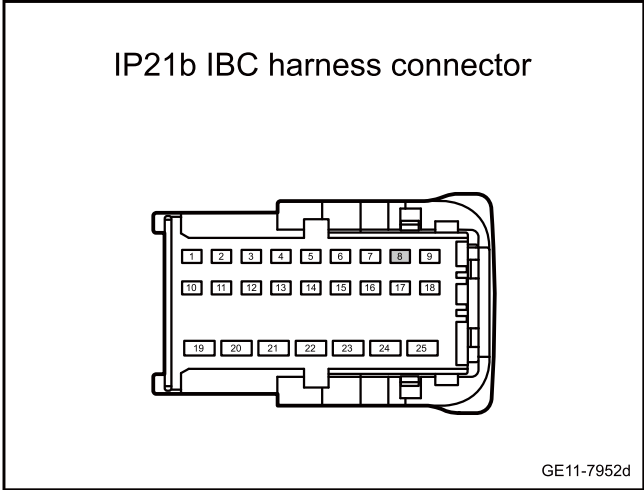
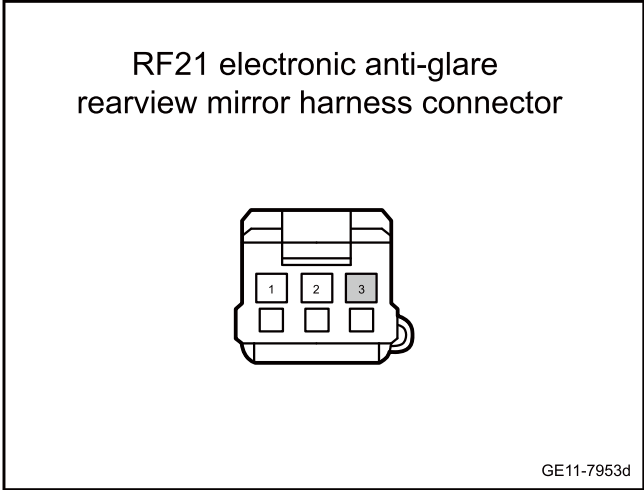
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check the circuit between the electronic dimming rearview mirrors and the IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic dimming rearview mirror harness connector.
- C. Disconnect the IBC harness connector IP21b.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF21(3)	IP21b(8)	Standard resistance: less than 1Ω
RF21(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF21(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

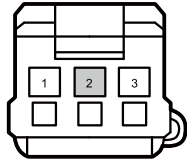
No

Repair or replace the harness.

Yes

Step 7 Check the grounding circuit of the electronic dimming rearview mirrors.

RF21 electronic anti-glare rearview mirror harness connector



GE11-7954d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the electronic dimming rearview mirror harness connector.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF21(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Electronic dimming rearview mirrors*

- A. Electronic dimming rearview mirrors* Refer to [Replacement of electronic dimming rearview mirrors](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9 Replace the combination switch(column shift)

- A. Replace the combination switch(column shift) Refer to [Replacement of Combination Switch\(column shift\)](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 10 Program and set the IBC.

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace the IBC.
---------	------------------

A. Replace the IBC. Refer to [Replacement of IBC](#)

Next step

Step 12	System is normal.
------------	-------------------

11.5.7 Removing and installing

11.5.7.1 Replacement of left exterior rearview mirror(Type I)

Removal procedure

Caution

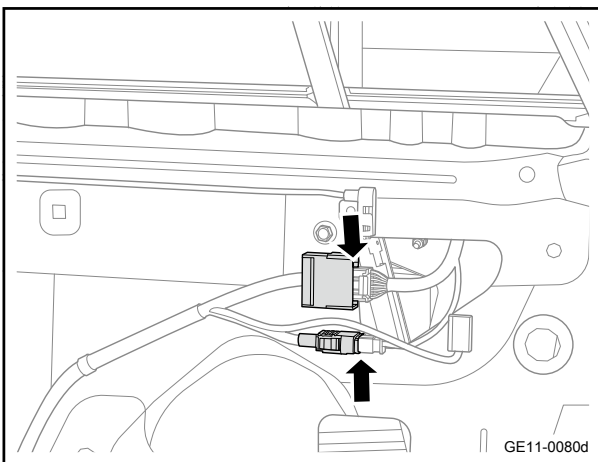
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

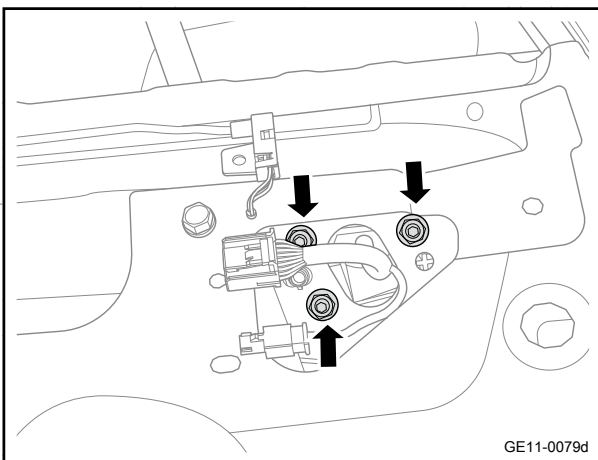
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

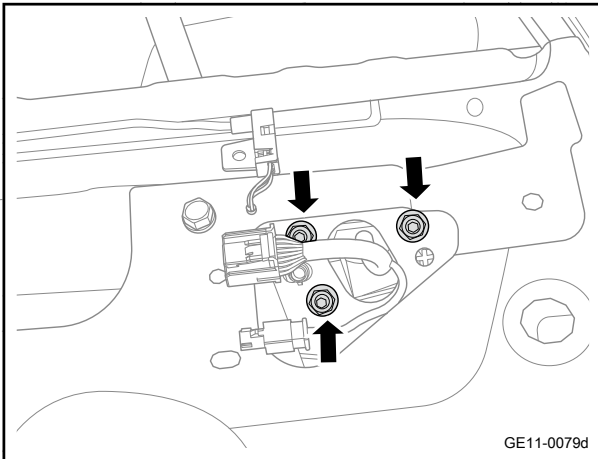
- 2 Remove the left front door interior trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)
- 3 Disconnect the harness connector of the left exterior rearview mirror.



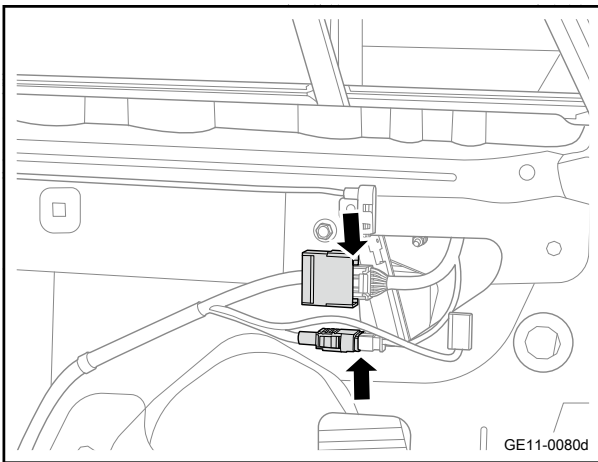
- 4 Remove the 3 fixing nuts of the left exterior rearview mirrors.
- 5 Remove the left exterior rearview mirror.



Installation procedure



- 1 Move the left exterior rearview mirror to the installation position.
- 2 Install the 3 fixing nuts of the left exterior rearview mirrors.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



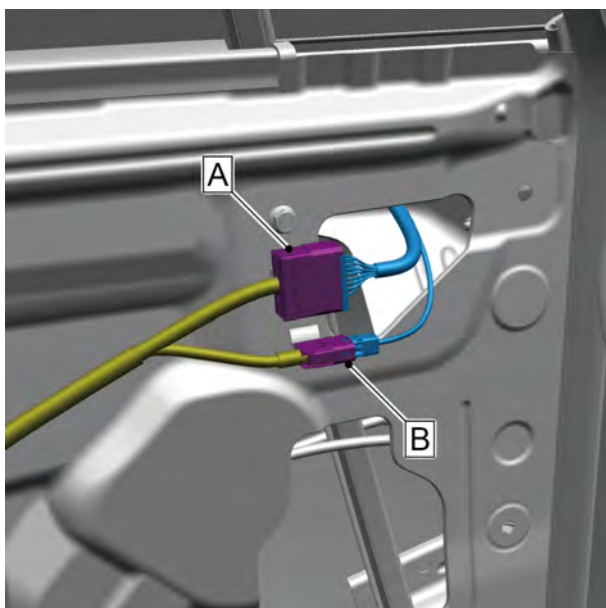
- 3 Connect the harness connector of the left exterior rearview mirror.

- 4 Install the left front door interior trim panel assembly.
- 5 Connect the negative cable of battery.

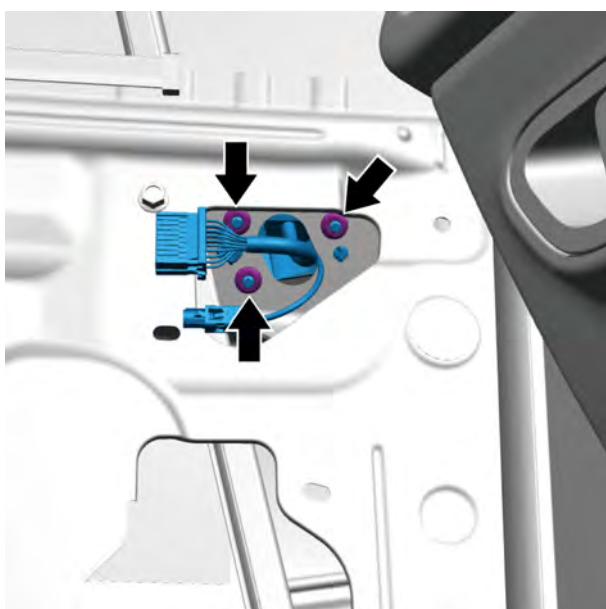
11.5.7.2 Replacement of left exterior rearview mirror(Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door watertight membrane. [Replacement of front left door watertight membrane](#)

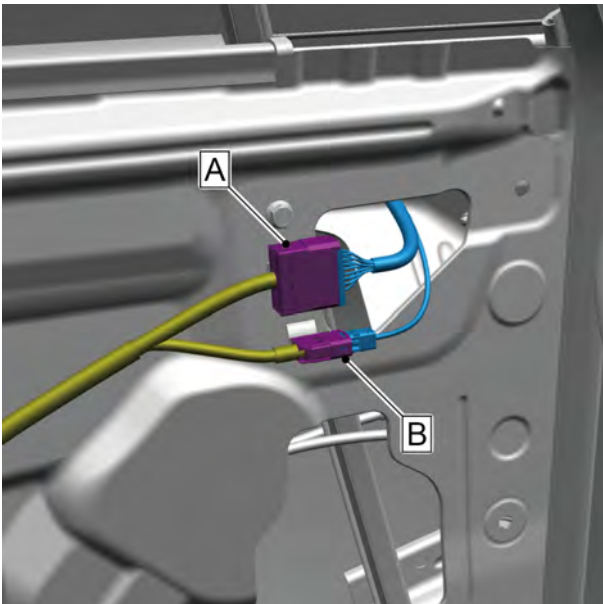
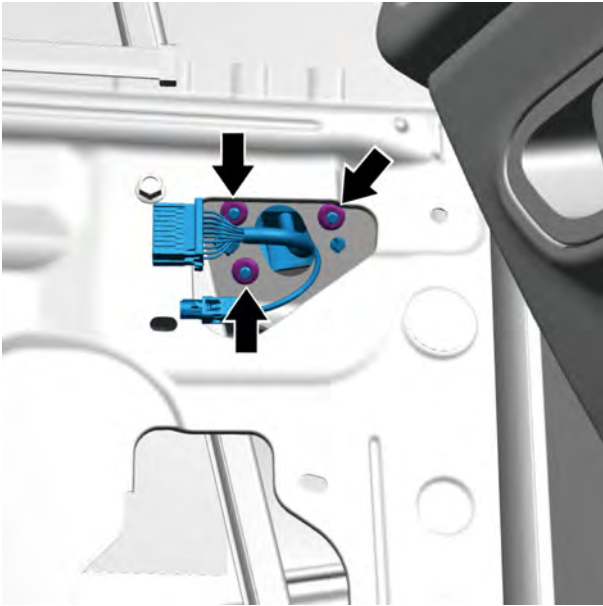


- 3 Disconnect the harness connector A connecting the left front door harness with the left outside rearview mirror.
- 4 Disconnect the harness connector B connecting the left front door harness with the forward camera assembly of 360-degree panoramic parking assistance.



- 5 Remove the 3 fixing nuts connecting the left outside rearview mirror with the front door outside rearview mirror mounting plate.
- 6 Remove the left exterior rearview mirror.

Installation procedure

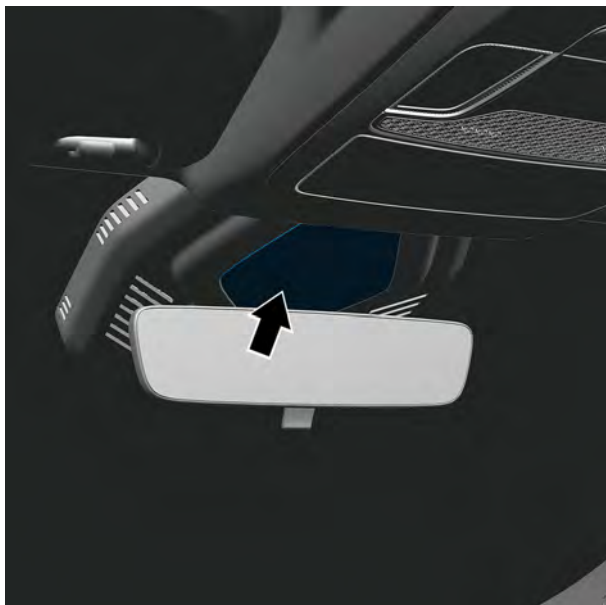


- 1 Move the left exterior rearview mirror to the installation position.
- 2 Install and tighten the 3 fixing nuts connecting the left exterior rearview mirror and the left front door exterior rearview mirror mounting plate.
- 3 Connect the harness connector B between the front left door harness and the forward camera assembly of 360-degree panoramic parking assistance.
- 4 Connect 1 harness connector A between the left front door harness and the left outside rearview mirror.
- 5 Install the front left door watertight membrane.
- 6 Connect the negative cable of battery.
- 7 Perform the calibration procedure of the automatic parking module. Refer to 360 AVM calibration

11.5.7.3 Replacement of interior rearview mirror

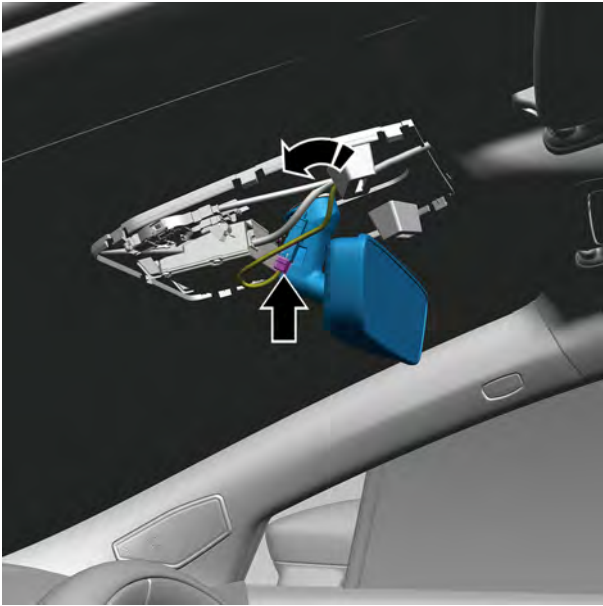
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Use the plastic prying plate to pry off the interior rearview mirror trim cover plate.

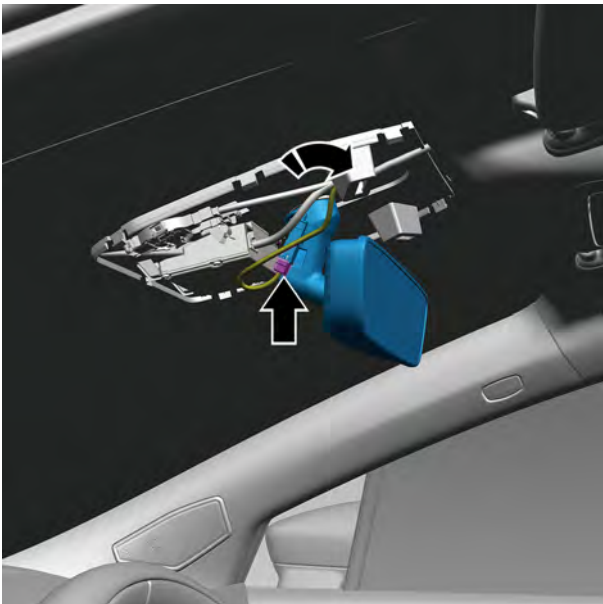


- 3 Use the plastic prying plate to pry off the interior rearview mirror trim cover.





- 4 Disconnect the 1 harness connector connecting the roof harness with the electronic dimming rearview mirror.
- 5 Rotate the electronic dimming interior rearview mirror counterclockwise for 60 degrees, and take out the electronic dimming rearview mirror downward.

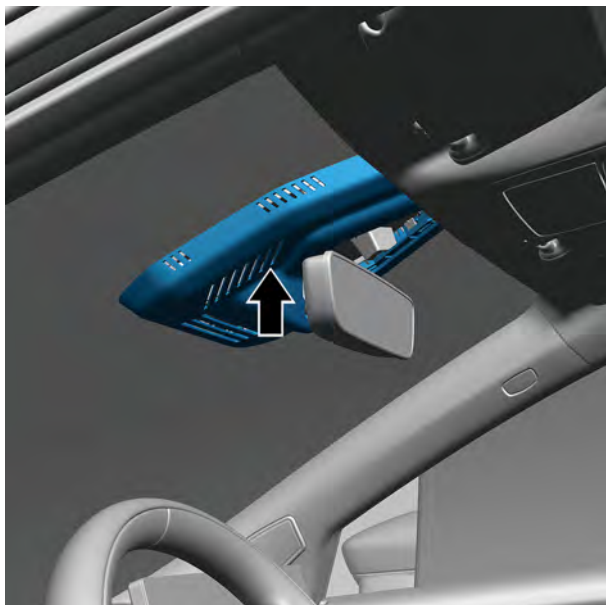


Installation procedure

- 1 Insert the electronic glare-free interior rearview mirror into the auxiliary windshield assembly and clockwise rotate 60 degrees to ensure that the electronic glare-free interior rearview mirror is firmly fixed.
- 2 Connect the 1 harness connector connecting the roof harness with the electronic dimming rearview mirror.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



3 Install the inner rearview mirror trim cover.

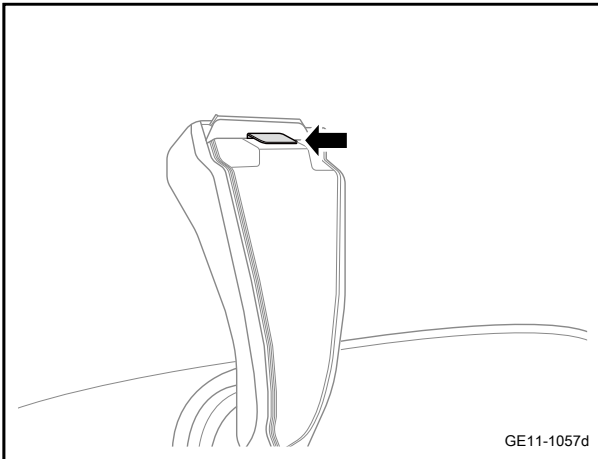


4 Install the inner rearview mirror trim cover plate.

5 Connect the negative cable of battery.

11.5.7.4 Replacement of manual dimming interior rearview mirrors

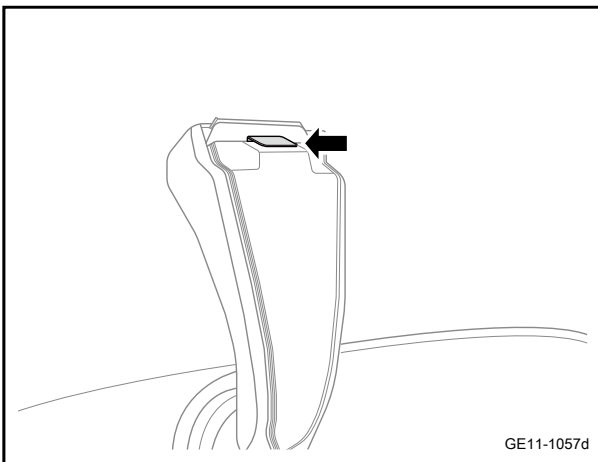
Removal procedure



- 1 Press and hold the clip and pull out the manual dimming interior rearview mirror.

Installation procedure

- 1 Move the manual dimming interior rearview mirror to the installation position.
- 2 Insert the manual dimming interior rearview mirror forward.



11.5.7.5 Replacement of the left power rearview mirror glass

Removal procedure

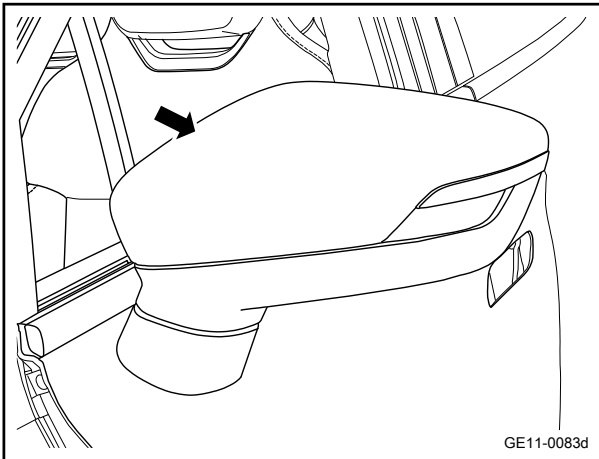
Caution

The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

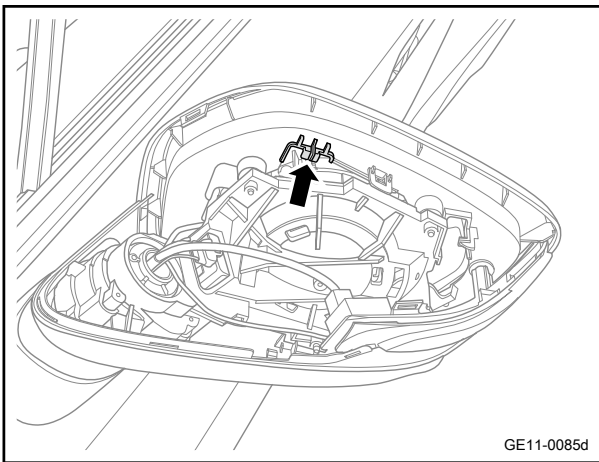
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



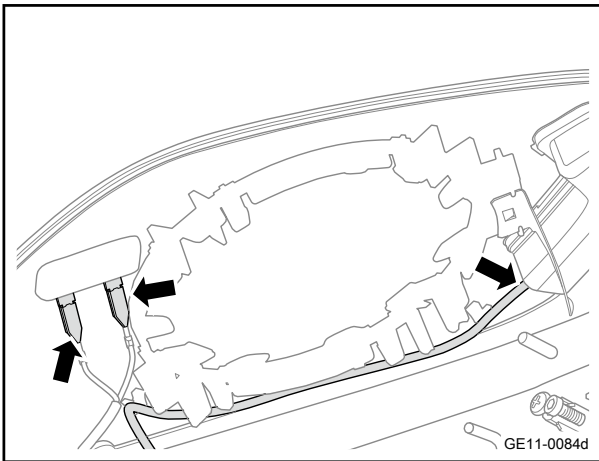
- 2 Use a suitable tool to remove the upper cover of the left power rearview mirror.

Caution

When removing, carefully scratch the power rearview mirror cover.

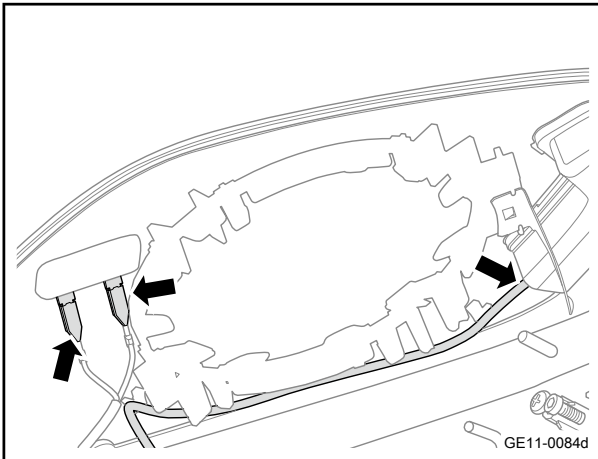


- 3 Pry off the left power rearview mirror glass.

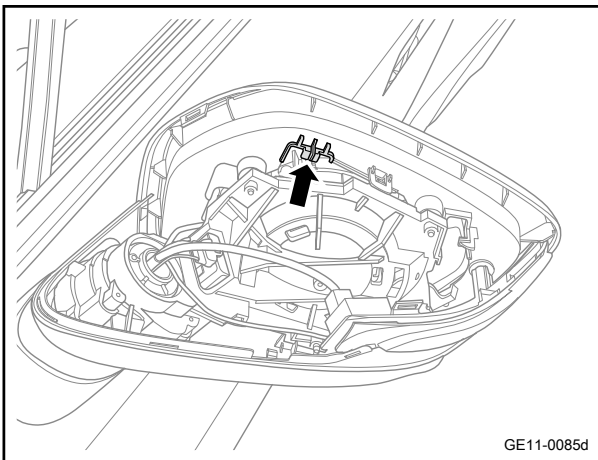


- 4 Disconnect the left power rearview mirror harness connector.
- 5 Remove the left power rearview mirror glass.

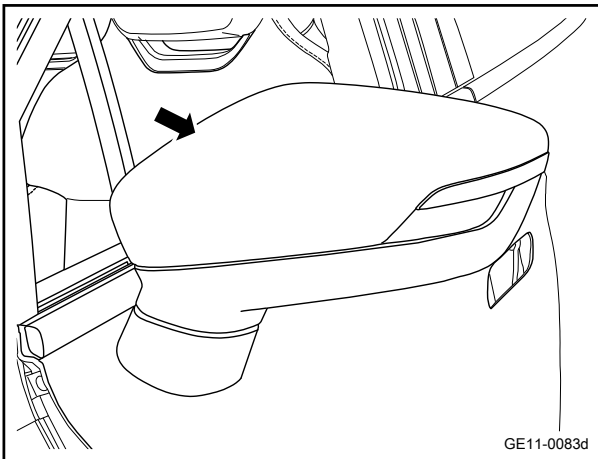
Installation procedure



- 1 Move the left power rearview mirror glass to the installation position.
- 2 Connect the harness connector of the left power rearview mirror.



- 3 Install the left power rearview mirror lens.



- 4 Install the left power rearview mirror upper cover.

- 5 Connect the negative cable of battery.

11.5.7.6 Replacement of exterior rearview mirror switch

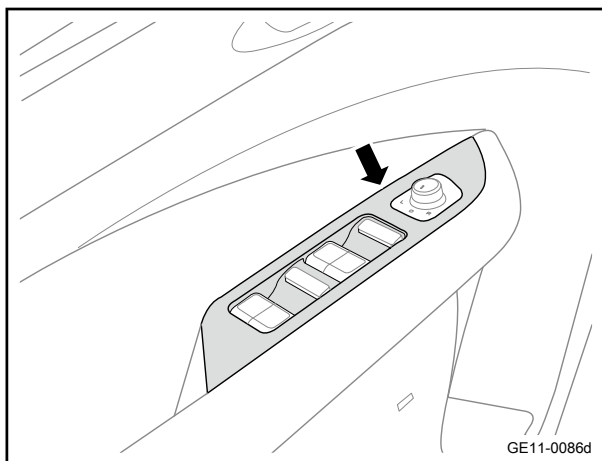
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

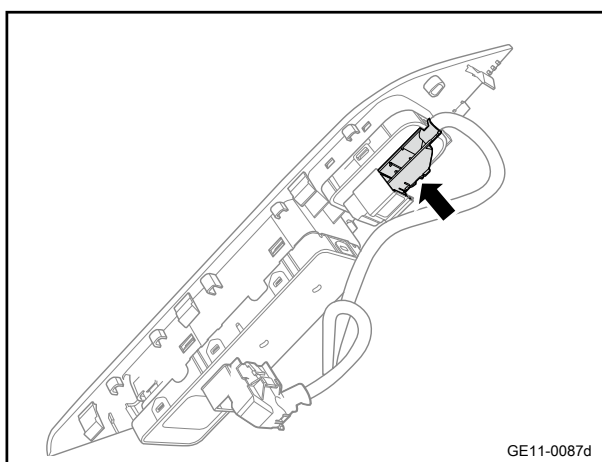
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Pry off the left front door switch panel assembly.

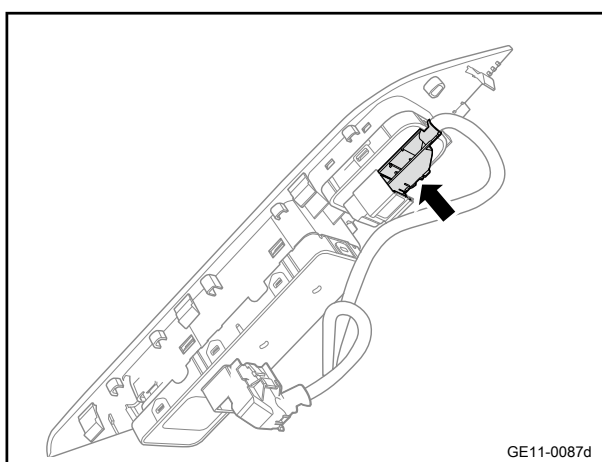


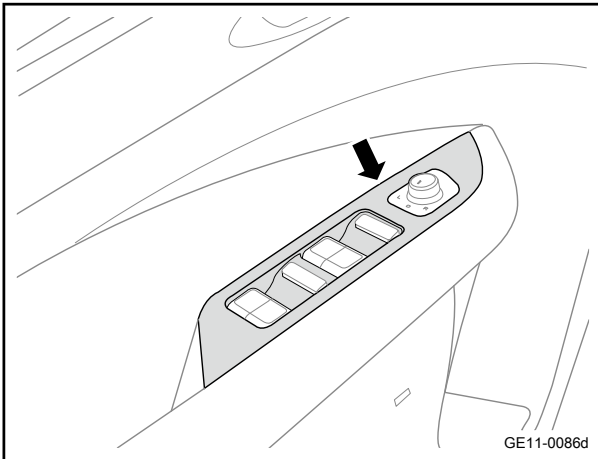
- 3 Disconnect exterior rearview mirror adjustment switch harness connector.
- 4 Take off exterior rearview mirror adjustment switch



Installation procedure

- 1 Move exterior rearview mirror adjustment switch to installation location
- 2 Connect exterior rearview mirror adjusting switch harness connector.





- 3 Install the left front door switch panel assembly.

- 4 Connect the negative cable of battery.

11.5.7.7 Replacement of the left front door electrically operated door glass lift switch assembly

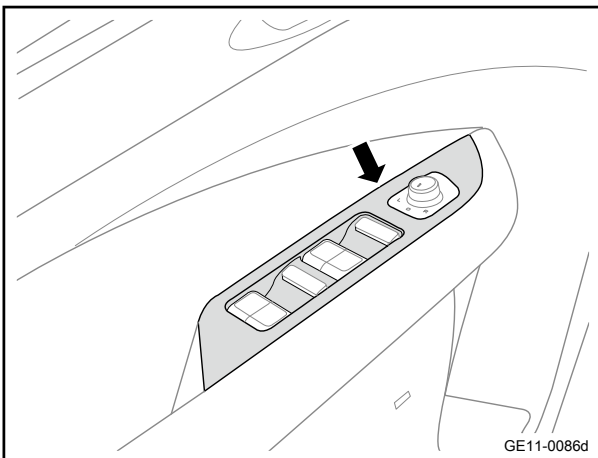
Removal procedure

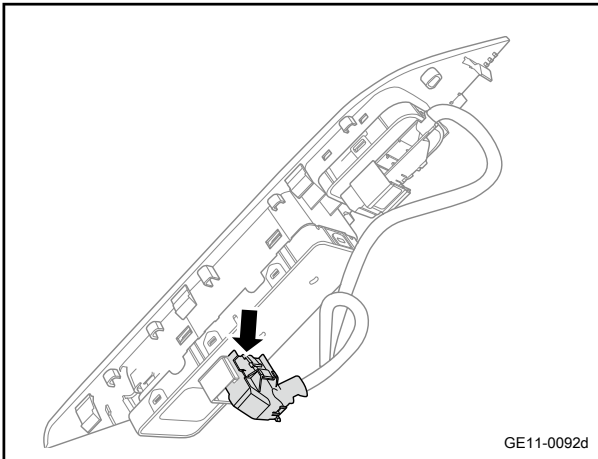
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

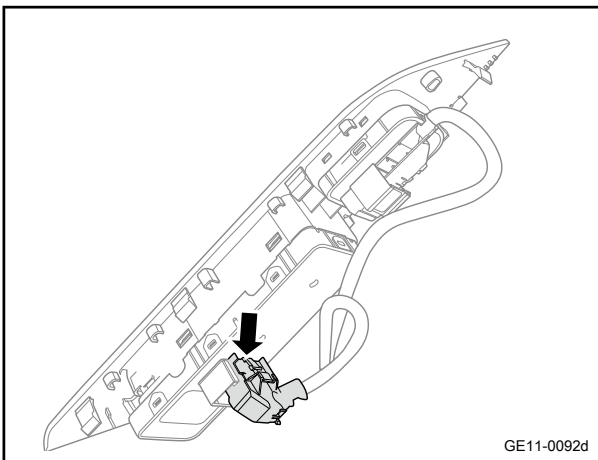
- 2 Pry off the left front door switch panel assembly.



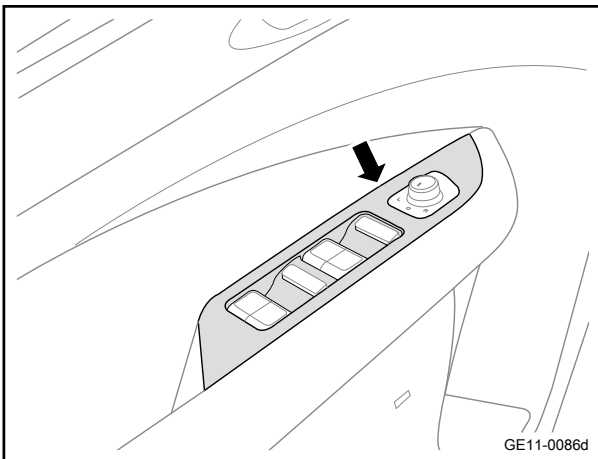


- 3 Disconnect the harness connector of the front left door electrically operated door glass lift switch assembly.
- 4 Pry off the left front door electrically operated door glass lift switch assembly.

Installation procedure



- 1 Move the left front door electrically operated door glass lift switch assembly.
- 2 Connect the left front door electrically operated door glass lift switch assembly.



- 3 Install the left front door switch panel assembly.

- 4 Connect the negative cable of battery.

11.5.7.8 Replacement of left front power glass regulator assembly

Removal procedure

Caution

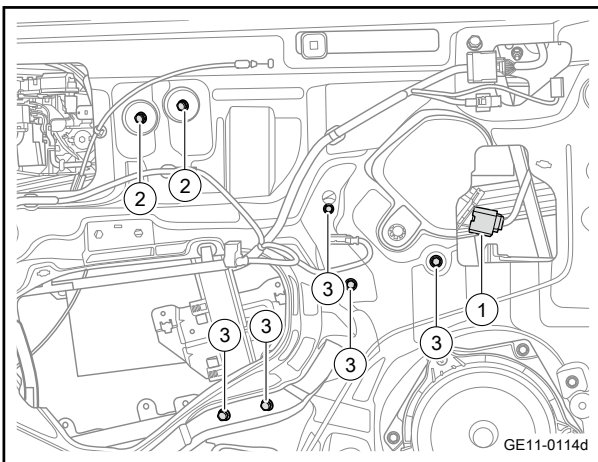
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

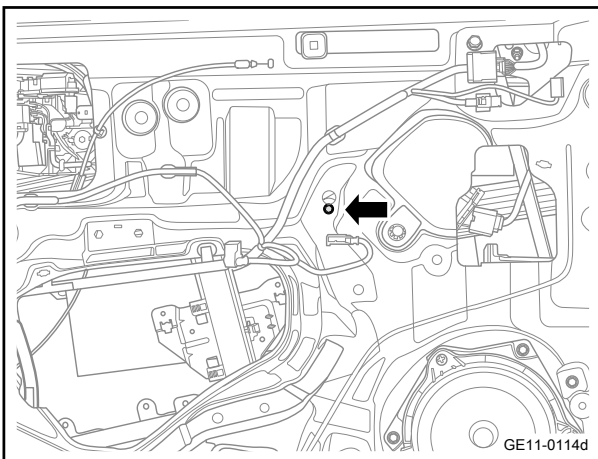
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

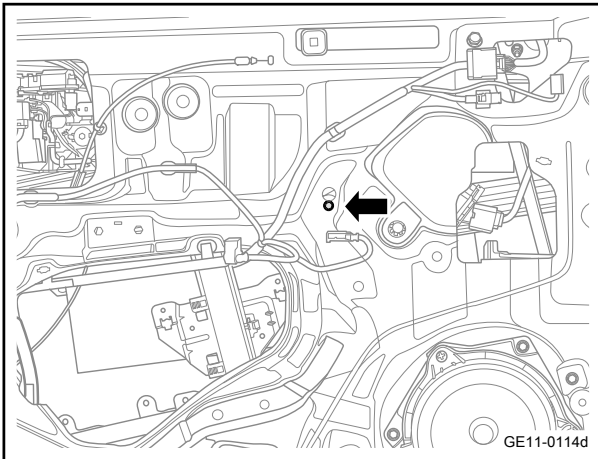
- 2 Remove the left front door glass assembly. Refer to [Replacement of Left Front Door Glass Assembly](#)
- 3 Disconnect the harness connector 1 of the left front door power electric window lifter assembly.
- 4 Remove the 2 fixing nuts 2 of the left front power glass regulator assembly.
- 5 Remove the 5 fixing bolts 3 of the left front power glass regulator assembly.



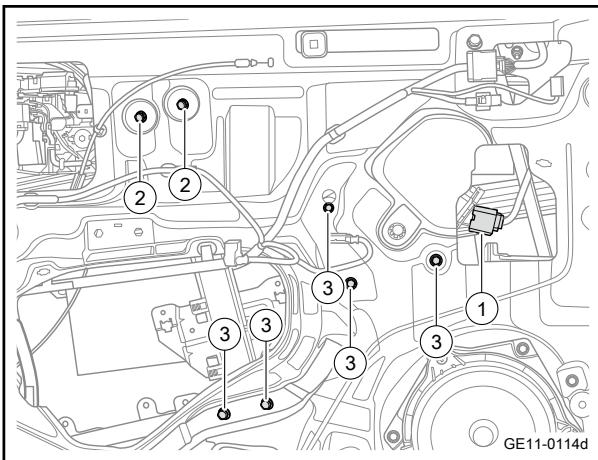
- 6 Loosen left front power glass regulator assembly fixing bolt
- 7 Take off the left front power glass regulator assembly.



Installation procedure



- 1 Move the left front power glass regulator assembly to the installation position.
- 2 Install the 1 fixing bolt of the left front power glass regulator assembly.
Torque: 9N.m (metric system) 6.6lb-ft (Imperial system)



- 2 Install the 4 fixing bolts 3 of the left front power glass regulator assembly.
Torque: 9N.m (metric system) 6.6lb-ft (Imperial system)
- 3 Install the 2 fixing nuts 2 of the left front power glass regulator assembly.
Torque: 10N.m (metric system) 7.4lb-ft (Imperial system)
- 4 Connect the harness connector 1 of the left front door power window lifter assembly.

- 5 Install the left front door glass assembly.
- 6 Connect the negative cable of battery.

11.5.7.9 Replacement of Single Electrically Operated Door Glass Lift Switch Assembly

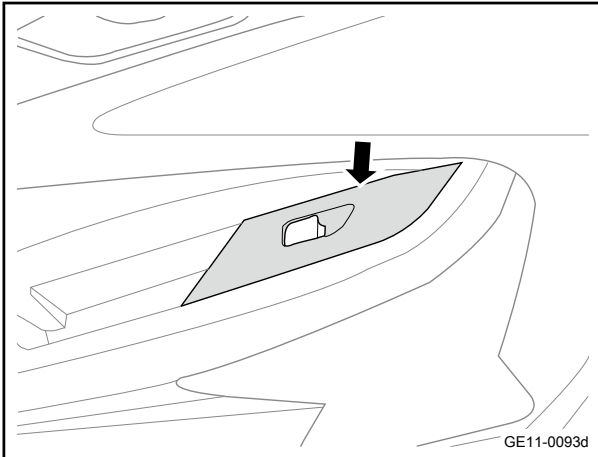
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

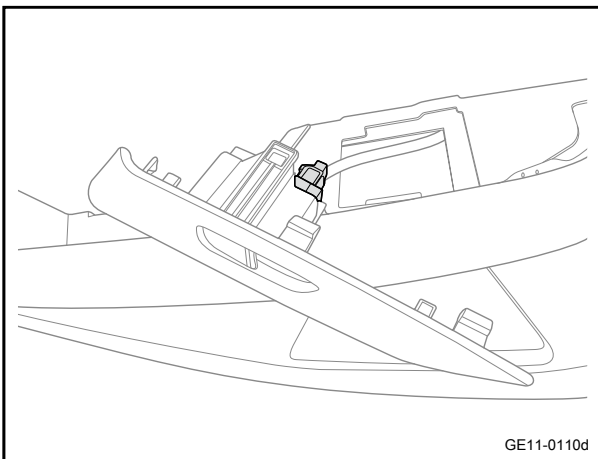
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

- 2 Pry off RL door window regulator switch panel assembly



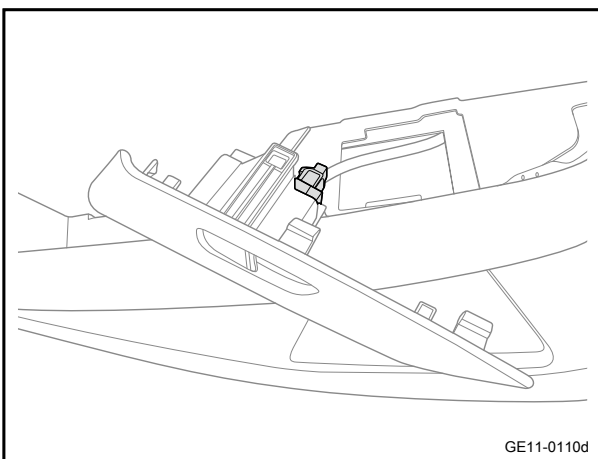
- 3 Disconnect the harness connector 1 of the single electrically operated door glass lift switch assembly harness connector.

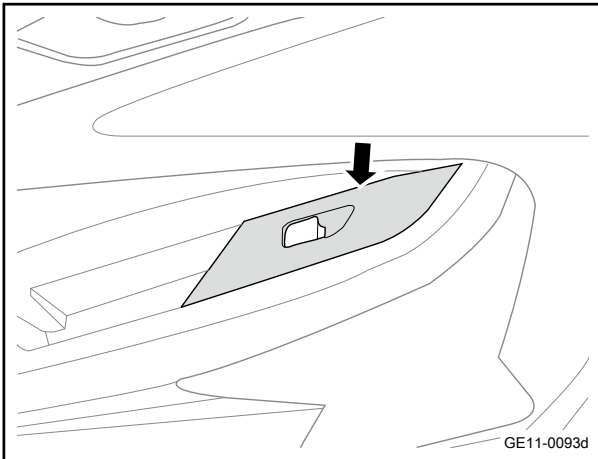


- 4 Take off single electrically operated door glass lift switch assembly.

Installation procedure

- 1 Move the single electrically operated door glass lift switch assembly to the installation position.
- 2 Connect the single electrically operated door glass lift switch assembly harness connector.





- 3 Install the left front door switch panel assembly.

- 4 Connect the negative cable of battery.

11.5.7.10 Replacement of left rear power glass regulator assembly

Removal procedure

Caution

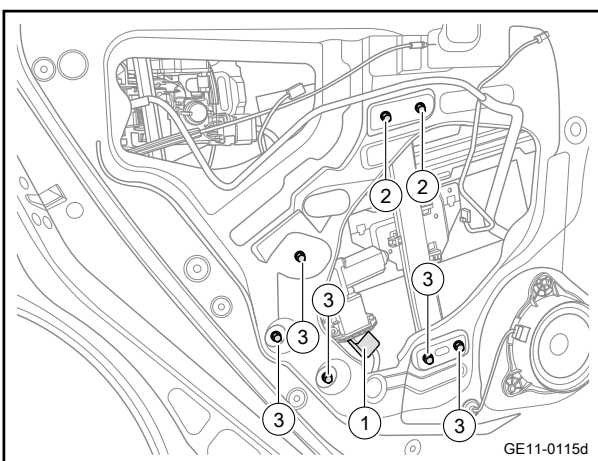
The left and right sides are removed and installed in the same way.

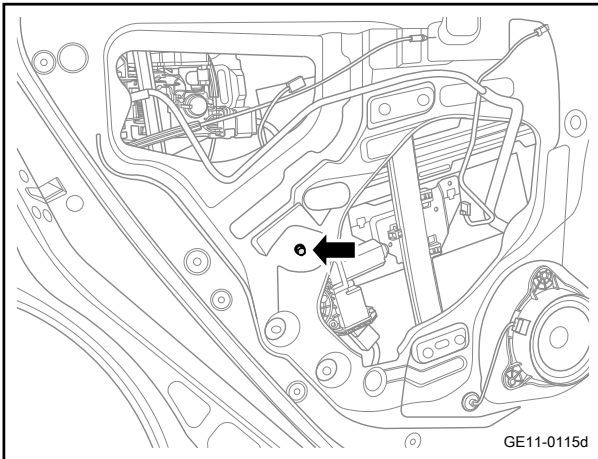
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

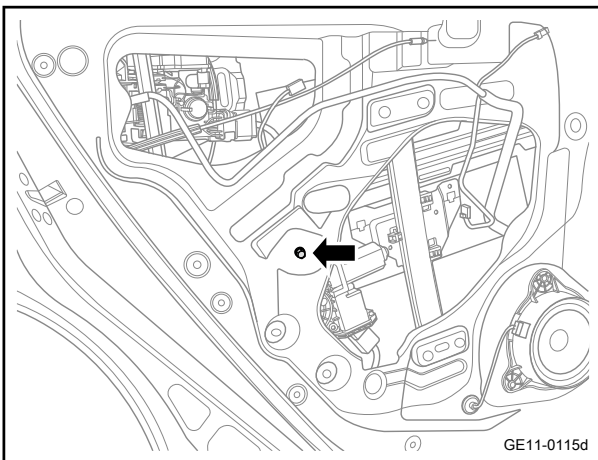
- 2 Remove the left rear door glass assembly. Refer to [Replacement of Left Front Door Glass Assembly](#)
- 3 Disconnect the left rear power glass regulator assembly harness connector 1.
- 4 Remove the 2 fixing nuts 2 of the left rear door power glass regulator assembly.
- 5 Remove the 5 fixing bolts 3 of the left rear door power glass regulator assembly.



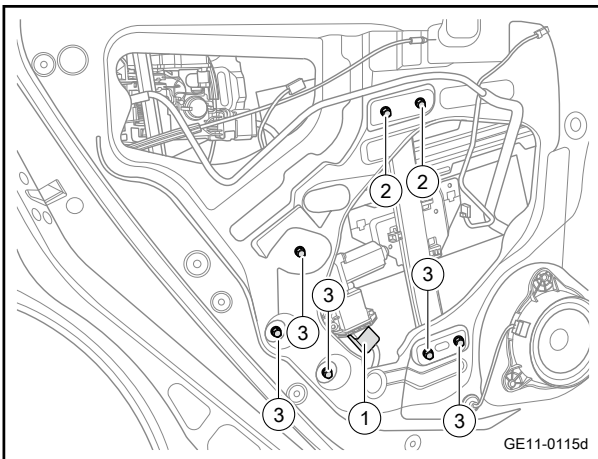


- 6 Loosen the 1 fixing bolt of the left rear door power glass regulator assembly.
- 7 Take off the left rear door power glass regulator assembly.

Installation procedure



- 1 Move the left rear door power glass regulator assembly to the installation position.
- 2 Install the 1 fixing bolt of the left rear door power glass regulator assembly.



- 3 Install the 5 fixing bolts 3 of the left rear door power glass regulator assembly.
Torque: 9N.m (metric system) 6.6lb-ft (Imperial system)
- 4 Install the 2 fixing nuts 2 of the left rear power glass regulator assembly.
Torque: 10N.m (metric system) 7.4lb-ft (Imperial system)
- 5 Connect the left rear door power glass regulator assembly harness connector 1.

- 6 Install left rear door glass assembly.
- 7 Connect the negative cable of battery.

11.5.7.11 Replacement of Left Front Door Glass Assembly

Removal procedure

Caution

The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

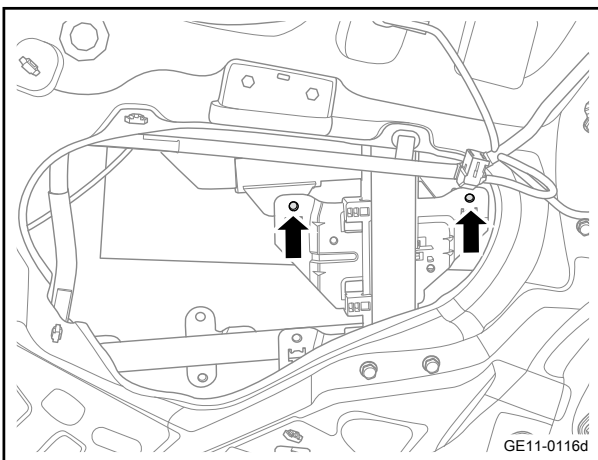
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

Caution

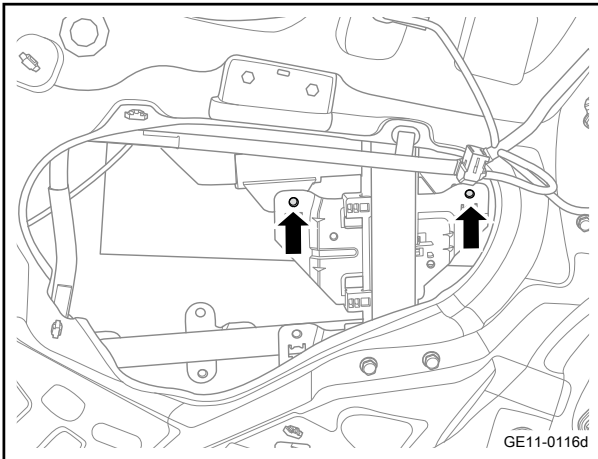
Raise the window glass to a suitable height before disconnecting the negative terminal of the battery for easy disassembly.

The glass must be supported when removing the glass fixing bolts.

- 2 Remove the left front door switch panel assembly. Refer to [Replacement of Left Front Door Switch Panel Assembly](#)
- 3 Remove the left front door interior trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)
- 4 Remove the 2 fixing bolts of the left front door glass assembly.
- 5 Take out the left front door glass assembly.



Installation procedure



- 1 Move the left front door glass assembly to the installation position.

Caution

Clamp the front and rear ends of the glass into the guide slot, hold the glass with both hands and run up and down to confirm that there is no catching, and put it into the lifting bracket by the B-pillar.

- 2 Install the 2 fixing bolts of the left front door glass assembly.

Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

Caution

Align the glass mounting hole with the via hole of the regulator for installation:

Pre-tighten the auxiliary positioning hole (kidney shaped hole), and then pre-tighten the main positioning hole (circular hole).

Tighten the main positioning hole first, and then tighten the auxiliary positioning hole.

- 3 Install the left front door interior trim panel assembly.
- 4 Install the left front door switch panel assembly.
- 5 Connect the negative cable of battery.

11.5.7.12 Replacement of front left door corner window glass

Removal procedure

Caution

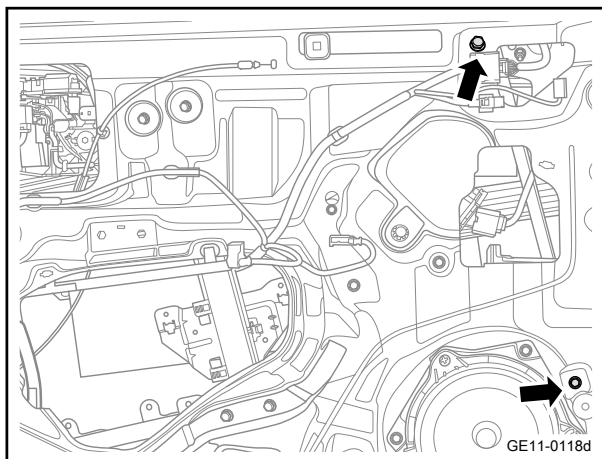
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

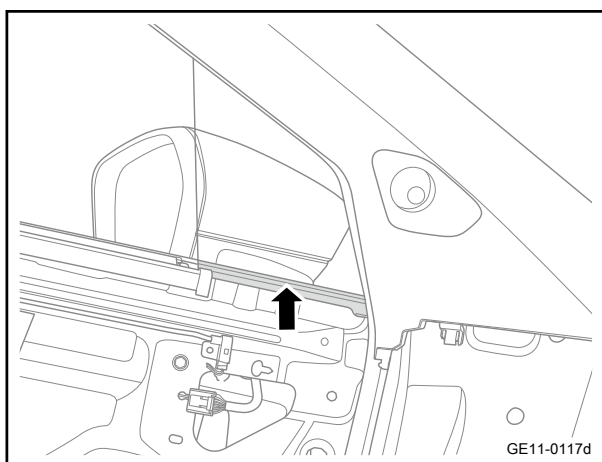
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door glass assembly. Refer to [Replacement of Left Front Door Glass Assembly](#)

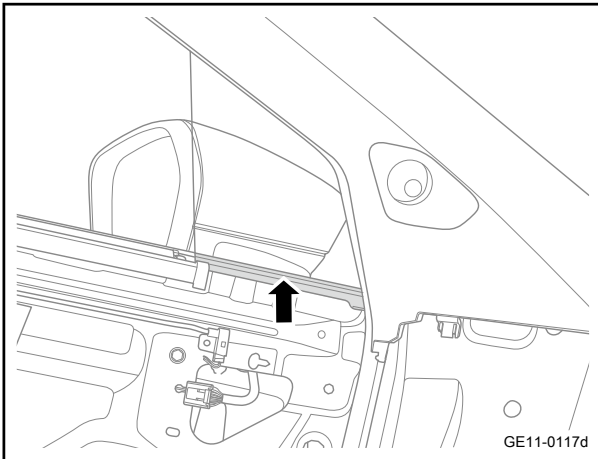


- 3 Remove the 2 fixing bolts of the left front door glass assembly.
- 4 Take off the front left door glass assembly front run channel.

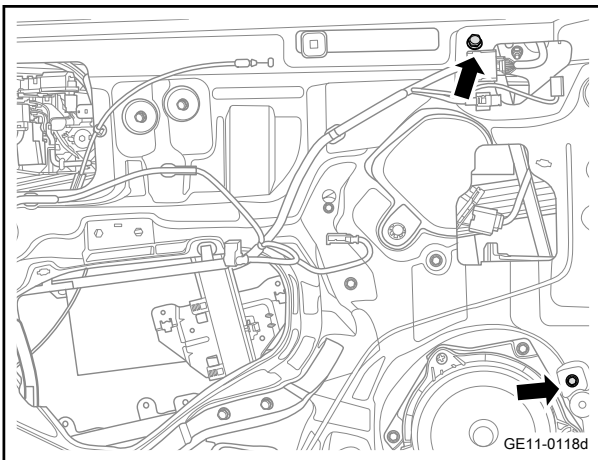


- 5 Take off the left front door corner window glass assembly.

Installation procedure



- 1 Move the left front door corner window glass assembly to the installation position.



- 2 Install the 2 fixing bolts of the left front door glass assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 3 Install the left front door glass assembly.
- 4 Connect the negative cable of battery.

11.5.7.13 Replacement of left rear door window assembly

Removal procedure

Caution

The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

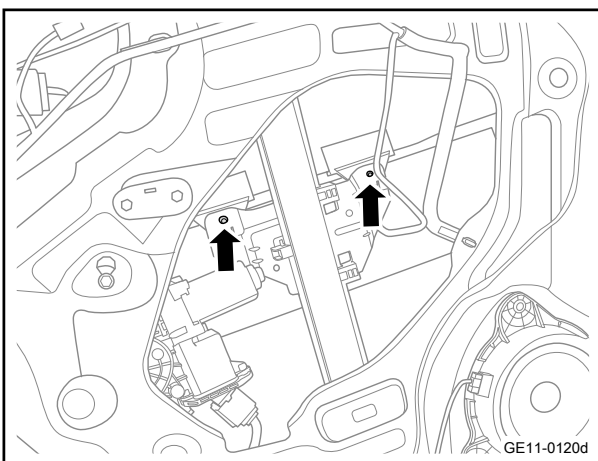
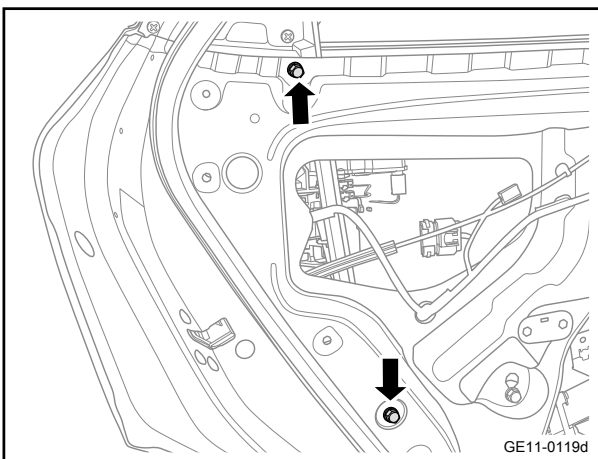
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

Caution

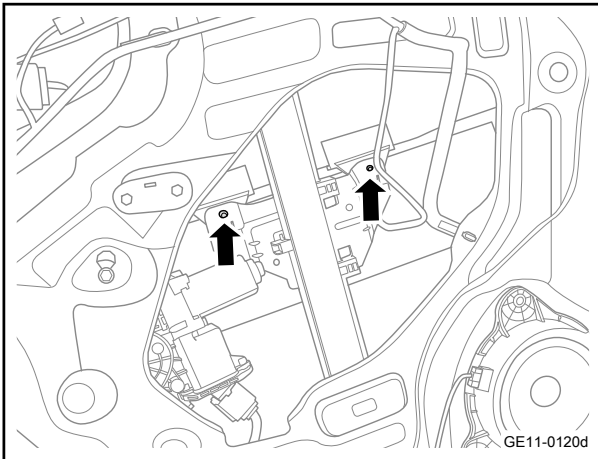
Raise the window glass to a suitable height before disconnecting the negative terminal of the battery for easy disassembly.

The glass must be supported when removing the glass fixing bolts.

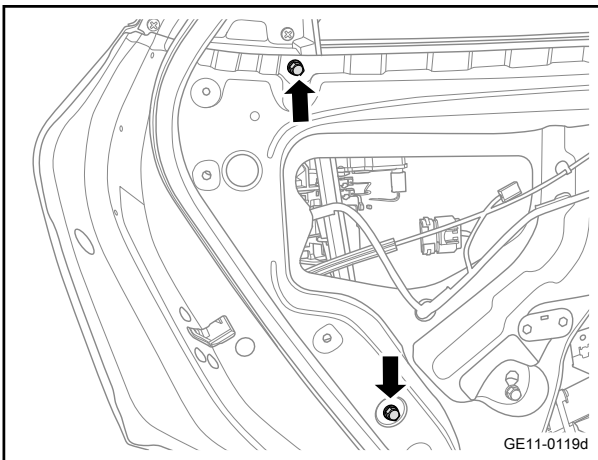
- 2 Remove the left rear door interior trim panel assembly. Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)
- 3 Remove the 2 fixing bolts of the left rear door glass run channel.
- 4 Remove the 2 fixing bolts of the left rear door glass assembly.
- 5 Take off the left rear glass assembly.



Installation procedure



- 1 Move the left rear door glass assembly to the mounting position.
- 2 Install the 2 fixing bolts of the left rear door glass assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



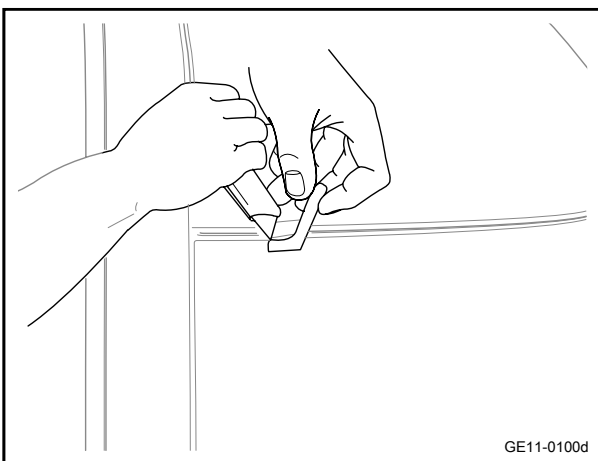
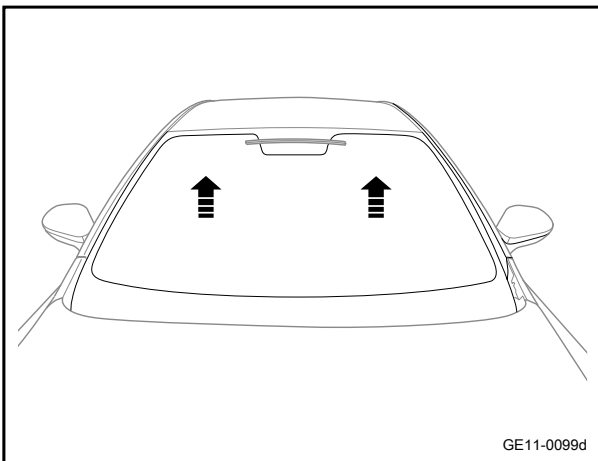
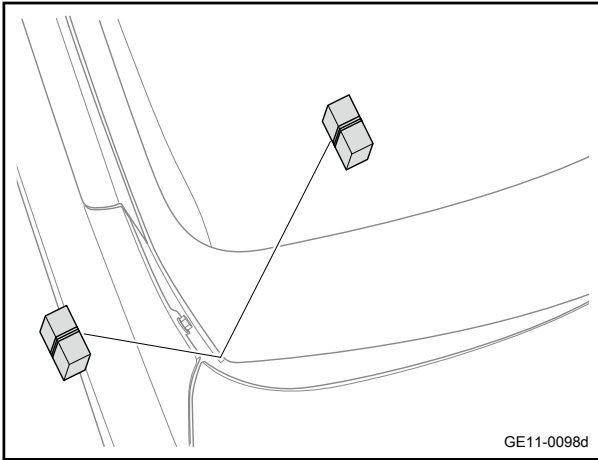
- 3 Install the 2 fixing bolts on the left rear door glass run channel.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 4 Install the RL door interior trim panel assembly
- 5 Connect the negative cable of battery.

11.5.7.14 Replacement of front windshield assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove front wiper arm assembly Refer to [Replacement of Left Wiper Arm Assembly](#)
- 3 Remove the ventilation cover plate assembly. Refer to [Replacement of Ventilation Cover Plate Assembly](#)
- 4 Remove the left and right A pillar upper trim panel assembly. Refer to [Replacement of Left Pillar A Upper Trim Panel Assembly](#)
- 5 Remove forward monocular camera Refer to [Replacement of Forward Monocular Camera](#)



- 6 Remove the interior rearview mirror assembly. Refer to [Replacement of interior rearview mirror](#) and [Replacement of Interior Rearview Mirrors](#).
- 7 Use a thin steel wire to cut the glass adhesive around the front windshield assembly.

Caution

Wood blocks are wrapped at both ends of the fine steel wire and operated by two people to facilitate removal. Place a plastic spacer on the instrument panel during operation to protect the instrument panel from scratches.

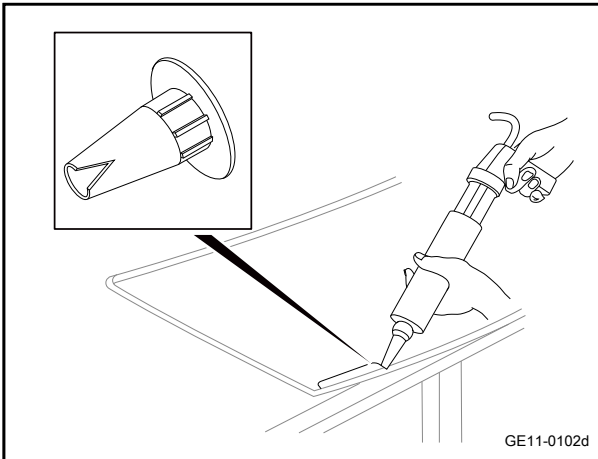
- 8 Remove the front windshield glass from the front windshield frame using a tool.

Caution

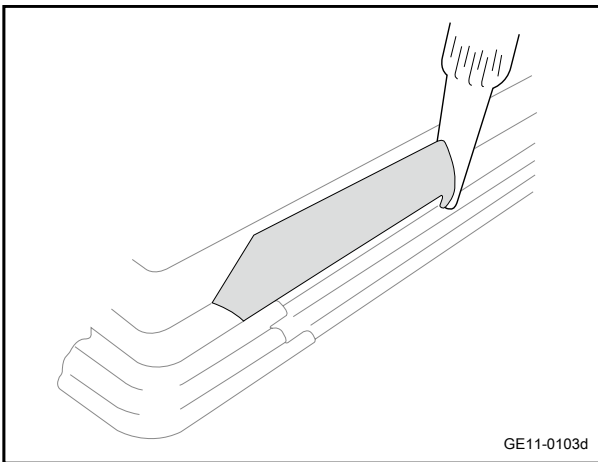
Ensure safety when performing this step. Two persons are required to perform this step.

- 9 Use a blade to eliminate bonding agents on the front windshield.
- 10 Use a blade to eliminate bonding agents on the window frame of front windshield for the body.
- 11 Use a dedicated cleaner to clean the inner surface edge of windshield.

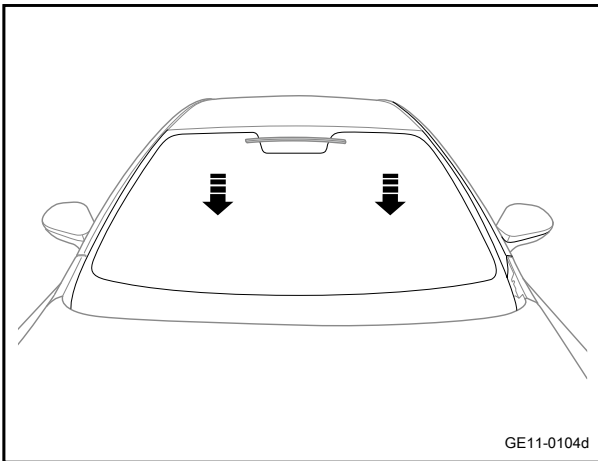
Installation procedure



- 1 Cut the Geely dedicated glass sealant nozzle to make the flange edge of the sprayed glass glue reach 8mm (0.3in) wide and 8mm (0.3in) high.



- 2 Use an extension-type filling gun to evenly and continuously paint the flange edge of glass sealants to ensure even width of this glue.



- 3 With the help of an assistant, use the suction cup to install the front windshield into the front windshield frame.

Caution

Ensure safety when performing this step. Two persons are required to perform this step.

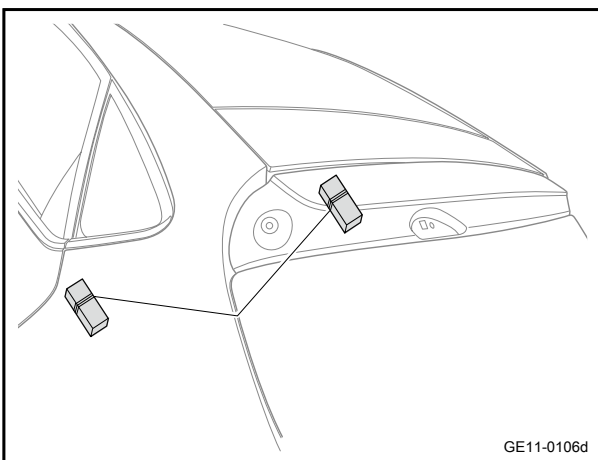
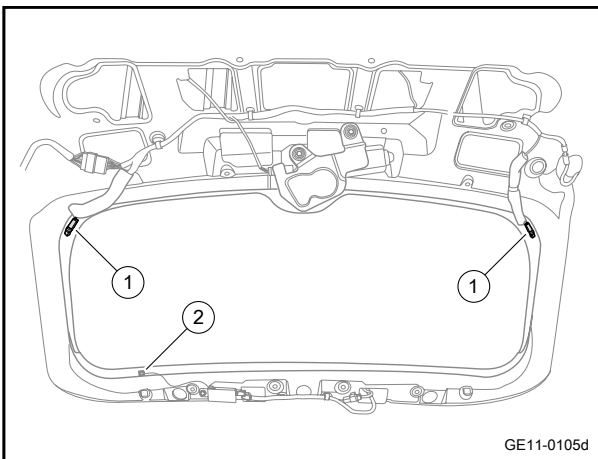
- 4 Press the windshield, and then stick the tape on the sealing strips, front windshield and the front windshield frame to fix the front windshield.
- 5 Let the adhesive dry for over 24h.
- 6 Run water on the front windshield to check for leaks. If water leaks, dry the front windshield glass and plug the leak with adhesive. If the water is still leaking, remove the front windshield glass and repeat the entire repair procedure.
- 7 Install the exterior rearview mirror assembly.
- 8 Install the forward monocular camera.
- 9 Install the left and right A-pillar upper trim panel assembly.
- 10 Install the ventilation cover assembly.

- 11 Install the front wiper arm assembly.
- 12 Connect the negative cable of battery.

11.5.7.15 Replacement of rear windshield glass assembly

Removal procedure

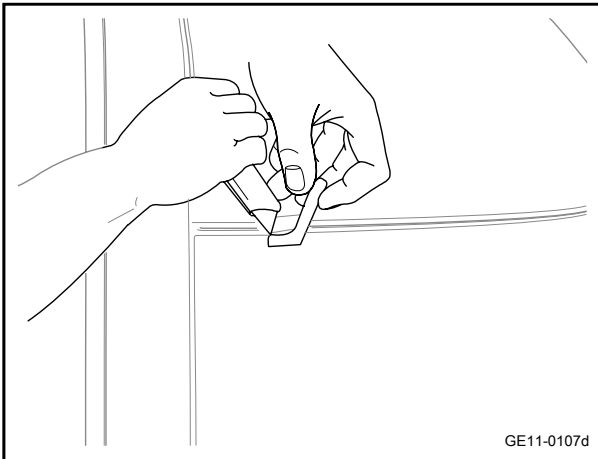
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- Warning**
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove rear wiper blade assembly Refer to [Rear wiper blade assembly](#)
 - 3 Remove the interior trim panel of the tailgate. Refer to [Replacement of tailgate lower interior trim panel assembly](#)
 - 4 Remove the spoiler assembly. Refer to [Replace the spoiler assembly](#)
 - 5 Disconnect the antenna amplifier harness connector 2 from rear defroster harness connector 1.



- 6 Use a thin steel wire to cut the glass adhesive around the rear windshield.
- 7 Remove the tailgate assembly.

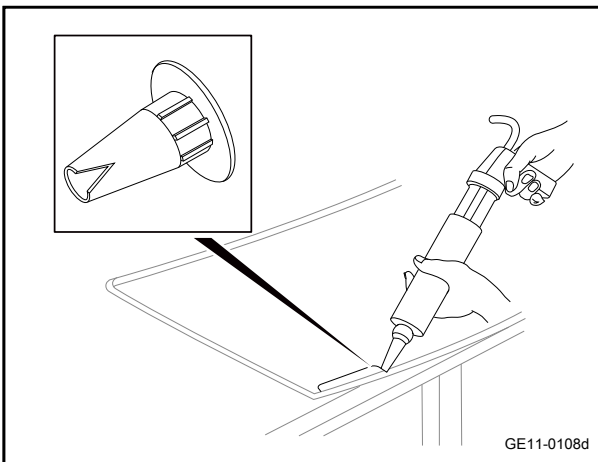
Caution

Wood blocks are wrapped at both ends of the fine steel wire and operated by two people to facilitate removal.

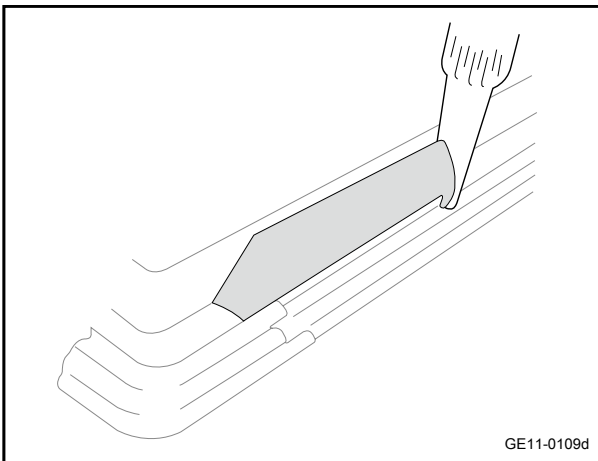


- 8 Use a blade to remove the adhesive from the tailgate glass assembly frame.
- 9 Use a blade to eliminate bonding agents on the window frame of tailgate windshield of the body.
- 10 Use a dedicated cleaner to clean the edge of the inner surface of the tailgate glass.

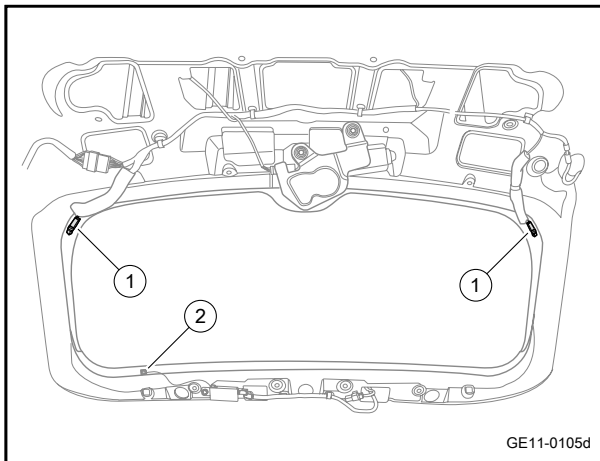
Installation procedure



- 1 Use the Geely dedicated glass sealant nozzle to make the flange edge of the sprayed glass glue reach 8mm (0.3in) wide and 8mm (0.3in) high.



- 2 Use an extension-type filling gun to evenly and continuously paint the flange edge of glass sealants to ensure even width of this glue.
- 3 With the help of an assistant, use the suction cup to install the tailgate glass into the rear windshield frame.
- 4 Press the rear tailgate glass, and then stick the tape on the rear tailgate glass and the window frame to fix the rear tailgate glass.
- 5 Let the adhesive dry for 24h.
- 6 Run water on the tailgate glass to check for leaks. If water leaks, dry the rear tailgate glass and plug the leak with glass sealant. If the water is still leaking, remove the rear tailgate glass and repeat the entire repair procedure. Connect the rear defogger harness connector.



- 7 Connect rear defrosting harness connector 1 and antenna amplifier harness connector 2.

- 8 Install spoiler assembly.
- 9 Install the tailgate lower trim panel assembly.
- 10 Install rear wiper blade assembly.
- 11 Connect the negative cable of battery.

11.5.7.16 Replacement of rear door corner window glass assembly

Removal procedure

Caution

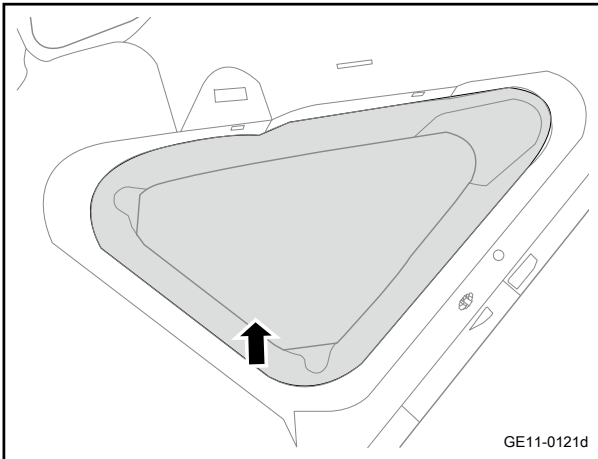
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the trunk left trim panel assembly. Refer to [Replacement of left trim panel assembly of trunk](#)
- 3 Remove the pillar C upper trim panel assembly. Refer to [Replacement of Pillar C Upper Trim Panel Assembly](#)



- 4 Use a suitable tool to cut off the rear door corner window sealant.

Caution

When cutting the corner windows, pay attention to the three clamps shown in the figure.

- 5 Take off the rear door corner window glass assembly.

Installation procedure

- 1 Apply the specified glass glue to the rear door corner window glass assembly.

Caution

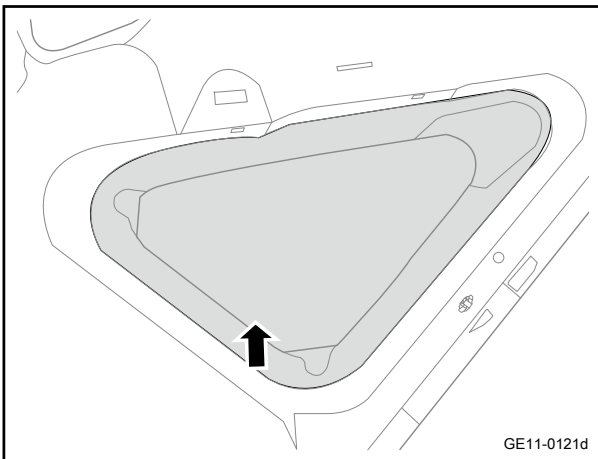
When cutting the corner windows, pay attention to the three clamps shown in the figure.

- 2 Move the rear door corner window glass assembly to the installation position.

Caution

Before installation, the installation position of corner window should be wiped clean with special detergent.

Pay attention to the three screws on the corner window during installation, and align them before installation.



- 3 Install the left C-pillar upper trim panel assembly.
- 4 Install the trunk left trim panel assembly.
- 5 Connect the negative cable of battery.

11.6 Location diagram of the wiper/ cleaning system

11.6.1 Specification

11.6.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left/right wiper arm assembly fixing nut	M10	35-41
Fixing bolt of the spray bottle with washing motor assembly and right front longitudinal beam	M6×25	5-7
Rear wiper motor assembly fixing bolt	M6×25	6-8
Rear hanging piece fixing nut	M6	6-8
Install wiper motor and connecting rod assembly fixing bolt	M6×28	8 -10

11.6.2 Description and operation

11.6.2.1 Description and Operations

The wiper/washer system consists of the following parts:

- Body control module (IBC)
- Wiper/washer switch
- Front washer fuse
- Washer fluid reservoir
- Front wiper motor and connecting rod
- Rear wiper motor and connecting rod
- Washer fluid pump
- Front wiper arm
- Washer nozzle

The wiper/washer can realize four control modes: high speed, low speed, clearance or automatic, and inching. The wiper switch is set on the control lever on the right side of the steering column.

Front wiper/washer system

The front wiper system consists of wiper/washer switch, wiper motor, connecting rod, wiper arm and wiper blades. The front wiper motor is of the low current type. The IBC will continue to drive the front wiper until it returns to the stopped position, and then turns off the power relay. The wiper system is driven by permanent magnetic motor. The wiper motor is installed on the front wall, connected with the front wiper linkage directly. The wiper switch is an integral part of the wiper/washer system.

Rear wiper/washer system

The front wiper system consists of wiper/washer switch, wiper motor, connecting rod, wiper arm and wiper blades. The rear wiper motor is of the high current type. The IBC will be turned off immediately, and the rear wiper will be returned under the self-return mechanism. In the rear wiper circuit, there is an automatic-stop device which consists of a worm gear and a cam disc, so as to keep the circuit intact for a short time after the wiper/washer switch is turned off, and do not disconnect the circuit until the wiper arm is fully returned to the initial position. The wiper system is driven by permanent magnetic motor. The wiper motor is installed on the rear wall, connected with the rear wiper linkage directly. The wiper switch is an integral part of the wiper/washer system.

Windshield washer system

The windshield washer system is composed of washing liquid, reservoir, washer pump, hose, nozzle and wiper/washer switch. The windshield washer reservoir is installed under the right headlamp assembly and in front of the right front fender

liner. The washing liquid pump is fixed on the washing liquid reservoir, and the washing liquid pump sends the washing liquid to the nozzle through the hose. Washer switch is also a component of wiper/washer switch.

11.6.3 System working principles

11.6.3.1 System Working Principles

The front wiper sends a signal via the wiper switch to the body control module (IBC), which then drives the front wiper motor to rotate; when the wiper switch is in a low gear, the current flows from the low-speed brush of the motor into the armature coil, generating a large back electromotive force, resulting in the motor rotating at a low speed; when the wiper switch is in a high gear, the current flows from the high-speed brush of the motor into the armature coil, generating a small back electromotive force, resulting in the motor rotating at a high speed; when the wiper washer switch is turned on, the wiper spray pump is in working state; after the washer switch is continuously operated for 1s, the wiper motor also starts to rotate in a low gear. When the wiper switch is turned off, the wiper motor will not stop immediately and will continue to rotate for a while under the inertia of the armature. At the same time, the armature generates back electromotive force, which generates electric braking to the wiper motor, and the motor immediately stops at a fixed position.

The rear wiper sends a signal via the CAN network to the body control module (IBC). After receiving the wiper switch signal, the IBC controls the rear wiper motor to rotate; when the wiper switch is turned on, the IBC controls the rear wiper relay to pull in, and the current flows from the motor brush into the armature coil, and the rear wiper motor starts to rotate; when the wiper switch is turned on intermittently, the IBC controls the pull-in of the rear wiper relay, and the current flows from the motor brush into the armature coil intermittently; when the wiper switch is disconnected, if it is in the initial position, the rear wiper immediately stops rotating. If it is not in the initial position, the rear wiper will continue to rotate under the drive of the reset pin current, until it reaches the initial position next time. After continuously operating the washer switch for 1 s, the wiper motor also starts to rotate.

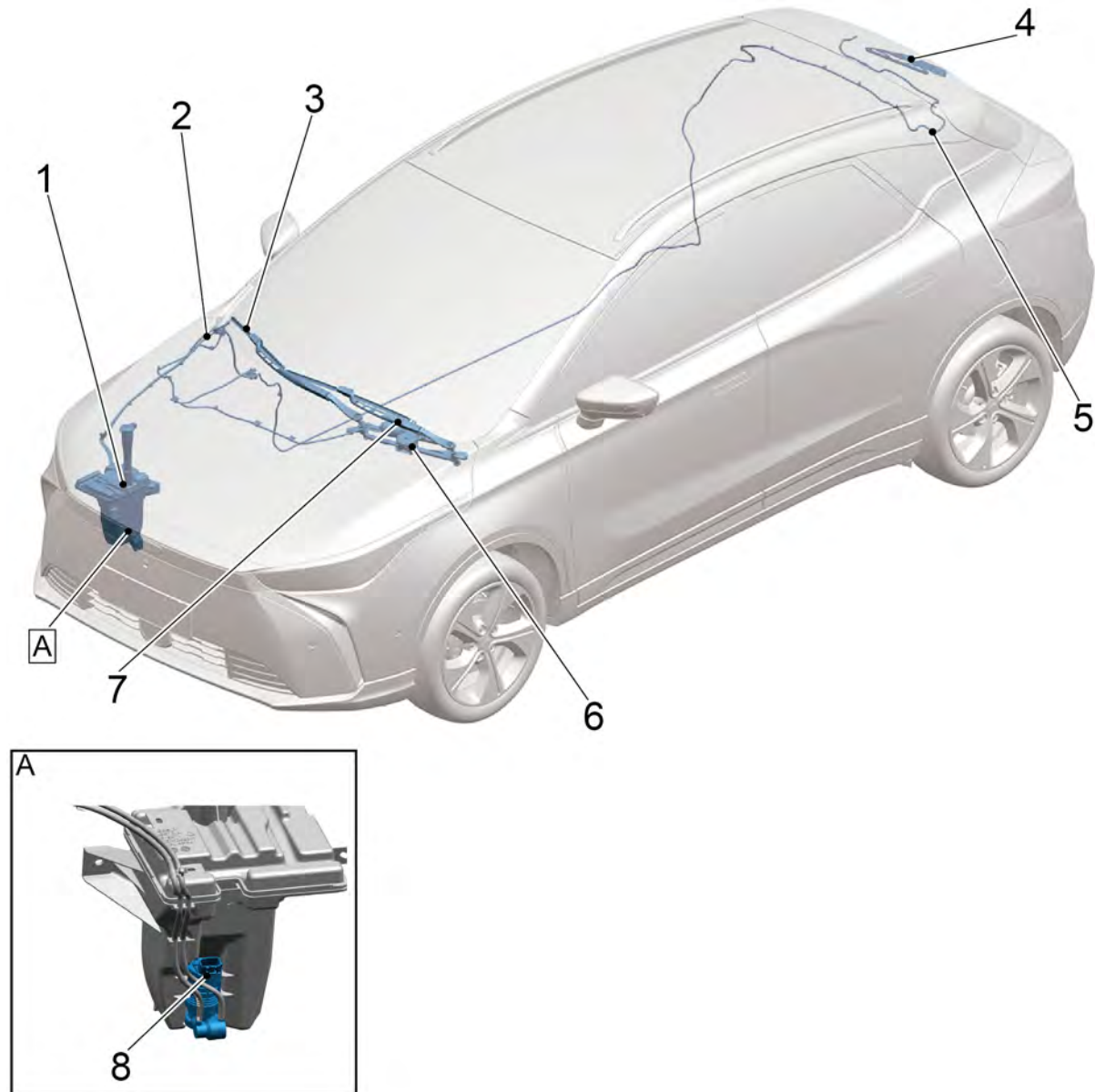
The front/rear washer switch provides signals to the IBC, and the IBC controls the front/reverse rotation of the washer motor after receiving the grounding signal of the washer switch, so as to realize the water spraying washing actions of the front/rear windshield respectively.

The specific area of the rain sensor is at the bracket position where the rearview mirror fits the front windshield. When it rains, rainwater will exist on the windshield, and part of the light will deviate, which causes the change of the total amount of light received by the sensor, thereby detecting the existence of rainwater. When there is more rainwater on the glass, the less light is reflected. Thus, the working frequency

of the wiper is adjusted. The wiper automatically controls the switch and speed of the wiper according to this.

11.6.4 Part position

11.6.4.1 Part Position

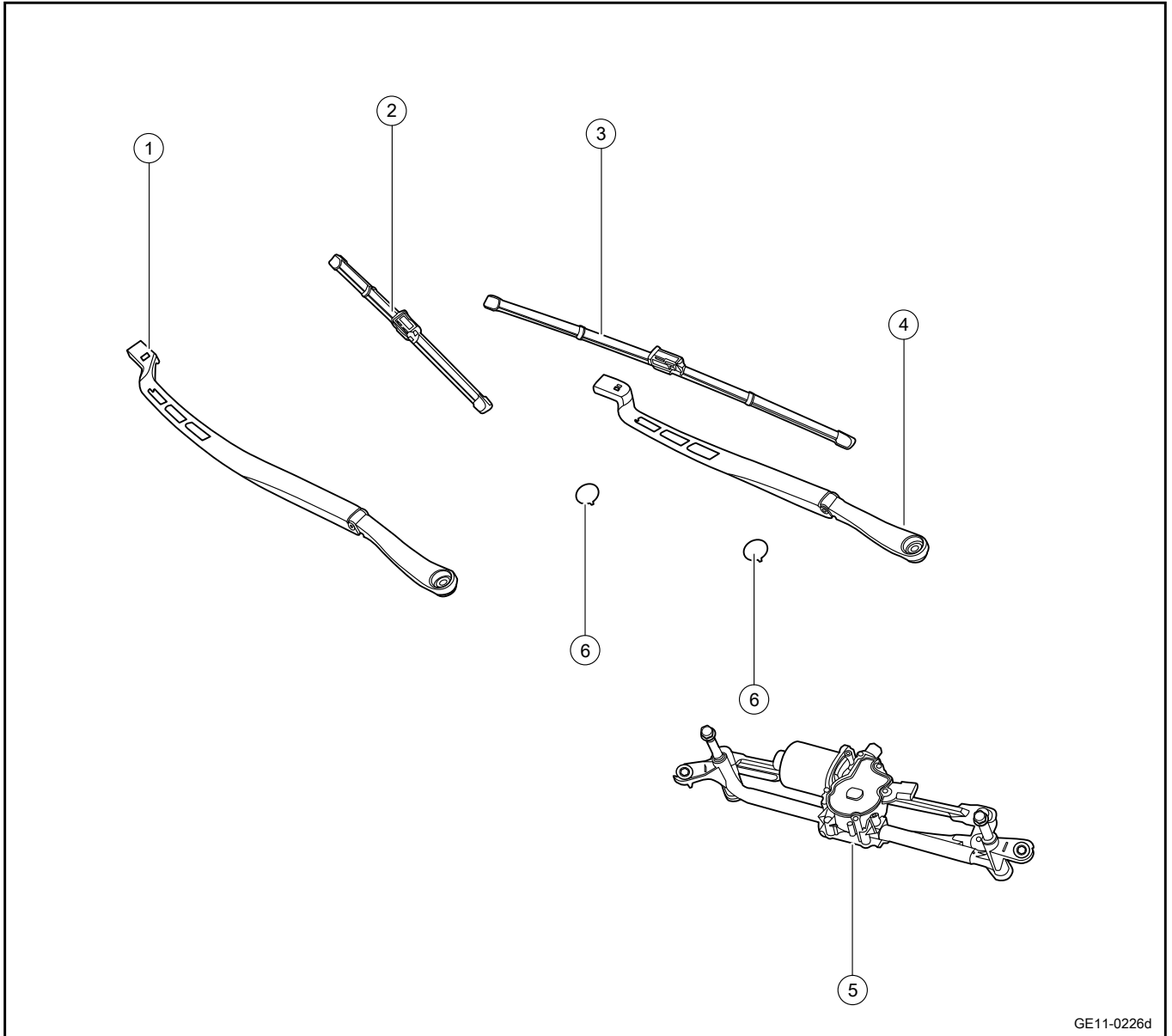


- 1. Washer bottle
- 2. Front washer hose assembly
- 3. Front wiper blade assembly
- 4. Rear wiper blade assembly

- 5. Rear washer hose assembly
- 6. Assembly-wiper motor and wiper linkage
- 7. Front wiper blade assembly
- 8. Washer motor

11.6.5 Breakdown drawing

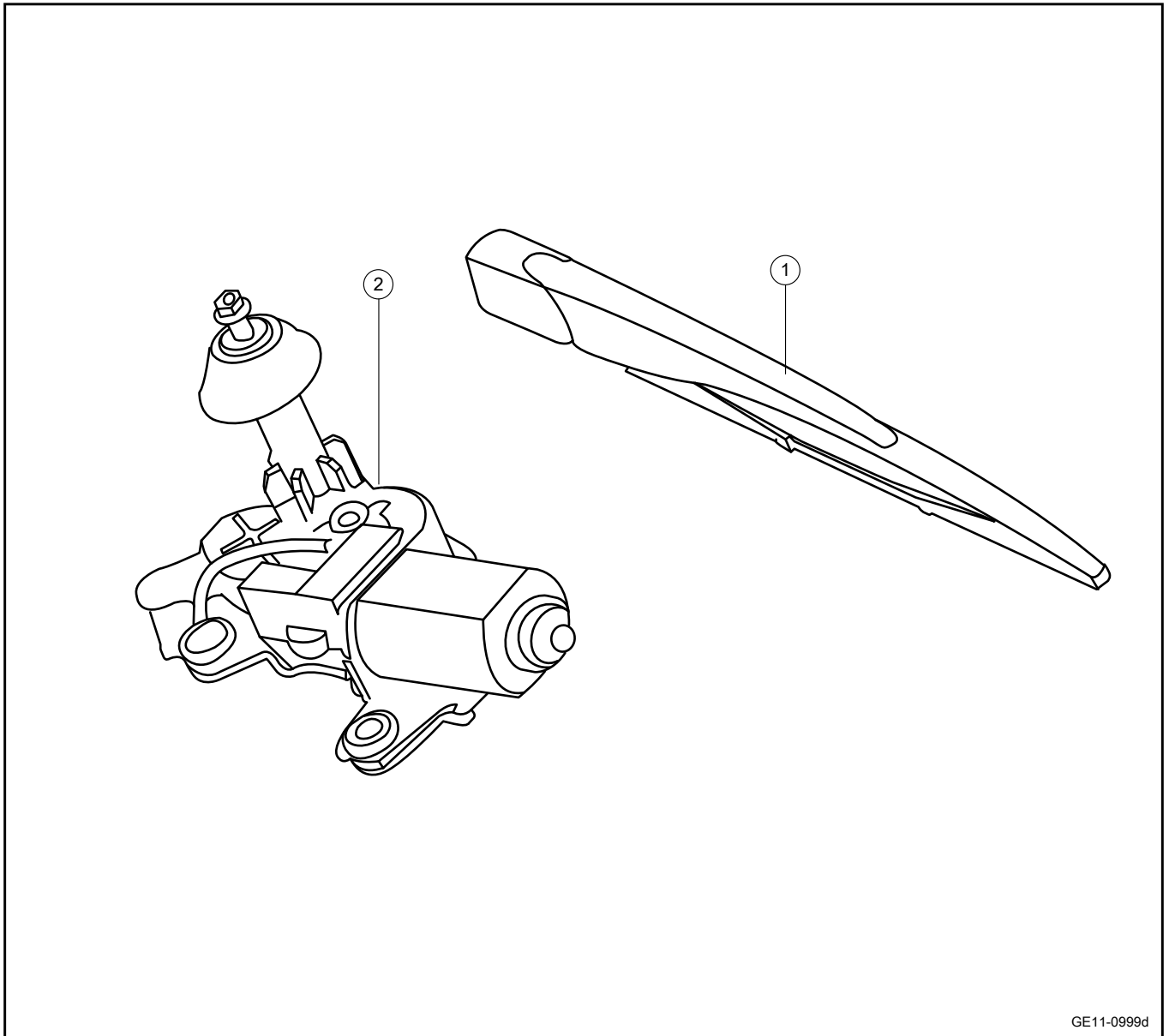
11.6.5.1 Breakdown Drawing(Front Wipers)



GE11-0226d

- | | |
|-------------------------------|-------------------------------------|
| 1. Right wiper arm assembly | 4. Left wiper arm assembly |
| 2. Right wiper blade assembly | 5. Wiper motor and linkage assembly |
| 3. Left wiper blade assembly | 6. Nut caps of front wiper arms |

11.6.5.2 Breakdown Drawing(Rear Wiper)



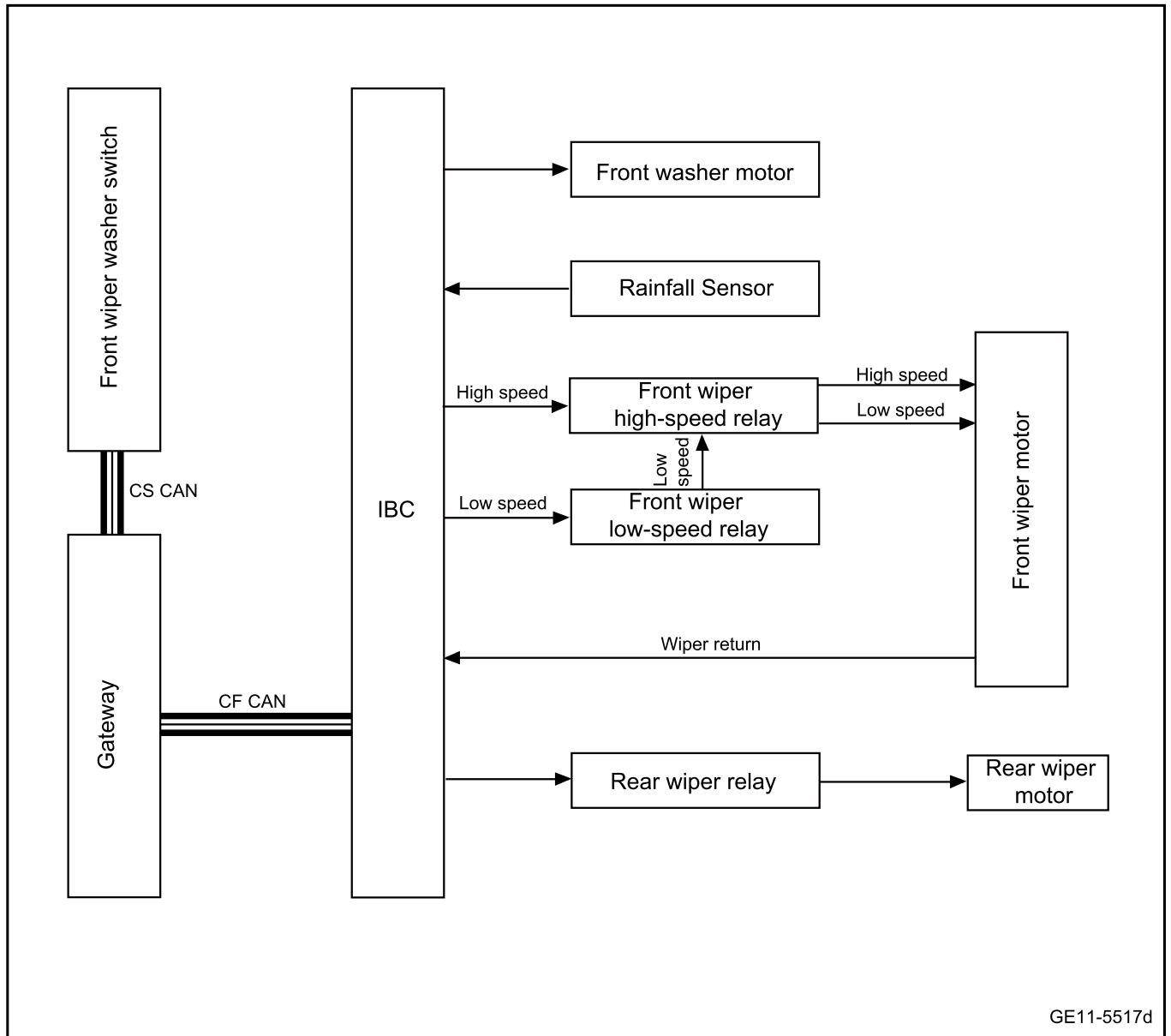
GE11-0999d

1. Rear wiper blade assembly

2. Rear wiper motor assembly

11.6.6 Electrical block diagram

11.6.6.1 Electrical Schematic Diagram of Wiper System



11.6.7 Diagnostic information and procedures

11.6.7.1 Diagnosis Description

Before diagnosis of wipers/cleaning system, refer to description and operation and system working principle. Understand and familiarize yourself with working principle of wiper/ cleaning system before starting system diagnosis. This helps to determine the DTC steps when a fault occurs. More importantly, it also helps to determine whether the situation described by the distributor is normal. Any fault diagnosis of wiper/washing system should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.6.7.2 Routine inspection

- The check may affect the after-sales installations of wiper/cleaning system operations and it is needed to guarantee that these installations will not affect wiper/cleaning system operations.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- Check and confirm that the washer liquid level of washer fluid tank is normal.

11.6.7.3 Fault symptom table

Symptom	Possibility and cause	Measures
Inoperative front wiper	1. The wiper connecting rod mechanism is damaged, stuck and deformed	Check the wiper linkage system and replace if necessary.
	2. Fuse fault	Inspect the fuse and replace if necessary.
	3. Wiper relay fault	Check the wiper relay and replace if necessary.
	4. Front wiper motor fault	Refer to The Wiper does not Work in Any Gear
	5. Wiper combination switch fault	
	6. IBC fault	To replace the IBC, please refer to Replacement of central control unit
Front wipers cannot be returned	1. The wiper connecting rod mechanism is damaged, stuck and deformed	Check the wiper linkage system and replace if necessary.
	2. Circuit fault	Refer to The Automatic Reset Function of the Front Wiper Motor Fails
	3. Wiper motor fault	
	4. IBC fault	To replace the IBC, please refer to Replacement of central control unit
Inoperative rear rain wiper	1. Fuse fault	Inspect the fuse and replace if necessary.
	2. Rear wiper relay fault	Check the rear rain wiper relay and replace if necessary.
	3. Rear wiper motor fault	Refer to Inoperation of rear wiper
	4. Wiper combination switch fault	
	5. IBC fault	To replace the IBC, please refer to Replacement of central control unit

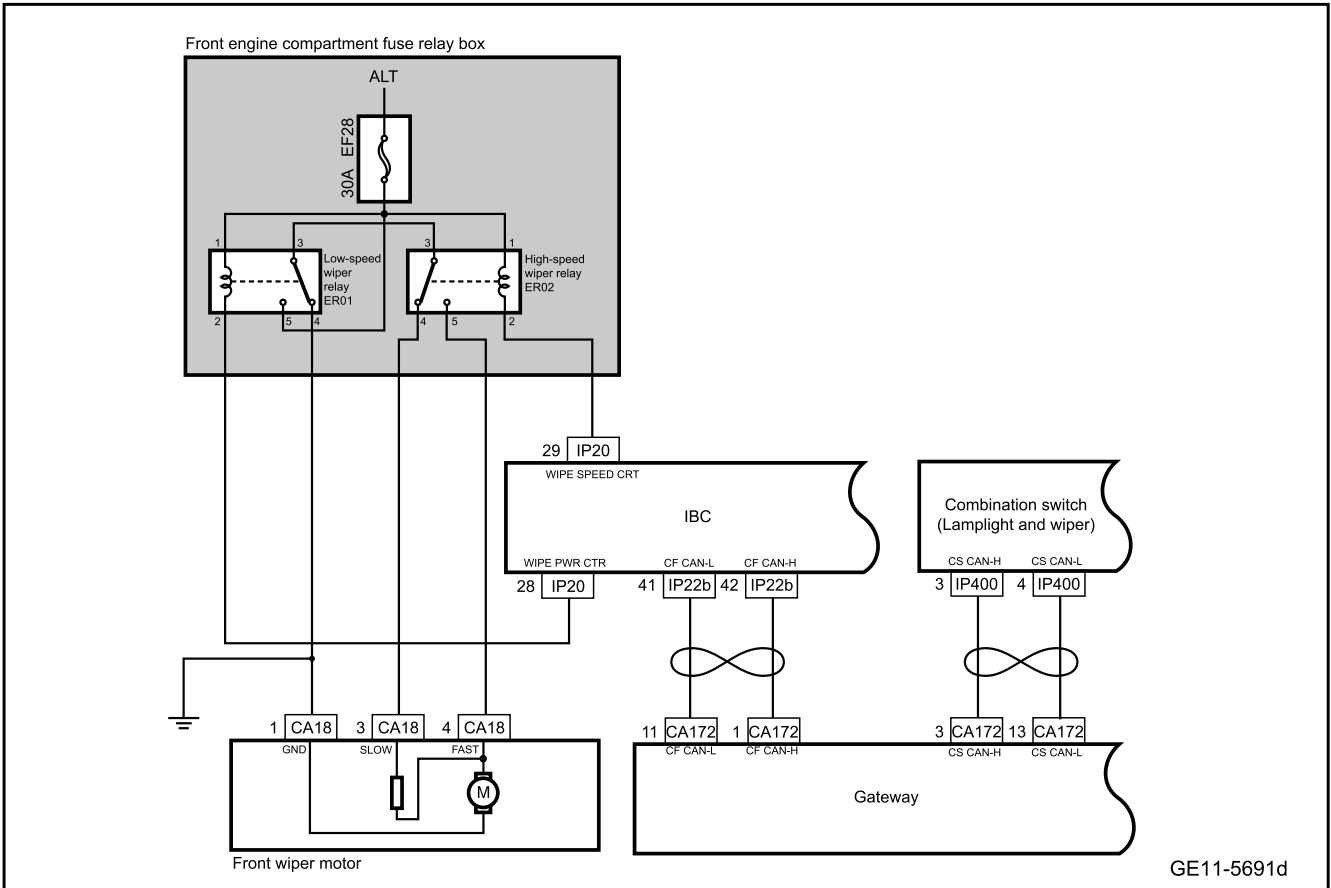
Symptom	Possibility and cause	Measures
Washer motor does not spray water or the amount of water is small	1. The foreign matters in the washer bottle block the water inlet of the washer motor.	Check the washer motor.
	2. The spraying pipes of the washer motor are bent, damaged or loosened.	Check the washer motor.
	3. Washer motor fault	Refer to Washer does not Work
	4. Wiper combination switch fault	
	5. IBC fault	To replace the IBC, please refer to Replacement of central control unit

11.6.7.4 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B109E1C	Wiper water spraying enabling input fault	Refer to Wash Motor Circuit Failure
B107412	Wiper ON/OFF circuit is short-circuited to power supply	Refer to Front Wiper Power Supply Circuit Failure
B107414	Wiper ON/OFF circuit is short-circuited to ground or opened	
B101071	Front wiper gets stuck	
B107512	Wiper high and low-speed circuit is short-circuited to power supply	Refer to Front Wiper Speed Control Circuit Failure
B107514	Wiper high and low-speed circuit is short-circuited to ground or opened	
B102112	Rear wiper circuit is short to power supply	Refer to rear wiper circuit fault
B102114	Rear wiper circuit is short-circuited to ground or opened	
B102171	Rear wiper circuit is blocked	
B101109	General faults of light sensor	Refer to Rain sensor fault
B101117	Rain and light sensor is overvoltage failure	
B101149	Rain sensor fault	
B10114B	Rain and light sensor is overheated	
B101796	Sunlight sensor fault	
B101896	Light sensor hardware fault	

11.6.7.5 Wipers are inoperative at all gears

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the front wiper motor and combination switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the combination switch is catching.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the EF28 fuse in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 30A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the front wiper relay.

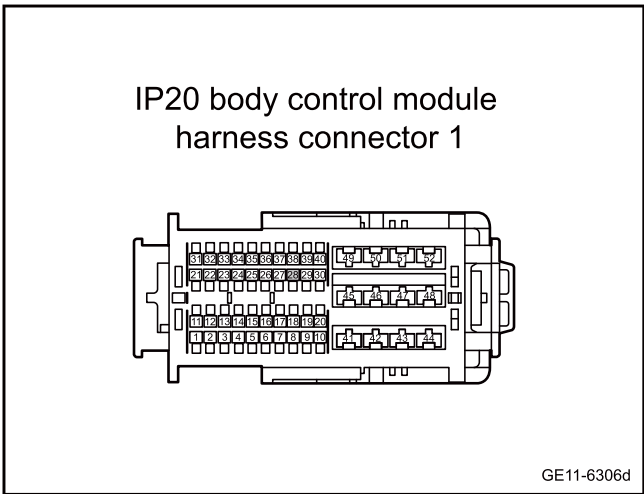
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Check whether the harness between the low-speed wiper relay and IBC is circuit open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Pull out the low-speed wiper relay ER01.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	ER01(2)	Standard resistance: less than 1Ω

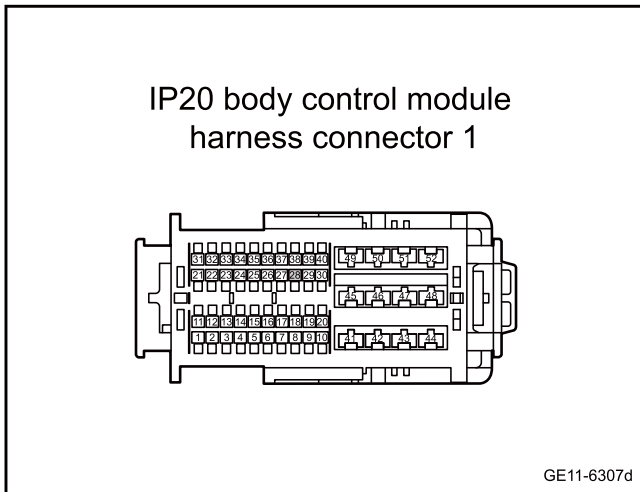
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the harness between low speed wiper relay and IBC is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Pull out the low-speed wiper relay ER01.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check whether the harness between low speed wiper relay and high speed wiper relay is open.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the high speed wiper relay ER02.
- C. Pull out the low-speed wiper relay ER01.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
ER02(3)	ER01(3)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Check whether the harness between low speed wiper relay and high speed wiper relay is shorted to GND.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the high speed wiper relay ER02.
- C. Pull out the low-speed wiper relay ER01.
- D. Use a multimeter to measure the terminals according to the table below:

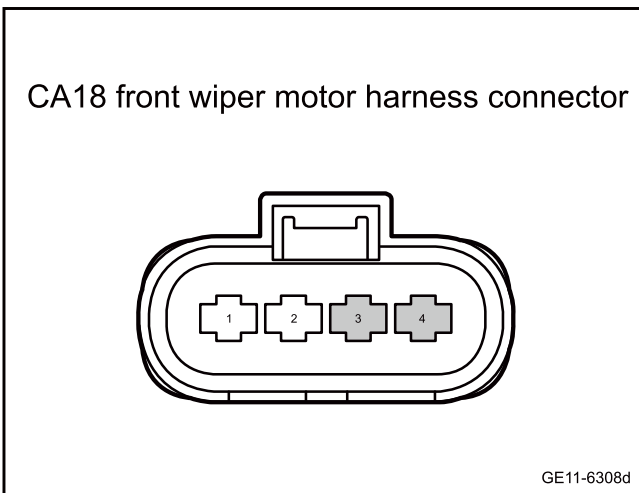
Measure terminal 1	Measure terminal 2	Standard value
ER02(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Check whether the harness between high speed wiper relay and wiper motor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the high speed wiper relay ER02.
- C. Disconnect front wiper motor harness connector CA18.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
ER02(4)	CA18(3)	Standard resistance: less than 1Ω
ER02(5)	CA18(4)	

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 | Check whether the harness between high speed wiper relay and wiper motor is open.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the high speed wiper relay ER02.
- C. Disconnect front wiper motor harness connector CA18.
- D. Use a multimeter to measure the terminals according to the table below:

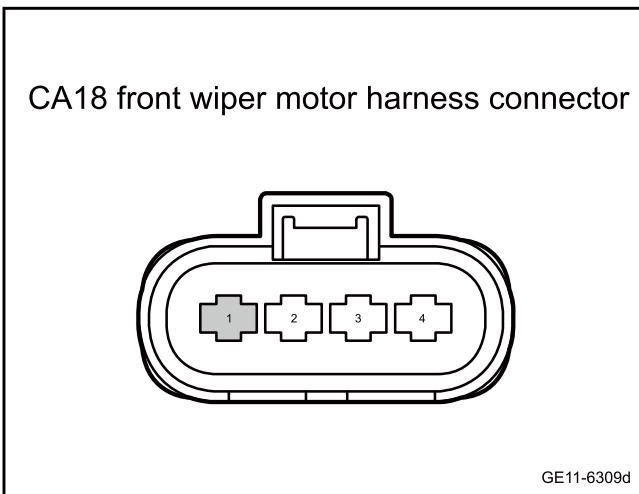
Measure terminal 1	Measure terminal 2	Standard value
ER02(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
ER02(5)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 10 Check front wiper motor grounding line.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA18(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair faulty lines or replace the harness.

Yes

Step 11 Check the CS-CAN network integrity.

- A. Check communication network, refer to CS-CAN bus network integrity check
- B. Confirm whether the CS-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Step 12	Check the CF-CAN network integrity.
------------	-------------------------------------

- A. Check communication network, refer to CS-CAN bus network integrity check
- B. Confirm whether the CF-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Step 13	Replace front wiper motor.
------------	----------------------------

- A. To replace the front wiper motor, please refer to [Replacement of Front Wiper Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 14	Replace wiper combination switch.
------------	-----------------------------------

- A. To replace the wiper combination switch, please refer to [Replacement of Wiper Combination Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 15	Replace the IBC
------------	-----------------

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 16	Reprogram and reset the IBC.
------------	------------------------------

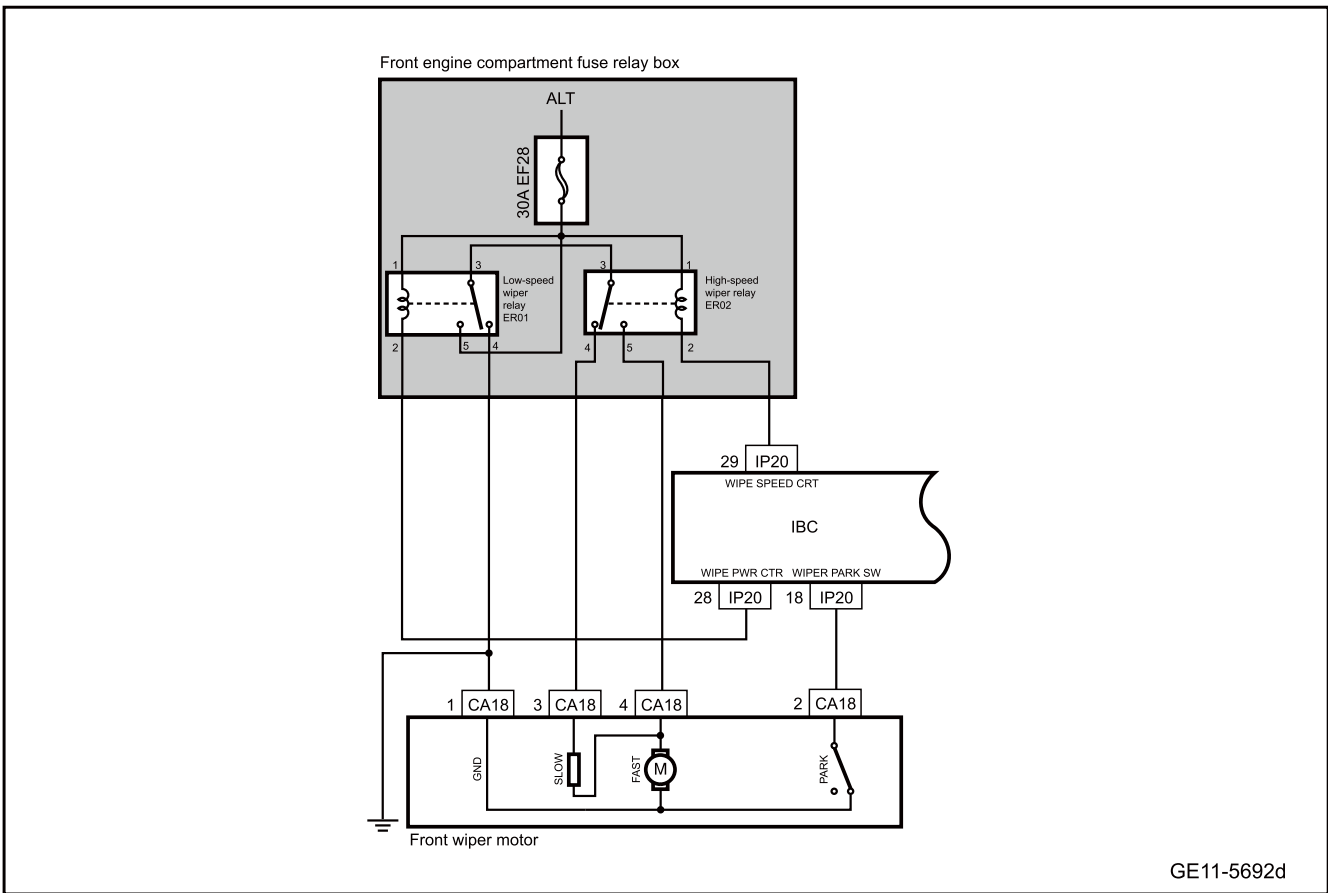
- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 17	System is normal.
------------	-------------------

11.6.7.6 Automatic reset function of the wiper fails

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the front wiper operates normally without interference.
- B. Check the front wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Check the wiper combination switch for the phenomenon of catching.
- D. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2 Check the front wiper relay.

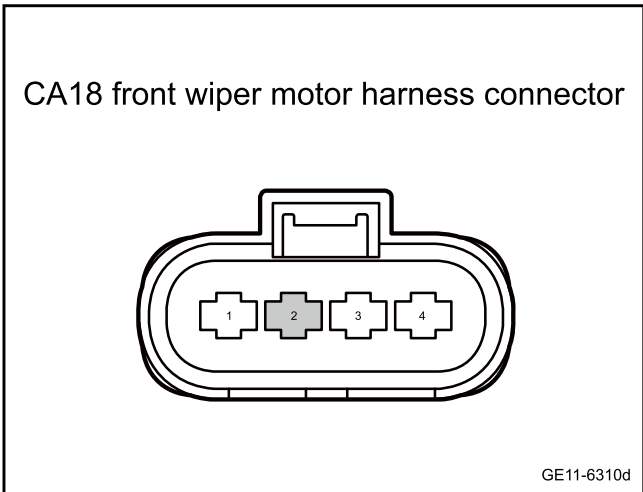
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the system is normal.

Yes

System is normal.

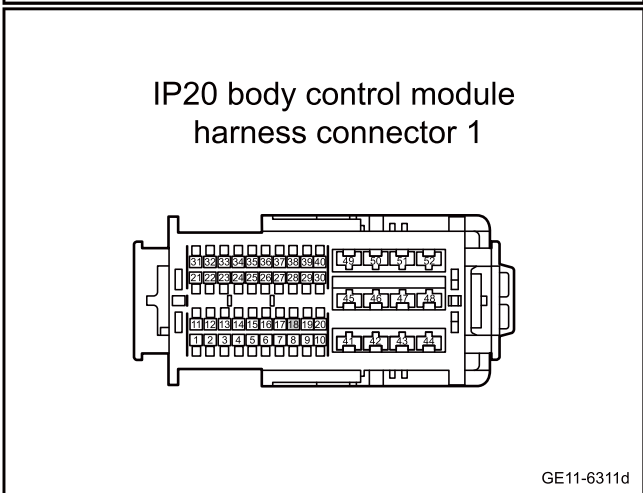
No

Step 3 Check whether the harness between the front wiper motor and IBC is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the resistance between terminal 2 of the front wiper motor harness connector CA18 and terminal 18 of IBC harness connector IP20.

Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

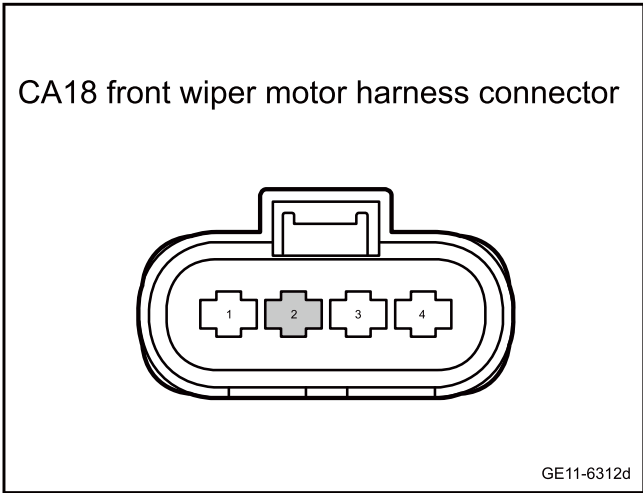


No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the front wiper motor and IBC is shorted to the power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Disconnect the IBC harness connector IP20.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between terminal 2 of the front wiper motor harness connector CA18 and body grounding.

Standard voltage: 0V

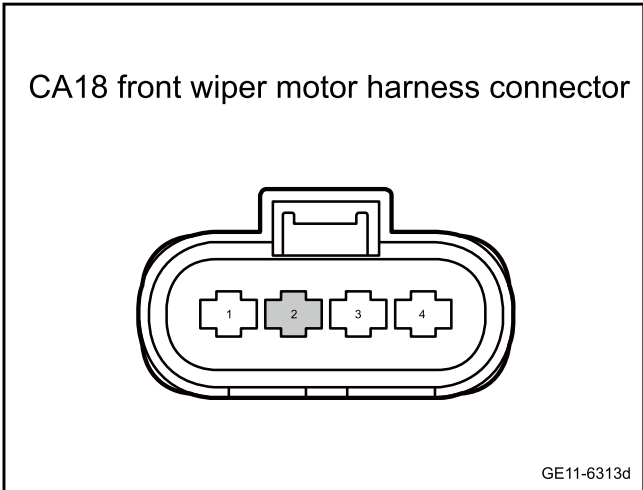
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check whether the harness between the front wiper motor and IBC is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the resistance between terminal 2 of the front wiper motor harness connector CA18 and body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Replace front wiper motor.

- A. To replace the front wiper motor, please refer to [Replacement of Front Wiper Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 | Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 8 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

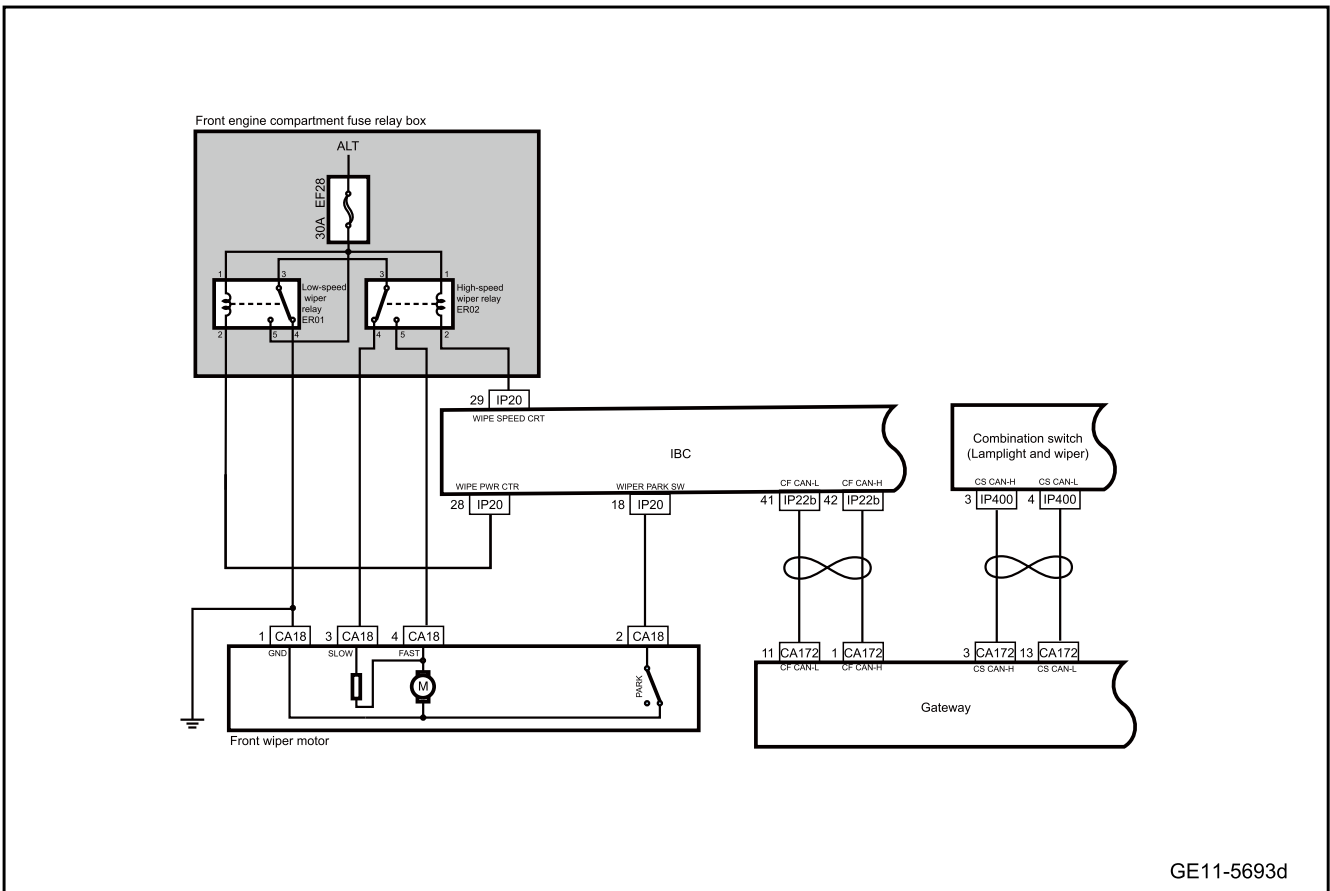
Yes System is normal.

No

Step 9 System is normal.

11.6.7.7 Front wiper does not work in high gear

1. Schematic circuit diagram:



GE11-5693d

2. Diagnosis steps

Step 1 Primary check.

- A. Check combination switch and IBC and wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check the combination switch for signs of being caught.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check the front wiper relay.

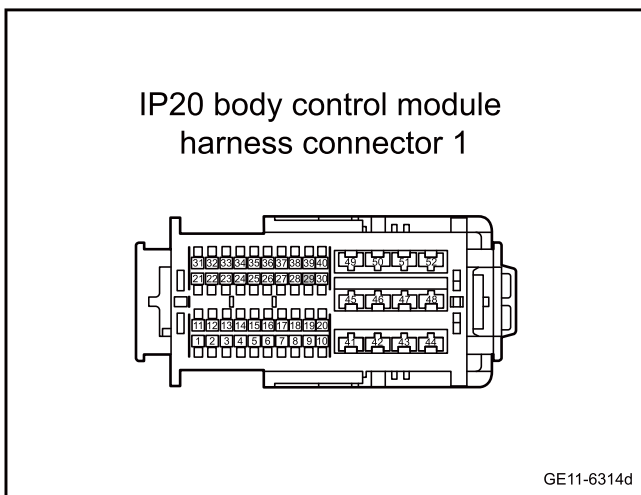
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the system is normal.

Yes

System is normal.

No

Step 3 Check whether the harness between the high speed wiper relay and IBC is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(29)	ER02(2)	Standard resistance: less than 1Ω

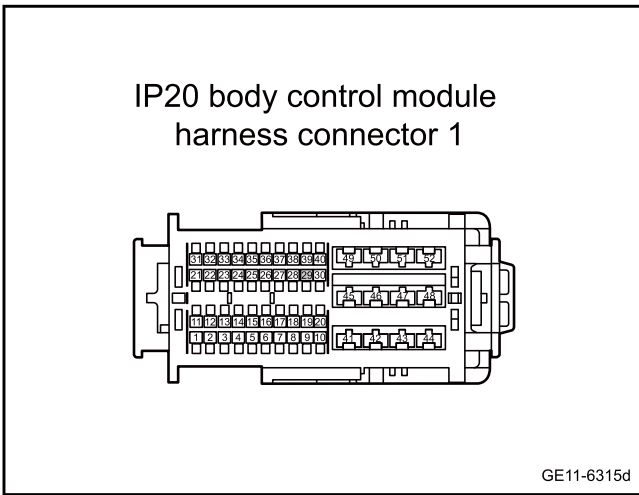
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between low speed wiper relay and IBC is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Unplug the high speed wiper relay ER02.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

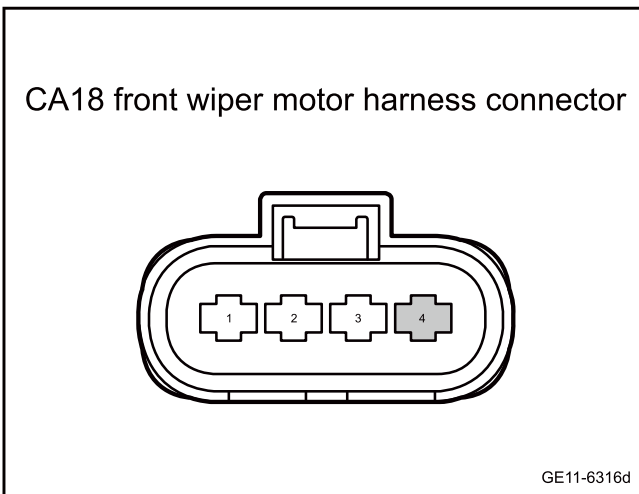
Measure terminal 1	Measure terminal 2	Standard value
IP20(29)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the harness between high speed wiper relay and front wiper motor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure the terminals according to the table below:

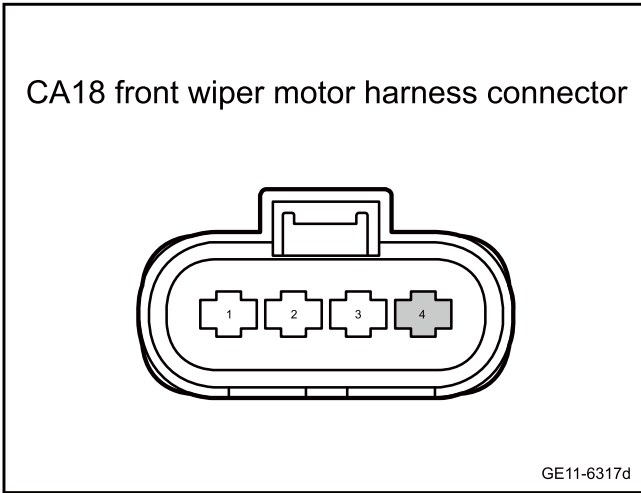
Measure terminal 1	Measure terminal 2	Standard value
CA18(4)	ER02(5)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check whether the harness between high speed wiper relay and front wiper motor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA18(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 | Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Step 8 | Check the CF-CAN network integrity.

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 9 | Replace front wiper motor.

- A. To replace the front wiper motor, please refer to [Replacement of Front Wiper Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Replace wiper combination switch.
------------	-----------------------------------

- A. To replace the wiper combination switch, please refer to [Replacement of Wiper Combination Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace the IBC
---------	-----------------

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 12	Reprogram and reset the IBC.
------------	------------------------------

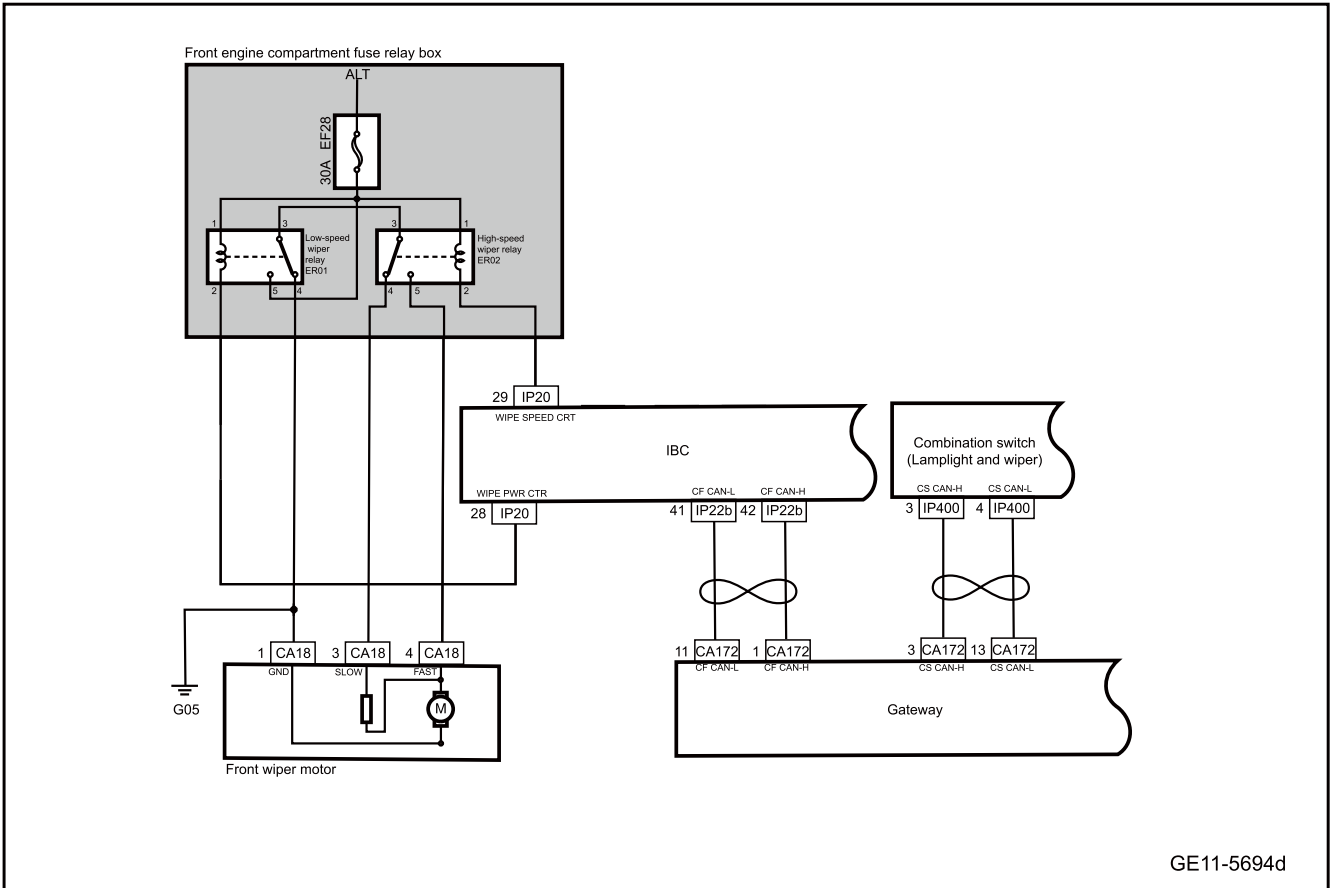
- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 13	System is normal.
------------	-------------------

11.6.7.8 Wiper does not work in low gear

1. Schematic circuit diagram:



GE11-5694d

2. Diagnosis steps

Step 1 | Primary check.

- A. Check the combination switch and front wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check the combination switch for signs of being caught.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 | Check the front wiper relay.

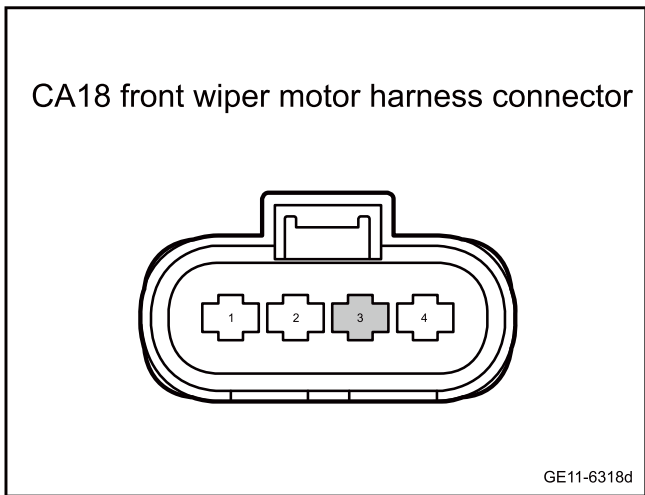
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 3 Check whether the harness between high speed wiper relay and front wiper motor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure the terminals according to the table below:

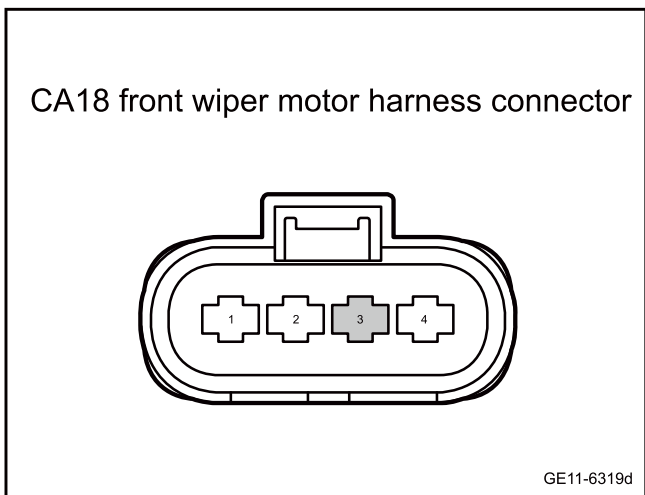
Measure terminal 1	Measure terminal 2	Standard value
CA18(3)	ER02(4)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Check whether the harness between high speed wiper relay and front wiper motor is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front wiper motor harness connector CA18.
- C. Unplug the high speed wiper relay ER02.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA18(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Step 6 Check the CF-CAN network integrity.

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 7 Replace wiper combination switch.

- A. Replace wiper combination switch. Refer to [Replacement of Wiper Combination Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace front wiper motor.

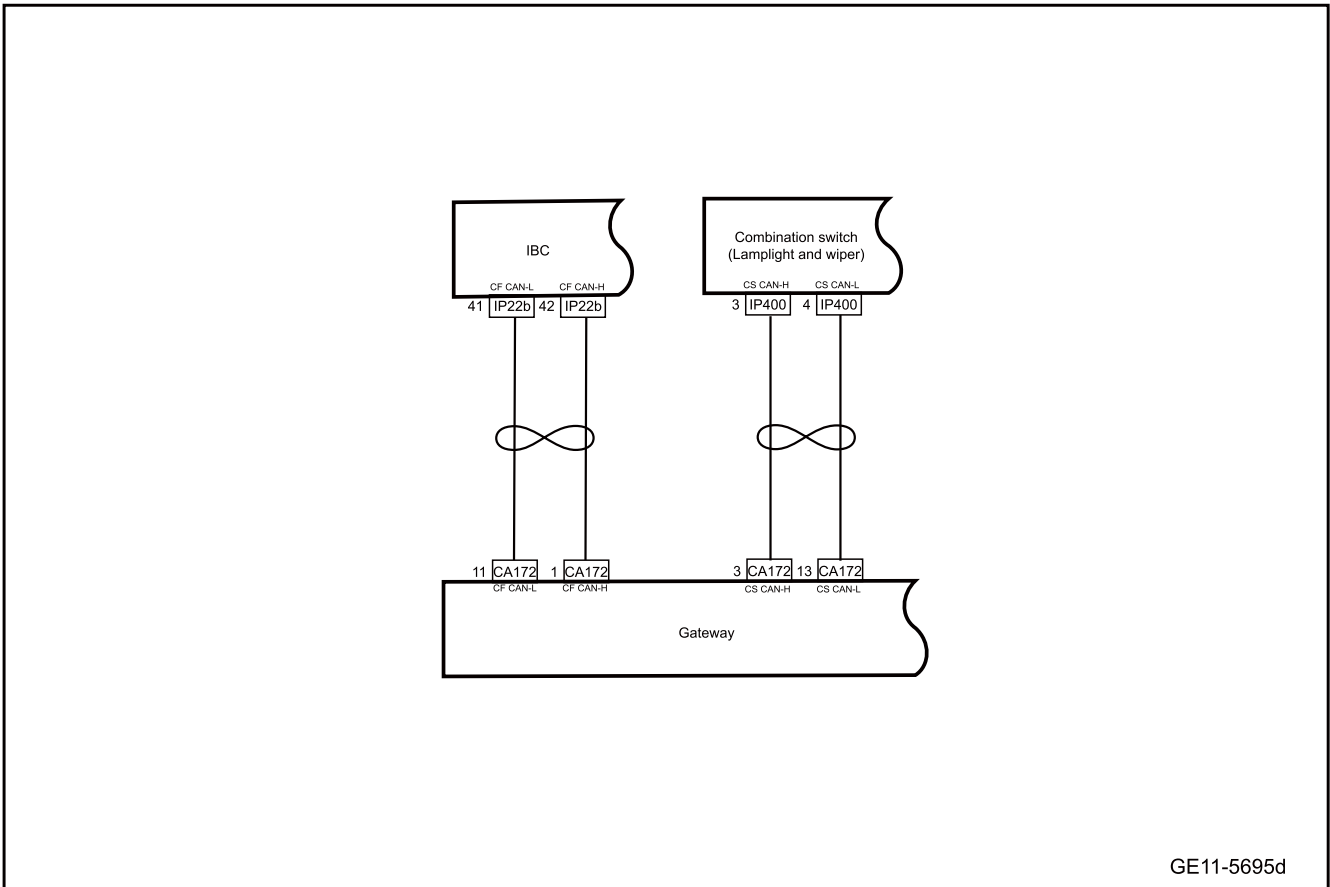
- A. To replace the front wiper motor, please refer to [Replacement of Front Wiper Motor](#)

Next step

Step 9 System is normal.

11.6.7.9 Wiper is inoperative at intermittent gear

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the IBC and the harness connector of combination wiper switch for signs of damage, poor contact, aging, loosening, etc.
- B. Check the combination wiper switch for catching.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Step 3	Check the CF-CAN network integrity.
--------	-------------------------------------

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Replace wiper combination switch.
--------	-----------------------------------

- A. To replace the wiper combination switch, please refer to [Replacement of Wiper Combination Switch](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 5	Replace the IBC
--------	-----------------

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6	Reprogram and reset the IBC.
--------	------------------------------

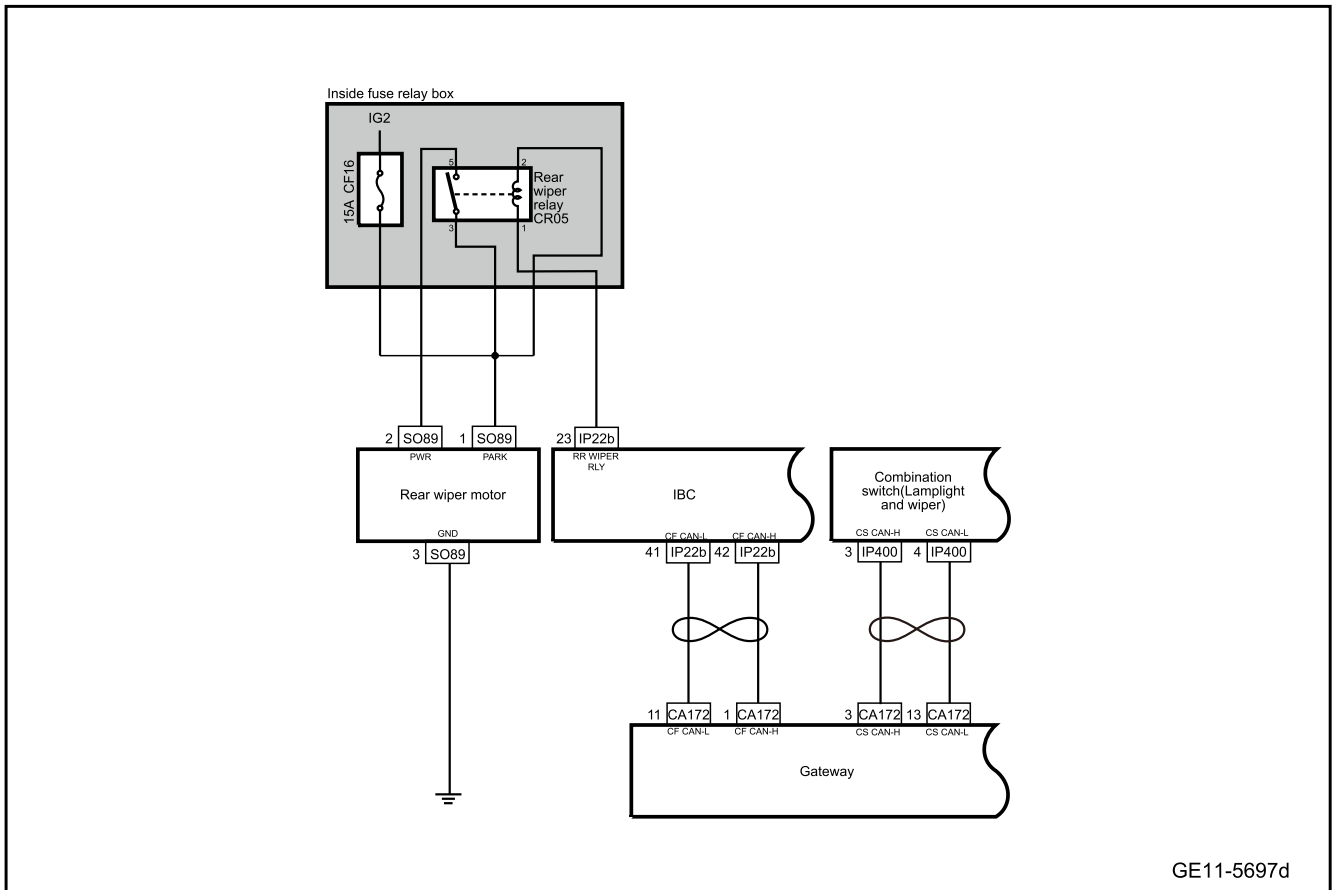
- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 7	System is normal.
--------	-------------------

11.6.7.10 Inoperative rear rain wiper

1. Schematic circuit diagram:



GE11-5697d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether the rear wiper activity is normal and without interference phenomenon.
- B. Check the rear wiper motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Check the rear rain wiper switch for sticking.
- D. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the rear rain wiper fuse
--------	--------------------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF16 and check whether the fuse is blown.

Rated capacity of fuse: 15A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

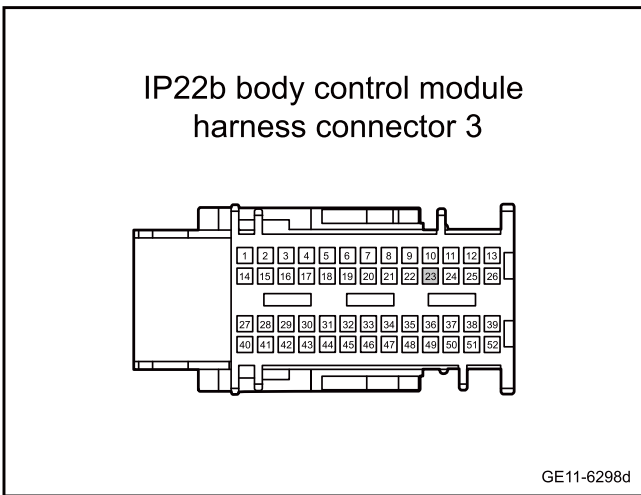
Step 3 | Check the rear rain wiper relay CR05

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the rear rain wiper relay CR05 and replace with a new one of the same model.
- C. Confirm whether the system is normal.

Yes → System is normal.

No

Step 4 | Check whether the circuit between the front wiper relay and the IBC is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Unplug the rear rain wiper relay CR05
- D. Use a multimeter to measure the terminals according to the table below:

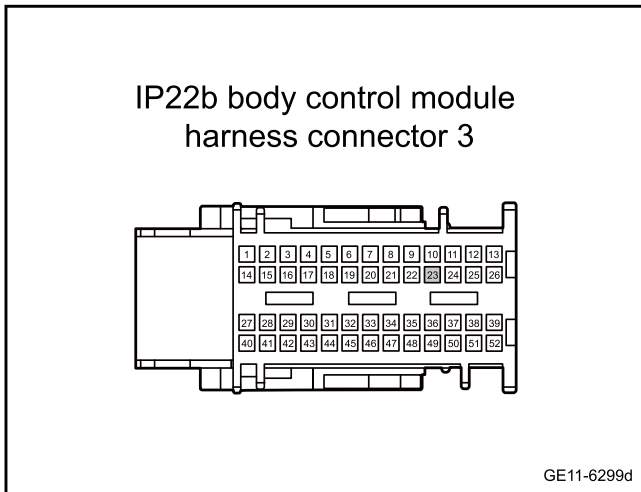
Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	CR05(1)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between the front wiper relay and the IBC is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Unplug the rear rain wiper relay CR05
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

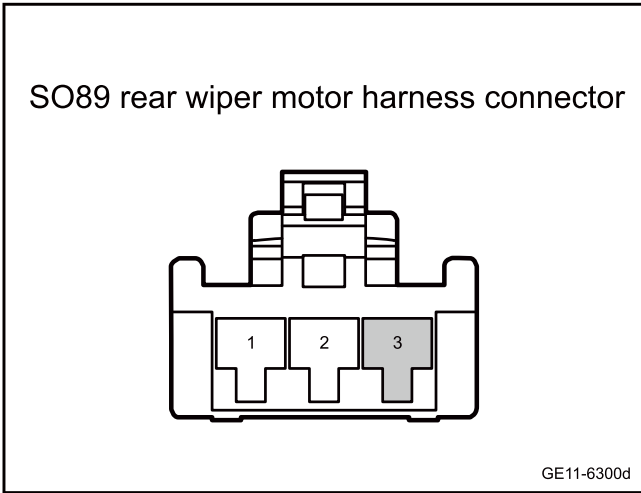
Step 7 | Check the CF-CAN network integrity.

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 8 | Check whether the grounding harness of rear rain wiper motor is functioning properly.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear wiper motor harness connector SO89.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO89(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

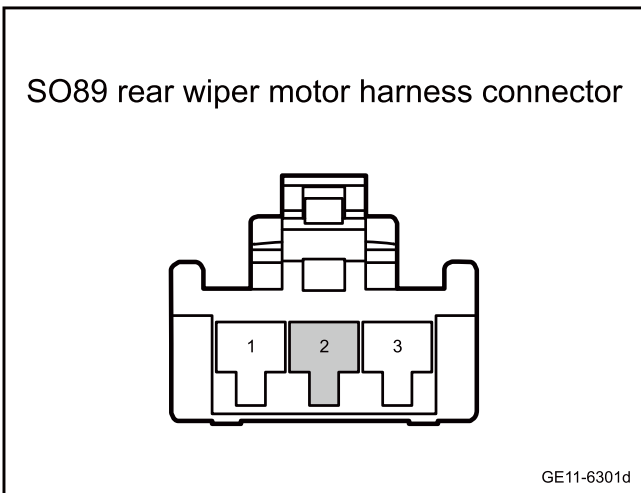
- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Check the circuit between rear wiper motor and the rear wiper relay.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear wiper motor harness connector SO89.
- C. Unplug the rear rain wiper relay CR05
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO89(2)	CR05(5)	Standard resistance: less than 1Ω
SO89(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 10 Replace the rear wiper motor.

- A. Replace the rear wiper motor, refer to [Replacement of rear wiper motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Replace wiper combination switch.
---------	-----------------------------------

- A. To replace the wiper combination switch, please refer to [Replacement of Wiper Combination Switch](#)
- B. Make sure the repair is completed.

Yes System is normal.

No

Step 12	Replace the IBC
---------	-----------------

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 13	Reprogram and reset the IBC.
---------	------------------------------

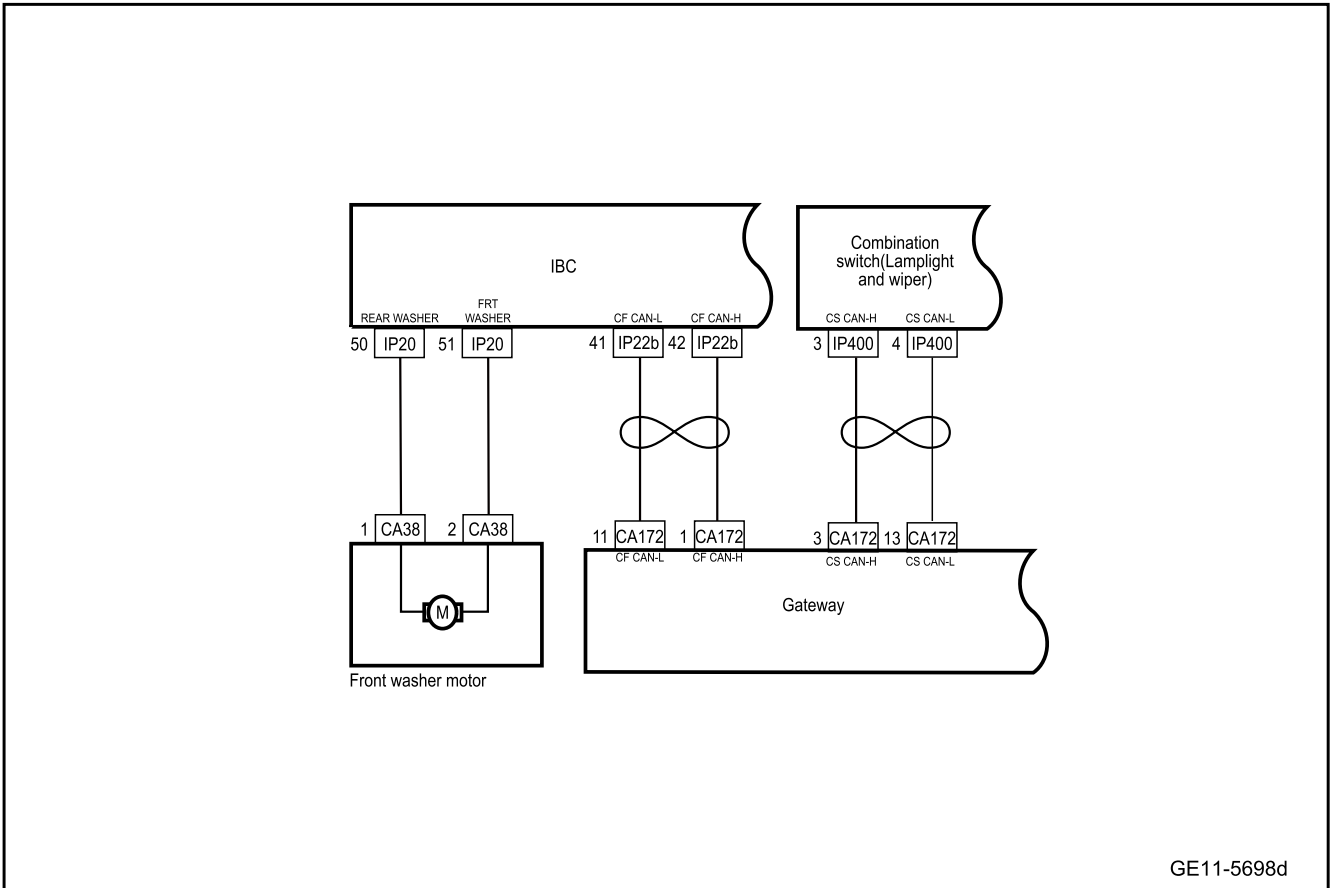
- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 14	System is normal.
---------	-------------------

11.6.7.11 Washer is inoperative

1. Schematic circuit diagram:



2. Diagnosis steps:

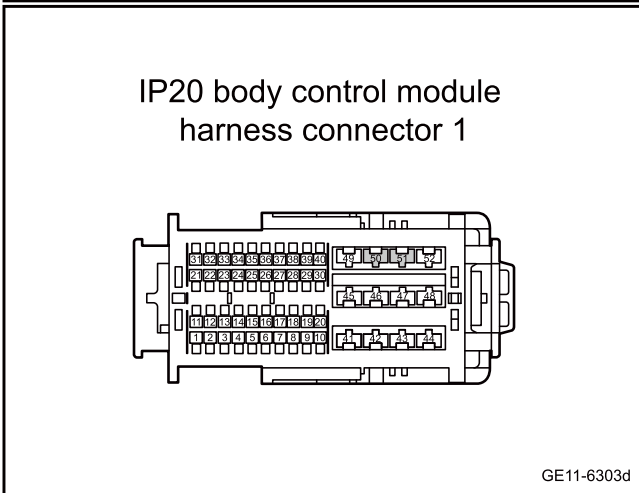
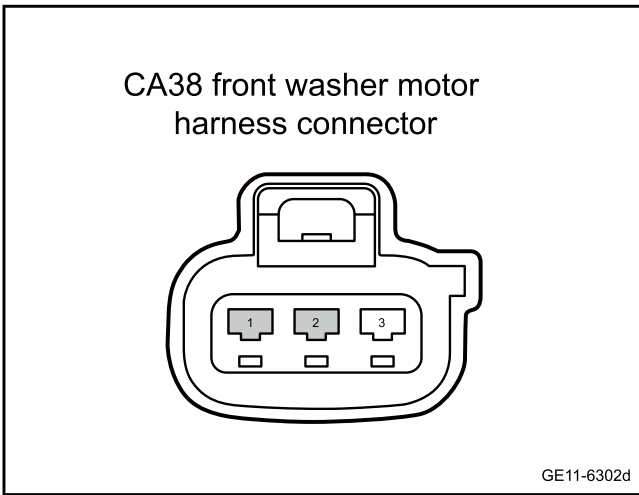
Step 1	Primary check.
--------	----------------

- A. Check whether the front washer and IBC harness connector indicate the signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check whether the harness between the front washer and IBC is open.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA38 of the front wiper motor.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure each terminal according to the table below:

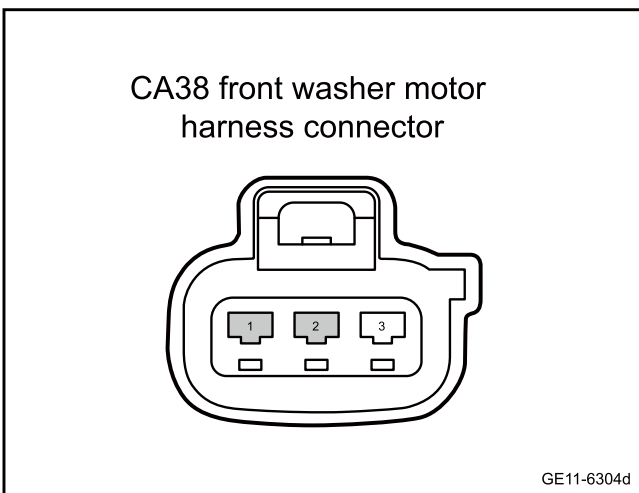
Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	IP20(50)	Standard resistance: less than 1Ω
CA38(2)	IP20(51)	

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 3 Check whether the harness between the front washer and IBC is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA38 of the front wiper motor.
- C. Disconnect the IBC harness connector IP20.
- D. The key activates the power supply of the vehicle to ON.
- E. Turn on the front washer switch.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	Vehicle body is grounded.	Standard voltage: 0V
CA38(2)		

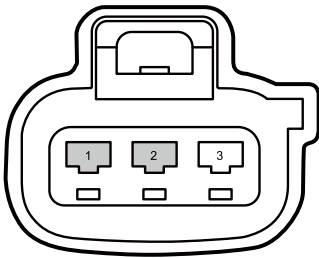
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Check whether the harness between the front washer and IBC is short to GND.

CA38 front washer motor harness connector



GE11-6305d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA38 of the front wiper motor.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA38(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Step 6 Check the CF-CAN network integrity.

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 7 Replace the front washer.

- A. Replace the front washer. Refer to [Replacement of front washer](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Replace wiper combination switch.

- A. Replace wiper combination switch. Refer to [Replacement of Wiper Combination Switch](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace IBC. Refer to [Replacement of the body control module](#)

Next step

Step 10 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 11 | System is normal.

11.6.7.12 Washer motor circuit failure

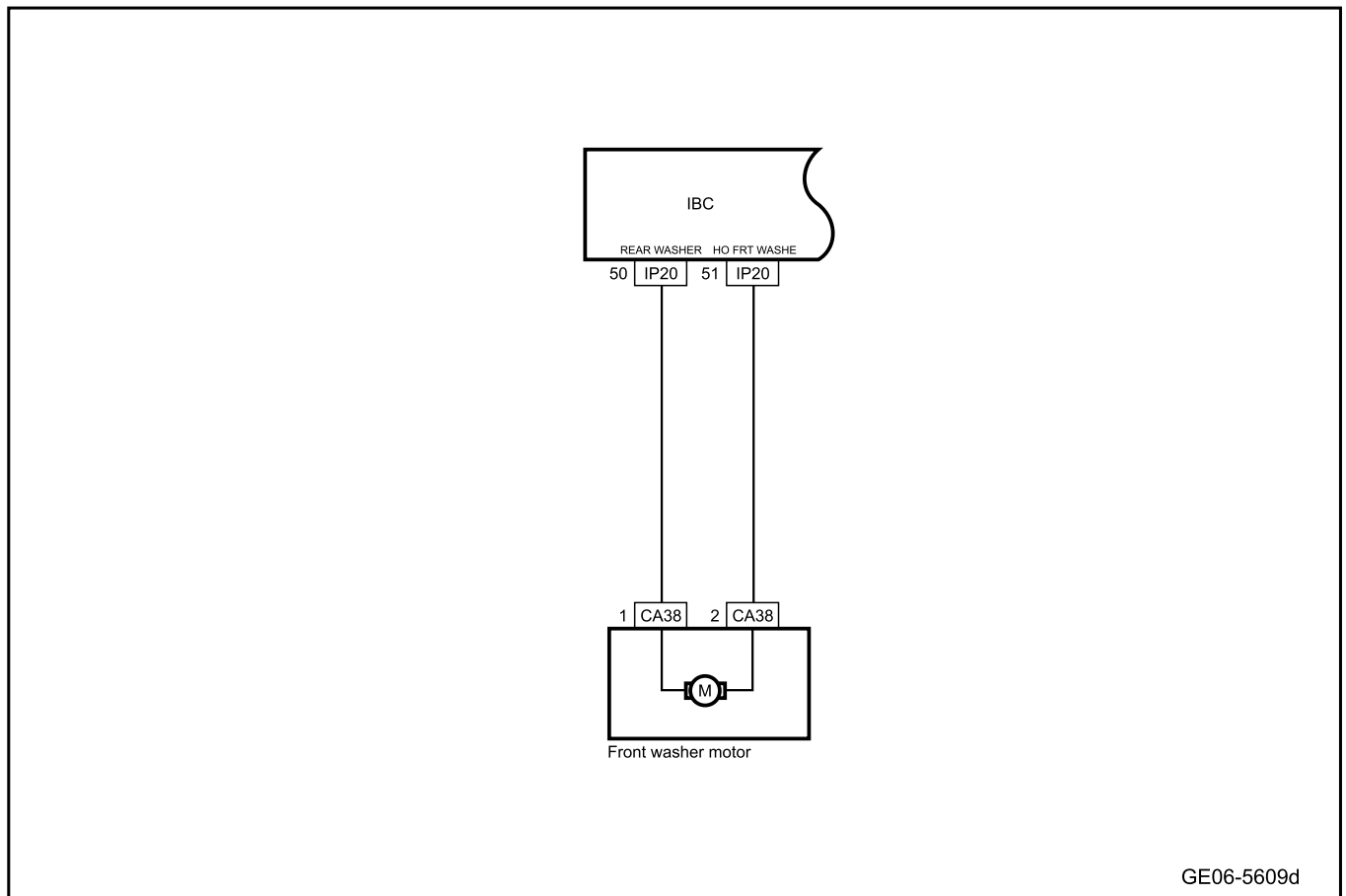
1. DTC description:

Diagnostic Trouble Code	Description
B109E1C	Wiper water spraying enabling input fault

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109E1C	When the front wiper parking switch (J1-18) completes two circuits detected three times, the wiper control washer (J4-02) voltage remains unchanged.	The IBC power supply voltage range is 9-16V The front wiper function is activated	1. Circuit 2. Front washer motor 3.IBC

3. Circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

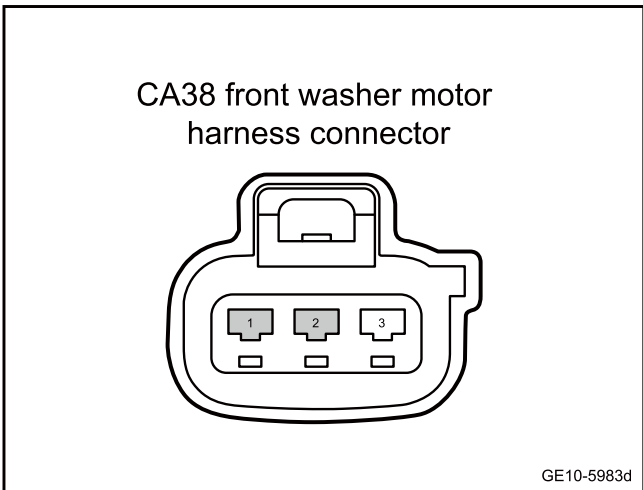
- A. Check the front washer motor, IBC for signs of damage, deformation, stain, loosening, etc.
- B. Check the front washer motor and IBC harness connectors for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

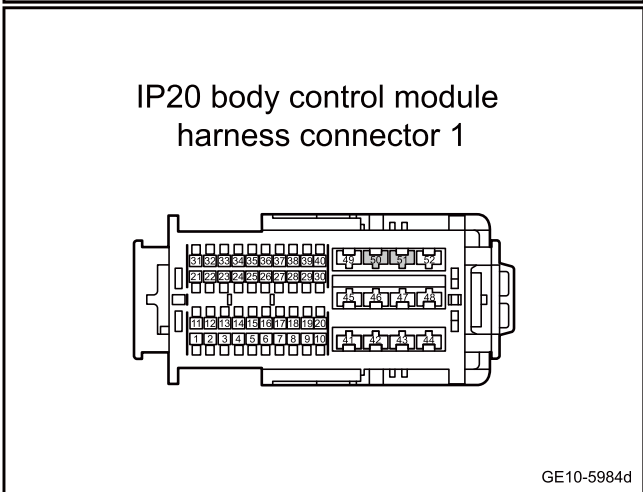
Step 3 Check the circuit between IBC and the front washer motor.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the front washer motor harness connector CA38.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	IP20(50)	Standard resistance: less than 1Ω
CA38(2)	IP20(51)	

- E. Confirm whether the measured value meets the standard.

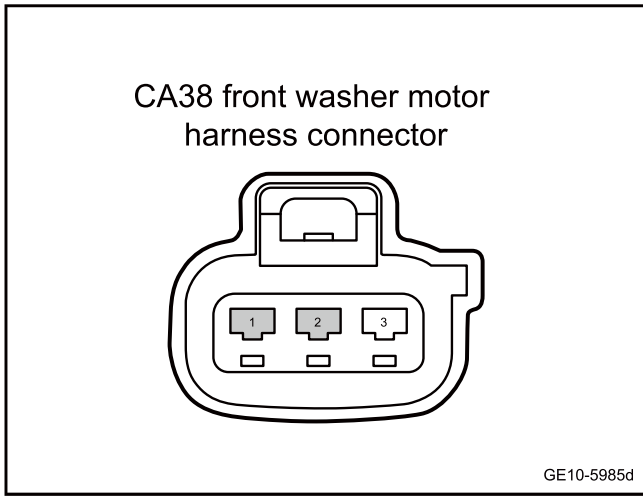


No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the IBC module and the front washer motor is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the front washer motor harness connector CA38.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	Vehicle body is grounded.	Standard voltage: 0V
CA38(2)		

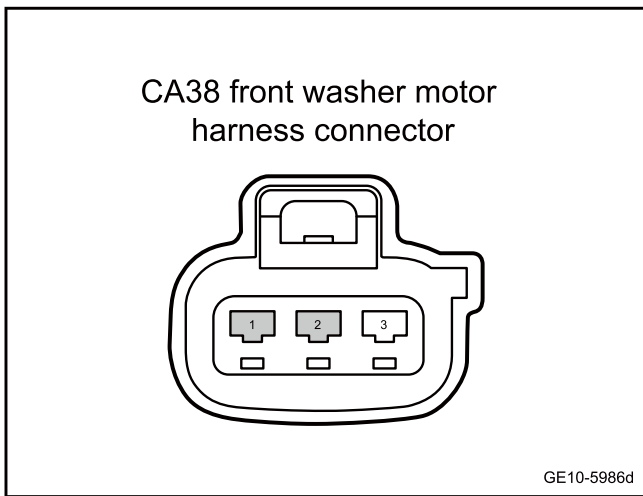
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check the circuit between IBC and the front washer motor.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the front washer motor harness connector CA38.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA38(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA38(2)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the front washer motor.

- A. Replace the front washer motor. Refer to [Replacement of Front Washer Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 8 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 | System is normal.

11.6.7.13 Front Wiper Power Supply Circuit Failure

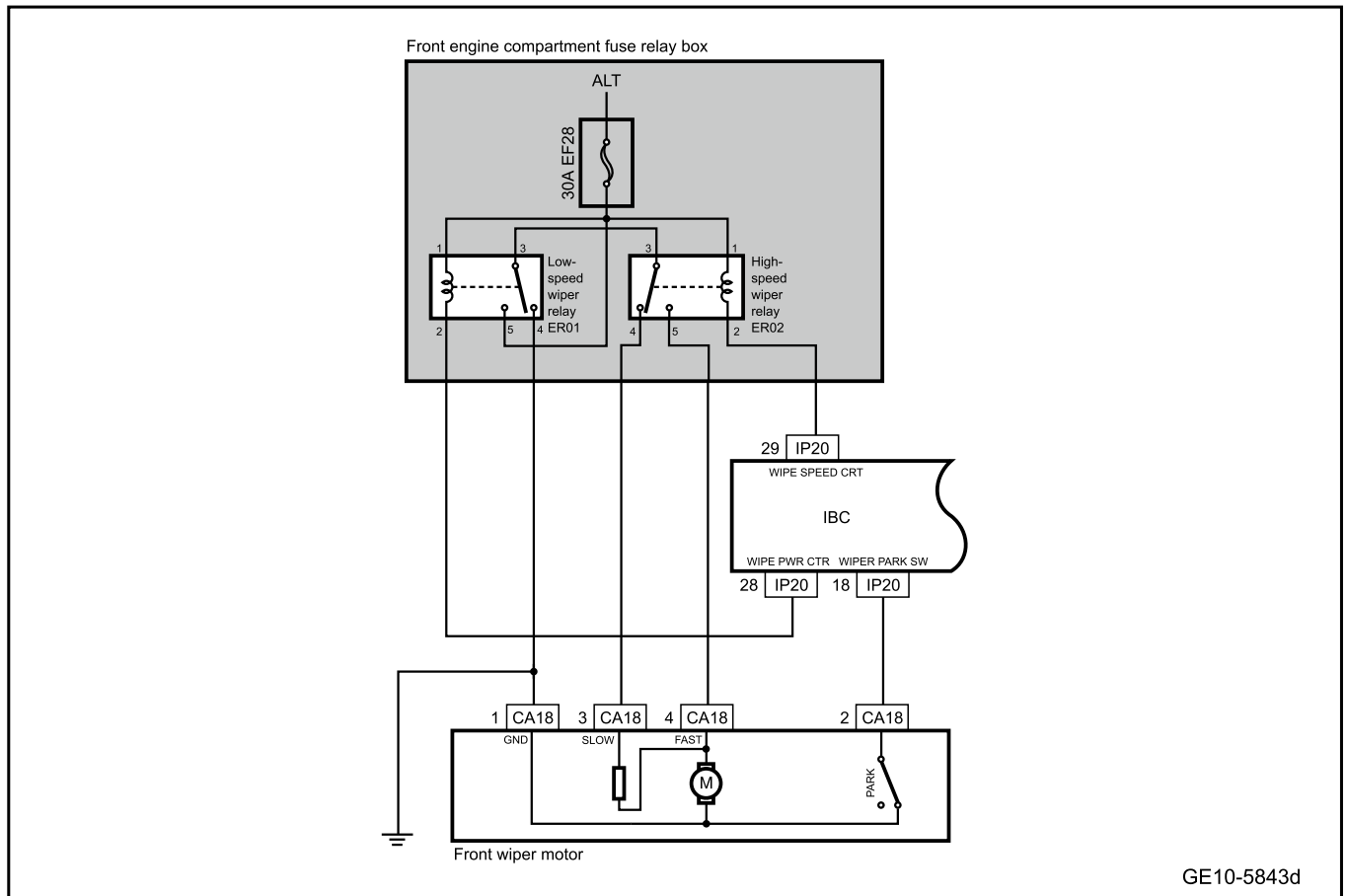
1. DTC description:

Diagnostic Trouble Code	Description
B107412	Wiper ON/OFF circuit is short-circuited to power supply
B107414	Wiper ON/OFF circuit is short-circuited to ground or opened
B101071	Front wiper gets stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107412	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short circuit fault of the battery; the wiper switch circuit is short to the battery for 200 milliseconds.	1. The power supply voltage is 9V-16V 2. The wiper function is activated for 100ms	1. Circuit 2. Fuse 3. Relay 4. IBC
B107414	Check the output voltage: if it is below a certain hardware threshold, a short-to-ground or open-circuit fault is considered. The wiper switch circuit is short to ground or open for 200ms		
B101071	Front wiper parking signal keeps unchanged for 8 seconds		

3. Circuit diagram:



GE10-5843d

4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No → Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the low speed wiper relay, high speed wiper relay and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF28 is blown out.

Rated capacity of fuse: 30A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the front wiper relay.

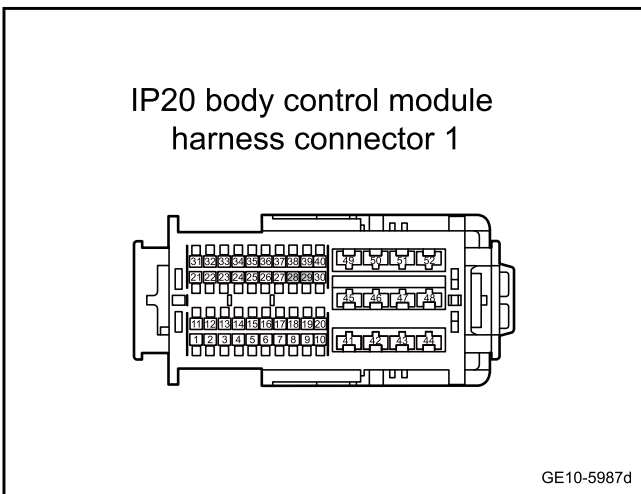
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug low speed wiper relay ER01 and replace it with a new relay of the same mode.
- C. Unplug high speed wiper relay ER02 and replace it with a new relay of the same specification.
- D. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Check whether the harness between the high-speed wiper relay and the IBC is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Pull out the low-speed wiper relay ER01.
- D. Unplug the high speed wiper relay ER02.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(29)		
IP20(28)	ER01(2)	Standard resistance: less than 1Ω

IP20(29)	ER02(2)	
----------	---------	--

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(28)	Vehicle body is grounded.	Standard voltage: 0V
IP20(29)		

- H. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to IBC Power Failure
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

11.6.7.14 Front Wiper Speed Control Circuit Failure

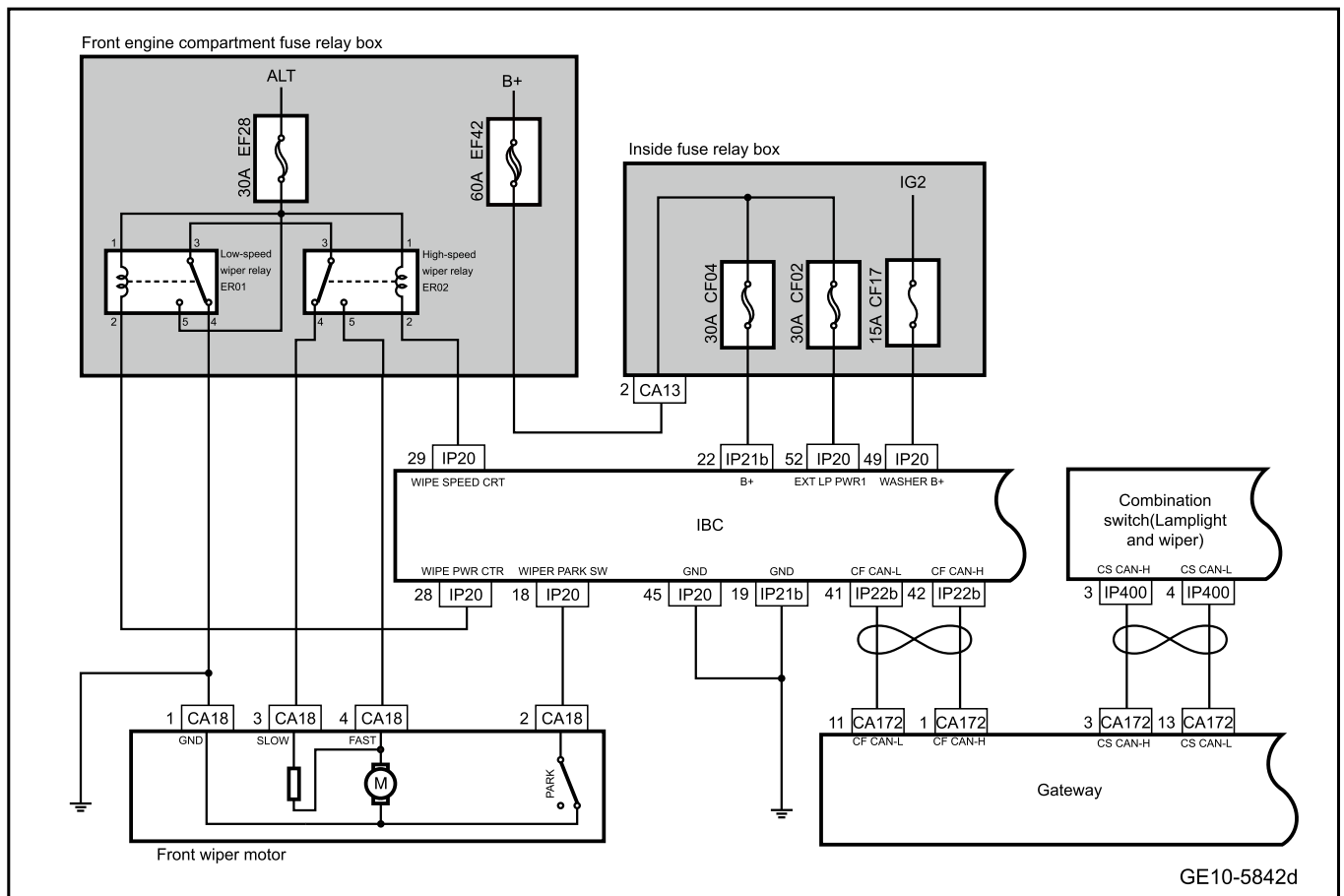
1. DTC description:

Diagnostic Trouble Code	Description
B107512	Wiper high and low-speed circuit is short-circuited to power supply
B107514	Wiper high and low-speed circuit is short-circuited to ground or opened

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B107512	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short circuit fault of the battery; the wiper switch circuit is short to the battery for 200ms	<ol style="list-style-type: none"> The power supply voltage is 9V-16V The wiper function is activated for 100ms at high speed 	<ol style="list-style-type: none"> Circuit Wiper combination switch IBC
B107514	Check the output voltage: if it is below a certain hardware threshold, a short-to-ground or open-circuit fault is considered. The wiper high/low circuit is short to ground or open for 200ms	<ol style="list-style-type: none"> The power supply voltage is 9V-16V The wiper function is activated for 100ms at low speed 	

3. Circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the wiper combination motor and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 | Check whether the wiper works normally in high gear.

- A. Check whether the wiper works normally in high gear, refer to [Inoperation of the wiper in high gear](#)
- B. Determine whether the wiper works normally in high gear.

No

Repair or replace the harness.

Yes

Step 4 | Check whether the wiper works normally at low speed.

- A. Check whether the wiper works normally in the low gear, refer to [Inoperation of the wiper in the low gear](#)
- B. Determine whether wiper work normally in high gear

No

Repair or replace the harness.

Yes

Step 5 | The wiper is inoperative at intermittent gear

- A. Check whether the wiper works normally in intermittent gear, refer to [Inoperation of wiper in intermittent gear](#)
- B. Determine whether the wiper works normally at intermittent gear

No

Repair or replace the harness.

Yes

Step 6 | Check the CF-CAN network integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm that the CF-CAN network is functioning properly.

No

Check or repair CF-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 7 | Check the CS-CAN network integrity.

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm that the CS-CAN network is functioning properly.

No

Check or repair CS-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 8 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.6.7.15 Rear wiper circuit fault

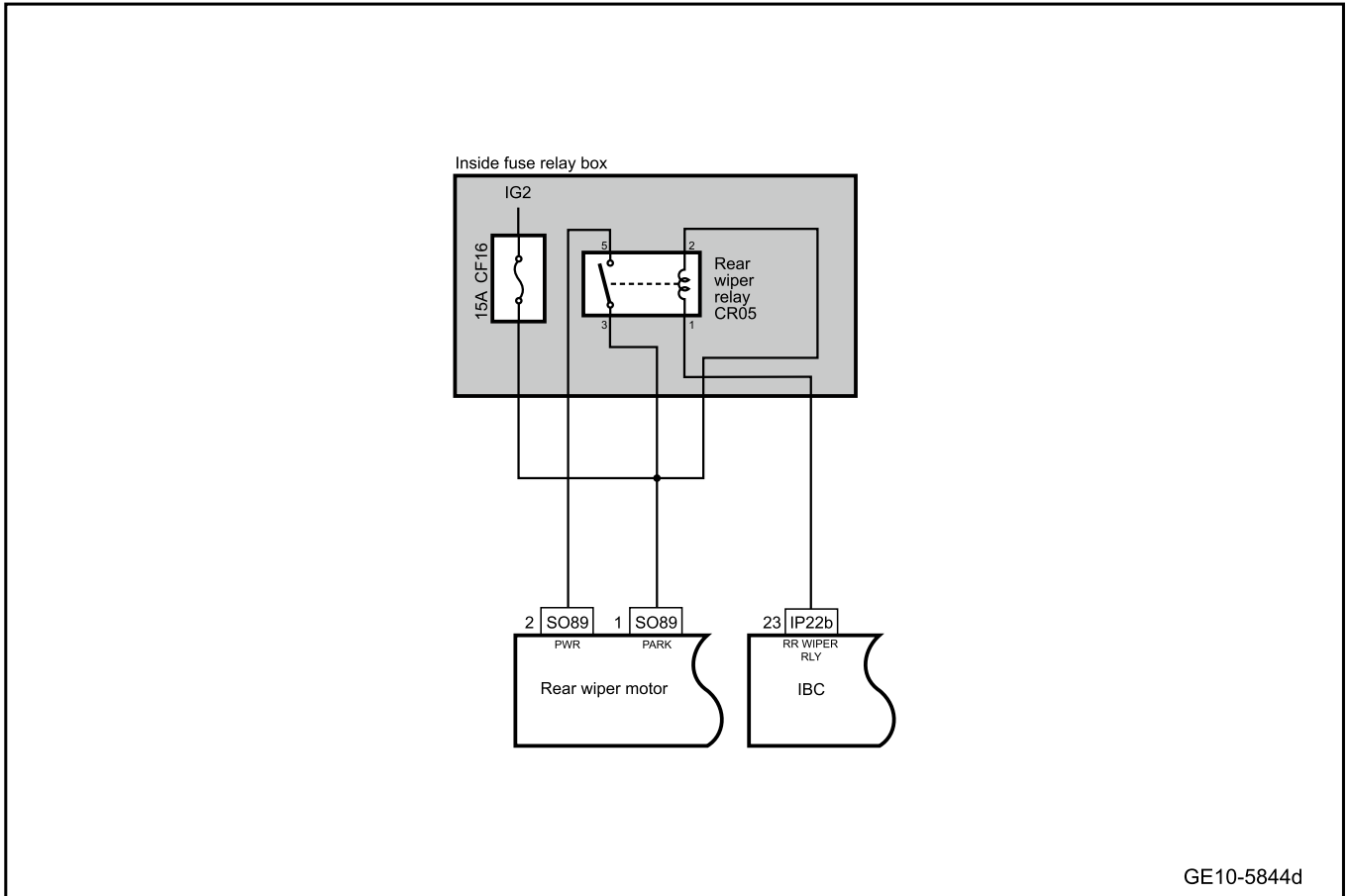
1. DTC description:

Diagnostic Trouble Code	Description
B102112	Rear wiper circuit is short to power supply
B102114	Rear wiper circuit is short-circuited to ground or opened
B102171	Rear wiper circuit is blocked

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B102112	The joint temperature will be monitored: If it is higher than a specific hardware threshold, it is regarded as a short circuit fault of the battery; the wiper switch circuit is short to the battery for 200 milliseconds.		
B102114	When the output changes from active to inactive, a small diagnostic current (based on hardware thresholds) is turned on and the output voltage is checked: if it is below a certain hardware threshold, a short-to-ground or open-circuit fault is considered. The rear wiper circuit is short to ground or open for 200ms	1. The power supply voltage is 9V-16V 2. The rear wiper function is activated for 100ms	1. Circuit 2. Fuse 3. Relay 4.IBC
B102171	The parking signal of the rear wiper (HW_rearwiper_Park_SW_ST) does not change within 8 seconds (P_t_WiperStall_Detection duration)		

3. Circuit diagram:



GE10-5844d

4. Diagnosis steps

Step 1 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the rear wiper relay and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 | Check the rear rain wiper relay.

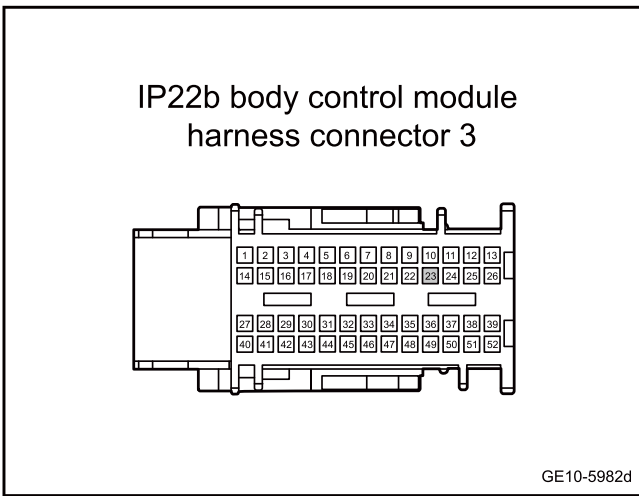
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the rear rain wiper relay CR05 and replace with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 | Check the control harness between the rear wiper relay and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Unplug the rear rain wiper relay CR05
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(23)	CR05(1)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(23)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8 System is normal.

11.6.7.16 Rain sensor fault

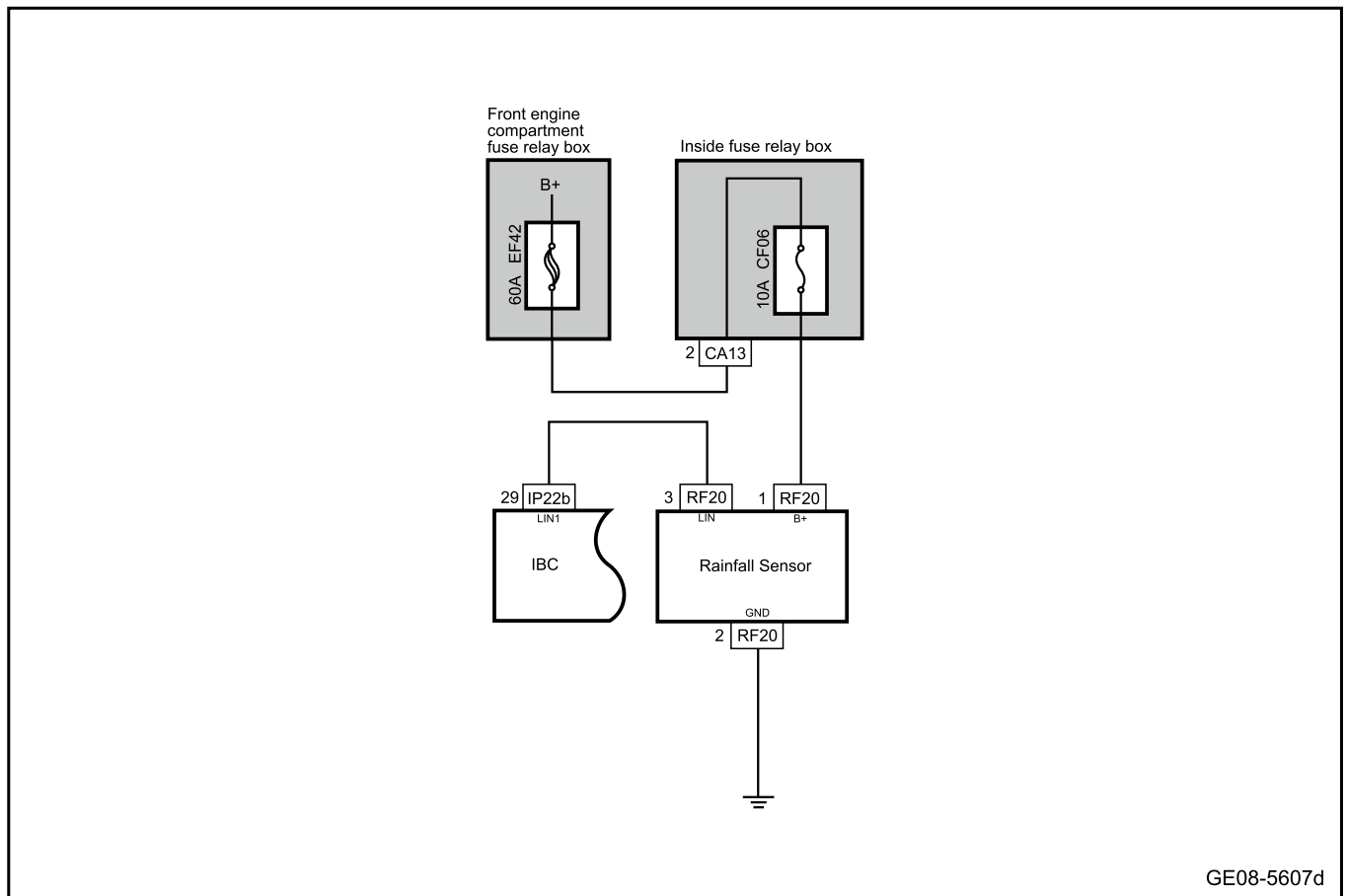
1. DTC description:

Diagnostic Trouble Code	Trouble description
B101117	Rain and light sensor is overvoltage failure
B101149	Rain sensor fault
B10114B	Rain and light sensor is overheated

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B101117	A successfully received RLS message indicates this error in the LIN frame (L_Err_State_Over_Volt=1)	1. LIN1 wakeup 2. IBC Power supply The supply voltage is within the range of 9-16V The ignition status is IGN ON (PhyTccStsBody==ON) and should meet the ignition condition.	1. Circuit 2. IBC 3. Rain sensor
B101149	A successfully received RLS message indicates this error in the Lin frame (L_RS_RainSensorError=1)		
B10114B	A successfully received RLS message indicates this error in the LIN frame (L_Err_State_Over_Temp=1)		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the rain sensor and IBC for signs of damage, deformation, smudges, looseness, etc.
- B. Check the rain sensor and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 Inspect the fuse.

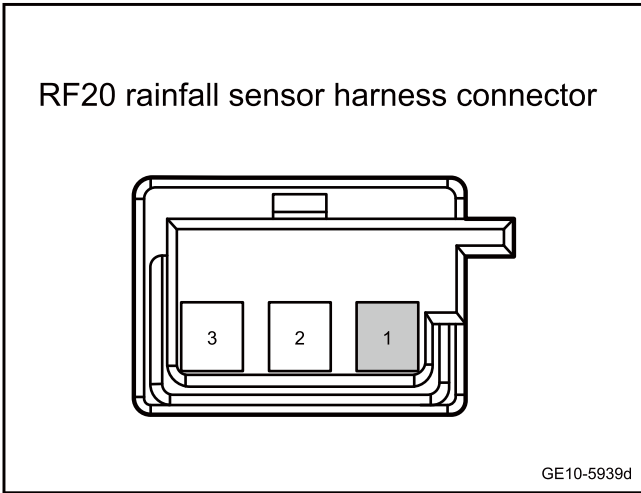
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF06 and check whether the fuse is blown.
Rated capacity of fuse: 10A
- C. Unplug the EF42 fuse in the front engine compartment and check whether the fuse is blown out.
Rated capacity of fuse: 60A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check whether the working voltage of the rain sensor is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rain sensor harness connector RF20.
- C. Disconnect the IBC harness connector IP22b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF20(1)	Vehicle body is grounded.	Standard voltage: 11-14V

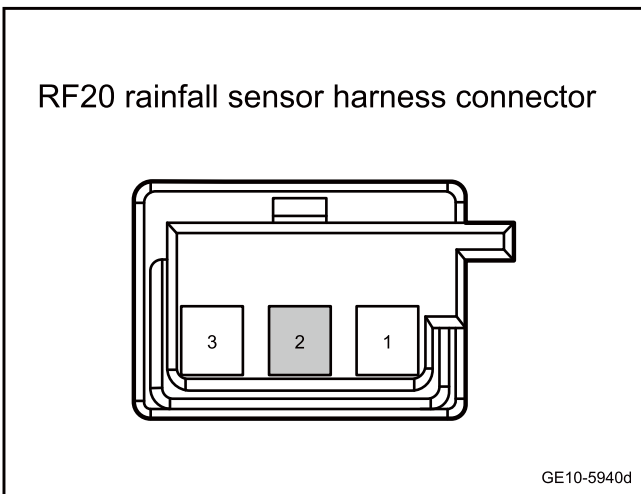
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check the grounding circuit of rain sensor.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rain sensor harness connector RF20.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF20(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

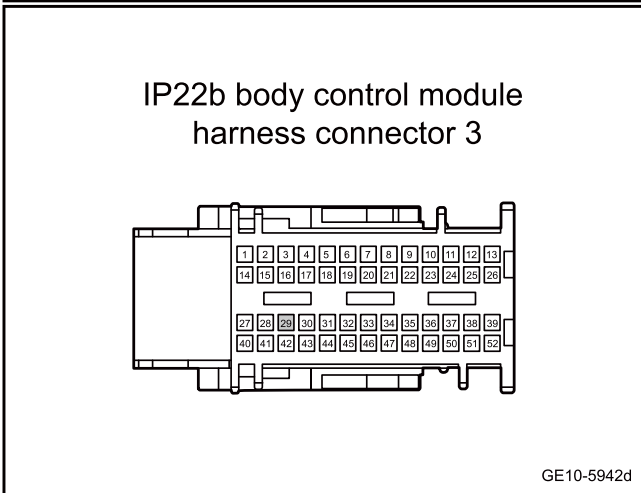
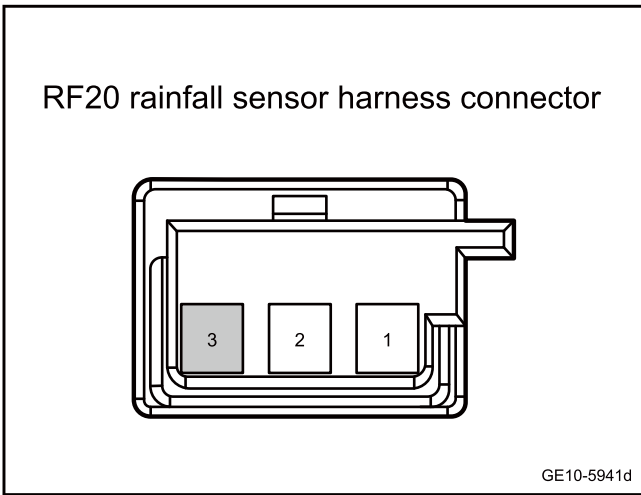
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check LIN communication harness of rain sensor.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rain sensor harness connector RF20.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF20(3)	IP22b(29)	Standard resistance: less than 1Ω
RF20(3)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF20(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 | Replace rain sensor.

- A. Replace rain sensor. Refer to [Replacement of rain sensor](#).
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 9 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 10	Reprogram and reset the IBC.
------------	------------------------------

- A. To reprogram and reset the IBC, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use diagnostic scanner to confirm the trouble code.
---------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

11.6.8 Removing and installing

11.6.8.1 Replacement of Left Wiper Blade Assembly

Removal procedure

Caution

The left and right sides are removed and installed in the same way.

- 1 Open the front engine compartment cover

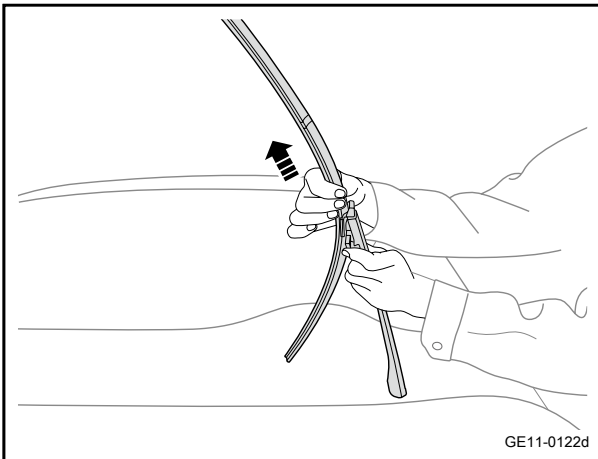
Caution

Before removal, adjust the wiper to maintenance mode and operate multimedia to set the power supply of the vehicle to OFF.

- 2 Lift the left wiper arm assembly and press the left wiper blade assembly to release the clips.
- 3 Pull out and remove the left wiper blade in the direction indicated by the arrow.

Caution

After removing the wiper blade, if the wiper is not replaced immediately, it is necessary to gently put down the wiper arm by hand to prevent damaging the front windshield mistakenly.

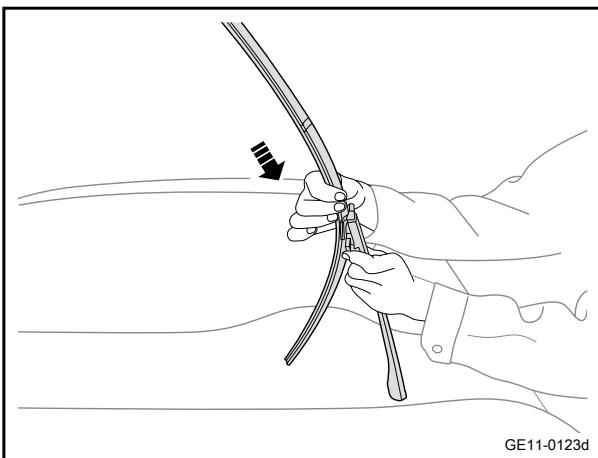


Installation procedure

- 1 Lift the left wiper arm assembly, install the left wiper blade assembly in the direction indicated by the arrow, and confirm the installation in place.
- 2 Take down left wiper arm assembly

Caution

After the installation of new wiper blades, the maintenance mode is closed.



- 3 Close the front engine compartment cover

11.6.8.2 Replacement of Left Wiper Arm Assembly

Removal procedure

Caution

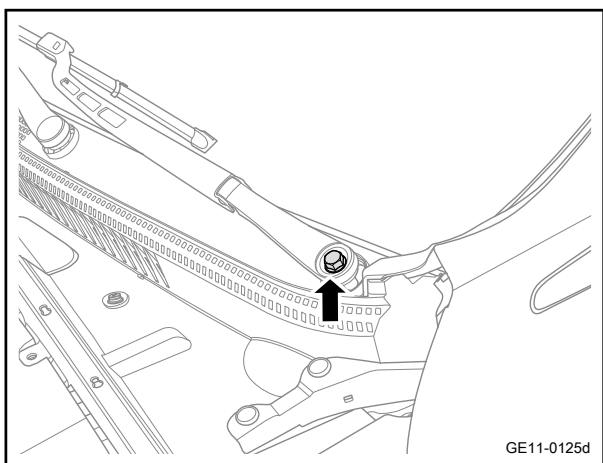
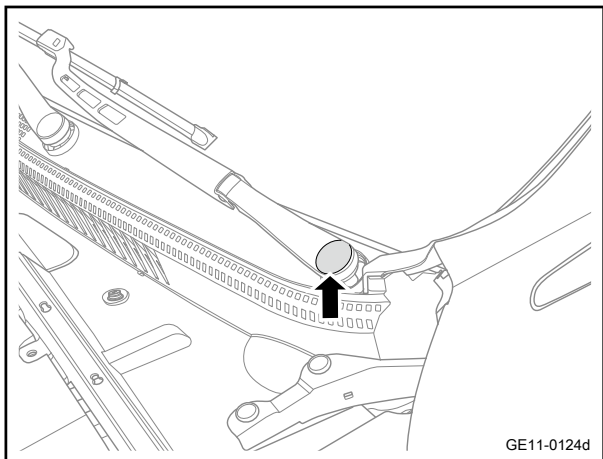
The left and right sides are removed and installed in the same way.

- 1 Open the front engine compartment cover

Caution

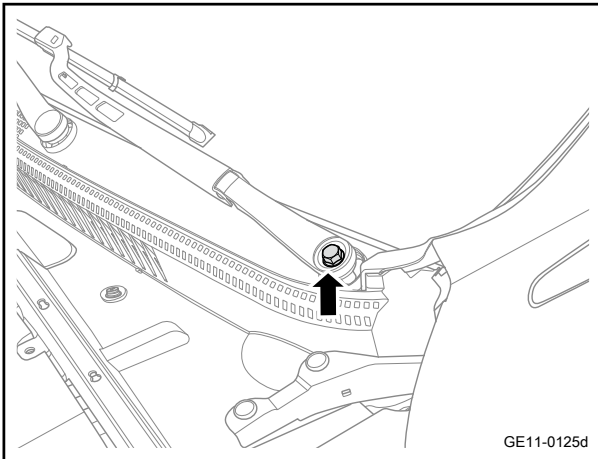
Before removal, adjust the wiper to maintenance mode and operate multimedia to set the power supply of the vehicle to OFF.

- 2 Remove the fixing nut caps of wiper arm assembly.



- 3 Remove the fixing nuts of wiper arm assembly.
- 4 Take down left wiper arm assembly.

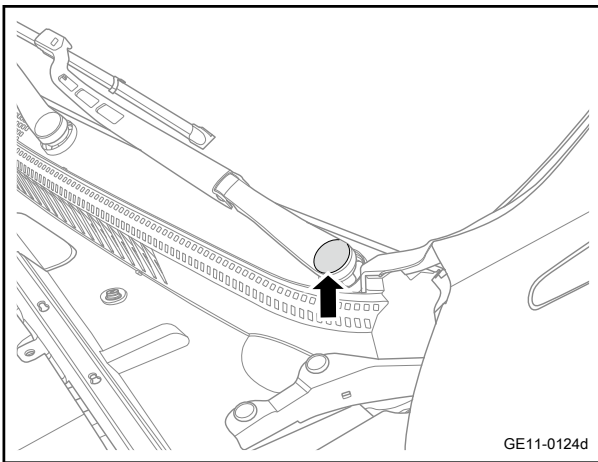
Installation procedure



- 1 Move the left wiper arm assembly to the installation position.
- 2 Install the nut of left wiper arm assembly.
Torque: 38N·m (metric system) 28lb-ft (Imperial system)

Caution

After the installation of new wiper blades, the maintenance mode is closed.



- 3 Install the nut caps of left wiper arm assembly.

- 4 Close the front engine compartment cover

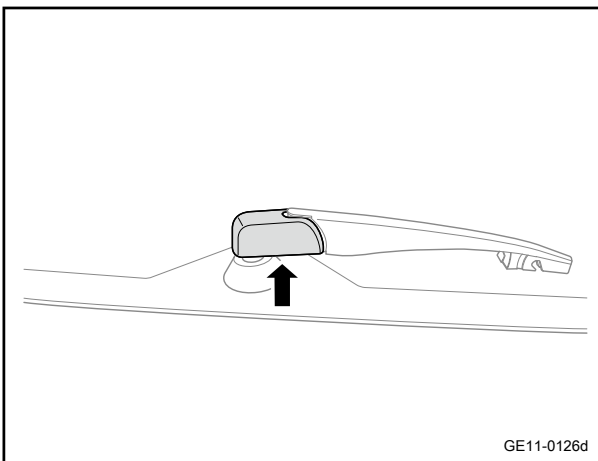
11.6.8.3 Replacement of rear wiper blade assembly

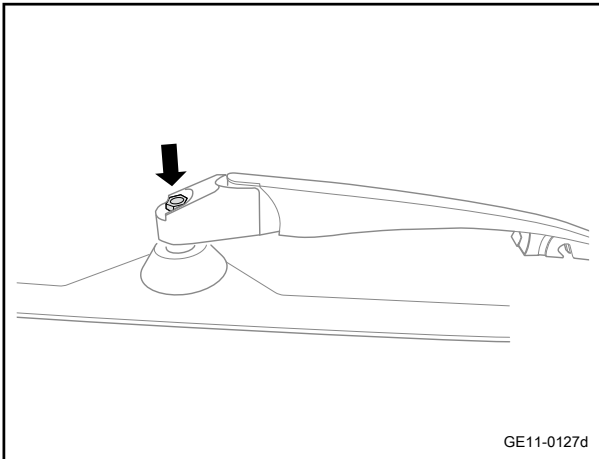
Removal procedure

Caution

Before removal, park the rear wiper blade assembly in a suitable position and turn off the ignition switch.

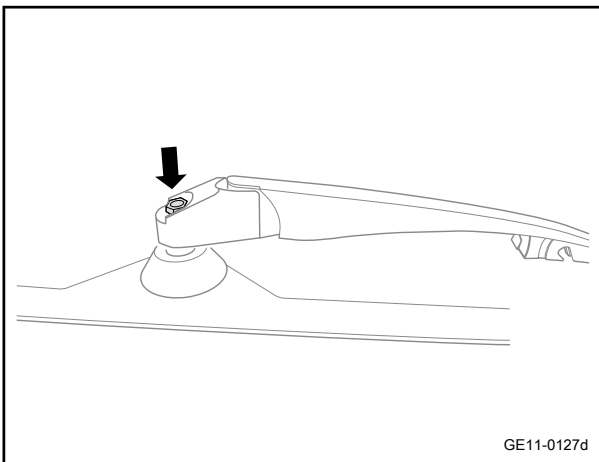
- 1 Remove rear wiper blade assembly nut caps



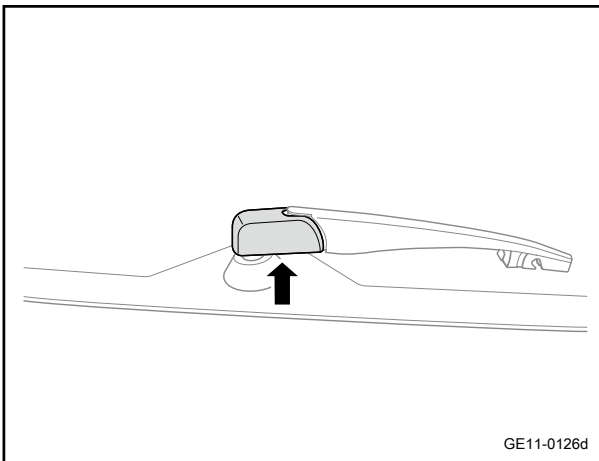


- 2 Remove rear wiper blade assembly fixing nut
- 3 Remove rear wiper blade assembly

Installation procedure



- 1 Move the rear wiper blade assembly to the mounting position.
- 2 Install rear wiper blade assembly fixing nut
Torque: 7N·m (metric system) 5.2lb-ft (Imperial system)

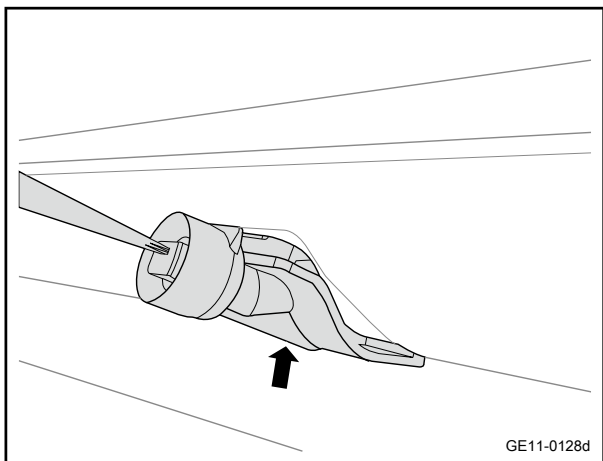


- 3 Install rear wiper blade assembly nut caps

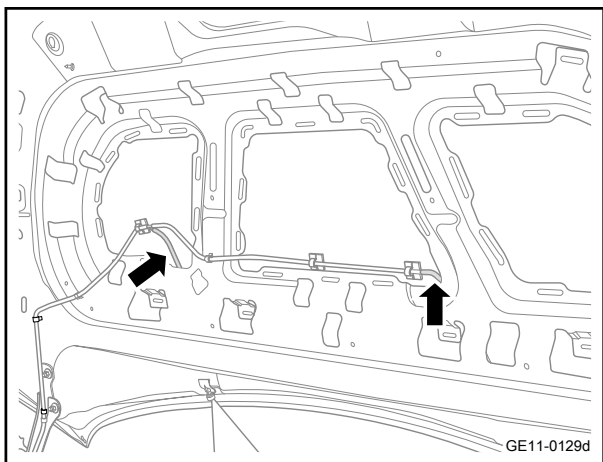
11.6.8.4 Replacement of front washer nozzle assembly

Removal procedure

- 1 Open the front engine compartment cover
- 2 Remove the sound insulating pad of the front engine compartment. Refer to [Replacement of Front Engine Compartment Sound Insulating Pad](#)



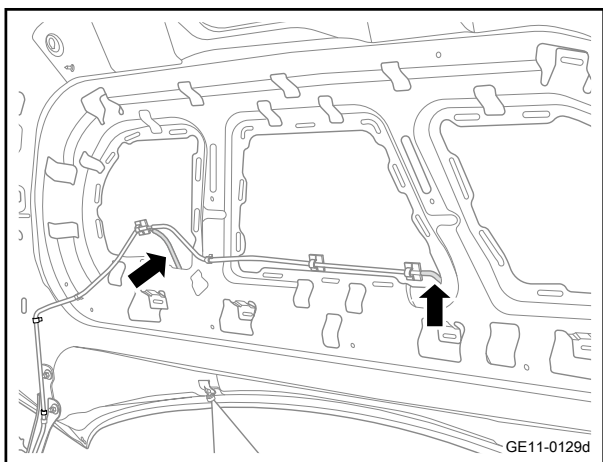
3 Remove the front washer nozzle with an appropriate tool.



4 Disconnect the front washer nozzle and the front washer hose).

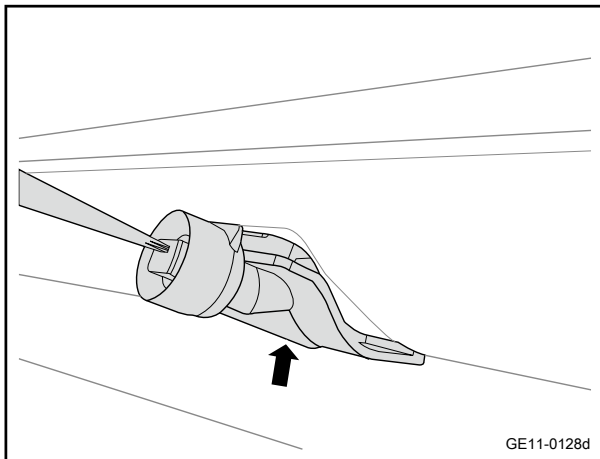
5 Remove the front washer nozzle.

Installation procedure



1 Move the front washer nozzle assembly to the installation positions.

2 Connect front wiper nozzle and front washer hose.



3 Install the front washer nozzle.

4 Install the sound insulating pad of the front engine compartment.

5 Close the front engine compartment cover.

11.6.8.5 Replacement of rear washer nozzle assembly

Removal procedure

1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

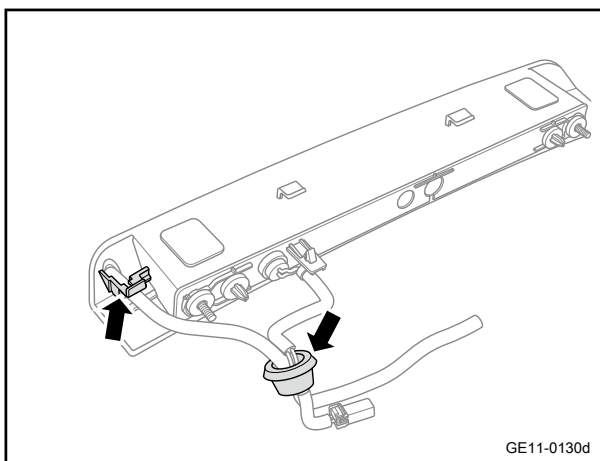
2 Remove the middle upper interior trim panel of the tailgate [Replacement of interior trim panel assembly at the upper middle side of the tailgate](#)

3 Remove the spoiler assembly. [Replace the spoiler assembly](#)

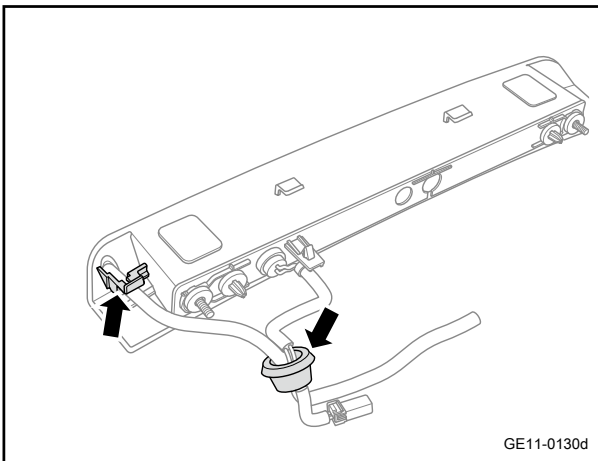
4 Remove the high-mounted stop lamp. Refer to [Replacement of High-mounted Stop Lamp](#)

5 Remove rear washer nozzle assembly plug.

6 Remove rear washer nozzle assembly with a tool.



Installation procedure

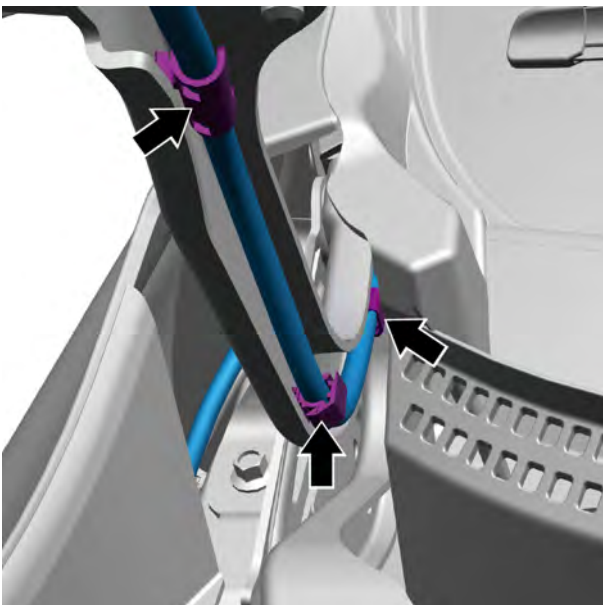
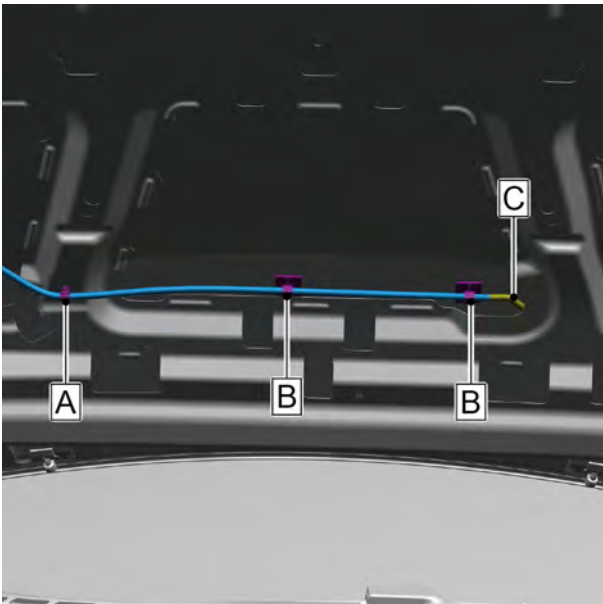
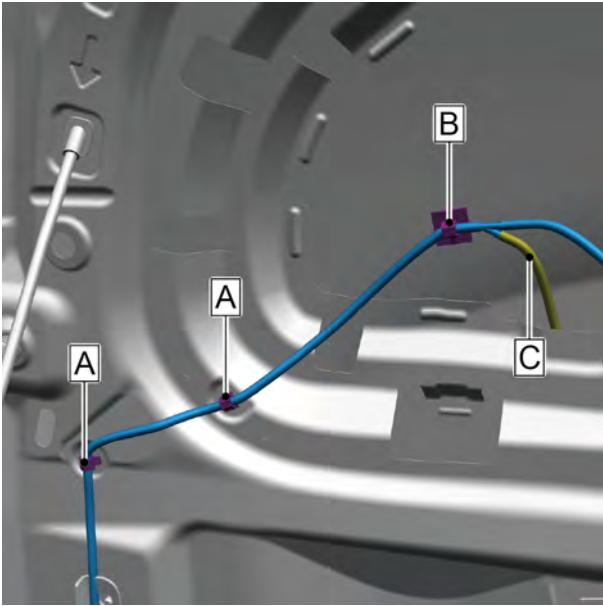


- 1 Move the rear washer nozzle assembly to the installation positions.
- 2 Pass the water pipe through the spoiler and install the high-mounted brake lamp before passing the water pipe through the plug.
- 3 Install the high-mounted stop lamp assembly.
- 4 Install spoiler assembly.
- 5 Install the upper middle interior trim panel assembly of tailgate.
- 6 Connect the negative cable of battery.

11.6.8.6 Replacement of front washer hose assembly

Removal procedure

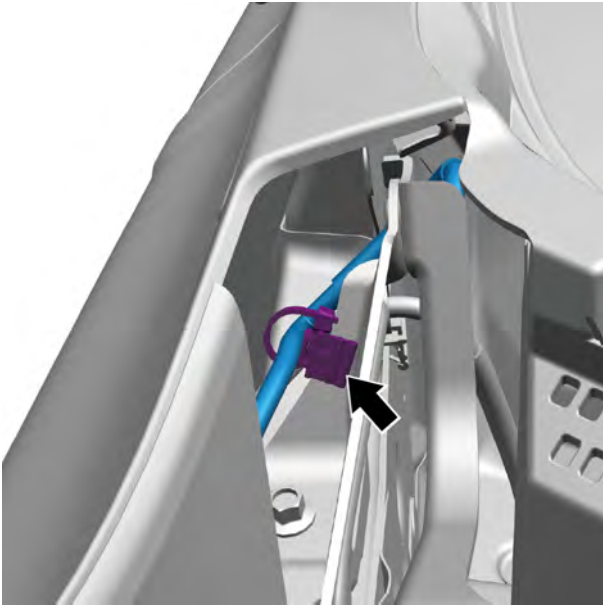
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the right front wheel. Refer to [Wheel Replacement](#)
- 4 Remove the sound insulating pad of the engine compartment. Refer to [Replacement of Engine Compartment Sound Insulating Pad](#)
- 5 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)



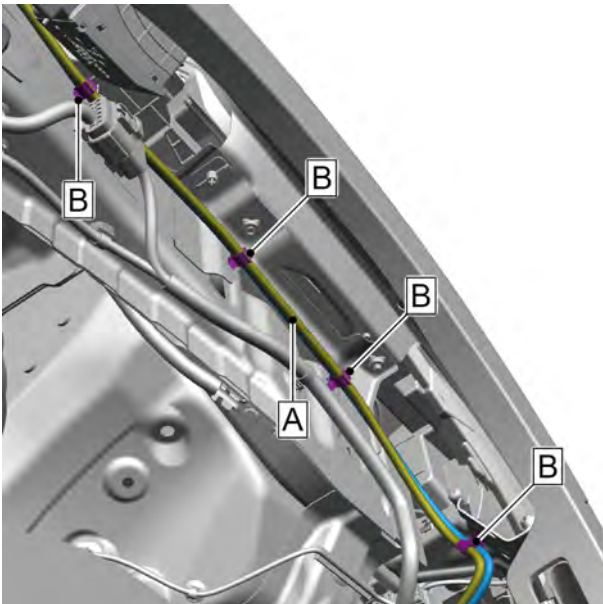
- 6 Disengage 2 retaining clips A that hold the front washer hose assembly and the engine compartment cover outer plate.
- 7 Disengage 1 retaining clip B that hold the front washer hose assembly and the engine compartment cover inner plate.
- 8 Disengage front washer nozzle assembly C from the front washer hose assembly.

- 9 Disengage 1 retaining clip A that hold the front washer hose assembly and the engine compartment cover outer plate.
- 10 Disengage 2 retaining clip B that hold the front washer hose assembly and the engine compartment cover inner plate.
- 11 Disconnect the front washer nozzle assembly C from the front washer hose assembly.

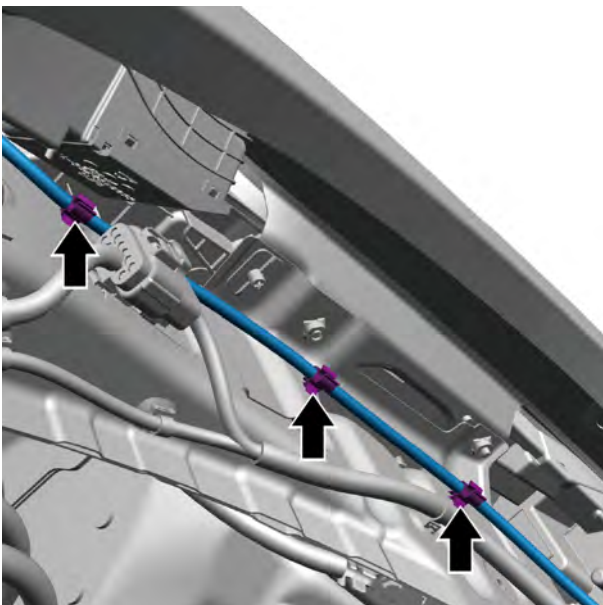
- 12 Disengage 3 retaining clips that hold the front washer hose assembly and the engine compartment cover left hinge assembly.



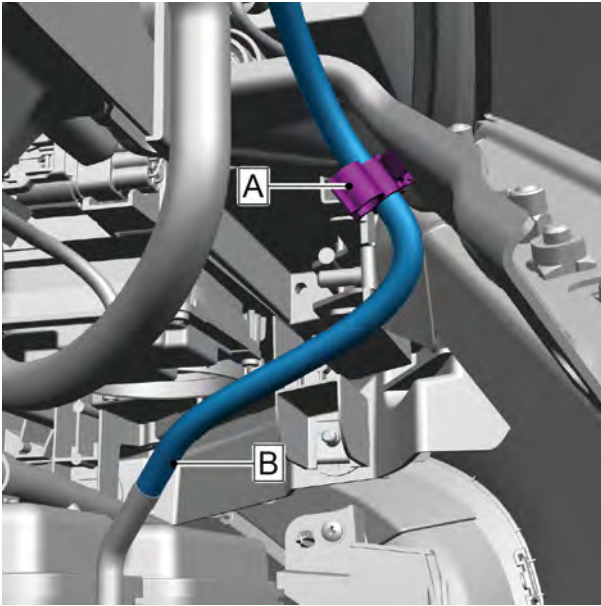
- 13 Disengage 1 retaining clips that hold the front washer hose assembly and the engine compartment cover left hinge assembly.



- 14 Disconnect the rear washer hose A from the fixing clip B of the front washer hose assembly.



- 15 Disengage 3 retaining clips A that hold the front washer hose assembly and the body.



- 16 Disconnect the 1 fixing clip A connecting the front washer hose assembly with the front fixing plate of the right front fender.
- 17 Disconnect the front washer hose assembly B from the washer bottle c/w washer motor assembly.
- 18 Remove front washer hose assembly

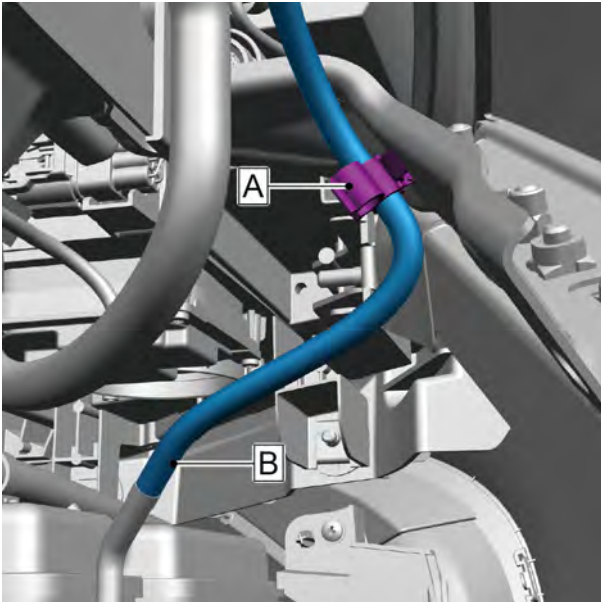
Installation procedure

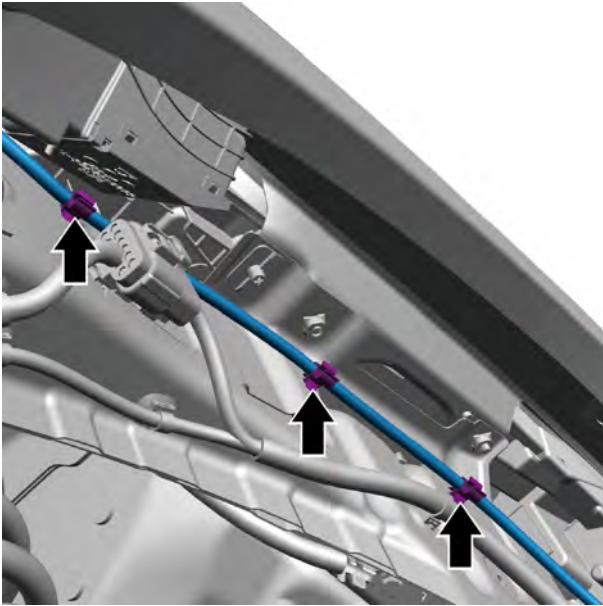
- 1 Move the front washer hose assembly to the installation position.
- 2 Install front washer hose assembly B into the washer bottle c/w washer motor assembly.

Caution

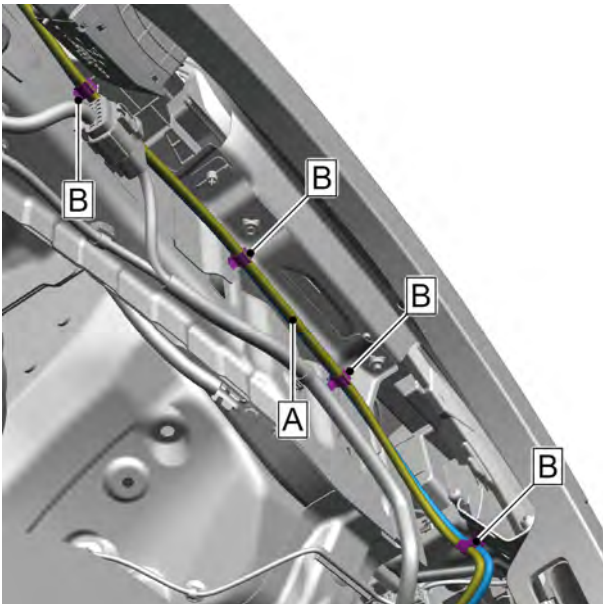
Check whether the front washer hose assembly B is installed securely in the washer bottle c/w washer motor assembly.

- 3 Install 1 fixing clip A connecting front washer hose assembly and the left front fender liner.

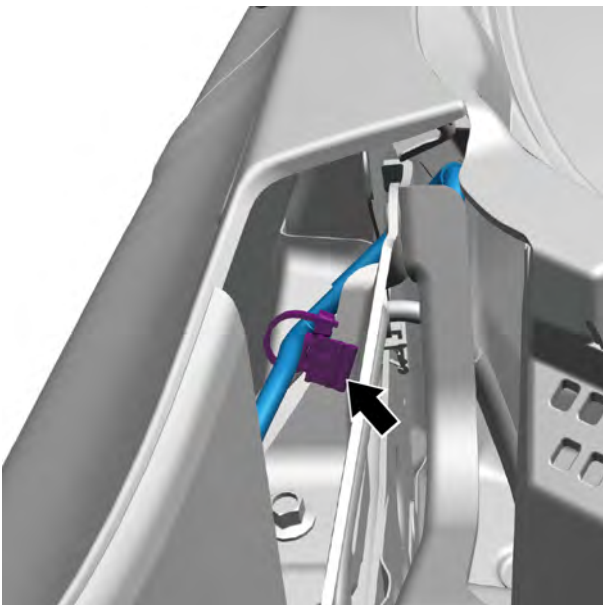




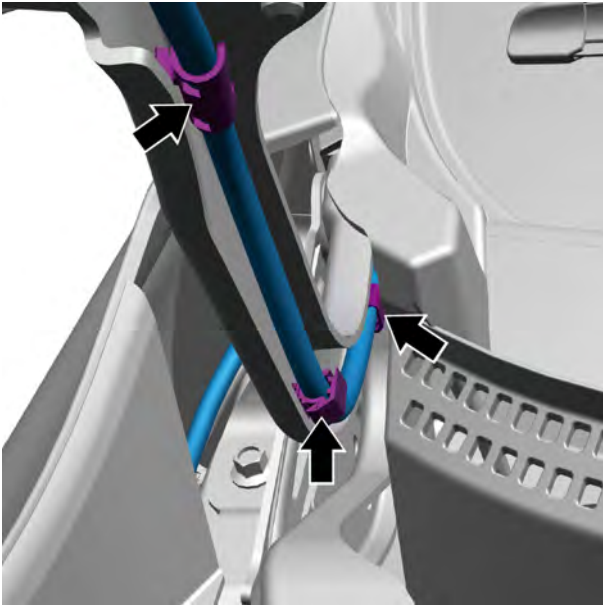
- 4 Install 3 retaining clips A that hold the front washer hose assembly and the body.



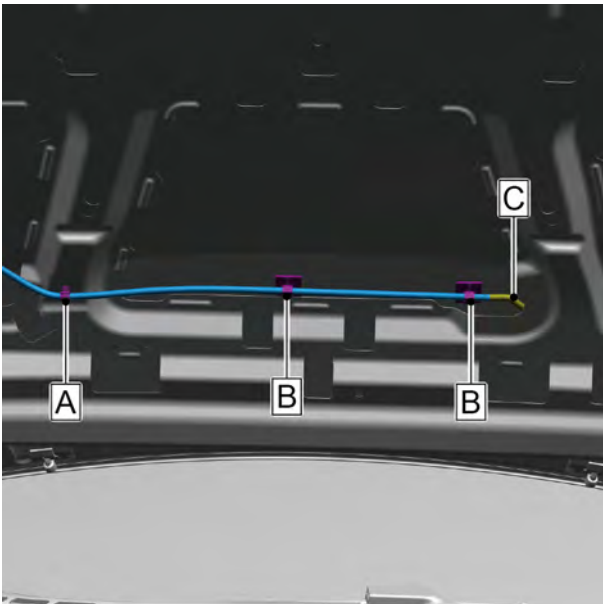
- 5 Install rear washer hose A into fixing clip B of the front washer hose assembly.



- 6 Install 1 retaining clip that hold the front washer hose assembly and the engine compartment cover left hinge assembly.



- 7 Install 3 retaining clip that hold the front washer hose assembly and the engine compartment cover left hinge assembly.

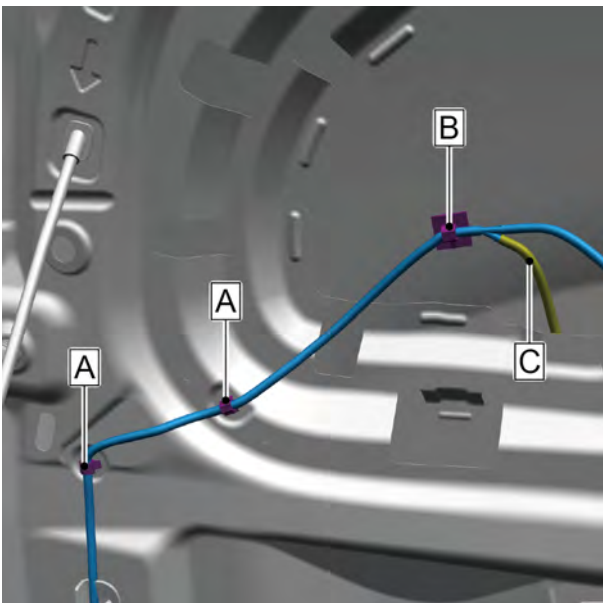


- 8 Install front washer nozzle assembly C into the front washer hose assembly.

Caution

Check whether the front washer nozzle assembly C is installed in the front washer hose assembly securely.

- 9 Install 2 retaining clips B that hold the front washer hose assembly and the engine compartment cover inner plate.
- 10 Install 1 retaining clip A that hold the front washer hose assembly and the engine compartment cover outer plate.



- 11 Install front washer nozzle assembly C onto the front washer hose assembly, making sure to install and tighten it.
- 12 Install 1 retaining clips B that hold the front washer hose assembly and the engine compartment cover inner plate.
- 13 Install 2 retaining clip A that hold the front washer hose assembly and the engine compartment cover outer plate.

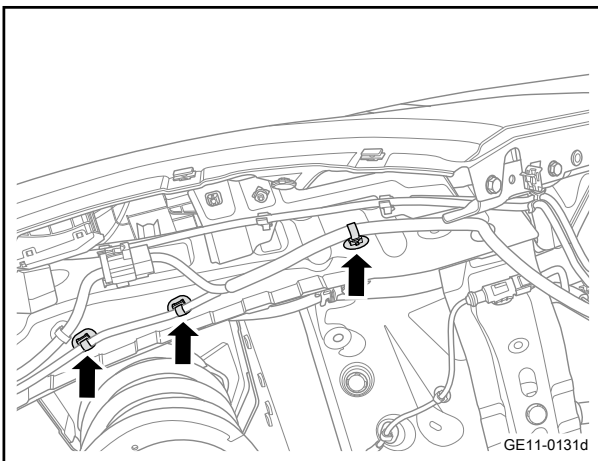
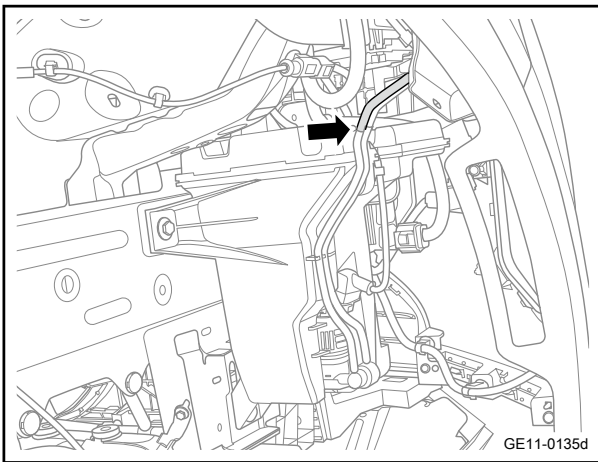
- 14 Install the right front fender liner.
- 15 Install the sound insulating pad of the front engine compartment.
- 16 Install right front wheel.
- 17 Lower the vehicle.
- 18 Connect the negative cable of battery.

11.6.8.7 Replacement of rear washer hose assembly

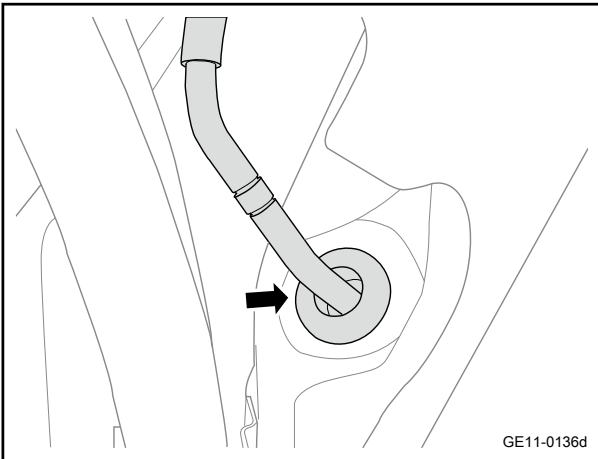
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- Warning
- Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
 - 3 Remove the front right wheel. Refer to [Wheel Replacement](#)
 - 4 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
 - 5 Remove the trim panel assembly of the right front rocker panel. Refer to [Replacement of Left Front Rocker Panel Trim Plate Assembly](#)
 - 6 Remove the right pillar A lower trim panel assembly. Refer to [Replacement of Left Pillar A Lower Trim Panel Assembly](#)
 - 7 Remove the right pillar B lower trim panel assembly. Refer to [Replacement of Left Pillar B Lower Trim Panel Assembly](#)
 - 8 Remove the trim panel assembly of the right rear rocker panel. Refer to [Replacement of Left Rear Rocker Panel Trim Plate Assembly](#)
 - 9 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
 - 10 Remove the rear seat backrest. Refer to [Replacement of Rear Seat Backrest](#)
 - 11 Remove the trim panel assembly of the right rear rocker panel. Refer to [Replacement of Left Rear Rocker Panel Trim Plate Assembly](#)

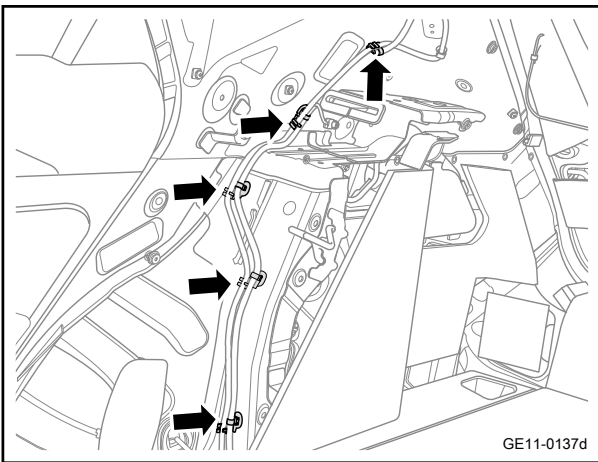
- 12 Remove the right C-pillar lower trim panel assembly.
Refer to [Replacement of Left C-Pillar Lower Trim Panel Assembly](#)
- 13 Remove the interior trim panel assembly of the rear wall.
Refer to [Replacement of Interior Trim Plate Assembly of Rear Wall](#)
- 14 Remove the trunk right trim panel. [Replacement of left trim panel assembly of trunk](#)
- 15 Remove the right C-pillar lower trim panel assembly.
Refer to [Replacement of Left C-Pillar Lower Trim Panel Assembly](#)
- 16 Disconnect the rear washer hose from the washer bottle c/ w washer motor assembly and drain the cleaning fluid.



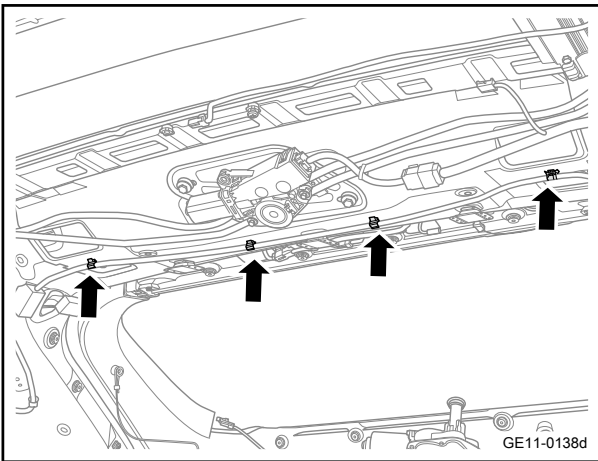
- 17 Separate the rear washer hose from the right front vehicle body.



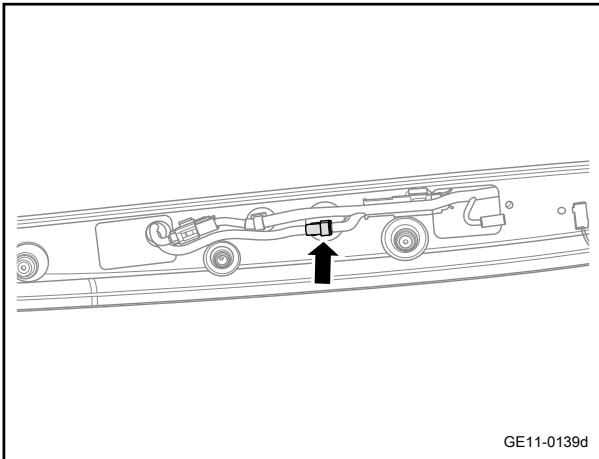
- 18 Separate the rear washer hose waterproof plug from the right front vehicle body.



- 19 Separate the rear washer hose above the trunk.

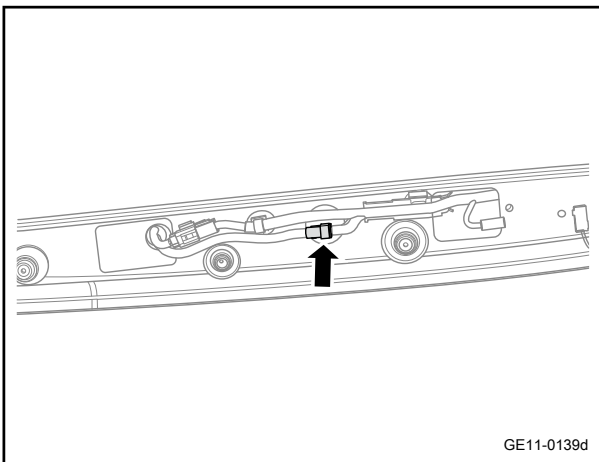


- 20 Separate the rear washer hose joint from the rear roof.

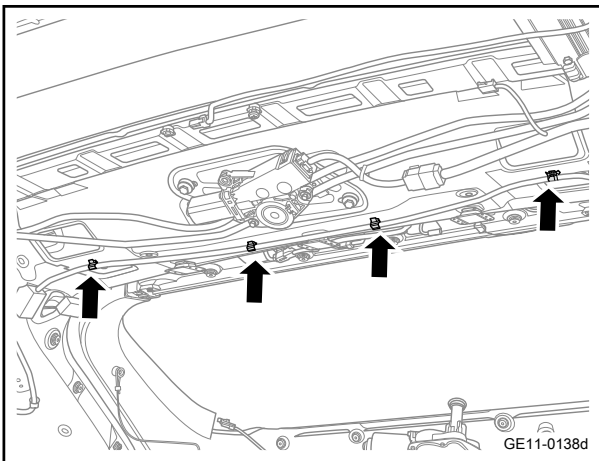


- 21 Disconnect the rear washer hose assembly from the rear nozzle.
- 22 Remove rear washer hose

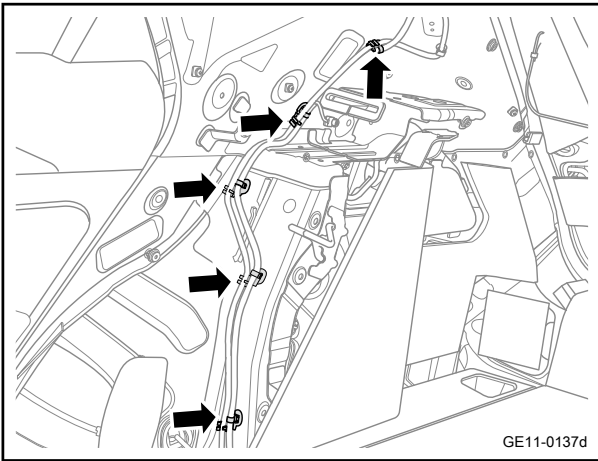
Installation procedure



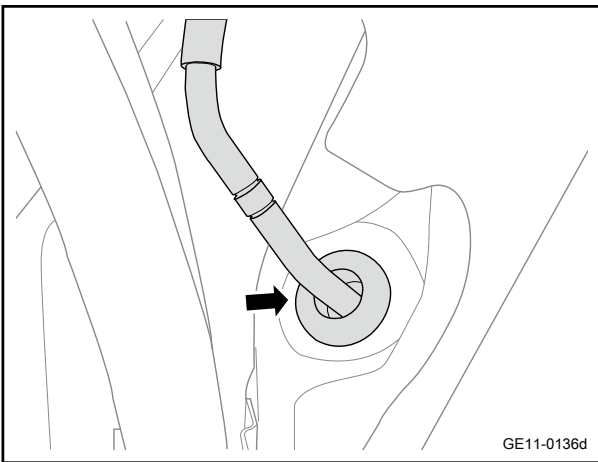
- 1 Move the rear washer hose assembly to the installation position.
- 2 Connect the rear washer hose assembly with the rear nozzle.



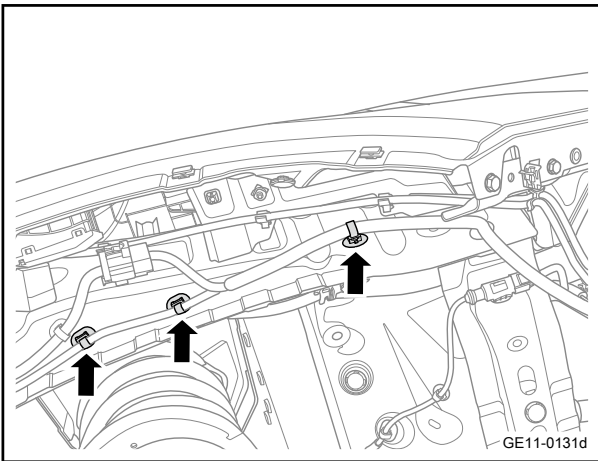
- 3 Install the rear washer hose joint and rear washer hose to the rear roof.



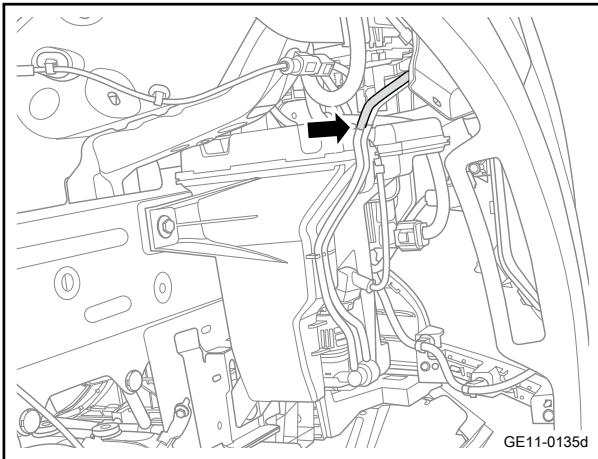
4 Install the trunk upside washer hose.



5 Install the rear washer hose waterproof plug to the right front vehicle body.



6 Install the right front body washer hose.



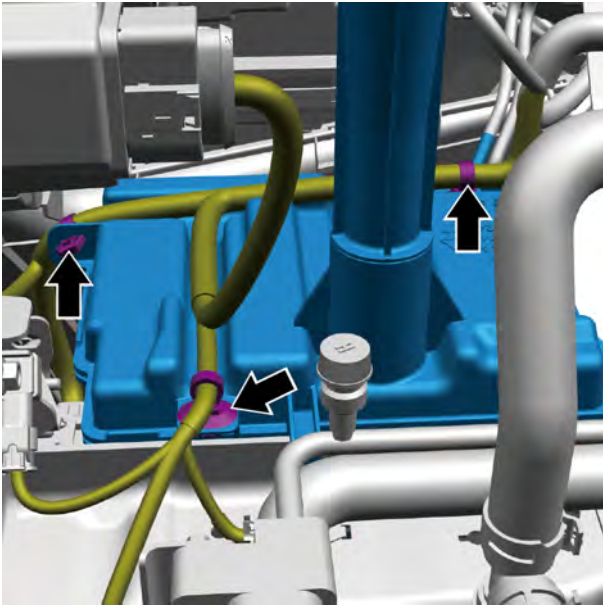
- 7 Install the rear washer hose to the washer bottle c/w washer motor assembly and fill with cleaning fluid.

- 8 Install the lower trim panel assembly of right C-pillar.
- 9 Install the trunk right trim panel assembly.
- 10 Install the assembly-interior trim panel rear wall.
- 11 Install the lower trim panel assembly of right C-pillar.
- 12 Install the right rear rocker panel trim plate assembly.
- 13 Install the rear seat backrest.
- 14 Install the rear seat cushion.
- 15 Install the right rear rocker panel trim plate assembly.
- 16 Install the right pillar B lower trim panel assembly.
- 17 Install the right pillar A lower trim panel assembly.
- 18 Install the trim panel assembly of the right front rocker panel
- 19 Install the front right fender liner.
- 20 Install the right front wheel.
- 21 Lower the vehicle.
- 22 Connect the negative cable of battery.

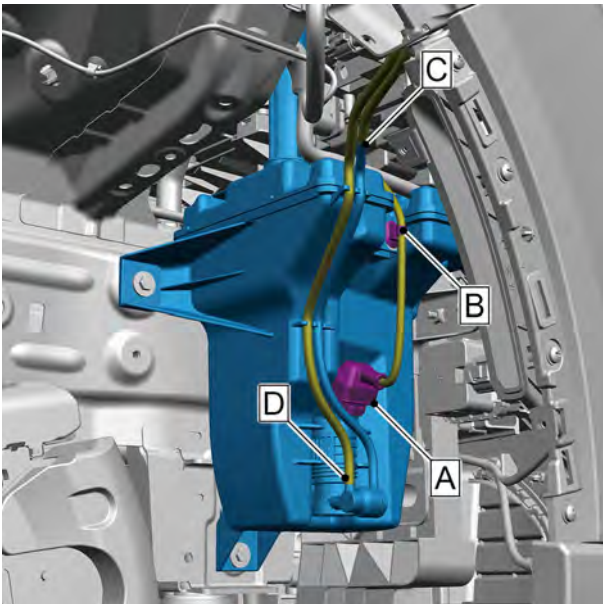
11.6.8.8 Replacement of Spray Bottle c/w Washer Motor Assembly

Removal procedure

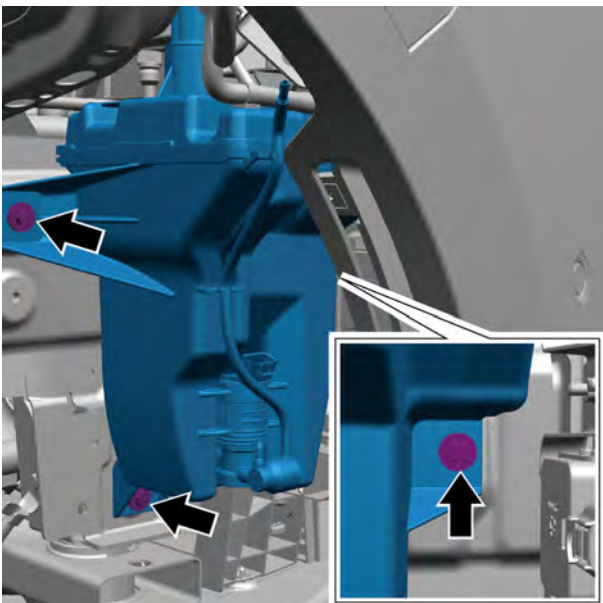
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the right front fender liner. Refer to [Replacement of Left Front Fender Liner](#)



- 4 Disconnect the 3 clips B connecting the engine compartment harness with the spray bottle c/w washer motor assembly.

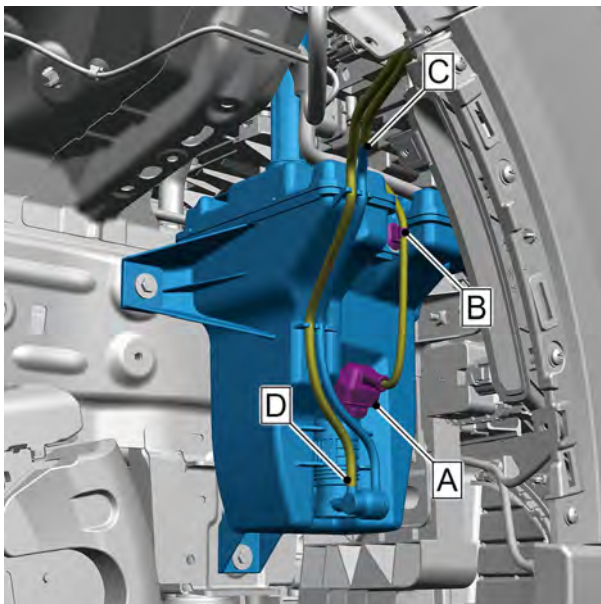
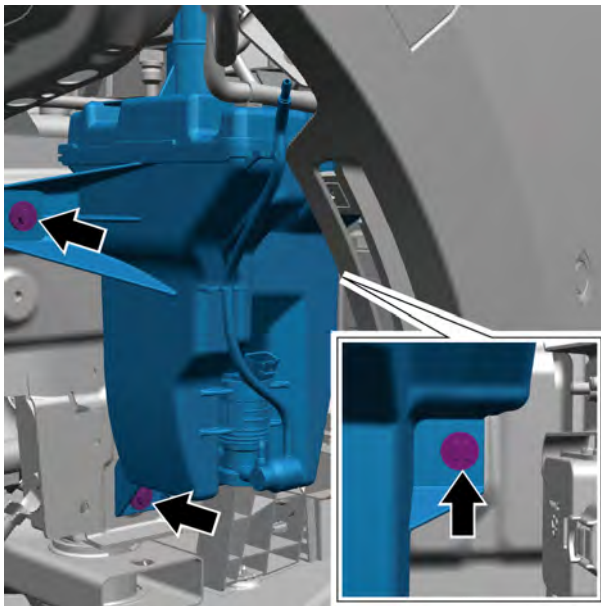


- 5 Disconnect the 1 harness connector A connecting the engine compartment harness with the spray bottle c/w motor assembly.
- 6 Disconnect the 1 clip B connecting the engine compartment harness with the spray bottle c/w motor assembly.
- 7 Disconnect the front washer hose assembly C from the spray bottle c/w washer motor assembly.
- 8 Disconnect the rear washer hose assembly D from the spray bottle c/w washer motor assembly.



- 9 Remove 3 fixing bolts of the spray bottle with washing motor assembly and right front longitudinal beam
- 10 Remove the spray bottle c/w washer motor assembly.

Installation procedure



- 1 Move the spray bottle c/w washer motor assembly to the correct position.
- 2 Install and tighten the 3 fixing bolts connecting the spray bottle assembly c/w motor assembly with the right front longitudinal beam.
Torque: 6N·m

- 3 Install rear washer hose assembly D into the spray bottle c/w washer motor assembly.

Caution

Check whether the rear washer hose assembly D is installed securely in the washer bottle c/w washer motor assembly.

- 4 Install front washer hose assembly C into the spray bottle c/w washer motor assembly.

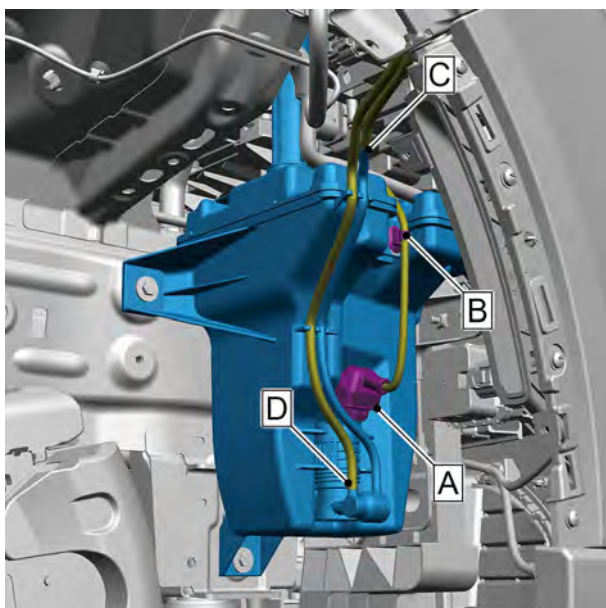
Caution

Check whether the front washer hose assembly C is installed securely in the spray bottle c/w washer motor assembly.

- 5 Install the 1 clip B connecting the engine compartment harness with the spray bottle c/w motor assembly.
- 6 Connect the 1 harness connector A connecting the engine compartment harness with the spray bottle c/w motor assembly.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 7 Install the 3 fixing clips of the engine compartment harness and spray bottle c/w motor assembly.

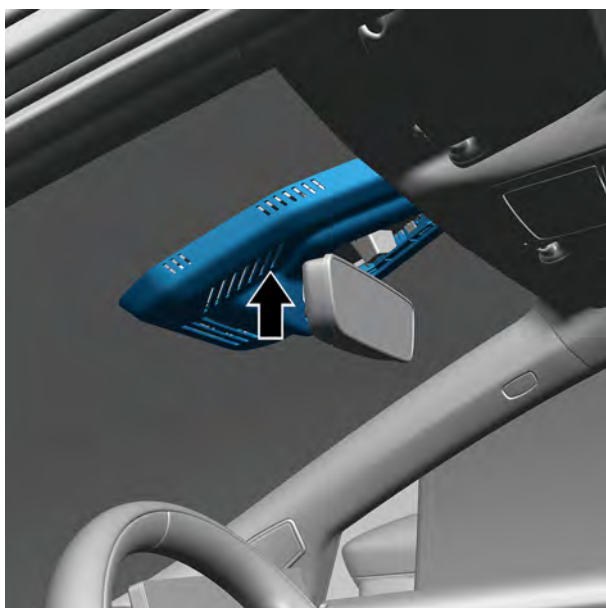
- 8 Install the front fender liner RH.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

11.6.8.9 Replacement of rain sensor.

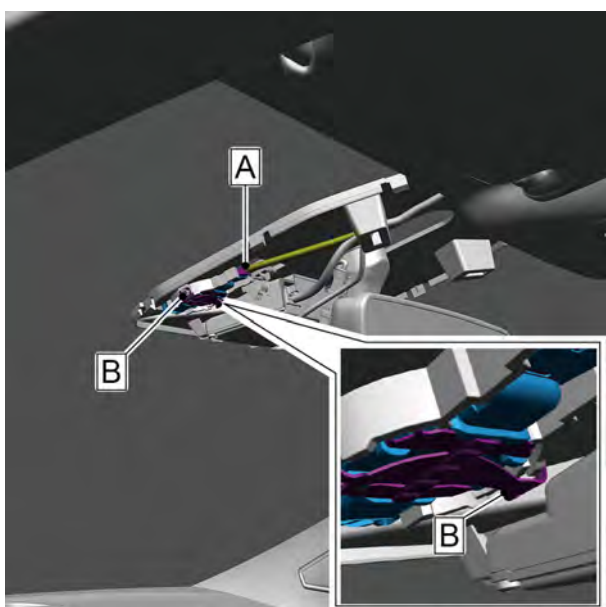
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Use the plastic prying plate to pry off the interior rearview mirror trim cover plate.





- 3 Use the plastic prying plate to pry off the interior rearview mirror trim cover.

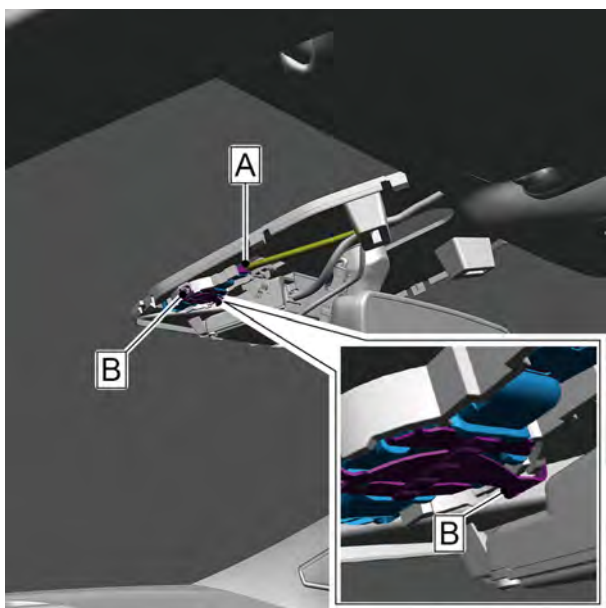


- 4 Disconnect the 1 harness connector A of roof harness and the rain sensor.
- 5 Disconnect the 2 fixing clips B connecting the rain sensor and the rain sensor bracket.
- 6 Remove rain sensor

Caution

The rain sensor is a disposable part, and should be replaced with a new one after each removal.

Installation procedure



- 1 Move the rain sensor to the installation position.
- 2 Install rain sensor on rain sensor bracket and ensure it is installed in place.

Caution

Before installation, the mounting surface of the rain keeping sensor and the front gear glass is cleaned.

After installation, check whether there are bubbles on the mounting surfaces of the rain sensor and the front windshield.

- 3 Connect the 1 harness connector A of the roof harness and rain sensor.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the monocular camera rear cover plate.





- 5 Install the monocular camera front cover plate.

- 7 Connect the negative cable of battery.

11.6.8.10 Replacement of wiper motor and connecting rod assembly

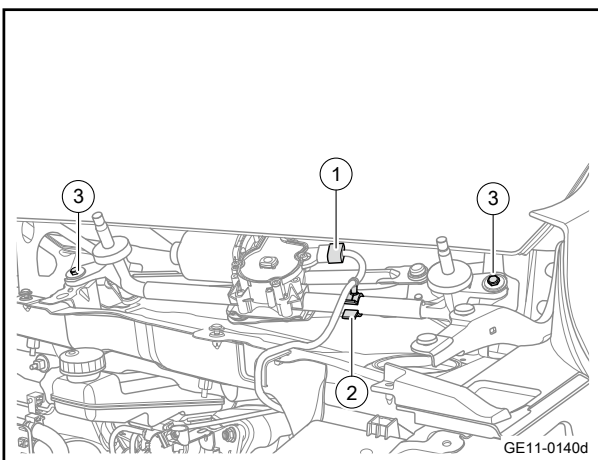
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

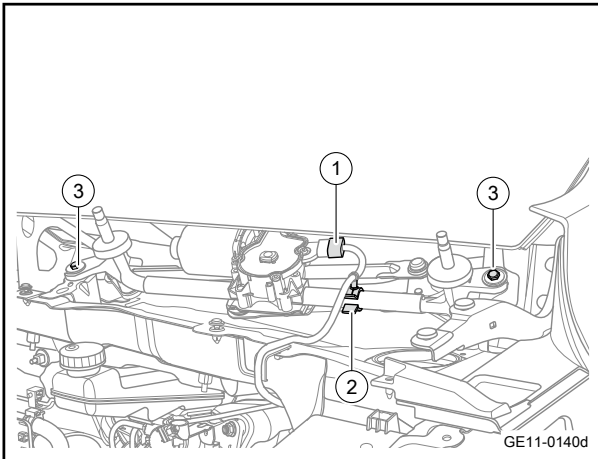
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove left/right wiper arm assembly. Refer to [Replacement of Left Wiper Arm](#)
- 3 Remove the ventilation cover plate assembly. Refer to [Replacement of Ventilation Cover Plate Assembly](#)
- 4 Disconnect the harness connector 1 of the wiper motor and connecting rod assembly.
- 5 Disconnect the harness clip 2 of the wiper motor and connecting rod assembly.
- 6 Remove 2 fixing bolts 3 of wiper motor and connecting rod assembly.
- 7 Remove the wiper motor and connecting rod assembly.



Installation procedure



- 1 Move the wiper motor and connecting rod to the correct position.
- 2 Install the 2 fixing bolts 3 of the wiper motor and connecting rod assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Install the wiper motor and connecting rod assembly clip 2.
- 4 Connect the harness connector 1 of the wiper motor and connecting rod assembly.

- 5 Install the ventilation cover plate assembly.
- 6 Install left/right wiper arm assembly
- 7 Connect the negative cable of battery.

11.6.8.11 Replacement of rear wiper motor assembly

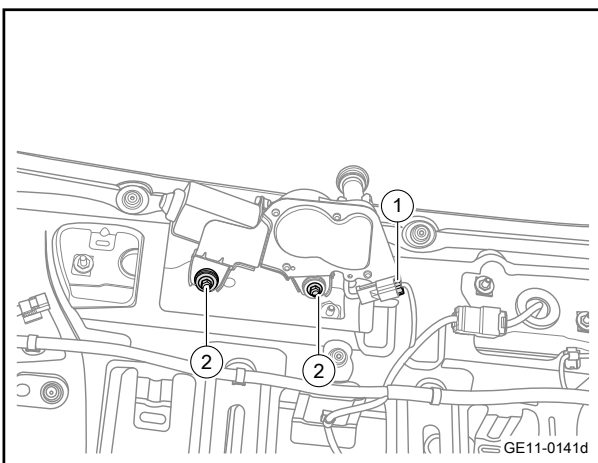
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

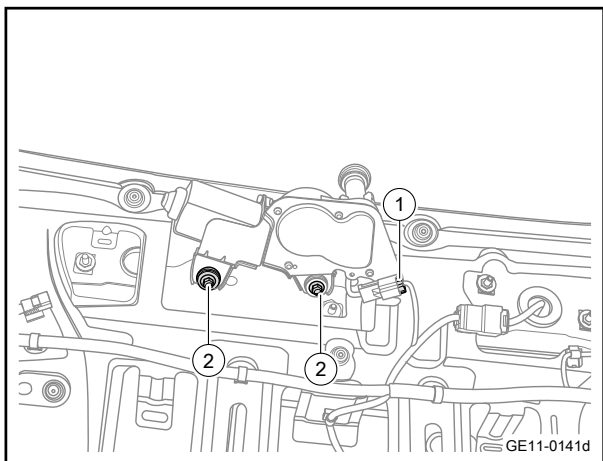
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove rear wiper blade assembly. Refer to [Replacement of rear wiper blade assembly](#)
- 3 Remove the interior trim panel of the tailgate. Refer to [Replacement of tailgate lower interior trim panel assembly](#)
- 4 Disconnect the harness connector 1 of the rear wiper motor assembly.
- 5 Remove the 2 fixing nuts 2 of the rear wiper motor assembly.
- 6 Take down rear wiper motor assembly.



Installation procedure



- 1 Move the rear wiper motor assembly to the installation position.
- 2 Install the 2 fixing nuts 2 of the rear wiper motor assembly.
Torque: 7N·m (metric system) 5.2lb-ft (Imperial system)
- 3 Connect the harness connector 1 of the rear wiper motor assembly.
- 4 Install the tailgate lower trim panel assembly.
- 5 Install rear wiper blade assembly
- 6 Connect the negative cable of battery.

11.7 Instrument Cluster/Driver's information system

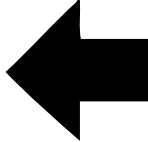
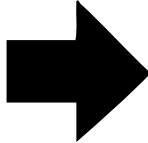



11.7.1 Specification







11.7.1.1 Fastener specifications






Fastener name	Specification	Torque range
		Metric system (N.m)
Instrument panel display screen retaining bolt	ST4.2×16	2.5-3.5
Fixing screw of HUD and HUD display body bracket	M6×25	8.5-11.5


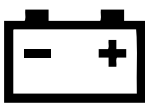
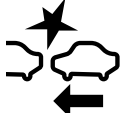



11.7.2 Description and operation

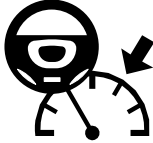
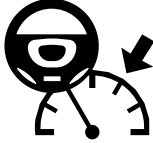


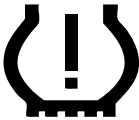

11.7.2.1 Indicator light description (Type I)


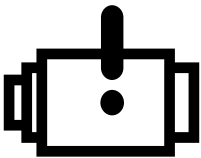
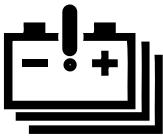


Serial No.	Indicator light	Light symbol	Color
1	Left turn indicator light	 GE11-1153d	Green
2	Right turn indicator light	 GE11-1152d	Green
3	High beam indicator	 GE11-1154d	Blue
4	Rear fog lamp indicator	 GE11-1157d	Yellow
5	Low outdoor temperature indicator light	 GE11-1330d	White

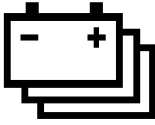





Serial No.	Indicator light	Light symbol	Color
6	IHBC intelligence high beam lamp indicator light	 GE11-1317d	White, red
7	Position indicator	 GE11-1155d	Green
8	ABS fault alarming indicator	 GE11-1161d	Yellow
9	EBD fault alarming indicator	 GE11-1162d	Yellow
10	Brake system fault warning indicator	 GE11-1160d	Red, Yellow
11	Parking brake warning indicator	 GE11-1150d	Red

Serial No.	Indicator light	Light symbol	Color
		 GE11-1158d	Green
12	Electrical Park Brake (EPB) system fault warning lamp	 GE11-1316d	Yellow
13	AUTO HOLD (AVH) indicator lamp	AUTO HOLD GE11-1318d	Green, red
14	Airbag fault warning indicator	 GE11-1164d	Red
15	Front-row seat belt warning lamp	 GE11-1163d	Red
16	Electronic stability control (ESC) system fault warning lamp	 GE11-1300d	Yellow

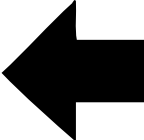
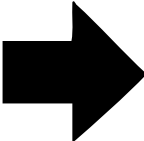

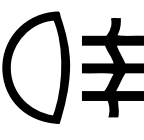


Serial No.	Indicator light	Light symbol	Color
17	Electronic Stability Control System (ESC) OFF indicator	 <small>GE11-1301d</small>	Yellow
18	Battery charging fault warning indicator	 <small>GE11-1159d</small>	Red
19	Autonomous Emergency Braking (AEB) system fault warning indicator	 <small>GE11-1319d</small>	Red
20	Autonomous Emergency Braking system closed indicator lamp	 <small>GE11-1319d</small>	Yellow
21	Adaptive cruise control (ACC) status indicator	 <small>GE11-1320d</small>	White, green
22	ACC fault warning indicator	 <small>GE11-1322d</small>	Red







Serial No.	Indicator light	Light symbol	Color
23	Intelligent cruise control (ICC) indicator	 GE11-1327d	Yellow, green, white
24	ICC System fault warning lamp	 GE11-1327d	Red
25	Lane keeping assist (LKA) system status indicator	 GE11-1321d	Green, red
26	ABS, EBD fault warning lamps	 GE11-1302d	Yellow
27	TPMS warning indicator	 GE11-1165d	Yellow
28	Reducer fault warning lamp	 GE11-1306d	Yellow, red





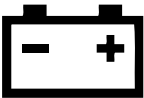
Serial No.	Indicator light	Light symbol	Color
29	System fault warning lamp	 <p>GE11-1156d</p>	Red
30	Motor and controller overheating warning lamp	 <p>GE11-1309d</p>	Red
31	Power battery fault warning lamp	 <p>GE11-1151d</p>	Red
32	Charging cable connection indicator light	 <p>GE11-1310d</p>	Red
33	Power limit indicator light	 <p>GE11-1307d</p>	Yellow
34	Sport Readiness indicator light	<p>READY</p> <p>GE11-1149d</p>	Green





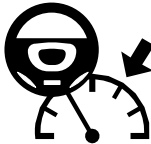
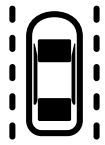
Serial No.	Indicator light	Light symbol	Color
35	Low power battery indicator light	 <p>GE11-1323d</p>	Yellow
36	Low-speed warning off indicator	 <p>GE11-1305d</p>	Yellow
37	HDC system indicator	 <p>GE11-1324d</p>	Green, yellow
38	Cruise Status indicator lamp	 <p>GE11-1303d</p>	Green, white
39	Automatic speed limit control system (LIM) status indicator	 <p>GE11-1304d</p>	Green, white, yellow
40	Electric power steering (EPS) system fault warning indicator	 <p>GE11-1331d</p>	Yellow






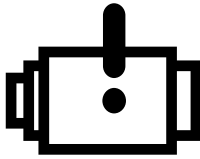
11.7.2.2 Indicator light description (Type II)




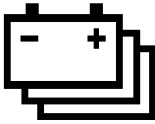
Serial No.	Indicator light	Light symbol	Color
1	Left turn indicator light	 GE11-1153d	Green
2	Right turn indicator light	 GE11-1152d	Green
3	High beam indicator	 GE11-1154d	Blue
4	Rear fog warning indicator	 GE11-1157d	Yellow
5	Low outdoor temperature indicator light	 GE11-1330d	White
6	IHBC intelligence high beam lamp indicator light	 GE11-1317d	White, yellow



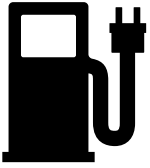
Serial No.	Indicator light	Light symbol	Color
7	Position indicator	 <p>GE11-1155d</p>	Green
8	ABS fault alarming indicator	 <p>GE11-1161d</p>	Yellow
9	EBD fault warning indicator	 <p>GE11-1302d</p>	Yellow
10	Brake system fault warning indicator	 <p>GE11-1160d</p>	Red, yellow
11	Parking brake warning indicator	 <p>GE11-1150d</p>	Red, green
12	Electrical Park Brake (EPB) system fault warning lamp	 <p>GE11-1316d</p>	Yellow

Serial No.	Indicator light	Light symbol	Color
13	AUTO HOLD (AVH) indicator lamp	<p style="text-align: center;">AUTO HOLD</p> <p style="text-align: center;"><small>GE11-1318d</small></p>	Green, red
14	Airbag fault warning indicator	 <p style="text-align: center;"><small>GE11-1164d</small></p>	Red
15	Front-row seat belt warning lamp	 <p style="text-align: center;"><small>GE11-1163d</small></p>	Red
16	Electronic stability control (ESC) system fault warning lamp	 <p style="text-align: center;"><small>GE11-1300d</small></p>	Yellow
17	Electronic Stability Control System (ESC) OFF indicator	 <p style="text-align: center;"><small>GE11-1301d</small></p>	Yellow
18	Battery charging fault warning indicator	 <p style="text-align: center;"><small>GE11-1159d</small></p>	Red

Serial No.	Indicator light	Light symbol	Color
19	Autonomous Emergency Braking(AEB) system fault warning indicator*	 GE11-1319d	Yellow
20	Autonomous Emergency Braking system closed indicator lamp	 GE11-1319d	Yellow
21	Adaptive cruise control (ACC) status indicator	 GE11-1320d	White, green
22	ACC fault warning indicator	 GE11-1322d	Red
23	Intelligent cruise control (ICC) indicator	 GE11-1327d	White, green, yellow, red
24	Lane keeping assist (LKA) system status indicator	 GE11-1321d	Green, yellow

Serial No.	Indicator light	Light symbol	Color
25	Lane keeping assist (LKA) system status indicator	 GE11-1332d	Yellow
26	Electric power steering (EPS) system fault warning indicator	 GE11-1325d	Yellow
27	TPMS warning indicator	 GE11-1165d	Yellow
28	Reducer fault warning lamp	 GE11-1306d	Yellow, red
29	System fault warning lamp	 GE11-1156d	Red
30	Motor and controller overheating warning lamp	 GE11-1309d	Red

Serial No.	Indicator light	Light symbol	Color
31	Power battery fault warning lamp	 GE11-1151d	Red
32	Charging cable connection indicator light	 GE11-1310d	Red
33	Power limit indicator light	 GE11-1307d	Yellow
34	Sport Readiness indicator light	READY GE11-1149d	Green
35	Low power battery indicator light	 GE11-1323d	Yellow
36	Economic mode indicator light	ECO GE11-1312d	Green

Serial No.	Indicator light	Light symbol	Color
37	Sport mode indicator lamp	<p style="text-align: center;">SPORT</p> <p style="text-align: center;"><small>GE11-1313d</small></p>	Yellow
38	Long-distance mode indicator light	<p style="text-align: center;">ECO+</p> <p style="text-align: center;"><small>GE11-1326d</small></p>	Green
39	Low-speed warning off indicator	 <p style="text-align: center;"><small>GE11-1328d</small></p>	Yellow
40	HDC system started indicator	 <p style="text-align: center;"><small>GE11-1324d</small></p>	Yellow, green
41	Power battery charging indicator light	 <p style="text-align: center;"><small>GE10-1307a</small></p>	Yellow

11.7.3 System working principles

11.7.3.1 System working principles(Type I)

Instrument backlight

The instrument backlight controls the brightness by judging the backlight adjustment signals of the key gear, position lamp, and MMI, and sends the CAN signal of the backlight brightness level;

No matter whether the driving mode is related or not, the background color signal sent by MMI in EC+ mode is blue, which is consistent with ECO mode;

The blue and red perspective drawings are only different from the ECO/SPORT symbol;

Skin color is always linked with the driving mode.

Electricity meter

Through the ratio of the column-shaped bar with color to the height of battery, the battery electricity meter can perform the analog display of the current remaining electricity. When the remaining electricity of power battery is sufficient, the column-shaped bar will be displayed in green; When the remaining electricity is less than or equal to 20% but greater than 10%, the column-shaped bar will be displayed in yellow; When the remaining electricity is less than or equal to 10%, the column-shaped bar will be displayed in red.

When the color of the bar-shaped bar of the battery meter turns yellow or red, please charge in time.

Power meter

The power meter shows the current output power of the driving motor and the recovered power, in kW, and the display range is-100 ~ 150 kW.

The power meter indicates that in the blue area, it indicates that the driving motor is consuming electric energy and outputting power.

The power meter indicates that in the green area, it indicates that the driving motor is recycling energy to charge the power battery.

When the vehicle speed is greater than or equal to 2 km/h, the output power is displayed by the power meter. When the vehicle speed is greater than or equal to 7 km/h, the power meter starts to display the recovered power.

Outdoor temperature

The accuracy is 0.5°C. If the signal is an integral, it displays the entire number, not the decimal point, such as 23°C, 23°C, not 23.0°C;

Clock

Time settings include: combination instrument time setting-steering wheel key input (MMI key operation CAN signal), combination instrument time setting-audio touch screen setting input (MMI clock CAN signal);

When there is no external input, the instrument cluster uses its own clock crystal oscillator signal as the starting display time display and timing; When receiving any input of steering wheel key setting signal (MMI key operation CAN signal) and MMI setting signal (MMI clock CAN signal), the instrument cluster continues to measure time by using the crystal oscillator of the instrument cluster as the starting display time according to the received input signal;

When the battery is powered on for the first time, the timing starts from 00:00:00 ;

Gear

Gearshift operation

- a. When there is a gear shifting action, the gear effect becomes larger, the current front gear is displayed in real time, and it resumes 2S after the gear shifting action is completed;
- b. The judgment of gearshifting action is based on "changes in old and new gears". After confirming that there is a gear change, the current gear after gearshifting will be enlarged and resume after 2S
- c. Press down the P-gear button, the gear display will become larger, and it will resume for 2S after the gear shifting action is completed.

Mileage subtotal/mileage

Mileage subtotal/mileage accumulation is calculated by the vehicle speed point for time;

The display of subtotal mileage is updated every 0.1 km of travel, and the display of 1 km of accumulated mileage.

The display range of mileage subtotal is 0.0-999.9 km, restarts from 0 after exceeding 999.9 km; the display range of mileage accumulation:0-99999 km, lasting this value after exceeding 999999 km;

When the vehicle speed signal is greater than 220 km/h and it is valid, the instrument will normally carry out subtotal accumulation at the vehicle speed of 220 km/h.

For mileage subtotal reset operation, refer to HMI definition.

The accumulated mileage zero clearing can only be performed 3 times, and the accumulated mileage of 3 times should be less than 500 km. Refer to the definition of HMI for reset operation;

Note: when the total mileage is reset, the subtotal mileage will also be reset, and the maintenance mileage will be reset;

To prevent the loss of the total mileage value, the value saved in the EEPROM is updated every 1 km by the instrument. After the power failure, the maximum error of the total mileage is 1 km. If the total mileage value read from the EEPROM fails, "—" will be displayed at the corresponding display position.

After ignition, the instrument checks the total mileage value in RAM. If the RAM value is lost or invalid, reread the total mileage value from the EEPROM. The total mileage value saved in RAM is 1 km with accuracy.

Average power consumption

Average power consumption=(Cumulative total power consumption/accumulated driving mileage) * 100; Average power consumption within the whole driving mileage.

Display range:0.0-99.9 kW·h/ 100 km, resolution:0.1 kW·h/ 100 km;

After the battery runs for 0.5 km on the instrument or the average power consumption is reset to zero, it will be updated after the battery runs for 0.5 km, and the average power consumption data will be updated every 10 s;

11.7.3.2 System working principles(Type II)

Drive modes

According to the driving mode currently selected by the driver, it is displayed as ECO, SPORT, ECO+.

ECO mode

The full name of ECO is a combination of Ecology, Travelation and Optimization. When the ECO lamp on the vehicle combination display is on, the energy saving mode is activated.

When the ECO mode is turned on during driving, the VCU will make a comprehensive judgment and analysis on the electric drive system, power battery, air conditioner, high voltage, and conditions under which the brake system affects electric energy consumption. With the comfort of the complete vehicle, the speed of the electric drive system and the power of the air conditioning system will be appropriately reduced, and the brake torque will be increased, so that the vehicle recovers more energy during braking to obtain the maximum endurance mileage.

Calculated from READY= 1; The current is negative and still calculated; When the average power consumption is reset to zero, or the first 0.5 km after the travel or the average power consumption is calculated to be negative, the average power consumption shows—kW·h/ 100 km;

The average power consumption display memory the state before power-off of 15, that is, when the instrument is powered on again after power-off of 15, the average power consumption display value before power-off of 15 ;

For the average power consumption reset operation, refer to the HMI definition.

When the signal timeout or the signal is invalid, the average power consumption shows—kW·h/ 100 km; after the signal returns to normal, on the basis of the previous data loss, it is normally indicated according to the received signal;

Instantaneous power consumption

Instantaneous power consumption=within update time (accumulated total power consumption/accumulated driving mileage) * 100; (1 s)

Display range:-99.9-99.9 kW·h/ 100 km, resolution:0.1 kW·h/ 100 km;

It is calculated from READY= 1 and the vehicle speed is greater than 0 km/h, showing the update time of 1 s;

When the vehicle speed is=0 km/h, the instantaneous power consumption shows—kW·h/ 100 km;

When the vehicle speed exceeds 120 km/h, the VCU will give priority to the driver's speed demand, and the energy saving mode will fail automatically.

When the vehicle is climbing and other conditions require greater torque output, the VCU judges to give priority to ensuring that there is sufficient power to drive the vehicle, and the ECO mode will not work.

SPORT mode

In SPORT mode, the vehicle can maintain a torque output and power that is large enough, and the electronic accelerator pedal will be more sensitive in response. When the vehicle suspension hardens, the power acceleration will be stronger.

ECO+ mode

The ECO+ mode is an operation mode in which comfort and stability are pursued, and fuel consumption and energy are saved. After it is turned on, the vehicle suspension is soft and has a good smooth passage, with slow start and slow stop.

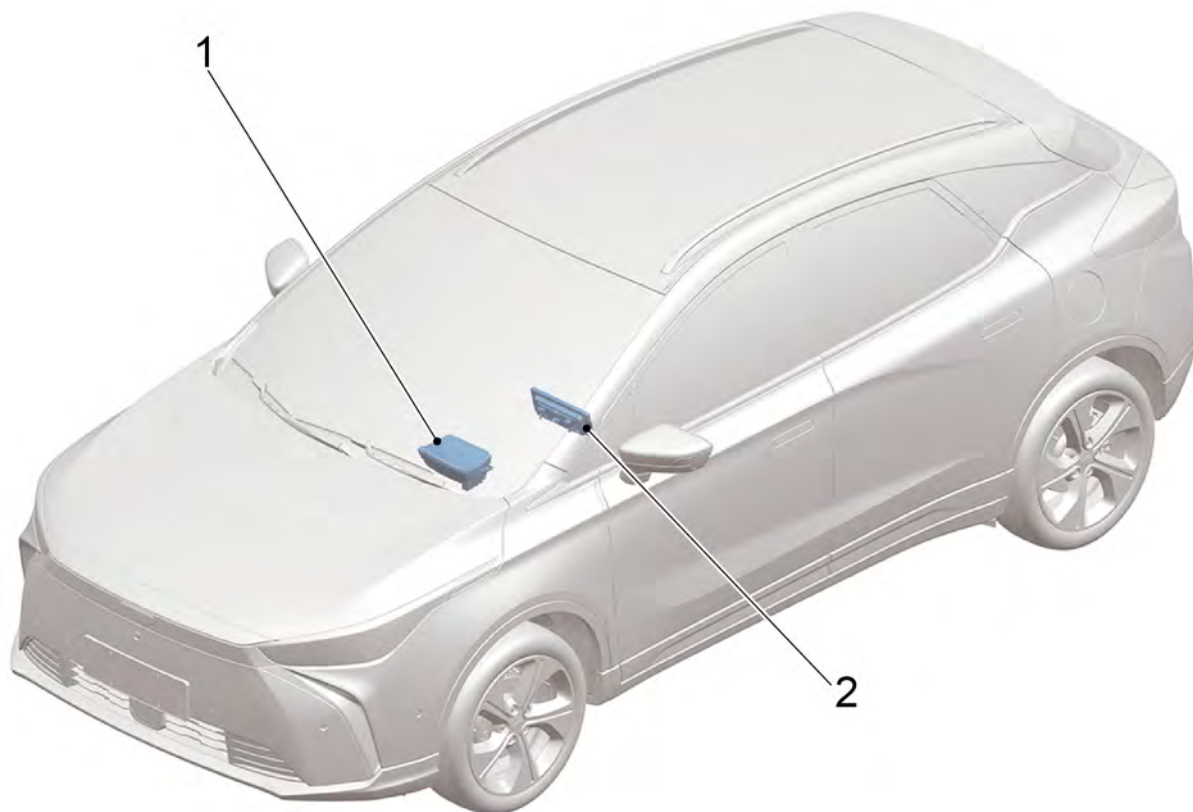
11-634 Instrument Cluster/Driver's information system

Body Electrical

The comfort mode steering wheel is light and the speed of the electric drive system remains at a low level.

11.7.4 Part position

11.7.4.1 Part Position

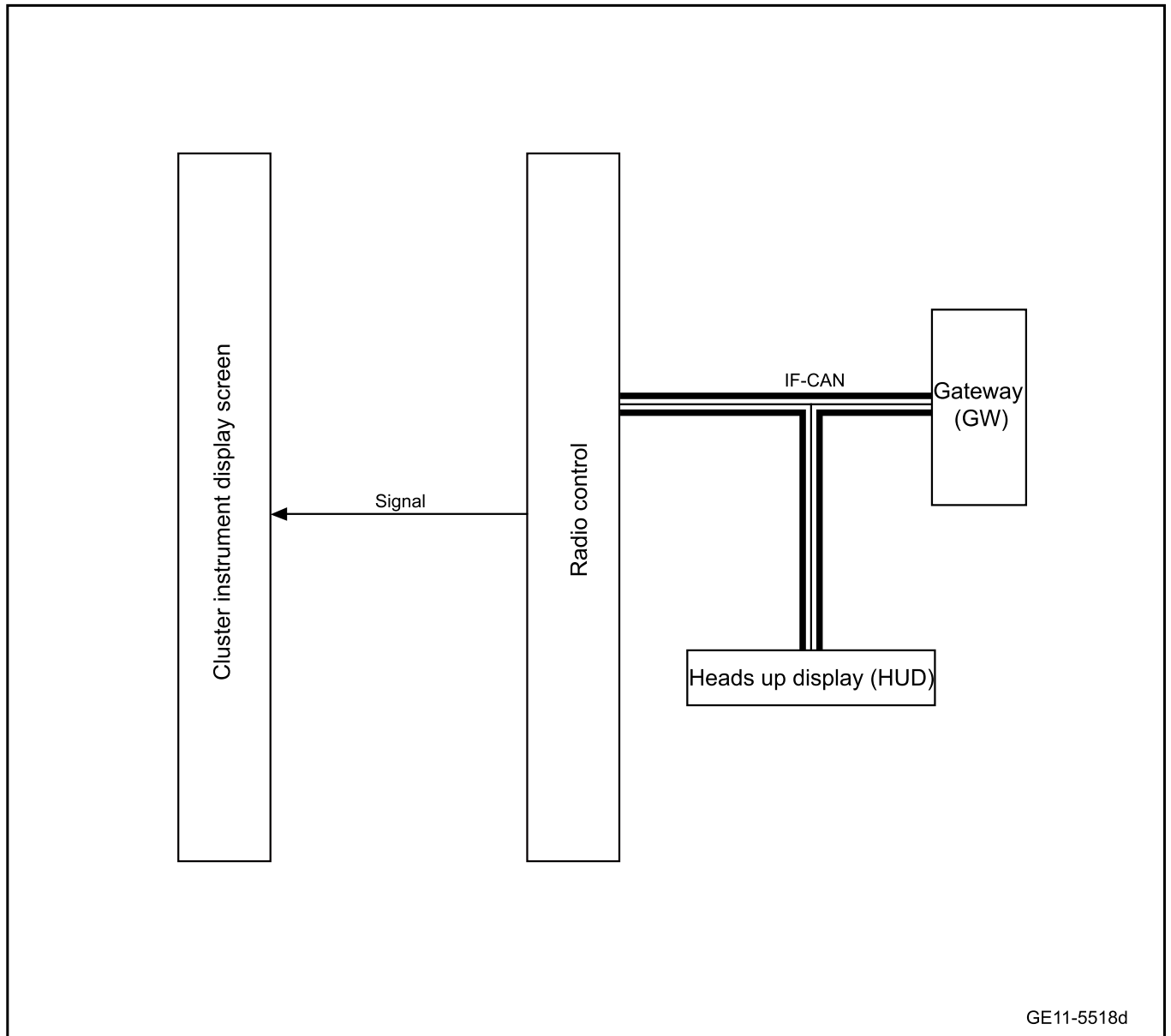


1. Heads up display (HUD)

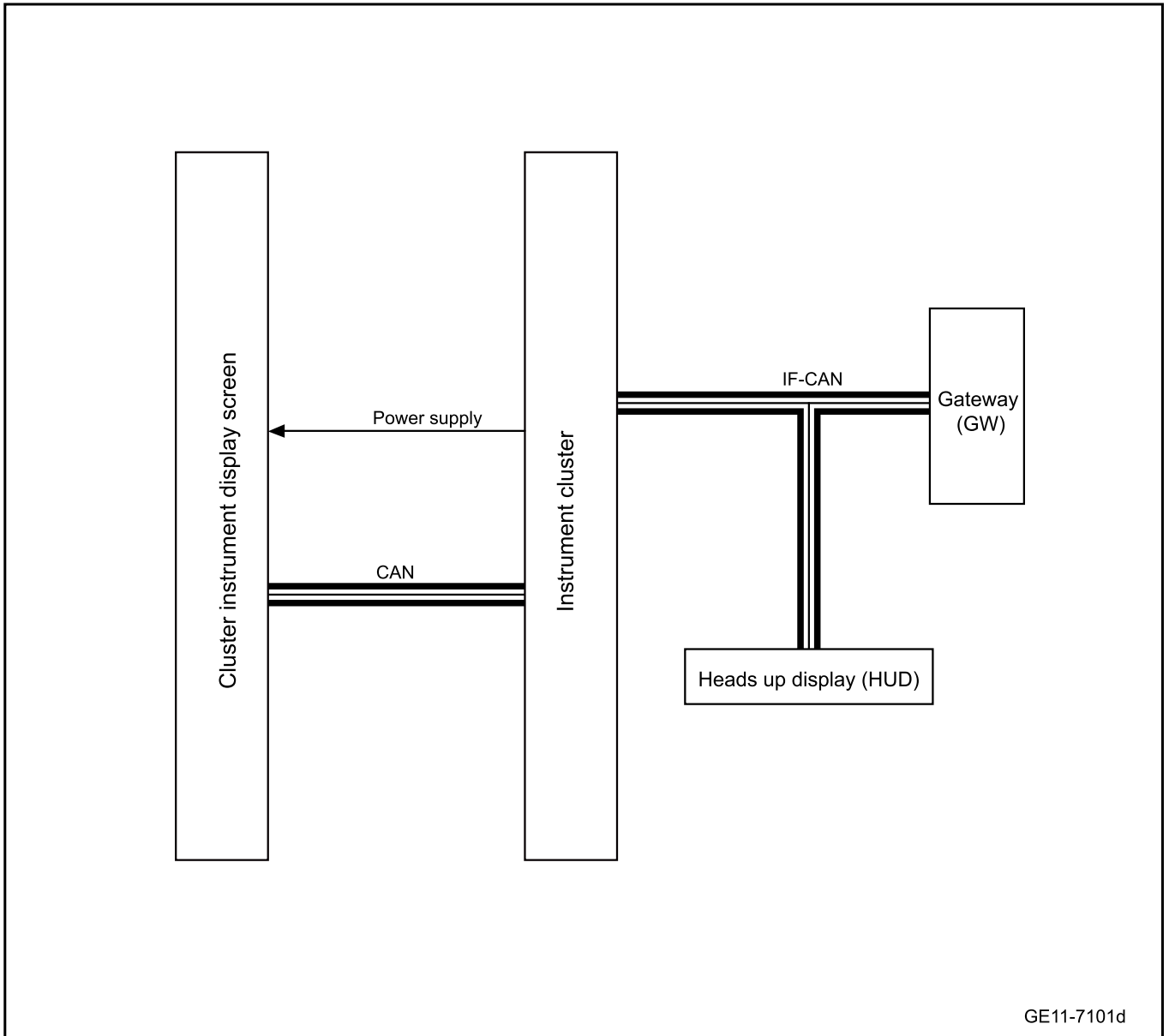
2. Driver's information display screen

11.7.5 Electrical block diagram

11.7.5.1 Electrical Schematic Diagram of Instrument Cluster System(Type I)



11.7.5.2 Electrical Schematic Diagram of Instrument Cluster System(Type II)



11.7.6 Diagnostic information and procedures

11.7.6.1 Diagnosis Description

Before fault diagnosis of combination instrument/driver information system, refer to description and operation and system working principle. Understand and familiarize yourself with operating principles of combination instrument/driver information system before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it also helps to determine whether the situation described by the distributor is normal. Any fault diagnosis of instrument cluster/driver information system should start with 11.7.6.2 routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.7.6.2 Routine inspection

- Check after-sales installations that may affect the operation of instrument cluster/driver information system. Make sure these installations will have no influence in the operation of instrument cluster/driver information system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- Check and make sure the sensors of various instrument display information are normal.

11.7.6.3 Data list

Data identifier	DID description	Normal value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Total mileage	0-16777215	Km
4	Meter mileage zeroing times	0-3	Times

11.7.6.4 Fault symptom table

Symptom	Possibility and cause	Measures
Instrument cluster display screen blank screen	1. Check the instrument cluster power supply and grounding circuits.	Refer to fault of instrument cluster(Type I) Refer to fault of instrument cluster(Type II)
	2. Battery voltage is too low or too high	Check the battery voltage. Replace it if necessary.
	3. The generator power generation is too high.	Check generator power generation. Replace it if necessary
	4. Instrument cluster display screen fault	Replace the instrument cluster display screen
Parking brake indicator is always on	1. Brake fluid level is too low	Check the brake fluid level, check the brake fluid reservoir and brake fluid pipeline for damage and leakage, check the brake caliper for damage and leakage, and check the brake shoes for excessive wear.
	2. EPB switch fault	Refer to EPB Switch Fault

Symptom	Possibility and cause	Measures
	3. Brake fluid level sensor	Refer to Brake fluid level indicator is not on(Type I) Refer to Brake fluid level indicator is not on(Type II)
	4. Instrument cluster display screen fault	Replace the instrument cluster display screen
Abnormal indication of water temperature gauge	1. The coolant is insufficient	Add coolant.
	2. The coolant pipe is damaged or clogged.	Repair or replace the coolant pipe.
	3. The radiator is blocked or the radiator surface is covered with foreign matters.	Repair or replace the radiator.
	4. Cooling water pump fault	Refer to Battery cooling water pump does not work
	5. Fault on cooling fan	Refer to cooling fan fault(Type I) Refer to cooling fan does not work(Type II)
	6.VCU fault	Vehicle control unit is changed
	7. Instrument cluster display screen fault	Replace the instrument cluster display screen

11.7.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.7.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

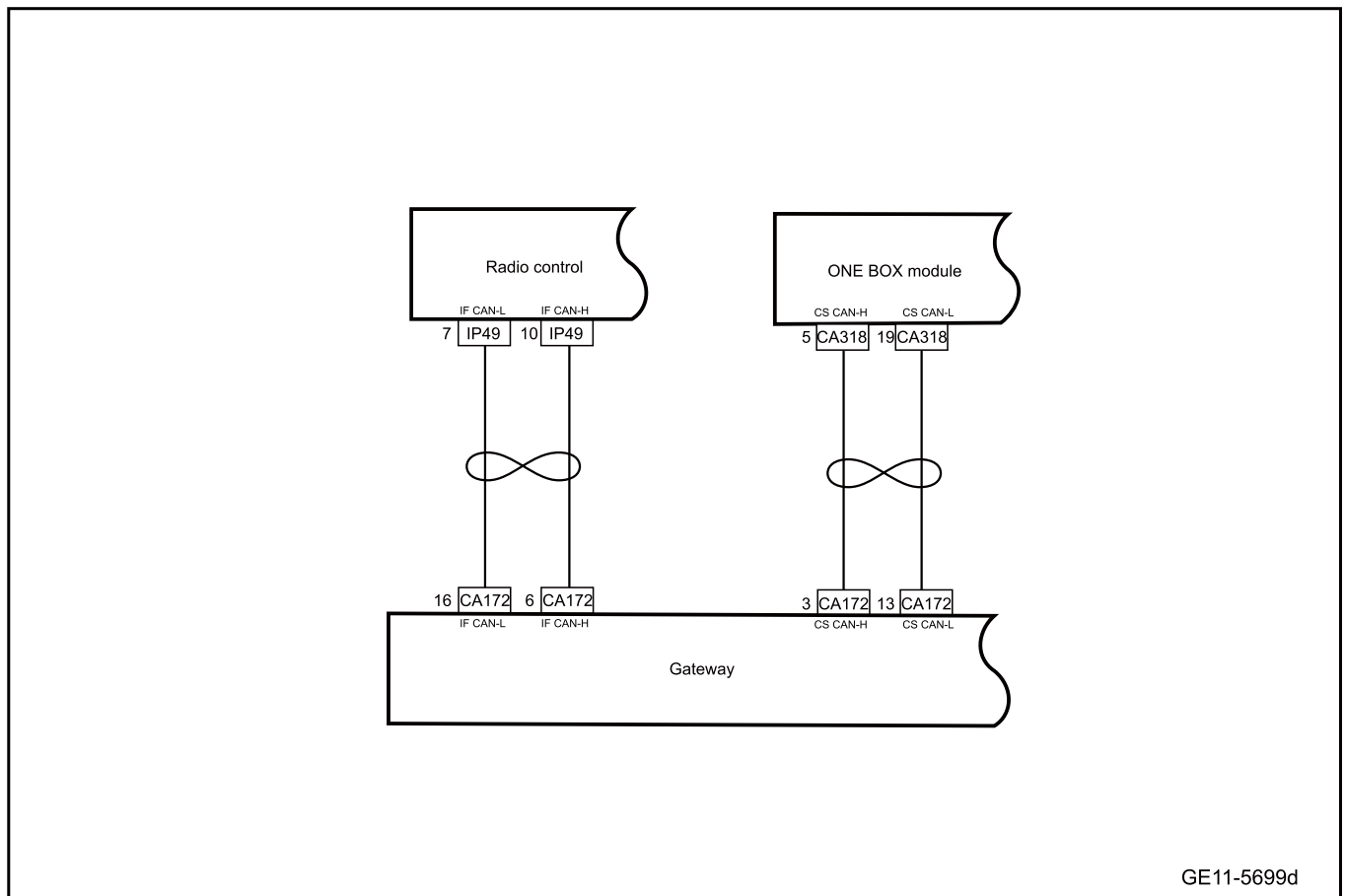
- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.7.6.7 List of Heads Up Display (HUD) Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U014087	Communication with BCM is lost	Refer to HUD Communication Failure
U015587	Communication with IPK is lost	
U015687	Communication with MMI is lost	
U014687	Communication with GW is lost	
U111487	Communication with VCU is lost	
U120387	Communication with FCS is lost	
U007300	CAN bus off	
U300616	Control module input voltage is low	Refer to HUD Power Failure
U300617	Control module input voltage is high	

11.7.6.8 Turn signal indicator is not on(Type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the head unit (instrument cluster controller), combination switch (light and wiper switch) and left front combination lamp harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check whether the turn signal lamp is working.
--------	--

- A. Turn on the turn signal lamp and check whether it works.

No Refer to [Turn Signal Lamp Does not Work](#)

Yes

Step 3	Check IF-CAN bus integrity.
--------	-----------------------------

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4	Check CS-CAN bus integrity.
--------	-----------------------------

- A. To check the integrity of the HB-CAN bus, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5	Program and set the combination switch (light and wiper switch).
--------	--

- A. Program and set the combination switch (light and wiper switch). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Replace the combination switch (light and wiper switch).

- A. To replace the wiper combination switch, please refer to [Replacement of Combination Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 | Replace the head unit (instrument cluster controller).

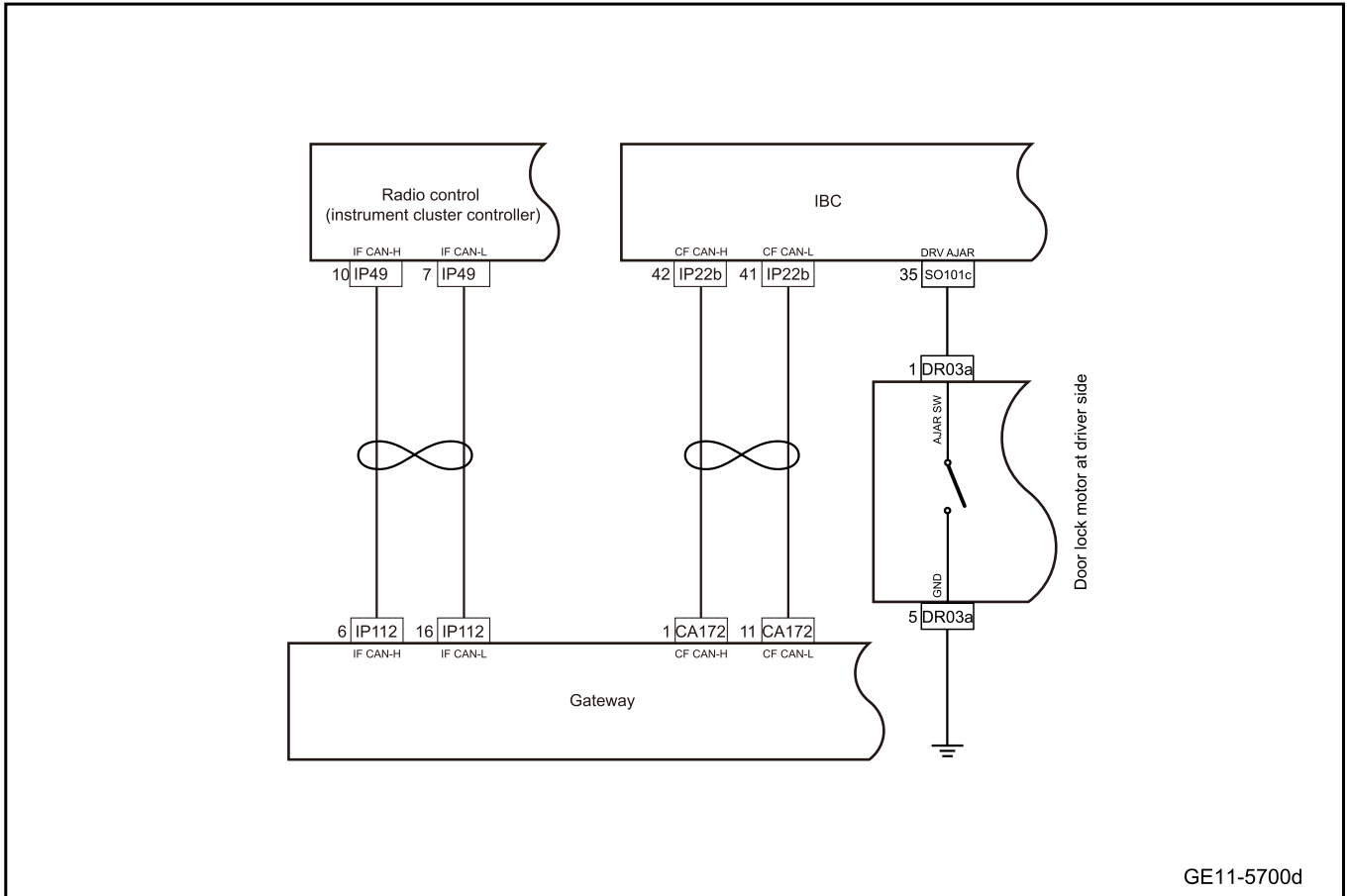
- A. Replace the head unit (instrument cluster controller). Refer to [Replacement of head unit](#)

Next step

Step 9 | System is normal.

11.7.6.9 Door open instrument alarms are inoperative(Type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

The maintenance manual focuses on carrying out the fault diagnosis in such a situation that the driver side door is open but the alarm light is not on. Other fault diagnosis methods for open doors are similar.

Step 1	Primary check.
--------	----------------

- A. Check the IBC and the driver side door lock motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

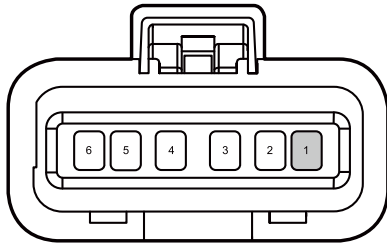
No

Repair or replace the faulty part.

Yes

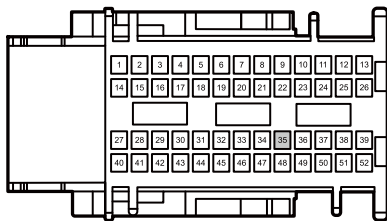
Step 2	Check whether the harness between the driver side door lock motor and the IBC is normal.
--------	--

DR03a driver's side door lock motor harness connector



GE11-6320d

SO101c body control module harness connector



GE11-6321d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	SO101c(35)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	Vehicle body is grounded.	Standard voltage: 0V

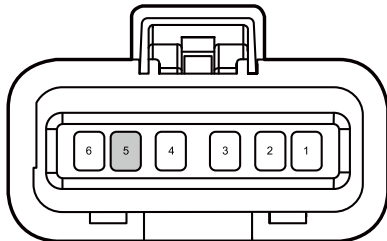
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 | Check whether the grounding harness of the driver side door lock motor is normal.

DR03a door lock motor harness connector at driver side



GE11-6322d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Use a multimeter to measure the terminals according to the table below:

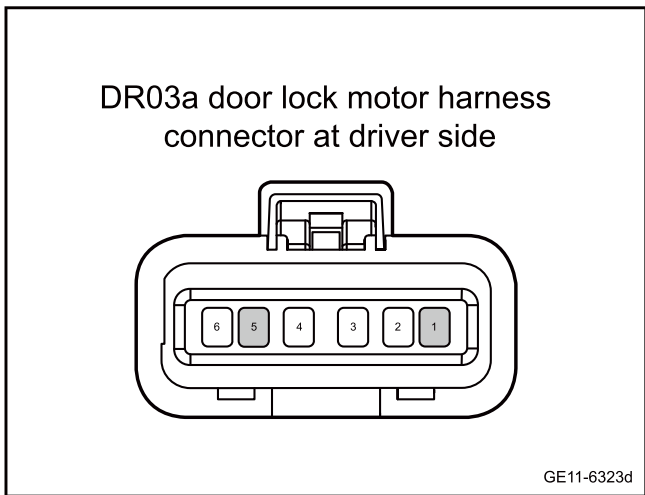
Measure terminal 1	Measure terminal 2	Standard value
DR03a(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the grounding harness of the driver side door lock motor is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Door lock motor at driver side is unlocked.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	DR03a(5)	Standard resistance: 10KΩ or higher

- E. Door lock motor at driver side is unlocked.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	DR03a(5)	Standard resistance: less than 1Ω

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the faulty part.

Yes

Step 5 Check IF-CAN bus communication line.

- A. To check the communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No → Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 6 Check CF-CAN bus communication line.

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 7 Replace the driver side door lock motor.

- A. To replace the front passenger side door lock motor, please refer to [Replacement of Left Front Side Door Lock](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the head unit (instrument cluster controller).

- A. Check the instrument cluster power supply and grounding harness, please refer to [Power supply fault of the head unit \(instrument cluster controller\)](#)
- B. Replace the head unit (instrument cluster controller). Refer to [Replacement of head unit](#)

Next step

Step 10 Reprogram and reset the head unit (instrument cluster controller).

- A. Reprogram and reset the head unit (instrument cluster controller). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

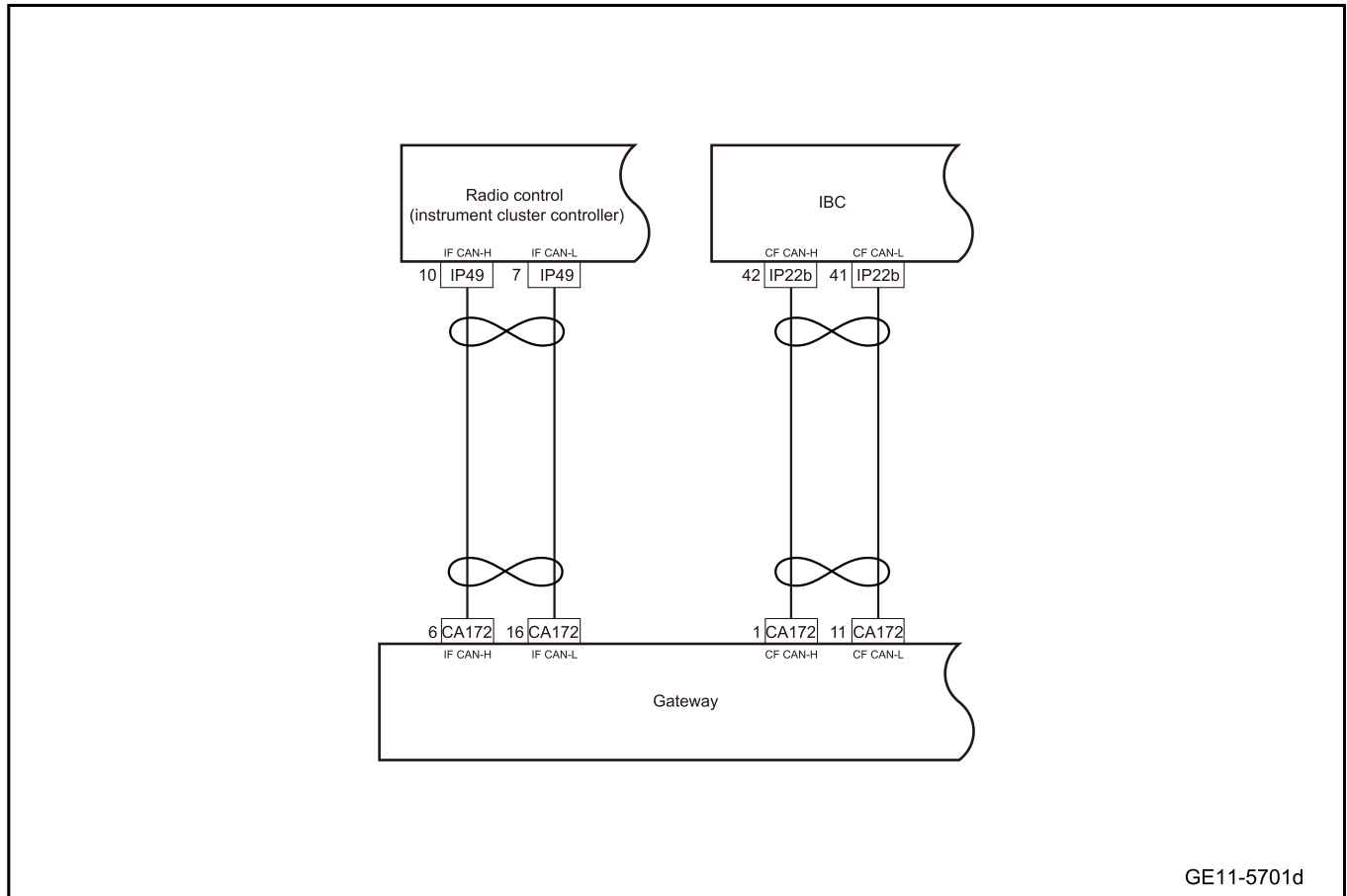
System is normal.

No

Step 11 System is normal.

11.7.6.10 Indicator light of the high beam is always off(Type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the head unit (instrument cluster) harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check whether the high beam is working.

- A. Switch on the high beam and check whether the high beam is working.

No

Refer to [High Beam Lamp Does Not Work](#)

Yes

Step 3 | Check IF-CAN bus integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 | Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Replace the head unit (instrument cluster controller).

- A. Replace the head unit (instrument cluster controller). Refer to [Replacement of head unit](#)

Next step

Step 7 | Reprogram and reset the head unit (instrument cluster).

- A. Reprogram and reset the head unit (instrument cluster). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

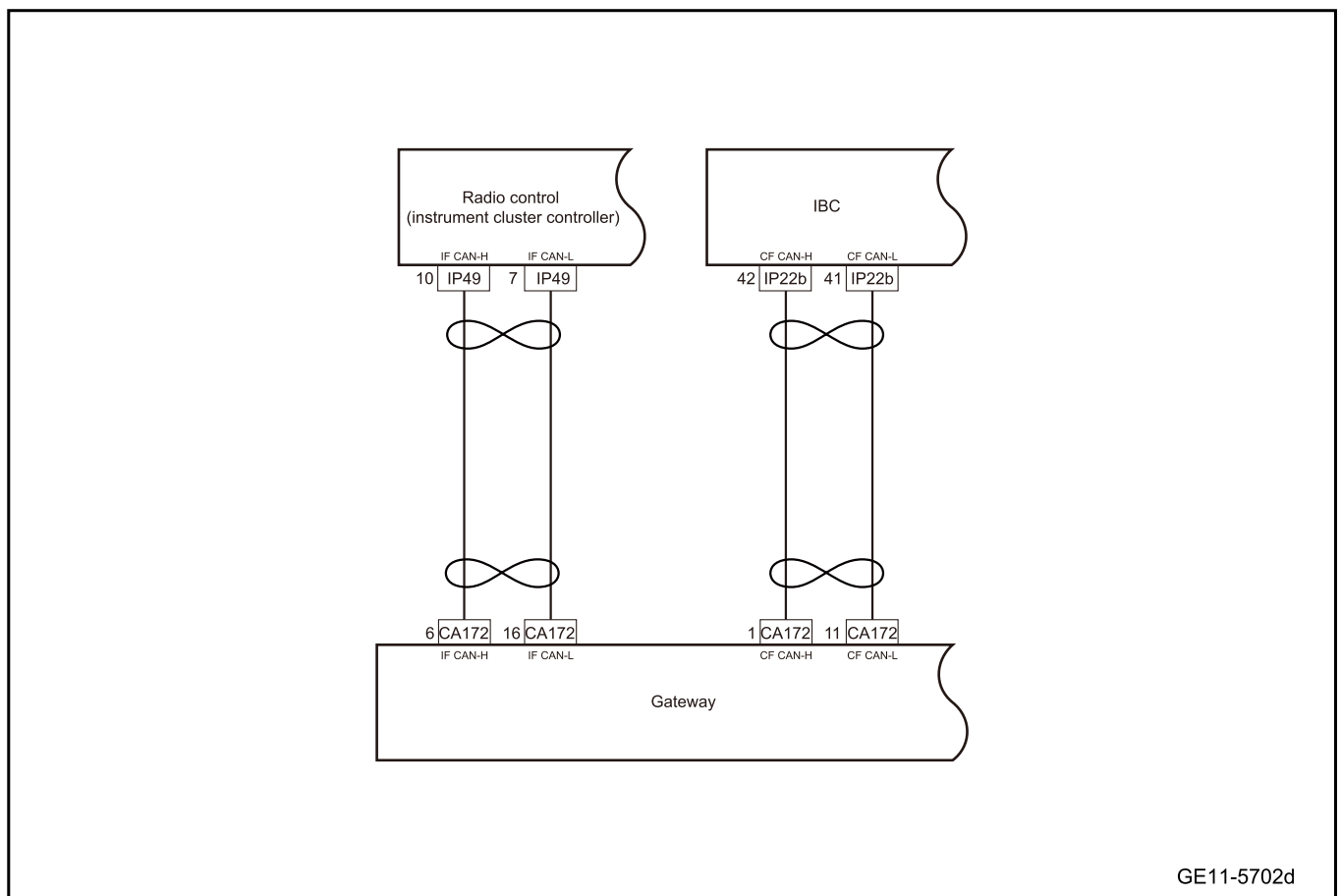
Yes System is normal.

No

Step 8 System is normal.

11.7.6.11 Indicator light of the rear fog lamp does not light up(Type I)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the head unit (instrument cluster controller) harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2 Check whether the rear fog lamp is operating.

- A. Turn on the rear fog lamp and check whether the rear fog lamp operates.

No

Refer to [Rear Fog Lamp Does Not Work](#)

Yes

Step 3 Check IF-CAN bus integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4 Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the head unit (instrument cluster controller).

- A. Check the BCM power supply and grounding harness.
Refer to [Head unit power supply fault](#)
- B. Replace the head unit (instrument cluster controller).
Refer to [Replacement of head unit](#)

Next step

Step 7 Reprogram and reset the head unit (instrument cluster controller).

- A. Reprogram and reset the head unit (instrument cluster controller). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

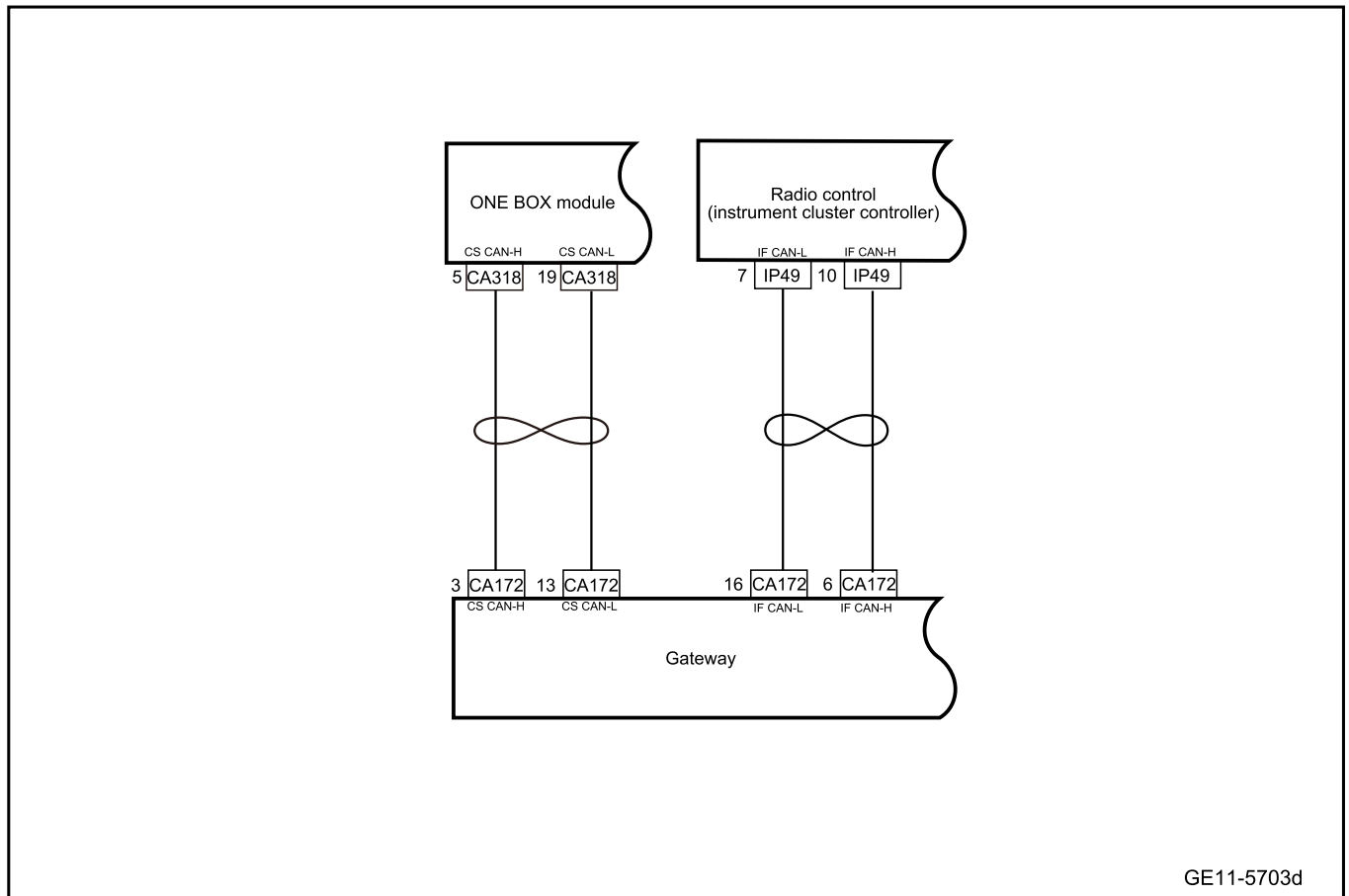
System is normal.

No

Step 8 System is normal.

11.7.6.12 Parking brake indicator is always off (Type I)

1. Schematic circuit diagram:



GE11-5703d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the head unit(instrument cluster controller) harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. Check the integrity of IF-CAN network, refer to the [IF-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the trouble of CAN network integrity.

Yes

Step 3	Check the CS-CAN network integrity.
--------	-------------------------------------

- A. Check the integrity of CS-CAN network, refer to the [CS-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the trouble of CAN network integrity.

Yes

Step 4	Replace the ONE BOX module.
--------	-----------------------------

- A. Replace the ONE BOX control module, refer to [Replacement of Brake control module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the head unit (instrument cluster controller).
--------	--

- A. Check the BCM power supply and grounding harness.
Refer to [Head unit power supply fault](#)
- B. Replace the head unit (instrument cluster controller).
Refer to [Replacement of head unit](#)

Next step

Step 6 Reprogram and reset the head unit (instrument cluster controller).

- A. Reprogram and reset the head unit (instrument cluster controller). Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

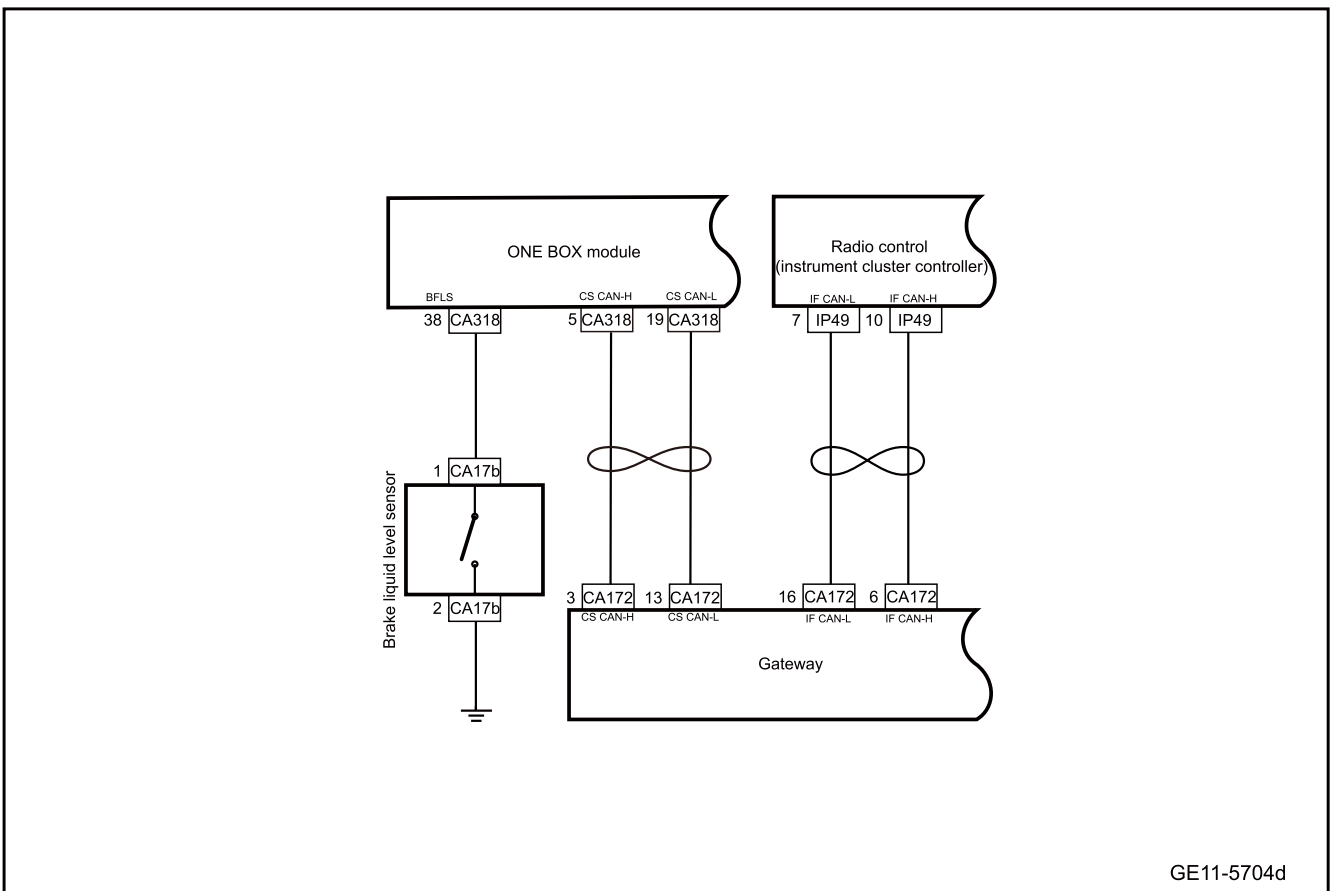
Yes System is normal.

No

Step 7 System is normal.

11.7.6.13 Brake fluid level indicator is not on(Type I)

1. Schematic circuit diagram:



GE11-5704d

2. Diagnosis steps

Step 1 Primary check.

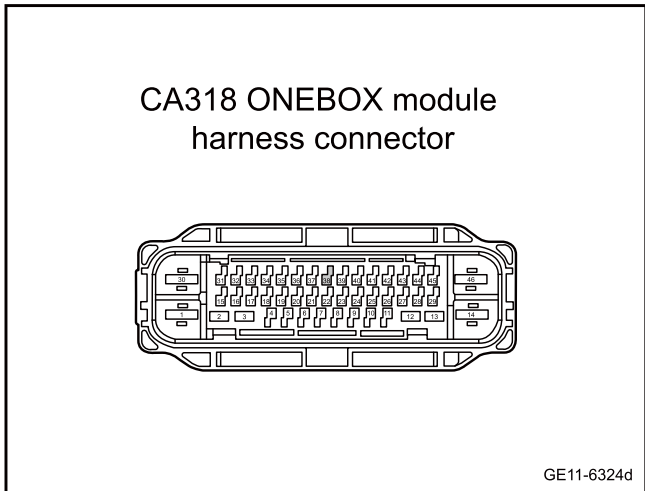
- A. Check the harness connector of brake fluid sensor for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

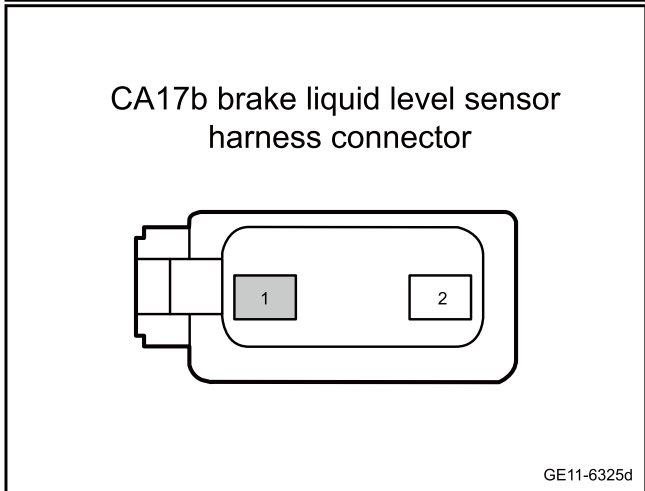
Yes

Step 2 Check whether the harness between ONE BOX and brake fluid sensor is opened.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA17b of brake fluid level sensor
- C. Disconnect the ONE BOX module harness connector CA318.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(38)	CA17b(1)	Standard resistance: less than 1Ω



- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(38)	Vehicle body is grounded.	Standard voltage: 0V

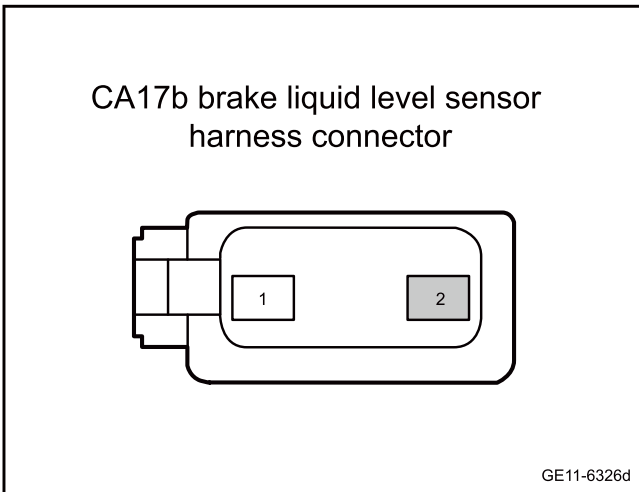
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Check whether the grounding harness of brake fluid sensor is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA17b of brake fluid level sensor
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA17b(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 | Check the IF-CAN network integrity.

- A. Check the integrity of IF-CAN network, refer to the [iF-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No → Priority is given to eliminating the trouble of imperfect CAN network.

Yes

Step 5 | Check the CS-CAN network integrity.

- A. Check the integrity of CS-CAN network, refer to the [iCS-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No → Priority is given to eliminating the trouble of imperfect CAN network.

Yes

Step 6 | Replace brake fluid sensor.

- A. To replace the brake fluid level sensor, please refer to [Replacement of Brake Control Module](#)
- B. Confirm whether the trouble is removed.

Yes → System is normal.

No

Step 7 Replace the head unit (instrument cluster controller).

- A. Check the head unit (instrument cluster controller) power supply and grounding harness, please refer to [Power supply fault of the head unit](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 8 Reprogram and reset the head unit (instrument cluster controller).

- A. Reprogram and reset the head unit (instrument cluster controller). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

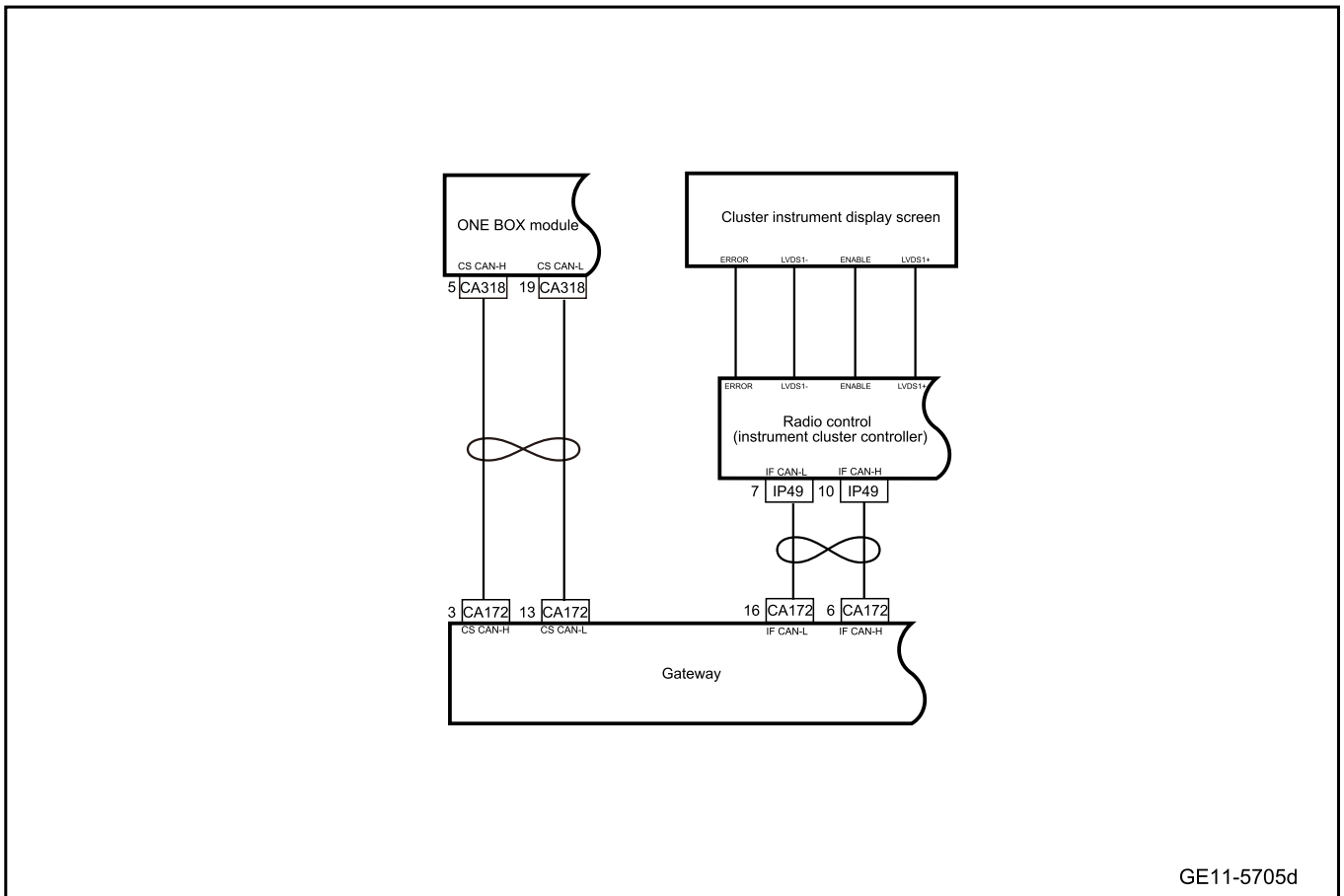
System is normal.

No

Step 9 System is normal.

11.7.6.14 Abnormal indication of speedometer(Type I)

1. Schematic circuit diagram:



GE11-5705d

2. Diagnosis steps

Step 1 Primary check.

- A. Check head unit (instrument cluster controller) and ONE BOX module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No → Repair or replace the faulty part.

Yes

Step 2 Check the IF-CAN network integrity.

- A. To check the communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No → Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 3 Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the instrument cluster display screen.

- A. To replace the instrument cluster display screen, please refer to [Replacement of the Instrument Cluster Display Screen\(Type I\)](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the head unit (instrument cluster controller).

- A. Check the head unit (instrument cluster controller)power supply and grounding harness, please refer to [Power supply fault of the head unit](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Yes

System is normal.

No

Step 6 Reprogram and reset the head unit (instrument cluster controller).

- A. Reprogram and reset the head unit (instrument cluster controller). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the ONE BOX module.

- A. Replace the ONE BOX control module, refer to [Replacement of brake control module](#)

Next step

Step 8	Reprogram and reset the ONE BOX module.
--------	---

- A. Reprogram and reset the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 9	System is normal.
--------	-------------------

11.7.6.15 Heads up display (HUD) power supply fault

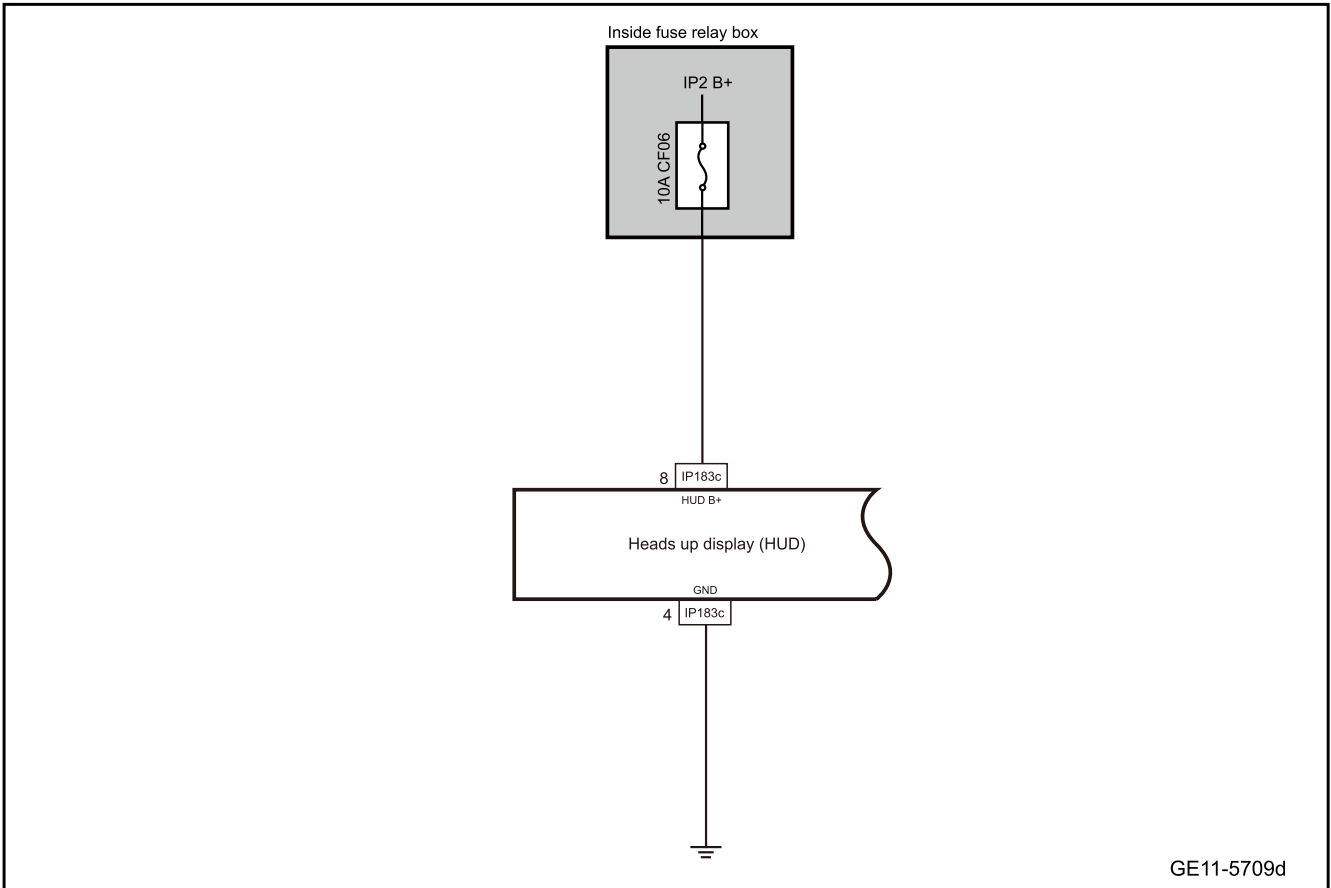
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measure the voltage<9V	1. Ignition status is ignition ON	1. Battery 2. Circuit 3. Fuse 4. Heads up display (HUD)
U300617	Measure the voltage>16 V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 | Check whether other modules have power failure codes.

A. Read the fault code and confirm whether other modules have output power failure code.

No → To Step 4.

Yes

Step 2 | Primary check.

A. Check the HUD module harness connector for signs of damage, poor contact, aging, loosening, etc.
B. Confirm whether the above items are normal.

Yes → Repair or replace the faulty part.

No

Step 3 | Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.

Standard voltage: 9-16V

- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse CF06 and check whether the fuse is blown.

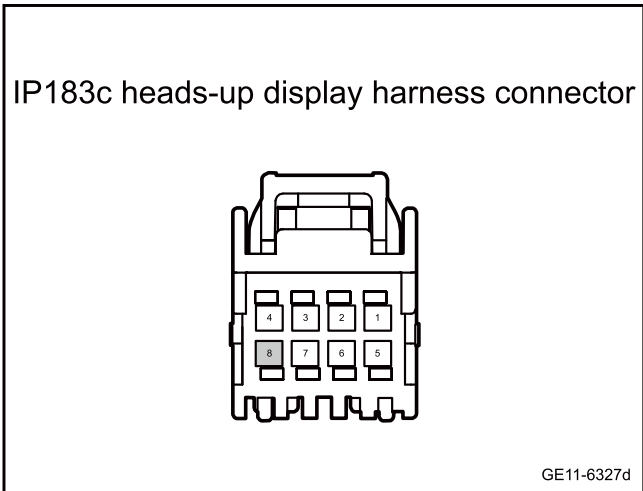
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 | Check whether the HUD power circuit is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the HUD module harness connector IP183c.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between the terminal 8 of the engine control module IP183c and body grounding.

Standard voltage: 11-14V

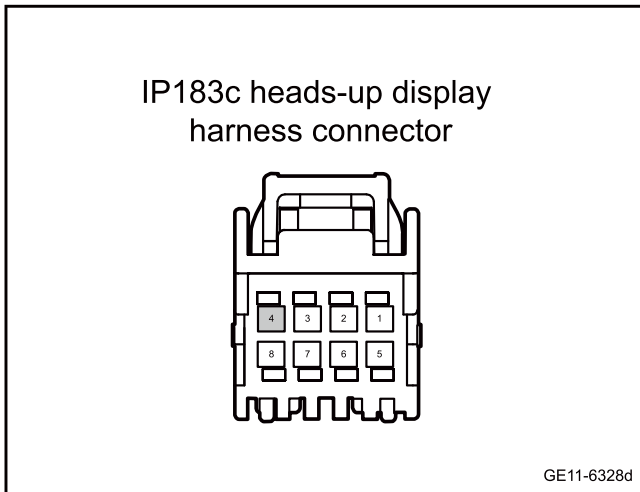
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 | Check whether the grounding harness of HUD module is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the HUD module harness connector IP183c.
- C. Use a multimeter to measure the resistance between IP183c terminal 4 and the vehicle body ground.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Replace Heads up display (HUD)

- A. Replace Heads up display (HUD) Refer to [Replacement of the HUD](#)

Next step

Step 8 | Reprogram and set the HUD .

- A. To reprogram and reset the HUD , please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.7.6.16 Heads up display (HUD) communication fault

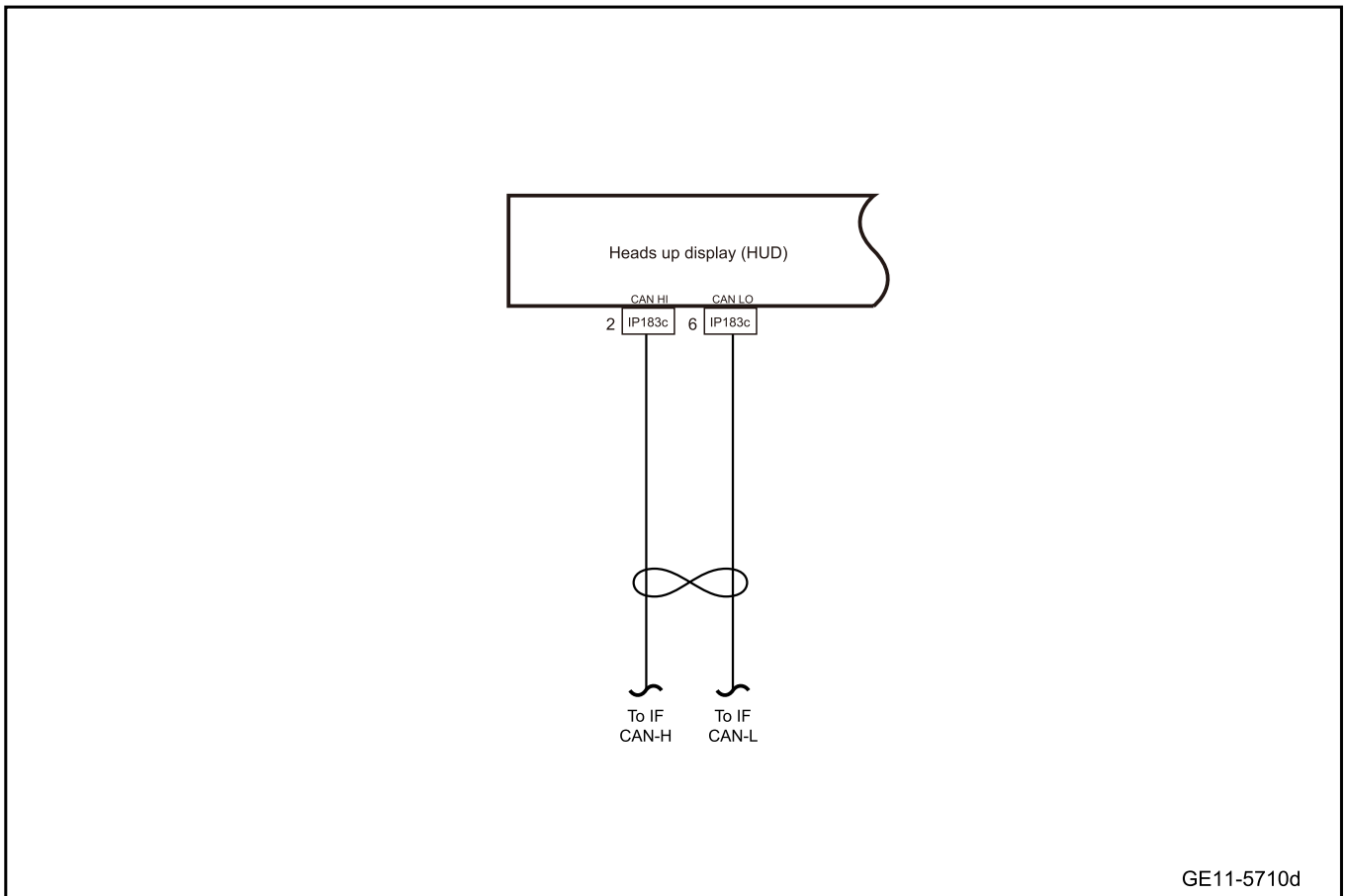
1. DTC description:

Diagnostic Trouble Code	Description
U014087	Communication with BCM is lost
U015587	Communication with IPK is lost
U015687	Communication with MMI is lost
U014687	Communication with GW is lost
U111487	Communication with VCU is lost
U120387	Communication with FCS is lost
U007300	CAN bus off

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U014087	BCM (ID=0x1F0) message is lost for 250 milliseconds	1. CAN bus power supply voltage is within the range of 9-16V 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON	1. Harness 2. Diagnostic interface 3. Heads up display (HUD)
U015587	5T lost IPK (ID=0x26D) message		
U015687	5T lost MMI (ID=0x2A4) message		
U014687	5T lost GW (ID=0x2FC) message		
U111487	VCU_HBCAN (ID=0x162) message is lost for 250ms		
U120387	Loss of FCS (ID=0x1B0) message within 250ms		
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. CAN bus power supply voltage is within the range of 9-16V 2. Bus off detected	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the HUD harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check the integrity of the IF-CAN bus.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm that the IF-CAN network is functioning properly.

No

Check or repair IF-CAN bus communication faults and replace or repair harness as necessary.

Yes

Step 4 Replace Heads up display (HUD)

- A. Check the HUD power supply and grounding harness. Refer to [HUD Power Failure](#)
- B. To replace the HUD, please refer to [Replacement of HUD](#)

Next step

Step 5 Reprogram and set the HUD.

- A. Reprogram and set the HUD. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.7.6.17 Part change operation

1. Diagnosis steps

Step 1	Write network node configuration
--------	----------------------------------

Next step

Step 2	Write function configuration
--------	------------------------------

Next step

Step 3	Write traceability information
--------	--------------------------------

Next step

Step 4	Maintenance mileage reset
--------	---------------------------

11.7.6.18 Maintenance mileage reset function

1. Diagnosis steps

Step 1	Enter the first level menu and select the "maintenance mileage reset" function in the first level menu.
--------	---

Next step

Step 2	Click "OK" to enter the first prompt interface;
--------	---

Next step

Step 3	Click "Next" to start
--------	-----------------------

Next step

Step 4	The device pops up in the drop-down box. There are 3 options: 1. Maintenance interval is set at 5000Km 2, maintenance interval is set at 7500Km (default) 3, maintenance interval is set at 10000Km 4, and maintenance interval is customized.
--------	--

Next step

Step 5	Click "set the maintenance interval to 5000 km".
--------	--

Next step

Step 6	Click "set the maintenance interval to 7500 km".
--------	--

Next step

Step 7 Click "Maintenance interval is set to 10000 km".

Next step

Step 8 Click "custom maintenance interval" to prompt the input mileage value.

Next step

Step 9 Wait for 500ms.

Next step

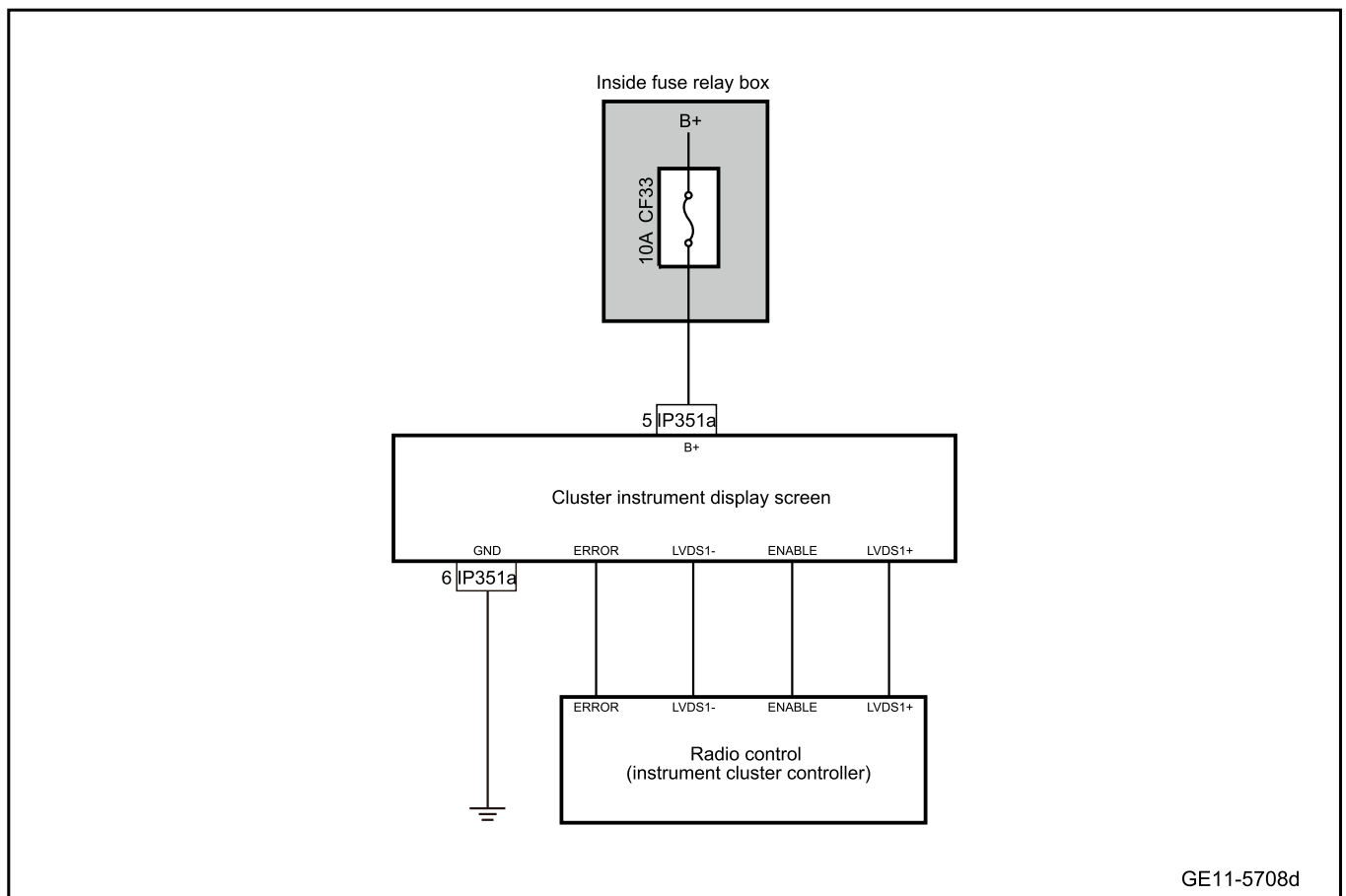
Step 10 ECU restarts.

Next step

Step 11 The end.

11.7.6.19 Instrument Cluster Display Screen Fault (Type I)

1. Circuit diagram:



2. Diagnosis steps:

Step 1 Primary check.

- A. Check the instrument cluster display screen for signs of damage, getting adrift, etc.
- B. Check the instrument cluster display screen, head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check the fuse of the instrument cluster display screen.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse and check whether the fuse CF33 is blown.

Rated capacity of fuse: 10A

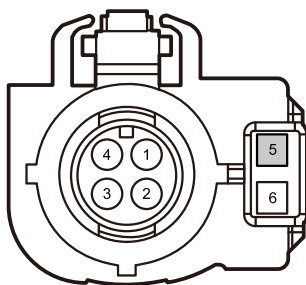
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check the instrument cluster display screen power supply circuit.

IP351a instrument cluster display harness connector



GE11-6373d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster display screen harness connector IP351a.
- C. The key activates the power supply of the vehicle to ON.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP351a(5)	Vehicle body is grounded.	Standard voltage: 11-14V

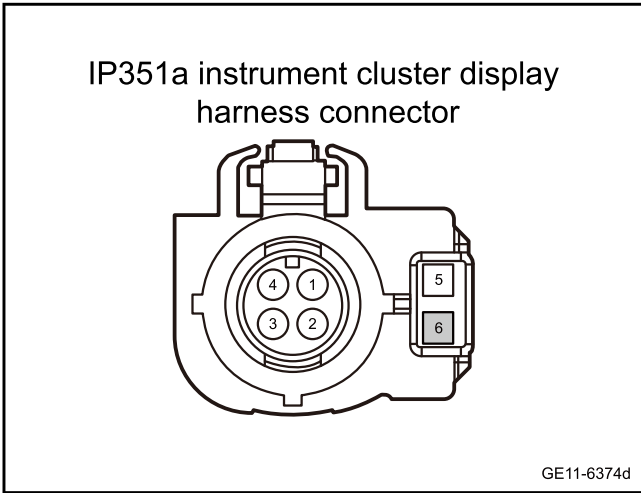
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

No

Step 4 Check the instrument cluster display screen grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster display screen harness connector IP351a.
- C. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP351a(6)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Replace the instrument cluster display screen.

- A. Replace the instrument cluster display screen. Refer to [Replacement of the Instrument Cluster Display Screen](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 6 | Change the head unit.

- A. Check whether the control module power supply or grounding harness of the head unit is normal. Refer to [Head unit power supply fault](#)
- B. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 7 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 8 System is normal.

11.7.6.20 Mileage zero clearing

1. Diagnosis steps

Step 1 Enter the first level menu and select the mileage zero clearing function in the first level menu.

Next step

Step 2 Click "OK" to enter the first prompt interface;

Next step

Step 3 Click "Next" to start.

Next step

Step 4 The diagnostic instrument interface prompts: mileage zero clearing is successful.

Next step

Step 5 The diagnostic instrument interface prompts: mileage zero clearing fails.

Next step

Step 6 The end.

11.7.6.21 List of Diagnostic Trouble Codes (DTC) of instrument cluster

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Control module input voltage is low	Refer to Instrument Cluster Power Supply Failure(Type II)
U300617	Control module input voltage is high	
U012287	Communication with ESC is lost	Refer to Instrument Cluster Communication Failure(Type II)
U013187	Communication with EPS is lost	
U014087	Communication with BCM is lost	
U014687	Communication with the gateway is lost.	
U015187	Communication with ACU is lost	
U016487	Communication with AC is lost	
U021487	Communication with the keyless entry system is lost.	
U011287	Communication with BMSH is lost	
U016087	Communication with AVAS is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U111487	Communication with VCU is lost	
U111587	Communication with OBC is lost	
U011087	Communication with IPU is lost.	
U015687	Communication with MMI is lost	
U010387	Communication with the electronic gear shifter module is lost.	
U020887	Communication with DSCU is lost.	
U111A87	Communication with IB is lost	

11.7.6.22 Power supply fault of instrument cluster(Type II)

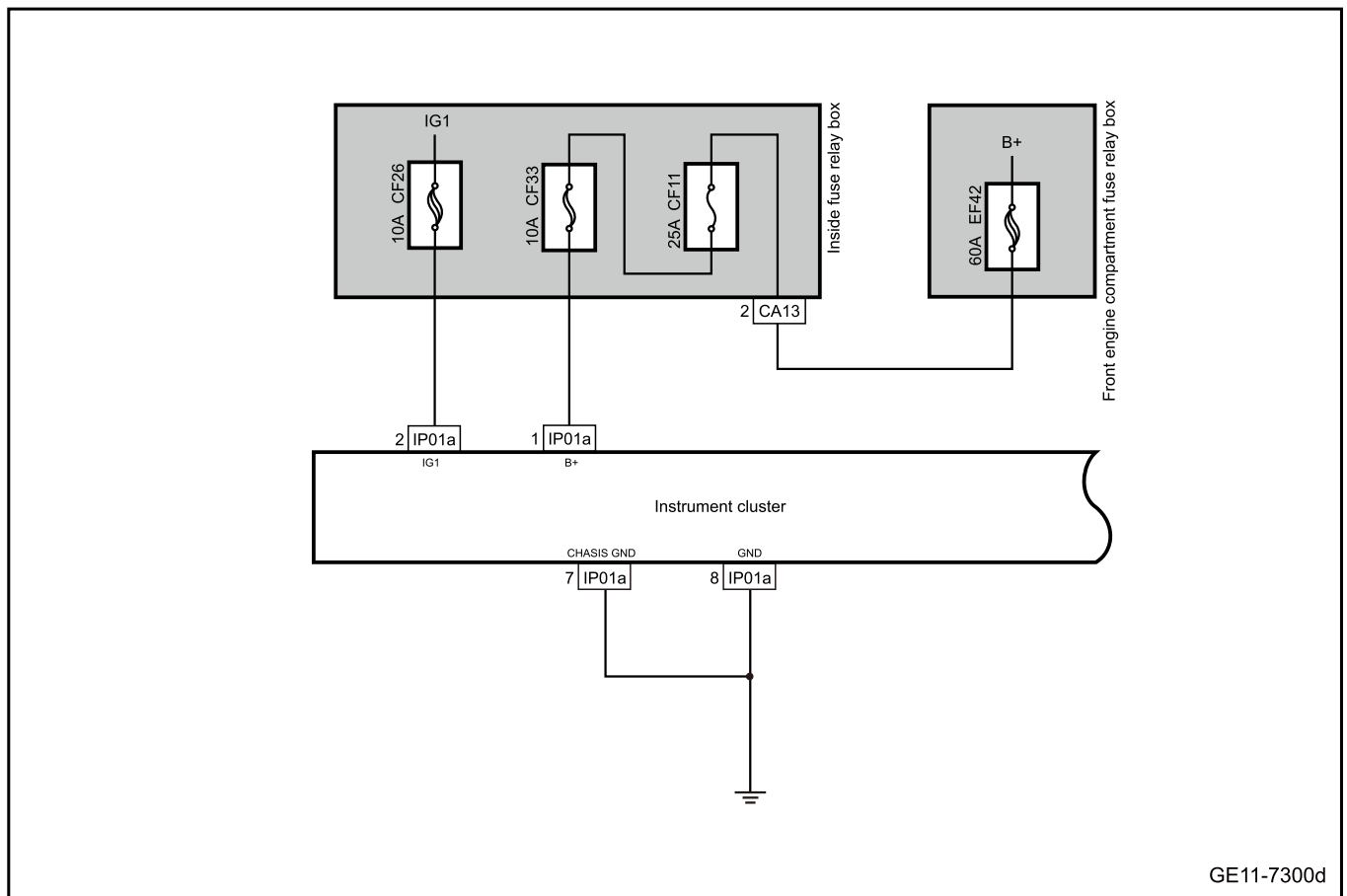
1. DTC description:

DTC	Trouble description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	1. KL_15 ON 3. Diagnosis service \$85 is not activated	Power supply voltage range is $\leq 9.0\text{v}$	1. Circuit 2. Fuse 3. Instrument cluster
U300617	1. KL_15 ON 3. Diagnosis service \$85 is not activated	Power supply voltage range is $\geq 16\text{v}$	

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Check fault codes of other modules.
--------	-------------------------------------

A. Check whether other modules except instrument cluster have power failure codes.

No Go to Step 3.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

A. The key activates the power supply of the vehicle to ON.

B. Use a multimeter to measure the battery voltage.

Standard voltage: 9-16V

C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

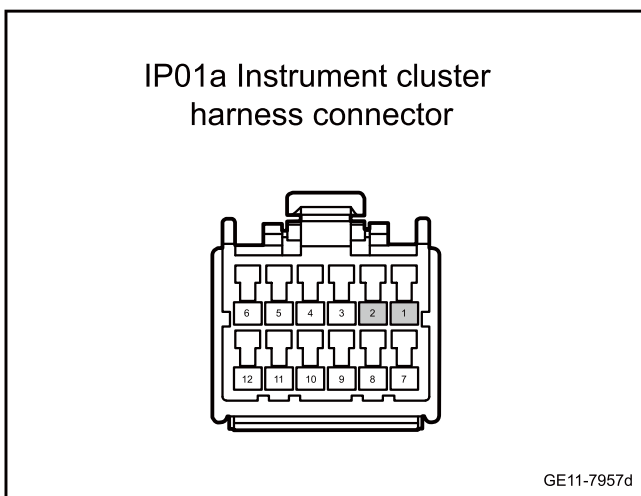
- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF11	25A
Indoor fuse relay box	CF33	10A
Indoor fuse relay box	CF26	10A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the instrument cluster power supply circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster harness connector IP01a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

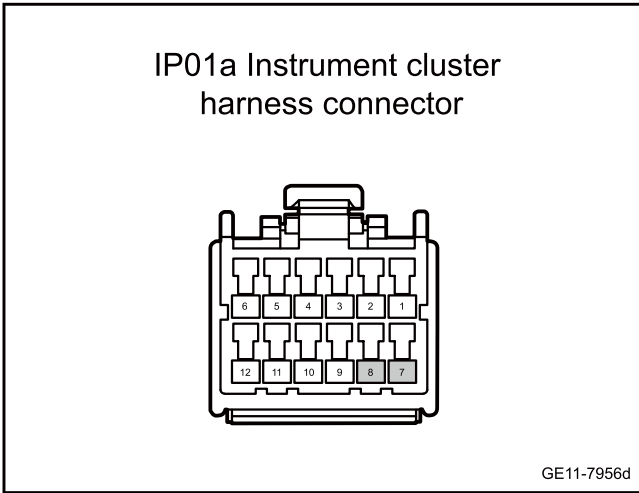
Measure terminal 1	Measure terminal 2	Standard value
IP01a(1)	Vehicle body is grounded.	Standard voltage: 11-14V
IP01a(2)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check the instrument cluster grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster harness connector IP01a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP01a(7)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP01a(8)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Reprogram and reset the instrument cluster.

- A. Reprogram and reset the instrument cluster. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Replace the instrument cluster.

- A. To replace the instrument cluster, please refer to [Replacement of the Instrument Cluster](#)

Next step

Step 8 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

11.7.6.23 Communication fault of instrument cluster(Type II)

1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus off
U014687	Communication with the gateway is lost.
U021487	Communication with the keyless entry system is lost.
U023587	Communication with the front radar module is lost.
U120387	Communication with the front camera module is lost.
U017087	Communication with the side rear radar module is lost.
U011287	Communication with BMSH is lost
U016087	Communication with AVAS is lost
U111487	Communication with VCU is lost
U111587	Communication with OBC is lost
U011087	Communication with IPU is lost.
U015687	Communication with MMI is lost
U010387	Communication with the electronic gear shifter module is lost.
U020887	Communication with DSCU is lost.
U111A87	Communication with IB is lost
U023687	Communication with ESCL is lost
U012287	Communication with ESC is lost
U013187	Communication with EPS is lost
U014087	Communication with BCM is lost
U015187	Communication with ACU is lost
U016487	Communication with AC is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012287	ID: 125 signal \128 signal not received for > 250ms	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF110 is diagnosed	
U013187	Frame loss is tested.	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF110 is diagnosed	1. Circuit 2. Instrument cluster 3. Diagnostic interface
U014087	ID not received for > 250ms:	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF110 is diagnosed	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U014687	(ID=0x150 Cycle timer: 20ms) (defined in CMX).	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF111 is diagnosed	
U015187	Frame loss is tested. (ID= 0x380 Cycle timer: 200ms) (defined in CMX).	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF112 is diagnosed	
U016487	Frame loss is tested. (ID= 0x2F1 Cycle timer: 100ms) (defined in CMX).	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF113 is diagnosed	

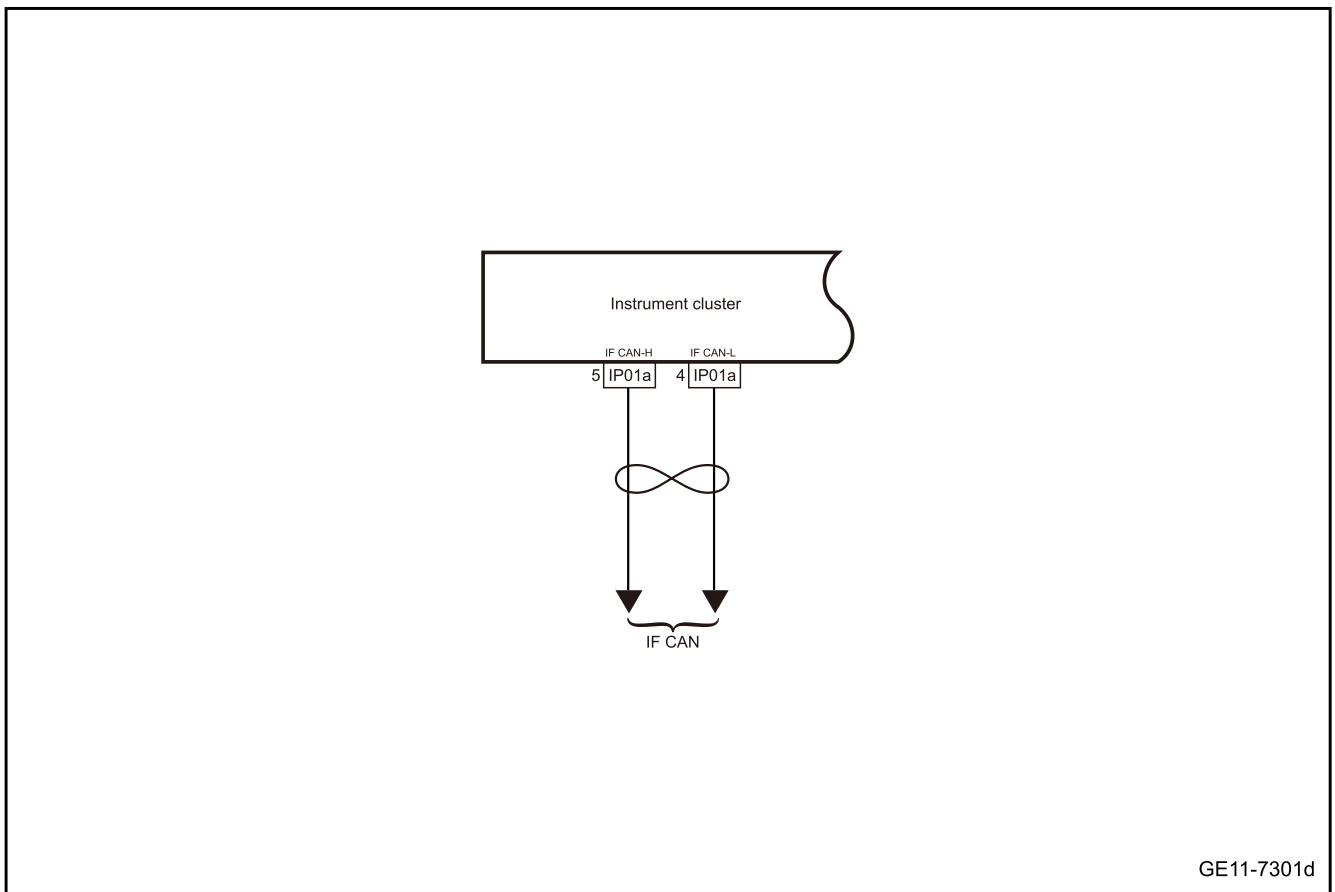
DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U021487	Either PEPS_0x1E2_ TimeoutFlag or PEPS_0x272_ TimeoutFlag in the message ID: 2FC signal is 1	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF114 is diagnosed	
U011287	ID not received for > 2500ms: ID not received for > > 2500ms:Either BMSH_0x0B0_ TimeoutFlag or BMSH_0x178_ TimeoutFlag or BMSH_0x211_ TimeoutFlag in message ID: 54 or ID: 17a is not received for > > 500ms or ID: 17b is not received for > 250ms.	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF115 is diagnosed	
U016087	No receipt of ID: 2B2 signal for more than 500ms	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF116 is diagnosed	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111487	ID not received for > 250ms: 162\1A5\165 signal	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF117 is diagnosed	
U111587	ID not received for > 500ms: 220\222 signal	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF118 is diagnosed	
U011087	No ID: 0A8 signal or ID: 250 is received for > 250ms. Either IPU_0x176_ TimeoutFlag or IPU_0x360_ TimeoutFlag in the message is 1	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF119 is diagnosed	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	Frame loss is tested. (ID= 0x2A4 Cycle timer: 100ms) (defined in CMX).	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF120 is diagnosed	
U010387	No receipt of ID: 145 information for more than 250ms	1. The power supply voltage at the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. No matter how the EOL configured in DIDF110 is diagnosed	
U020887	No receipt of ID: 2D2 signal for more than 500ms	1. The power supply voltage of the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_ 15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. The diagnostic EOL configured in DIDF110 is valid.	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111A87	No receipt of ID: 225 information for more than 500ms	11. The power supply voltage of the CAN bus node is in the range of 9-16V; 2. No bus off is detected, and the ECU is on the CAN; 3. KL_15 =ON; 4. The condition of TDiagEnable is met; 5. The diagnostic service \$85 is not activated; 6. The diagnostic EOL configured in D1DF110 is valid.	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2 Primary check.

- A. Check the instrument cluster harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the IF-CAN network integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 4 Reprogram and reset the instrument cluster.

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Replace the instrument cluster.

- A. To replace the instrument cluster, please refer to [Replacement of the Instrument Cluster](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

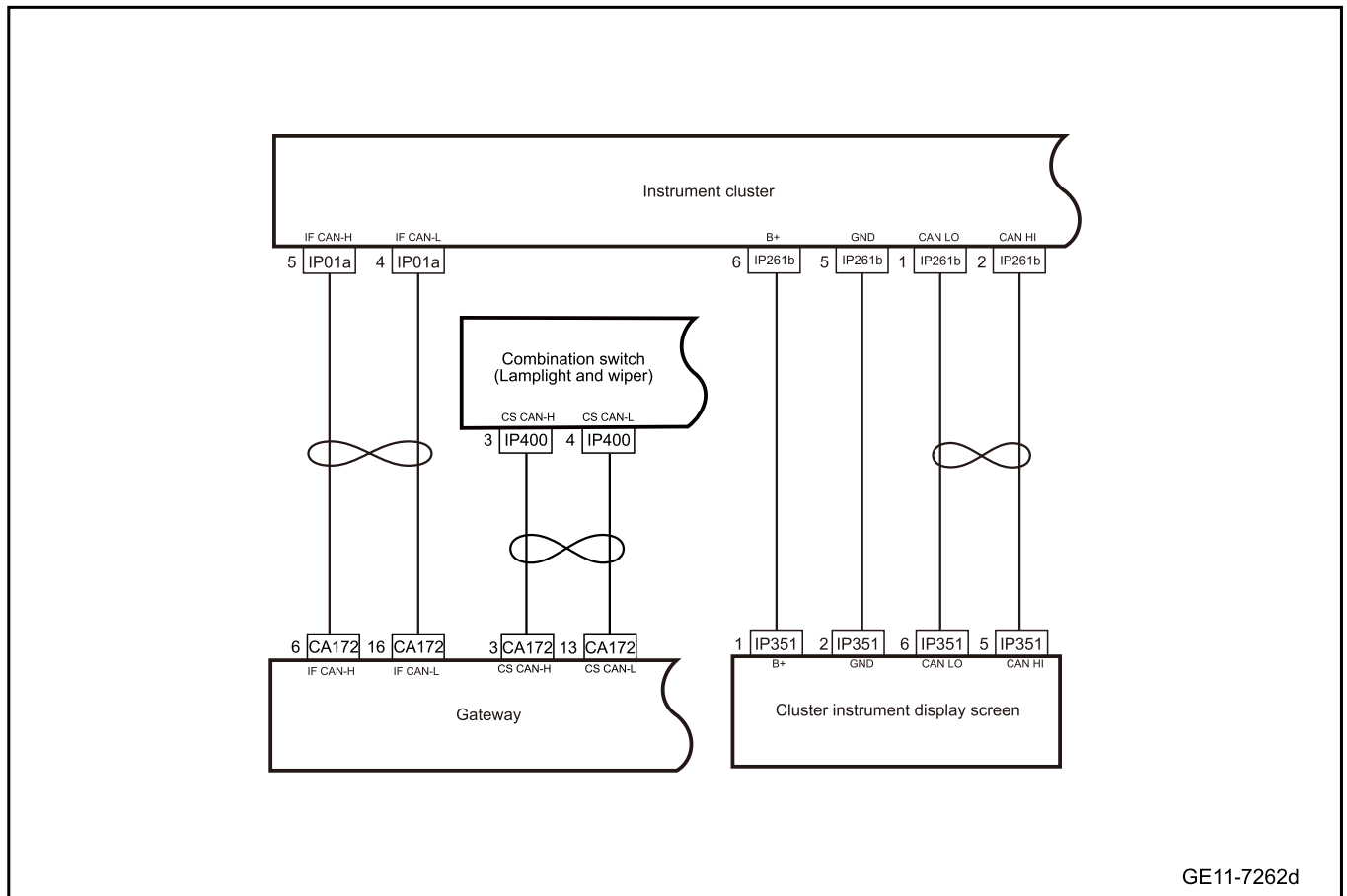
Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.7.6.24 Turn signal indicator is not on(Type II)

1. Schematic circuit diagram:



GE11-7262d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster, the instrument cluster display screen, the combination switch (light and wiper) and left front combination lamp harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check turn signal lamp.
--------	-------------------------

- A. Turn on the turn signal lamp and check whether it works.

No

Refer to [Turn Signal Lamp Does not Work](#)

Yes

Step 3	Check whether the display screen on the instrument cluster is normal.
--------	---

No

Refer to [fault of instrument cluster display screen\(Type II\)](#)

Yes

Step 4	Check IF-CAN bus integrity.
--------	-----------------------------

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5	Check CS-CAN bus integrity.
--------	-----------------------------

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No

Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 6 Reprogram and reset the instrument cluster (light and wiper).

- A. Reprogram and reset the instrument cluster (light and wiper). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the combination switch (light and wiper).

- A. To replace the combination switch (light and wiper), please refer to [Replacement of Combination Switch \(light and wiper\)](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Replace the instrument cluster display screen.

- A. To replace the instrument cluster display screen, please refer to [Replacement of the Instrument Cluster Display Screen](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Reprogram and reset the instrument cluster.

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 Replace the instrument cluster.

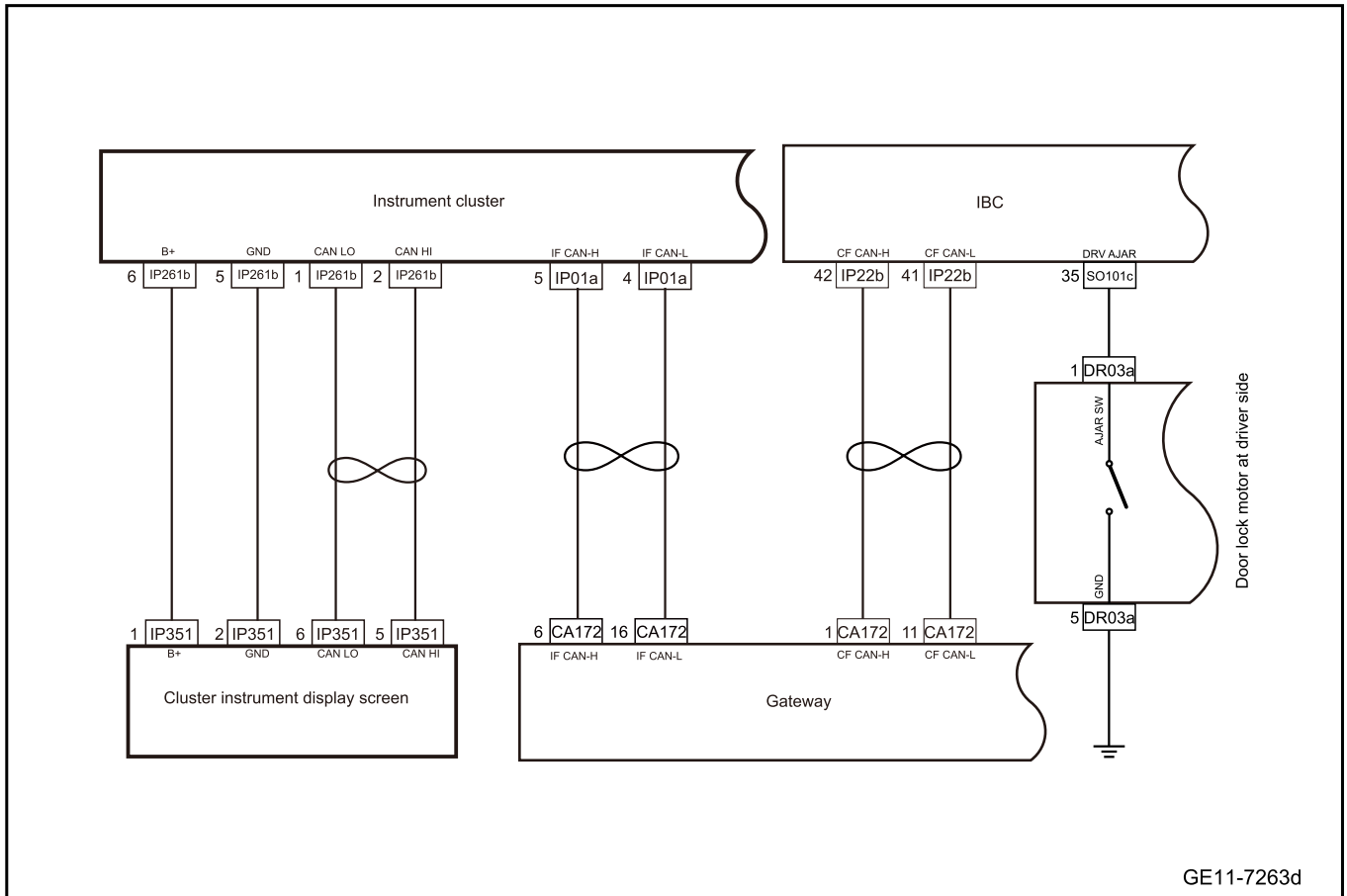
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

Step 11 | System is normal.

11.7.6.25 Door open instrument alarms are inoperative (Type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Caution

The maintenance manual focuses on carrying out the fault diagnosis in such a situation that the driver side door is open but the alarm light is not on. Other fault diagnosis methods for open doors are similar.

Step 1 | Primary check.

- A. Check the instrument cluster, instrument cluster display screen, IBC and the driver side door lock motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

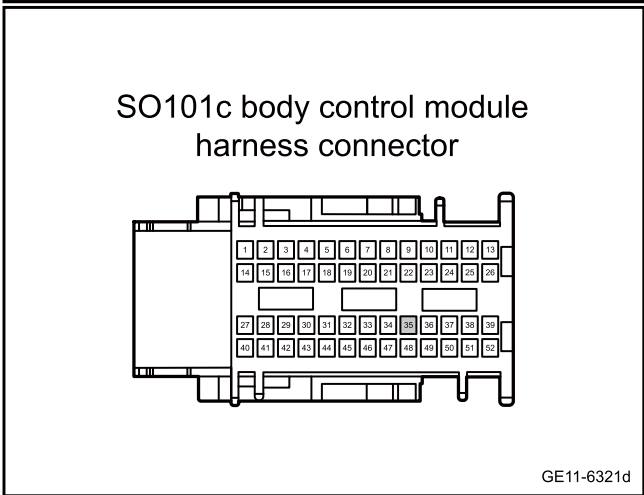
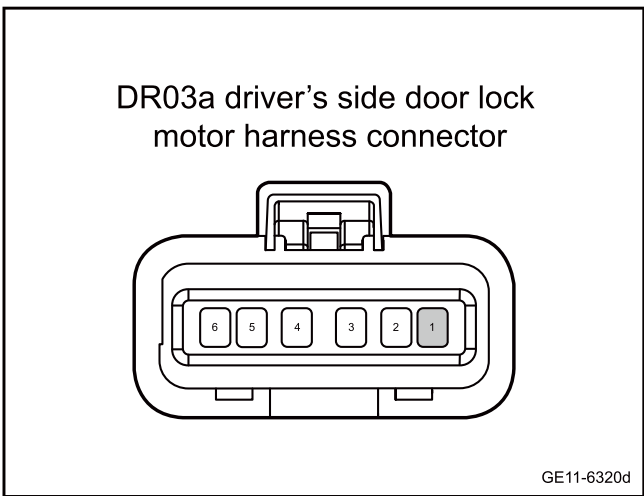
Step 2 Check whether the display screen on the instrument cluster is normal.

No

Refer to [fault of instrument cluster display screen\(Type II\)](#)

Yes

Step 3 Check circuits in the harness between driver side door lock motor and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	SO101c(35)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	Vehicle body is grounded.	Standard voltage: 0V

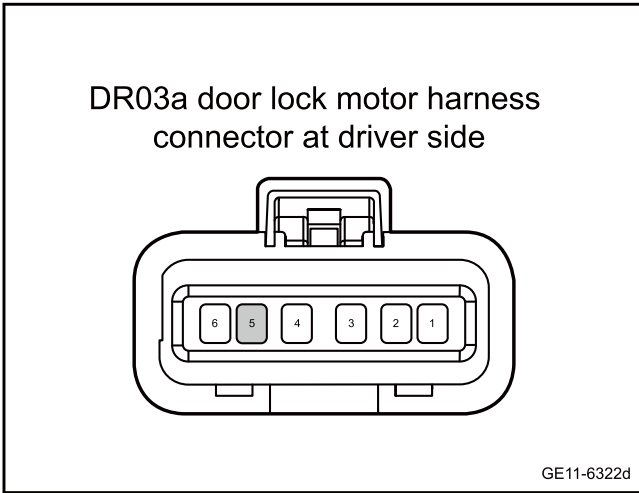
- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the grounding harness of the driver side door lock motor is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Use a multimeter to measure the terminals according to the table below:

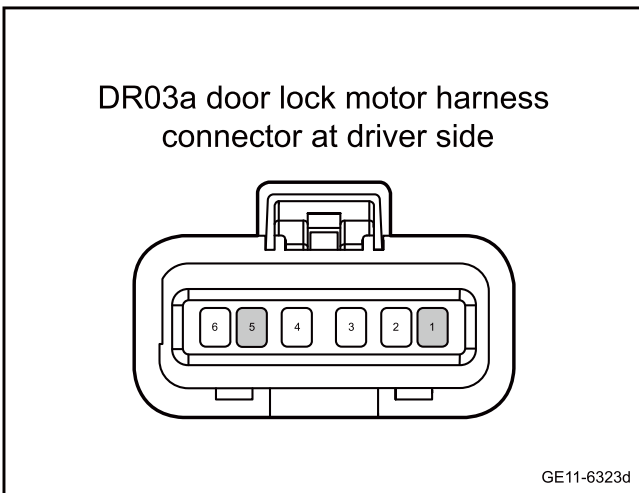
Measure terminal 1	Measure terminal 2	Standard value
DR03a(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the grounding harness of the driver side door lock motor is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Door lock motor at driver side
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	DR03a(5)	Standard resistance: 10KΩ or higher

- E. Door lock motor at driver side
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR03a(1)	DR03a(5)	Standard resistance: less than 1Ω

- G. Confirm whether the measured value meets the standard.

No Repair or replace the faulty part.

Yes

Step 6	Check IF-CAN bus communication line.
--------	--------------------------------------

- A. To check the communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 7	Check CF-CAN bus communication line.
--------	--------------------------------------

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 8	Replace the driver side door lock motor.
--------	--

- A. To replace the front passenger side door lock motor, please refer to [Replacement of Front Left Door Lock](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Program and set the IBC.
--------	--------------------------

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Replace the IBC
---------	-----------------

- A. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace the instrument cluster display screen.
---------	--

- A. To replace the instrument cluster display screen, please refer to [Replacement of the Instrument Cluster Display Screen\(Type II\)](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	Reprogram and reset the instrument cluster.
---------	---

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Replace the instrument cluster.
---------	---------------------------------

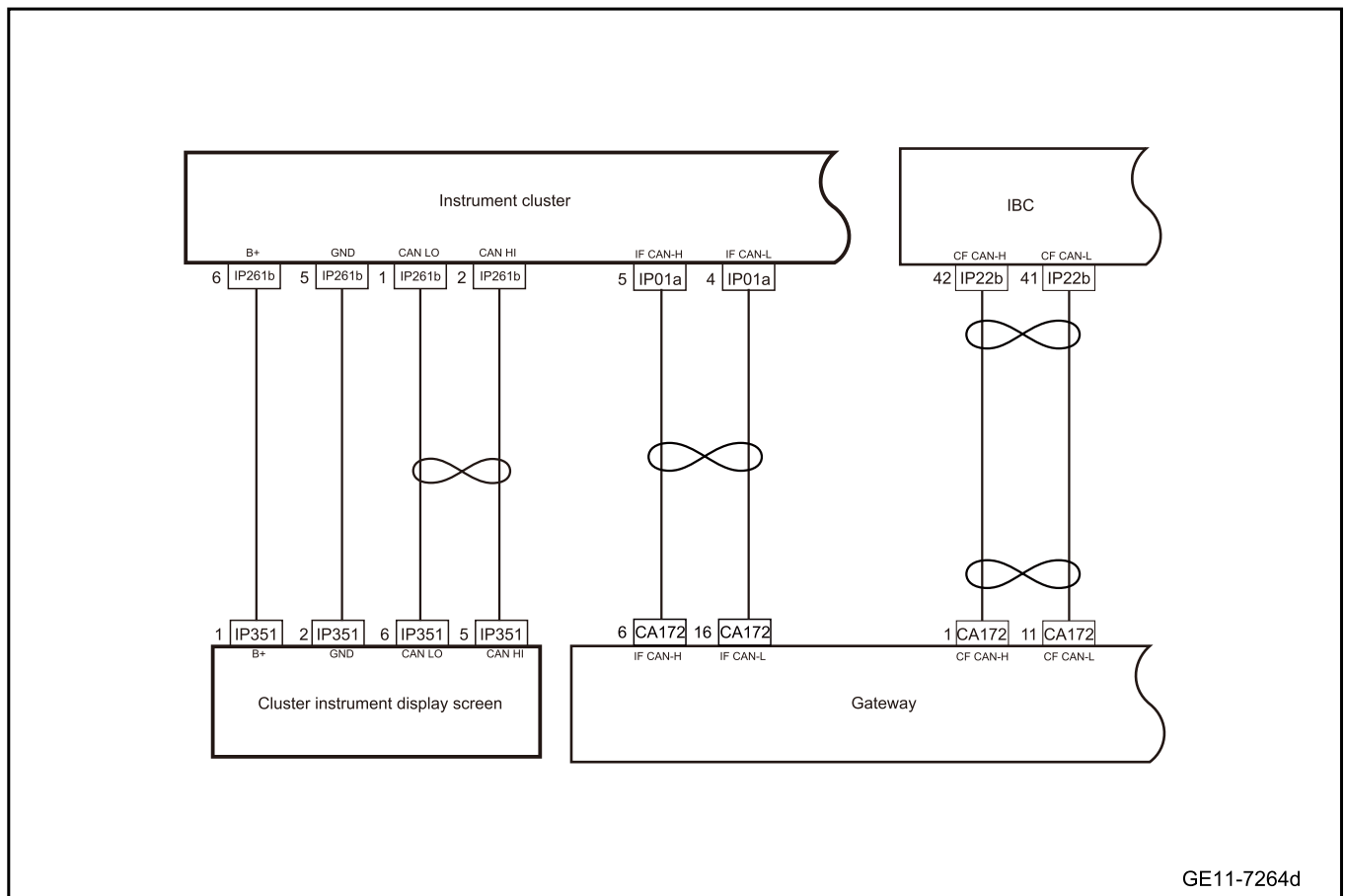
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

Step 14	System is normal.
---------	-------------------

11.7.6.26 Indicator light of the high beam is not on(Type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the instrument cluster, instrument cluster display screen and IBC harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes ➤

Step 2	Check whether the high beam is working.
--------	---

- A. Switch on the high beam and check whether the high beam is working.

No ➤ Refer to [High Beam Lamp Does Not Work](#)

Yes ➤

Step 3	Check whether the display on the instrument cluster is normal.
--------	--

No Refer to [fault of instrument cluster display screen \(Type II\)](#)

Yes

Step 4 | Check IF-CAN bus integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 6 | Program and set the IBC.

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Replace the instrument cluster.
--------	---------------------------------

- A. To replace the instrument cluster, please refer to [Replacement of the Instrument Cluster Display Screen \(Type II\)](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 9	Reprogram and reset the instrument cluster.
--------	---

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 10	Replace the instrument cluster.
---------	---------------------------------

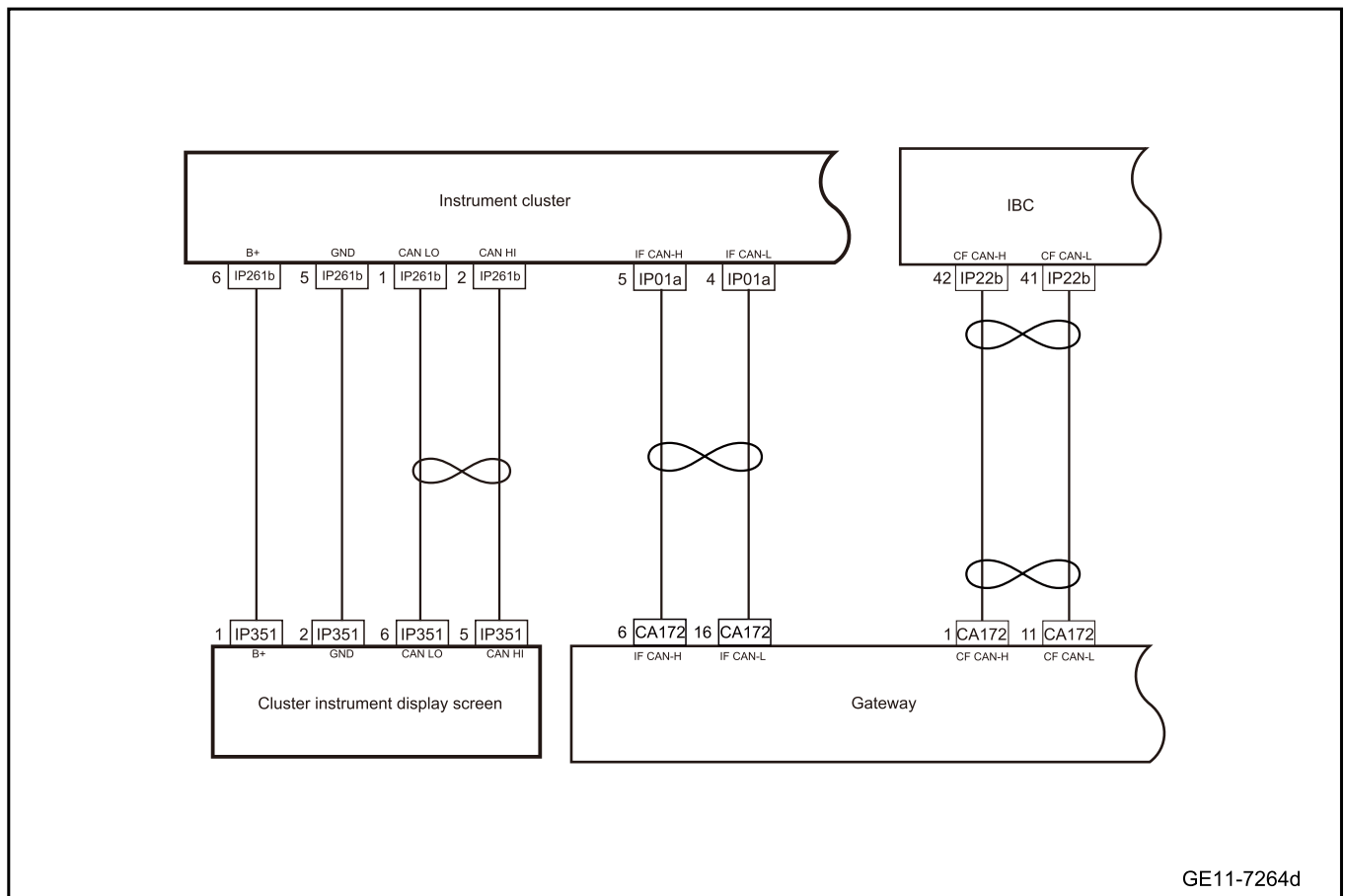
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

Step 11	System is normal.
---------	-------------------

11.7.6.27 Indicator light of the rear fog lamp is not on(Type II).

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the instrument cluster, instrument cluster display screen, IBC and the driver side door lock motor harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check whether the rear fog lamp is operating.

- A. Turn on the rear fog lamp and check whether the rear fog lamp operates.

No

Refer to [Rear Fog Lamp Does Not Work](#)

Yes

Step 3 Check whether the display on the instrument cluster is normal.

No Refer to [fault of instrument cluster display screen\(Type II\)](#)

Yes

Step 4 | Check IF-CAN bus integrity.

- A. To check the integrity of the IF-CAN bus, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 5 | Check CF-CAN bus integrity.

- A. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CAN network is normal.

No Priority should be given to excluding the integrity fault of the CAN bus.

Yes

Step 6 | Program and set the IBC.

- A. Program and set the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)
- C. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Replace the instrument cluster.

- A. To replace the instrument cluster, please refer to [Replacement of the Instrument Cluster Display Screen](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Reprogram and reset the instrument cluster.

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10
10 Replace the instrument cluster.

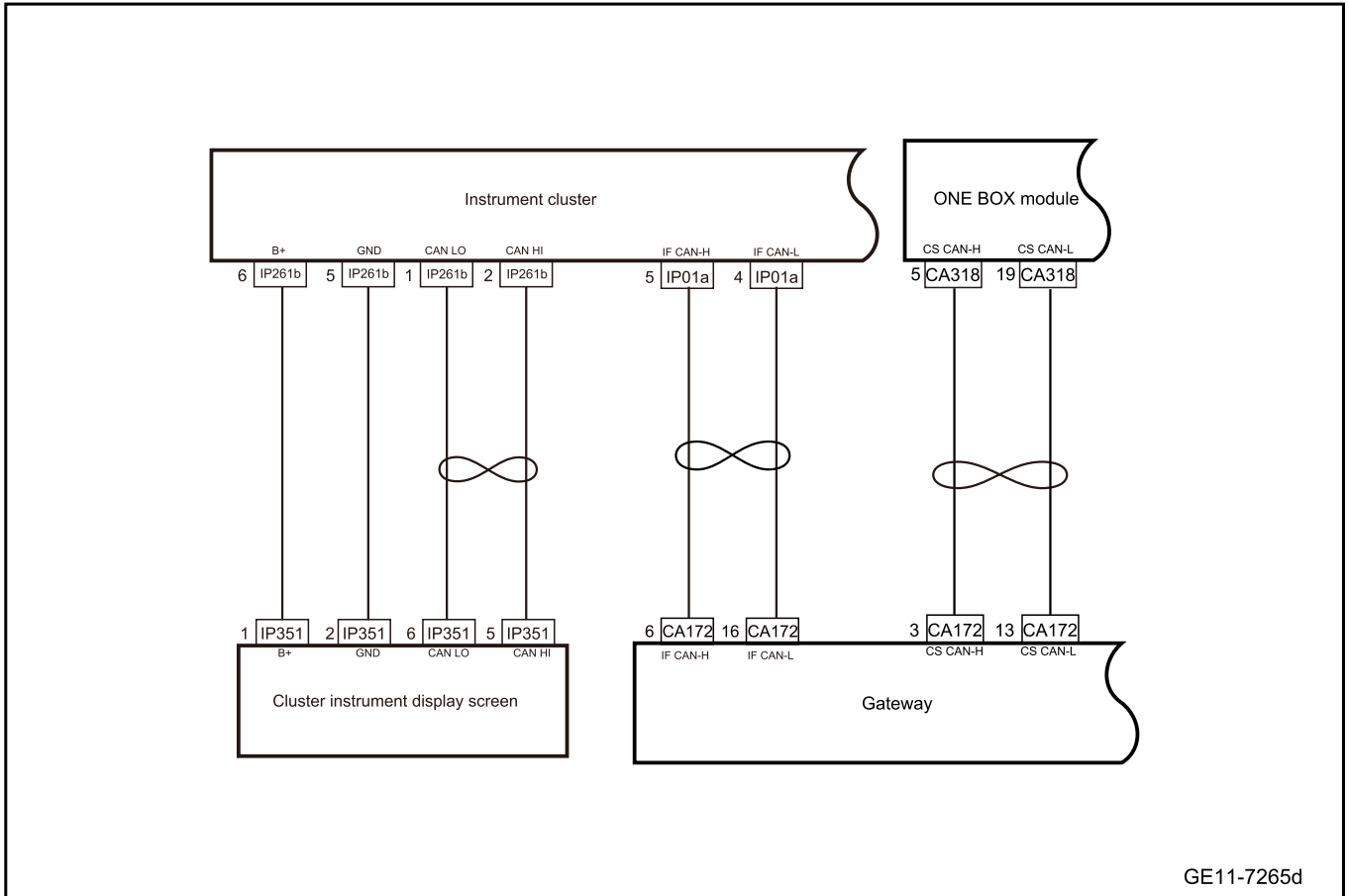
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

Step 11 System is normal.

11.7.6.28 Parking brake indicator is always off(Type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check instrument cluster, instrument cluster display screen and ONE BOX module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the display on the instrument cluster is normal.
--------	--

No

Refer to [fault of instrument cluster display screen\(Type II\)](#)

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. Check the integrity of IF-CAN network, refer to the [IF-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the trouble of imperfect CAN network.

Yes

Step 4 Check the CS-CAN network integrity.

- A. Check the integrity of CS-CAN network, refer to the [iCS-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the trouble of imperfect CAN network.

Yes

Step 5 Program and set the ONE BOX module.

- A. Program and set the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the ONE BOX module.

- A. To replace the ONE BOX module, please refer to [Replacement of ONE BOX](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the instrument cluster display screen.

- A. To replace the instrument cluster display screen, please refer to [Replacement of the Instrument Cluster Display Screen](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Reprogram and reset the instrument cluster.
--------	---

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Replace the instrument cluster.
--------	---------------------------------

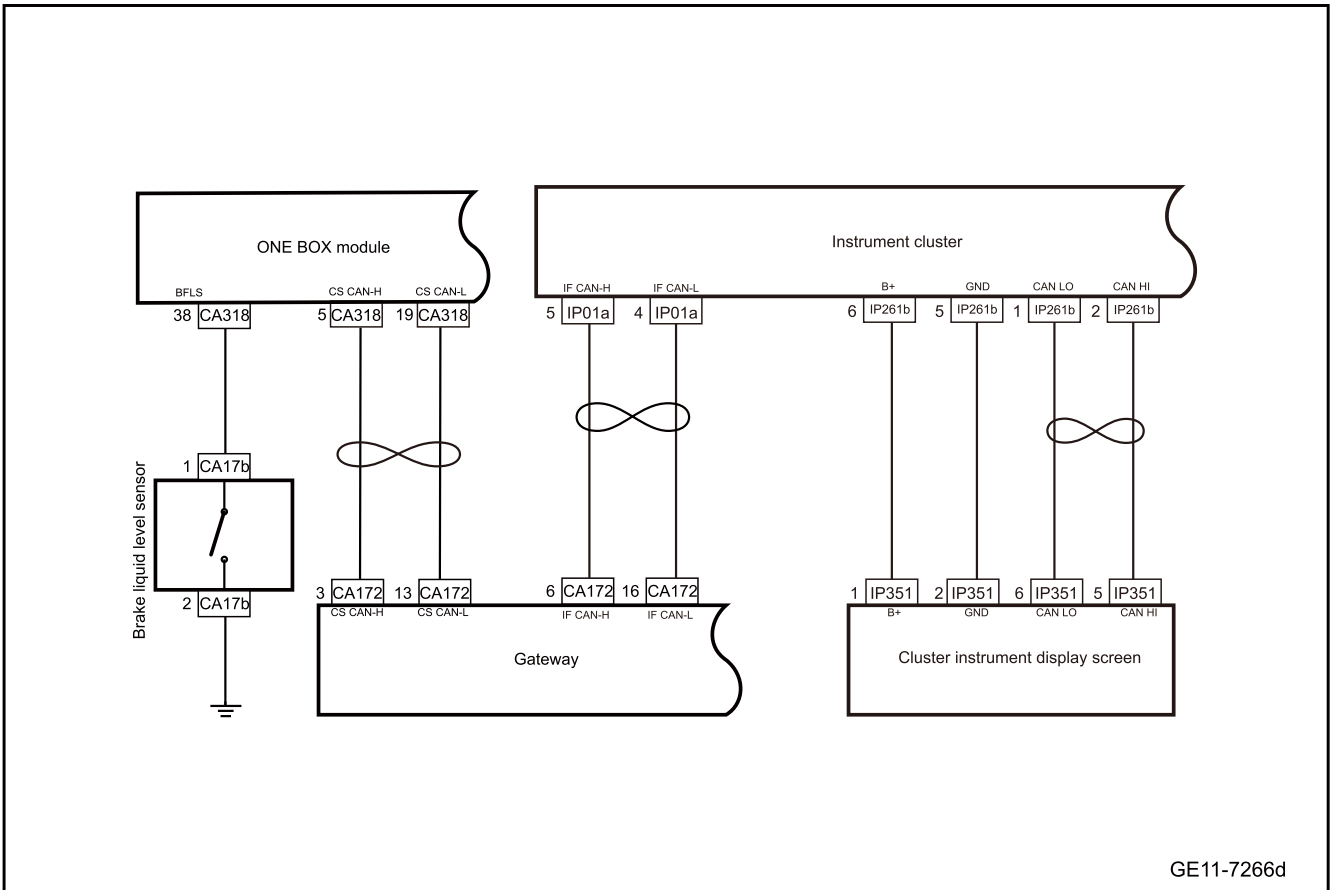
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Controller Cluster](#)

Next step

Step 10	System is normal.
---------	-------------------

11.7.6.29 Brake fluid level indicator is not on(Type II)

1. Schematic circuit diagram:



GE11-7266d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

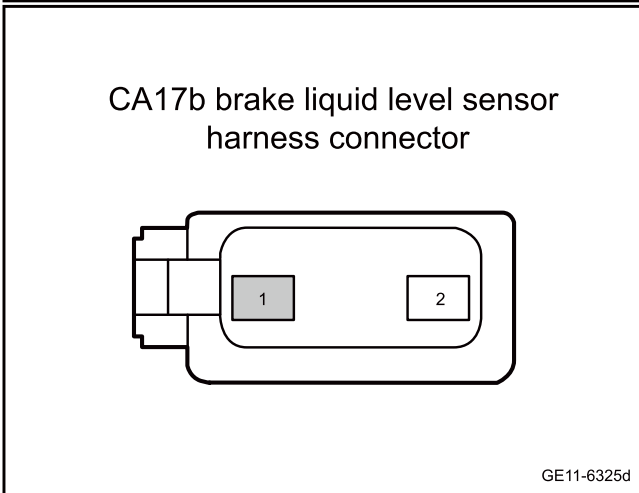
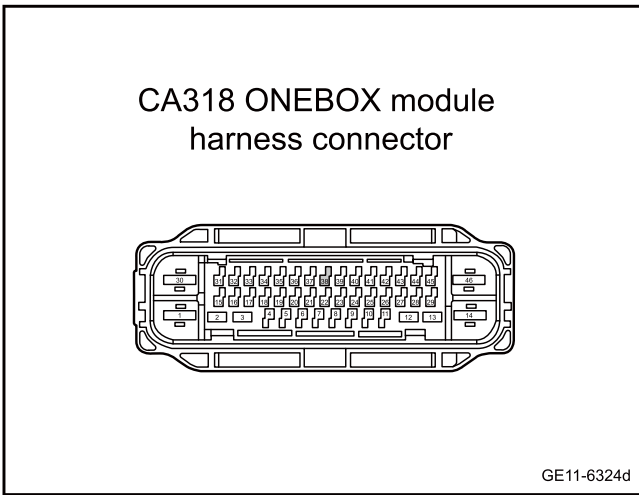
- A. Check the harness connector of brake fluid sensor for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check whether the harness between ONE BOX module and brake fluid sensor is opened.
--------	--



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA17b of brake fluid level sensor
- C. Disconnect the ONE BOX module harness connector CA318.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA318(38)	CA17b(1)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

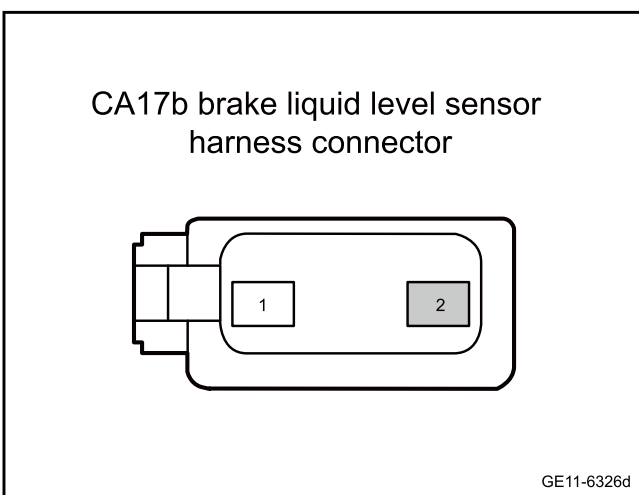
Measure terminal 1	Measure terminal 2	Standard value
CA318(38)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 | Check whether the grounding harness of brake fluid sensor is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA17b of brake fluid level sensor
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA17b(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the display on the instrument cluster is normal.

No

Refer to [fault of instrument cluster display screen\(Type II\)](#)

Yes

Step 5 Check the IF-CAN network integrity.

- A. Check the integrity of IF-CAN network, refer to the [IF-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the trouble of imperfect CAN network.

Yes

Step 6 Check the CS-CAN network integrity.

- A. Check the integrity of CS-CAN network, refer to the [iCS-CAN network integrity check](#)
- B. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the trouble of imperfect CAN network.

Yes

Step 7 Replace brake fluid sensor.

- A. To replace the brake fluid level sensor, please refer to [Replacement of Brake Control Module Assembly](#)
- B. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 8 Program and set the ONE BOX module.

- A. Program and set the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 | Replace the ONE BOX module.

- A. Replace the ONE BOX control module, refer to [Replacement of brake control module](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10 | Replace the instrument cluster display screen.

- A. To replace the instrument cluster display screen, please refer to [Replacement of the Instrument Cluster Display Screen](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11 | Reprogram and reset the instrument cluster.

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 12 | Replace the instrument cluster.

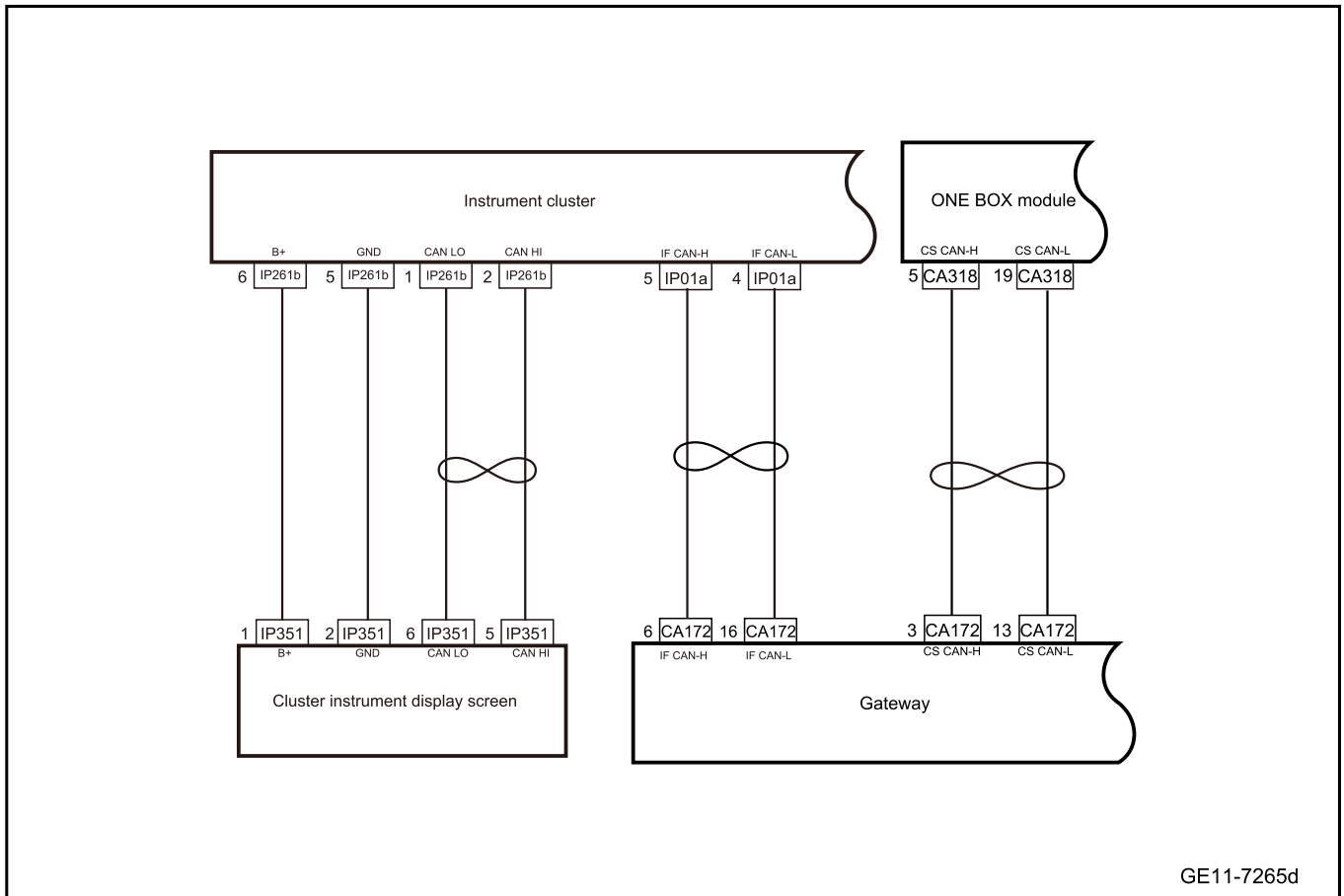
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

Step 13 | System is normal.

11.7.6.30 Abnormal indication of speedometer(Type II)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check instrument cluster and ONE BOX module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 2	Check whether the display on the instrument cluster is normal.
--------	--

No ➤ Refer to [fault of instrument cluster display screen\(Type II\)](#)

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. To check the communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5 Program and set the ONE BOX module.

- A. Program and set the ONE BOX module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Replace the ONE BOX module.

- A. Replace the ONE BOX control module, refer to [Replacement of brake control module](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the instrument cluster display screen.

- A. To replace the instrument cluster display screen, please refer to [Replacement of the Instrument Cluster Display Screen \(Type II\)](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Reprogram and reset the instrument cluster.
--------	---

- A. Reprogram and reset the instrument cluster. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Replace the instrument cluster.
--------	---------------------------------

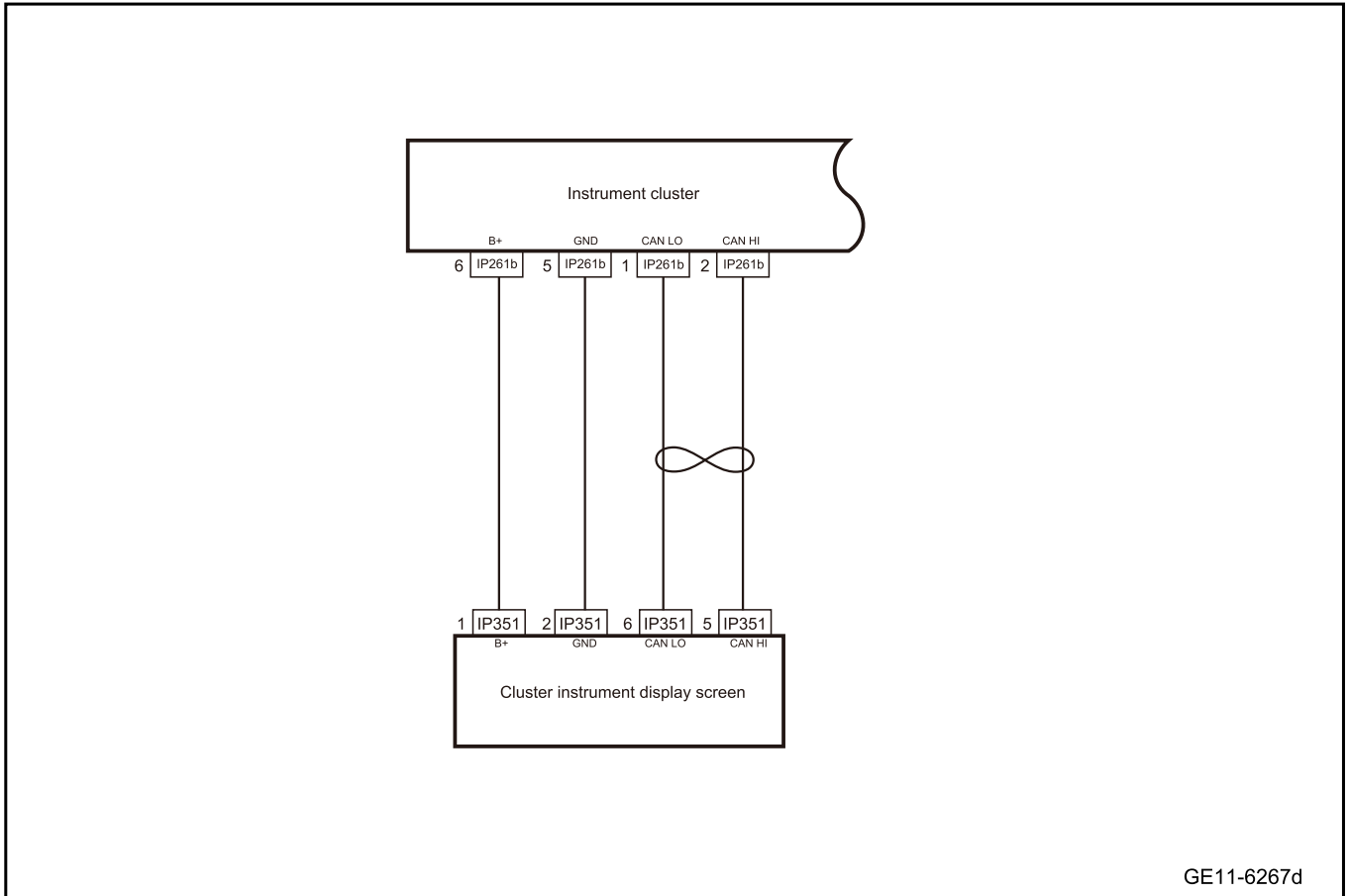
- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

Step 10	System is normal.
---------	-------------------

11.7.6.31 Instrument Cluster Display Screen Fault (Type II)

1. Circuit diagram:



2. Diagnosis steps:

Step 1	Primary check.
--------	----------------

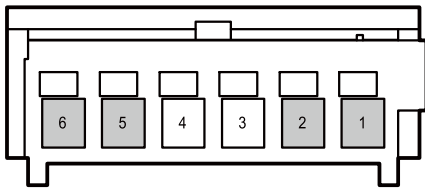
- A. Check the instrument cluster display screen and instrument cluster for signs of damage, getting adrift, etc.
- B. Check the instrument cluster display screen and instrument cluster harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

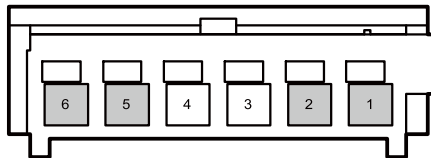
Step 2	Check the circuit between the instrument cluster and the instrument cluster display screen.
--------	---

IP261b cluster instrument harness connector



GE02-7343d

IP351 cluster instrument harness connector



GE02-7344d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the instrument cluster harness connector IP261b.
- C. Disconnect the instrument cluster display screen harness connector IP351.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(1)	IP351(6)	Standard resistance: less than 1Ω
IP261b(2)	IP351(5)	
IP261b(5)	IP351(2)	
IP261b(6)	IP351(1)	Standard resistance: 10KΩ or higher
IP261b(1)	Vehicle body is grounded.	
IP261b(2)		
IP261b(5)		
IP261b(6)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP261b(1)	Vehicle body is grounded.	Standard voltage: 0V
IP261b(2)		
IP261b(5)		
IP261b(6)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace the instrument cluster display screen.

- A. Replace the instrument cluster display screen. Refer to [Replacement of the Instrument Cluster Display screen \(Type II\)](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 4	Reprogram and reset the instrument cluster.
--------	---

- A. Reprogram and reset the instrument cluster. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace the instrument cluster.
--------	---------------------------------

- A. Replace the instrument cluster. Refer to [Replacement of the Instrument Cluster Controller Assembly](#)

Next step

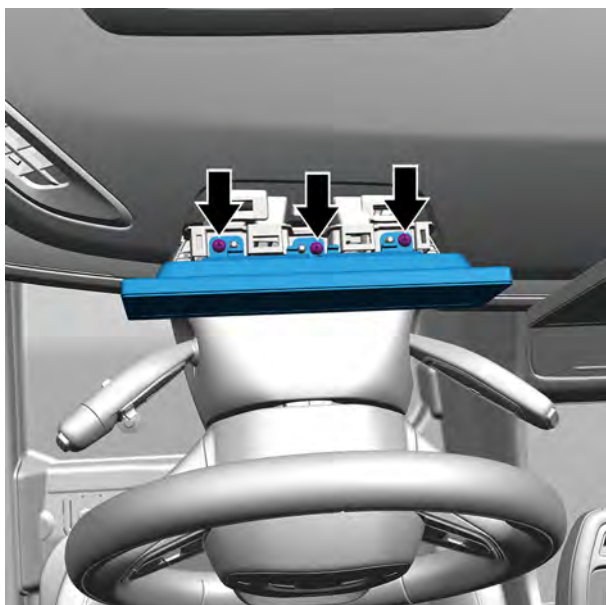
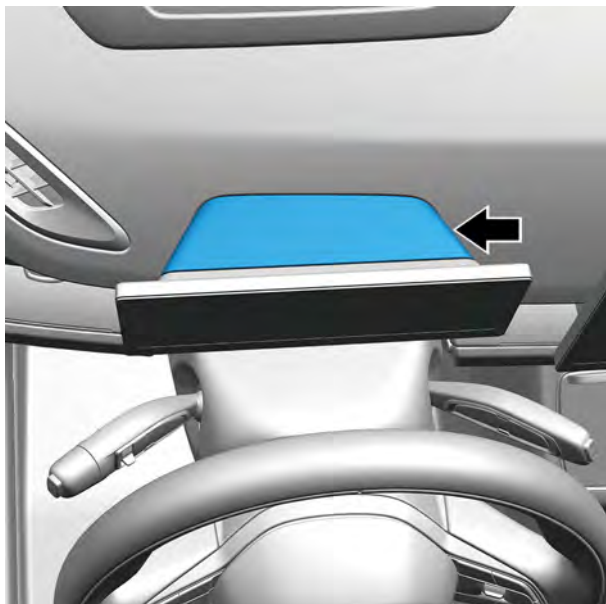
Step 6	System is normal.
--------	-------------------

11.7.7 Removing and installing

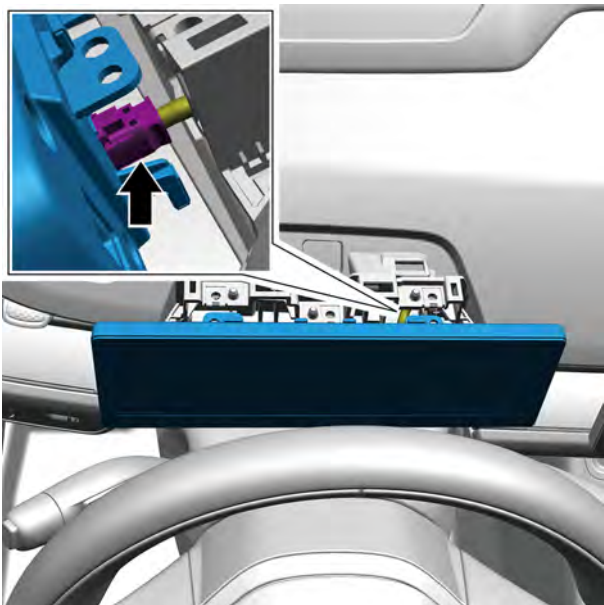
11.7.7.1 Replacement of Instrument Cluster Display Screen (Type I)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Pry off the instrument cluster brim.



- 3 Remove the 3 fixing screws connecting the instrument cluster display screen and instrument panel body.



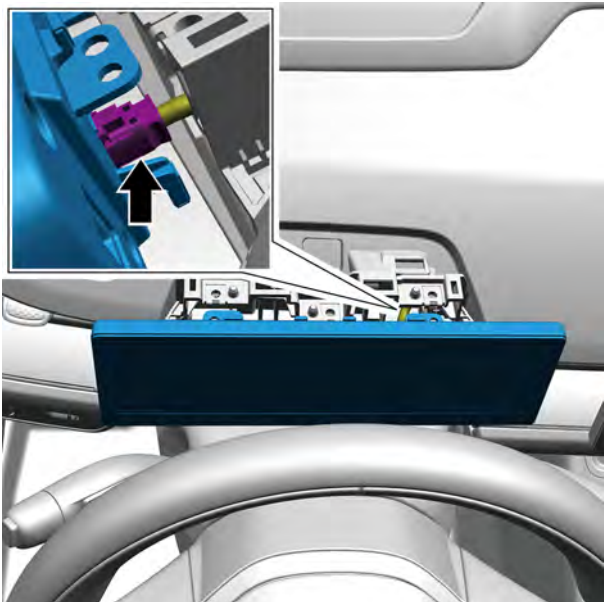
- 4 Disconnect the 1 harness connector of the instrument cluster display screen and instrument harness connector.
- 5 Take off the instrument cluster display screen.

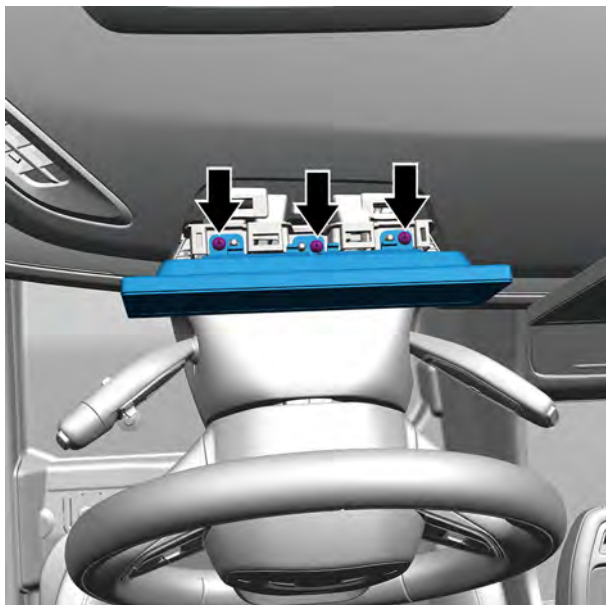
Installation procedure

- 1 Move the instrument cluster display screen to the installation position.
- 2 Connect the harness connector B connecting the instrument panel harness connector and the instrument cluster display screen.

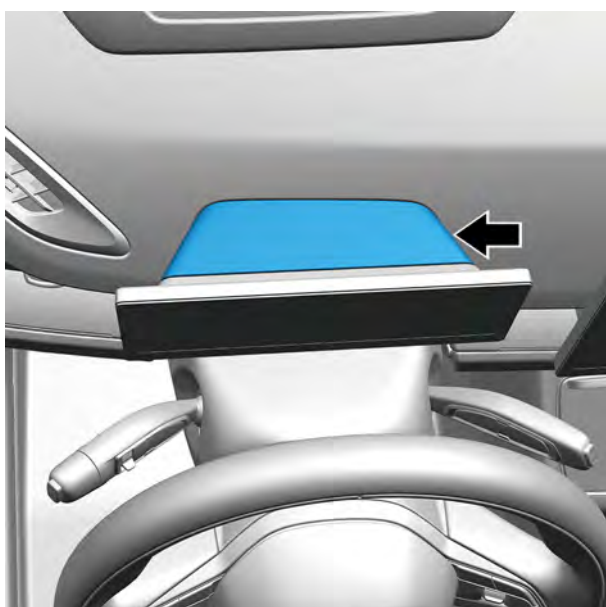
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.





- 3 Install the 3 fixing bolts connecting the instrument panel body and the instrument cluster display screen.
Torque: 3N·m



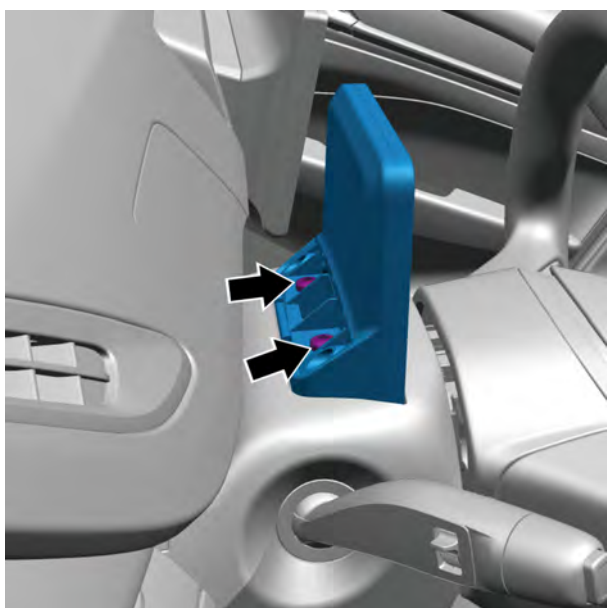
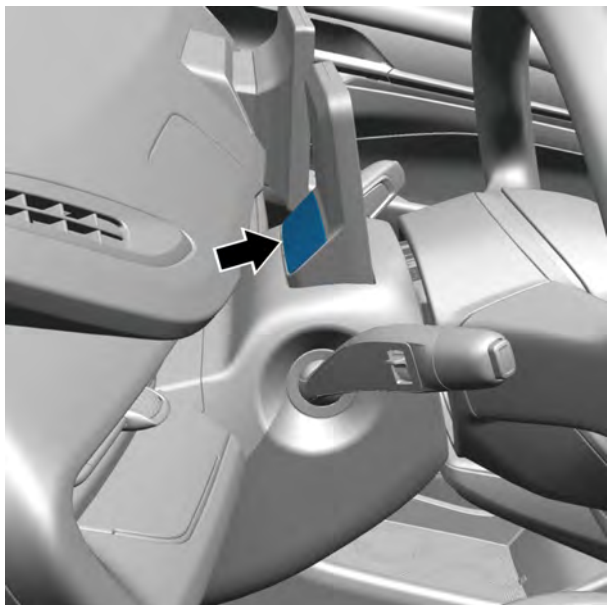
- 4 Install the instrument cluster brim.

- 5 Connect the negative cable of battery.

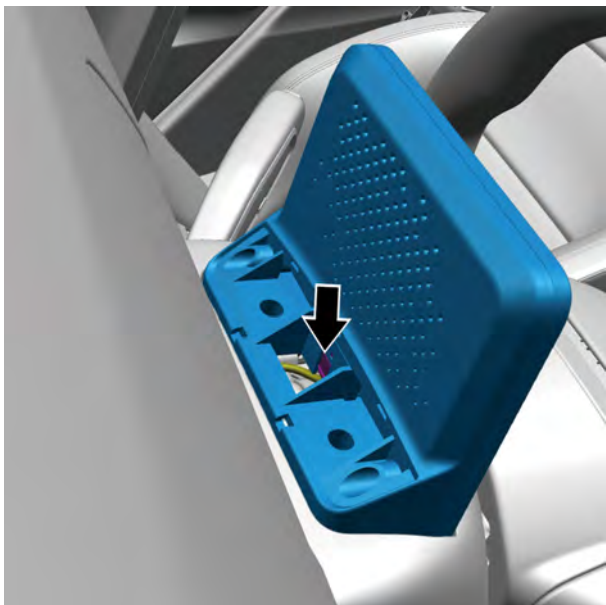
11.7.7.2 Replacement of Instrument Cluster Display Screen (Type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Use the plastic prying plate to pry off the instrument cluster brim.

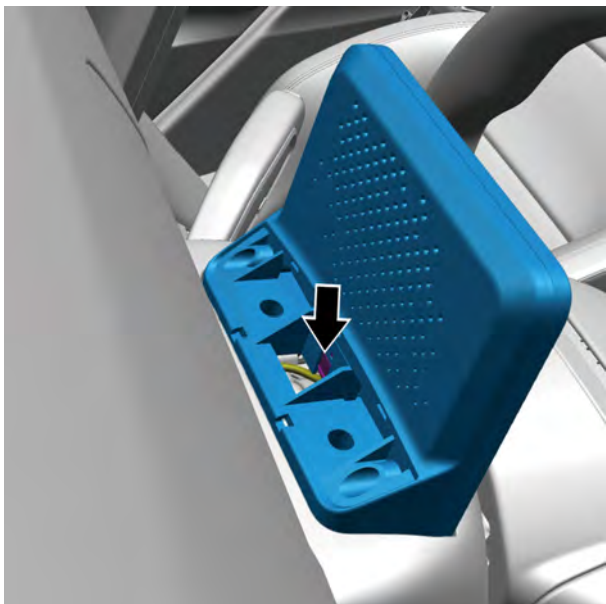


- 3 Remove the 2 fixing screws connecting the instrument cluster display screen and instrument cluster assembly bracket.



- 4 Disconnect the 1 harness connector of the instrument cluster harness and instrument cluster display screen.
- 5 Take off the instrument cluster display screen.

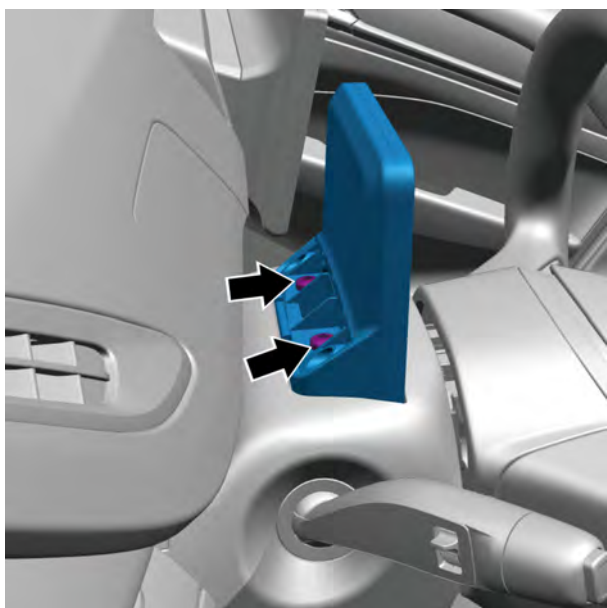
Installation procedure



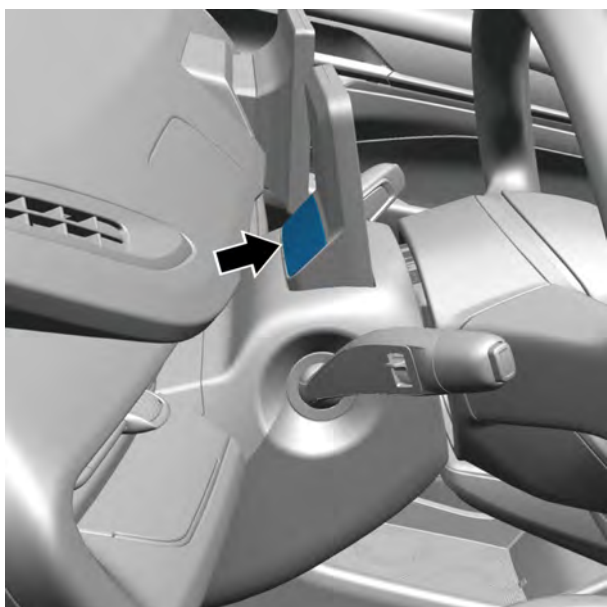
- 1 Move the instrument cluster display screen to the installation position.
- 2 Connect the 1 harness connector of the instrument cluster harness and instrument cluster display screen.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 3 Install the 2 fixing screws of the instrument cluster display screen and instrument cluster assembly bracket.



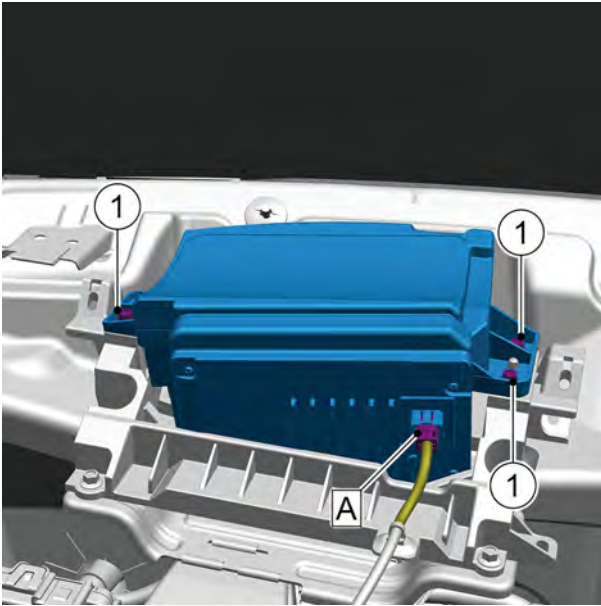
- 4 Install the instrument cluster brim.

- 5 Connect the negative cable of battery.

11.7.7.3 Replacement of Heads up display (HUD)

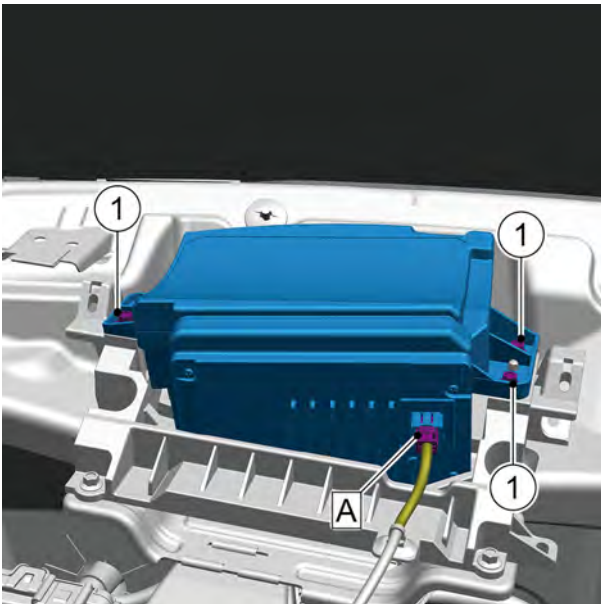
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the dashboard body assembly. Refer to [Replacement of Dashboard Body Assembly](#)



- 3 Disconnect the 1 harness connector A of the instrument panel harness and HUD.
- 4 Remove the 3 set screws from the HUD and HUD mounting bracket.
- 5 Heads up display (HUD) is taken down.

Installation procedure



- 1 Install and tighten the 3 fixing screws 1 of the HUD and HUD display bracket.
Torque: 10N·m
- 2 Connect the harness connector A connecting the instrument panel harness and the HUD.

Caution

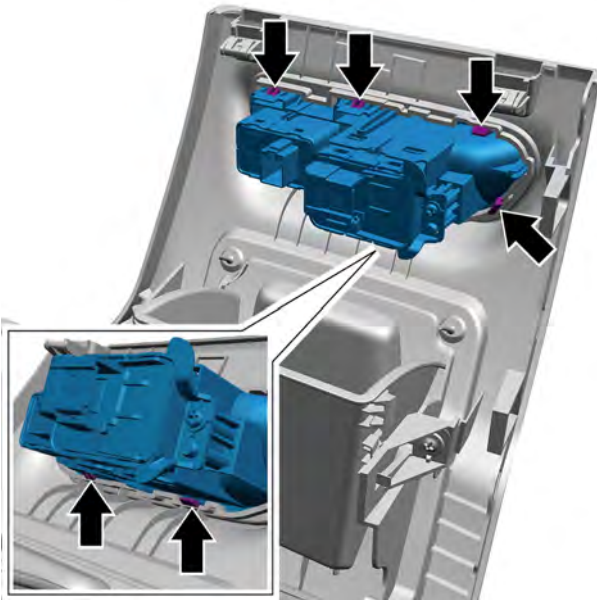
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the dashboard body assembly.
- 5 Connect the negative cable of battery.

11.7.7.4 Replacement of instrument cluster switch

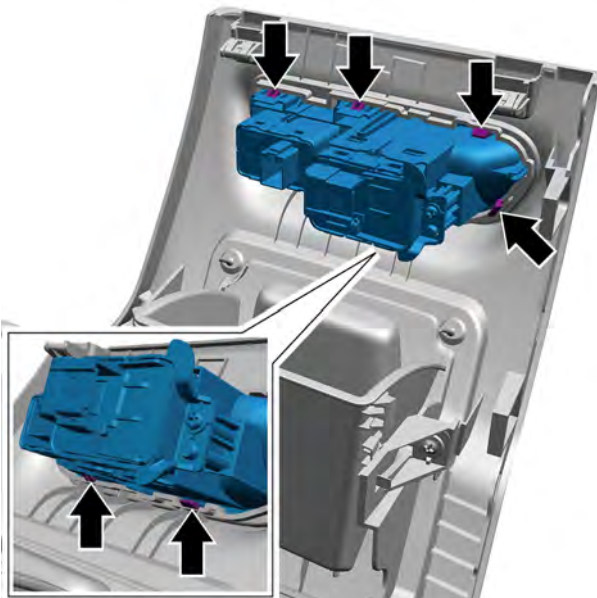
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Pry off the switch on the instrument cluster with a flat head screwdriver.



Installation procedure

- 1 Move the instrument cluster switch to the installation position.
- 2 Insert the instrument cluster switch into the left lower shield assembly of the instrument panel.

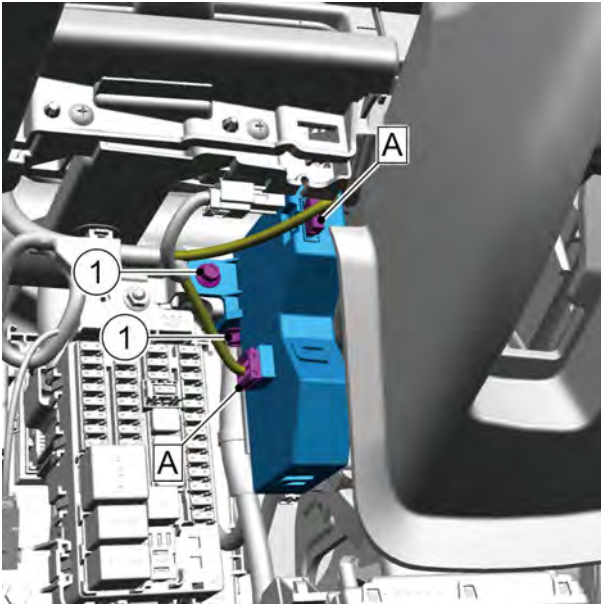


- 3 Install the left lower shield assembly of the dashboard.
- 4 Connect the negative cable of battery.

11.7.7.5 Replacement of combination instrument controller assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Disconnect the 2 harness connectors A connecting the instrument harness with the instrument cluster controller assembly.
- 4 Remove the 2 fixing bolts 1 connecting the instrument cluster controller assembly with the cross member of the instrument panel.
- 5 Take off the instrument cluster controller assembly.

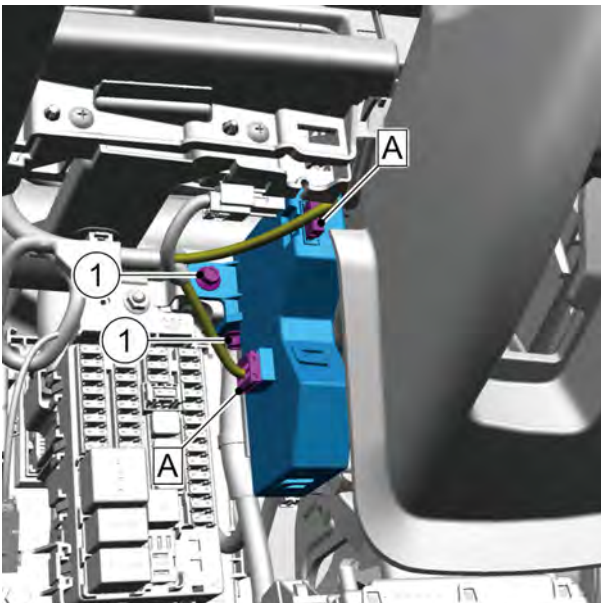


Installation procedure

- 1 Move the instrument cluster controller to the installation position.
- 2 Install the 2 fixing bolts 1 connecting the instrument cluster controller with the cross member of the instrument panel.
- 3 Connect the 2 harness connectors A of the instrument harness and instrument cluster controller assembly.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 4 Install the left lower shield assembly of the dashboard.
- 5 Connect the negative cable of battery.

11.8 Sunroof

11.8.1 Specification

11.8.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Roof sunshade module fixing bolt	M6×20	8 -10
Roof sunshade assembly fixing bolt	M6×20	8 -10
Roof sunshade assembly fixing nut	M6	8 -10

11.8.2 Description and operation

11.8.2.1 Description and Operations

System composition

- Sunshade module
- Sunshade switch
- Panoramic sunroof
- Sunroof Sunshade

Panoramic sunroof

The panoramic sunroof equipped by the vehicle is in the non-openable state.

Electric sunshade

Opening/closing sunshade of sunroof

- Toggle the sunshade switch backward and release it, and the sunshade will automatically open to the fully opened position.
- Toggle the sunshade switch backward and hold, so that the sunshade slides in inching when it is opened.
- Toggle the sunshade switch forward and release it, and the sunshade will automatically slide to the fully closed position.
- Toggle the sunshade switch forward and hold, so that the sunshade slides in inching when it is closed.

One-touch on/off self-learning of electric sunshade

After the electric sunshade motor runs continuously for more than 60 seconds, it needs to re-learn to realize the one-click opening/closing function of the electric sunshade.

The self-learning steps are as follows:

- Toggle the sunshade switch forward and hold it until the sunshade is fully closed, and release the sunshade switch.
- Toggle the sunshade switch forward again and hold it for 13 seconds, the electric sunshade motor will make two [pine] sounds. At this time, the one-click opening/closing function of the electric sunshade is self-learned.

11.8.3 System working principles

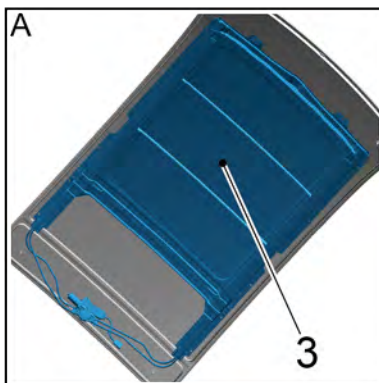
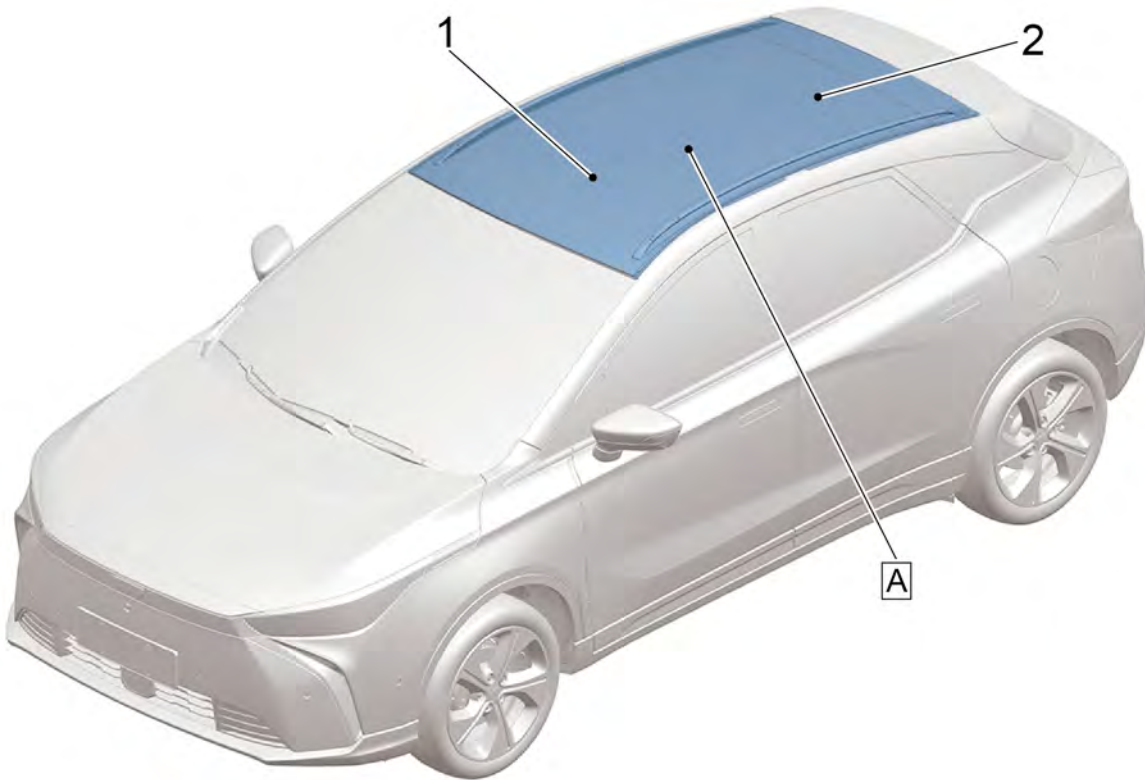
11.8.3.1 System Working Principles

When operating the sunshade switch, the sunshade module drives the sunshade motor to run according to the switch signal.

When the vehicle uses the remote control to close the sunshade, long press the locking button on the smart key, and when the conditions are met (multimedia sets the power supply of the vehicle to OFF, the doors are closed, the sunshade is initialized normally, etc.), the key request signal is analyzed by the IBC and controls the sunshade control module through the LIN line to close the sunshade.

11.8.4 Part position

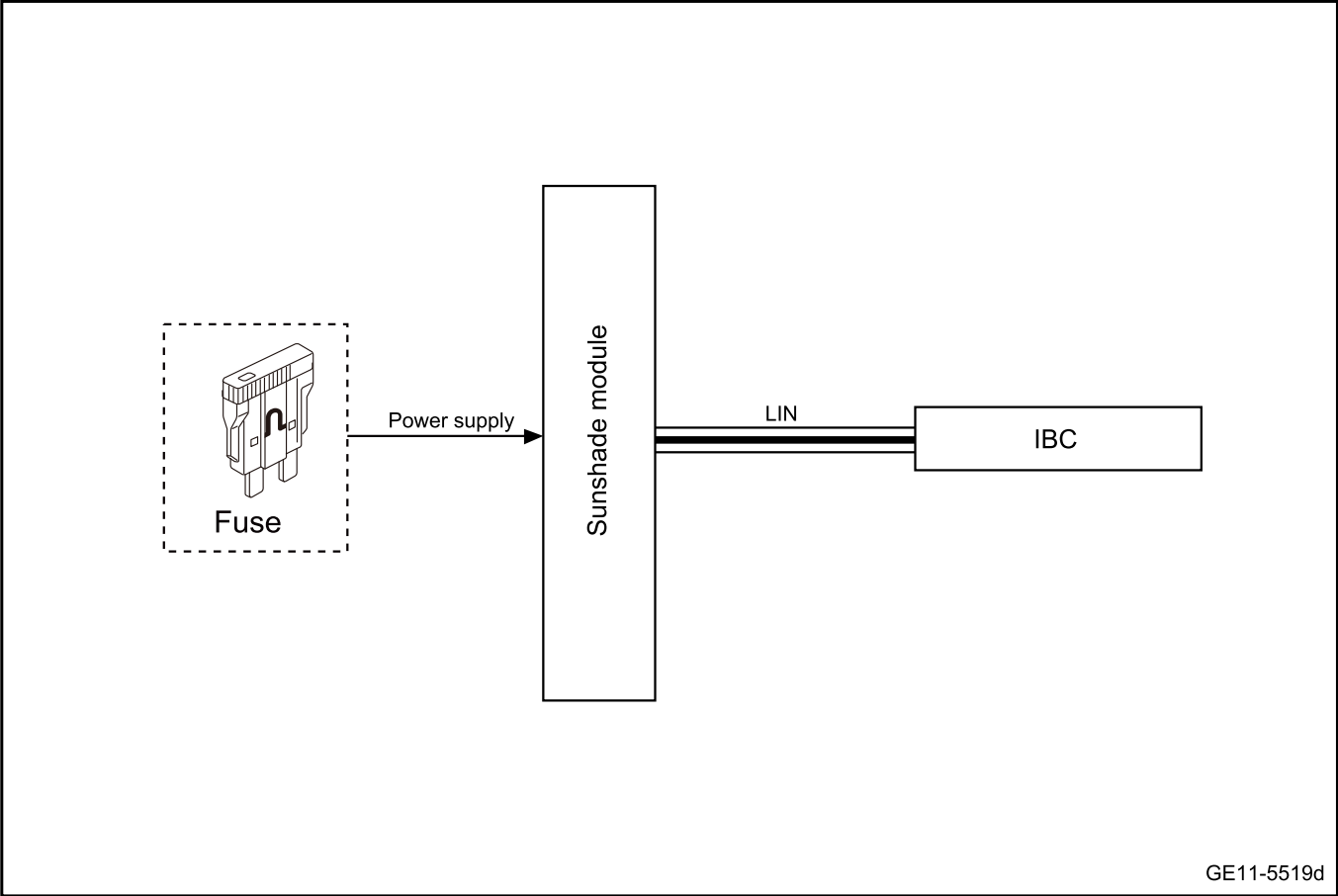
11.8.4.1 Part Position



- | | |
|--|---------------------------|
| 1. Front glass assembly of panoramic glass | 3. Roof sunshade assembly |
| 2. Rear glass assembly of panoramic glass | |

11.8.5 Electrical block diagram

11.8.5.1 Electrical Schematic Diagram of Sunroof System



11.8.6 Diagnostic information and procedures

11.8.6.1 Diagnosis Description

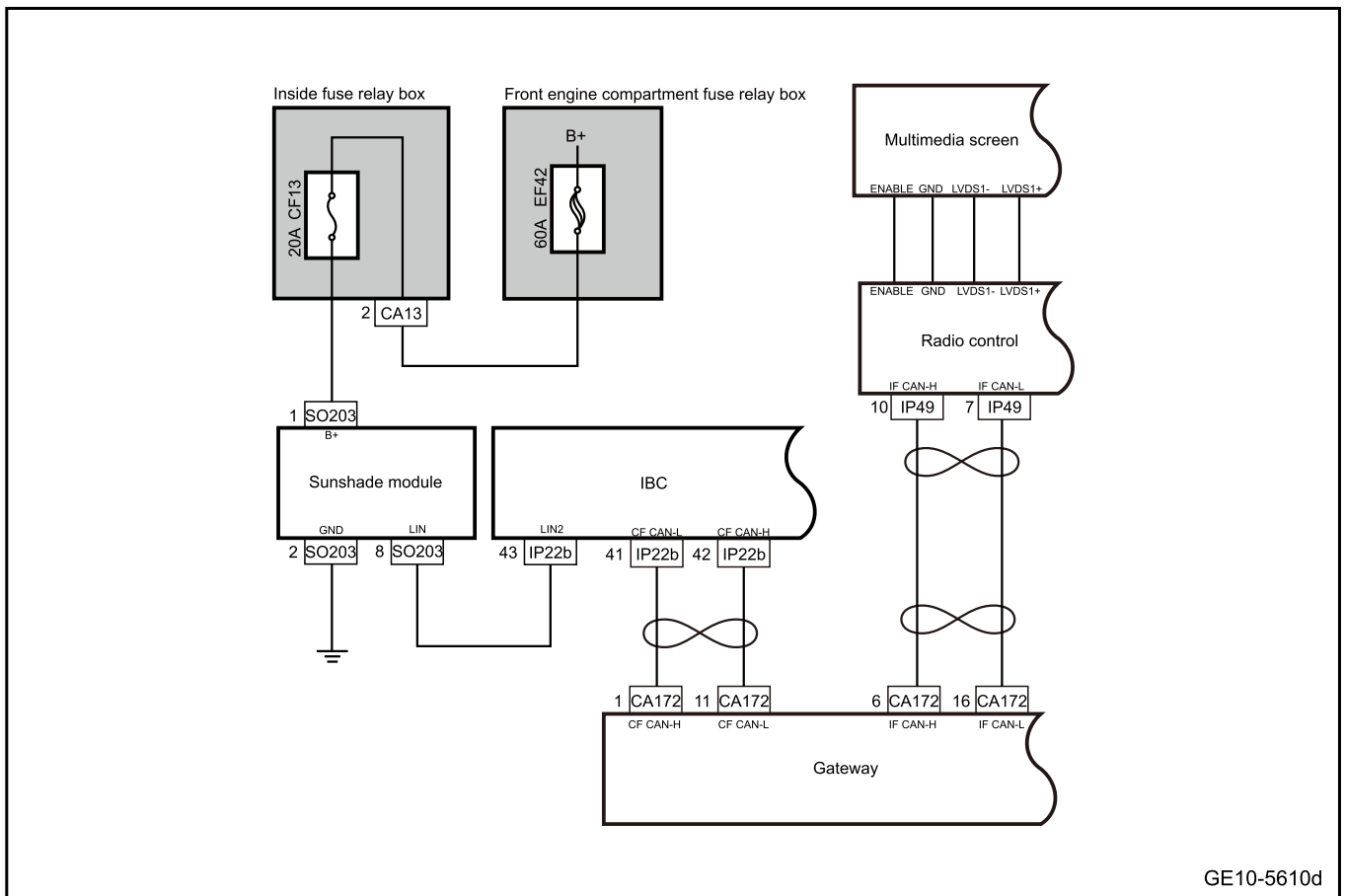
Before diagnosing the sunroof fault, refer to the Description and operation and the System working principle. Understand and familiarize yourself with the working principle of the sunroof, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Any fault diagnosis of sunroof should start with regular inspection 11.8.7.2 and it will guide maintenance personnel to take the next logical step to conduct fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.8.6.2 Routine inspection

- Check after-sale installations that may affect the normal operation of the sunroof and ensure that these installations cannot affect the sunroof.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- Check and ensure that the sunroof is initialized properly.

11.8.6.3 Sunshade curtain circuit trouble

1. Schematic circuit diagram:



1. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the sunshade curtain module and IBC for signs of damage, deformation, stain, loosening, etc.
- B. Check the sunshade curtain module and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF13 and check whether the fuse is blown.

Rated capacity of fuse: 20A

- C. Unplug the EF42 fuse in the front engine compartment and check whether the fuse is blown out.

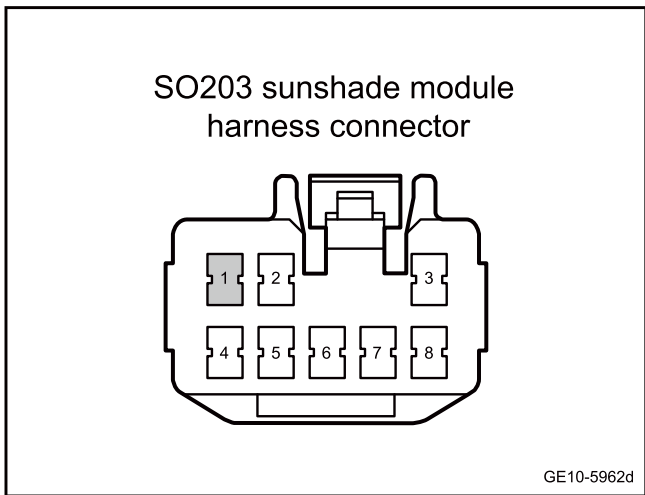
Rated capacity of fuse: 60A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check whether the sunshade curtain module voltage is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the sunshade curtain module harness connector SO203.
- C. Disconnect the IBC harness connector IP22b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO203(1)	Vehicle body is grounded.	Standard voltage: 11-14V

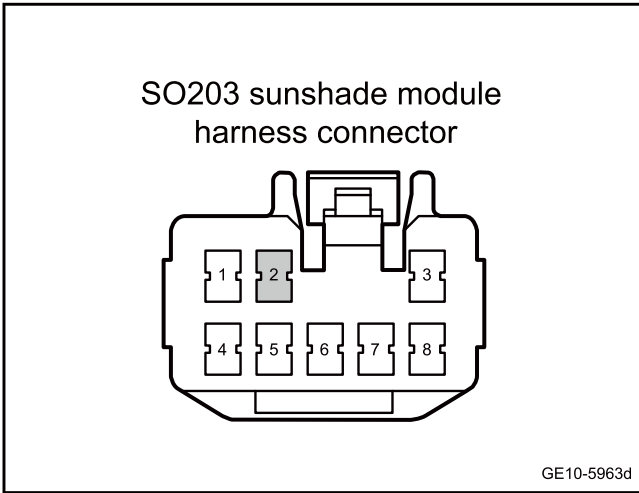
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check the grounding circuit of sunshade curtain module.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the sunshade curtain module harness connector SO203.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the terminals according to the table below:

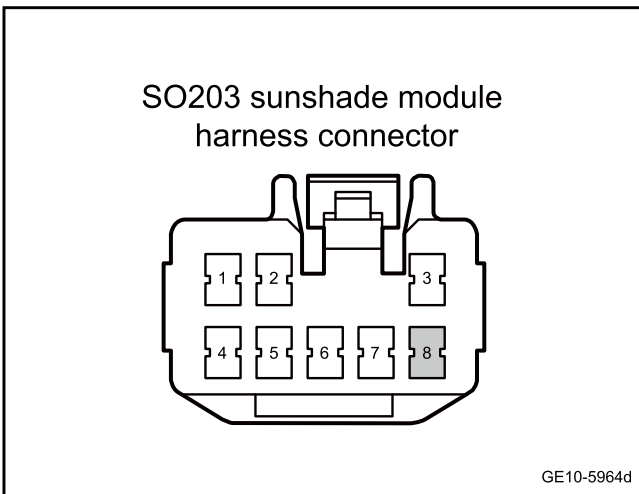
Measure terminal 1	Measure terminal 2	Standard value
SO203(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Check LIN communication harness of sunshade curtain module.



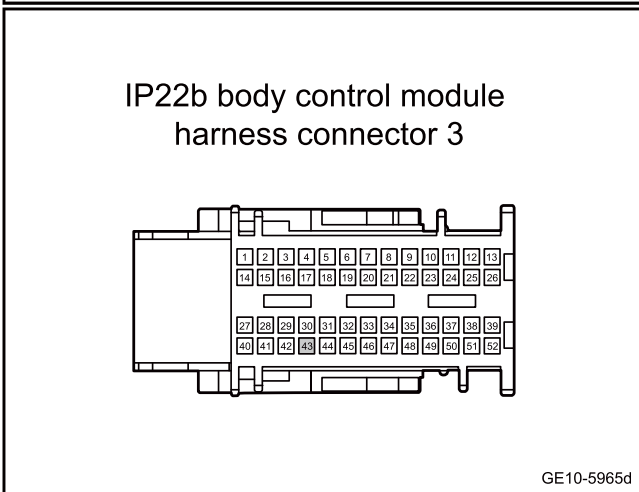
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the sunshade curtain module harness connector SO203.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO203(8)	IP22b(43)	Standard resistance: less than 1Ω
SO203(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO203(8)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.



No

Repair or replace the harness.

Yes

Step 8 Sunshade curtain module replacement

- A. Sunshade curtain module replacement Refer to Replacement of sunshade curtain module
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9 Replace the IBC.

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 10 Reprogram and reset the IBC.

- A. To reprogram and reset the IBC, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

11.8.7 Removing and installing

11.8.7.1 Replacement of roof sunshade plate assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

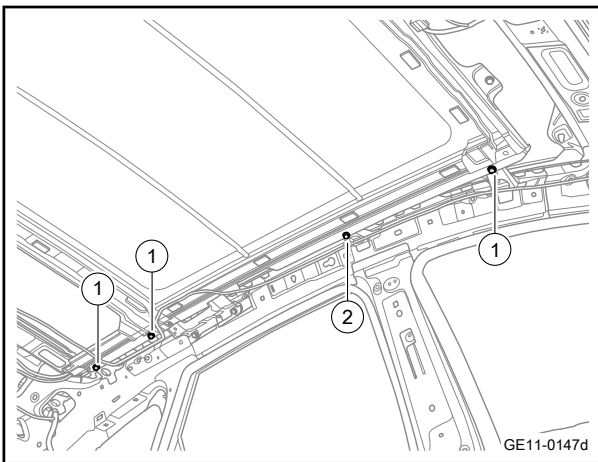
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove roof interior trim panel assembly. [Replacement of Roof Interior Trim Panel Assembly](#)
- 3 Remove sunshade curtain module. Refer to [Replacement of Sunshade Curtain Module](#)
- 4 Remove the 3 fixing bolts 1 of sunshade plate assembly.
- 5 Remove the 1 fixing nut 2 each on the left and right sides of the sunshade plate assembly.
- 6 Take off the sunshade plate assembly.

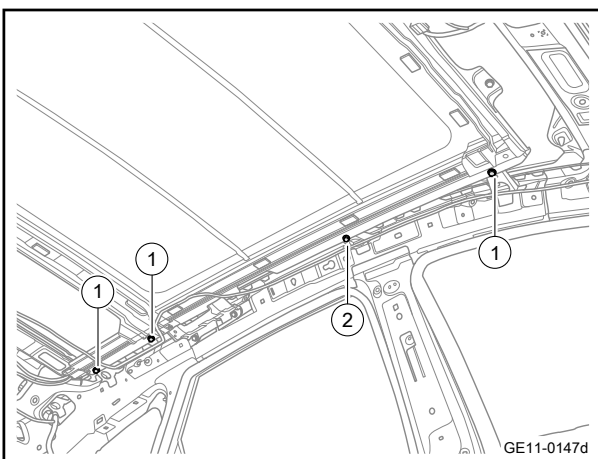
Caution

This step requires cooperation of two persons.



Installation procedure

- 1 Move the sunshade plate assembly to the installation position.
- 2 Install the 1 fixing nut 2 each on the left and right sides of the sunshade plate assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Install the 3 fixing bolts 1 of sunshade plate assembly.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



- 4 Sunshade module is installed.
- 5 Install roof interior trim panel assembly.
- 6 Connect the negative cable of battery.

11.8.7.2 Replacement of panoramic glass

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to ["Warnings Regarding Battery Disconnection" in "Warnings and Precautions"](#)

- 2 Remove roof interior trim panel assembly. Refer to [Replacement of Roof Interior Trim Panel Assembly](#)
- 3 Use a thin steel wire to cut the glass adhesive around the front windshield.

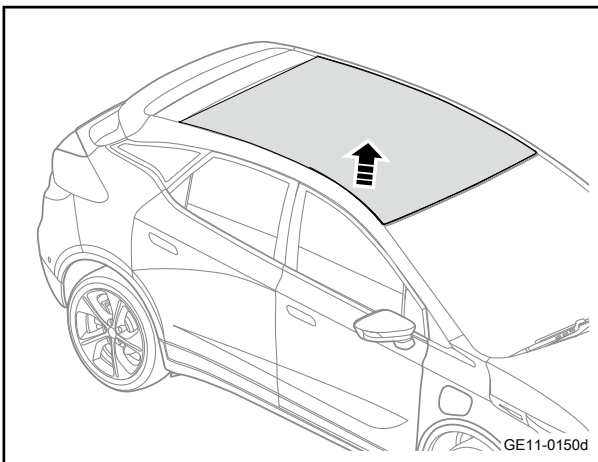
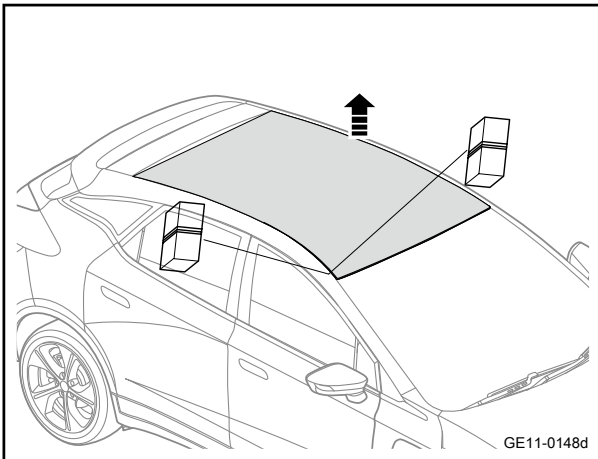
Caution

Wood blocks are wrapped at both ends of the fine steel wire and operated by two people to facilitate removal.

- 4 Take off the sunroof glass assembly.

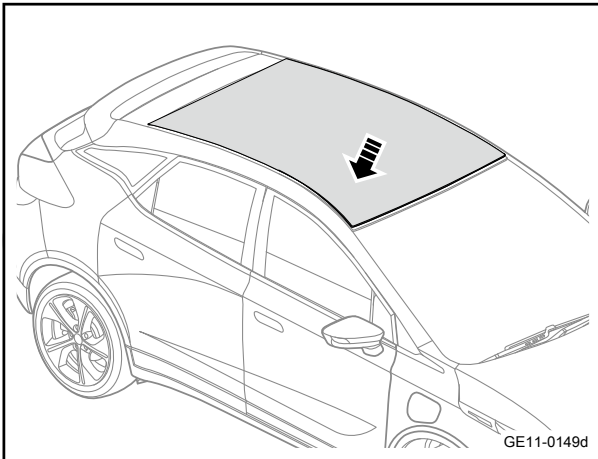
Caution

This step requires cooperation of two persons.



- 5 Use a blade to eliminate bonding agents on the frame of sunroof glass.
- 6 Use a lint-free rag moistened with a 50/50 volumetric mixture of industrial ethanol and water to clean the edges of the inner surface of the sunroof glass.

Installation procedure



- 1 Install the sunroof glass assembly. Before installation, apply glass sealant evenly on the joint surface between the roof and the sunroof glass assembly.
Standard value: 8 mm (0.3 in) wide and 8 mm (0.3 in) high

Caution

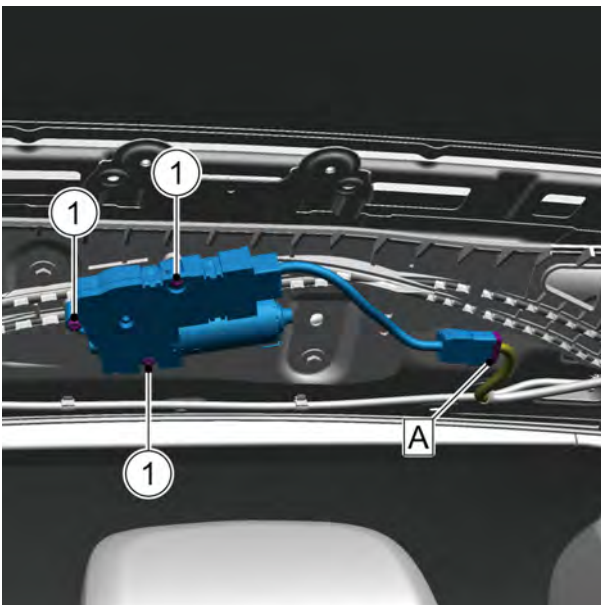
After the adhesive has hardened, pour water on the sunroof glass to check for water leaks. If water leaks, dry the sunroof glass and plug the leak with adhesive. If the water is still leaking, remove the sunroof glass and repeat the entire repair procedure.

- 2 Install roof interior trim panel assembly.
- 3 Connect the negative cable of battery.

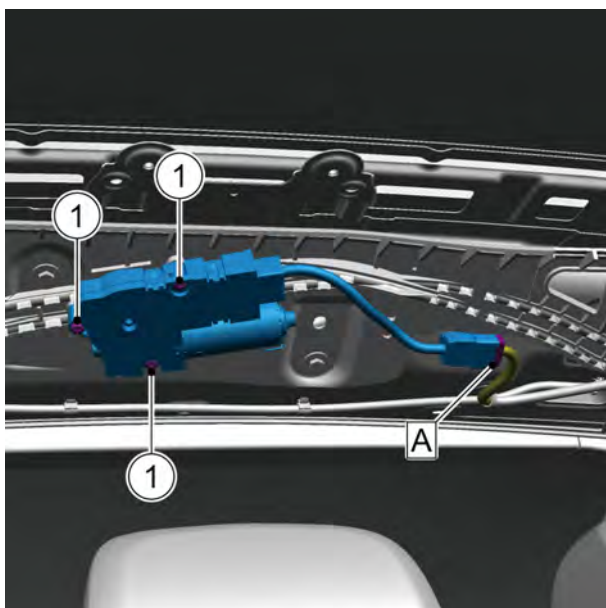
11.8.7.3 Replacement of sunshade curtain module

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove roof interior trim panel assembly. [Replacement of Roof Interior Trim Panel Assembly](#)
- 3 Disconnect the 1 harness connectors 1 connecting the floor harness with the sunshade curtain module.
- 4 Remove the 3 fixing bolts 1 connecting the sunshade module with the panoramic sunshade curtain.
- 5 Sunshade curtain module is taken off.



Installation procedure



- 1 Move the sunshade curtain module to the installation position.
- 2 Install and tighten the 3 fixing bolts 1 connecting the sunshade curtainmodule and the panoramic sunshade curtain.
Torque: 9N·m
- 3 Connect the 1 harness connector A connecting the floor harness and the f sunshade curtain module.

- 4 Install roof interior trim panel assembly.
- 5 Connect the negative cable of battery.

11.9 Central lock

11.9.1 Specification

11.9.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left front door lock fixing bolt	-	5-7
Door lock catch assembly fixing bolt	M8×22	20-26
Tailgate lock assembly fixing bolt	M8×22	20-26
Tailgate lock catch fixing bolt	M8×22	20-26
Left front door lock fixing bolt	-	5-7
Fixing bolts connecting the left rear door electric regulator motor with the left rear door	M6×12	8.5-11.5
Fixing bolts connecting the left rear door lock with the left rear door	-	5-7

11.9.2 Description and operation

11.9.2.1 General

Door lock

- Door lock is mainly composed of motor, micro switch, shell, pull rod, etc.
- There is one motor and two micro switches in the door lock. The working voltage of the motor is 9 ~ 16V, and one of the micro switches is the door lock state signal and the other is the door-control switch signal.
- Two door lock switches are set on the system, one in the front left door lock and the other in the front left door central control switch. The lock signals of the two door lock switches are input to the same input terminal of IBC, but the unlock signals are input separately. The driver door key lock cylinder can only unlock the driver side door individually, but can lock all doors.

Unlocking and locking with the mechanical key

The driver's side door lock is provided with mechanical unlocking and locking devices. When using mechanical unlocking, insert the mechanical key into the lock hole and turn it clockwise to unlock the driver's door. Rotate counterclockwise to lock the four doors.

Remote locking and unlocking

Unlocking

- Briefly press the unlocking button on the smart key to unlock the vehicle, and the steering light flashes for 3 times to confirm. Position lamp lights up; Press the unlock key for a long time, and the four-door glass will open. Press and hold the tailgate opening button to unlock the tailgate.

Locking

- Briefly press the locking button on the smart key to lock the vehicle, and the steering light flashes once. Press the unlock key for a long time, and the four-door glass will close. If any of the four doors, the front engine compartment cover and the tailgate is not closed, press the locking button on the smart key, and the vehicle will give five consecutive alarm sounds to remind the locking failure.

Automatic locking and unlocking

Automatic re-locking

Within 30s after unlocking by using the smart key, any of the four doors, the front engine compartment cover and the tailgate can not be opened, the doors will automatically re-lock. The interior lamps go out and the vehicle enters an anti-theft state.

Automatic locking during driving

When the key activates the power supply of the vehicle to ON position, the four doors will be automatically locked when the vehicle speed is greater than 20 km/h.

Caution

The automatic locking function can adjust the speed of automatic locking in the multimedia settings or select to disable this function.

Unlocking remind for key left in the vehicle

When the power supply is placed in the OFF position, the smart key is left in the vehicle, and an alarm will appear when the vehicle is locked.

Automatic central control unlocking upon stop

After the vehicle is automatically locked, if the vehicle is stopped and the power supply is set to OFF, the door will be unlocked automatically.

Collision unlocking

In case of severe head-on collision in travel, the four doors are unlocked automatically so that the occupants can leave the vehicle quickly.

Priority levels of central control door lock

- Priority level: When several signals are valid at the same time: collision unlocking > front door key switch signal > remote control signal > central control door lock > automatic unlocking and automatic locking function
- When one of the above signals is valid and the corresponding action is being performed. If another signal occurs at this time, it will be ignored. But when a collision unlocking signal occurs, the IBC immediately executes the collision unlocking action.

11.9.3 System working principles

11.9.3.1 System Working Principles

Lock operation

When the IBC receives the switch locking input signal or meets the automatic locking condition, it outputs power from the locking output terminal of the IBC, and controls the door lock motors of the five doors to perform the locking operation.

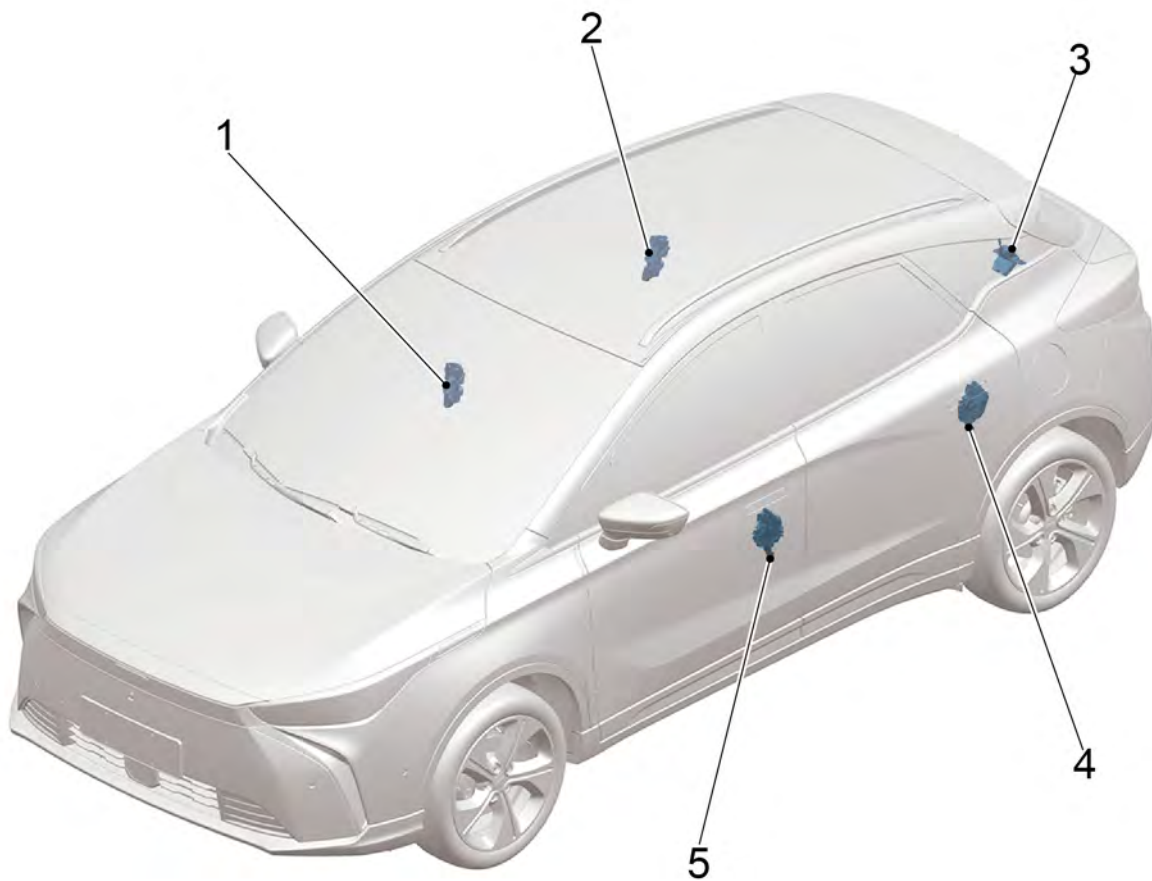
Unlock operation

When IBC receives the input signal of switch unlock or meets the conditions of automatic unlock, it outputs power from the unlock output terminal of IBC and controls the door lock motor of four doors plus the tailgate to perform unlock operation.

The tailgate can be opened separately by operating the tailgate switch and by keyless entry of the module and IBC signal control.

11.9.4 Part position

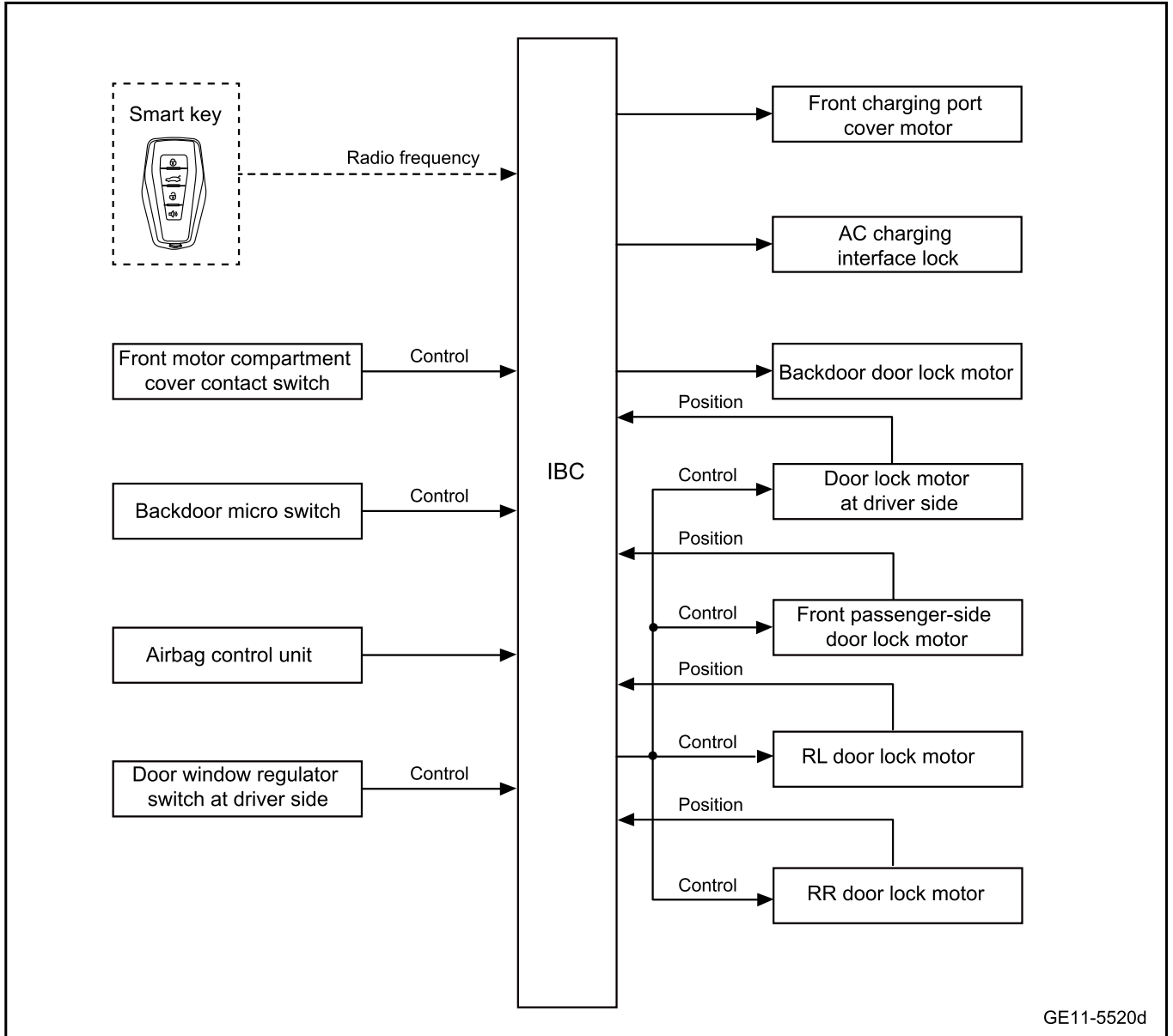
11.9.4.1 Part Position



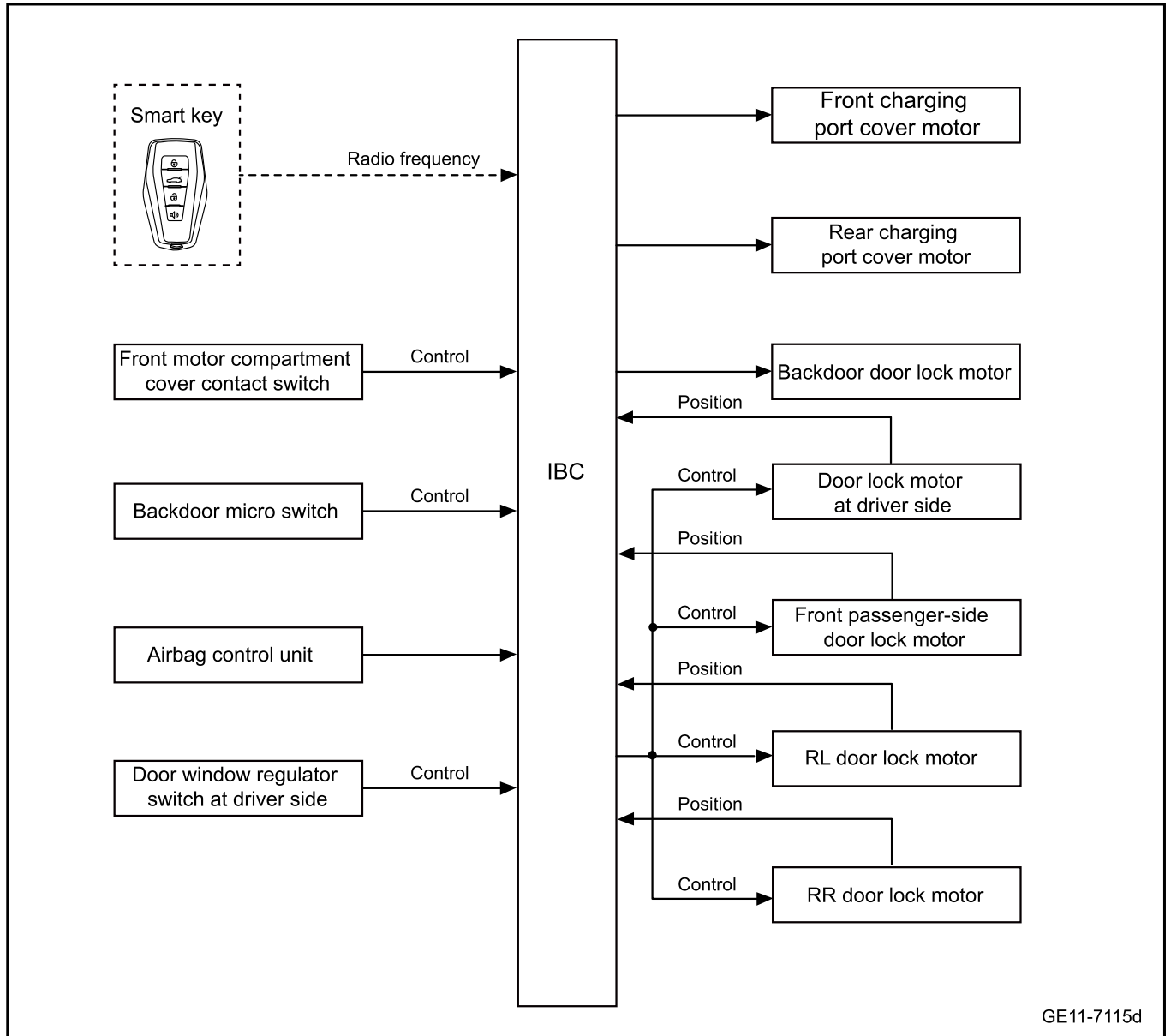
- | | |
|---------------------------|------------------------|
| 1. FR door lock | 4. Rear left door lock |
| 2. Rear right door lock | 5. FL door lock |
| 3. Tailgate lock assembly | |

11.9.5 Electrical block diagram

11.9.5.1 Electrical Schematic Diagram of Central Control Lock System(Type I)



11.9.5.2 Electrical Schematic Diagram of Central Control Lock System(Type II)



GE11-7115d

11.9.6 Diagnostic information and procedures

11.9.6.1 Diagnosis Description

Refer to the description and operation of the system before diagnosing the fault of the central locking. Understand and familiarize yourself with the working principle of the central locking and the start the system diagnosis, which helps to determine the correct fault diagnosis steps in case of failure, and more importantly, helps to determine whether the condition described by the distributor is normal operation Any fault diagnosis of the central locking should take 11.9.6.2 visual inspection as the starting point to guide the maintenance personnel to take the next logical step for fault diagnosis. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.9.6.2 Visual Check

- Check the after-sales installations which may affect central locking and ensure these installations cannot affect the normal work of central locking.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.
- If all door locking operations fail, check and repair the poor contact or open circuit at the power supply or grounding circuit before replacing the door lock.

11.9.6.3 Fault symptom table

Fault Symptom	Possibility and cause	Measures
The central lock switch cannot lock/open the door	1. Power supply fault of the central lock	Repair the power supply line.
	2. Central lock switch on the left front glass regulator switch assembly fault	Repair the left front door glass regulator switch.
	3. Poor contact of the harness plug	Repair the harness and plug.
	4. Poor contact at relevant ground point	Repair the grounding point fault.
	5. Central lock motor fault	Replace the door lock motor assembly.
	6. IBC fault	Repair IBC and replace IBC if necessary.
The remote control cannot lock/open the door Fault definition: The remote control cannot lock/open the door, and the vehicle central control switch is normally unlocked for the door.	1. Electromagnetic interference in the service environment	Move to a non-interference environment for use.
	2. The remote control is out of power	Repair the battery of the remote controller and replace the remote controller if necessary.
	3. Remote Anti-theft System	Reprogram and set the anti-theft key.
	4. IBC fault	Repair IBC and replace IBC if necessary.
The door lock hops while driving.	1. Door lock mechanism fault	Adjust the mechanical mechanism of the door lock and replace the door lock mechanism when necessary.
	2. Poor contact of the harness plug	Repair the harness and plug.
	3. Poor contact at relevant ground point	Repair the grounding point fault.
	4. Harness fault	Repair the door lock harness.
	5. Central lock motor contact switch fault	Replace the door lock motor assembly.

Fault Symptom	Possibility and cause	Measures
	6.IBC fault	Repair IBC and replace IBC if necessary.

11.9.6.4 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B108D11	Door lock status indicator lamp is short-circuited to ground	Refer to Fault of Central Control Door Lock Switch Indicator Lamp

11.9.6.5 Smart key remote function is invalid

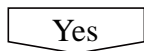
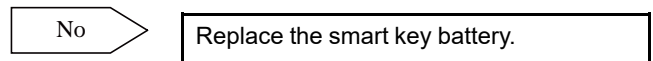
1. Diagnosis steps

Caution

This diagnostic procedure applies to the situations that the smart key cannot lock/open all doors and the central locking switch function is normal.

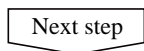
Step 1	Check the smart key battery voltage.
--------	--------------------------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Open the smart key rear cover and take out the battery.
- C. Use a multimeter to measure the battery voltage.
Standard voltage: 2.17~3.6V
- D. Confirm whether the measured value meets the standard.



Step 2	Replace the smart key.
--------	------------------------

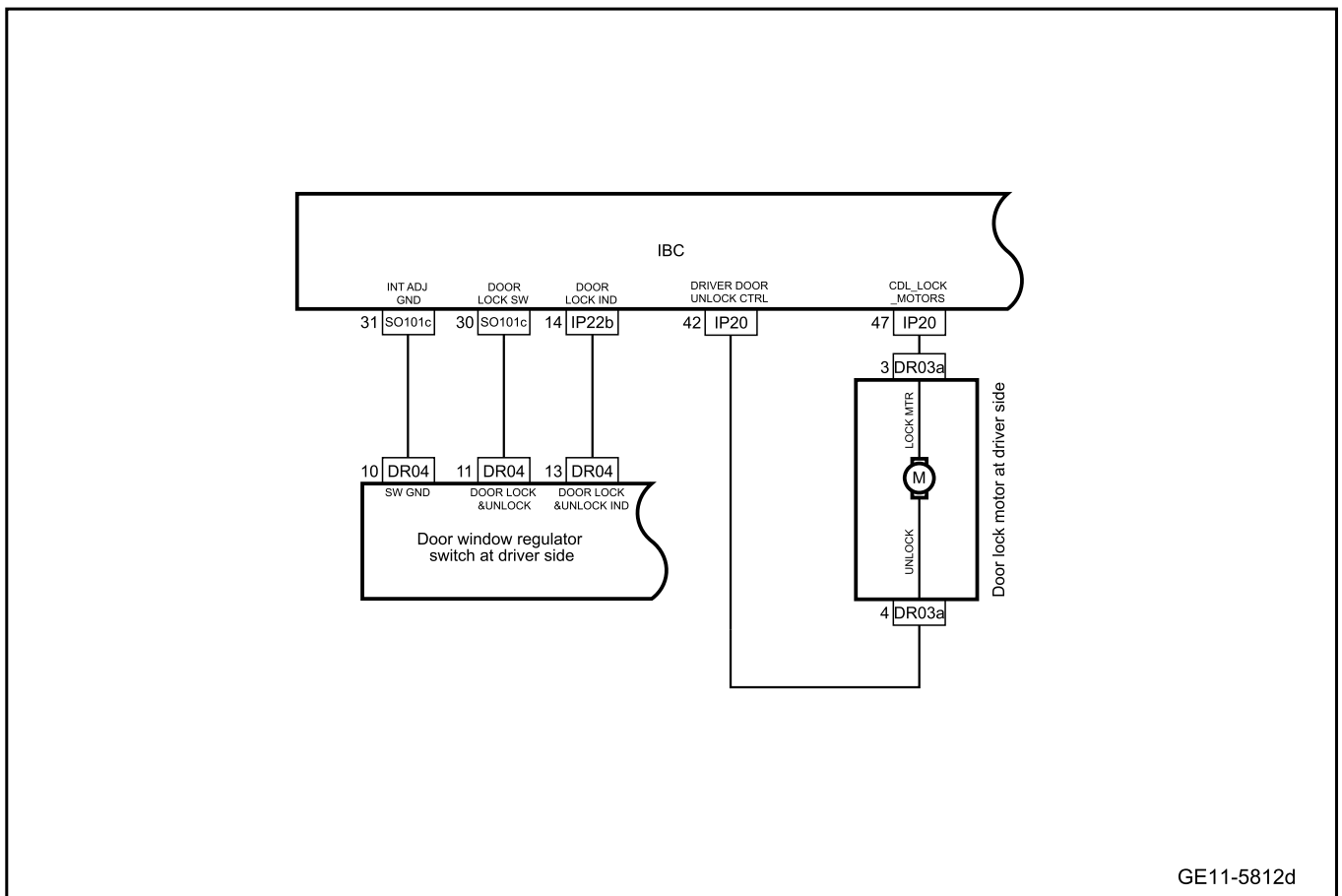
- A. Replace the smart key.
- B. Match the smart key.
- C. Confirm the remote function of the smart key is normal.



Step 3	The diagnosis is finished.
--------	----------------------------

11.9.6.6 Door lock at driver side dose not work

1. Schematic circuit diagram:



GE11-5812d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the IBC and all lock harness connectors for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

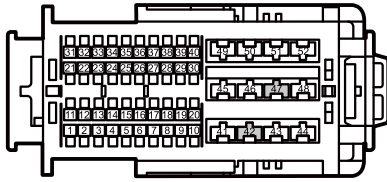
No

Repair or replace the faulty part.

Yes

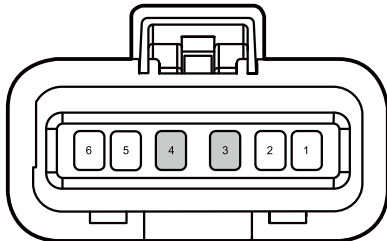
Step 2	Check whether the circuit between IBC and the driver side door lock motor is open.
--------	--

IP20 body control module harness connector 1



GE11-6347d

DR03a driver's side door lock motor harness connector



GE11-6348d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the harness connector DR03a of the driver side door lock motor.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(42)	DR03a(4)	Standard resistance: less than 1Ω
IP20(47)	DR03a(3)	

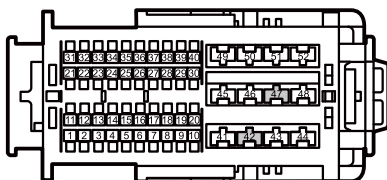
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 3 Check whether the circuit between IBC and the driver side door lock motor is short to GND.

IP20 body control module harness connector 1



GE11-6347d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the harness connector DR03a of the driver side door lock motor.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(42)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(47)		

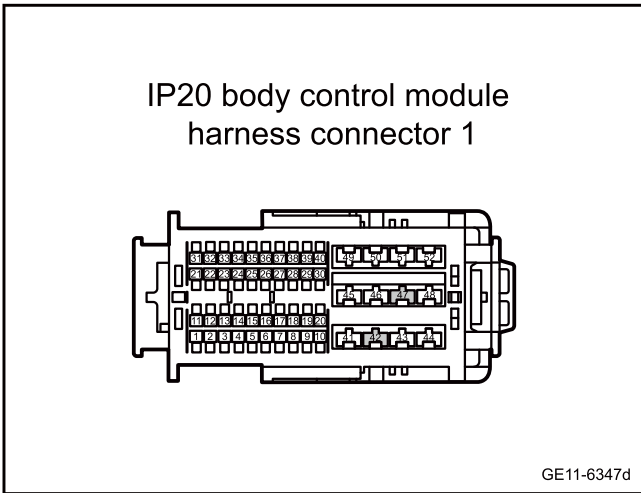
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between IBC and the driver side door lock motor is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Disconnect the harness connector DR03a of the driver side door lock motor.
- D. The key activates the power supply of the vehicle to the on gear.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(42)	Vehicle body is grounded.	Standard voltage: 0V
IP20(47)		

- F. Confirm whether the measured value meets the standard.

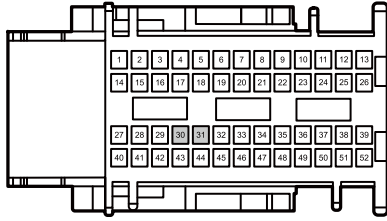
No

Repair or replace the harness.

Yes

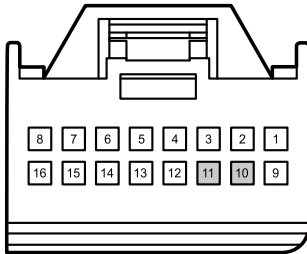
Step 5 Check whether the line between the glass lifter switch of the driver side door and IBC is circuit open.

SO101c body control module harness connector



GE11-6352d

DR04 driver's side door window regulator switch harness connector



GE11-6353d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(30)	DR04(11)	Standard resistance: less than 1Ω
SO101c(31)	DR04(10)	

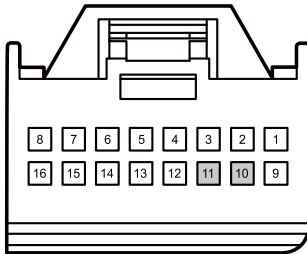
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 6 Check whether the line between the glass lifter switch of the driver side door and IBC is shorted to GND.

DR04 driver's side door window regulator switch harness connector



GE11-6354d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR04(10)	Vehicle body is grounded.	

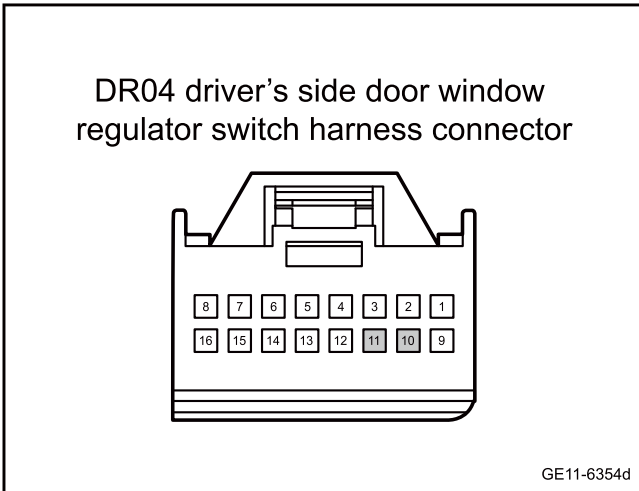
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the line between the glass lifter switch of the driver side door and IBC is shorted to the power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(11)	Vehicle body is grounded.	Standard voltage: 0V
DR04(10)	Vehicle body is grounded.	

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Replace the driver side door glass regulator switch.

- A. To replace the driver side glass regulator switch, please refer to [Replacement of Driver Side Door Glass Regulator Switch](#)
- B. Confirm whether the trouble is removed.

Yes System is normal.

No

Step 9 Replace the door lock motor.

- A. To replace the door lock motor, please refer to [Replacement of Door Lock Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 10	Replace the IBC
------------	-----------------

- A. Check whether the power supply of control module IBC and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 11	Reprogram and reset the IBC.
---------	------------------------------

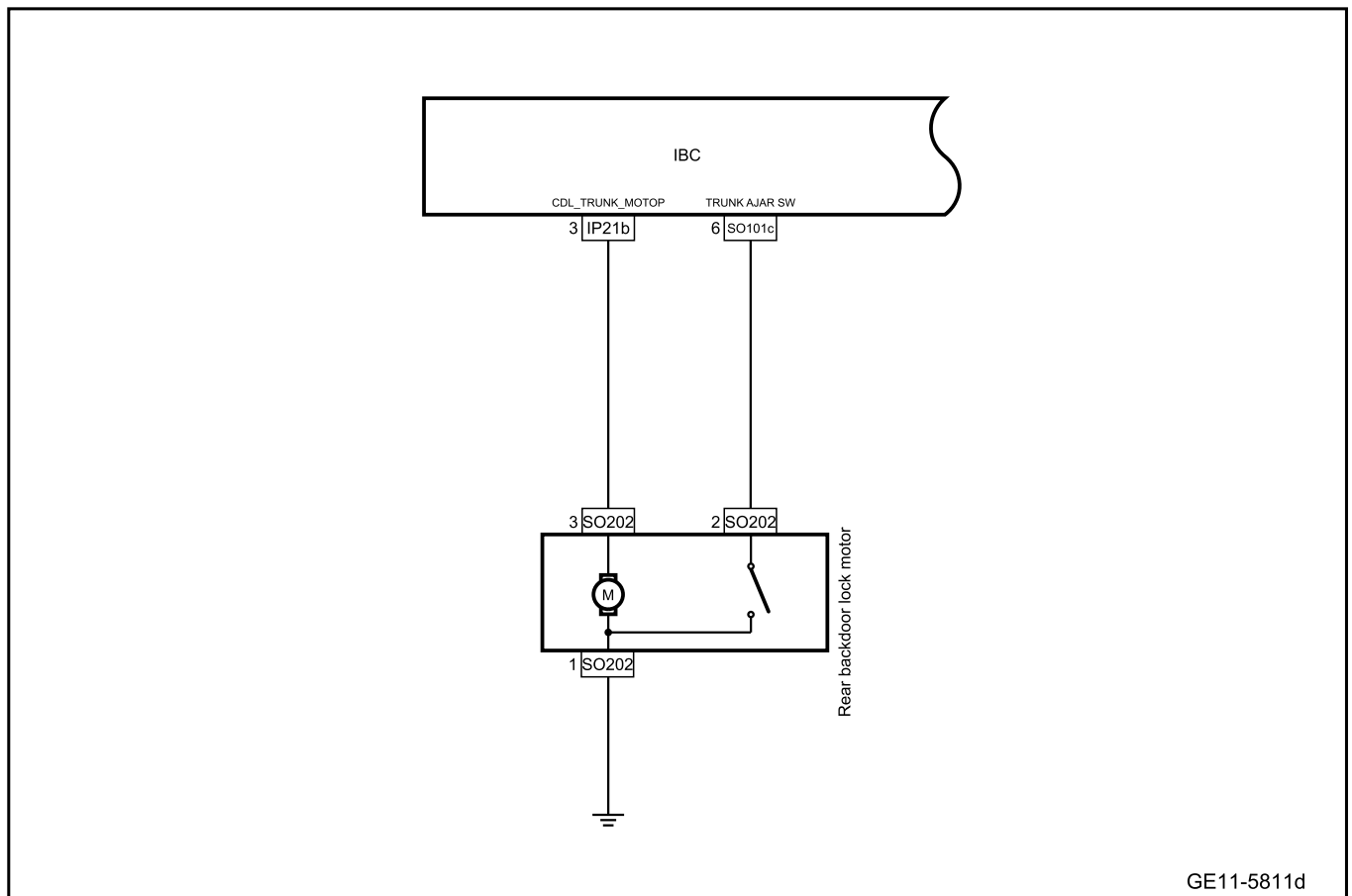
- A. Reprogram and reset the IBC module. Refer to [Programming and Setting of IBC](#)
- B. Confirm whether the system is normal.

Next step

Step 12	System is normal.
------------	-------------------

11.9.6.7 Inoperative rear tailgate lock motor

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check whether harness connector on tailgate lock motor indicates the signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

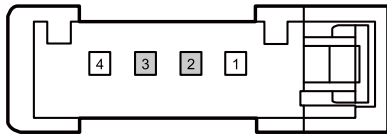
No

Repair or replace the faulty part.

Yes

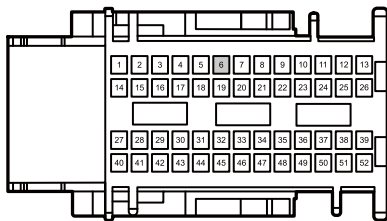
Step 2	Check whether the line between IBC and tailgate lock motor is open.
--------	---

SO202 backdoor lock motor harness connector



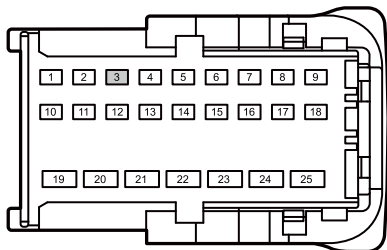
GE11-6355d

SO101c body control module harness connector



GE11-6356d

IP21b body control module harness connector 2



GE11-6357d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the IBC harness connector SO101c.
- D. Disconnect the trunk lock motor harness connector SO202.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	SO101c(6)	Standard
SO202(3)	IP21b(3)	resistance: less than 1Ω

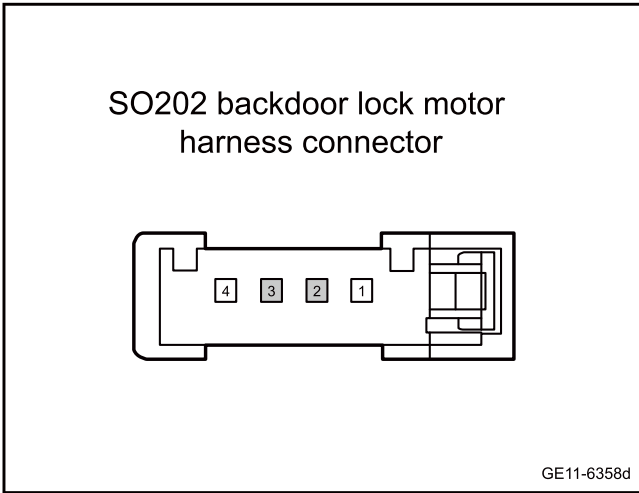
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Check whether the line between IBC and tailgate lock motor is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the IBC harness connector SO101c.
- D. Disconnect the trunk lock motor harness connector SO202.
- E. Use a multimeter to measure each terminal according to the table below:

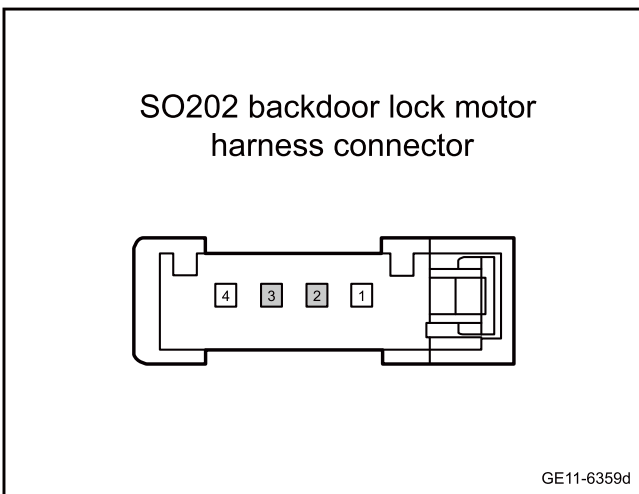
Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO202(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the line between IBC and tailgate lock motor is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP21b.
- C. Disconnect the IBC harness connector SO101c.
- D. Disconnect the trunk lock motor harness connector SO202.
- E. Use a multimeter to measure each terminal according to the table below:

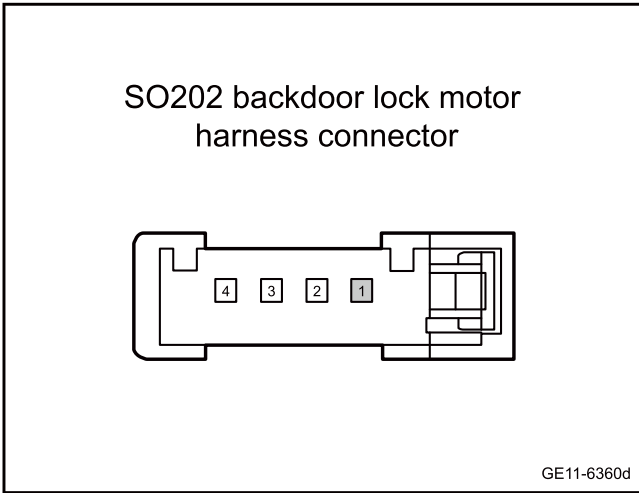
Measure terminal 1	Measure terminal 2	Standard value
SO202(2)	Vehicle body is grounded.	Standard voltage: 0V
SO202(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check tailgate lock motor grounding harness.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear tailgate lock motor harness connector SO202.
- C. Use a multimeter to measure the resistance between terminal 1 of tailgate lock motor harness connector SO202 and body ground terminal.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace tailgate lock motor.

- A. To replace the trunk lock motor, please refer to [Replacement of Trunk Lock Motor](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Replace the IBC

- A. Check whether the power supply of control module IBC and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 8 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

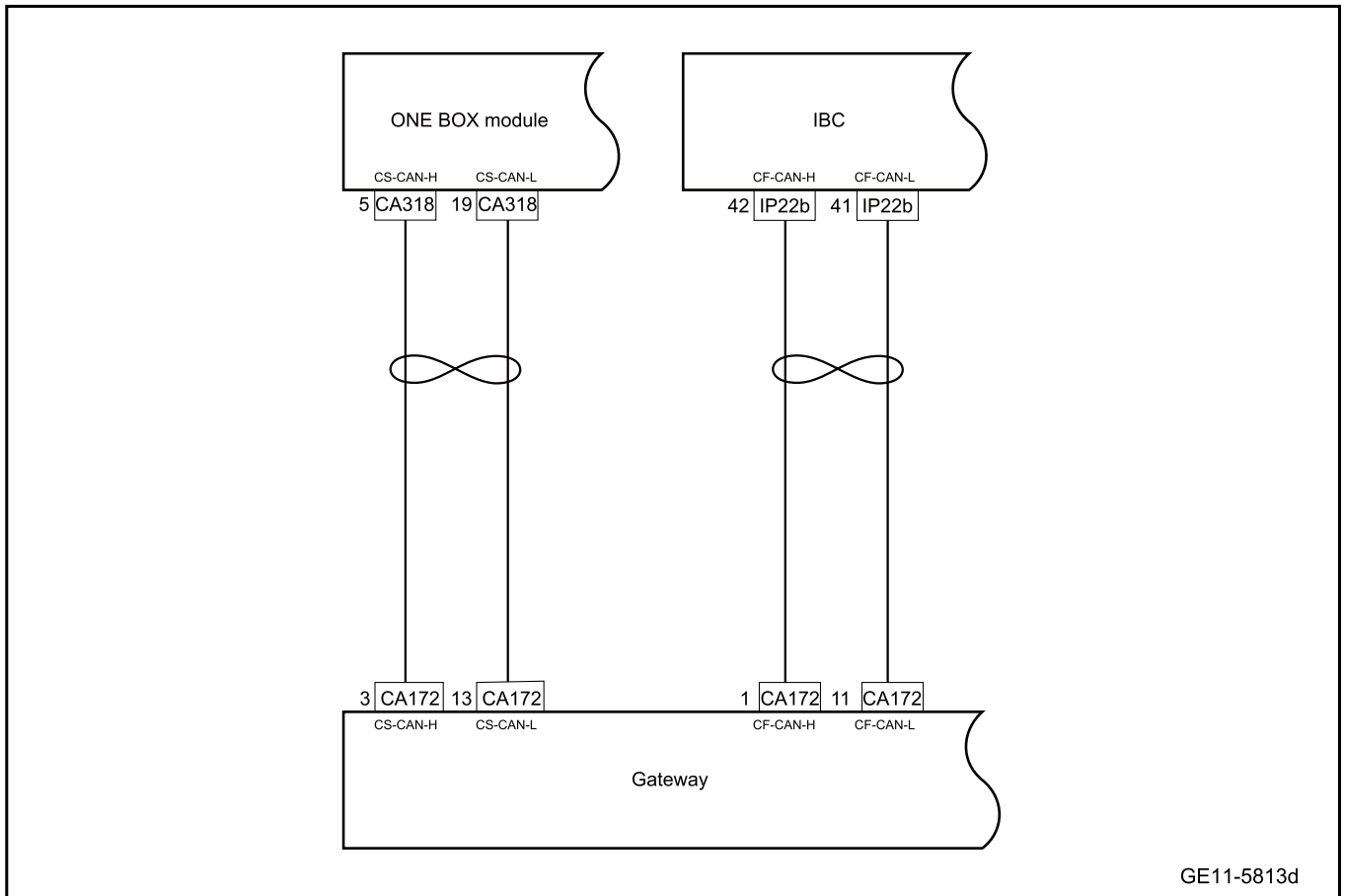
Yes System is normal.

No

Step 9 | System is normal.

11.9.6.8 Automatic door lock function fails

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the IBC, gateway and ONE BOX module harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the damaged components.

Yes

Step 2	Check whether indication of speedometer is normal.
--------	--

- A. Drive the vehicle slowly.
- B. Observe whether the indication of instrument cluster speedometer is normal.

No

Priority is given to eliminating the fault of speedometer indication.

Yes

Step 3	Check whether the central lock function is normal.
--------	--

- A. The key activates the power supply of the vehicle to ON.
- B. Operate the driver side glass regulator switch.
- C. Confirm whether the central lock is normally locked.

No

Refer to Driver Side Door Lock Does Not Work
--

Yes

Step 4	Check CAN network integrity.
--------	------------------------------

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. To check the integrity of the CF-CAN bus, please refer to [CF-CAN Bus Network Integrity Check](#)
- C. Confirm whether the CAN network is normal.

No

Priority is given to eliminating the fault of CAN network.
--

Yes

Step 5	Replace the IBC
--------	-----------------

- A. Check whether the power supply of control module IBC and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6	Reprogram and reset the IBC.
--------	------------------------------

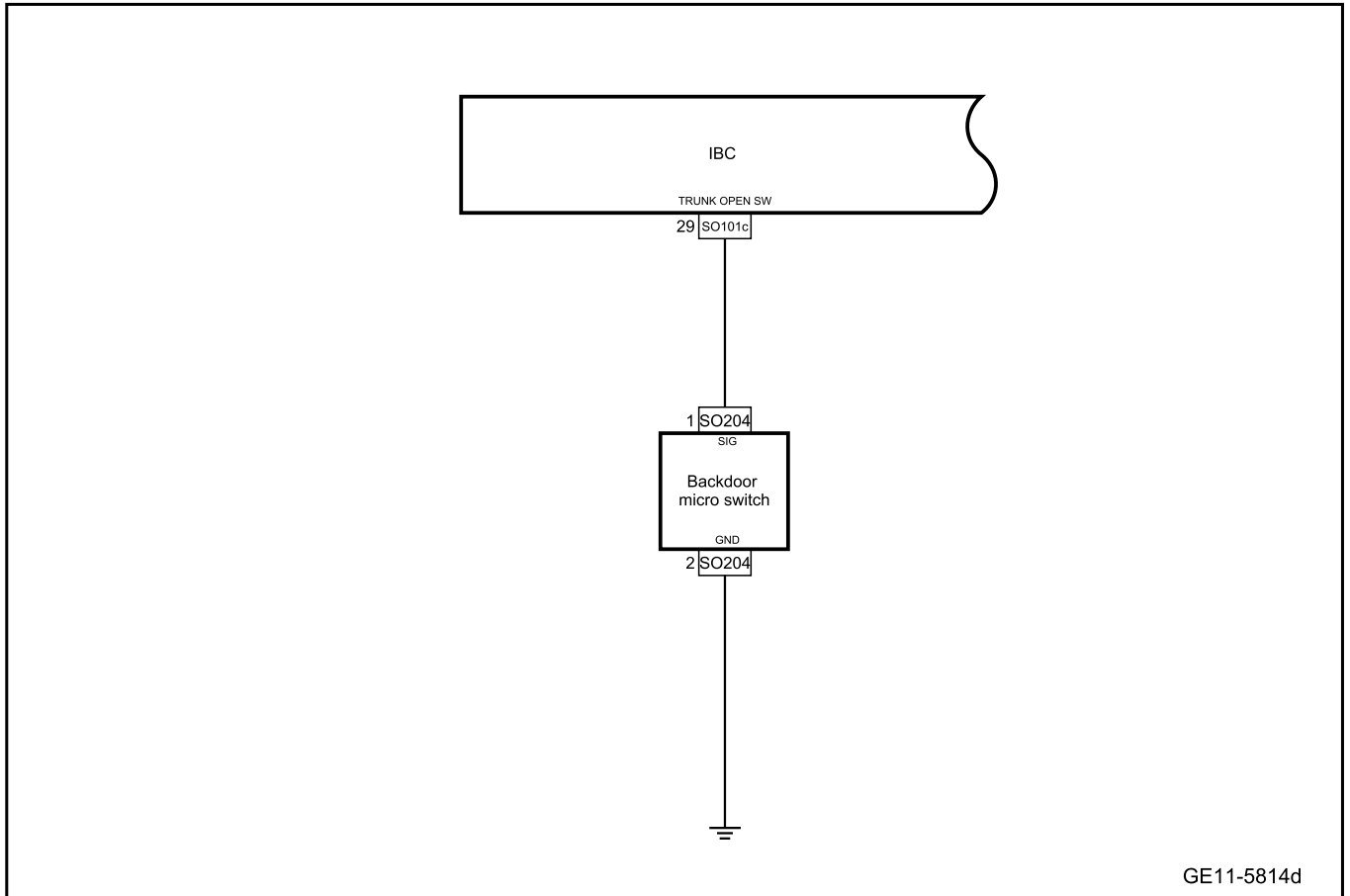
- A. Reprogram and reset the IBC module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 7	System is normal.
--------	-------------------

11.9.6.9 Tailgate micro switch fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

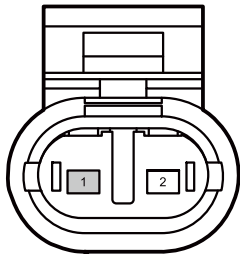
- A. Check the tailgate micro switch harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check whether the tailgate lock switch is caught.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check whether the circuit between the IBC and the tailgate micro switch is open.
--------	--

SO204 backdoor micro switch harness connector

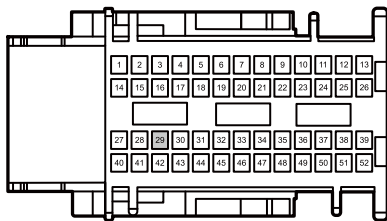


GE11-6361d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect tailgate micro switch harness connector SO204.
- D. Use a multimeter to measure the resistance between terminal 1 of the tailgate micro switch harness connector SO204 and terminal 29 of the IBC harness connector SO101c.

Standard resistance: less than 1Ω
- E. Confirm whether the measured value meets the standard.

SO101c body control module harness connector



GE11-6362d

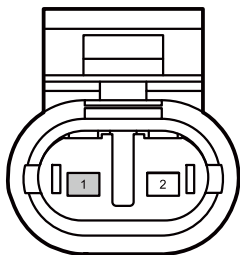
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the IBC and the tailgate micro switch is short to GND.

SO204 backdoor micro switch harness connector



GE11-6363d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect tailgate micro switch harness connector SO204.
- D. Use a multimeter to measure the resistance between terminal 1 of the tailgate micro switch harness connector SO204 and body grounding.

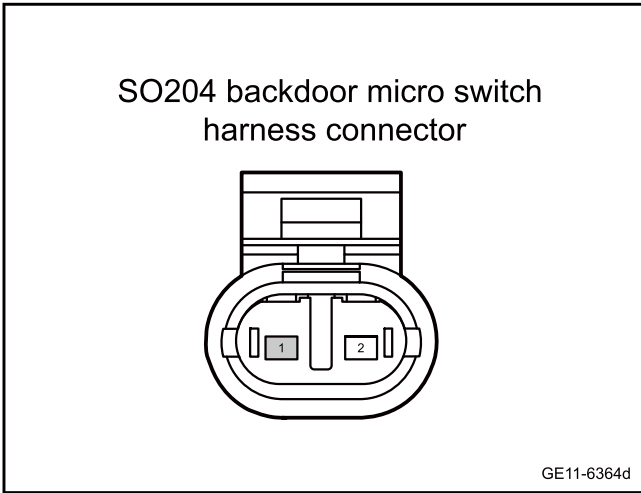
Standard resistance: 10KΩ or higher
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the IBC and the tailgate micro switch is short to power supply.

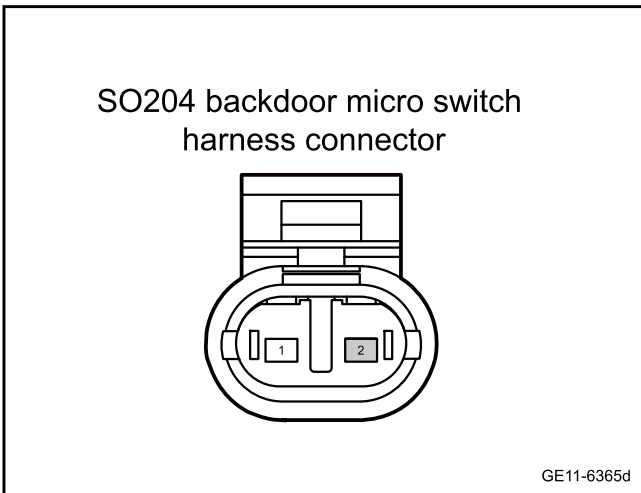


- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect the IBC harness connector SO101c.
 - C. Disconnect tailgate micro switch harness connector SO204.
 - D. The key activates the power supply of the vehicle to ON.
 - E. Use a multimeter to measure the voltage between terminal 1 of the tailgate micro switch harness connector SO204 and body grounding.
- Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check the grounding circuit of the rear tailgate micro switch.



- A. Multimedia settings from vehicle power supply to OFF.
 - B. Disconnect tailgate micro switch harness connector SO204.
 - C. Use a multimeter to measure the resistance between terminal 2 of the tailgate micro switch harness connector SO204 and body grounding.
- Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the micro switch of the tailgate.

- A. Replace the tailgate micro switch, refer to [Replacement of tailgate micro switch](#)
- B. Confirm whether the system is working normally.

Yes System is normal.

No

Step 7 | Replace the IBC

- A. Check whether the power supply of control module IBC and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 8 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC module. Refer to [Programming and Setting of IBC](#)
- B. Confirm whether the system is normal.

Yes

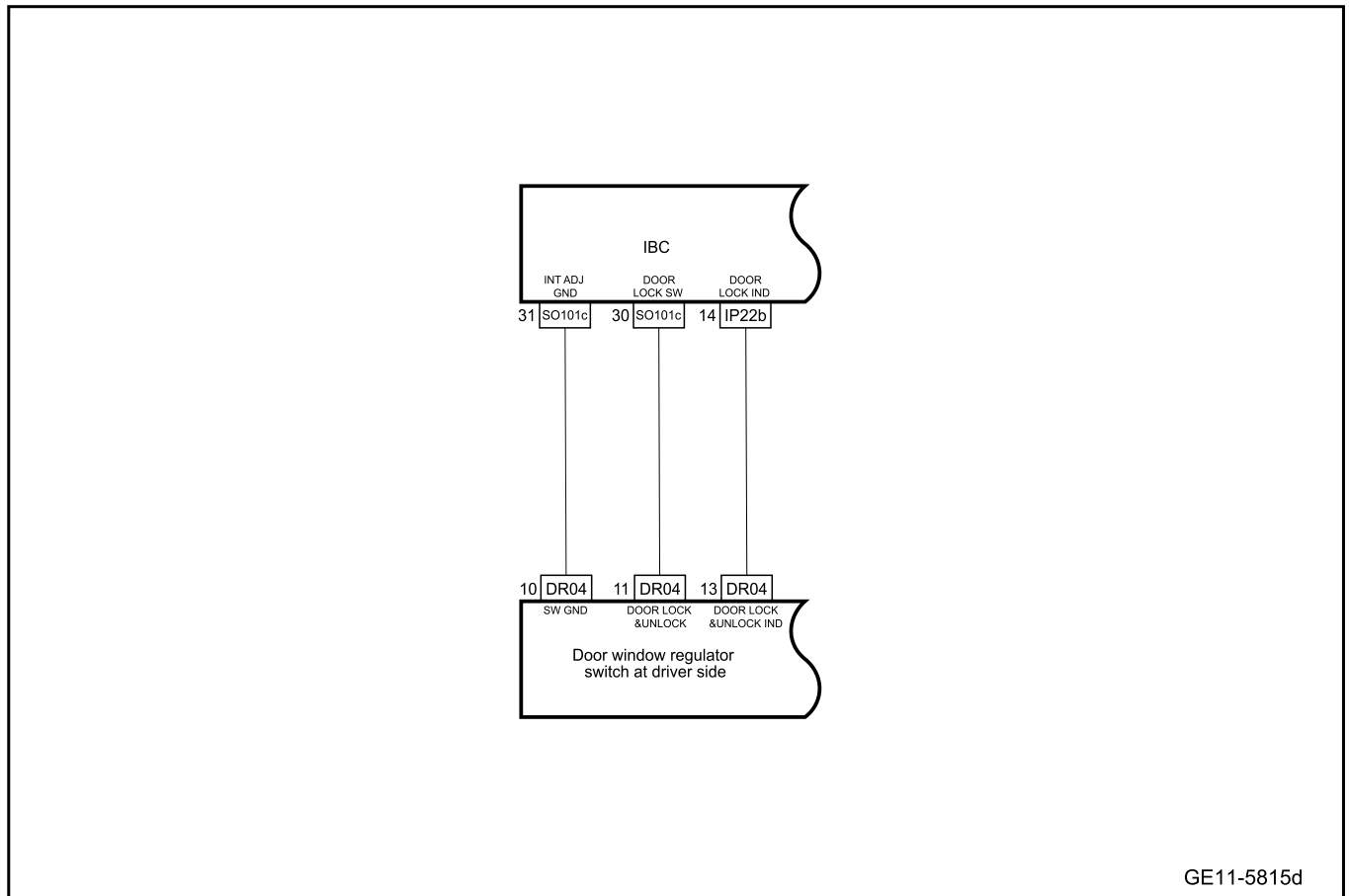
System is normal.

No

Step 9 System is normal.

11.9.6.10 Central lock switch cannot control all the central locks

1. Schematic circuit diagram:



GE11-5815d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check glass lifter switch of driver side door harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Check whether the driver side glass regulator switch is catching.
- C. Confirm whether the above items are normal.

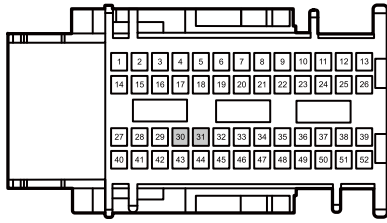
No

Repair or replace the faulty part.

Yes

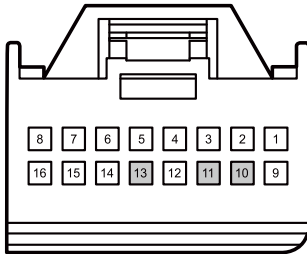
Step 2	Check whether the circuit between IBC and glass regulator switch at driver side is open.
--------	--

SO101c body control module harness connector



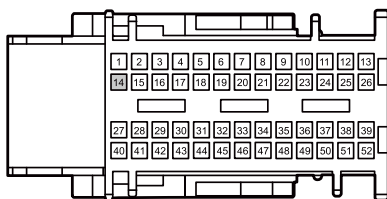
GE11-6366d

DR04 driver's side door window regulator switch harness connector



GE11-6367d

IP22b body control module harness connector 3



GE11-6368d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(30)	DR04(11)	Standard resistance: less than 1Ω
SO101c(31)	DR04(10)	Standard resistance: less than 1Ω
IP22b(14)	DR04(13)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

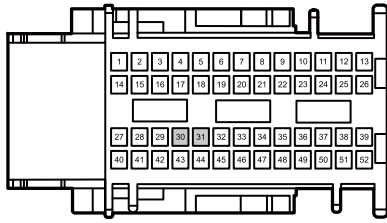
No

Repair or replace the harness.

Yes

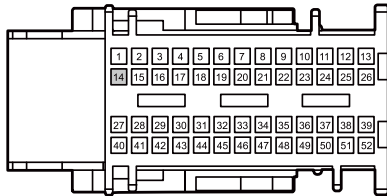
Step 3 Check whether the circuit between IBC and glass regulator switch at driver side is short to GND.

SO101c body control module harness connector



GE11-6369d

IP22b body control module harness connector 3



GE11-6370d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(30)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101c(31)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(14)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

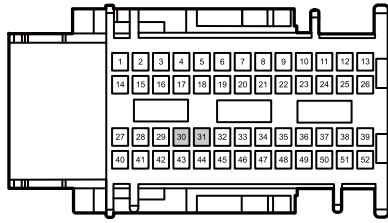
No

Repair or replace the harness.

Yes

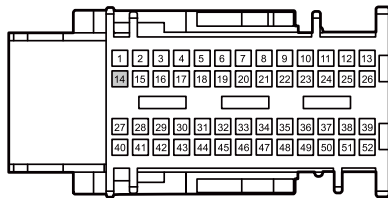
Step 4 | Check whether the circuit between IBC and glass regulator switch at driver side is short to power supply.

SO101c body control module harness connector 7



GE11-6371d

IP22b body control module harness connector 3



GE11-6372d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(30)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(31)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(14)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Replace the driver side door glass regulator switch.

- A. To replace the driver side glass regulator switch, please refer to [Replacement of Driver Side Door Glass Regulator Switch](#)
- B. Confirm whether the central lock works normally.

Yes → System is normal.

No

Step 6 Replace the IBC

- A. Check whether the power supply of control module IBC and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

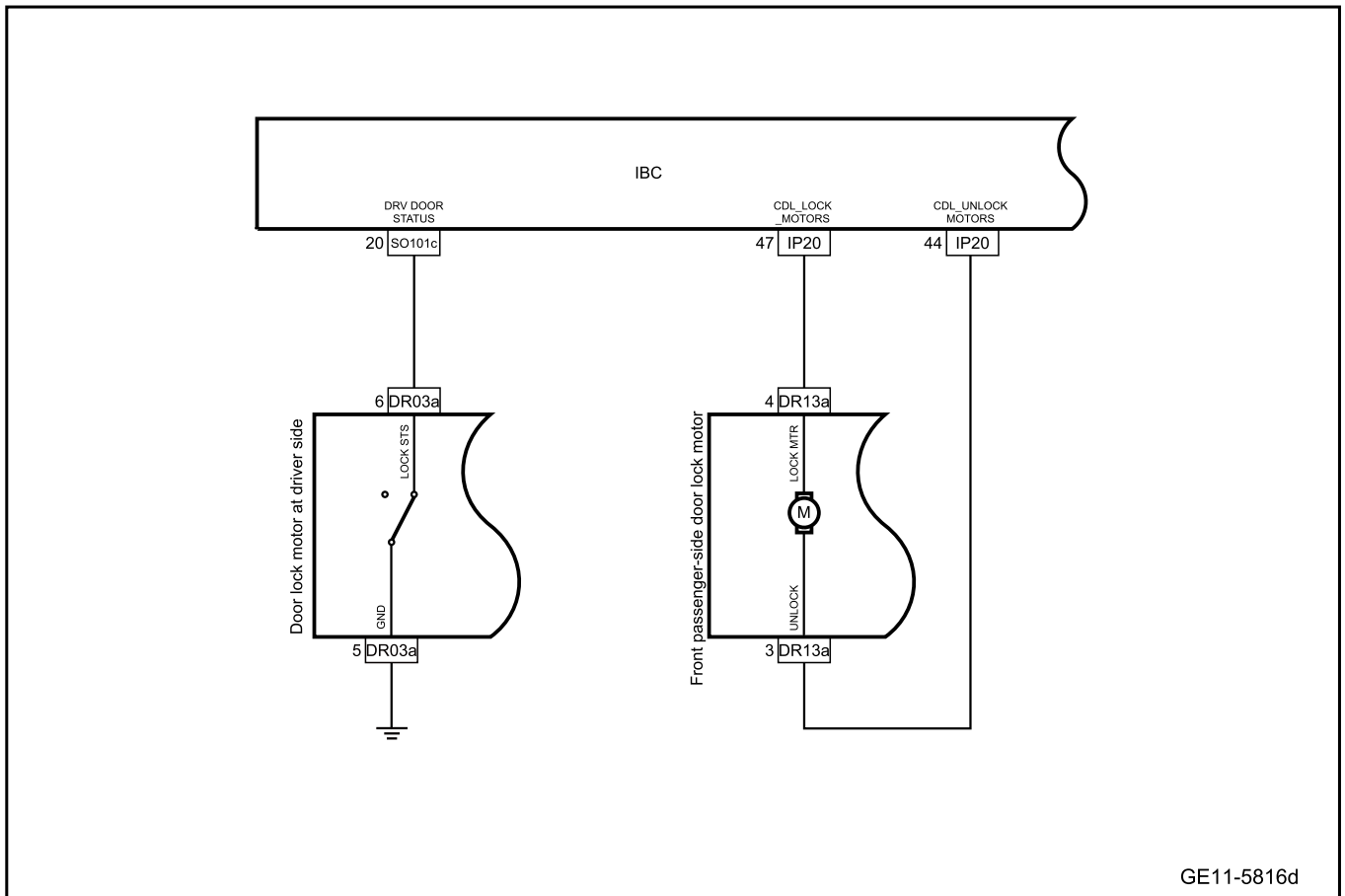
Yes System is normal.

No

Step 8 System is normal.

11.9.6.11 Not driver side lock dose not work

1. Schematic circuit diagram:



GE11-5816d

2. Diagnosis steps

Step 1 Primary check.

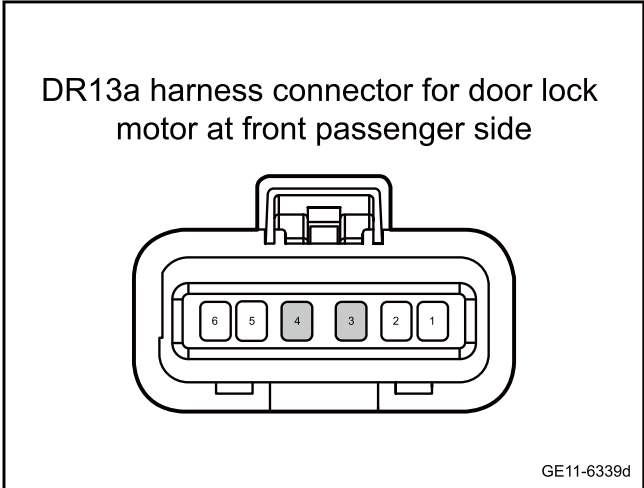
- A. Check driver side door lock motor and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

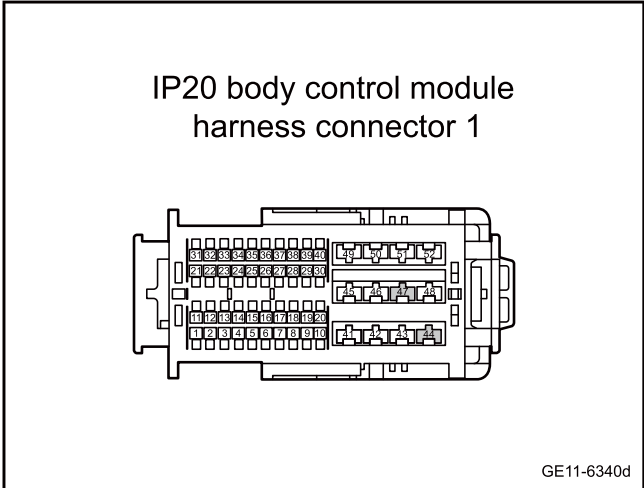
Yes

Step 2 Check whether the circuit between the front passenger side door lock engine and vehicle IBC is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front passenger side door lock motor harness connector DR13a.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR13a(4)	IP20(47)	Standard resistance: less than 1Ω
DR13a(3)	IP20(44)	



- E. Confirm whether the measured value meets the standard.

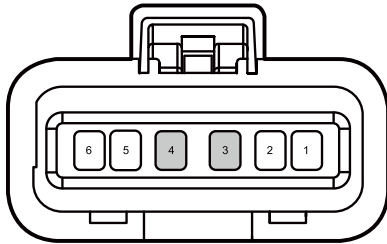
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the front passenger side door lock motor and the IBC is short to ground.

DR13a harness connector for door lock motor at front passenger side



GE11-6341d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front passenger side door lock motor harness connector DR13a.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR13a(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR13a(3)		

- E. Confirm whether the measured value meets the standard.

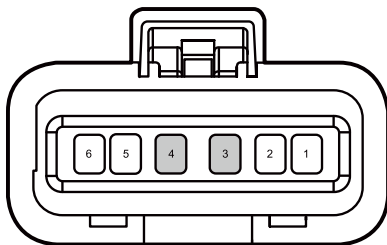
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the front passenger side door lock motor and the IBC is short to power supply.

DR13a harness connector for door lock motor at front passenger side



GE11-6342d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect front passenger side door lock motor harness connector DR13a.
- C. Disconnect the IBC harness connector IP20.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR13a(4)	Vehicle body is grounded.	Standard voltage: 0V
DR13a(3)		

- F. Confirm whether the measured value meets the standard.

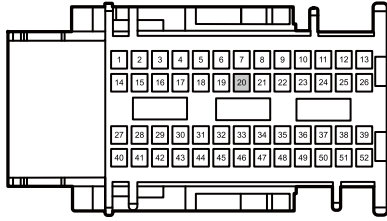
No

Repair or replace the harness.

Yes

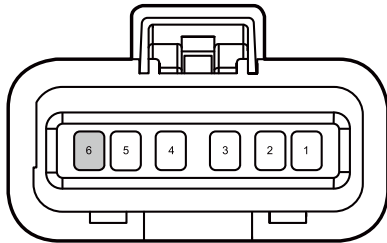
Step 5 Check whether the circuit between the front passenger side door lock engine and vehicle IBC is open.

SO101c body control module harness connector



GE11-6343d

DR03a driver's side door lock motor harness connector



GE11-6344d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(20)	DR03a(6)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

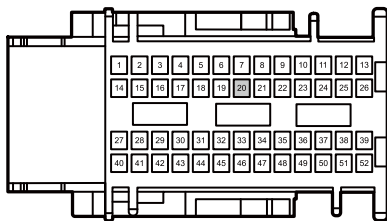
No

Repair or replace the harness.

Yes

Step 6 Check whether the circuit between the driver side door lock motor and the IBC is short to ground.

SO101c body control module harness connector



GE11-6345d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(20)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

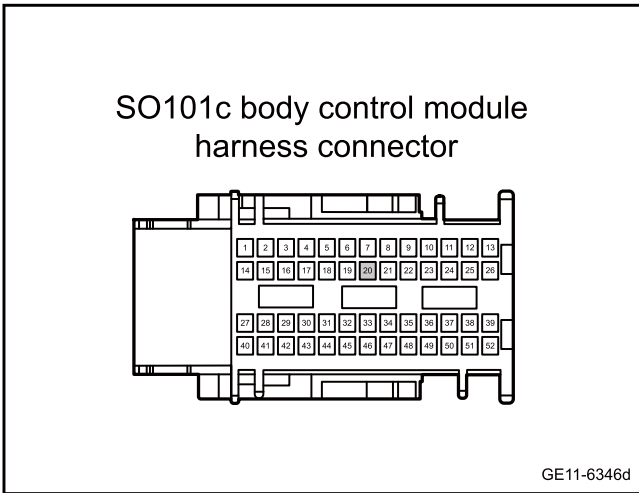
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the circuit between the driver side door lock motor and the IBC is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR03a of the driver side door lock motor.
- C. Disconnect the IBC harness connector SO101c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(20)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Replace the front passenger side door lock motor.

- A. To replace the front passenger side door lock motor, please refer to [Replacement of Front Passenger Side Door Lock Motor](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the driver side door lock motor.

- A. Replace the driver side door lock motor. Refer to [Replacement of driver side door lock](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Replace the IBC

- A. Check whether the power supply of control module IBC and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 11	Reprogram and reset the IBC.
---------	------------------------------

- A. Reprogram and reset the IBC module. Refer to [Programming and Setting of IBC](#)

Next step

Step 12	System is normal.
---------	-------------------

11.9.6.12 Central Control Door Lock Switch Indicator Lamp Fault

1. DTC description:

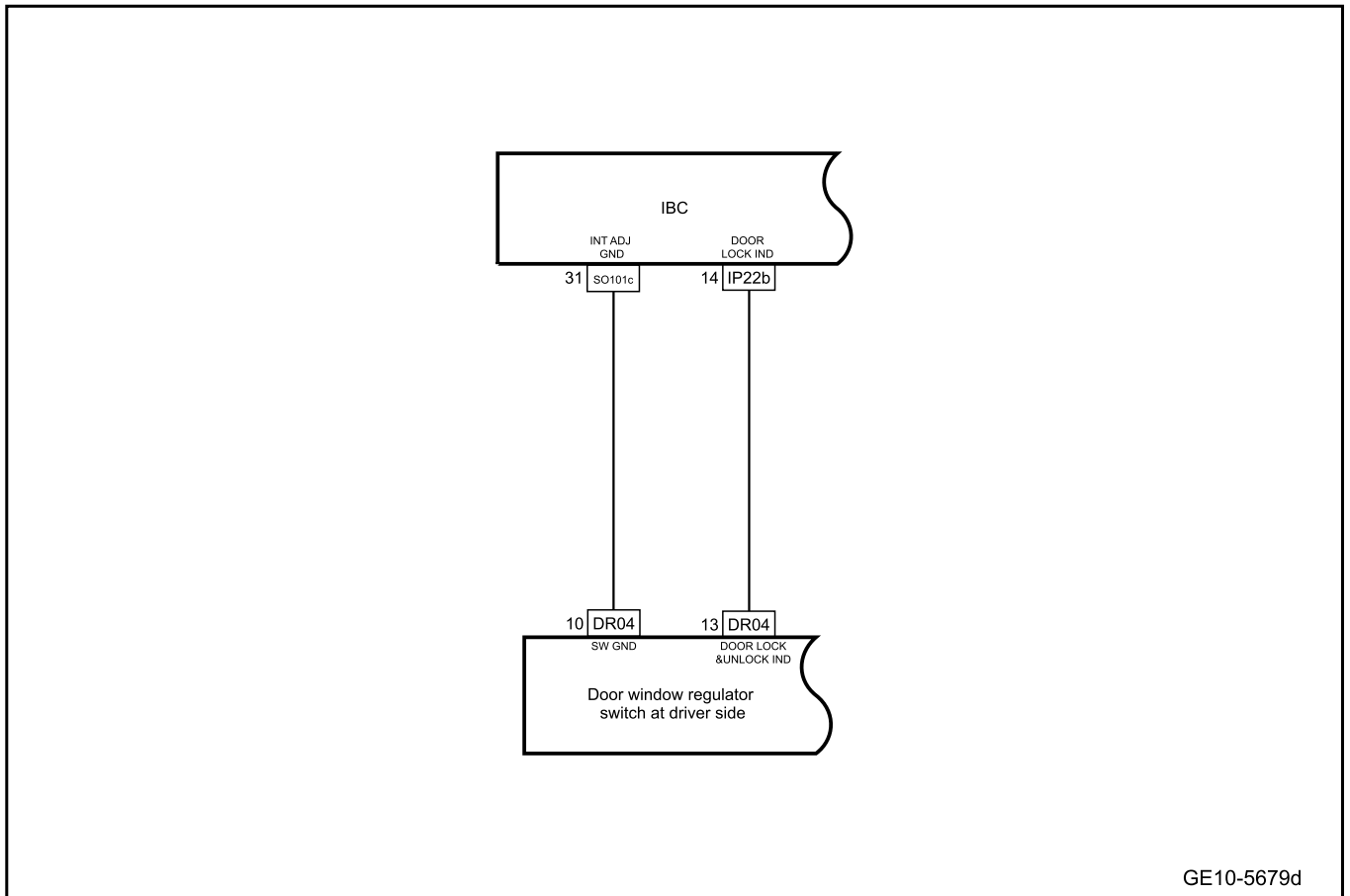
Diagnostic Trouble Code	Trouble description
B108D11	Door lock status indicator lamp is short-circuited to ground
B108D15	Door lock status indicator lamp is short-circuited or open to power supply

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108D11	The output current will be checked to monitor the short circuit to ground, and if the current is higher than a certain hardware threshold, it is considered a short circuit to ground. The door lock status indicator is short-circuited to ground for 200ms	1. The power supply voltage is 9V-16V 2. The lock status indicator function is activated for 100ms	1. Circuit 2. IBC 3. Driver side door glass regulator switch

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108D15	The output current will be checked to monitor for such faults as open-circuit load or short circuit to battery, and if the current is below a certain HW threshold, it is considered an open circuit load or a short circuit fault to battery. The locking status lamp turns on and load or shorts the battery for 200 milliseconds		

3. Schematic circuit diagram:



GE10-5679d

4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check glass regulator switch of driver side door harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

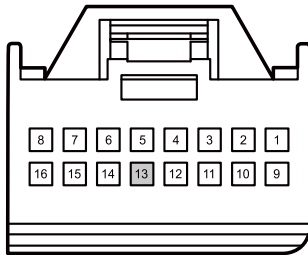
No

Repair or replace the faulty part.

Yes

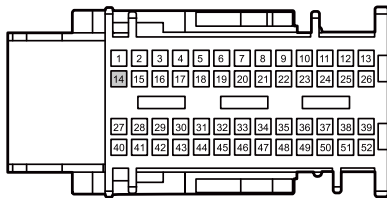
Step 3 Check the line between the driver side door glass regulator switch and IBC.

DR04 driver's side door window regulator switch harness connector



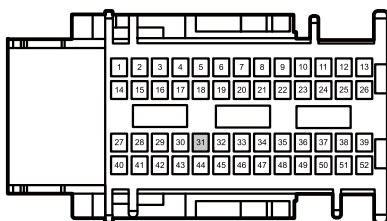
GE10-5932d

IP22b body control module harness connector 3



GE10-5933d

SO101c body control module harness connector 7



GE11-6352d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP22b and SO101c.
- C. Disconnect the harness connector DR04 of the driver side door glass regulator switch.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(10)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR04(13)		
DR04(10)	SO101c(31)	Standard resistance: less than 1Ω
DR04(13)	IP22b(14)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR04(10)	Vehicle body is grounded.	Standard voltage: 0V
DR04(13)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 4 Replace the driver side door glass regulator switch.

- A. Replace the driver side door glass regulator switch. Refer to [Replacement of Driver Side Door Glass Regulator Switch](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 | Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 | System is normal.

11.9.7 Removing and installing

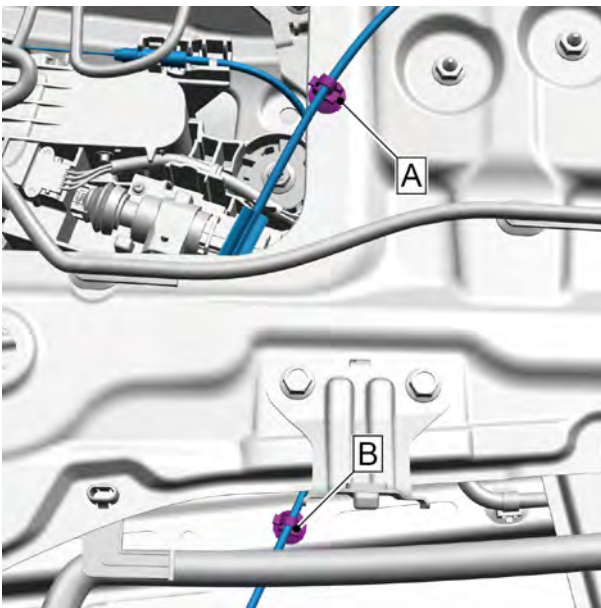
11.9.7.1 Replacement of FL door lock

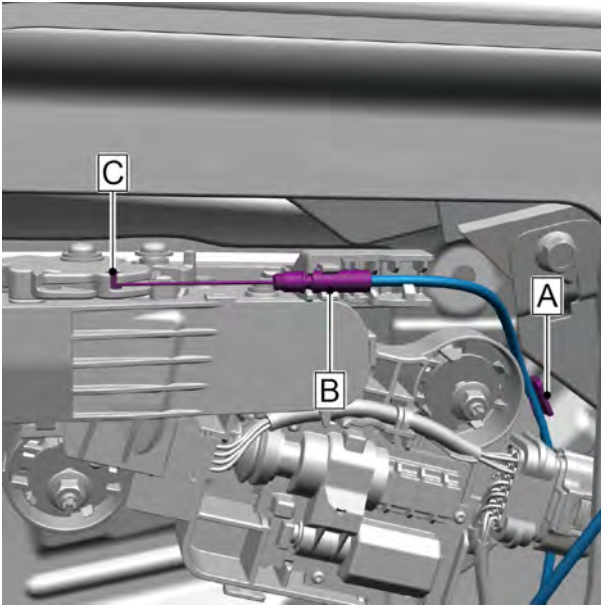
Removal procedure

Caution

The left and right front key bodies are removed and installed in the same way

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door interior trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)
- 3 Remove the left front door watertight membrane. Replacement of [Replacement of front left door watertight membrane](#)
- 4 Disconnect the 1 fixing clip A connecting the front door exterior release cable with the left front door.
- 5 Disconnect the 1 fixing clip B connecting the front door exterior release cable with the left front door.

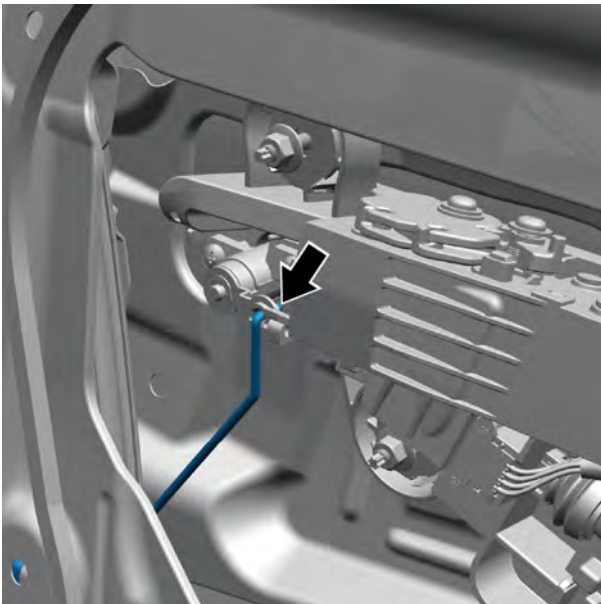




- 6 Disconnect the 1 fixing clip A connecting the front door exterior release cable and the left front door exterior release handle.
- 7 Disconnect the fixing clips B and C connecting the front door exterior release cable and the left front door exterior release handle.

Caution

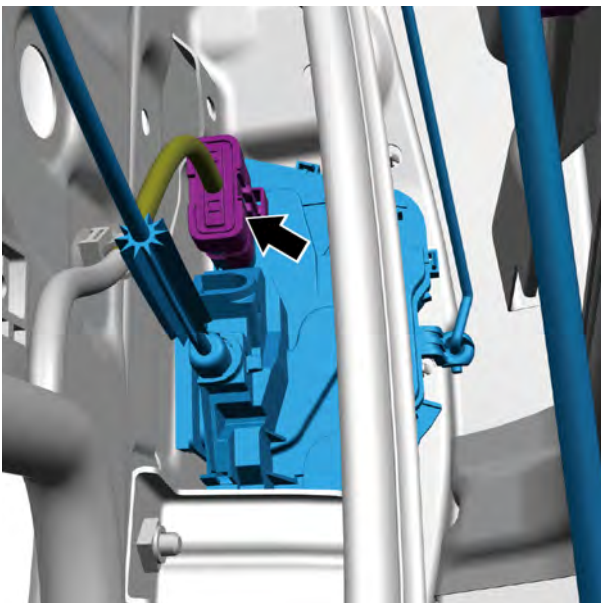
Disconnect the fixing clip B outward, and then disconnect the fixing clip C.



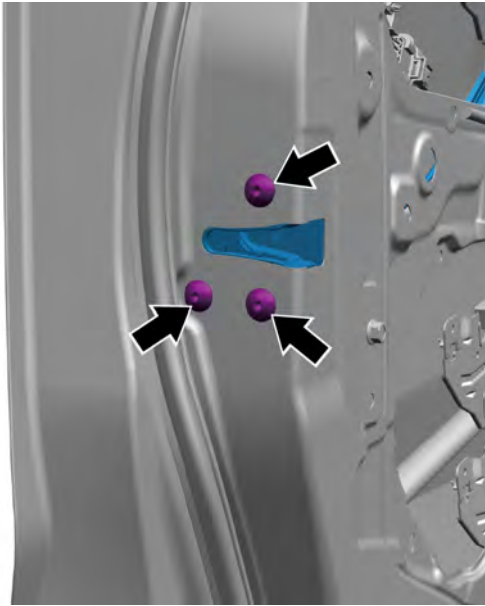
- 8 Disconnect the left front door lock cylinder pull rod from the left front door lock cylinder assembly.

Caution

Pull out the FL door lock core pull rod.



- 9 Disconnect 1 harness connector connecting the front left door harness and left front door lock.



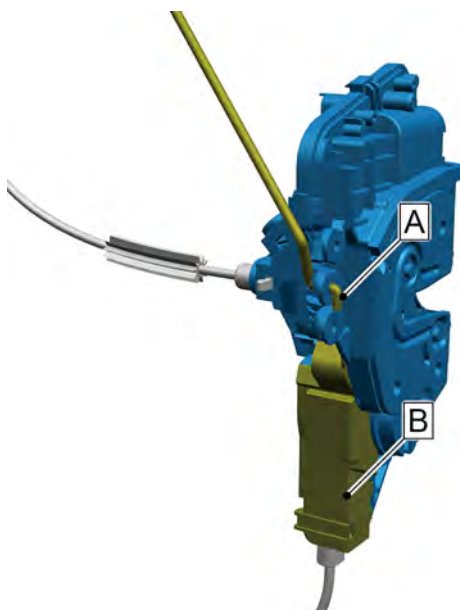
- 10 Remove the 3 fixing bolts connecting the left front door lock with the left front door.



- 11 Take off the left front door and internal and exterior pull rod and lock cylinder pull rod.

Caution

Move the left front door lock, the internal and external release cable, and the lock cylinder pull rod downward and take them out from under the glass run channel.

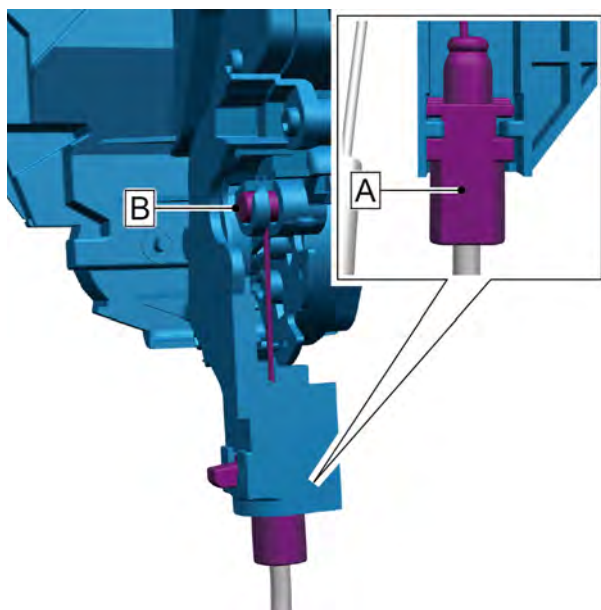


- 12 Disconnect the left front door lock cylinder pull rod A from the left front door lock.

Caution

Rotate the FL door lock cylinder pull rod, tilting slowly to disconnect the FL door lock cylinder pull rod at the position shown in the figure.

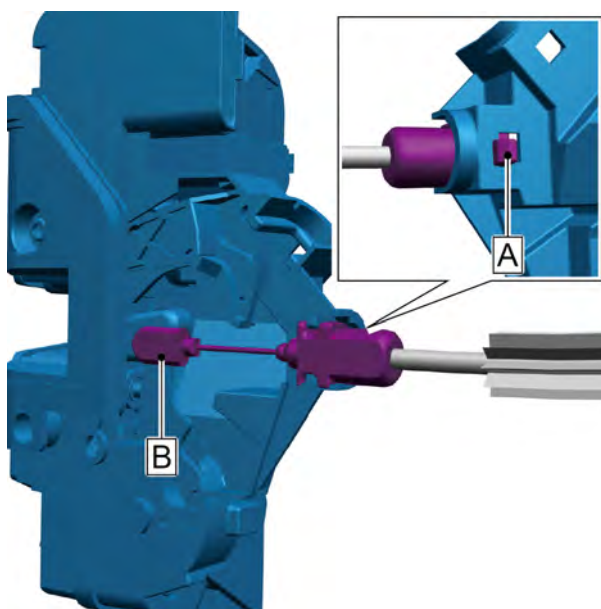
- 13 Use a straight screwdriver to pry off the left door lock shield B.



- 14 Disconnect the fixing clips A and B connecting left front door exterior release cable and left front door lock.

Caution

Disconnect the fixing clip A outward, and then disconnect the fixing clip B.



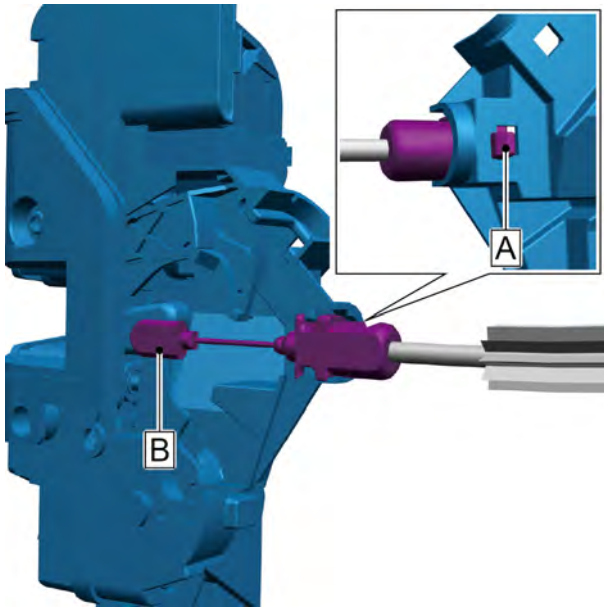
- 15 Disconnect the 2 fixing clip A and B connecting the front door interior release cable and left front door lock.

Caution

Disconnect the fixing clip A outward, and then disconnect the fixing clip B.

- 16 Remove the front left door lock.

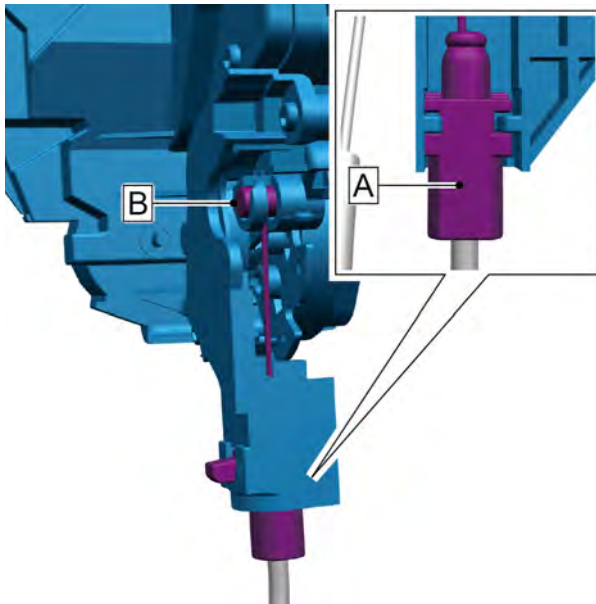
Installation procedure



- 1 Move the left front door lock to the installation position.
- 2 Install the fixing clips A and B connecting the front door interior release cable and left front door lock.

Caution

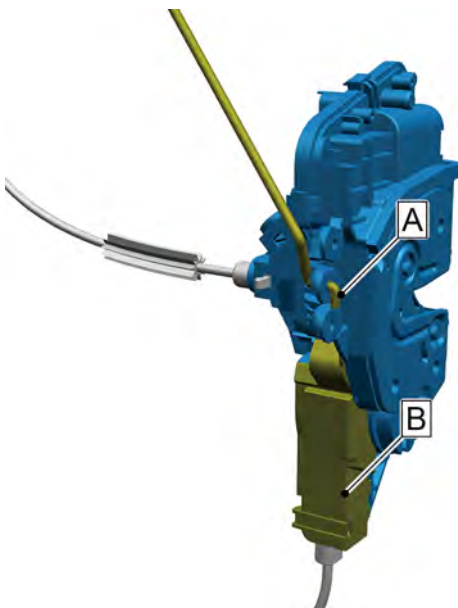
Check whether the 2 fixing clips A and B connecting the front door interior release cable and the left front door lock are installed securely.



- 3 Install the fixing clips A and B connecting left front door exterior release cable and left front door lock.

Caution

Check whether the 2 fixing clips A and B connecting the front door exterior release cable and the left front door lock are installed securely.

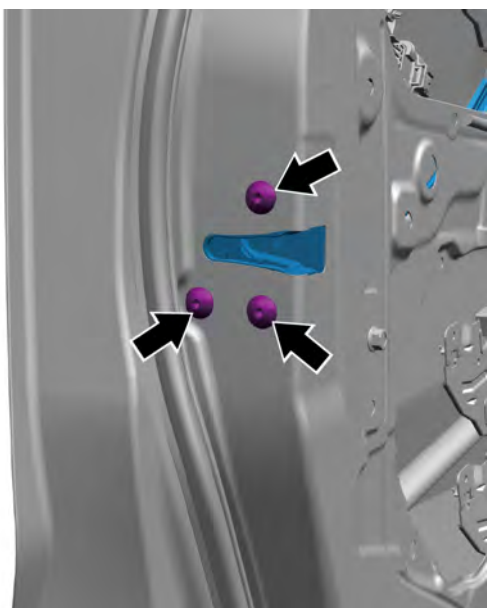


- 4 Install the left door lock protective cover B.

Caution

After installation, check the cooperation between the left door lock protective cover B and the left front door lock for flatness.

- 5 Install the left front door lock cylinder pull rod A into the left front door lock.



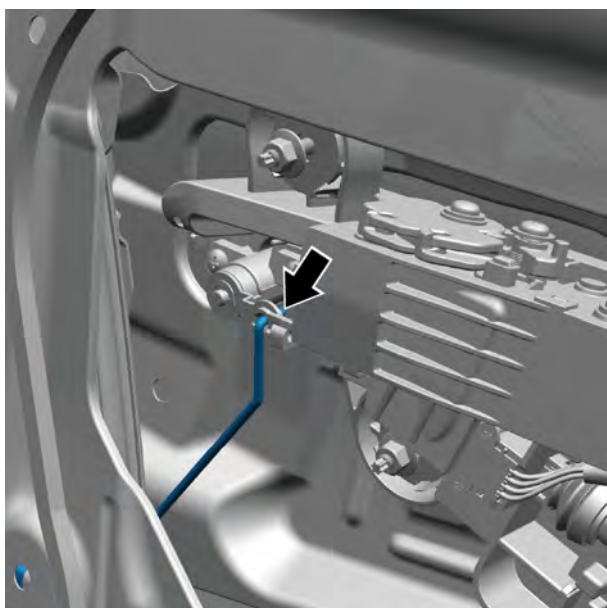
- 6 Move the left front door lock, internal and exterior release cable and lock cylinder pull rod to the installation position.
- 7 Install the 3 fixing bolts connecting the left front door lock with the left front door.
Torque: 6N·m



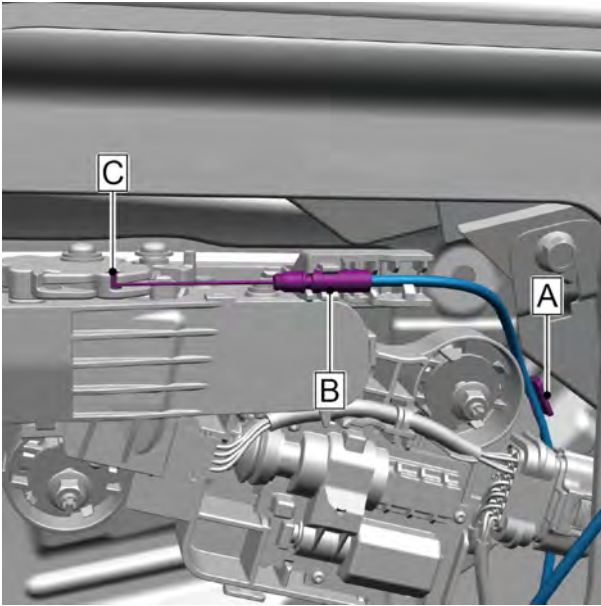
- 8 Connect harness connector connecting the front left door harness and left front door lock.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 9 Insert the FL door lock cylinder pull rod into the FL door lock cylinder assembly

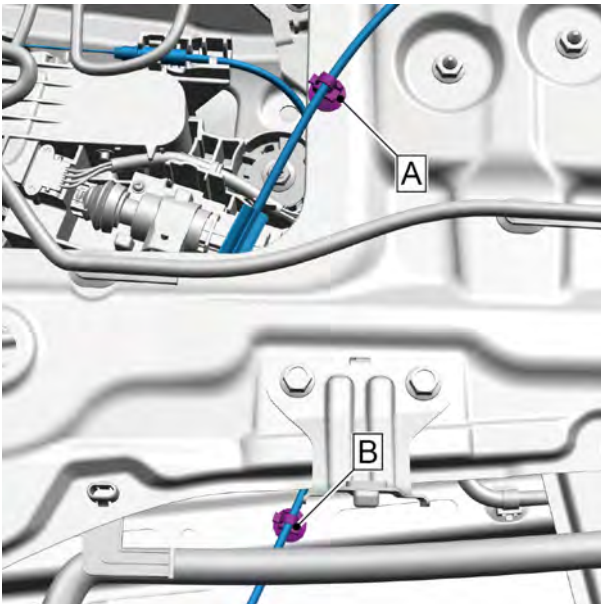


- 10 Install the 2 fixing clips B and C connecting the front door exterior release cable and the left front door exterior release handle.

Caution

Check whether the 2 fixing clips B and C connecting the front door exterior release cable and the left front door exterior release handle are installed in place.

- 11 Install the 1 fixing clip A connecting the front door exterior release cable and the left front door exterior release handle.



- 12 Install the 1 fixing clip B of the front door interior release cable and left front door.
- 13 Install the 1 fixing clip A of left front door exterior release cable and left front door.

- 14 Install the front left door watertight membrane.
- 15 Install the left front door interior trim panel assembly.
- 16 Connect the negative cable of battery.

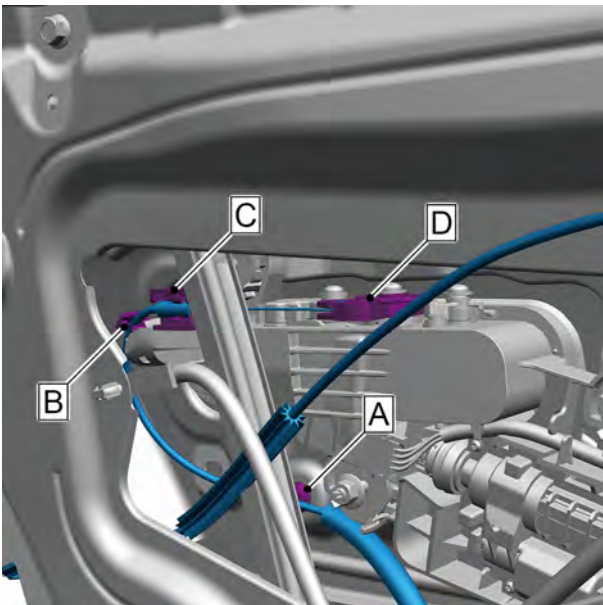
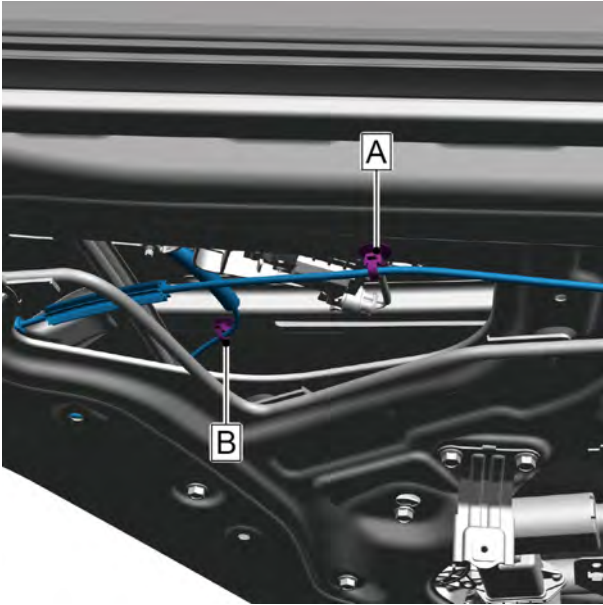
11.9.7.2 Replacement of rear left door lock

Removal procedure

Caution

The left and right rear locks are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

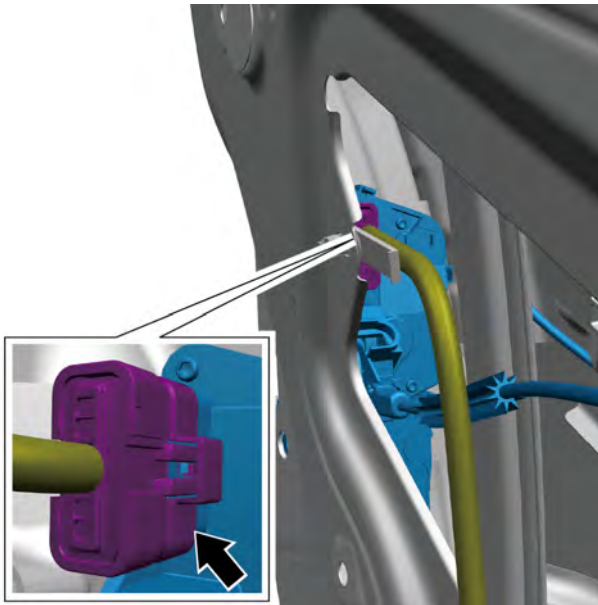


- 2 Remove the left rear door interior trim panel assembly. Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)
- 3 Remove the left rear door watertight membrane. Refer to [Replacement of Left Rear Door Watertight Membrane](#)
- 4 Disconnect the fixing clip A of rear left door interior release cable and the rear door lock.
- 5 Disconnect the 1 fixing clip B of left front door exterior release cable and the rear door lock.

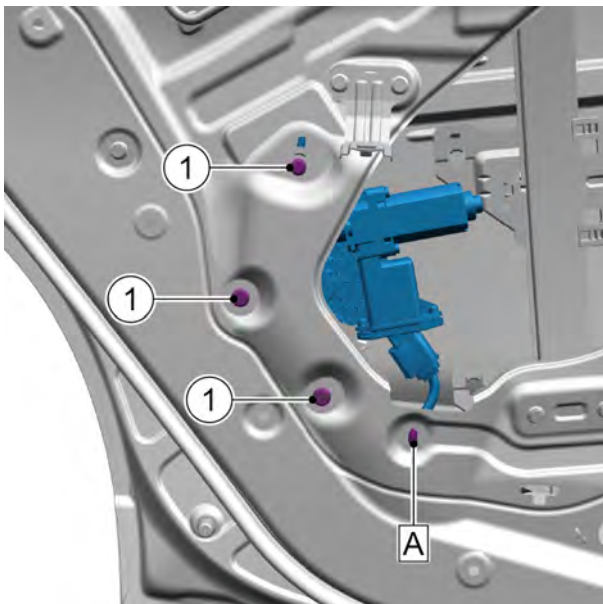
- 6 Disconnect the 1 fixing clip A of left rear door exterior release cable and the left rear door lock.
- 7 Disconnect the 1 fixing clip B connecting the left rear door exterior release cable and the left rear door exterior release handle.
- 8 Disconnect the fixing clips C and D connecting the rear door exterior release cable and the left rear door exterior release handle.

Caution

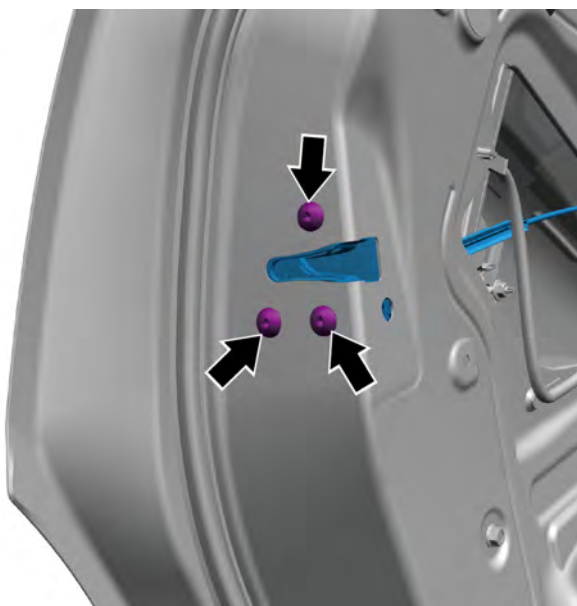
Disconnect the fixing clip C outward, and then disconnect the fixing clip D.



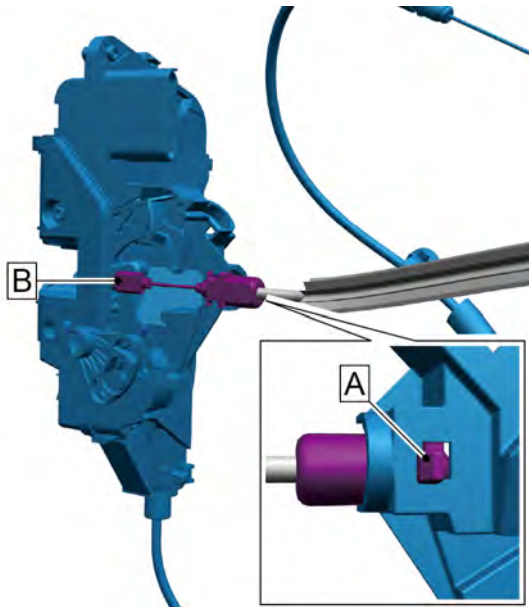
- 9 Disconnect 1 harness connector connecting the left rear door harness with the left rear door lock.



- 10 Remove the 3 fixing bolts 1 of the left rear door glass regulator motor and left rear door.
- 11 Disconnect the 1 fixing clip A connecting the left rear door harness with the left rear door.
- 12 Left rear door window regulator motor is removed.



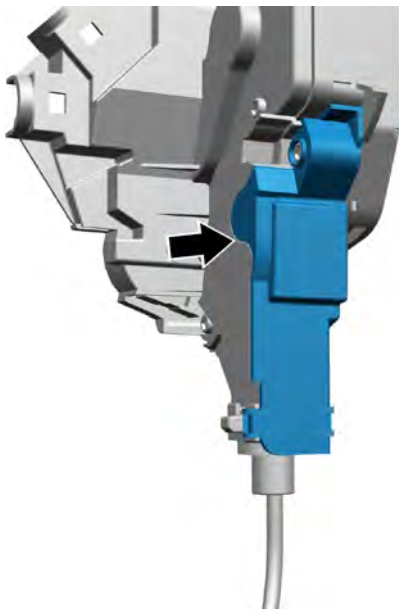
- 13 Remove the 3 fixing bolts connecting the left rear door lock with the left rear door .
- 14 Take out the left rear door lock and the inner and outer release cables.



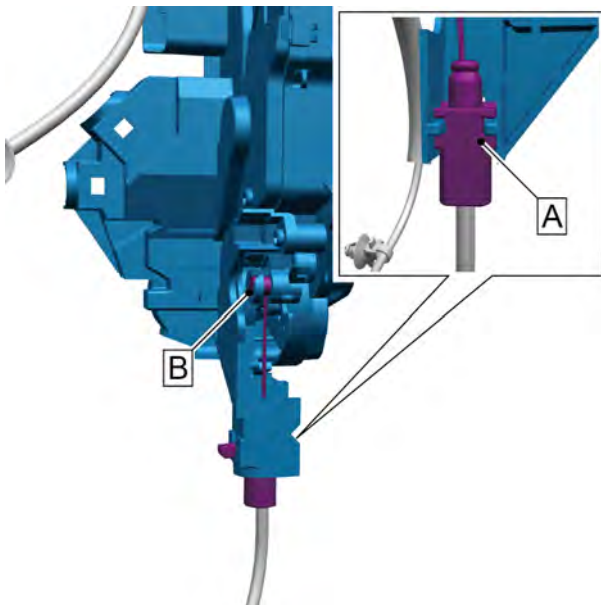
- 15 Disconnect the clips A and B of rear left door interior release cable and the rear door lock.

Caution

Disconnect the fixing clip A outward, and then disconnect the fixing clip B.



- 16 Use a straight screwdriver to pry off the left door lock shield.



- 17 Disconnect the clips A and B of rear left door interior release cable and the left rear door lock.

Caution

Disconnect the fixing clip A outward, and then disconnect the fixing clip B.

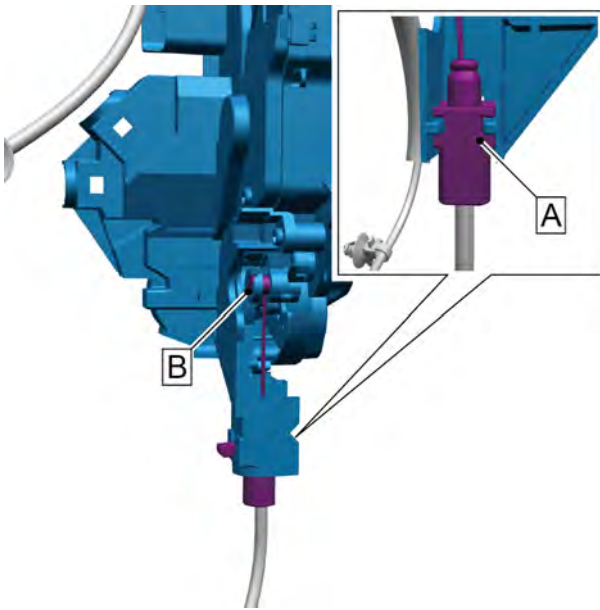
- 18 Remove the rear left door lock.

Installation procedure

- 1 Move the left rear door lock to the installation position.
- 2 Install the fixing clips A and B connecting the rear door exterior release cable and the left rear door lock.

Caution

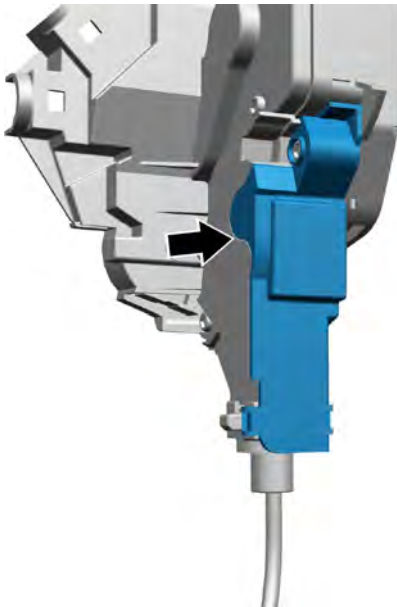
Check whether the fixing clips A and B connecting the front door exterior release cable and the left front door lock are installed securely.

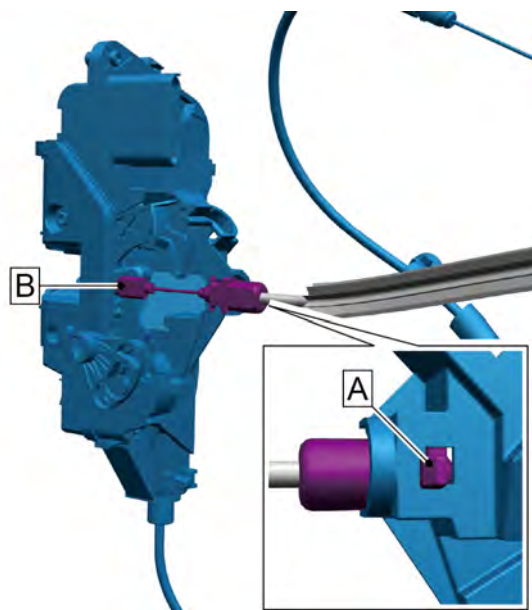


- 3 Install the rear left door lock cover.

Caution

After installation, check the cooperation between the left door lock protective cover and the left front door lock for flatness.

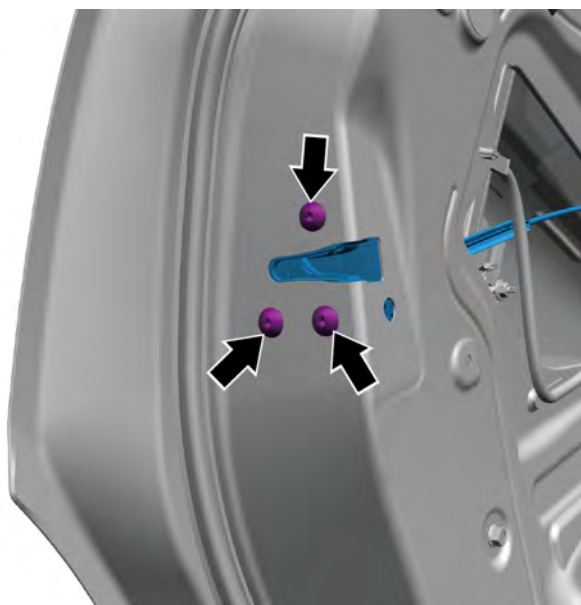




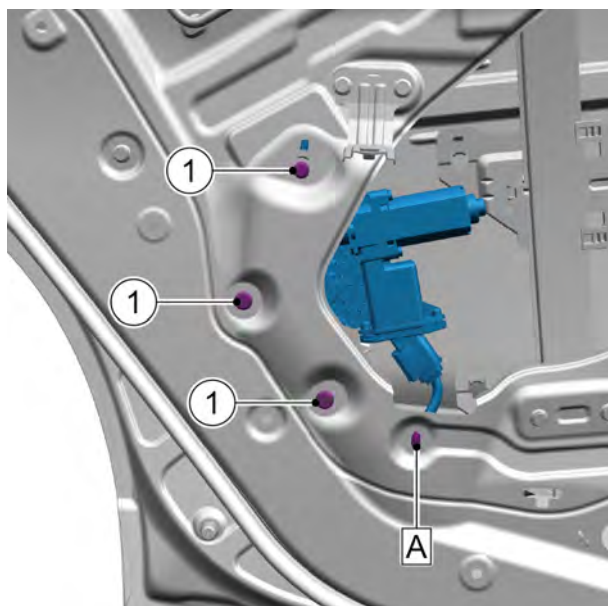
- 4 Install the fixing clips A and B connecting the rear door interior release cable and the left rear door lock.

Caution

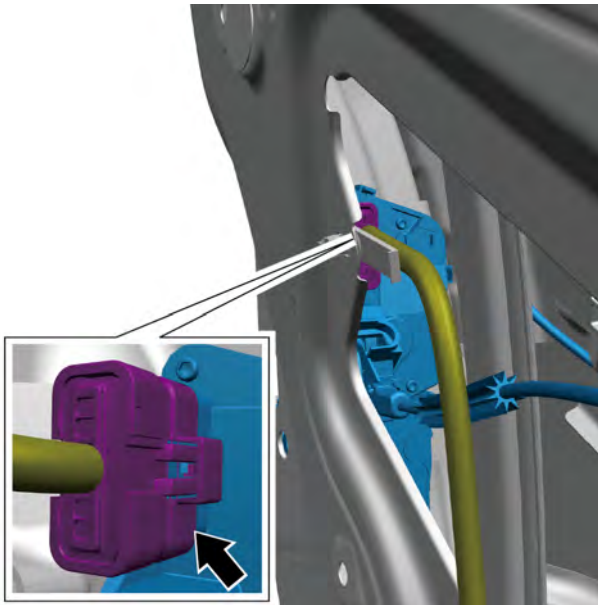
Check whether the fixing clips A and B connecting the rear door interior release cable and the left rear door lock are installed securely.



- 5 Move the left rear door lock, inner and outer unlocking cables and lock cylinder pull rod to the installation position.
- 6 Install the 3 fixing bolts connecting the left front door lock with the left front door.



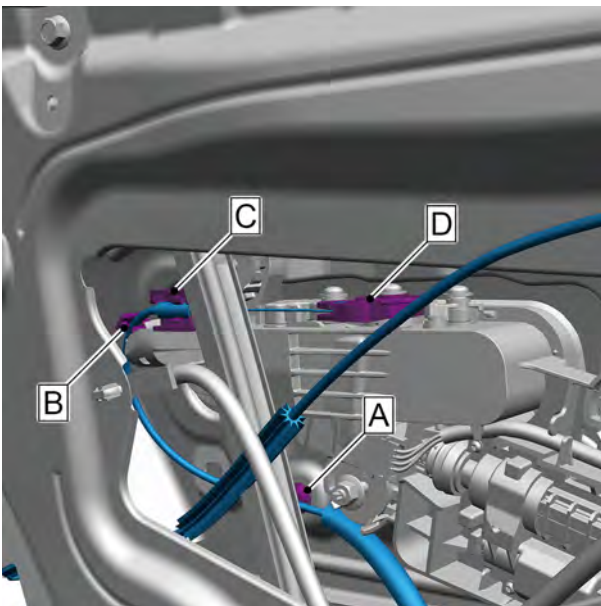
- 7 Move the left rear power glass regulator motor to the installation position.
- 8 Install the 1 fixing clip A connecting the left rear door harness to the left rear door.
- 9 Remove the 3 fixing bolts 1 of the left rear door glass regulator motor and the left rear door.



- 10 Connect 1 harness connector connecting the left rear door harness with the left rear door lock.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

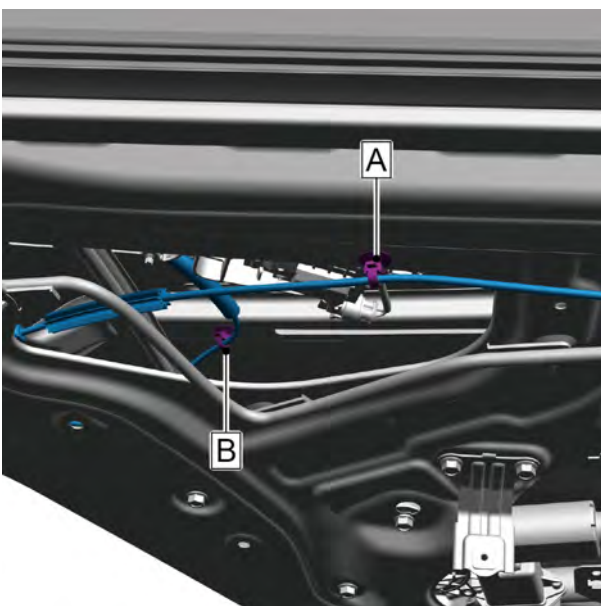


- 11 Install the 2 fixing clips D and C connecting the rear door exterior release cable and the left rear door exterior release handle.

Caution

Check whether the 2 fixing clips D and C connecting the rear door exterior release cable and the left rear door exterior release handle are installed in place.

- 12 Install the 1 fixing clip B connecting the rear door exterior release cable and the left rear door exterior release handle.
- 13 Install the 1 fixing clip A connecting the rear door outer opening cable with the left rear door.



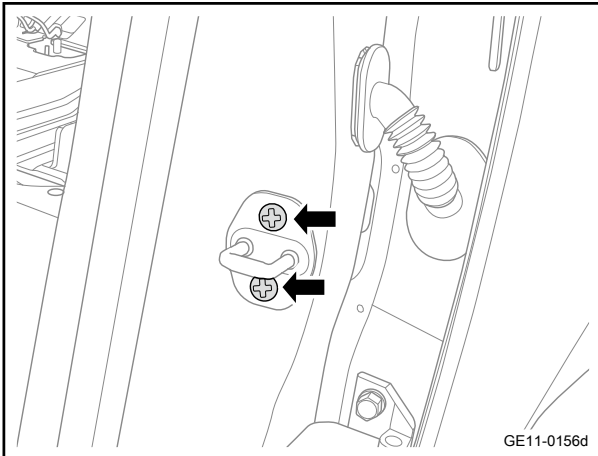
- 14 Install the 1 fixing clip B connecting the rear door outer opening cable with the left rear door.
- 15 Install the 1 fixing clip A connecting the rear door inner opening cable with the left rear door.

- 16 Install the left rear door watertight membrane.
- 17 Install the RL door interior trim panel assembly
- 18 Connect the negative cable of battery.

11.9.7.3 Replacement of door lock catch assembly

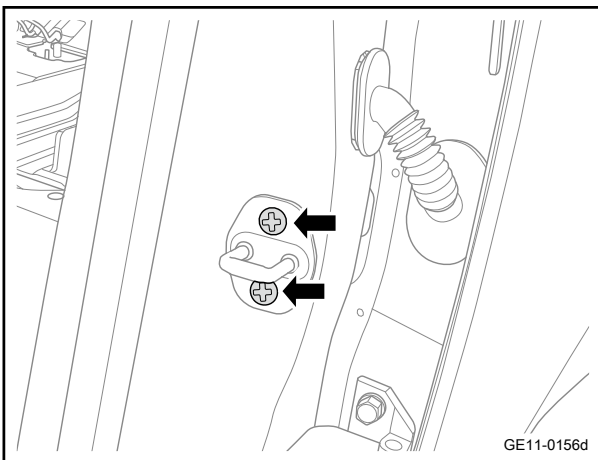
Removal procedure

- 1 Open doors.
- 2 Remove the 2 fixing bolts of the door lock catch assembly.
- 3 Take off the door lock catch assembly.



Installation procedure

- 1 Move the door lock catch assembly to the installation positions.
- 2 Install the 2 fixing bolts of door lock catch assembly.
Torque: 23N·m (metric system) 17lb·ft (Imperial system)



- 3 Close doors.

11.9.7.4 Replacement of tailgate lock assembly

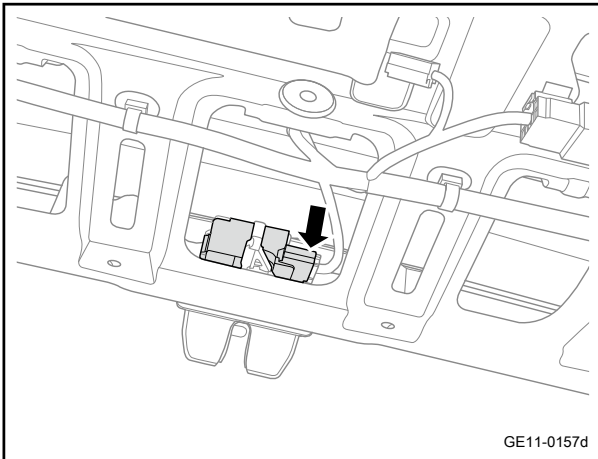
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

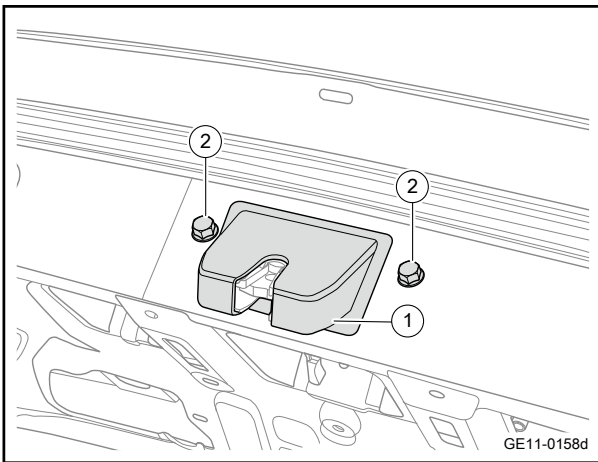
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

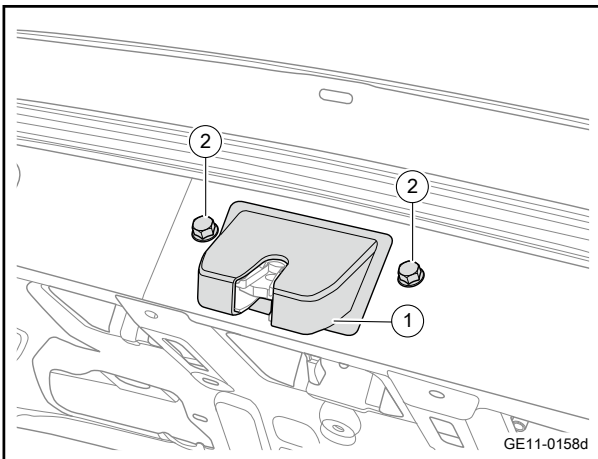
- 2 Remove the interior trim panel of the tailgate. Refer to [Replacement of tailgate lower interior trim panel assembly](#)



- 3 Disconnect the harness connector of tailgate lock assembly.

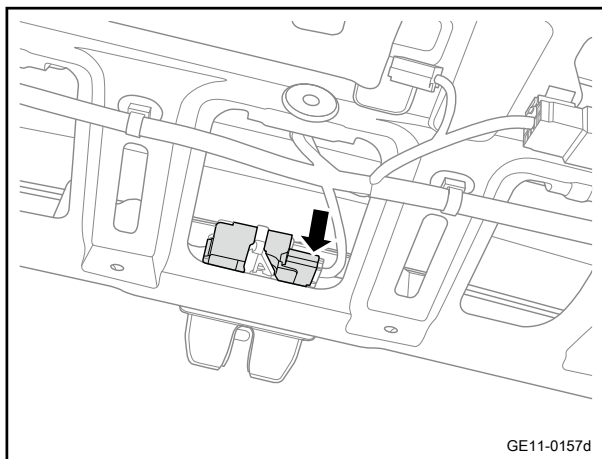


- 4 Remove the tailgate lock body cover 1.
- 5 Remove 2 fixing bolts 2 of tailgate lock assembly.
- 6 Remove the tailgate lock assembly.



Installation procedure

- 1 Move the tailgate lock buckle assembly to the correct installation position.
- 2 Install the 2 fixing bolts 2 of tailgate lock assembly.
Torque: 23N·m (metric system) 17lb·ft (Imperial system)
- 3 Install tailgate lock body cover 1.



- 4 Connect the tailgate lock assembly harness connector.

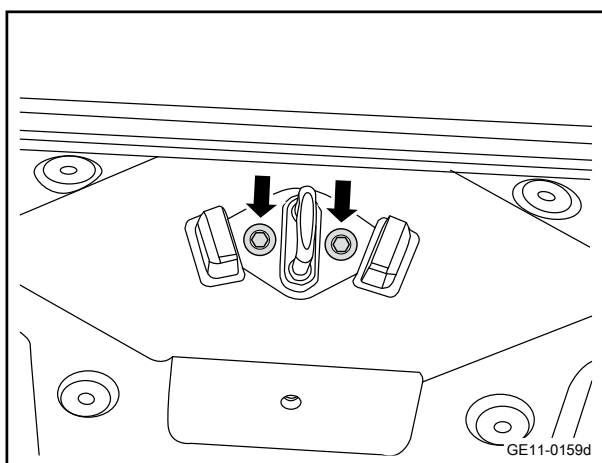
- 5 Install the tailgate lower trim panel assembly.

- 6 Connect the negative cable of battery.

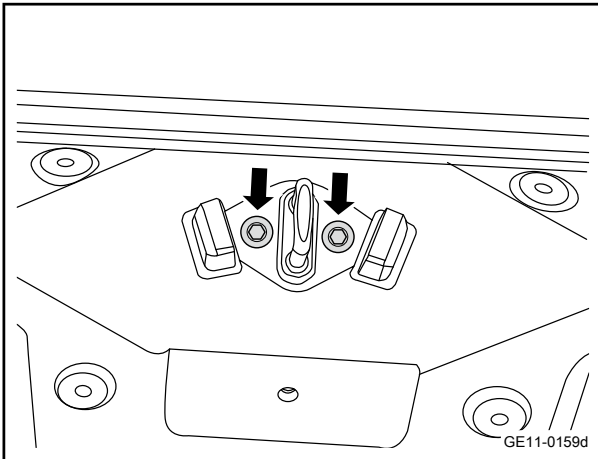
11.9.7.5 Replacement of tailgate lock assembly

Removal procedure

- 1 Open the tailgate.
- 2 Remove the interior trim panel assembly of the rear wall.
Refer to [Replacement of Interior Trim Plate Assembly of Rear Wall](#)
- 3 Remove 2 fixing bolts of tailgate lock catch assembly.
- 4 Remove the tailgate lock catch assembly.



Installation procedure



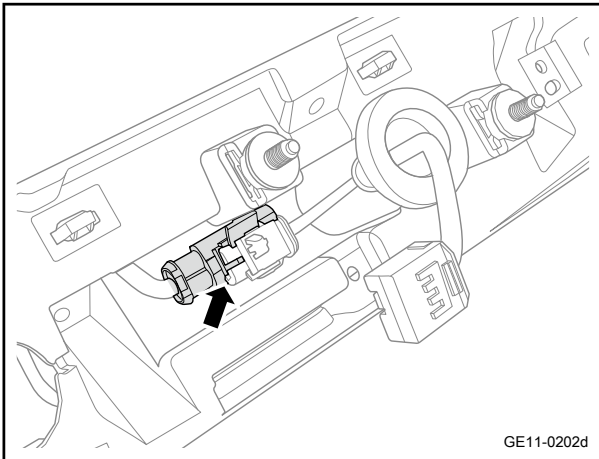
- 1 Move the tailgate lock catch assembly to the correct installation position.
- 2 Install the 2 fixing bolts of tailgate lock catch assembly.
Torque: 23N·m (metric system) 17lb·ft (Imperial system)

- 3 Install the assembly-interior trim panel rear wall.
- 4 Close the tailgate.

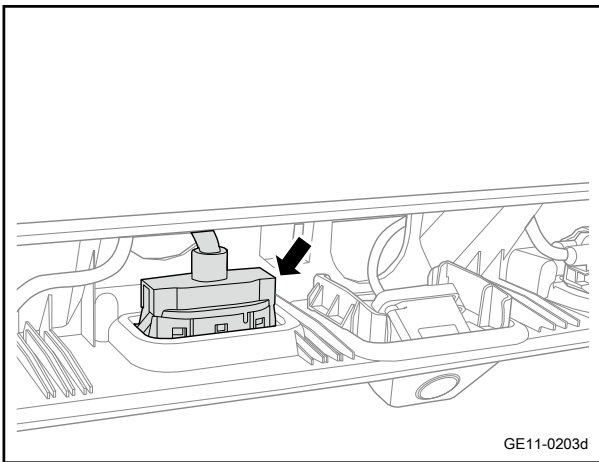
11.9.7.6 Replacement of tailgate micro switch

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the tailgate exterior trim panel. Refer to [Replacement of Tailgate Exterior Trim Panel Assembly](#)
- 3 Remove the tailgate through lamp. Refer to [Replacement of Tailgate Through Lamps](#)

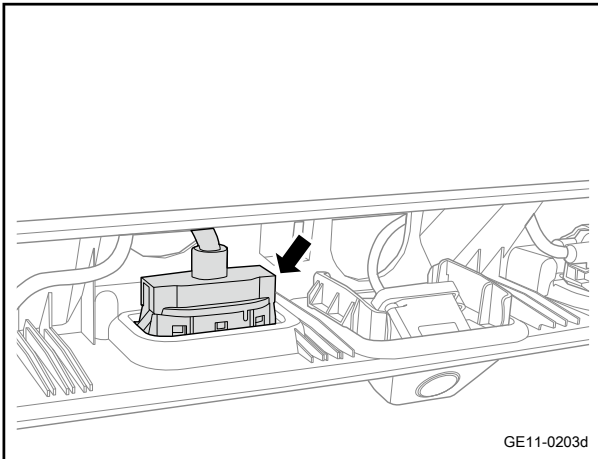


4 Disconnect the harness connector of micro switch.

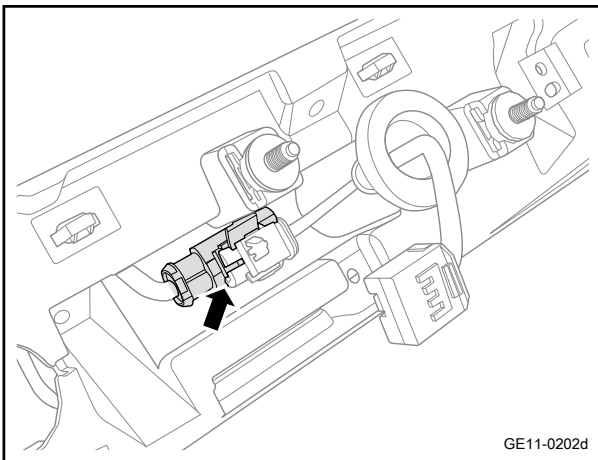


5 Pry off the microswitch.

Installation procedure



1 Install the micro switch.



2 Connect the harness connector of micro switch.

3 Install the tailgate through lamp.

4 Install the tailgate exterior trim panel assembly.

5 Connect the negative cable of battery.

11.9.7.7 Replacement of central door lock button

Refer to [Replacement of Left Front Door Electrically Operated Door Glass Lift Switch Assembly](#)

11.10 Remote Anti-theft System

11.10.1 Specification

11.10.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing nuts for connecting the front keyless entry internal antenna with the instrument panel body	M6	2.5-3.5
Fixing screws connecting the middle antenna with the rear panel assembly of the auxiliary fascia console	ST4.2×13	1.3-1.7
Fixing bolt connecting rear antenna and body	M6	2.5-3.5

11.10.2 Description and operation

11.10.2.1 General

Remote anti-theft system is an auxiliary vehicle alarm system that is triggered in the occasion of a forced invasion. The system is used together with central locking system. Radio frequency interference or battery exhaustion can fail the system.

The remote anti-theft system composes of the following main components:

- Body control module (integrated PEPS function)
- Smart key
- Keyless entry + keyless locking sensor
- Vehicle key search antenna
- Door handle control module
- Concealed door handle
- front engine compartment cover, four door locks and trunk lock micro-switch

The remote anti-theft system is designed to give an alarm when someone forcibly opens the door. Under the alarm system, the anti-theft horn will sound intermittently and all the turn signals will flash simultaneously. After 30s, the horn stops working, and only the left and right turn signals flash for 5min. When all doors are closed, the alarm will continue to sound for 30s. 30s later, the horn and headlights stop alarming, the door is locked, and the system returns to the enabled state. The remote control anti-theft system will not affect the start-up or normal operation of the vehicle.

Remote door locking

- The power mode is in the OFF state. Press the unlocking button on the remote control once, the four doors will be unlocked, the turn signals will flash for three times to confirm, the interior lamps will turn on gradually, and the position lamps will turn on.
- The power mode is in the OFF state. Press the locking button on the remote control once to lock the four doors, the turn signal lights up for 1s and goes out, the interior lamps fade out, and the position lamps go out.

Inching switch of the front engine compartment cover

A contact switch is set under the front engine compartment cover, which is disconnected when the front engine compartment cover is closed; once the front engine compartment cover is opened, this switch is turned off and sends a grounding signal to the IBC, and the IBC sends a prompt message to the head unit (instrument controller) via the CAN bus.

Boot lid contact switch

The boot is equipped with a contact switch. If the boot lid is closed, the switch will be disconnected; if the boot lid is opened, this switch will be connected and send the grounding signal to IBC. Afterward, according to this signal and with the help of the CAN bus, the IBC will send the message of lightening the warning lamp to indicate that the boot lid (tailgate) is opened to the to the audio host (instrument controller) through CAN bus.

Door contact switch

A contact switch is set in each door lock mechanism assembly, which is disconnected when the door is closed; once the door is opened, this switch in the door is turned off and sends a grounding signal to the IBC, and the IBC sends a message of “open the door” to the head unit (instrument controller) via the CAN bus.

Enter anti-theft state

- When the power mode is in the OFF state via multimedia settings, close the door, lock the door by pressing the locking button on the remote control (press the locking button once), and the turn signal lamp flashes once. Enter the anti-theft state after 3s.
- When automatic locking, the system will automatically enter the anti-theft state.
- When locking the door with the locking button of the remote control, if any door is not closed properly, the smart key cannot be used to lock the vehicle.
- When the external anti-theft alarm system is in the unguarded status, turn the power supply of the multimedia setting vehicle to OFF. If the doors are closed and the two covers are not closed properly, perform keyless locking or lock the door by pressing the locking button on the smart key (press the locking button once). The turn signal lamp flashes 3 times, and the system will enter the reminder state. The horn sounds twice every 2 seconds, and after 10 seconds, it will enter the partially protected status. If 10 seconds later, if all the doors are closed, the external anti-theft alarm system will enter the guard status. If any door is still not closed, the external anti-theft alarm system will enter the partially guard status, and only the closed door can trigger the alarm.

Keyless entry and start(PEPS Passive Entry Passive Start)

Enter the system without a key. As long as you enter a certain range around the vehicle with the legal smart key, the vehicle's low-frequency antenna will find the key and activate the smart key, the smart key will send a high-frequency verification signal, and the IBC(PEPS) will receive and verify whether it is legal. If the verification passes, the IBC will control the door lock to unlock automatically. The door handle

will automatically pop up. Pull the door handle and the door will open. After the vehicle is unlocked successfully, the turn signals flash 3 times, and the position lamps turn on.

When there are strong interference sources such as high-voltage charging piles, solar charging piles and signal transducer around the vehicle, the key search is affected and the function is temporarily invalid. Please pay attention to the lock status!

Keyless unlocking and keyless locking have a greater demand for the power supply of the complete vehicle. When the key is parked around the vehicle for more than 1 minute or the vehicle has not been used for 7 days, this function will be temporarily disabled. The key is activated to power supply of the vehicle and the function returns to normal. Open/close can be set via the multimedia display

11.10.3 System working principles

11.10.3.1 System Working Principles

Remote unlocking/locking

When the button is pressed on the smart key, the smart key sends a request signal to the IBC, and the IBC(PEPS) receives and verifies whether it is legal. If the verification passes, the IBC will control the automatic unlocking or locking of the door lock. The door handle control module will transmit signals through LIN and IBC, and perform the hidden door handle pop-out and hide, and the IBC will perform corresponding functions. If the door handle is equipped with mechanical hidden door handle, it is required to manually press the door handle to complete the pop-up and hidden operations.

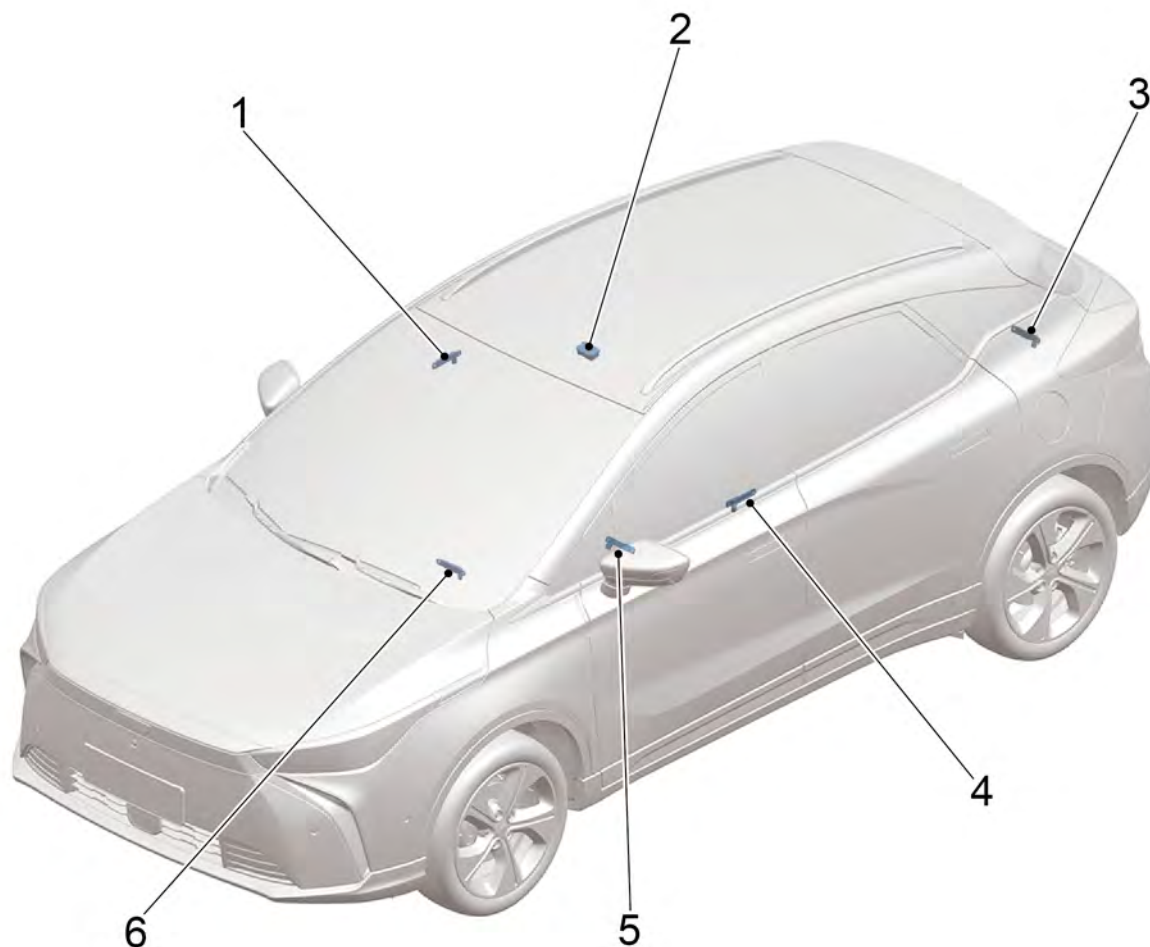
Keyless entry and start (PEPS Passive-Entry-Passive-Start)

Enter the system without key. As long as you enter a certain range around the vehicle with the legal smart key, the vehicle's low-frequency antenna will find the key and activate the smart key, the smart key will send a high-frequency verification signal, and the IBC(PEPS) will receive and verify whether it is legal. If the verification passes, the IBC will control the automatic unlocking of the door lock. The door controller will signal through the LIN line and the IBC, perform the hidden door handle pop, pull the door handle, and the door will open.

For keyless starting system, the IBC detects the validity of the surrounding remote control, and the remote control sends a signal in response to the vehicle. At this time, the IBC performs anti-theft matching with the IPU through the CAN network system. After the successful matching, the IPU sends a signal to the VCU. If there is no abnormality, the VCU sends the signal of closing the main relay to the BMS. After the relay is successfully closed, the VCU sends the signal to communicate with the IPU. If there is no abnormality, turn on the READY lamp, and the whole vehicle starts successfully.

11.10.4 Part position

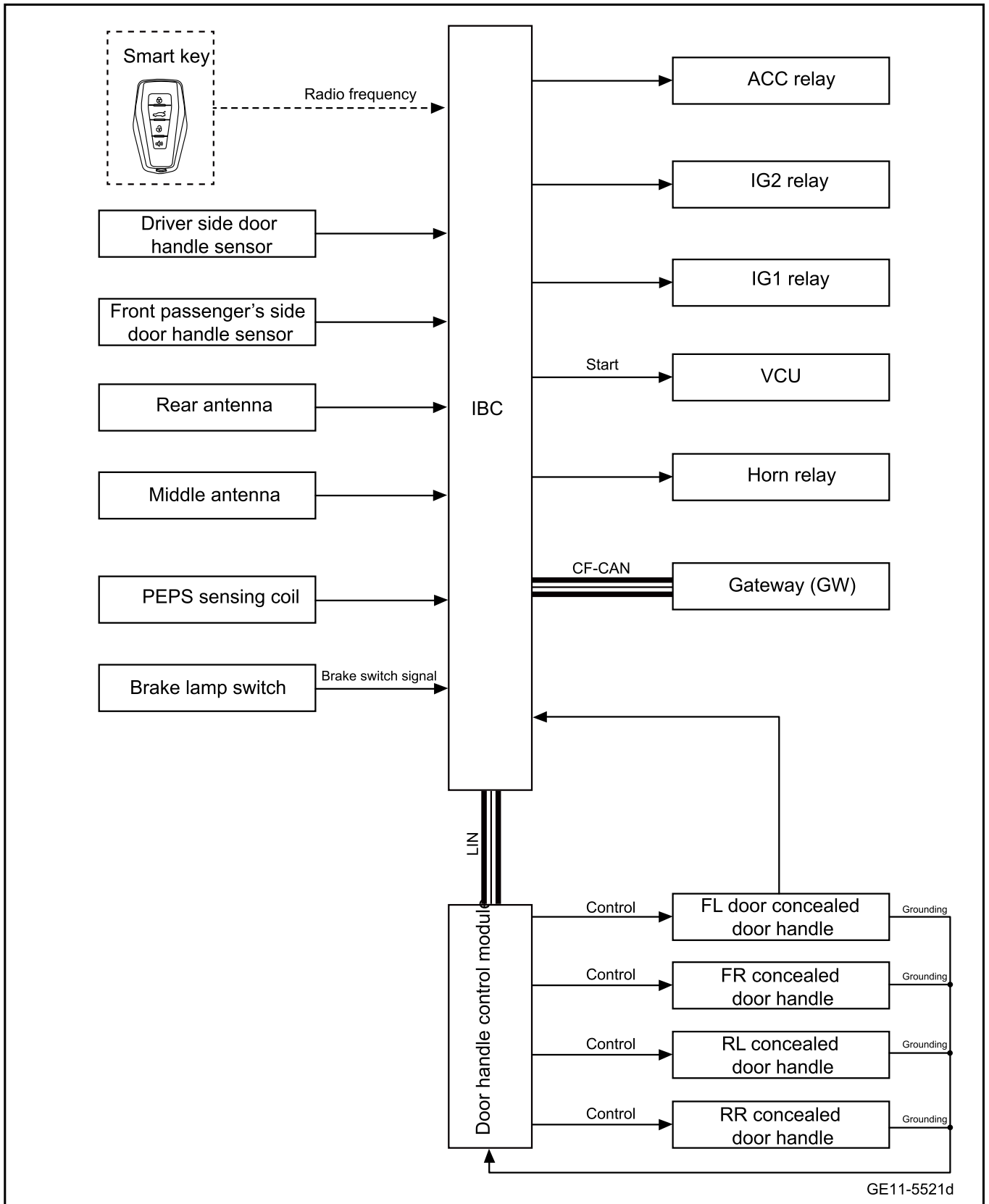
11.10.4.1 Part Position



- | | |
|--|---|
| 1. Left front keyless entry internal antenna | 4. Right front keyless entry internal antenna |
| 2. RF receiver module | 5. Middle antenna |
| 3. Rear antenna | 6. Left keyless entry internal antenna |

11.10.5 Electrical block diagram

11.10.5.1 Electrical Schematic Diagram of Anti-theft System



11.10.6 Diagnostic information and procedures

11.10.6.1 Diagnosis Description

Before diagnosing the fault of the remote anti-theft system Refer to the Description and Operations and System Working Principle. Understand and be familiar with the working principle of the remote anti-theft system, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation. Any fault diagnosis of remote anti-theft system should start with 11.10.7.2 routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.10.6.2 Routine inspection

- Check after-sales installations that may influence anti-theft system and ensure that these installations do not affect the PEPS system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.10.6.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.10.6.4 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.10.6.5 Fault symptom table

Symptom	Possibility and cause	Measures
The vehicle cannot be started or the anti-theft indicator flashes when the smart key is in the vehicle	1. Electromagnetic interference	Check whether there are high-power electrical equipment such as transformers, substations and high-voltage distribution boxes near the vehicle.
	2. Vehicle remote key information is lost	Re-match the vehicle remote key information.
	3. Smart key fault	Refer to Smart key remote function is invalid
	4. Middle Antenna Failure	Refer to Middle Antenna Failure
	5. Rear antenna is faulty	Refer to Rear Antenna Failure
	6. IBC fault	Replace the IBC
The door cannot be opened when the smart key is outside	1. Electromagnetic interference	Check whether there are high-power electrical equipment such as transformers, substations and high-voltage distribution boxes near the vehicle.
	2. Vehicle remote key information is lost	Re-match the vehicle remote key information.
	3. Fault of the handle sensor of the driver side door	Refer to Fault of Driver Side Door Handle Sensor
	4. Fault of the handle sensor of the front passenger side door	Refer to Fault of Front Passenger Side Door Handle Sensor
	5. IBC fault	Replace the IBC

11.10.6.6 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B128200	ACC output failure	Refer to ACC Relay Fault
B128229	ACC relay control output is invalid	
B128A00	Trunk antenna failure	Refer to Rear Antenna Failure
B128B00	Rear bumper antenna open	
B128600	Driver side antenna fault	Refer to Fault of Driver Side Door Handle Sensor
B128700	Antenna fault at front passenger side	Refer to Fault of Front Passenger Side Door Handle Sensor
B109001	Opening fault of position limiting switch of the left front door handle	Refer to Fault of Concealed Door Handle Status Sensor
B109101	Closing fault of position limiting switch of FL door handle	
B109301	Closing fault of FR door handle limit switch	

Diagnostic Trouble Code	Description	Fault location/elimination method
B109401	Opening fault of FR door handle position limiting switch	
B109601	Closing fault of Rear left door handle limit switch	
B109701	Opening fault of Rear left door handle limit switch	
B109901	Closing fault of Rear right door handle limit switch	
B109A01	Opening fault of Rear right door handle limit switch	
B128900	Antenna failure in the middle of the vehicle	Refer to Middle Antenna Failure
B128300	IGN1 output failure	Refer to IGN1 Relay Fault
B128329	Invalid IGN1 relay control output	
B128400	IGN2 output failure	Refer to IGN2 Relay Fault
B128429	Invalid IGN2 relay control output	
B108000	RF receiver communication failure	Refer to RF Receiver Module Communication Failure

11.10.6.7 ACC Relay Fault

1. DTC description:

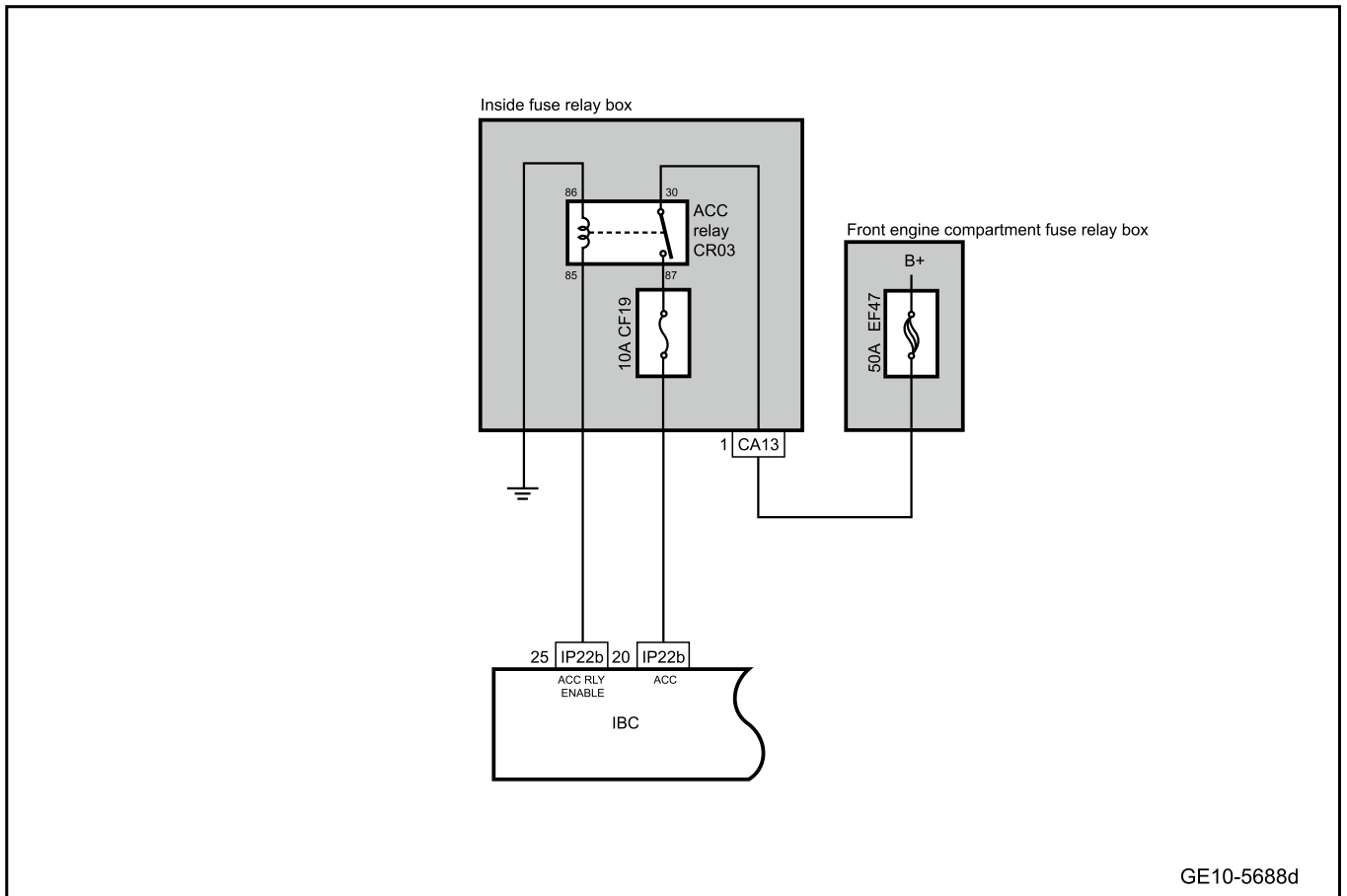
DTC code	Code description
B128200	ACC output failure
B128229	ACC relay control output is invalid

2. Trouble code setting and trouble locations:

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128200	Terminal is ACC/IGN, AU ACC U FB is open or short to ground or the terminal is closed, A_ACC_FB is shorted to BAT detection time: 1000ms or the terminal is ACC/IGN, OU ACC is shorted to ground or the terminal is closed, O_ACC_RLYshort to BAT detection time: 100ms	CAN bus mode power supply voltage is between 9V-16V	1. Relay 2.IBC

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128229	The ignition status is IGN ON (PhyTccStsBody==ON) and should meet the TdiagEnable condition. cfgNodeAFS/adbooption=1terminal is ACC/IGN , A_ACC_FB short circuit to ground or terminal disconnection, A_ACC_FBis short to BAT(A_ACC_FB !=A_ACC), detection time: TCCC26 (1000 ms)		

3. Schematic circuit diagram:



GE10-5688d

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No
Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the fuse, main relay and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF19 is blown out.

Rated capacity of fuse: 10A
- C. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF47 is blown out.

Rated capacity of fuse: 50A

Yes
Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

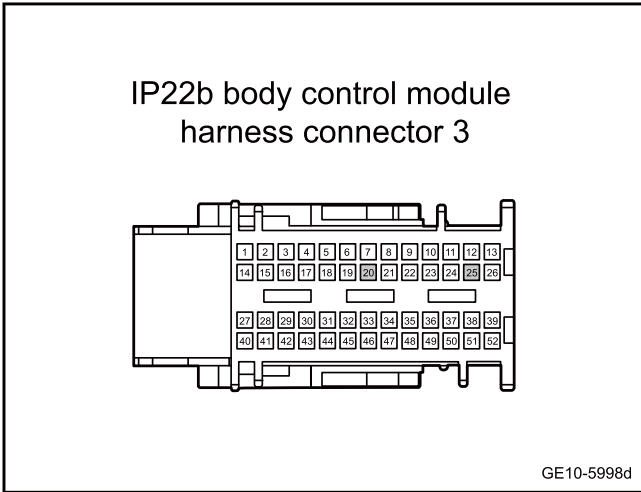
Step 4	Check the ACC relay CR03.
--------	---------------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove the ACC relay CR03 and replace ACC relay with a new relay of the same model.
- C. Confirm whether the trouble is removed.

Yes System is normal.

No

Step 5 | Check whether the circuit between the horn switch and the relay is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Remove the ACC relay CR03.
- D. Use a multimeter to measure the terminals according to the table below:

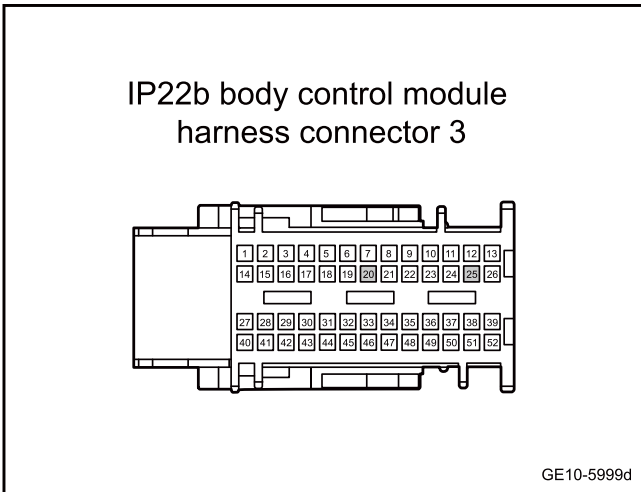
Measure terminal 1	Measure terminal 2	Standard value
IP22b(25)	CR03(85)	Standard resistance: less than 1Ω
IP22b(20)	CR03(87)	

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check whether the line between IBC and ACC relay is shorted to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Remove the ACC relay CR03.
- D. Use a multimeter to measure the terminals according to the table below:

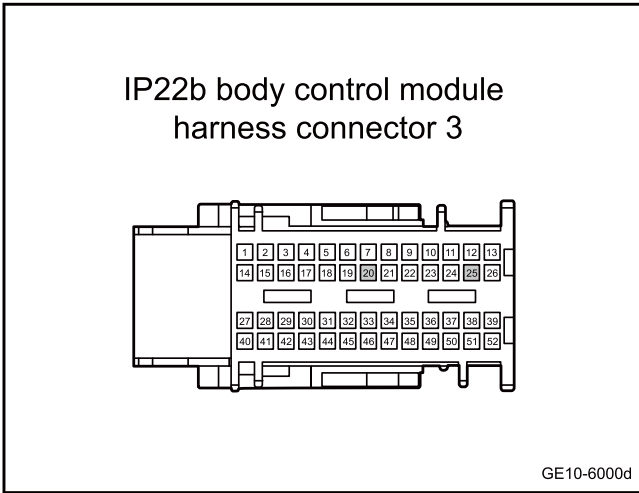
Measure terminal 1	Measure terminal 2	Standard value
IP22b(25)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(20)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 | Check whether the circuit between IBC and the ACC relay is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Remove the ACC relay CR03.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(25)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(20)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 | Check ACC relay grounding circuit.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove the ACC relay CR03.
- C. Use a multimeter to measure the resistance between terminal 86 of ACC relay CR03 and the body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Use diagnostic scanner to confirm the trouble code.
---------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

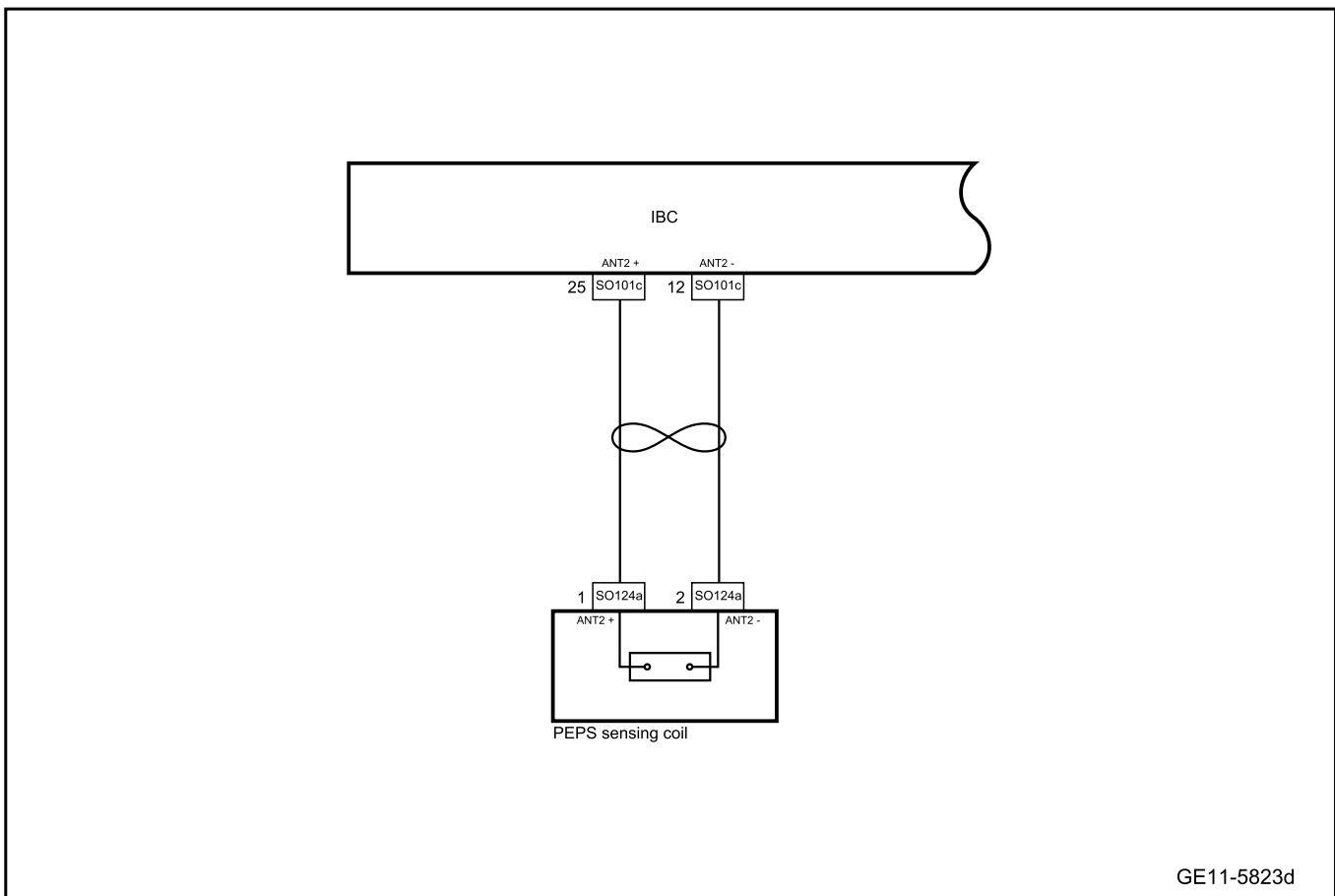
Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

11.10.6.8 PEPS induction coil fault

1. Circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

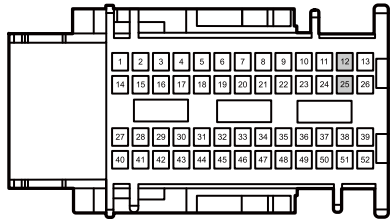
- A. Check the PEPS induction coil, IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

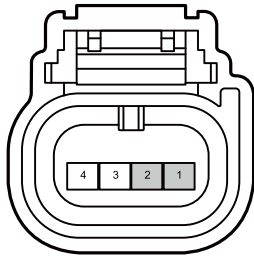
Step 2	Check the control harness between the PEPS induction coil and IBC.
--------	--

S0101c body control module harness connector



GE11-5920d

SO124a PEPS sensing coil harness connector



GE11-5921d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Unplug the PEPS induction coil harness connector SO124 a.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(12)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101c(25)		
SO101c(12)	SO124a(2)	Standard resistance: less than 1Ω
SO101c(25)	SO124a(1)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(12)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(25)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 | Replace the PEPS induction coil.

- A. Replace the PEPS induction coil. Refer to [Replacement of PEPS induction coil](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 4 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 5 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 System is normal.

11.10.6.9 Rear antenna fault

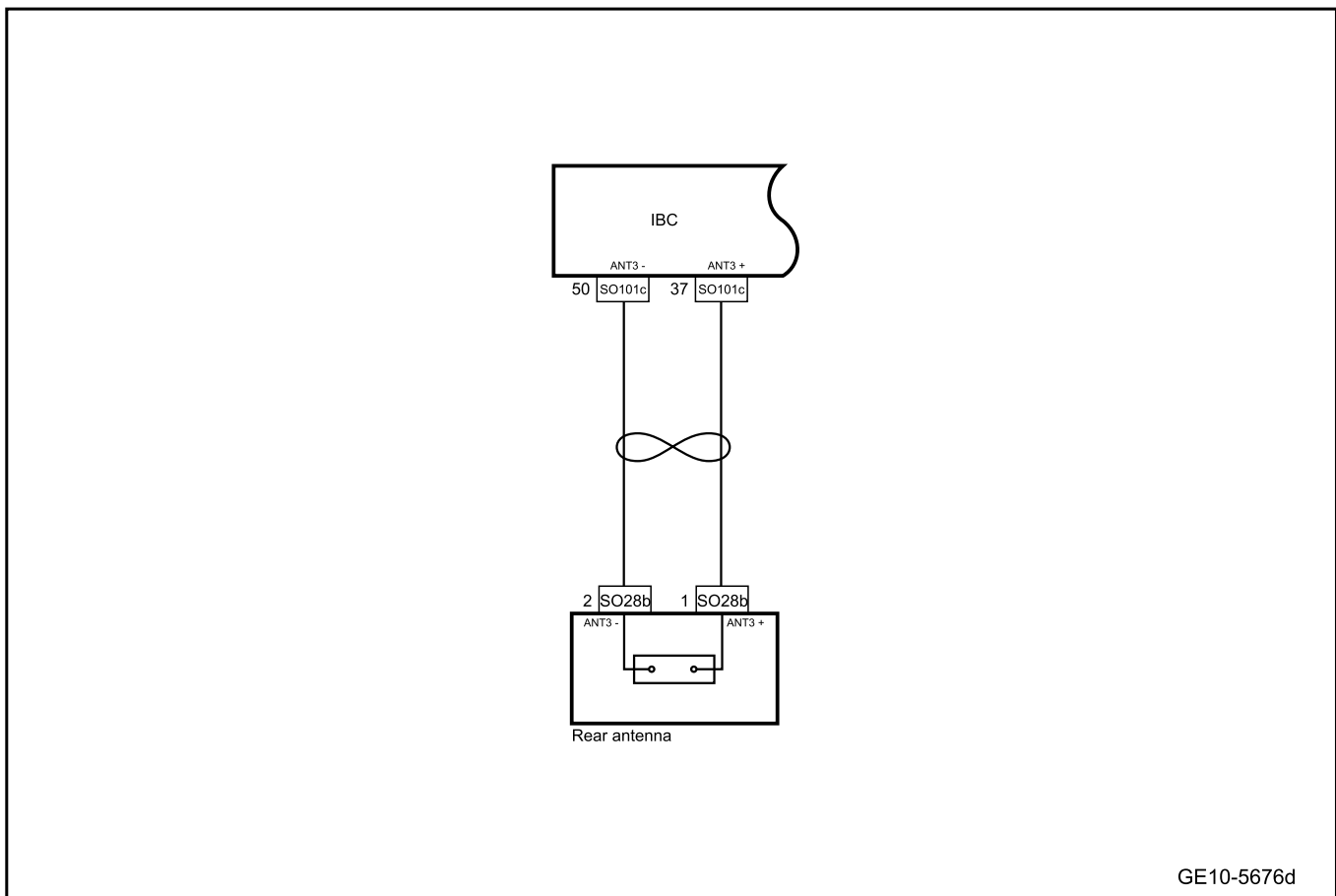
1. DTC description:

Diagnostic Trouble Code	Description
B128A00	Trunk antenna failure
B128B00	Rear bumper antenna fault

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128A00	When the trunk antenna is triggered and the antenna is detected to be short circuited to battery/ground/open circuited, or a fault (0x61FC) is detected during the antenna self-test, the dithering time is 5	1. The power supply voltage of IBC is between 9V-16V 2. Relay antenna has been configured (Cfg_trunkannen== 0 x 1)	1. Circuit 2. Rear antenna 3.IBC
B128B00	When the bumper antenna is triggered and the antenna is detected to be short circuited to battery/ground/open circuited, or a fault (0x61FC) is detected during the antenna self-test, the dithering time is 5		

3. Circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

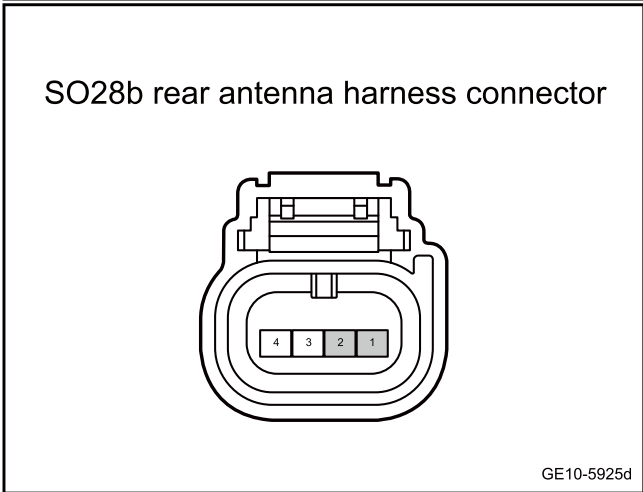
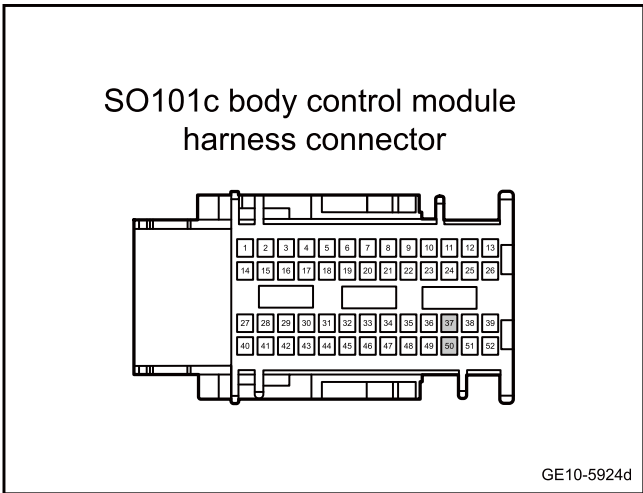
Step 2 Primary check.

- A. Check the harness connector of rear antenna and IBC harness connector for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check the control harness between the rear antenna and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector SO28b of rear antenna.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(50)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101c(37)		
SO101c(50)	SO28b(2)	Standard resistance: less than 1Ω
SO101c(37)	SO28b(1)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(50)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(37)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Replace rear antenna.

- A. Replace rear antenna. Refer to [Replacement of Rear Antenna](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 5 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 | Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8 | System is normal.

11.10.6.10 Fault of the handle sensor of the driver side door

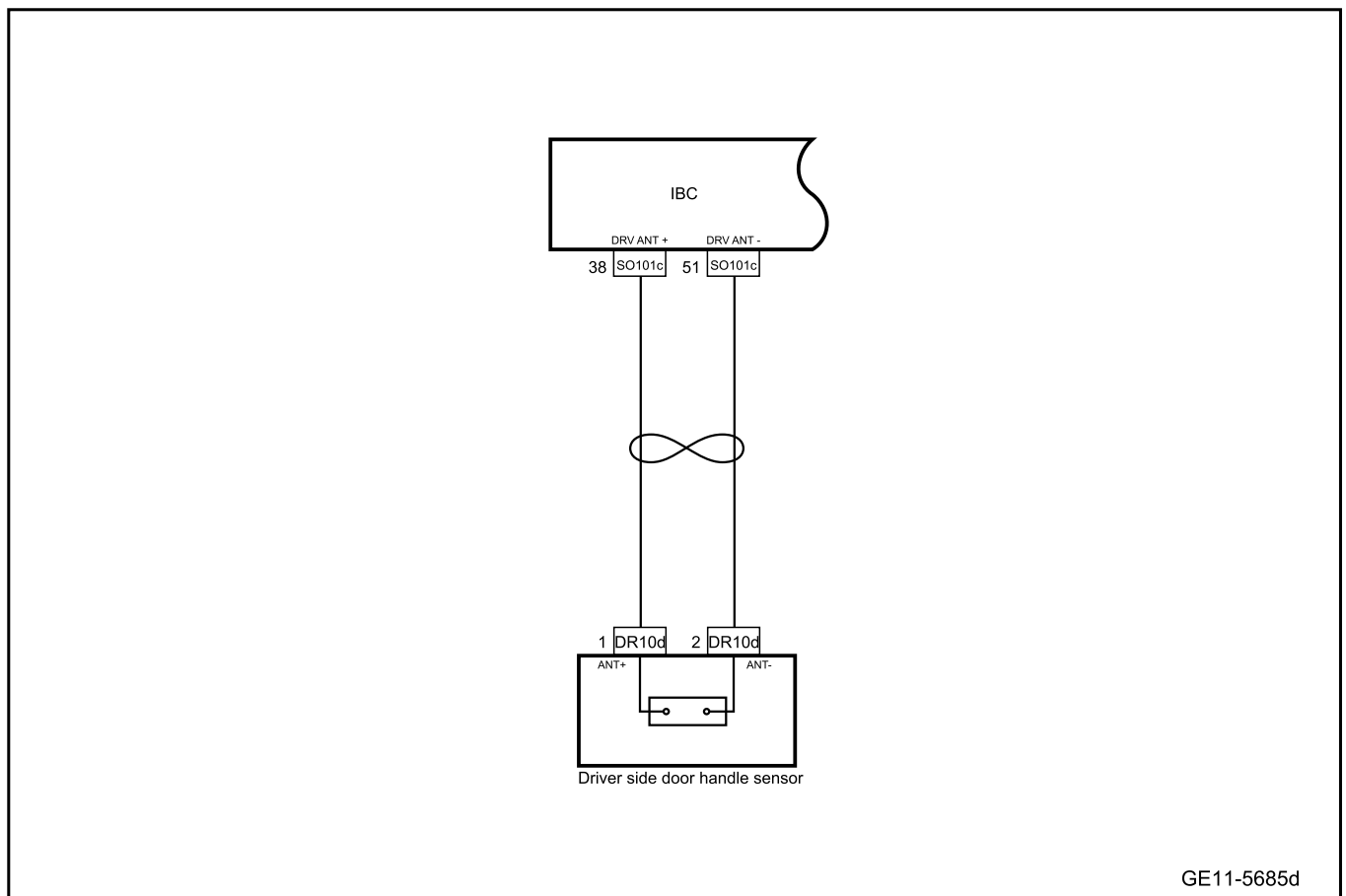
1. DTC description:

Diagnostic Trouble Code	Description
B128600	Driver side antenna fault

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128600	When the driver side antenna is triggered and the antenna is detected to be short circuited to battery/ground/ open circuited, or a fault (0x61FC) is detected during the antenna self-test, the dithering time is 5	1. The power supply voltage of IBC is between 9V-16V 2. The left door antenna has been configured(Cfg_LeftDoor antenna==0x1)	1. Circuit 2. Front left antenna 3. IBC

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

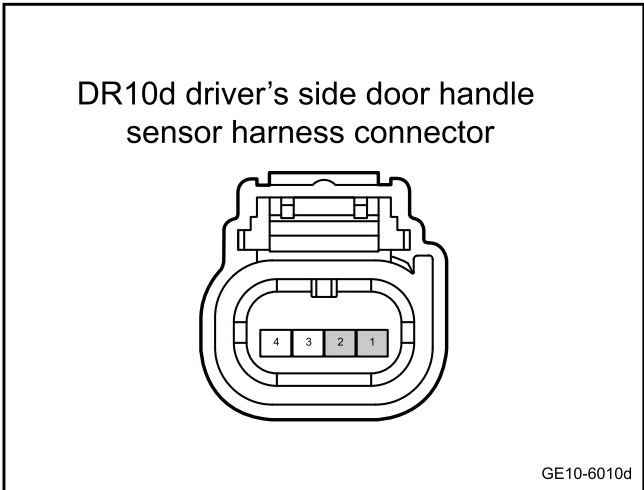
- A. Check the driver side door handle sensor and the IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

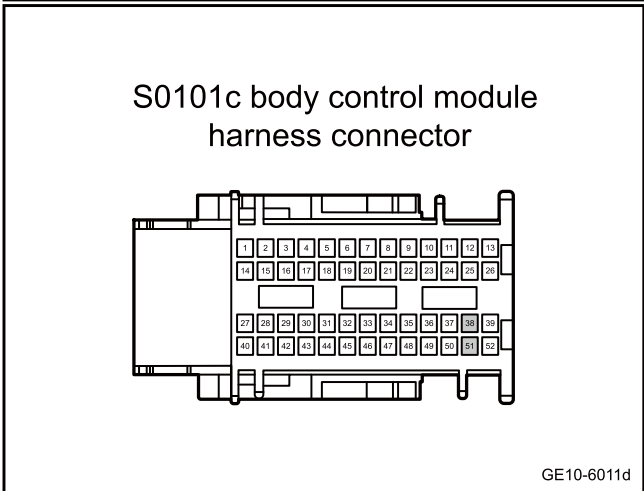
Step 3 Check the open circuit fault between the handle sensor of the driver side door and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the handle sensor DR10d of the driver side door.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR10d(1)	SO101c(38)	Standard resistance: less than 1Ω
DR10d(2)	SO101c(51)	

- E. Confirm whether the measured value meets the standard.



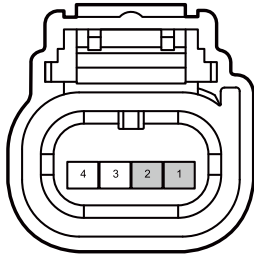
No

Repair or replace the harness.

Yes

Step 4 Check the short circuit fault to GND between the handle sensor of the driver side door and IBC.

DR10d driver's side door handle sensor harness connector



GE10-6012d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the handle sensor DR10d of the driver side door.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR10d(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR10d(2)		

- E. Confirm whether the measured value meets the standard.

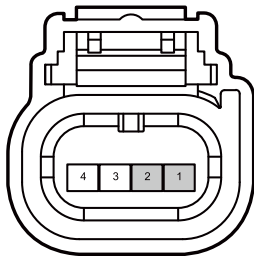
No

Repair or replace the harness.

Yes

Step 5 Check the short circuit fault to power supply between the handle sensor of the driver side door and IBC.

DR10d driver's side door handle sensor harness connector



GE10-6013d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the handle sensor DR10d of the driver side door.
- C. Disconnect the IBC harness connector SO101c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR10d(1)	Vehicle body is grounded.	Standard voltage: 0V
DR10d(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the handle sensor of the driver side door.

- A. Replace the handle sensor of the driver side door. Refer to [Replacement of handle sensor of driver side door](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 8 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.10.6.11 Fault of the handle sensor of the front passenger side door

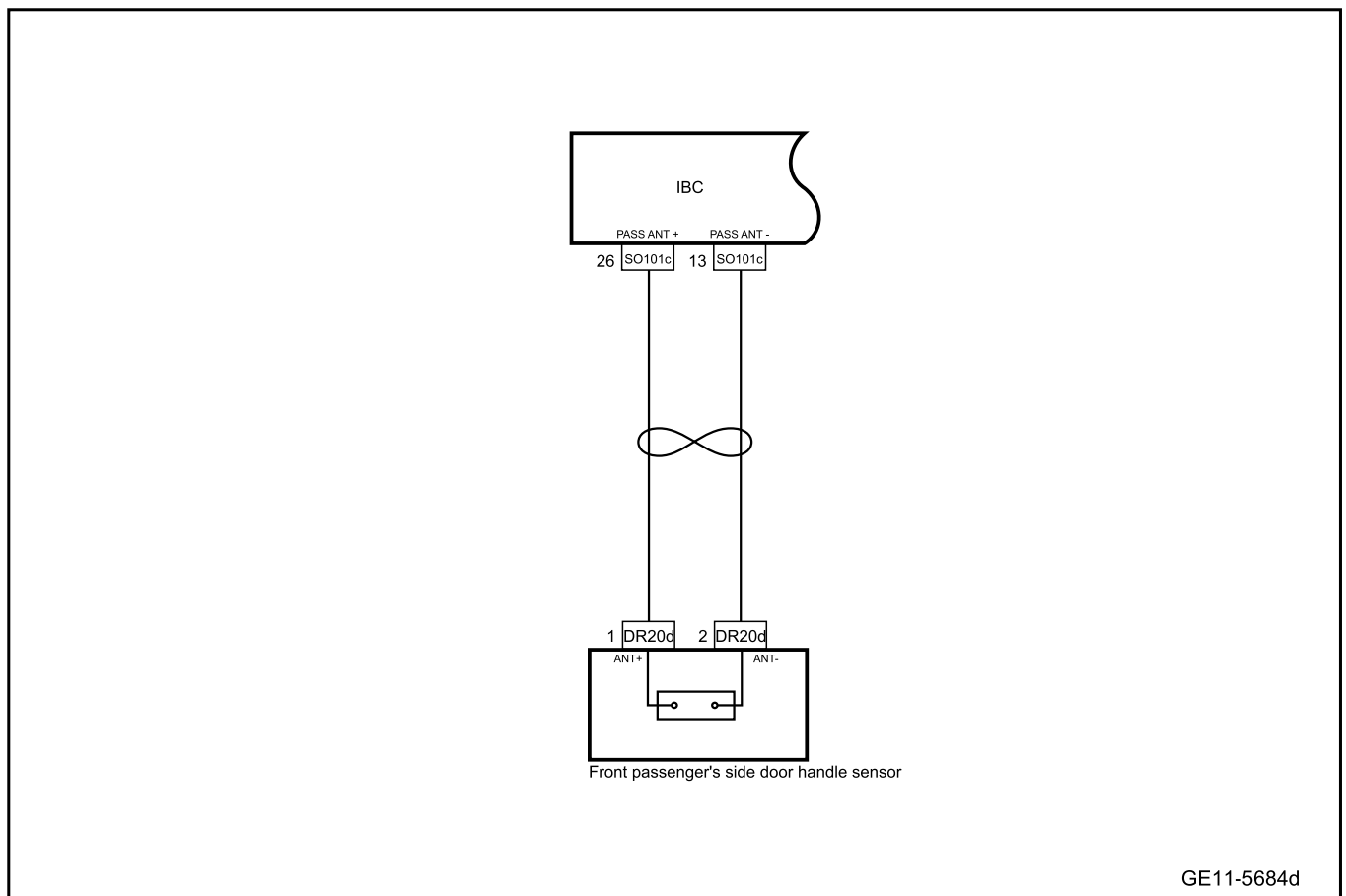
1. DTC description:

Diagnostic Trouble Code	Description
B128700	Antenna fault at front passenger side

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128700	When the auxiliary side antenna is triggered and the antenna is detected to be short circuited to battery/ ground/open circuited, or a fault (0x61FC) is detected during the antenna self-test, the dithering time is 5	1. The power supply voltage of IBC is between 9V-16V 2. The right door antenna has been configured (Cfg_Rightdoor antenna==0x1)	1. Circuit 2. Front passenger side door handle sensor 3. IBC

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

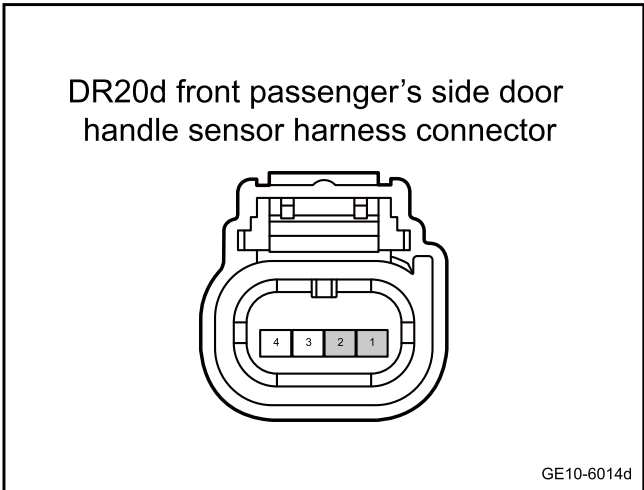
- A. Check front passenger side door handle sensor and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

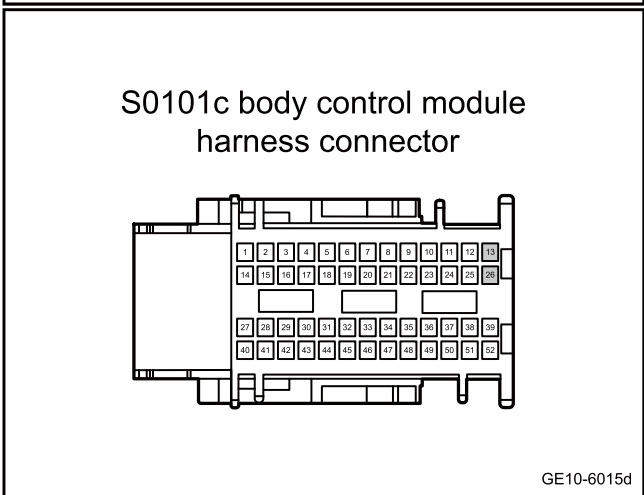
Step 3 Check the open circuit fault between the handle sensor of the front passenger side door and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the handle sensor harness connector DR20d of the front passenger side door.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR20d(1)	SO101c(26)	Standard resistance: less than 1Ω
DR20d(2)	SO101c(13)	

- E. Confirm whether the measured value meets the standard.



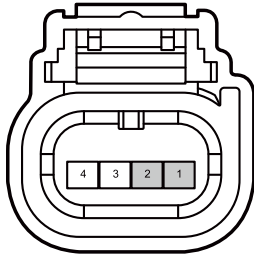
No

Repair or replace the harness.

Yes

Step 4 Check the short circuit to GND between the handle sensor of the front passenger side door and IBC.

DR20d front passenger's side door handle sensor harness connector



GE10-6016d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the handle sensor harness connector DR20d of the front passenger side door.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR20d(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR20d(2)		

- E. Confirm whether the measured value meets the standard.

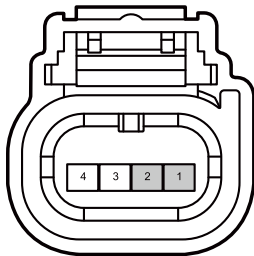
No

Repair or replace the harness.

Yes

Step 5 Check the short circuit to power supply between the handle sensor of the front passenger side door and IBC.

DR20d front passenger's side door handle sensor harness connector



GE10-6017d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the handle sensor harness connector DR20d of the front passenger side door.
- C. Disconnect the IBC harness connector SO101c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR20d(1)	Vehicle body is grounded.	Standard voltage: 0V
DR20d(2)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the handle sensor of the front passenger side door.

- A. Replace the handle sensor of the front passenger side door. Refer to [Replacement of handle sensor of front passenger side door](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the IBC
--------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 8	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

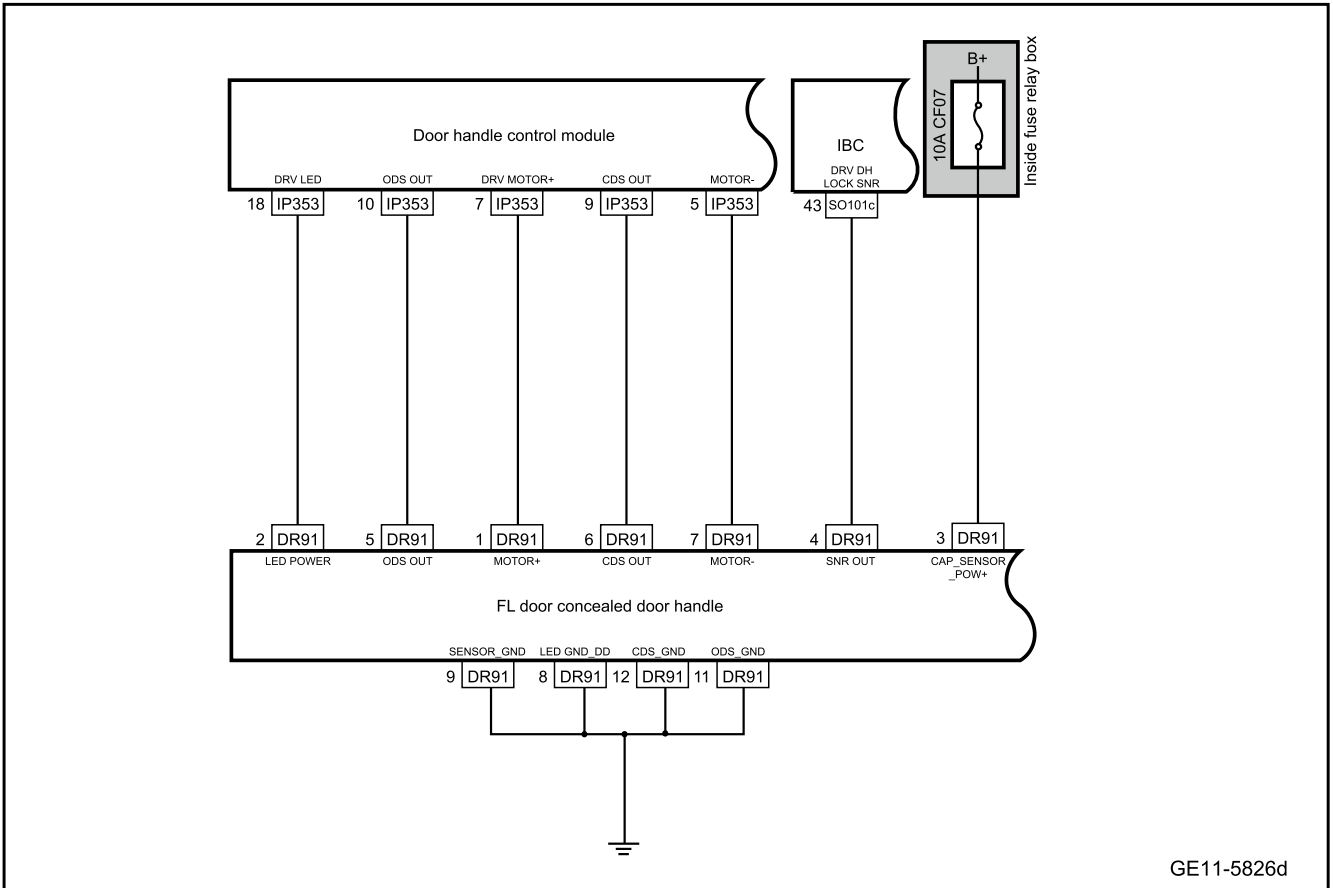
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

11.10.6.12 Front left concealed door handle fault

1. Schematic circuit diagram:



GE11-5826d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the FL concealed door handle harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse relay box fuse CF07 and check whether the fuse is blown.

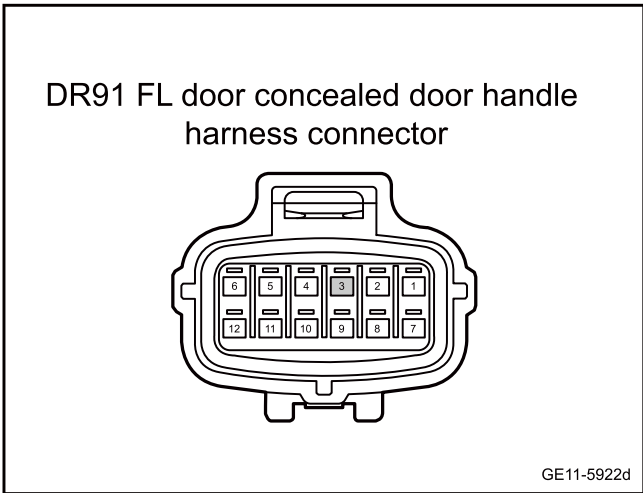
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the power supply circuit of left front concealed door handle is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door concealed door handle harness connector DR91.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(3)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Use a multimeter to measure the voltage between terminal 3 of the FL combination concealed door handle connector DR91 and the body ground terminal.

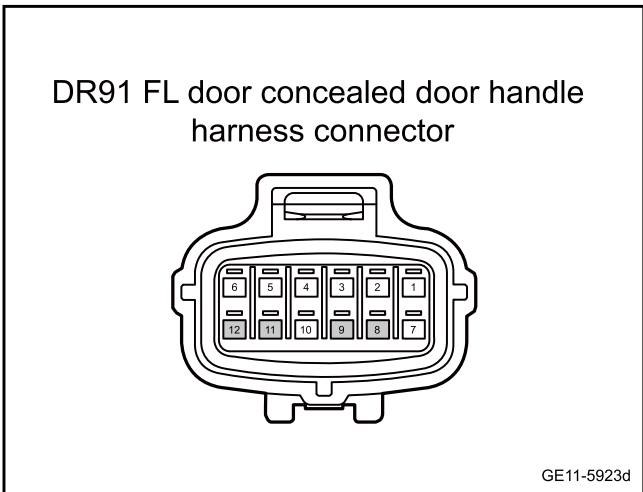
Standard voltage: 11-14V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the grounding circuit of left front concealed door handle is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door concealed door handle harness connector DR91.
- C. Use a multimeter to measure each terminal according to the table below:

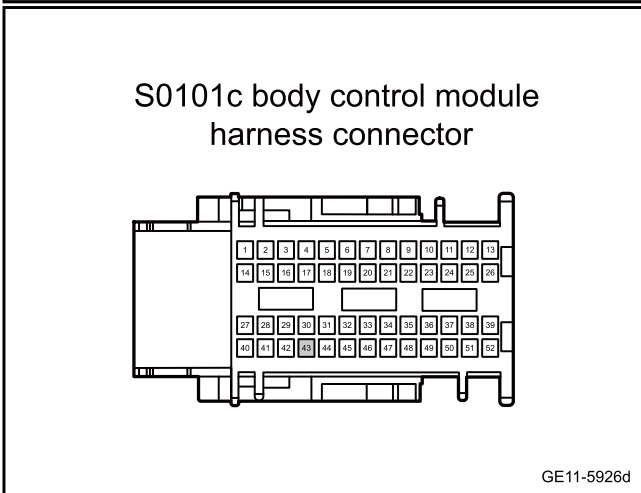
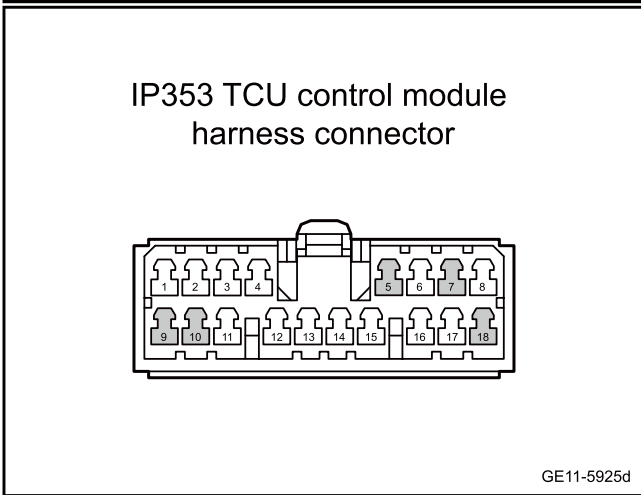
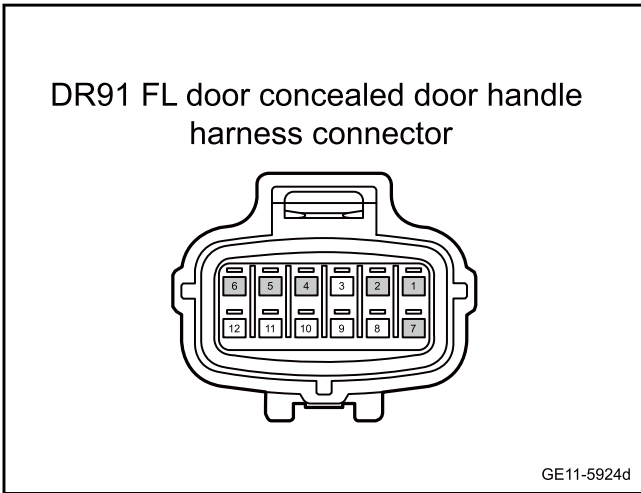
Measure terminal 1	Measure terminal 2	Standard value
DR91(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω
DR91(9)		
DR91(11)		
DR91(12)		

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between concealed door handle control module and IBC is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door concealed door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Disconnect the IBC harness connector SO101c.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	IP353(7)	Standard resistance: less than 1Ω
DR91(2)	IP353(18)	
DR91(4)	SO101c(43)	
DR91(5)	IP353(10)	
DR91(6)	IP353(9)	
DR91(7)	IP353(5)	

- F. Confirm whether the measured value meets the standard.

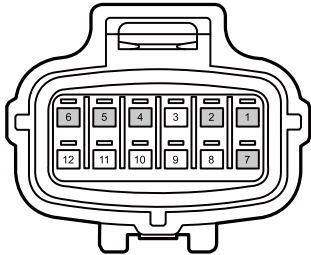
No

Repair or replace the harness.

Yes

Step 6 Check whether lines between front left concealed door handle and IBC are shorted to GND.

DR91 FL door concealed door handle harness connector



GE11-5927d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door concealed door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Disconnect the IBC harness connector SO101c.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(2)		
DR91(4)		
DR91(5)		
DR91(6)		
DR91(7)		

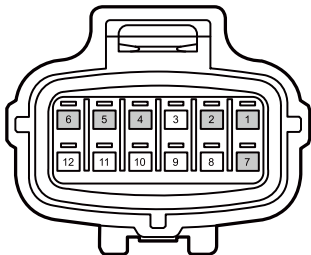
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Check whether the circuit between concealed door handle control module and IBC is short to power supply.

DR91 FL door concealed door handle harness connector



GE11-5928d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door concealed door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Disconnect the IBC harness connector SO101c.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(1)	Vehicle body is grounded.	Standard voltage: 0V
DR91(2)		
DR91(4)		
DR91(5)		
DR91(6)		

Measure terminal 1	Measure terminal 2	Standard value
DR91(7)		

G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Replace left front concealed door handle

A. To replace the left front door concealed door handle, please refer to Replacement of Left Front Door concealed door handle

B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Replace Door handle control module

A. Replace Door handle control module Refer to [Replacement of Door handle Control Module](#)

B. Confirm whether the system is normal.

Yes System is normal.

No

No

Step 10 Replace the IBC

A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)

B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 11 Reprogram and reset the IBC.

A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 12	System is normal.
------------	-------------------

11.10.6.13 Concealed door handle status sensor fault

1. DTC description:

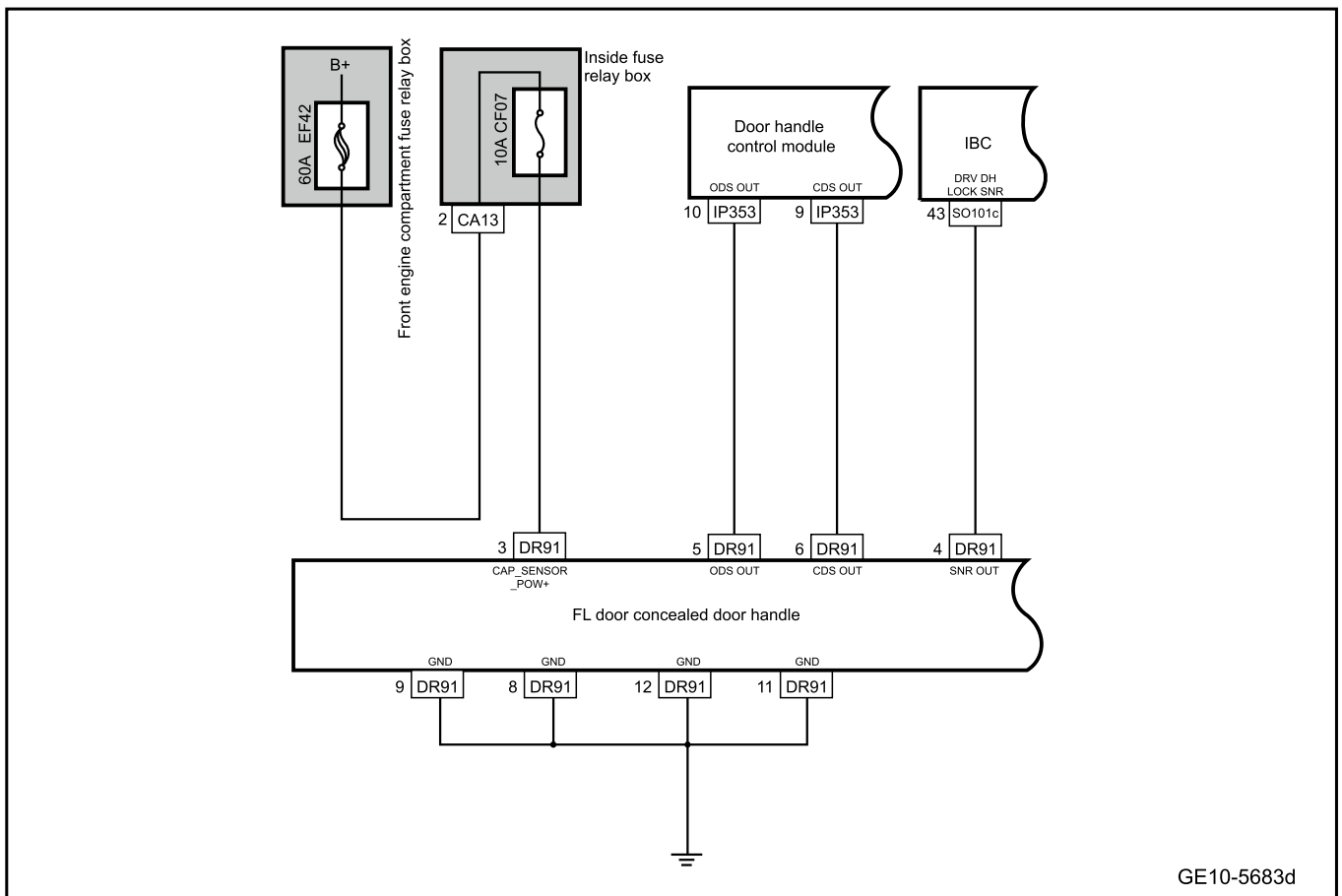
Diagnostic Trouble Code	Trouble description
B109001	Closing fault of left front door handle position limiting switch
B109101	Opening Fault of FL door handle position limiting switch
B109301	Closing fault of FR door handle limit switch
B109401	Opening Fault of FR door handle position limiting switch
B109601	Closing fault of Rear left door handle limit switch
B109701	Opening Fault of Rear left door handle limit switch
B109901	Closing fault of Rear right door handle limit switch
B109A01	Opening Fault of Rear right door handle limit switch

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109001	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_LF_error == 0 x 4)	1. LIN2 is in the wake-up state and meets the communication enabling conditions 2. The power supply voltage range of IBC is 9-16V 3.cfg hidden door handle option== 1 (F101 byte 14 bit 1 == 1)	1. Circuit 2.IBC 3. Door handle control module 4. Concealed door handle
B109101	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_LF_error == 0 x 5)		
B109301	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_RF_error == 0 x 4)		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B109401	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_RF_error == 0 x 5)		
B109601	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_LR_error == 0 x 4)		
B109701	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_LR_error == 0 x 5)		
B109901	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_RR_error == 0 x 4)		
B109A01	Received DHC (door handle controller) information indicates that the LIN frame has errors for 3 consecutive times (0 x 18:L_DHC_RR_error == 0 x 5)		

3. Schematic circuit diagram:



This manual is only used to diagnose the fault of left front door concealed door handle. The diagnosis of other door handles is the same as that of left front door lock.

4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left front door concealed door handle, door handle control module and IBC harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 | Inspect the fuse.

A. Multimedia settings from vehicle power supply to OFF gear.

B. Unplug front engine compartment fuse relay box fuse EF42 to check whether the fuse is blown.

Rated capacity of fuse: 60A

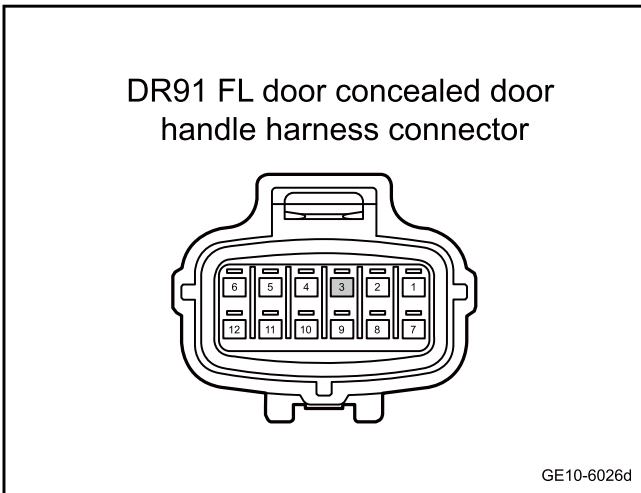
C. Unplug the indoor fuse relay box fuse CF07 and check whether the fuse is blown.

Rated capacity of fuse: 10A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the power supply circuit fault of the left front door hidden door handle.



A. Multimedia settings from vehicle power supply to OFF gear.

B. Disconnect the front left door concealed door handle harness connector DR91.

C. The key activates the power supply of the vehicle to ON.

D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(3)	Vehicle body is grounded.	Standard voltage: 11-14V

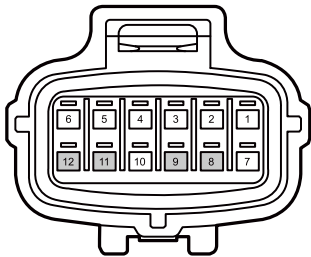
E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check the grounding circuit fault of the left front door hidden door handle.

DR91 FL door concealed door handle harness connector



GE10-6027d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left concealed door handle harness connector DR91.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(8)	Vehicle body is grounded.	Standard resistance: less than 1Ω
DR91(9)		
DR91(11)		
DR91(12)		

- D. Confirm whether the measured value meets the standard.

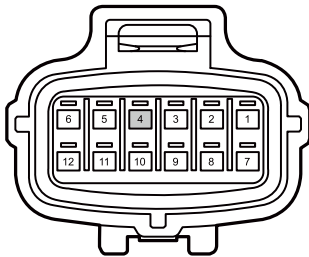
No

Repair or replace the harness.

Yes

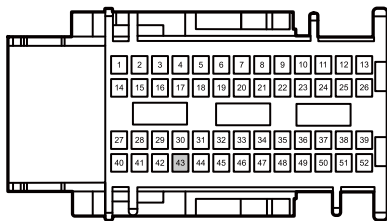
Step 6 | Check the circuit between the left front concealed door handle and the IBC.

DR91 FL door concealed door handle harness connector



GE10-6028d

S0101c body control module harness connector



GE10-6029d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left door concealed door handle harness connector DR91.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(4)	SO101c(43)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(4)	Vehicle body is grounded.	Standard voltage: 0V

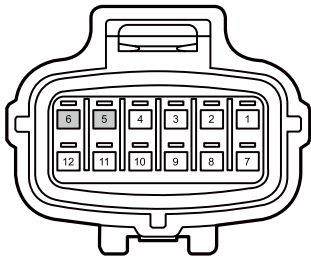
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

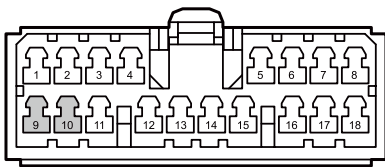
Step 7 | Check the circuit trouble between the left front hidden door handle and the door handle control module.

DR91 FL door concealed door handle harness connector



GE10-6030d

IP353 TCU control module harness connector



GE10-6031d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front left concealed door handle harness connector DR91.
- C. Disconnect the door handle control module harness connector IP353.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR91(6)		
DR91(5)	IP353(10)	Standard resistance: less than 1Ω
DR91(6)	IP353(9)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR91(5)	Vehicle body is grounded.	Standard voltage: 0V
DR91(6)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Replace left front Concealed door handle

- A. Replace left front Concealed door handle Refer to [Replacement of Left Front Concealed Door Handle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 | Replace Door handle control module

- A. Check whether the power supply of door handle control module and the grounding harness are normal. Refer to [Power Supply Failure of Door Handle Control Module](#)
- B. Replace the Door Handle control module, refer to [Replacement of Door Handle control module](#)

Next step

Step 10	Reprogram and reset door handle control module.
------------	---

- A. Reprogram and reset door handle control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace the IBC
---------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 12	Reprogram and reset the IBC.
------------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Use diagnostic scanner to confirm the trouble code.
------------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

11.10.6.14 Middle Antenna Failure

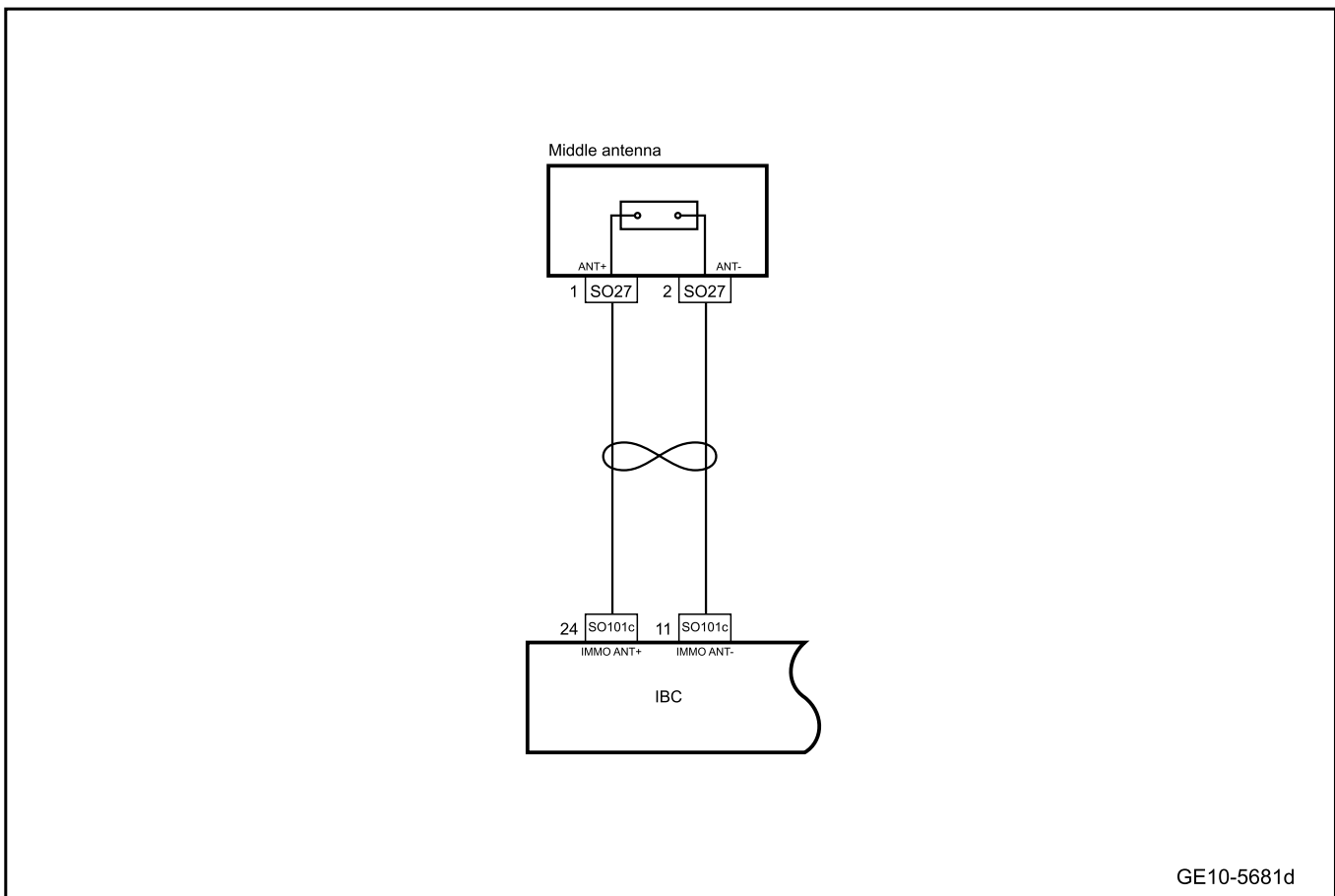
1. DTC description:

Diagnostic Trouble Code	Description
B128900	Antenna failure in the middle of the vehicle

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B128900	When the middle interior antenna is triggered and the antenna is detected to be short circuited to battery/ground/open circuited, or a fault (0x61FC) is detected during the antenna self-test, the dithering time is 5	1. The power supply voltage of IBC is between 9V-16V 2.The Interior2 antenna is configured.(Cfg_ Interior2Antenna==0x1)	1. Circuit 2. Middle antenna 3.IBC

3. Circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

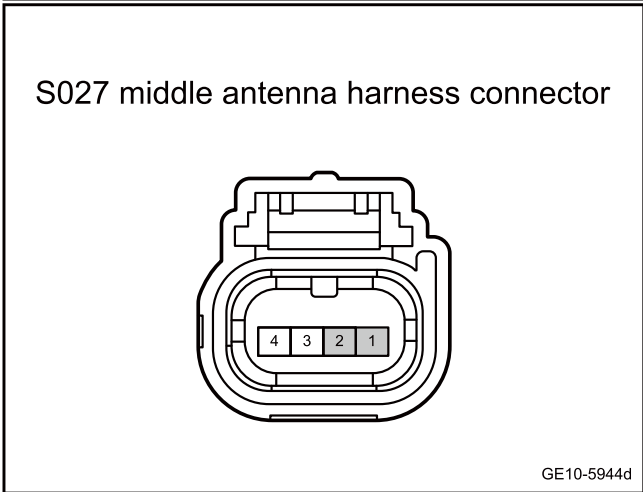
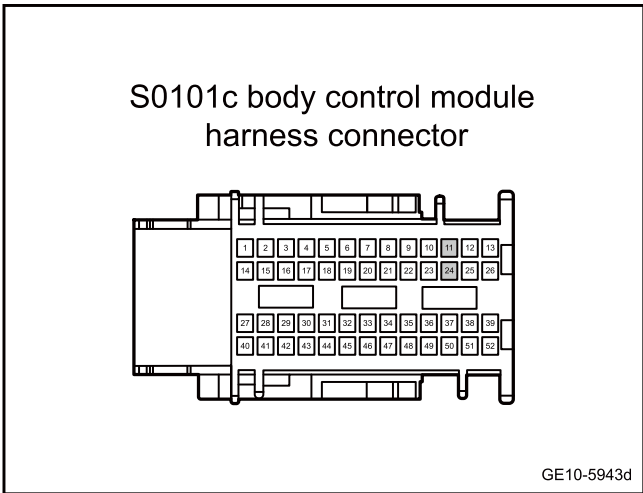
Step 2 Primary check.

- A. Check the harness connector of middle antenna for damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check the control harness between the middle antenna and IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector SO101c.
- C. Disconnect the harness connector SO27 of middle antenna.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO101c(11)		
SO101c(24)	SO27(1)	Standard resistance: less than 1Ω
SO101c(11)	SO27(2)	

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(24)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(11)		

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 4 Replace middle antenna

- A. Replace middle antenna Refer to [Replacement of Middle Antenna](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 5 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 6 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8 System is normal.

11.10.6.15 IGN1 relay fault

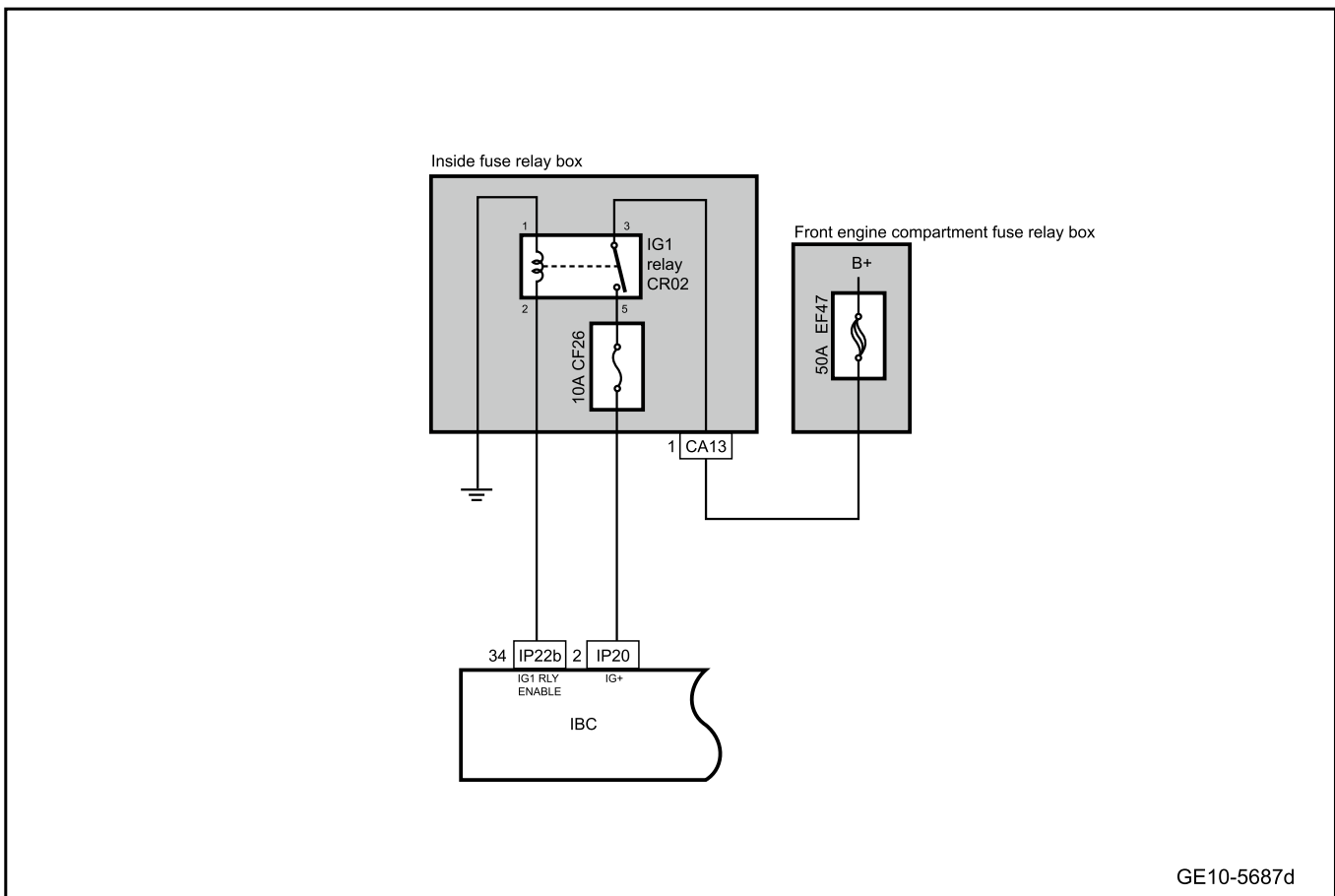
1. DTC description:

DTC code	Code description
B128300	IGN1 output failure
B128329	Invalid IGN1 relay control output

2. Trouble code setting and trouble locations:

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128300	Terminal is IGN, AU IG1 U FB is open or short-circuited to ground or Terminal is disconnected/accelerated, A_IG1_FB is short-circuited to battery detection time: 1000ms or terminal is IGN, O \U IG1 is shorted to ground or Terminal is closed/ accelerated, O}u IG1 }u RLY to bat short circuit detection time: 100ms	CAN bus mode power supply voltage is between 9V-16V	1. Relay 2.IBC
B128329	Terminal is IGN, A_IGN1 _Fb is open or short-circuited to ground or terminal is disconnected/ACC, A_IGN1 _Fb is short-circuited to BAT (A_IGN1 _FB ! =A_IGN1), detection time: TCCC26 (1000 ms) Report error note I	The IBC power supply voltage range is 9V-16V	

3. Schematic circuit diagram:



GE10-5687d

4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the fuse, main relay and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse of the indoor fuse relay box, and check whether the fuse CF26 is blown out.

Rated capacity of fuse: 10A

- C. Unplug the fuse of the front engine compartment fuse relay box and check whether the fuse EF47 is blown out.

Rated capacity of fuse: 50A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check IG1 relay CR02.
--------	-----------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the IG1 relay CR02 and replace it with a new relay of the same model.
- C. Confirm whether the trouble is removed.

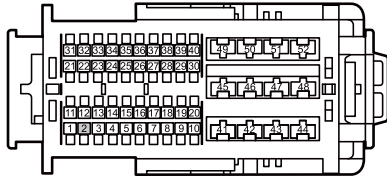
Yes

System is normal.

No

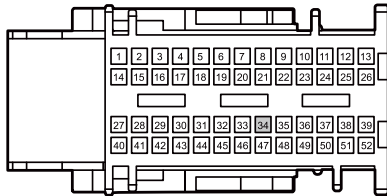
Step 5	Check whether the circuit between the IBC and the IG1 relay is open.
--------	--

IP20 body control module harness connector 1



GE10-6001d

IP22b body control module harness connector 3



GE10-6002d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP22b and IP20.
- C. Unplug the IG1 relay CR02.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	CR02(5)	Standard resistance: less than 1Ω
IP22b(34)	CR02(2)	

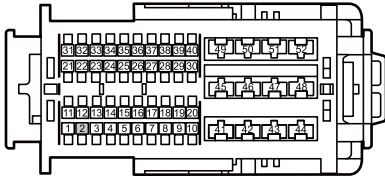
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

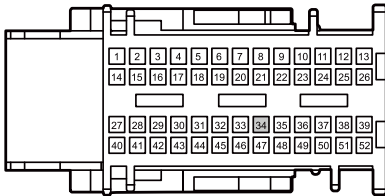
Step 6 Check the circuit between IBC and IG1 relay for a short to GND.

IP20 body control module harness connector 1



GE10-6003d

IP22b body control module harness connector 3



GE10-6004d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP22b and IP20.
- C. Unplug the IG1 relay CR02.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(34)		

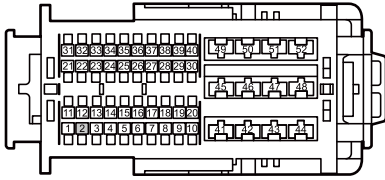
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

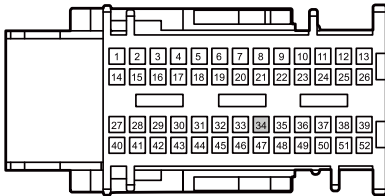
Step 7 | Check whether the circuit between IBC and the IG1 relay is shorted to power supply.

IP20 body control module harness connector 1



GE10-6005d

IP22b body control module harness connector 3



GE10-6006d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connectors IP22b and IP20.
- C. Unplug the IG1 relay CR02.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(2)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(34)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 8 | Check the grounding circuit of IG1 relay.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the IG1 relay CR02.
- C. Use a multimeter to measure the resistance between IG1 relay CR02 terminal 1 and body grounding.

Standard resistance: less than 1Ω
- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 9 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10	Reprogram and reset the IBC.
------------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11	Use diagnostic scanner to confirm the trouble code.
---------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

11.10.6.16 IGN2 relay fault

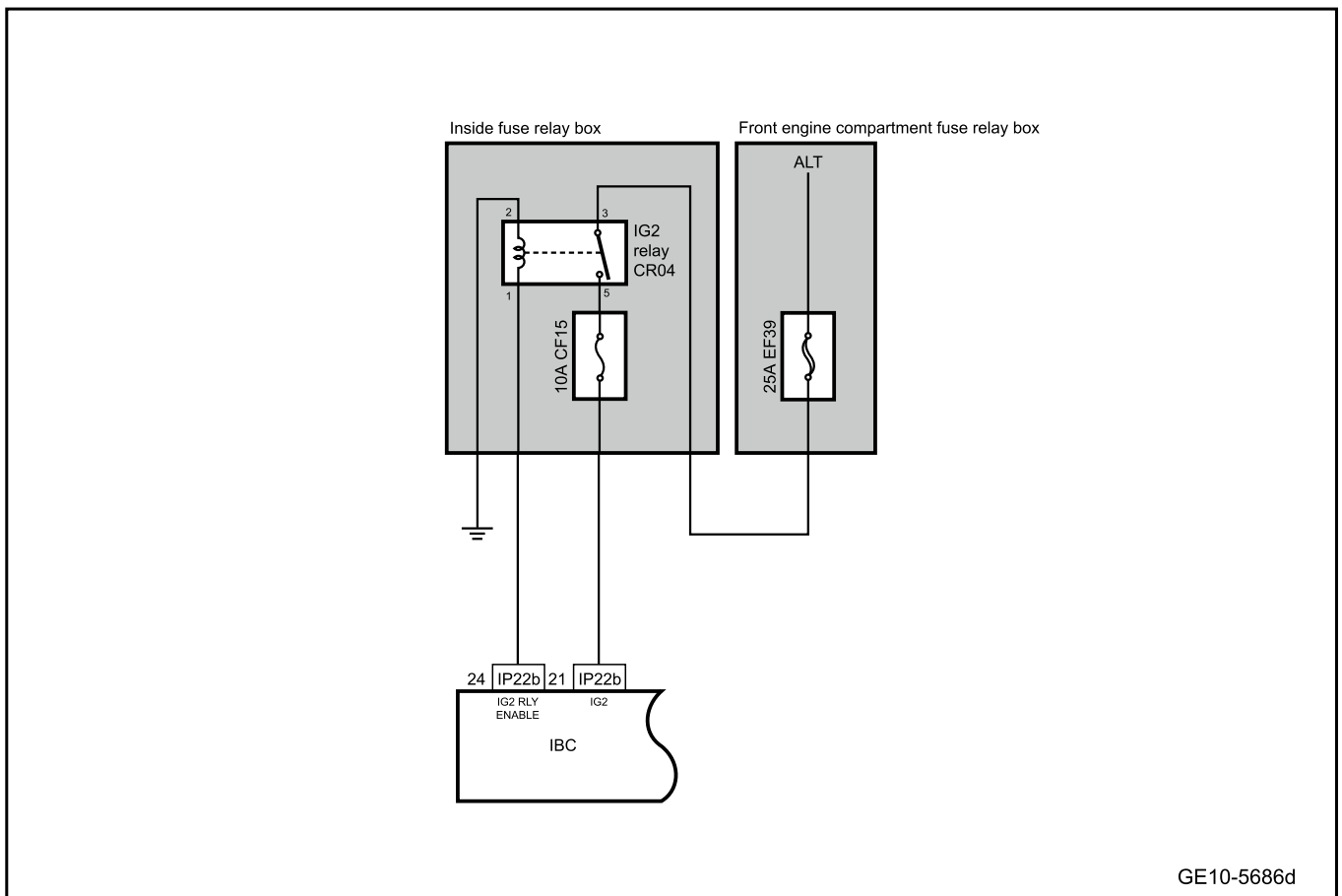
1. DTC description:

DTC code	Code description
B128400	IGN2 output failure
B128429	Invalid IGN2 relay control output

2. Trouble code setting and trouble locations:

DTC No.	DTC detection strategy	DTC setting conditions (control strategy)	Trouble location
B128400	Terminal is IGN, AU IG2 U FB is open or short-circuited to ground or Terminal is disconnected/accelerated, A_IG2_FB is short-circuited to battery detection time: 1000ms or terminal is IGN, O \U IG2 is shorted to ground or Terminal is closed/ accelerated, O}u IG2}ly is short circuited to Bat, detection time: 100ms	CAN bus mode power supply voltage is between 9V-16V	1. Relay 2.IBC
B128429	Terminal is IGN, A_IGN2 _Fb is open or short-circuited to ground or terminal is disconnected/ACC, A_IGN2 _Fb is short-circuited to BAT (A_IGN2 _FB ! =A_IGN2), detection time: TCCC26 (1000 ms)	The IBC power supply voltage range is 9V-16V	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the fuse, main relay and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out fuse CF15 of the indoor fuse relay box. Check whether fuse CF15 is blown.

Rated capacity of fuse: 10A
- C. Unplug the fuse EF39 in the fuse relay box in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 25A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

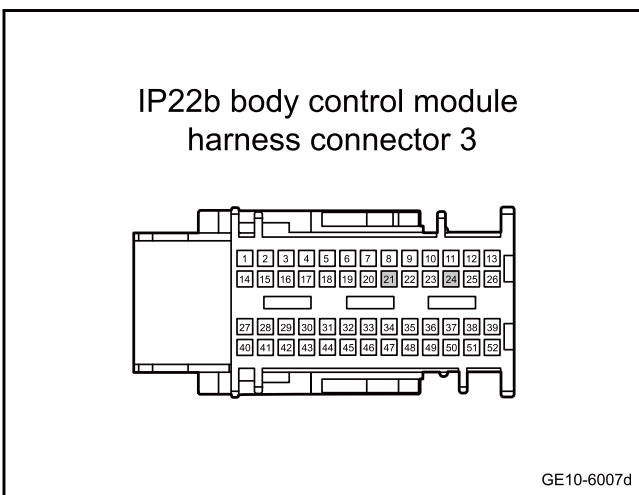
Step 4 Check IG2 relay CR04.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug IG2 relay CR04 and replace the IG2 relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes → System is normal.

No

Step 5 Check whether the circuit between the IBC and the IG2 relay is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Unplug the IG2 relay CR04.
- D. Use a multimeter to measure the terminals according to the table below:

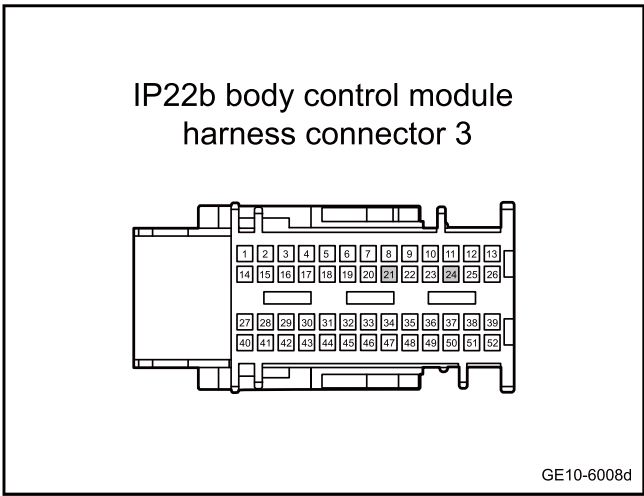
Measure terminal 1	Measure terminal 2	Standard value
IP22b(24)	CR04(1)	Standard resistance: less than 1Ω
IP22b(21)	CR04(5)	

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Check the circuit between IBC and IG2 relay for a short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Unplug the IG2 relay CR04.
- D. Use a multimeter to measure the terminals according to the table below:

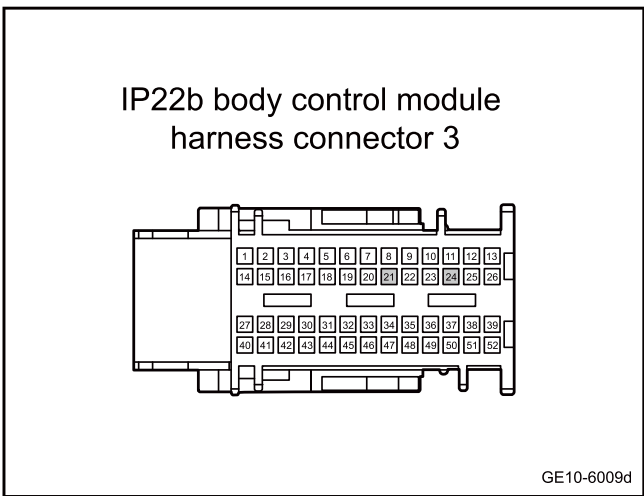
Measure terminal 1	Measure terminal 2	Standard value
IP22b(24)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP22b(21)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Check whether the circuit between IBC and the IG2 relay is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP22b.
- C. Unplug the IG2 relay CR04.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP22b(24)	Vehicle body is grounded.	Standard voltage: 0V
IP22b(21)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Check the grounding circuit of IG2 relay.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the IG2 relay CR04.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CR04(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 10 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 11 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 12	System is normal.
------------	-------------------

11.10.6.17 RF Receiver Module Communication Failure

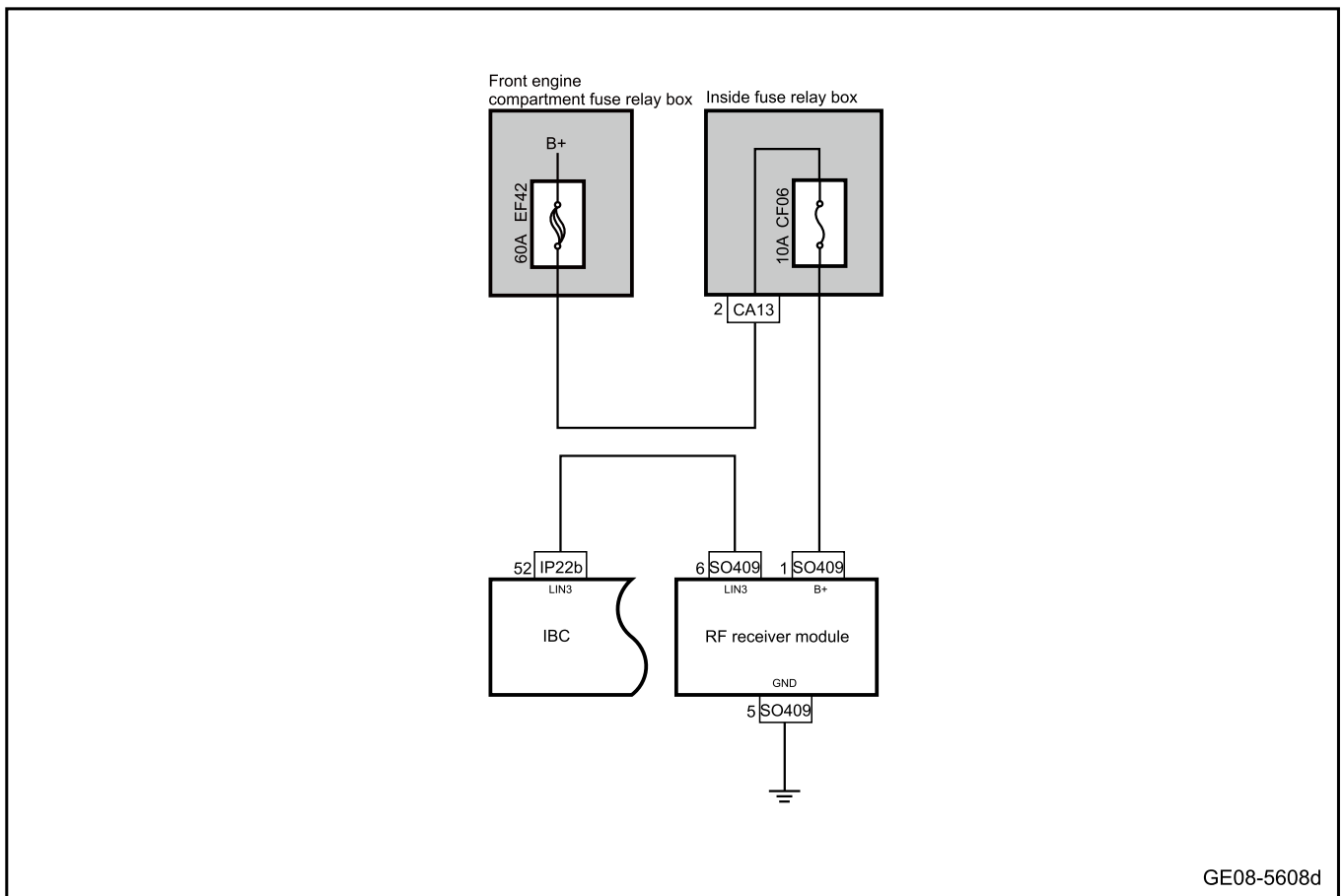
1. DTC description:

Diagnostic Trouble Code	Description
B108000	RF receiver communication failure

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108000	1. KLINE is short circuited to ground and VBAT 2. KLINE circuit is open or RFR does not respond	1. IBC supply voltage is within the range of 9-16V.	1. Battery 2. Circuit 3. Fuse 4. RF receiver module

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the RF receiver module and IBC for signs of damage, deformation, stain, loosening, etc.
- B. Check the RF receiver module and IBC harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF06 and check whether the fuse is blown.

Rated capacity of fuse: 10A

- C. Unplug the EF42 fuse in the front engine compartment and check whether the fuse is blown out.

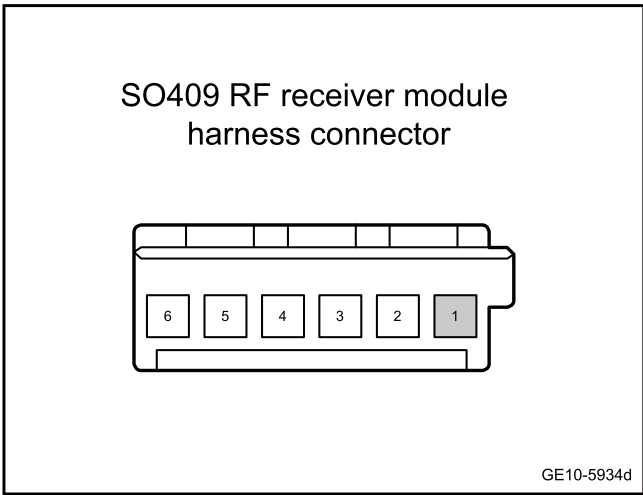
Rated capacity of fuse: 60A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check the working voltage of the RF receiver module.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the RF receiver module harness connector SO409.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO409(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

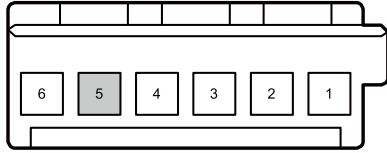
No

Repair or replace the harness.

Yes

Step 6 Check the grounding harness of the RF receiver module.

SO409 RF receiver module harness connector



GE10-5935d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the RF receiver module harness connector SO409.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO409(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

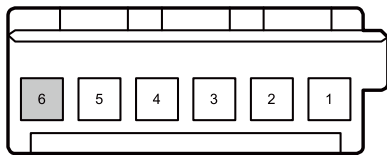
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Check RF receiver module LIN communication line.

SO409 RF receiver module harness connector



GE10-5936d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the RF receiver module harness connector SO409.
- C. Disconnect the IBC harness connector IP22b.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO409(6)	IP22b(52)	Standard resistance: less than 1Ω
SO409(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

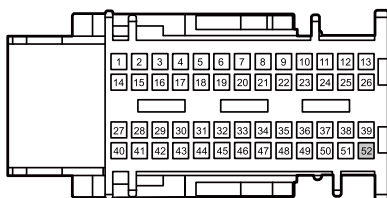
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO409(6)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

IP22b body control module harness connector 3



GE10-5937d

Yes

Step 8 Replace the RF receiver module.

- A. Replace the RF receiver module. Refer to [Replacement of RF Receiver Module](#)
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 9 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 10 Reprogram and reset the IBC.

- A. To reprogram and reset the IBC, please refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11 Use diagnostic scanner to confirm the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 12	System is normal.
---------	-------------------

11.10.6.18 Antenna self-check

1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next step

Step 2	Enter the first-level menu "system matching", select the "antenna self-check" function in the second-level menu.
--------	--

Next step

Step 3	Click "OK" to enter the first prompt interface.
--------	---

Next step

Step 4	During self-check.
--------	--------------------

Next step

Step 5	Reply display according to XX and YY.
--------	---------------------------------------

Next step

Step 6	Click Next to prompt that the antenna self-check is over.
--------	---

Next step

Step 7	Exit antenna self-check and return to the main interface.
--------	---

11.10.6.19 PEPS replacement (PEPS learning)

1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next step

Step 2	Enter the first-level menu "system matching", select "PEPS" in the second-level menu "replace controller".
--------	--

Next step

Step 3 Click "OK" to enter the first prompt interface.

Next step

Step 4 Click "Next" to start PEPS learning.

Next step

Step 5 The dialog box will pop up. Select whether the controller has successfully learned.

Next step

Step 6 pops up the dialog box and enters the vehicle ESK code.

Next step

Step 7 ESK is written in

Next step

Step 8 Input the PEPS configuration of the vehicle in the pop-up box.

Next step

Step 9 PEPS is written in

Next step

Step
10 PEPS soft restart.

Next step

Step 11 Re-enter the extended mode and secure authentication.

Next step

Step
12 Take the ESK code input from step 3.6 into the secondary security access mode.

Next step

Step
13 Enter EOL learning mode.

Next step

Step 14	Antenna self-check.
------------	---------------------

Next step

Step 15	Ask the user how many keys to learn.
------------	--------------------------------------

Next step

Step 16	Select "1" to learn one key.
------------	------------------------------

Next step

Step 17	Select "2" to learn two keys.
------------	-------------------------------

Next step

Step 18	VIN is written in
------------	-------------------

Next step

Step 19	Success in learning.
------------	----------------------

Next step

Step 20	Back to the main interface of special routine operation.
------------	--

11.10.6.20 Delete old key, add new key

1. Diagnosis steps

Step 1	Enter the first-level menu "system matching", select "delete old key, add new key" in the second-level menu "key matching".
--------	---

Next step

Step 2	Click "OK" to enter the first prompt interface.
--------	---

Next step

Step 3 Click "Next" to start learning.

Next step

Step 4 Click "Enter ESK Code".

Next step

Step 5 Enter EOL learning mode.

Next step

Step 6 Antenna self-check.

Next step

Step 7 Ask the user how many keys to learn.

Next step

Step 8 Select "1" to learn one key.

Next step

Step 9 Select "2" to learn two keys.

Next step

Step 10 The match is successful.

Next step

Step 11 Back to the main interface.

11.10.6.21 Key matching

1. Diagnosis steps

Step 1 Brand selection, vehicle identification.

Next step

Step 2 Save old key, add new key

Next step

Step 3	Enter the first-level menu "system matching", select "save old key, add new key" in the second-level menu "key matching".
--------	---

Next step

Step 4	Click "OK" to enter the first prompt interface.
--------	---

Next step

Step 5	Click "Next" to start learning.
--------	---------------------------------

Next step

Step 6	Click "Enter ESK Code".
--------	-------------------------

Next step

Step 7	Enter the after-sales learning mode.
--------	--------------------------------------

Next step

Step 8	Antenna self-check.
--------	---------------------

Next step

Step 9	Ask the user how many keys to learn.
--------	--------------------------------------

Next step

Step 10	Select "1" to learn one key.
------------	------------------------------

Next step

Step 11	Select "2" to learn two keys.
---------	-------------------------------

Next step

Step 12	The match is successful.
------------	--------------------------

Next step

Step 13	Back to the main interface.
------------	-----------------------------

11.10.6.22 Clear the PEPS key

1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next step

Step 2	Enter the first-level menu "system matching", select "Clear the PEPS key" in the second-level menu "Clear the controller key".
--------	--

Next step

Step 3	Click "OK" to enter the first prompt interface.
--------	---

Next step

Step 4	Click "Next" to erase.
--------	------------------------

Next step

Step 5	Enter the ESK code.
--------	---------------------

Next step

Step 6	Erase PEPS key
--------	----------------

Next step

Step 7	Erase succeeds.
--------	-----------------

Next step

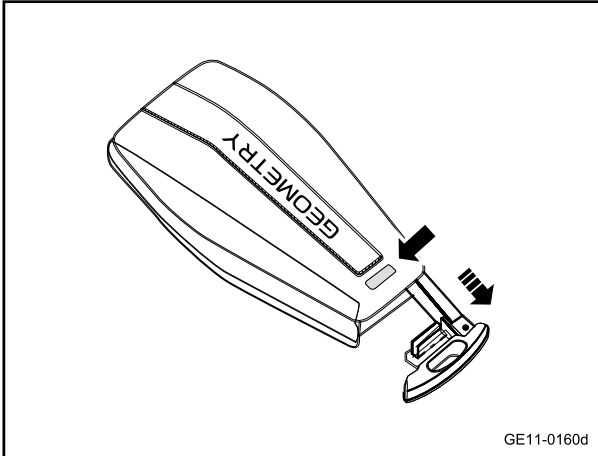
Step 8	Back to the main interface.
--------	-----------------------------

11.10.7 Removing and installing

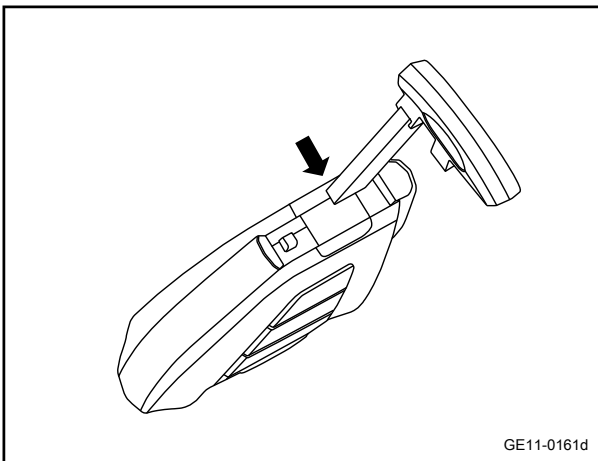
11.10.7.1 Replacement of remote emitter battery

Removal procedure

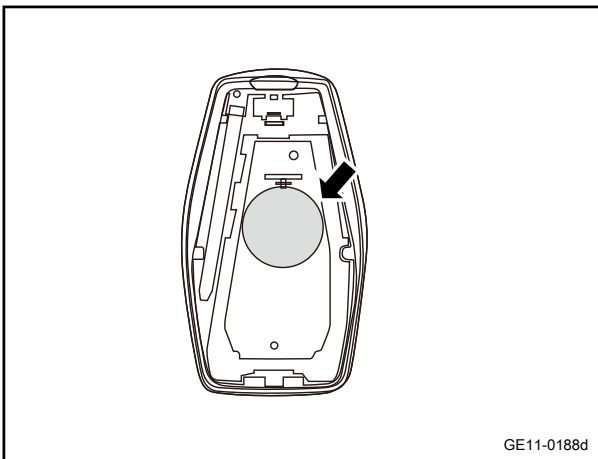
- 1 Press the release button on the back of the smart key and take out the mechanical key.



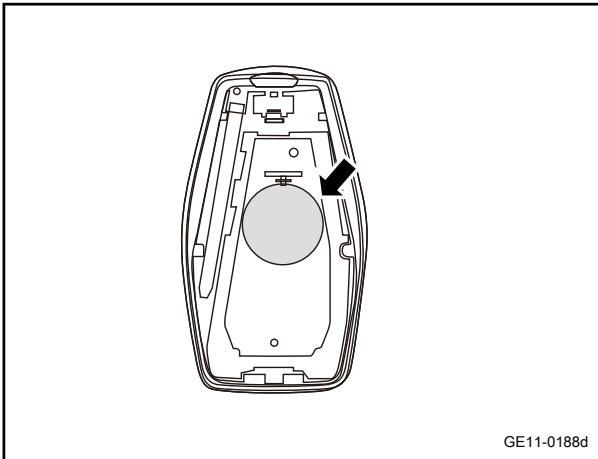
- 2 Use the mechanical key to pry up the back housing of the smart key.



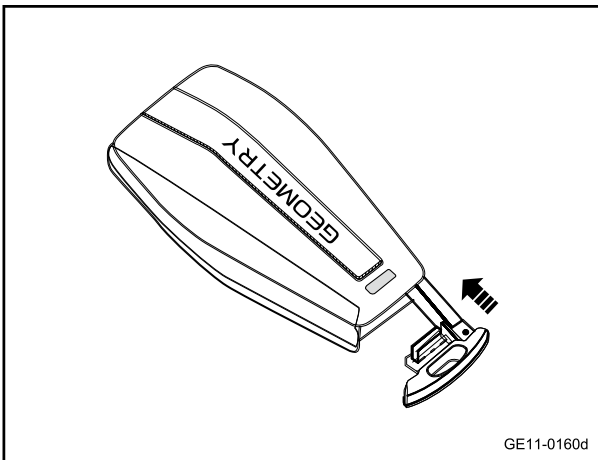
- 3 Take out the smart key battery.



Installation procedure



- 1 Install the smart key battery.
- 2 Close the rear cover of the smart key.

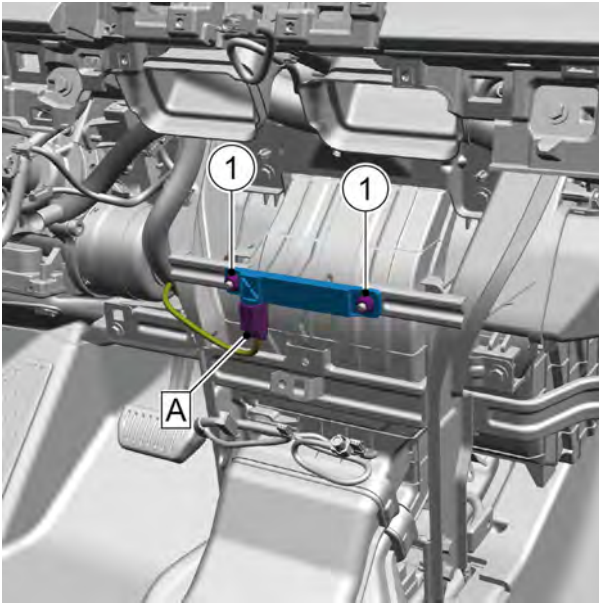


- 3 Insert the mechanical key.

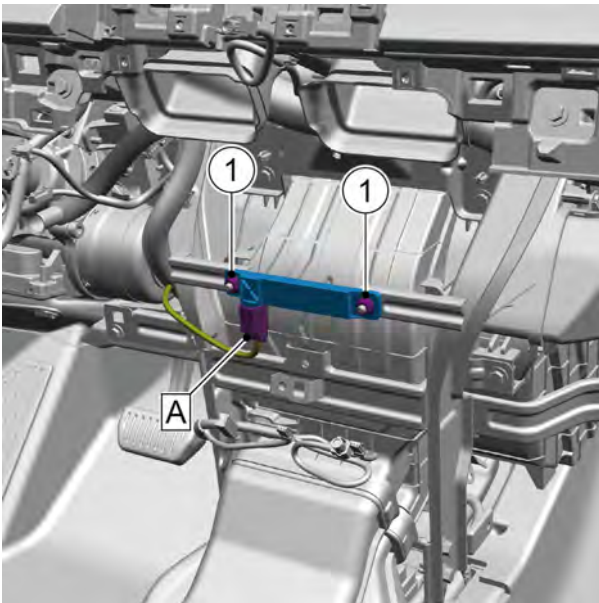
11.10.7.2 Replacement of Front Left Antenna

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the dashboard lower body assembly. Refer to [Replacement of Dashboard Lower Body Assembly](#)



- 3 Disconnect the 1 harness connector A connecting the instrument panel harness and the front left antenna harness.
- 4 Remove the 2 fixing nuts 1 connecting the front left antenna and instrument panel body.
- 5 Take off the front left antenna.



Installation procedure

- 1 Move the left front antenna to the installation position.
- 2 Install the 2 fixing nuts 1 connecting the left front antenna and instrument panel body.
Torque: 3N·m
- 3 Connect the 1 harness connector A connecting the instrument panel harness and the front left antenna.

Caution

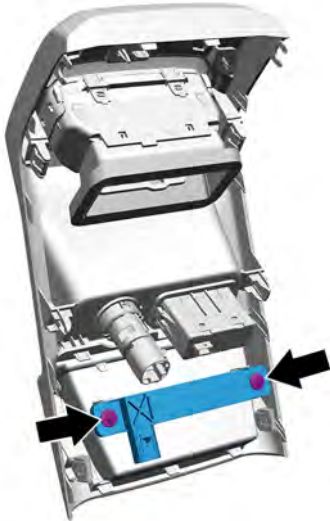
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the dashboard lower body assembly.
- 5 Connect the negative cable of battery.

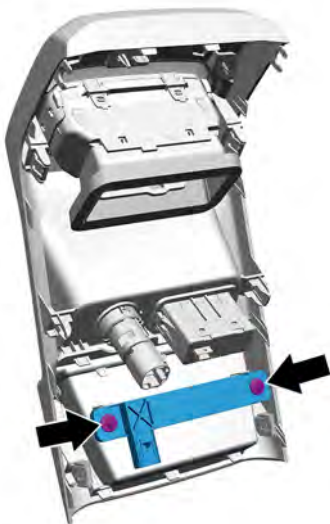
11.10.7.3 Replacement of Middle Antenna

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console rear panel assembly. Refer to [Replacement of Rear Panel of Auxiliary Fascia Console](#)



- 3 Remove the 2 fixing screws connecting the middle antenna and the auxiliary fascia console rear panel assembly.
- 4 Take off the middle antenna.



Installation procedure

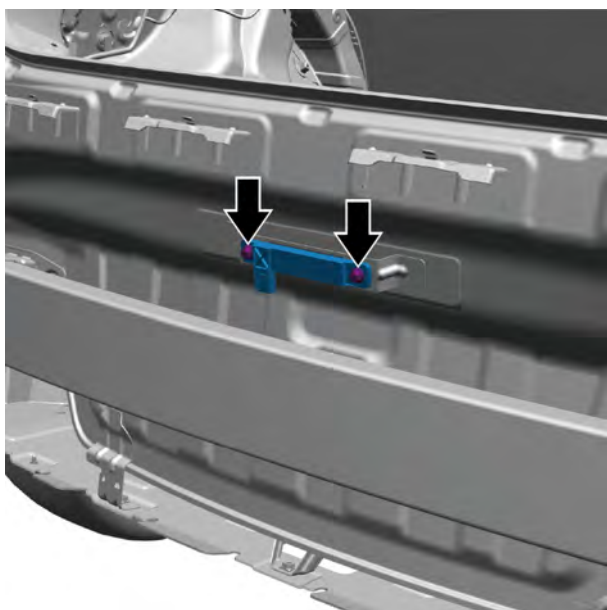
- 1 Move the middle antenna to the installation position.
- 2 Install and tighten the 2 fixing bolts connecting middle antenna and the auxiliary fascia console rear panel assembly.
Torque: 1.5N·m

- 3 Install the auxiliary fascia console rear panel assembly.
- 4 Connect the negative cable of battery.

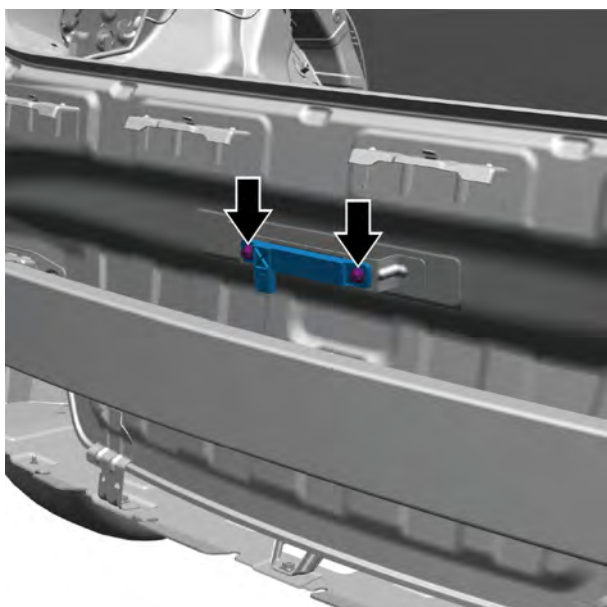
11.10.7.4 Replacement of Rear Antenna

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Replacement of Rear Bumper Refer to [Replacement of Rear Bumper](#)



- 4 Remove the 2 fixing bolts connecting the rear antenna to the vehicle body.
- 5 Take off the rear antenna.



Installation procedure

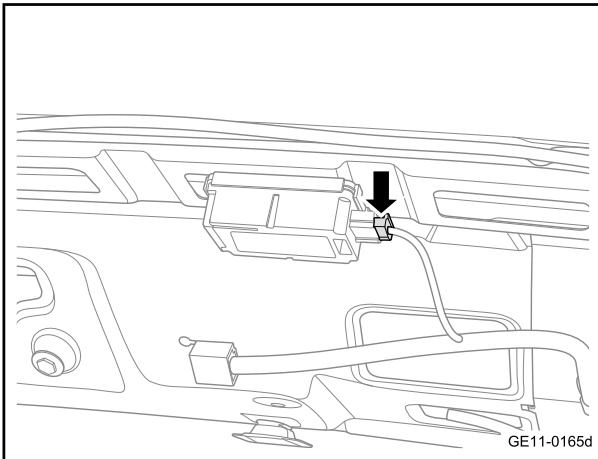
- 1 Move the rear antenna to the installation position.
- 2 Install and tighten the 2 fixing bolts connecting the rear antenna and the vehicle body.
Torque: 3N·m

- 3 Install the rear bumper.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

11.10.7.5 Replacement of RF receiver module

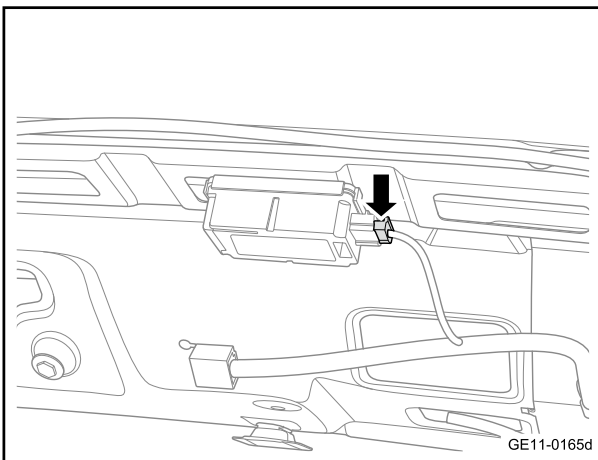
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)
- 2 Install headliner interior trim panel assembly. Refer to [Replacement of Headliner Interior Trim Panel Assembly](#)
- 3 Disconnect the RF receiver module harness connector.
- 4 Pry off the RF receiver module.



Installation procedure

- 1 Install the RF receiver module.
 - 2 Connect the RF receiver module harness connector.
-
- 3 Install headliner interior trim panel.
 - 4 Connect the negative cable of battery.



11.11 Power seat

11.11.1 Specification

11.11.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Front seat and front floor fixing bolts	M10×25	40-50
Seat control module fixing bolt	M6×25	3-5
Air outlet fixing bolt	M6×20	5-7

11.11.2 Description and operation

11.11.2.1 General

Power seat

System composition

- Power seat cushion
- Power seat backrest
- Power seat adjustment switch
- Forth-and-back adjustment motor for power seats
- Height adjustment motor for power seats
- Backrest adjustment motor for power seats
- Power seat heating

Function Introduction

- With the seat adjusting switch, the seat can be electrically adjusted forward/backward, the caution upward/downward, and the backrest inclination forward/backward.

Seat with memory function

System composition

- Power seat cushion
- Power seat backrest
- Power seat adjustment switch
- Forth-and-back adjustment motor for power seats
- Height adjustment motor for power seats
- Backrest adjustment motor for power seats
- Power seat heating

Function Introduction

- With the seat module recognizes the signal of the seat adjusting switch, the seat can be electrically adjusted forward/backward, the caution upward/downward, and the backrest inclination forward/backward.
- The seat heating switch is located in A/C control panel in the multimedia display screen After starting the vehicle, click the seat heating switch in the A/C control panel of the multimedia display screen to select the seat heating gear. There are 4 gears in the seat heating function, namely OFF, 1,2 and AUTO. The OFF gear is off, the first gear temperature is the lowest, the second gear temperature is the highst, and AUTO gear is the automatic gear.

If the seat heating function cannot heat the seat to a certain temperature after 20 minutes, the seat heating function will be automatically turned off.

After turning on the A/C economy mode, the seat heating function will be turned off.

Only use the seat heating AUTO gear once after starting the vehicle, and it cannot be reused.

- The memory information can be saved and referred to in the memory setting interface of the multimedia settings. The operation method is as follows:
- Adjust the driver's seat and exterior rearview mirrors to the desired positions.
- Open the memory setting interface in multimedia settings, click to save the current seat position, and a pop-up window for memory position selection will pop up.
- Select the saved position, the vehicle can memorize a total of 6 groups of driver seats and exterior rearview mirrors.
- After the driver's seat and exterior rearview mirrors are readjusted, click the corresponding position switch under the seat position adjustment in the memory setting interface to adjust the driver's seat and rear exterior rearview mirrors to the memory position.

Do not adjust any seat during driving. Moving the seat during driving may get the vehicle out of control, resulting in collision and serious injuries.

11.11.3 System working principles

11.11.3.1 System Working Principles

1. Driver seat control unit (DSCU)

The driver seat control unit(DSCU) features the functions of seat heating, adjusting and memory ECU.

1. DSCU control is not required for the adjustment of co-driver power seat, but is controlled by the co-driver seat;
2. The driver seat controller is fixed above the floor under the seat carpet (separate bracket).
3. The output signals of the driver seat assembly module have the following types:
 - a. Driver seat heating: the front end of the heating wire is automatically controlled by DSCU;
 - b. Front passenger seat heating: the front end of the heating wire is automatically controlled by DSCU;
 - c. Driver seat 6-way adjustment: the forward and reverse rotations of the adjusting motor are controlled by the DSCU internal relay;
 - d. Left exterior rearview mirror adjustment: the DSCU internal driving chip controls the up, down, left and right adjustment of the left exterior rearview mirror;
 - e. Right exterior rearview mirror adjustment: the DSCU internal driving chip controls the up, down, left and right adjustment of the right exterior rearview mirror;

4. Power seat adjuster switch

The seat adjuster switch provides the power supply and grounding circuit for the selected seat motor, which drives the motor to adjust.

5. Seat adjustment motor

All seat motors work independently. Each motor includes an electronic circuit breaker (PTC). The circuit breaker is disconnected when the circuit is overloaded and will only reset after the circuit voltage is cut off. There are three seat motors. They are back and forth adjusting motor, height adjusting motor and backrest adjusting motor. Back and forth adjusting motor enables the entire seat move forward and backward. The height adjusting motor enables the entire seat move up or down. Backrest adjusting motor enables backrests tilt forward or backward.

6. The backrest adjustment motor tilts the seat back forward or backward.

When the seat adjustment switch is operated to move the entire seat forward, the positive voltage of the battery is

applied to the motor through the switch contacts and forward control circuit of the back and forth adjustment motor. The motor is grounded through backward switch contact of the back and forth adjustment motor and backward control circuit of the back and forth adjustment motor. The motor runs to drive the entire seat forward until the switch is released. The operation process of moving the whole seat backward is similar to that of moving the whole seat forward, except that the positive voltage of battery and grounding are applied to the motor through opposite circuits, thus enabling the motor to run in the opposite direction.

Adjustment range of slideway: the total sliding stroke of slideway is 220mm.

7. Height adjustment

When the seat switch is operated to move the entire seat upward, the positive voltage of battery is applied to the height adjusting motor through the upward switch contact of height adjusting motor and the upward control circuit of height adjusting motor. The motor is grounded through the downward switch contact and the downward control circuit of height adjusting motor. The height adjusting motor drives the entire seat to move upward until the switch is released. The operation process of moving the whole seat downward is similar to that of moving the whole seat upward, except that the positive voltage of battery and grounding are applied to the motor through opposite circuits, thus enabling the motor to run in the opposite direction.

8. Backrest adjustment

When the backrest adjusting switch is operated to enable the backrest tilt forward, the positive voltage of battery is applied to the motor through the switch contacts and the forward control circuit of backrest adjusting motor. The motor is grounded through the backward switch contact and the backward control circuit of backrest adjusting motor. The motor runs to move the backrest forward until the switch is released. The operation process of moving the backrest backward is similar to that of moving the backrest forward, except that the positive voltage of battery and grounding are applied to the motor through opposite circuits, thus enabling the motor to run in the opposite direction.

Backrest adjustment range: 36° forward from the design position and 52° backward from the design position.

9. Seat Heating

The seat heating process has the following components: rapid heating and standard heating.

Fast heating: start level 2 heating. The control requirement is that at the ambient temperature of 0°C, the seat surface temperature can reach $42 \pm 2^\circ\text{C}$ (TBD) within 15 minutes, the NTC temperature insulation control temperature is 60°C (TBD). Add the lag interval of 2°C.

Standard heating: start level 1 heating. The control requirement is that at the 0-degree ambient temperature, the seat surface temperature can reach $37 \pm 2^\circ\text{C}$ within 15 minutes, the NTC temperature insulation control temperature is 50°C (TBD). Add the hysteresis interval of 2°C.

During the heating process, after the temperature is higher than or equal to the preset temperature, the DSCU controls to stop heating; after the temperature is lower than the preset temperature, the DSCU starts the heating process again. DSCU adopts certain temperature adjustment strategy to ensure the heating effect.

10. Memory Initialization

- a. Press the horizontal forward adjustment switch until the horizontal forward adjustment motor locked-rotor stops; press the horizontal backward adjustment switch until the horizontal backward adjustment motor locked-rotor stops;
- b. Press the backrest forward adjustment switch until the backrest forward adjustment motor stops locking; press the backrest backward adjustment switch until the backrest backward adjustment motor stops locking;
- c. Press down height adjusting switch until the downward adjustment motor locked-rotor stops; press down height adjusting switch until the upward adjustment motor locked-rotor stops;
- d. After 3 motors complete the locked-rotor, the initialization succeeds;

When the seat status is not initialized, the uninitialized DTC fault prompt system will be reported

During the initialization process, when any of the following conditions occur, the initialization fails and the system automatically exits the initialization process:

- a. After adjusting the operation of the motor, it stops, and does not press this switch again within 5 s to make the motor run to the locked-rotor position;
- b. The running action cannot be completed when the seat motor fault is detected;

After the initialization is completed, if the calibration of the seat is completed, the calibration state of the corresponding direction will change from invalid to valid, and the uninitialization fault is cleared.

After calibration is completed, the diagnostic instrument should be able to read the fault code information of the seat function, the seat adjustment distance and other information to determine whether the calibration is correct.

11. Seat motor fault

a. When the motor is running overtime

For all driving motors of a seat, if the continuous driving time of any motor exceeds the time shown in the table below, the driving of the motor will be stopped and the fault flag of continuous driving of the motor will be set. The motor will not be driven unless the system re-outputs the drive command. When it is detected that the system has output the motor drive command again, the motor drive timeout fault flag is cleared.

b. Motor stall

When driving the seat motor, the seat motor is diagnosed with drive locked-rotor at any time. If the motor is continuously driven, if the motor position is detected to be unchanged in the driving direction for a period of time, the motor is considered to be blocked.

When the seat motor locked-rotor fault is detected, the sign of locked-rotor fault of the seat motor is set and the driving of the motor is stopped. The motor will not be driven unless the system outputs the drive command again; when the drive command is detected to be reset, the sign of locked-rotor fault of the seat motor is cleared.

c. Seat motor sensor fault diagnosis

The power supply circuit of the Hall sensor. When the power supply line of the Hall sensor in the seat motor is short circuited to the ground, the Hall power supply will be turned off. At this time, the seat position memory and position transfer function will be stopped. until the power line returns to normal, enable the power supply output to enable the seat position memory and position pull out functions.

d. The seat motor is not initialized

Fault condition: after the seat is powered on, read the initialization mark corresponding to the adjustment direction of the seat from the storage position. If the initialization mark corresponding to the adjustment

direction is not initialized, the seat DTC in this direction is not initialized;

Recovery condition: when it is detected that the initialization flag variable of the seat adjustment direction is initialized, clear the uninitialization fault of the adjustment direction (seat initialization flag is recorded in EEPROM);

Execution output: disable functions related to remote memory of the seat, and record the fault DTC of the uninitialized adjustment direction of the corresponding motor

e. Fault of seat motor initialization stroke out of range

Fault condition: when the initialization of each adjustment direction of the seat determines the stroke of the corresponding direction, if the stroke of the corresponding adjustment direction exceeds 20% of the standard stroke (TBD), the seat stroke in this direction is out of range DTC;

Recovery condition: when the calibrated stroke falls within the error range after the initialization of the seat adjustment direction, clear the trouble that the stroke in the adjustment direction is out of range and update the seat stroke setting in this direction (the default value is the calibrated stroke by default);

Execution output: the stroke is executed according to the default calibration stroke, and the fault DTC corresponding to the motor adjustment direction is recorded.

12. Seat heating*diagnosis

a. High-end diagnosis of seat heating output

Fault detection: there is a current feedback circuit in the MOS drive of the seat heating high-end. When the feedback current threshold is greater than the short circuit current threshold, it is considered that the heating high-end output is short to ground; when the feedback current threshold is less than the open circuit current threshold, it is considered that the heating high-end output is an open circuit;

Fault treatment: when it is determined that there is a short circuit or open circuit at the high end, set the fault sign of open circuit or short circuit, and stop the driving of the heating pad. The heating pad will not be driven unless the system outputs the driving command again;

After the open circuit and short circuit fault flag is set, when the drive command is detected, clear the short

circuit fault flag and drive the heating pad again to detect the fault;

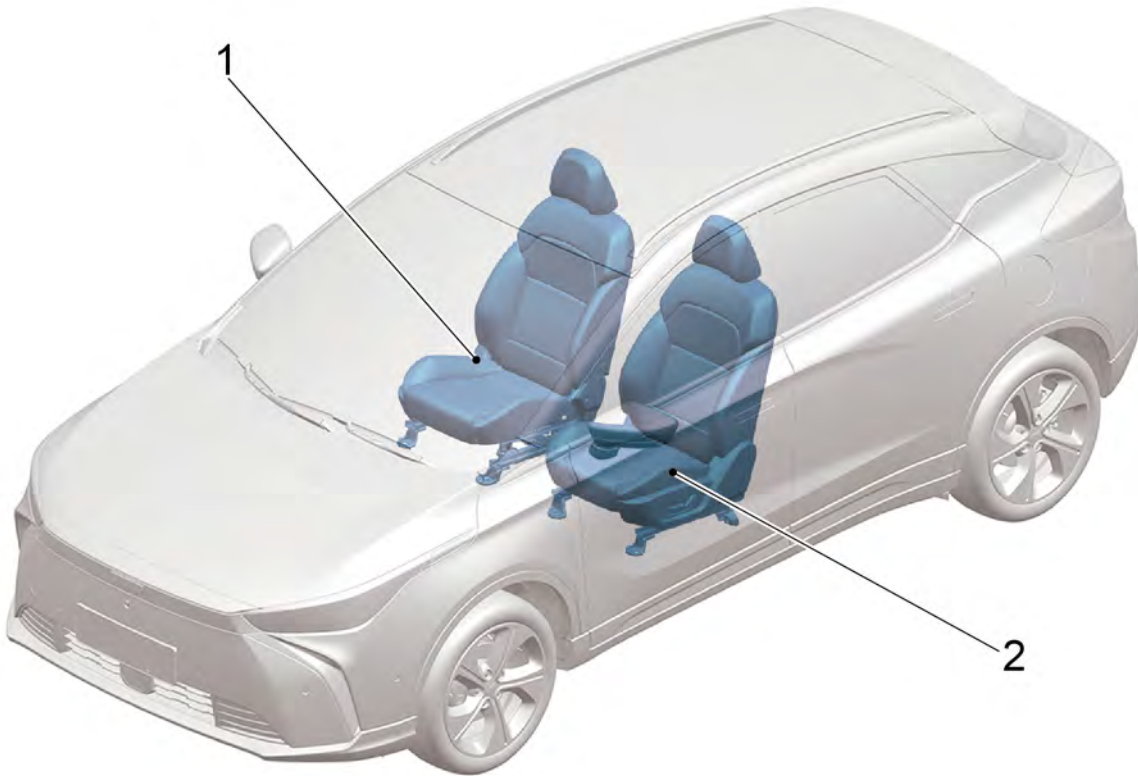
b. Diagnosis of seat heating NTC sensor

Fault detection: the seat heating NTC sensor is an AD acquisition circuit. When the AD feedback value is always 0 or full scale when the seat heating NTC sensor is short-circuited to ground or the power supply fails;

Fault treatment: when it is determined that the NTC sensor is short-circuited, set the fault identification and the heated drive is prohibited. When the fault recovers, clear the fault identification.

11.11.4 Part position

11.11.4.1 Part Position

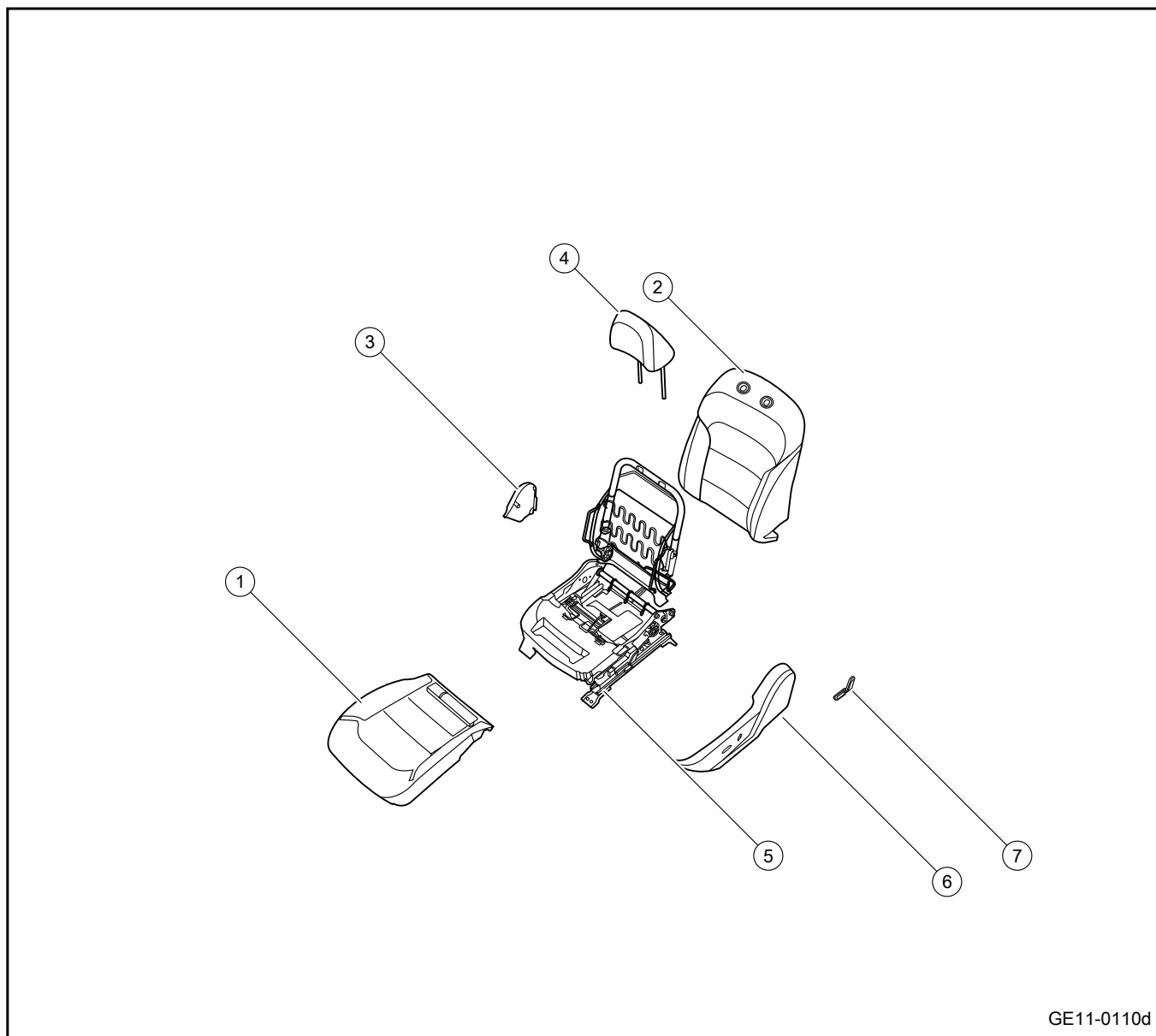


1. Passenger seat assembly

2. Left front seat assembly

11.11.5 Breakdown drawing

11.11.5.1 Power seat exploded view

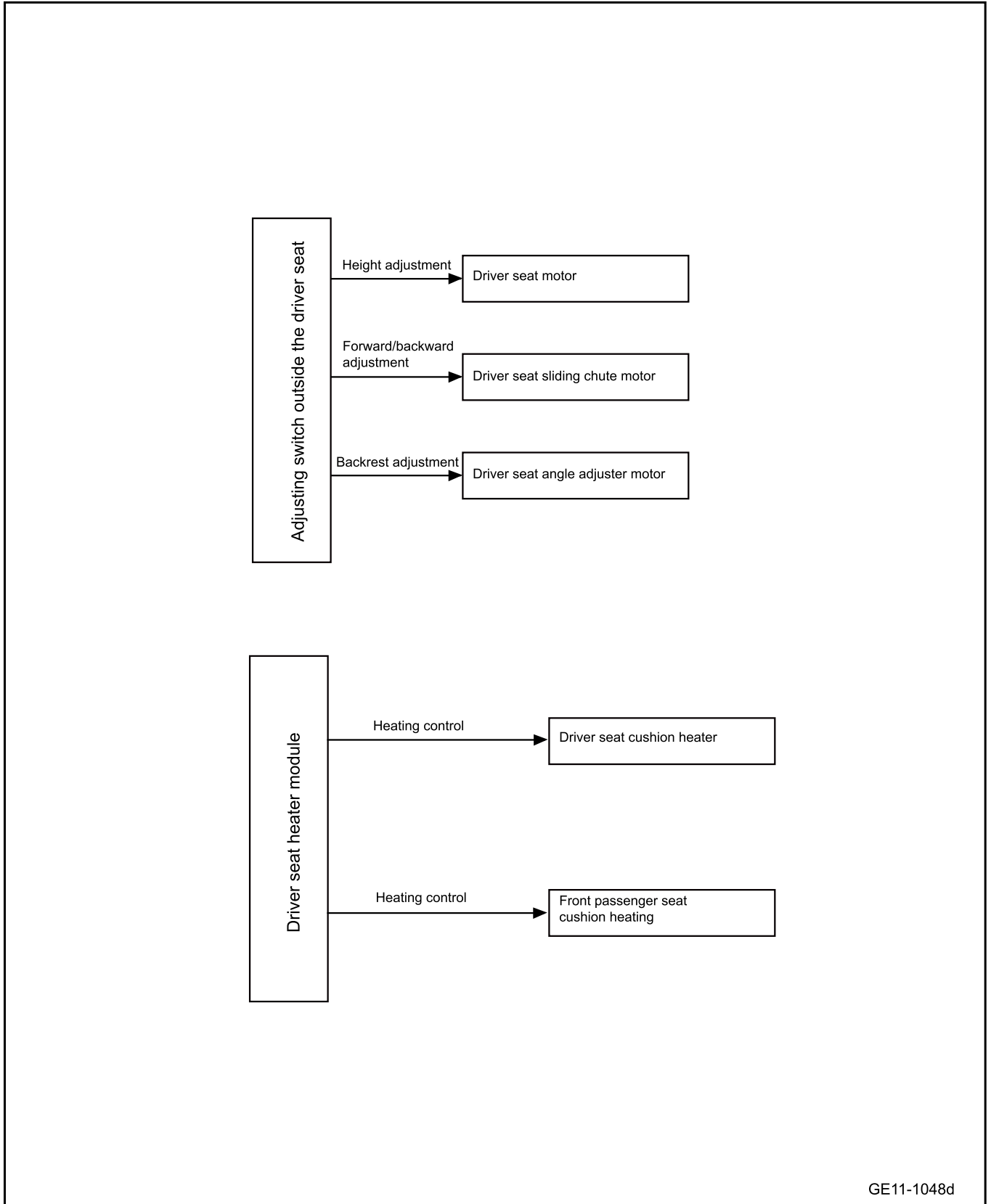


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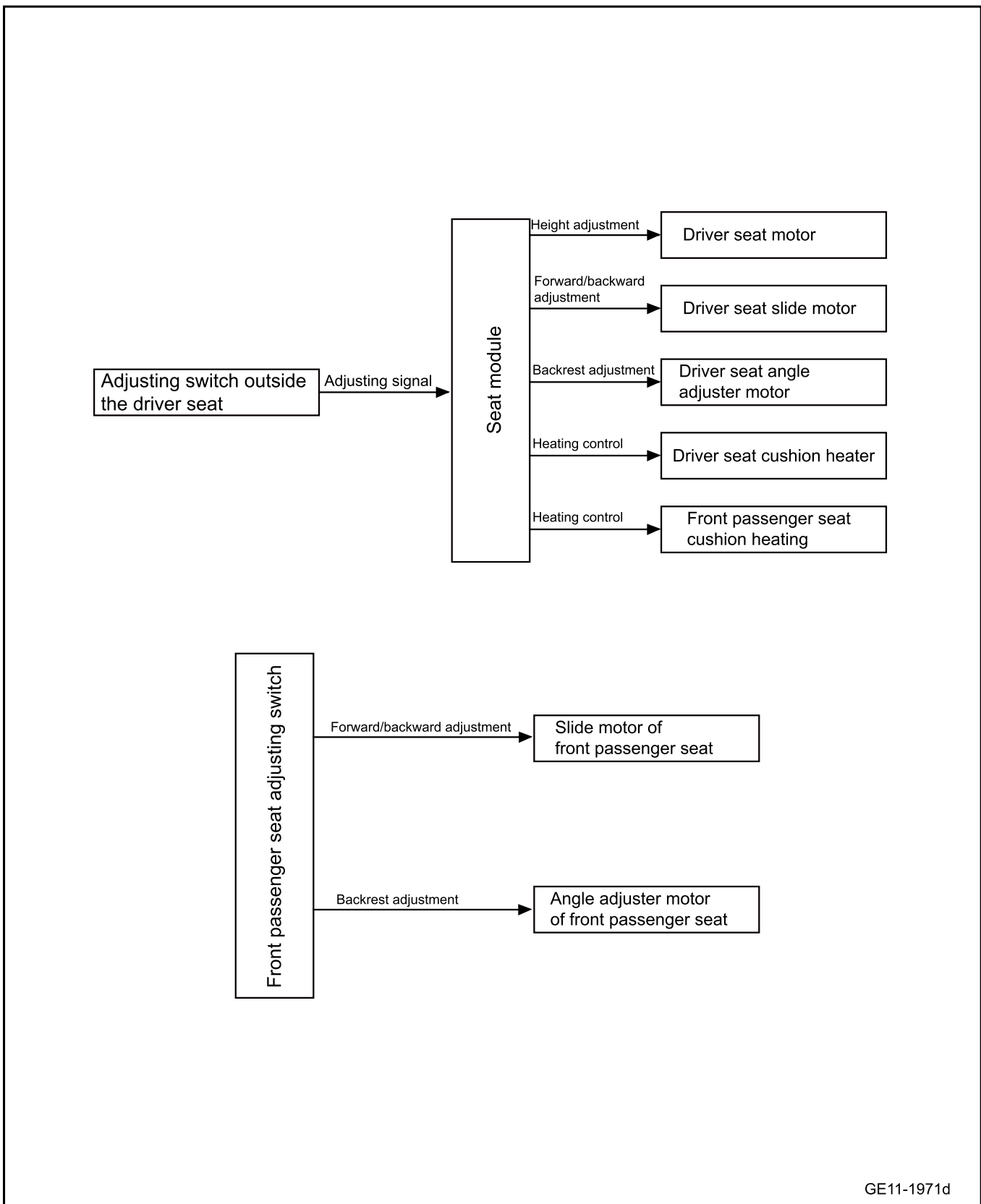
- | | |
|---------------------------------------|---------------------------------------|
| 1. Power seat cushion | 5. Power seat bracket |
| 2. Power seat backrest | 6. Right trim panel of the power seat |
| 3. Right trim panel of the power seat | 7. Power seat adjustment button |
| 4. Headrest | |

11.11.6 Electrical block diagram

11.11.6.1 Electrical Schematic Diagram of Power Seat(Type I)

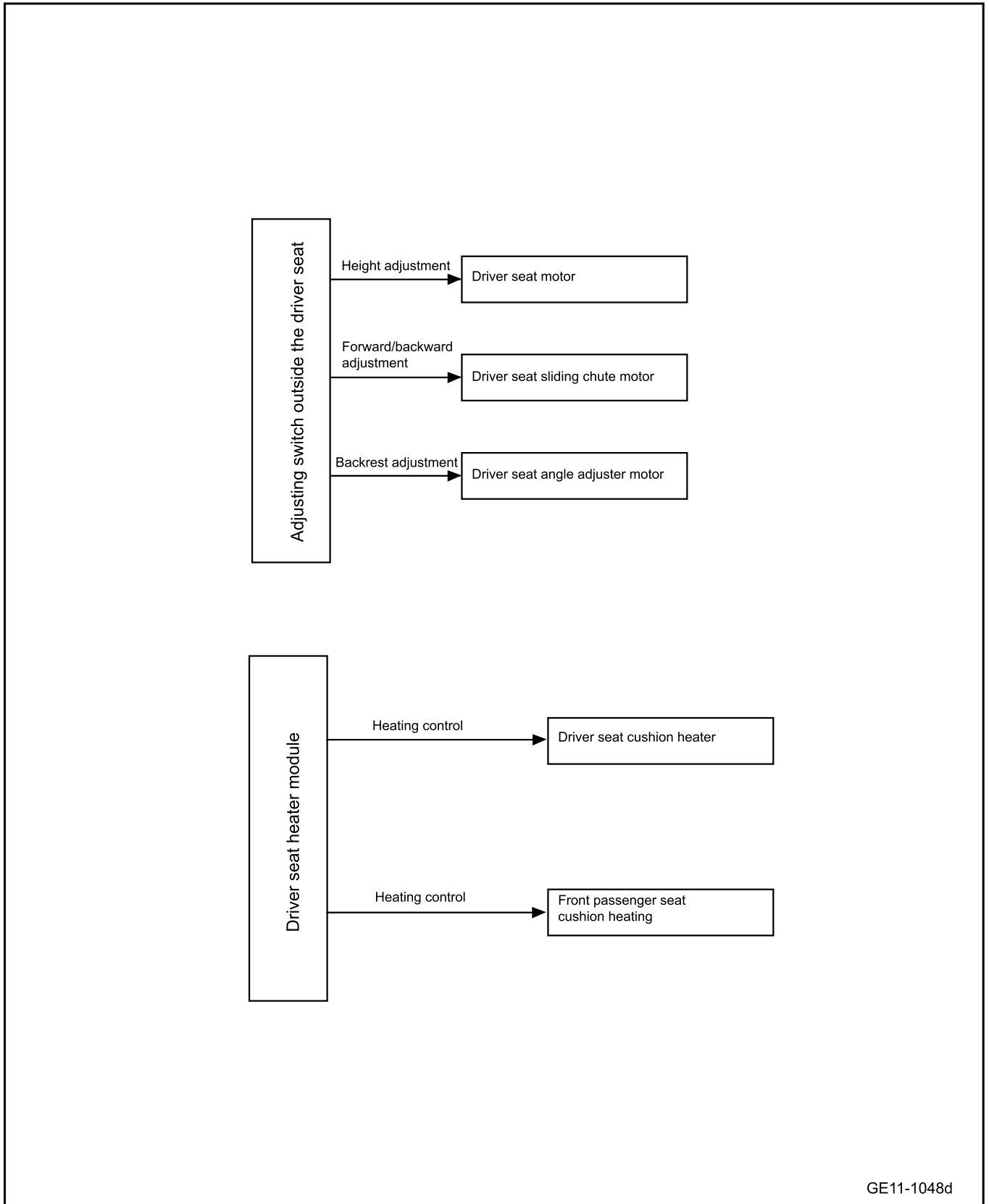


With memory function

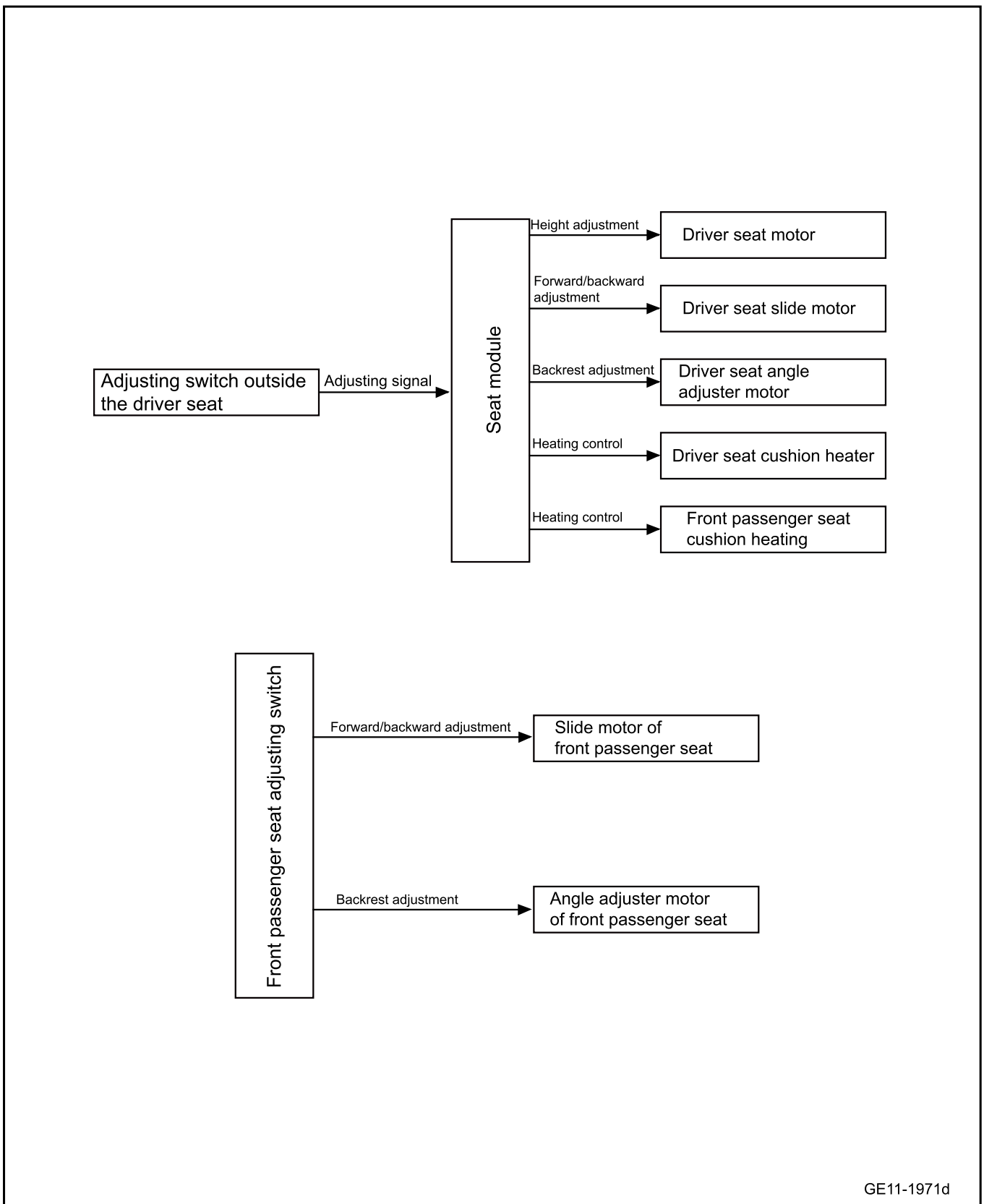


GE11-1971d

11.11.6.2 Electrical Schematic Diagram of Power Seat(Type II)

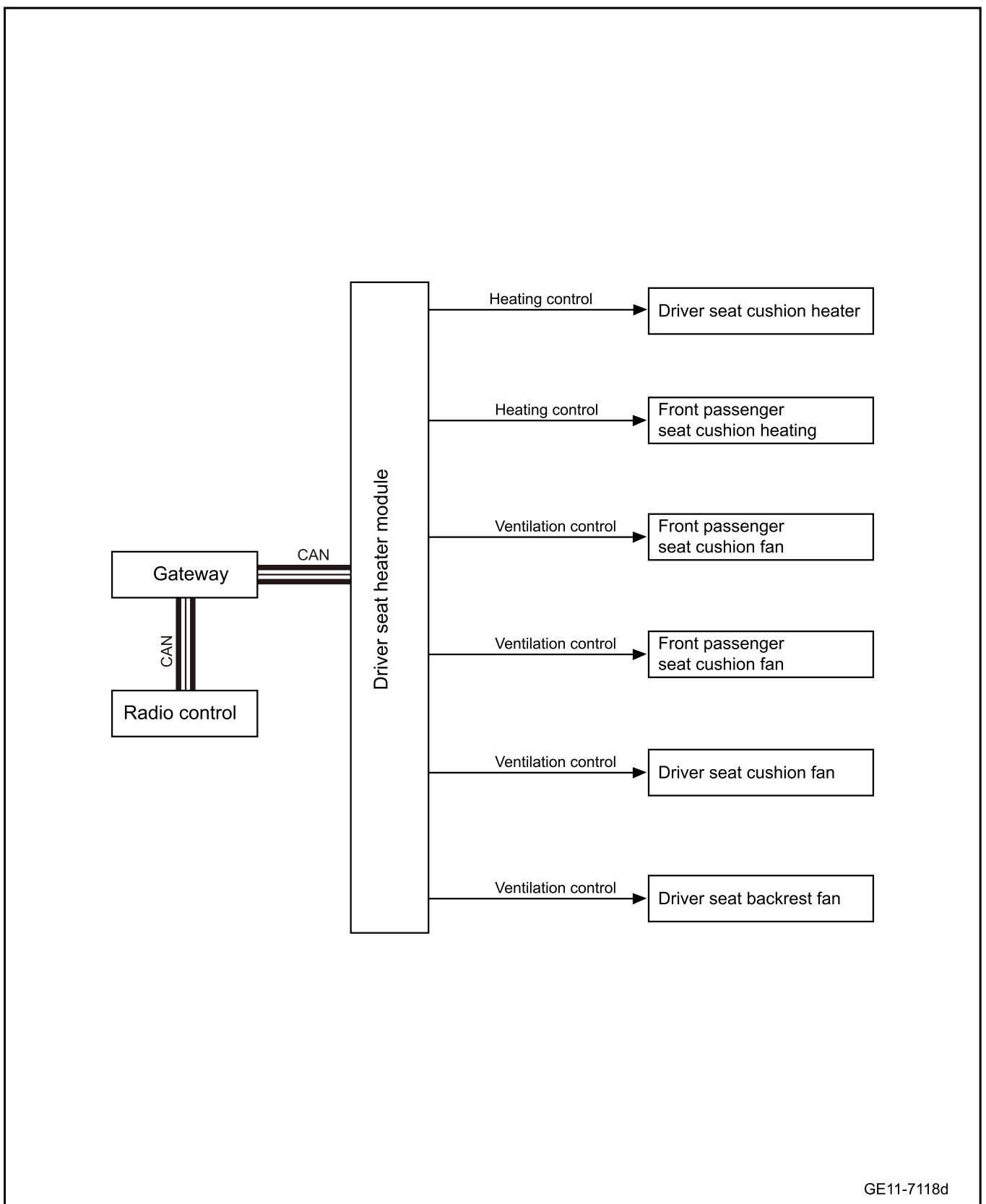


With memory function



GE11-1971d

Seat Heating/Ventilation



11.11.7 Diagnostic information and procedures

11.11.7.1 Diagnosis Description

Prior to diagnosis of fault in power seat, refer to Description and Operation and System Working Principle. Understand and get familiar with power seat working principle before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a trouble occurs. More importantly, it also helps to determine whether the situation described by the distributor is normal. Any fault diagnosis of power seat should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.11.7.2 Routine inspection

- Check after-sales installations that may affect the power seat, to ensure that these devices cannot affect the power seat.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.11.7.3 Action test table

By reading the “action test” on the fault diagnostic apparatus, working statuses of the relay and the actuator controlled by DSCU can be checked with no need to remove any part and component. Before diagnosing the related faults of the control system, the motion test is the prerequisite for troubleshooting, which can shorten the troubleshooting time.

Note

Data under normal condition is listed in the following table only for reference. Do not merely judge whether some part is faulty based on these reference values. Under normal conditions, a vehicle operating normally can be used to be compared with a vehicle being diagnosed in the same status to confirm whether the data of the vehicle being diagnosed is normal in current status.

- Multimedia settings from vehicle power supply to OFF gear.
- Connect the scan tool.
- The key activates the power supply of the vehicle to ON.
- Select “DSCU”/“action test”.
- Refer to the following table and conduct active test.

Diagnostic scanner display item	Test components	Control range	Diagnosis description
Driver's seat heating control	Driver's seat heater	ON/OFF	Control the operation of driver seat heater in accordance with the instructions of the diagnostic instrument
Front passenger's heating control	Front passenger's seat heater	ON/OFF	Control the operation of front passenger seat heater in accordance with the instructions of the diagnostic instrument
Seat forward and backward adjustment output control	Slide motor of seat	Forward/backward	Control the seat forward/backward adjustment output according to the instructions of the diagnostic instrument
Seat Height Adjustment output control	Angle adjuster motor of seat	Upward/downward	Control the seat height adjustment output according to the instructions of the diagnostic instrument

Diagnostic scanner display item	Test components	Control range	Diagnosis description
Seat Backrest Adjustment output control	Seat up/down motor	Forward/backward	Control the backrest adjustment output according to the instructions of the diagnostic instrument
Left rearview mirror adjustment output control	Left rearview mirror	Left/right/up/down	Control the left rearview mirror adjustment output in accordance with the instructions of the diagnostic instrument
Right rearview mirror adjustment output control	Right rearview mirror	Left/right/up/down	Control the right rearview mirror adjustment output in accordance with the instructions of the diagnostic instrument

11.11.7.4 Data list

Data identifier	DID description	Normal value range	Unit
1	Seat forward/backward switch status	00-04	/
2	Seat height witch status	00-04	/
3	Seat backrest witch status	00-04	/
4	Seat forward/backward calibration state	00-02	/
5	Seat backrest calibration	00-02	/
6	Seat Height calibration	00-02	/
7	KL15 switch status	00-01	/
8	Seat forward/backward calibration information	/	/
9	Seat height calibration information	/	/
10	Backrest calibration information	/	/
11	ECU supply voltage	0-20.4	V
12	Vehicle speed	0-3686.34375	km/h
13	Driver's seat heating control duty cycle	0- 100	%
	Driver's seat heating control frequency	10- 30	Hz
14	Duty cycle of front passenger seat heating control	0- 100	%
	Front passenger seat heating control frequency	10- 30	Hz
15	Driver seat heating NTC feedback data	0- 1023	/

Data identifier	DID description	Normal value range	Unit
16	Front passenger seat heating NTC feedback data	0- 1023	/
17	Driver's seat heating status	0- 7	/
18	Driver's seat heating status	0- 7	/
19	Information of X axis position of left rearview mirror	0- 1023	/
20	Position information of left rearview mirror Y shaft	0- 1023	/
21	Information of X axis position of the right rearview mirror	0- 1023	/
22	Right rearview mirror Y axis position information	0- 1023	/
23	Sampling value of working current of seat forward/backward adjustment motor	0- 1023	/
24	Sampling value of working current of seat height adjusting motor	0- 1023	/
25	Sampling value of working current of backrest adjusting motor	0- 1023	/
26	Sampling value of heating power supply voltage	0- 1023	/
27	Voltage sampling value of seat control power supply 1	0- 1023	/
28	Voltage sampling value of seat control power supply 2	0- 1023	/
29	Sampling value of working current of seat forward and backward adjustment switch	0- 1023	/
30	Sampling value of working current of seat Height Adjustment switch	0- 1023	/
31	Sampling value of backrest forward and backward adjusting switch	0- 1023	/
32	The common end (switch) sampling value for the horizontal up/down adjustment of the right view mirror	0- 1023	/

Data identifier	DID description	Normal value range	Unit
33	The common end (switch) sampling value for the horizontal up and down adjustment of the left view mirror	0- 1023	/
34	Horizontal adjustment motor (switch) sampling value of the left and right view mirrors	0- 1023	/
35	Seat level adjustment output status feedback	00-04	/
36	Seat height adjustment output status feedback	00-04	/
37	Seat backrest adjustment output status feedback	00-04	/
38	Seat forward and backward adjustment switch status	Stop/forward/backward/open/invalid	/
39	Seat Height Adjustment switch status	Stop/Up/Up/Down/Unknown/Invalid	/
40	Rear Seat Backrest Adjustment switch status	Stop/forward/backward/open/invalid	/
41	Seat length calibration state	Uncalibrated/calibrated	/
42	Backrest calibration state.	Uncalibrated/calibrated	/
43	Seat height calibration state	Uncalibrated/calibrated	/
44	Power supply mode status	Close/Open	/
45	Seat Length Adjustment Information	Current position/front hard dead center/rear hard dead center/calibration history	/
46	Seat Height Adjustment Information	Current position/front hard dead center/rear hard dead center/calibration history	/
47	Backrest adjustment information	Current position/front hard dead center/rear hard dead center/calibration history	/
48	Driver side seat cushion ventilation control duty cycle	0- 100	%
49	Driver side seat cushion ventilation control frequency	0- 1000	Hz
50	Duty cycle of seat cushion ventilation control at auxiliary driver side	0- 100	%

Data identifier	DID description	Normal value range	Unit
51	Vent control frequency of seat cushion at co-driver side	0- 1000	Hz
52	Temperature of driver seat	-40 × 120	°C
53	Temperature of front passenger seat	-40 × 120	°C
54	Driver side backrest ventilation control duty cycle	0- 100	%
55	Driver side backrest ventilation control frequency	0- 1000	Hz
56	Duty cycle of backrest ventilation control at co-driver side	0- 100	%
57	Ventilation control frequency of co-driver backrest	0- 1000	Hz

11.11.7.5 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.11.7.6 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.11.7.7 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B130029	Hall signal fault of seat height motor	Refer to Driver's power seat height cannot be adjusted (with memory function)
B130054	Seat height motor is not calibrated	
B130077	Wrong calibration path of seat height motor	
B130A29	Invalid seat height switch signal	
B130B07	Seat height up switch is stuck	
B130C07	Seat height down switch is stuck	
B130129	Seat front and rear motor Hall signal fault	Refer to Driver's Power Seat Cannot be Adjusted Forward and Backward(with memory function)
B130154	Seat front and rear motors are not calibrated	
B130177	Wrong calibration path of front and rear motor of seat	
B130D29	Seat front and rear switch signal is invalid	
B130E07	Seat forward/backward adjustment switch is caught	
B130F07	Seat forward/backward adjustment switch is caught	
B130229	Seat backrest motor Hall signal fault	Refer to Front Passenger's Power Seat Backrest cannot be Adjusted(with memory function)
B130254	Uncalibrated backrest motor	
B130277	Wrong calibration path of backrest motor	
B131029	Invalid seat backrest switch signal	
B131107	Backrest forward adjustment switch is caught	
B131207	Backrest adjustment switch is caught	
B130677	Driver's rearview mirror upper/lower position potentiometer signal is out of range	Refer to Fault of Driver Side Rearview Mirror (with Memory Function)
B130777	Driver's rearview mirror left/right position potentiometer signal is out of range	
B133907	Left rearview mirror leftward adjustment switch is stuck.	
B133A07	Left rearview mirror rightward adjustment switch is stuck.	
B133B07	Left rearview mirror upward adjustment switch is stuck.	

Diagnostic Trouble Code	Description	Fault location/elimination method
B133C07	Left rearview mirror downward adjustment switch is stuck.	
B130877	Passenger's rearview mirror upper/lower position potentiometer signal is out of range	Refer to Fault of rearview mirror at passenger side (with memory function)
B130977	Passenger's rearview mirror left and right position potentiometer signal is out of range	
B133D07	Right rearview mirror leftward adjustment switch is stuck.	
B133E07	Right rearview mirror rightward adjustment switch is stuck.	
B133F07	Right rearview mirror upward adjustment switch is stuck.	
B134007	Right rearview mirror downward adjustment switch is stuck.	
U300116	Controller voltage is low.	
U300117	Controller voltage is high.	
U300616	Low-voltage fault of the seat controller	
U300617	High voltage fault of the seat controller	
U021487	Communication with PEPS is lost	Refer to Seat Module Data Communication Failure
U014087	Communication with BCM is lost	
U015587	Communication with IPK is lost	
U111487	Communication with VCU is lost	
U012287	Communication with ESC is lost	
U019887	Communication with T_BOX is lost	
U016487	Communication with AC is lost	
U015687	MMI_DSCU_Command communication is lost	
U007300	Communication with MMI is lost	
U150082	Error in communication with ICM	
U015187	Communication with ACU is lost	
B180011	Driver seat heating high-end output is short-circuited to ground	Refer to Driver's Seat Heater Fault
B180013	Driver seat heating high-end output circuit is open	
B180411	Driver seat heating temperature sensor short to GND fault	

Diagnostic Trouble Code	Description	Fault location/elimination method
B180413	Driver's seat-heating temperature sensor is short-circuited to power failure or open circuit	
B180012	Driver seat heating low-end output is short-circuited to power supply	
B180412	Driver seat heating temperature sensor is short-circuited to power supply	
B180111	The high-end output of co-driver seat heating is short-circuited to the ground	Refer to Passenger Seat Heating Fault
B180113	Front passenger seat heating high-end output circuit is open	
B180511	Front passenger seat heating temperature sensor short to GND fault	
B180513	The heating temperature sensor of front passenger seat is short circuited to power failure or open circuit	
B180112	The low-end output of passenger seat heating is short-circuited to power supply	
B180512	The co-driver seat heating temperature sensor is short-circuited to power supply	

11.11.7.8 Power supply fault of seat module

1. DTC description:

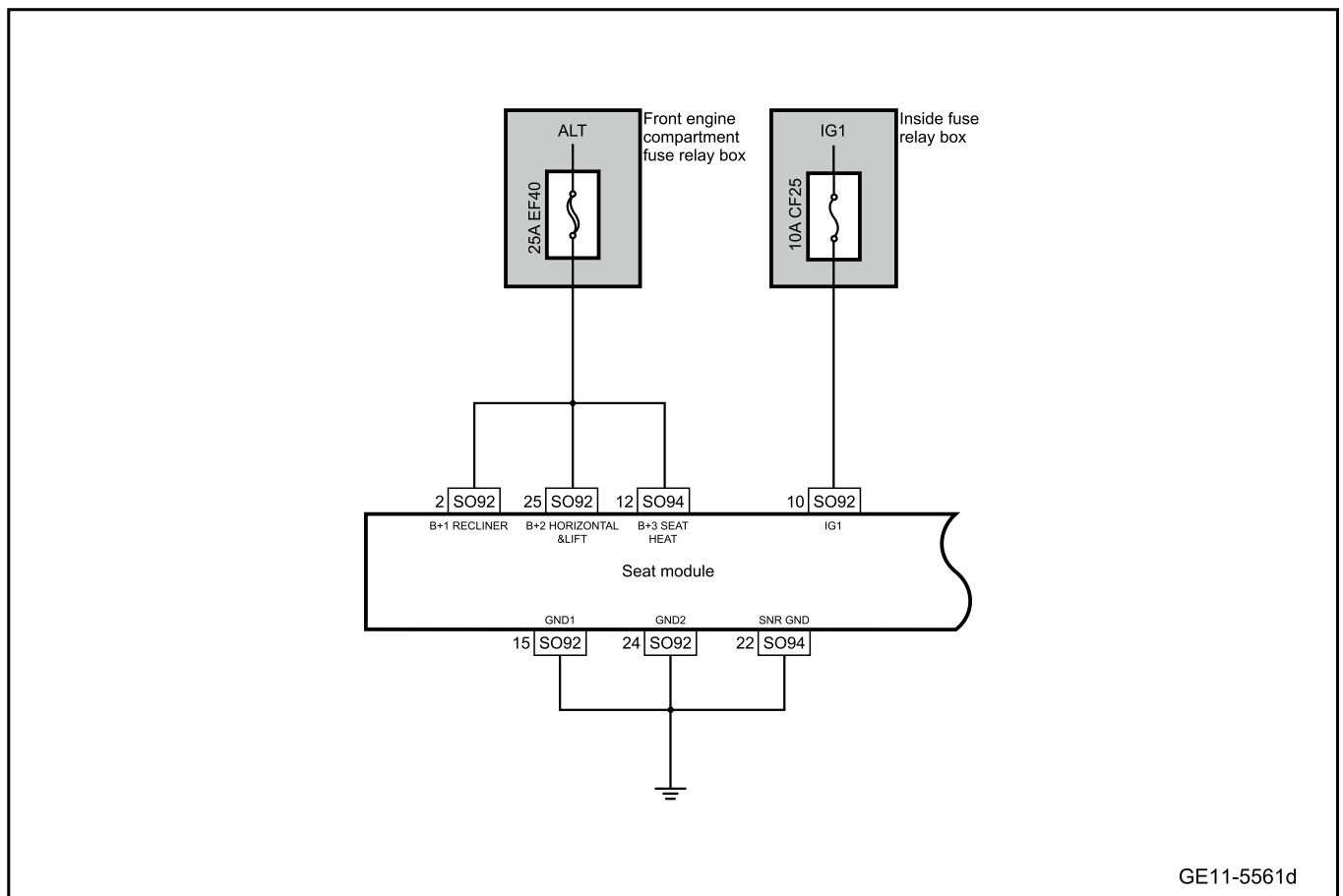
Diagnostic Trouble Code	Description
U300116	Controller voltage is low.
U300117	Controller voltage is high.
U300616	Low voltage fault of the seat controller
U300617	High voltage fault of the seat controller

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300116	Input voltage <9V, lasting for more than 1S	1. Ignition status is IG ON(3s after ignition) 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started	1. Battery 2. Harness 3 Seat module 4. Fuse
U300117	Input voltage \geq 16V, lasting for more than 1S		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Measure the voltage < 9V for 1000ms	1. KL_15 == ON. 2.2 seconds later, the ignition is off → On (substitute conditions)	
U300617	Measured voltage ≥ 16V for 1000ms	1. KL_15 == ON. 2.2 seconds later, the ignition is off → On (substitute conditions)	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

A. Read the fault code and confirm whether other modules have output power failure code.

No
To Step 4.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the Seat module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the Seat module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect seat module fuse
--------	--------------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove the indoor fuse box fuse, and check whether the fuse CF25 is blown out.
Rated capacity of fuse: 10A
- C. Pull out the fuse EF40 of the front engine compartment. Check whether the fuse EF40 is blown.
Rated capacity of fuse: 25A

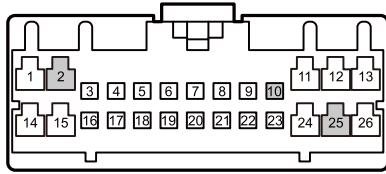
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

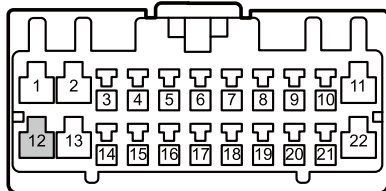
Step 5	Check whether the seat module voltage is normal.
--------	--

SO92 seat module harness connector A



GE11-6019d

SO94 seat module harness connector C



GE11-6020d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO92.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO92(2)	Vehicle body is grounded.	Standard voltage: 11-14V
SO92(10)		
SO94(12)		
SO92(25)		

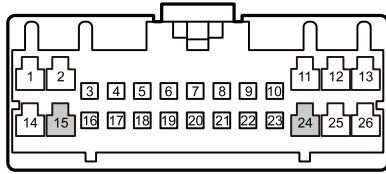
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

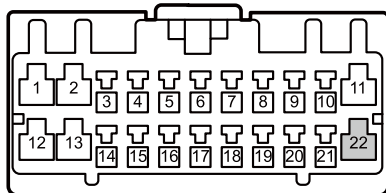
Step 6 | Check whether the grounding harness of seat module is normal.

SO92 seat module harness connector A



GE11-6021d

SO94 seat module harness connector C



GE11-6022d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the seat module harness connector SO92.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO92(15)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO94(22)		
SO92(24)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Replace the seat module.

- A. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 8 Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.11.7.9 Seat module data communication fault

1. DTC description:

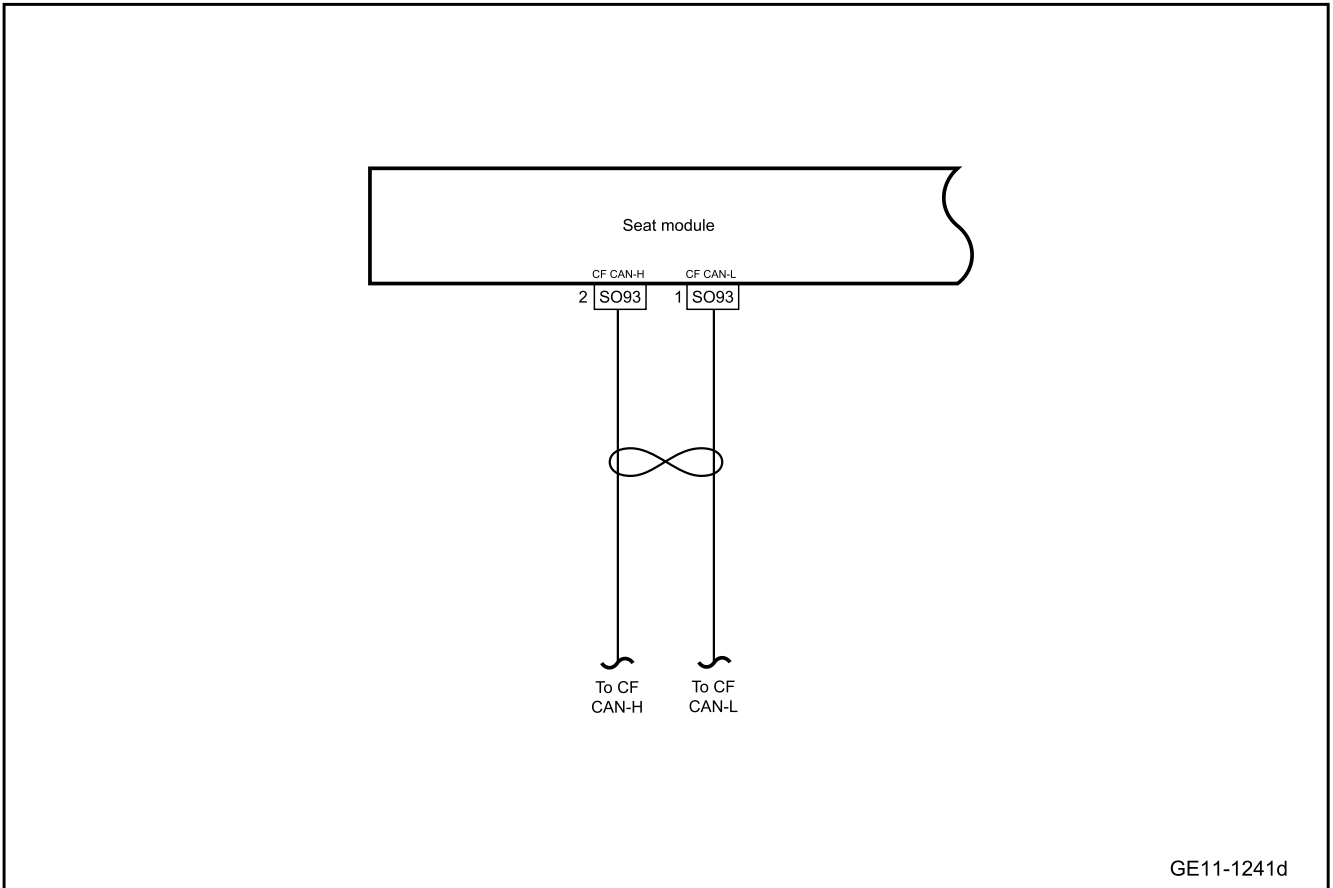
Diagnostic Trouble Code	Description
U021487	Communication with PEPS is lost
U014087	Communication with BCM is lost
U015587	Communication with IPK is lost
U111487	Communication with VCU is lost
U012287	Communication with ESC is lost
U019887	Communication with T_BOX is lost
U016487	Communication with AC is lost
U015687	MMI_DSCU_Command communication is lost
U007300	Communication with MMI is lost
U150082	Error in communication with ICM
U015187	Communication with ACU is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U021487	Frame loss ID= 0 x1E2 or 0 x 272 (defined in CMX)	1. There are no DTC (high level and low level) for voltage level 2. No bus-off is detected 3. UDS\$85 control DTC settings (status diagnosis) 4. Ignition status is IG ON(3S after ignition) 5. Communication Rx enabling state 6. Diagnostic offline configuration is valid (\$ F110PEPS is enabled) 7. Not started	1. Circuit 2. Seat module 3. Diagnostic interface
U014087	Frame loss ID= 0 x 285 is detected (defined as CMX)		
U015587	Frame loss ID= 0 x3F1 is detected (for the definition, see CMX)		
U111487	Frame loss ID= 0 x 165 or 0 x 162 or 0 x1A5 is detected (see CMX)		
U012287	Frame loss ID= 0 x 125 is detected (defined as CMX)		
U019887	Frame loss (ID=0x292) is detected (Defined in the CMX)		
U016487	Frame loss ID= 0 x2F1 is detected (for the definition, see CMX)		
U015687	Frame loss detected (ID= 0 x2A7 or 2A3 or 2A2) (defined in CMX)		
U007300	Bus switch-off counter from cL1 to L2 equals 10.(10 consecutive bus disconnections)	1. Ignition status should be ignited ON (within 3s after ignition) 2. UDS\$85 controls DTC settings (diagnosis activated) 3. There is no current DTC for voltage level (high and low) 4. CAN transmission enabling status 5. Non-turning status:	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U150082	Detected DLC < 8 equals to 10; the specific logic implementation is as follows: 1. In all application messages received by DSCU, as long as any ID makes a DLC error, the error counter will be increased by 1. When the counter is equal to 10, the DTC fault will be recorded.	1. The power supply voltage is higher than 9V and lower than 16V 2. KL_15 = ON. 3. 3 to 4 seconds after ignition is turned off → On (condition that can be agent) 4. The bus disconnection is not detected or recovered within 1S, and ECU is on this CAN	
U015187	ACU (ID=0x380) message in 5T(1000ms) is lost for 5s	1. The power supply voltage is higher than 9V and lower than 16V 2. KL_15 = ON. 3. 3 to 4 seconds after ignition is turned off → On (condition that can be agent) 4. The bus disconnection is not detected or recovered within 1S, and ECU is on this CAN 65. ACU is configured in F110DID	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the seat module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check the CF-CAN network integrity.

- A. To check the instrument communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8 Seat Module Power Supply Failure](#)
- B. To replace the seat module, please refer to [Replacement of Seat Module](#)

Next step

Step 5 Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

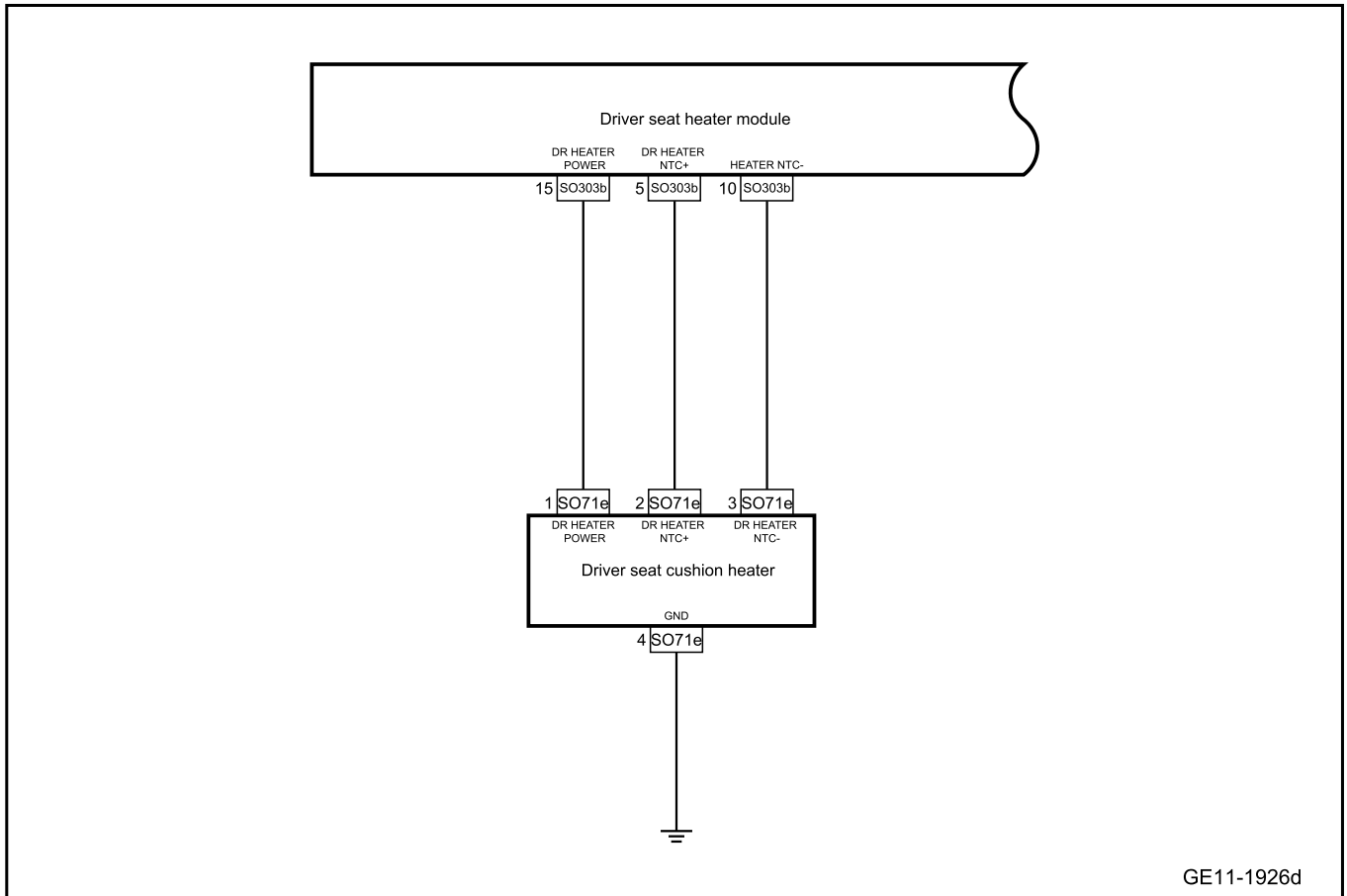
Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.11.7.10 Driver's seat heating fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 Primary check.

- A. Check the driver's seat heating module and driver seat cushion heater for signs of damage, deformation, smudges, looseness, etc.
- B. Check the driver's seat heating module and driver seat cushion heater harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

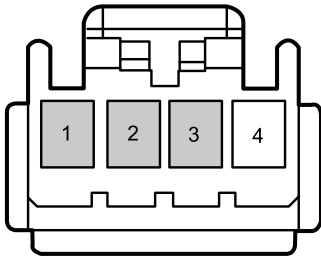
No

Repair or replace the faulty part.

Yes

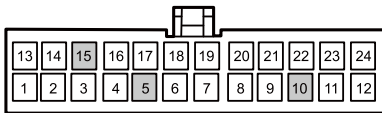
Step 2 Check whether the harness between driver seat cushion heater and driver seat heating module is open.

S071e driver seat heating harness connector



GE11-5929d

SO303b driver seat heating module harness connector



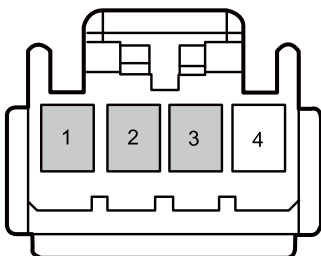
GE11-5930d

Yes

Step 3

Check whether the harness between driver seat cushion heater and driver seat heating module is short to power supply.

S071e driver seat heating harness connector



GE11-5931d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion heater harness connector so303c.
- C. Disconnect the driver seat heating module harness connector so303c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S071e(1)	SO303b(15)	Standard resistance: less than 1Ω
S071e(2)	SO303b(5)	
S071e(3)	SO303b(10)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion heater harness connector so303c.
- C. Disconnect the driver seat heating module harness connector so303c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S071e(1)	Vehicle body is grounded.	Standard voltage: 0V
S071e(2)		
S071e(3)		

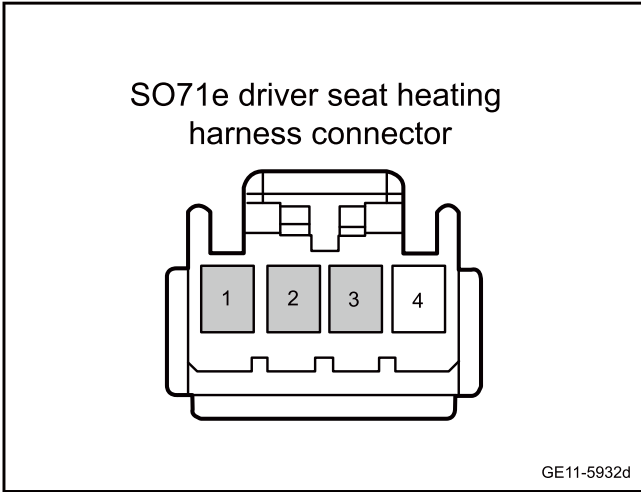
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the driver seat cushion heater and driver seat heating module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion heater harness connector so303c.
- C. Disconnect the driver seat heating module harness connector so303c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO71e(2)		
SO71e(3)		

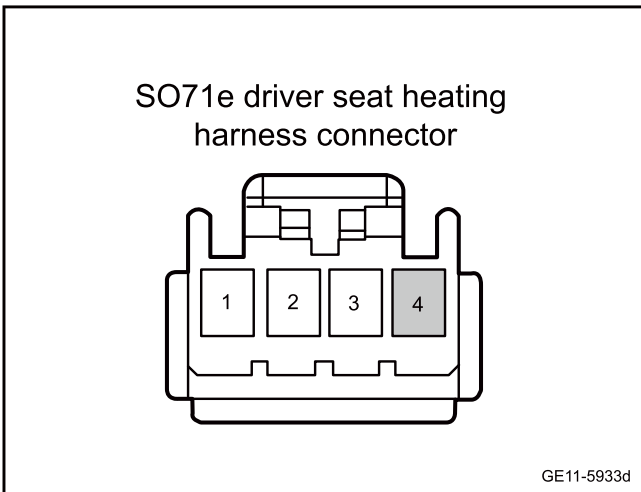
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the grounding circuit of driver seat cushion heater is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion heater harness connector so303c.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the driver's seat cushion heater.
--------	---

- A. Replace the driver's seat cushion heater. Refer to [Replacement of Driver's Cushion Seat Heater](#)
- B. Confirm whether the seat works normally.

Yes	System is normal.
-----	-------------------

No

Step 7	Replace the driver's seat heating module.
--------	---

- A. Replace the driver's seat heating module. Refer to [Replacement of Driver's Seat Cushion Heater](#)

Next step

Step 8	System is normal.
--------	-------------------

11.11.7.11 Fault of driver's rearview mirror (with memory function)

1. DTC description:

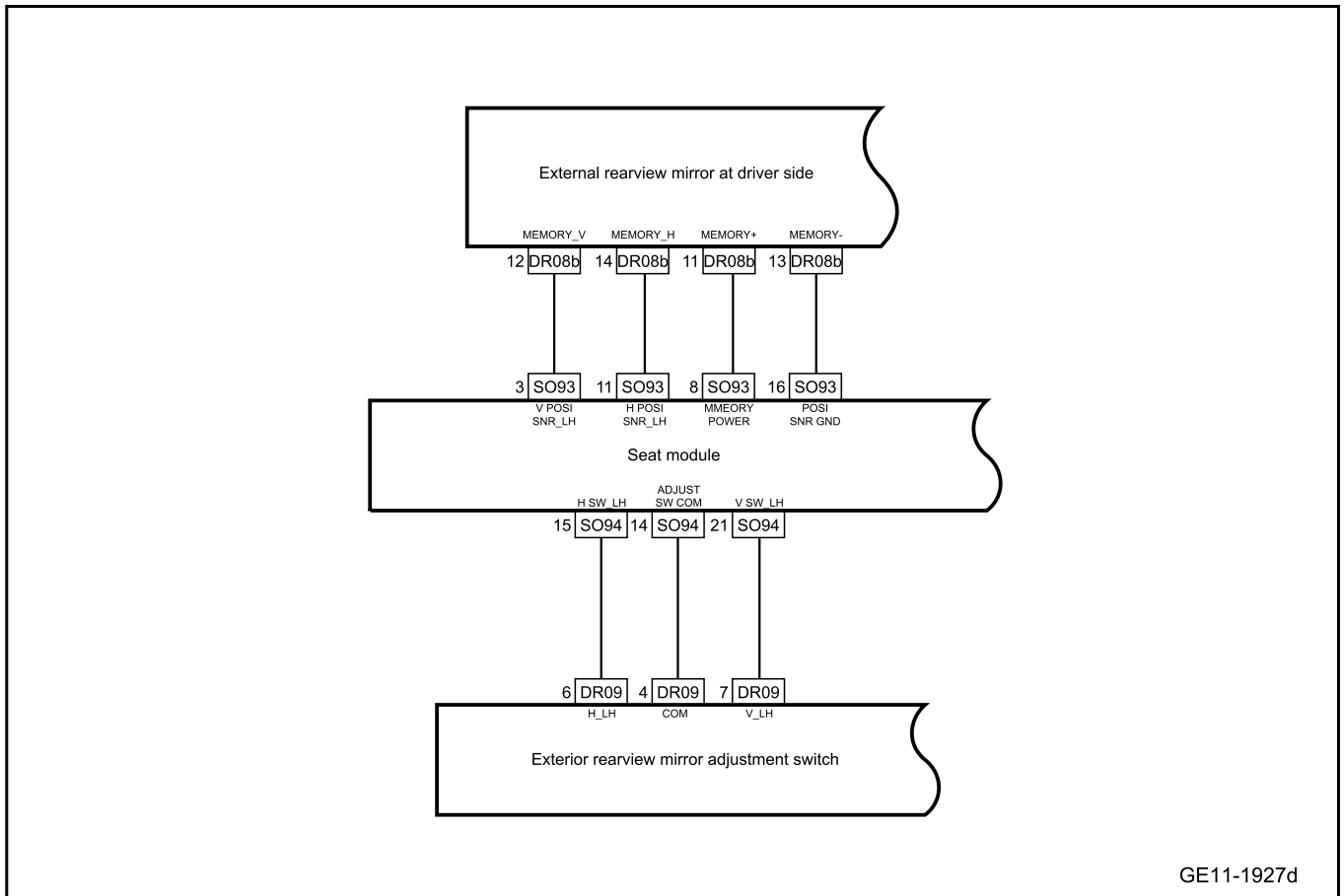
Diagnostic Trouble Code	Description
B130677	Driver's rearview mirror upper/lower position potentiometer signal is out of range
B130777	Driver's rearview mirror left/right position potentiometer signal is out of range
B133907	Left rearview mirror leftward adjustment switch is stuck.
B133A07	Left rearview mirror rightward adjustment switch is stuck.
B133B07	Left rearview mirror upward adjustment switch is stuck.
B133C07	Left rearview mirror downward adjustment switch is stuck.

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130677	Check the range of invalid sensor U value (200 consecutive failures)	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis)	1. Replace the driver's side exterior rearview mirror 2. Harness 3 Seat module
B130777	Check the range of invalid sensor U value (200 consecutive failures)		
B133907	The switch activation state lasts for more than 20 seconds		
B133A07	The switch activation state lasts for more than 20 seconds		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B133B07	The switch activation state lasts for more than 20 seconds		
B133C07	The switch activation state lasts for more than 20 seconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

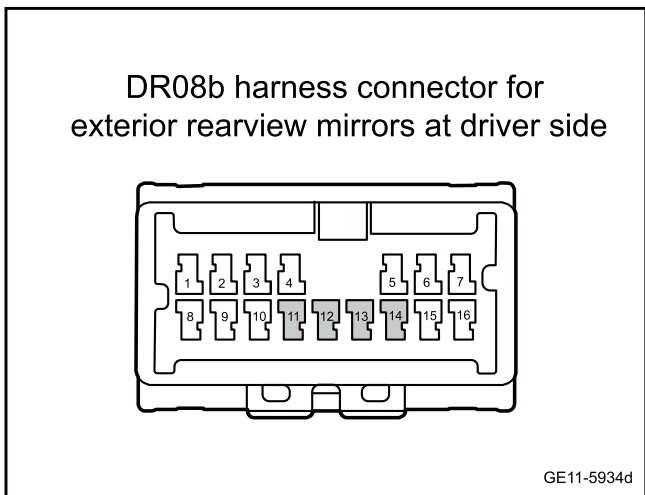
- A. Check the seat module and driver side exterior rearview mirror for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module and driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

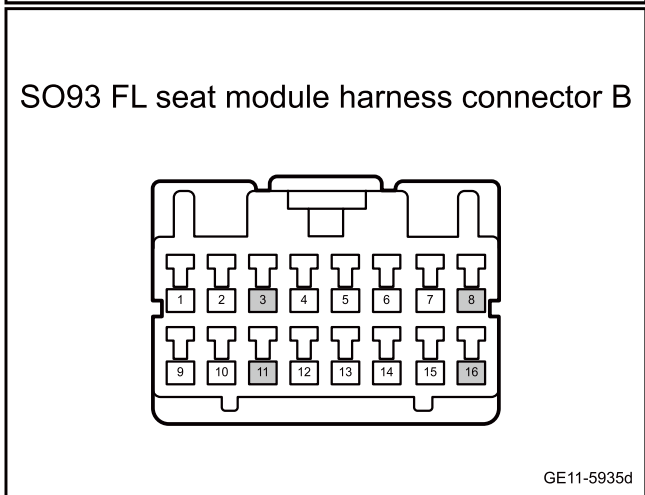
Yes

Step 3 Check whether the circuit between the driver side exterior rearview mirror and the seat module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(12)	SO93(3)	Standard resistance: less than 1Ω
DR08b(14)	SO93(11)	
DR08b(11)	SO93(8)	
DR08b(13)	SO93(16)	



- E. Confirm whether the measured value meets the standard.

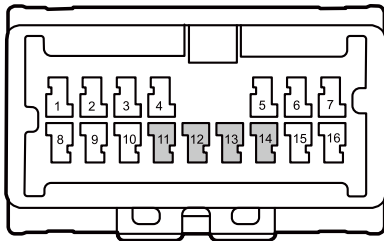
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the exterior rearview mirror and the seat module is short to power supply.

DR08b harness connector for exterior rearview mirrors at driver side



GE11-5936d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(12)	Vehicle body is grounded.	Standard voltage: 0V
DR08b(14)		
DR08b(11)		
DR08b(13)		

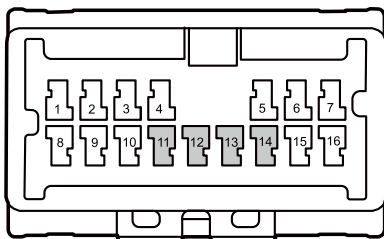
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between the exterior rearview mirror and the seat module is short to ground.

DR08b harness connector for exterior rearview mirrors at driver side



GE11-5937d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(12)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR08b(14)		
DR08b(11)		
DR08b(13)		

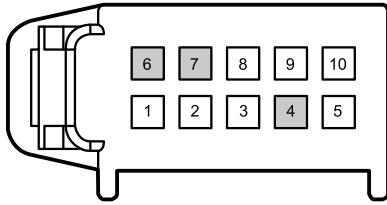
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

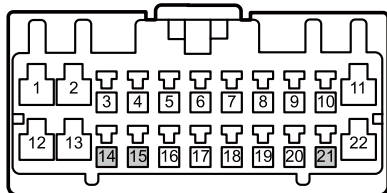
Step 6 | Check whether the circuit between seat module and exterior rearview mirror adjustment switch is open.

DR09 external rearview mirror adjusting switch harness connector



GE11-5938d

SO94 seat module harness connector C



GE11-5939d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(4)	SO94(14)	Standard resistance: less than 1Ω
DR09(6)	SO94(15)	
DR09(7)	SO94(21)	

- E. Confirm whether the measured value meets the standard.

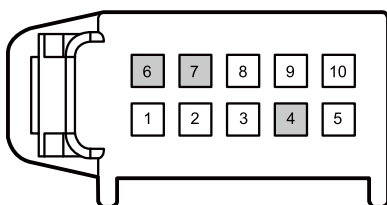
No

Repair or replace the harness.

Step 7

Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to GND.

DR09 external rearview mirror adjusting switch harness connector



GE11-5940d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(6)		
DR09(7)		

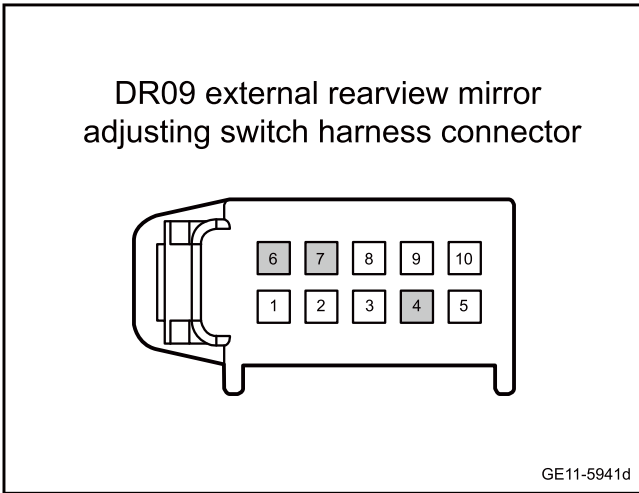
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(6)		
DR09(7)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch. Refer to [Replacement of the Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 10 Replace the driver's side exterior rearview mirror

- A. Replace the driver's side exterior rearview mirror Refer to [Replacement of driver-side exterior rearview mirror](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 11	Replace the seat module.
---------	--------------------------

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8 Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 12	Reprogram and reset the seat module.
---------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 14	System is normal.
---------	-------------------

11.11.7.12 Fault of rearview mirror at passenger side (with memory function)

1. DTC description:

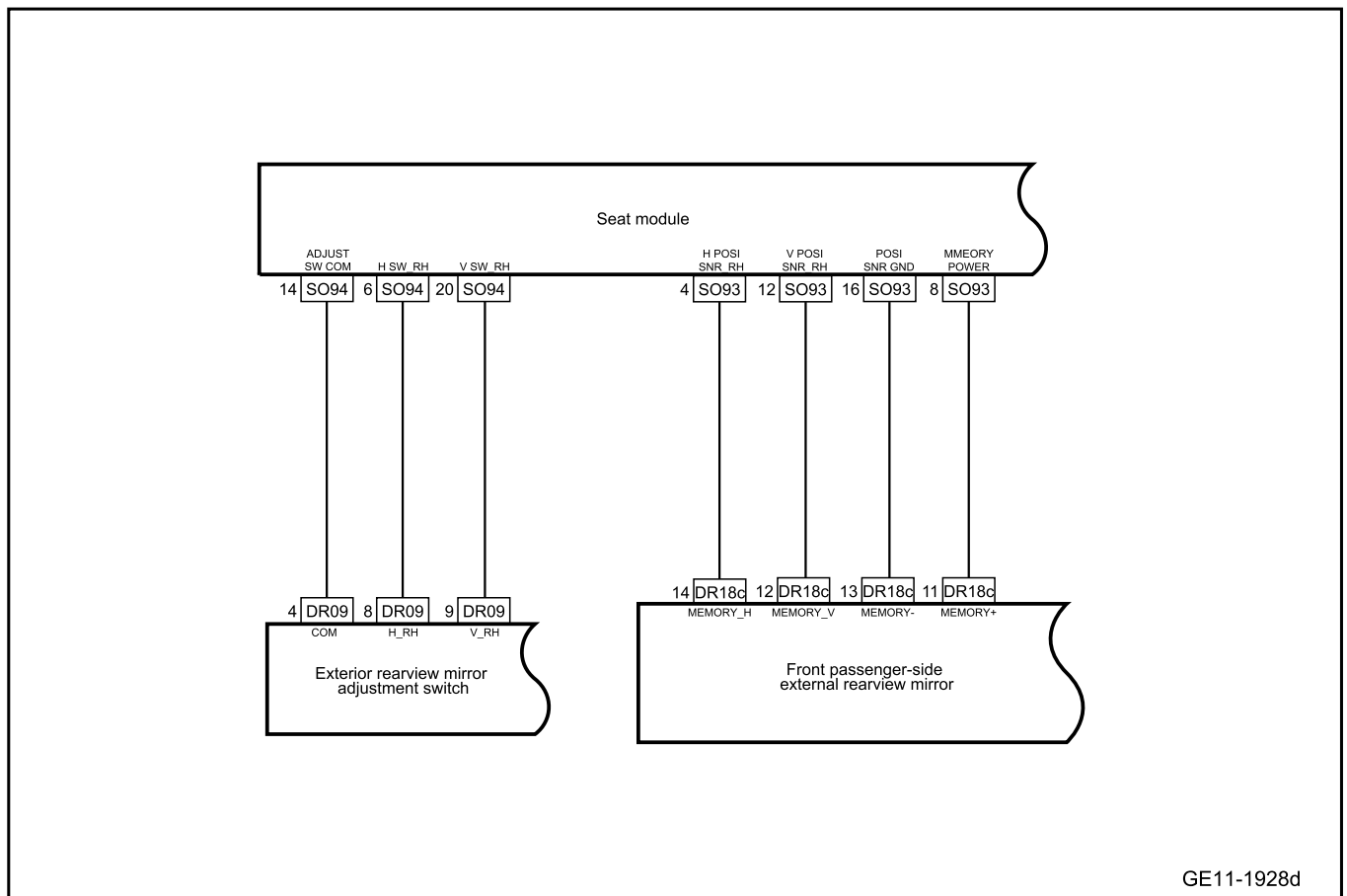
Diagnostic Trouble Code	Description
B130877	Passenger's rearview mirror upper/lower position potentiometer signal is out of range
B130977	Passenger's rearview mirror left and right position potentiometer signal is out of range
B133D07	Right rearview mirror leftward adjustment switch is stuck.

Diagnostic Trouble Code	Description
B133E07	Right rearview mirror rightward adjustment switch is stuck.
B133F07	Right rearview mirror upward adjustment switch is stuck.
B134007	Right rearview mirror downward adjustment switch is stuck.

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130877	Check the range of invalid sensor U value (200 consecutive failures)	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis)	1. Replace front passenger's side exterior rearview mirror. 2. Harness 3. Seat module
B130977	Check the range of invalid sensor U value (200 consecutive failures)		
B133D07	The switch activation state lasts for more than 20 seconds		
B133E07	The switch activation state lasts for more than 20 seconds		
B133F07	The switch activation state lasts for more than 20 seconds		
B134007	The switch activation state lasts for more than 20 seconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

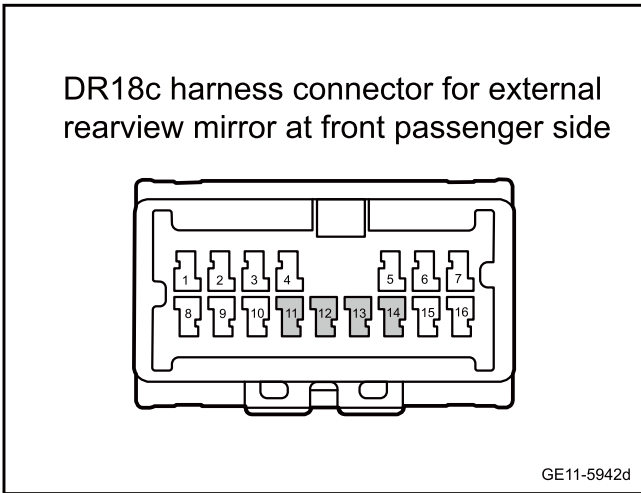
Step 2 Primary check.

- A. Check the seat module and the front passenger's exterior rear-view mirror for damage, deformation, dirt, loosening and other signs.
- B. Check the harness connector of seat module and front passenger side exterior rearview mirror for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

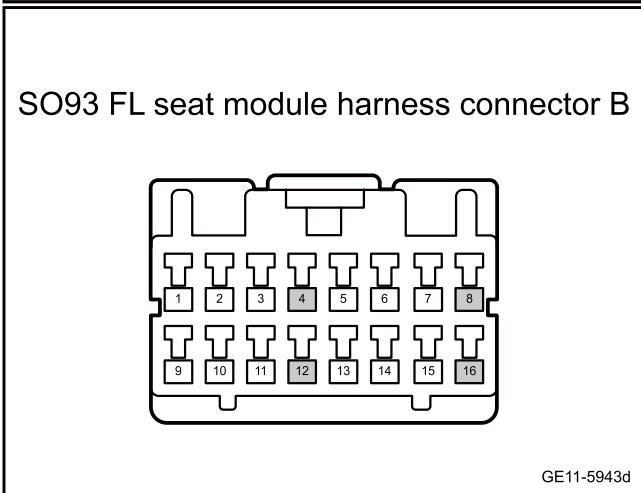
Yes

Step 3 Check whether the circuit between front passenger side exterior rearview mirror and the seat module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(12)	SO93(12)	Standard resistance: less than 1Ω
DR18c(14)	SO93(4)	
DR18c(11)	SO93(8)	
DR18c(13)	SO93(16)	



- E. Confirm whether the measured value meets the standard.

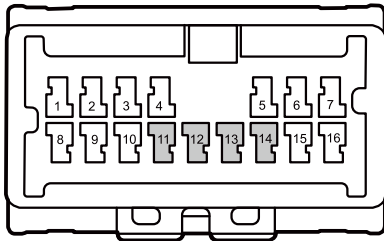
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the front passenger side exterior rearview adjustment switch and the seat module is short to power supply.

DR18c harness connector for external rearview mirror at front passenger side



GE11-5944d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(12)	Vehicle body is grounded.	Standard voltage: 0V
DR18c(14)		
DR18c(11)		
DR18c(13)		

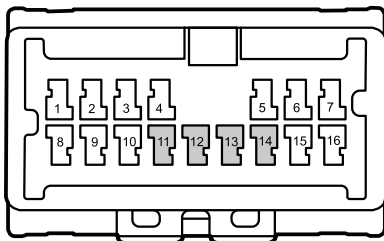
- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the front passenger side exterior rearview and the seat module is short to GND.
--------	---

DR18c harness connector for external rearview mirror at front passenger side



GE11-5945d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the seat module harness connector SO93.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(12)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR18c(14)		
DR18c(11)		
DR18c(13)		

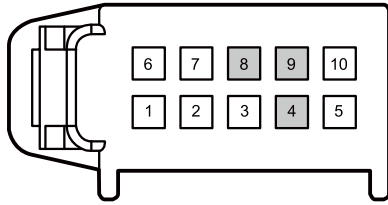
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

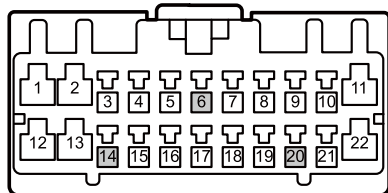
Step 6	Check whether the circuit between seat module and exterior rearview mirror adjustment switch is open.
--------	---

DR09 external rearview mirror adjusting switch harness connector



GE11-5946d

SO94 seat module harness connector C



GE11-5947d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(4)	SO94(14)	Standard resistance: less than 1Ω
DR09(8)	SO94(6)	
DR09(9)	SO94(20)	

- E. Confirm whether the measured value meets the standard.

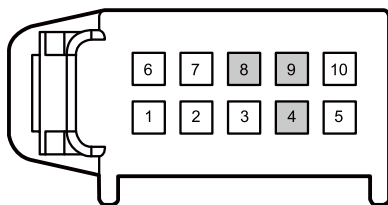
No

Repair or replace the harness.

Step 7

Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to GND.

DR09 external rearview mirror adjusting switch harness connector



GE11-5948d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR09(8)		
DR09(9)		

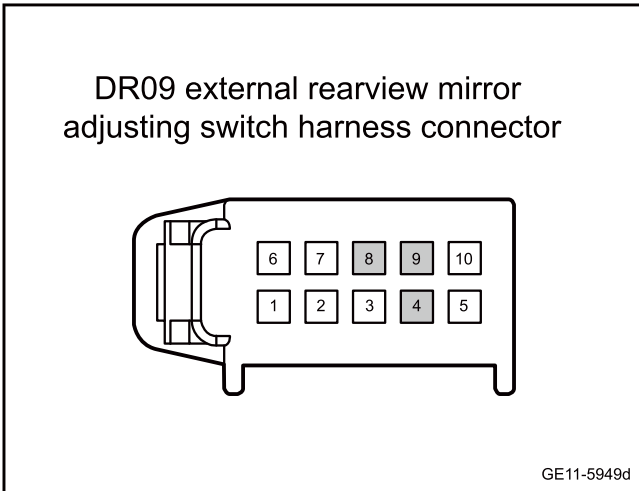
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between seat module and exterior rearview mirror adjustment switch is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect exterior rearview mirror adjustment switch harness connector DR09.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR09(4)	Vehicle body is grounded.	Standard voltage: 0V
DR09(8)		
DR09(9)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Step 9 Replace the exterior rearview mirror adjustment switch.

- A. Replace the exterior rearview mirror adjustment switch. Refer to [Replacement of the Exterior Rearview Mirror Adjustment Switch](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 10 Replace front passenger's side exterior rearview mirror.

- A. Replace front passenger's side exterior rearview mirror. Refer to [replacement of front passenger-side exterior rearview mirror adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 11 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8 Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 12	Reprogram and reset the seat module.
------------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

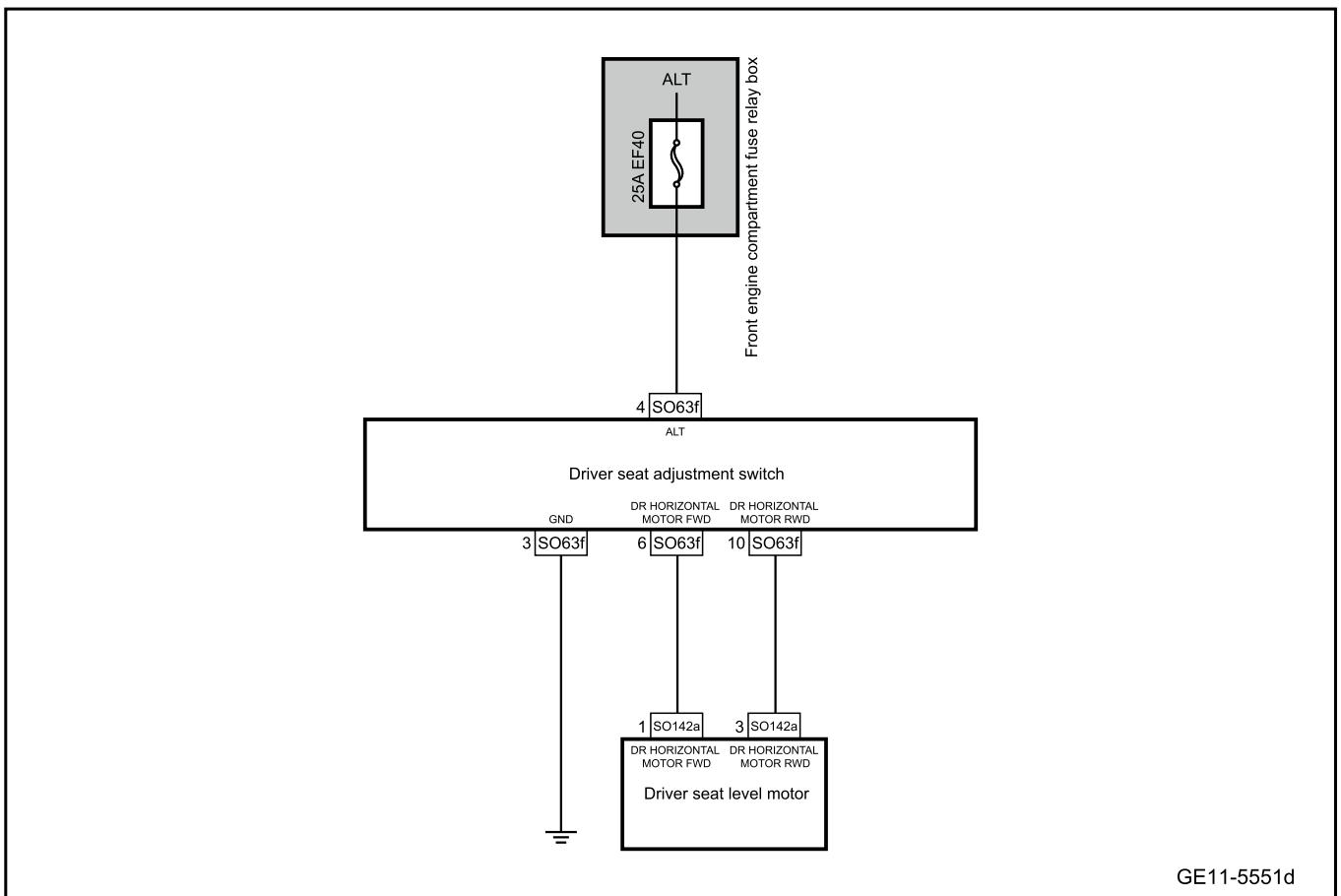
Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

11.11.7.13 Driver's power seat cannot be adjusted forward and backward

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the driver seat runner motor and driver seat adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the driver seat runner motor and driver seat adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

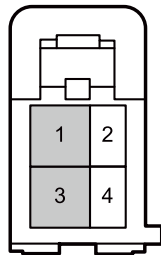
No

Repair or replace the faulty part.

Yes

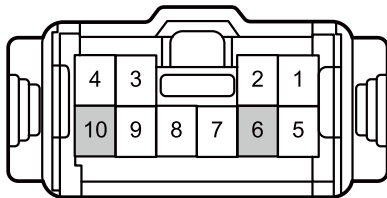
Step 2	Check whether the harness between driver seat runner motor and driver seat adjustment switch is open.
--------	---

SO142a harness connector of driver seat sliding chute motor



GE11-5952d

SO63f harness connector of driver seat adjusting switch



GE11-5953d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO142a of driver seat runner motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	SO63f(6)	Standard resistance: less than 1Ω
SO142a(3)	SO63f(10)	

- E. Confirm whether the measured value meets the standard.

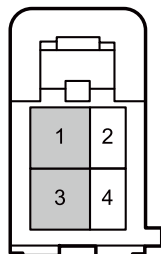
No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between driver seat runner motor and driver seat adjustment switch is short to power supply.

SO142a harness connector of driver seat sliding chute motor



GE11-5954d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO142a of driver seat runner motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

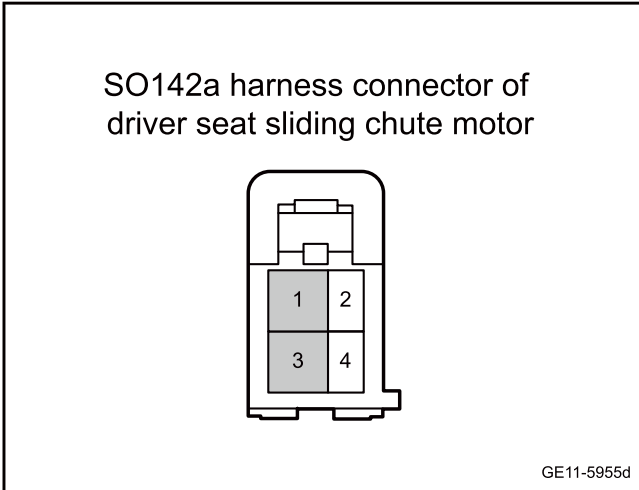
Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO142a(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the harness between the driver seat runner motor and driver seat adjustment switch is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO142a of driver seat runner motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO142a(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace runner motor of driver seat.

- A. Replace runner motor of driver seat. Refer to [Replacement of driver seat runner motor](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 6 Replace the adjustment switch of driver seat.

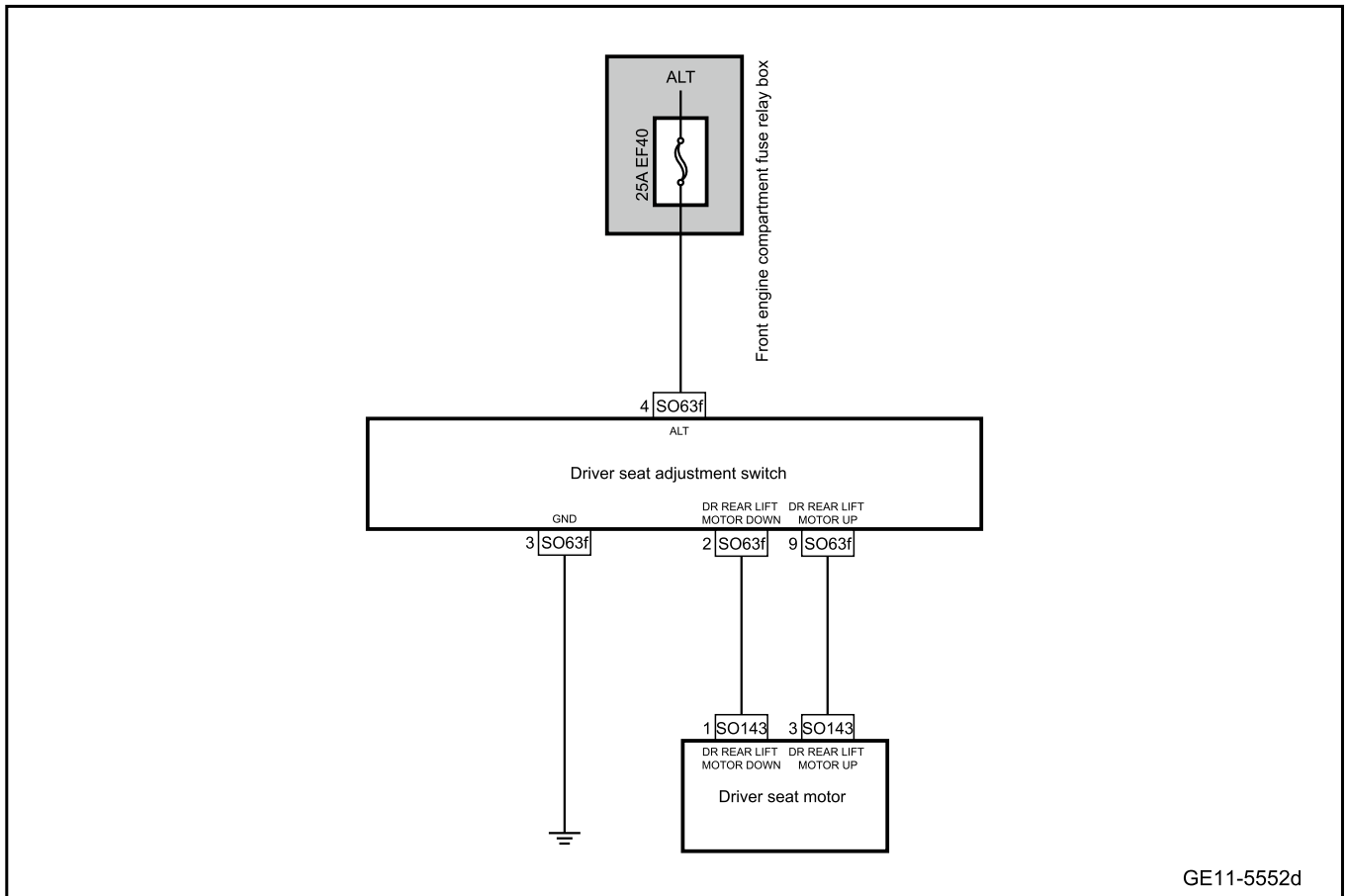
- A. Replace the adjustment switch of driver seat. Refer to [Replacement of driver seat adjustment switch](#)

Next step

Step 7 System is normal.

11.11.7.14 Driver power seat height cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

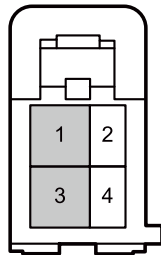
- A. Check the driver seat up/down motor and driver seat adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the driver seat up/down motor and driver seat adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

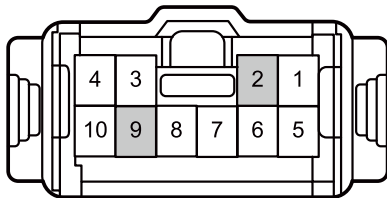
Step 2	Check whether the harness between the driver seat up/down motor and the driver seat adjustment switch is open.
--------	--

SO143 driver seat motor harness connector



GE11-5958d

SO63f harness connector of driver seat adjusting switch



GE11-5959d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat up/down motor harness connector SO143.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	SO63f(2)	Standard resistance: less than 1Ω
SO143(3)	SO63f(9)	

- E. Confirm whether the measured value meets the standard.

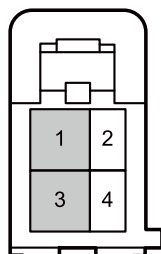
No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between the driver seat up/down motor and the driver seat adjustment switch is short to power supply.

SO143 driver seat motor harness connector



GE11-5960d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat up/down motor harness connector SO143.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard voltage: 0V
SO143(3)		

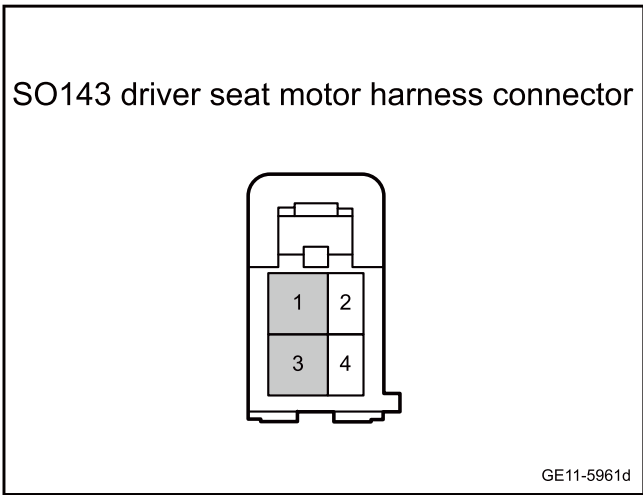
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the driver seat up/down motor and the driver seat adjustment switch is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat up/down motor harness connector SO143.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO143(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace up/down motor of driver seat.

- A. Replace up/down motor of driver seat. Refer to [Replacement of driver seat up/down motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 6 Replace the adjustment switch of driver seat.

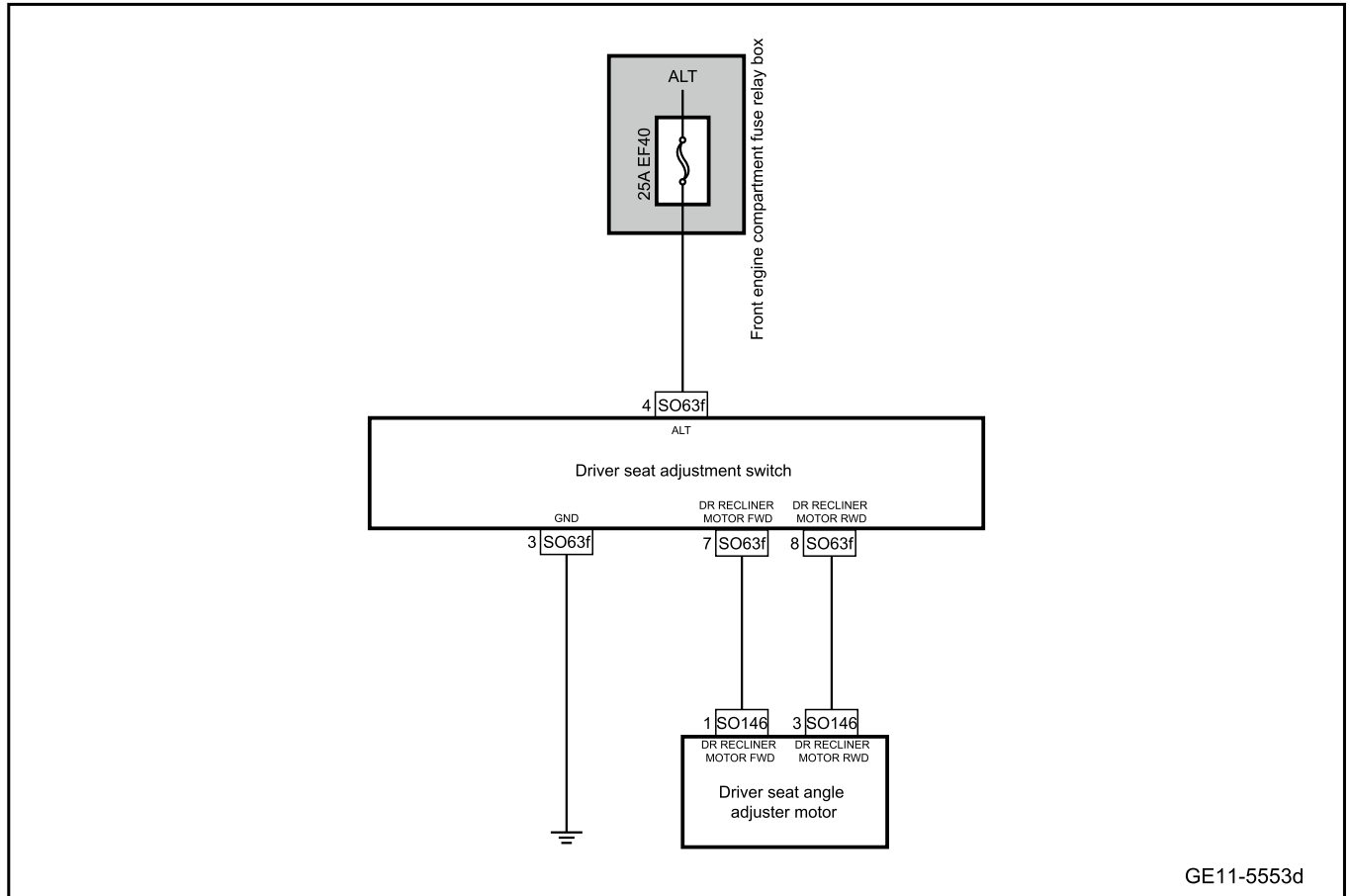
- A. Replace the adjustment switch of driver seat. Refer to [Replacement of driver seat adjustment switch](#)

Next step

Step 7 System is normal.

11.11.7.15 Driver's power seat backrest cannot be adjusted

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

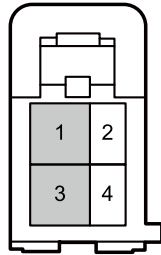
- A. Check the driver's seat angle adjuster motor and driver seat adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the driver's seat angle adjuster motor and driver seat adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

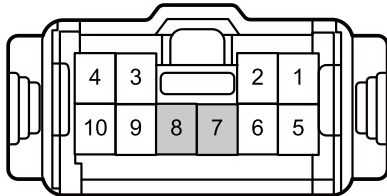
Step 2	Check whether the harness between driver seat angle adjuster motor and driver seat adjustment switch is open.
--------	---

SO146 harness connector of driver seat angle adjuster motor



GE11-5964d

SO63f harness connector of driver seat adjusting switch



GE11-5965d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	SO63f(7)	Standard resistance: less than 1Ω
SO146(3)	SO63f(8)	

- E. Confirm whether the measured value meets the standard.

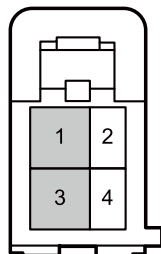
No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between driver seat angle adjuster motor and adjustment switch of driver seat is short to power supply.

SO146 harness connector of driver seat angle adjuster motor



GE11-5966d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

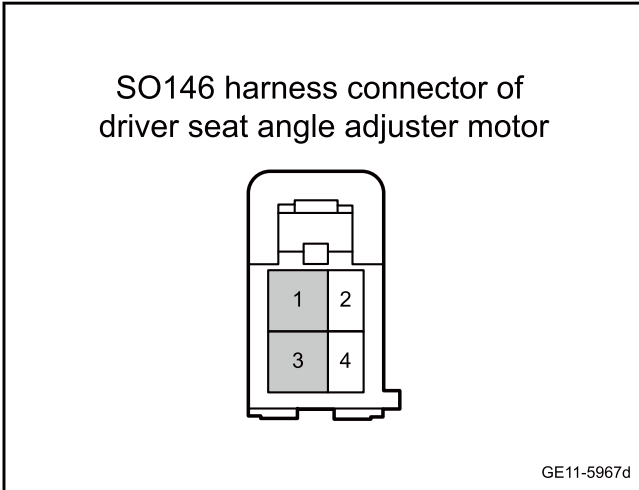
Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard voltage: 0V
SO146(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the harness between driver seat angle adjuster motor and adjustment switch of driver seat is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the harness connector SO63f of driver seat adjustment switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO146(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the driver seat angle adjuster motor

- A. Replace the driver seat angle adjuster motor Refer to [Replacement of driver seat angle adjuster motor](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 6 Replace the adjustment switch of driver seat.

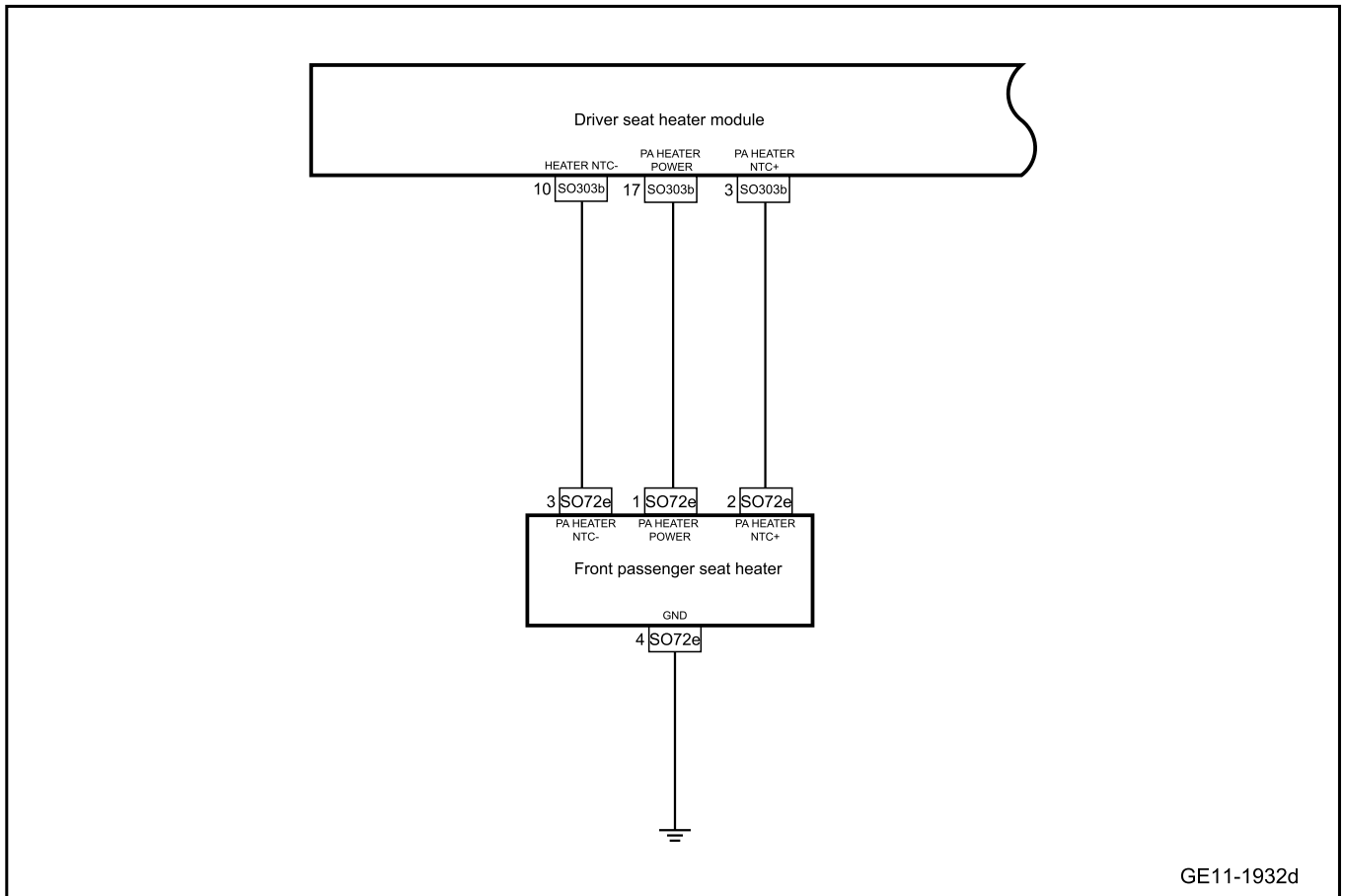
- A. Replace the adjustment switch of driver seat. Refer to [Replacement of driver seat adjustment switch](#)

Next step

Step 7 System is normal.

11.11.7.16 Passenger seat heating fault

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

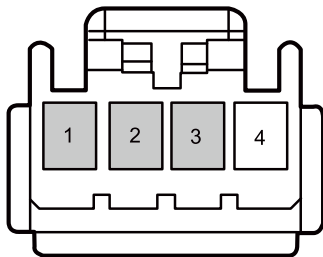
- A. Check the driver’s seat heating module and front passenger seat cushion heater for signs of damage, deformation, smudges, looseness, etc.
- B. Check the driver’s seat heating module and front passenger seat cushion heater harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

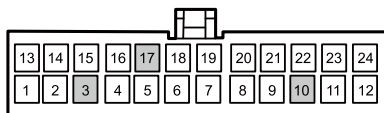
Step 2	Check whether the harness between the front passenger seat cushion heater and the driver seat heating module is open.
--------	---

S072e front passenger seat heating harness connector



GE11-5968d

SO303b driver seat heating module harness connector



GE11-5969d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion heater harness connector so303c.
- C. Disconnect the driver seat heating module harness connector so303c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	SO303b(17)	Standard resistance: less than 1Ω
S072e(2)	SO303b(3)	
S072e(3)	SO303b(10)	

- E. Confirm whether the measured value meets the standard.

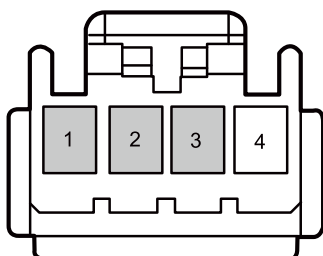
No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between the front passenger seat cushion heater and driver seat heating module is short to power supply.

S072e front passenger seat heating harness connector



GE11-5970d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the front passenger seat cushion heater harness connector so303c.
- C. Disconnect the driver seat heating module harness connector so303c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	Vehicle body is grounded.	Standard voltage: 0V
S072e(2)		
S072e(3)		

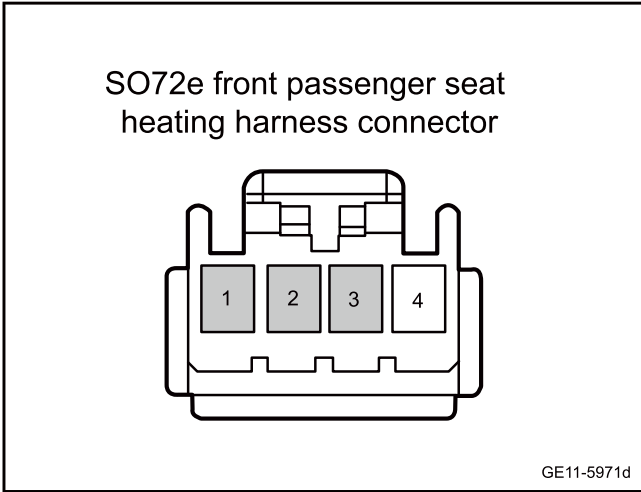
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between the front passenger seat cushion heater and the driver seat heating module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the front passenger seat cushion heater harness connector so303c.
- C. Disconnect the driver seat heating module harness connector so303c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
S072e(2)		
S072e(3)		

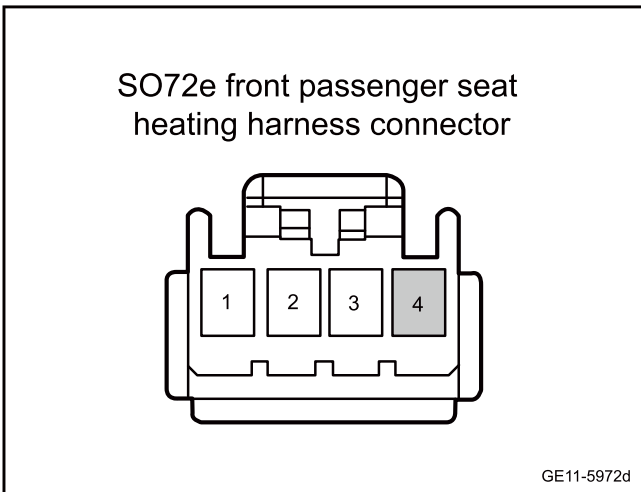
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the grounding circuit of front passenger seat cushion heater is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the front passenger seat cushion heater harness connector so303c.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S072e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6	Replace the front passenger seat cushion heater.
--------	--

- A. Replace the front passenger seat cushion heater. Refer to [Replacement of Front Passenger Seat Cushion Heater](#)
- B. Confirm whether the seat works normally.

Yes	System is normal.
-----	-------------------

No

Step 7	Replace the driver's seat heating module.
--------	---

- A. Replace the driver's seat heating module. Refer to [Replacement of Driver's Seat Heating Module](#)

Next step

Step 8	System is normal.
--------	-------------------

11.11.7.17 Special routine control

1. Diagnosis steps

Step 1	Brand selection, vehicle identification.
--------	--

Next step

Step 2	Enter the main interface of the diagnostic instrument for the relevant vehicle model and scan the complete vehicle.
--------	---

Next step

Step 3	Select DSCU module
--------	--------------------

Next step

Step 4	Enter the first-level menu "special operation", select the "seat calibration" function in the second-level menu; enter the first prompt interface; click "OK".
--------	--

Next step

Step 5	Click "Next" to start seat calibration.
--------	---

Next step

Step 6	Start calibration.
--------	--------------------

Next step

Step 7 Read the seat forward/backward calibration status and calibration history.

Next step

Step 8 Read the backrest calibration status and calibration history.

Next step

Step 9 Check the seat front height calibration status and calibration history.

Next step

Step 10 Read the seat height calibration status and calibration history.

Next step

Step 11 The YY display of the reply is based on the four states.

Next step

Step 12 Clear the trouble code.

Next step

Step 13 Exit calibration and back to the main interface.

Next step

Step 14 Enter the first-level menu "special operation", and select the "steering wheel adjustment calibration" function in the second-level menu.

Next step

Step 15 Click "OK" to enter the first prompt interface.

Next step

Step 16 Click "Next" to start steering wheel adjustment calibration.

Next step

Step 17	Safety certification.
------------	-----------------------

Next step

Step 18	Start calibration.
------------	--------------------

Next step

Step 19	Read the front and rear calibration state of the steering wheel and the calibration history.
------------	--

Next step

Step 20	Read the calibration status and calibration record of the steering wheel.
------------	---

Next step

Step 21	The YY display of the reply according to two states.
------------	--

Next step

Step 22	Clear the trouble code.
------------	-------------------------

Next step

Step 23	Exit calibration and back to the main interface.
------------	--

Next step

Step 24	Enter the first-level menu "special operation", and select the function of "rearview mirror test" in the second-level menu.
------------	---

Next step

Step 25	Click "OK" to enter the first prompt interface.
------------	---

Next step

Step 26	Click "Next" to start rearview mirror test.
------------	---

Next step

Step 27	Start calibration of the left/right rearview mirrors.
------------	---

Next step

Step 28	Display the rearview mirror status according to the restored YY.
------------	--

Next step

Step 29	Read the trouble code
------------	-----------------------

Next step

Step 30	Clear the trouble code.
------------	-------------------------

Next step

Step 31	Exit test and back to the main interface.
------------	---

11.11.7.18 Driver Seat Heating Fault (with Memory Function)

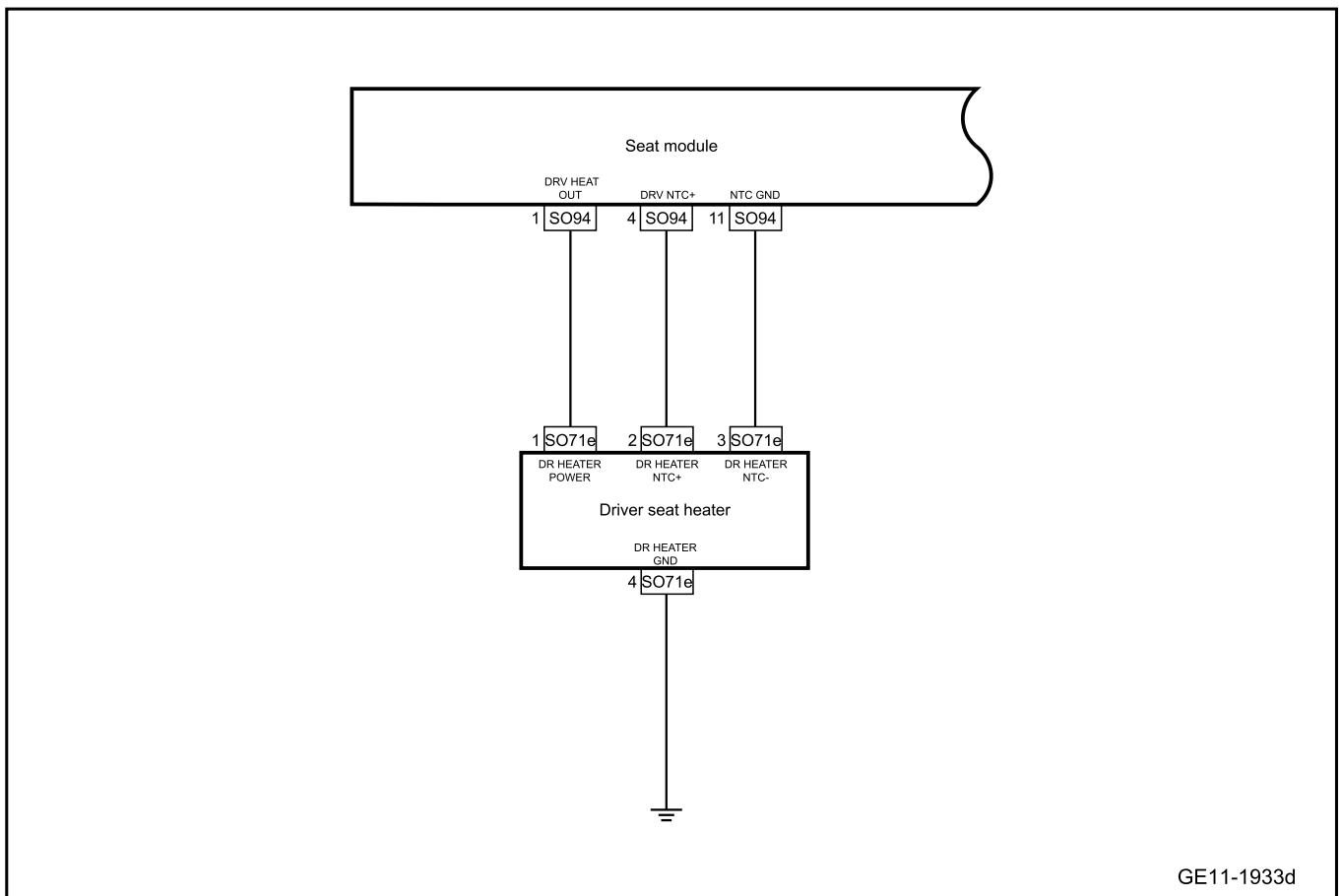
1. DTC description:

Diagnostic Trouble Code	Description
B180011	Driver seat heating high-end output is short-circuited to ground
B180013	Driver seat heating high-end output circuit is open
B180411	Driver seat heating temperature sensor short to GND fault
B180413	Driver's seat-heating temperature sensor is short-circuited to power failure or open circuit
B180012	Driver seat heating low-end output is short-circuited to power supply
B180412	Driver seat heating temperature sensor is short-circuited to power supply

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180011	Keep the high-voltage side of the driver seat heater short to ground for more than 500 milliseconds	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis) 3. Working state of passenger seat heater 1. The power supply voltage is higher than 9V and lower than 16V 2. Driver's seat heater does not work 3. Driver seat heating is configured in F101DID	1. Driver's seat heating 2. Harness 3. Driver's seat heating module
B180013	Keep the load on the high-voltage side of the driver seat heater for more than 2000 milliseconds		
B180411	The driver seat heater temperature sensor port is short-circuited to ground for more than 2000 milliseconds		
B180413	1. The port of driver seat heater temperature sensor is short to power supply for more than 2000 milliseconds 2. The driver seat heater temperature sensor port is opened and loaded for more than 2000 ms		
B180012	When the seat heater is on the low side of the seat heater and the power supply is shorted for 200 ms		
B180412	When it is detected that the temperature sensor is short circuited to the power supply for 500 ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

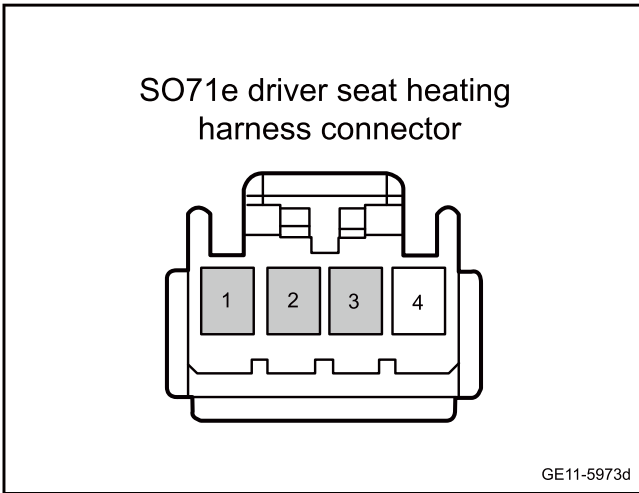
- A. Check the seat module and driver's seat heater for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module and driver's seat heater harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

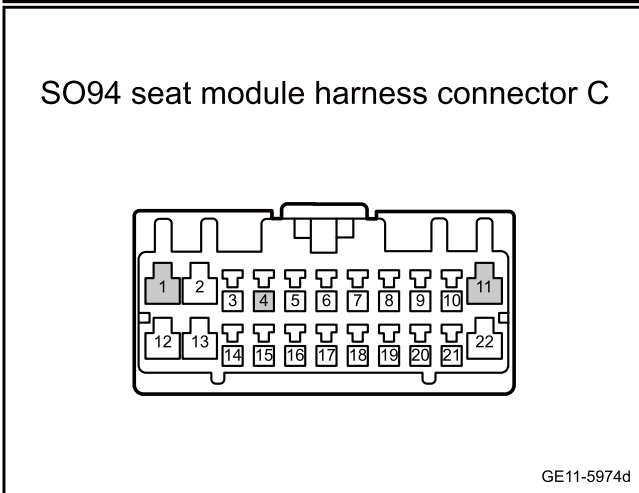
Step 3 Check whether the harness between driver seat heater and seat module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat heater harness connector SO71e.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	SO94(1)	Standard resistance: less than 1Ω
SO71e(2)	SO94(4)	
SO71e(3)	SO94(11)	

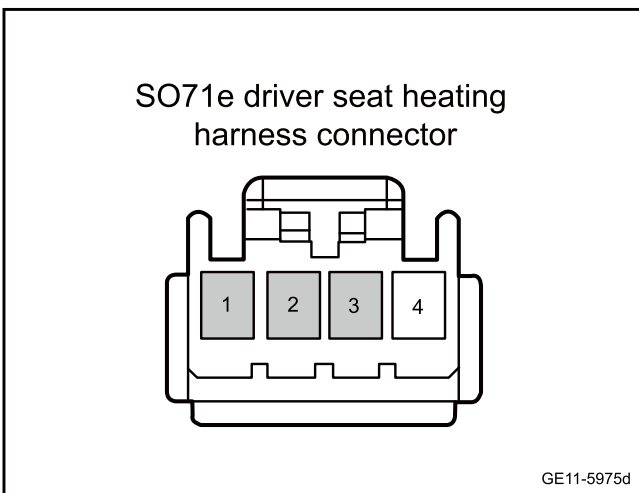
- E. Confirm whether the measured value meets the standard.



No Repair or replace the harness.

Yes

Step 4 Check whether the harness between driver seat heater and seat module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat heater harness connector SO71e.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard voltage: 0V
SO71e(2)		

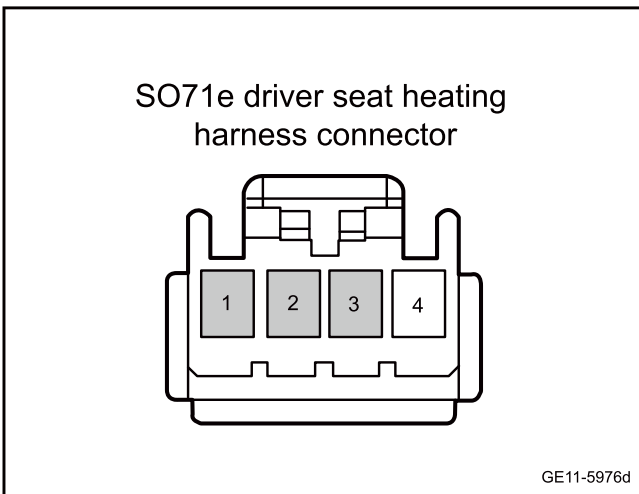
Measure terminal 1	Measure terminal 2	Standard value
SO71e(3)		

F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the harness between the driver seat heater and seat module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat heater harness connector SO71e.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

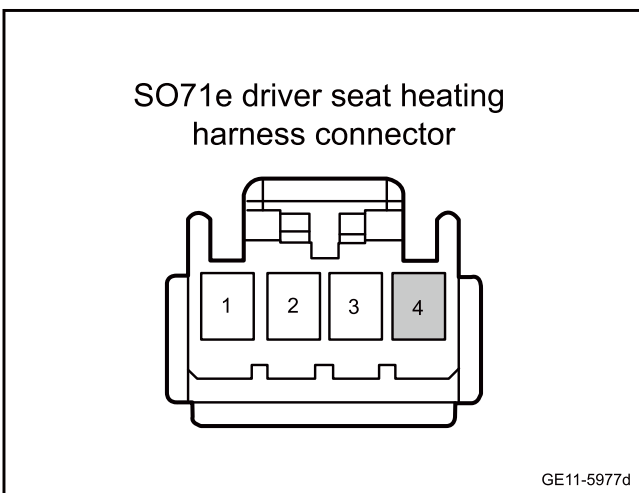
Measure terminal 1	Measure terminal 2	Standard value
SO71e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO71e(2)		
SO71e(3)		

E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check whether the grounding circuit of driver seat heater is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat heater harness connector SO71e.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO71e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the driver's seat heater.

- A. Replace the driver's seat heater. Refer to [Replacement of Driver's Seat Heater](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 8 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8. Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 9 Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.11.7.19 Passenger seat heating failure (with memory function)

1. DTC description:

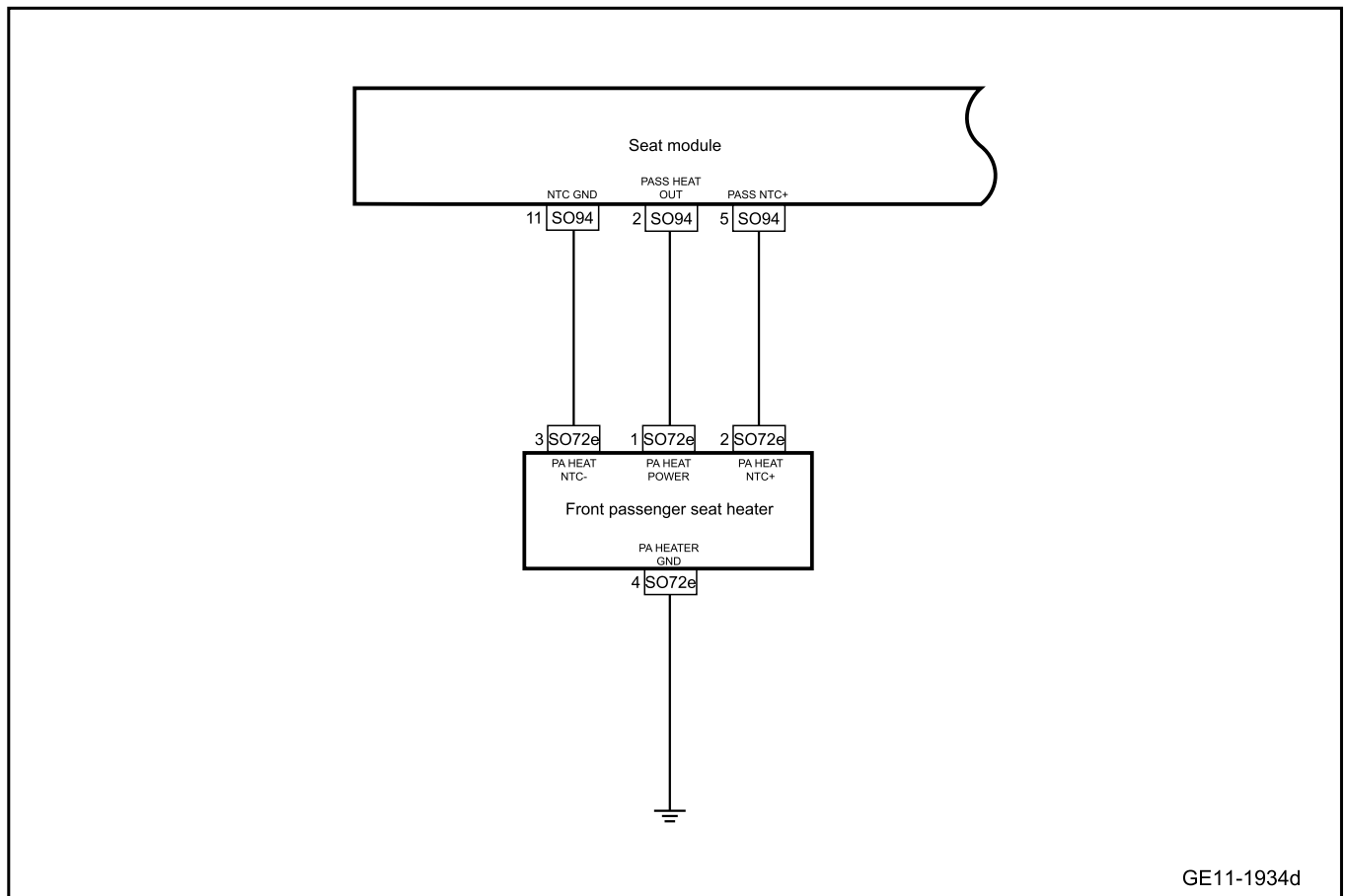
Diagnostic Trouble Code	Description
B180111	The high-end output of front passenger seat heating is short-circuited to the ground
B180113	Front passenger seat heating high-end output circuit is open
B180511	Front passenger seat heating temperature sensor short to GND fault
B180513	The heating temperature sensor of front passenger seat is short circuited to power failure or open circuit
B180112	The low-end output of passenger seat heating is short-circuited to power supply
B180512	The front passenger seat heating temperature sensor is short-circuited to power supply

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180111	Keep the high-voltage side of the front passenger seat heater short to ground for more than 500 milliseconds	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis) 3. Working state of passenger seat heater	1. Front passenger seat heating 2. Harness 3 Seat module
B180113	Keep the load on the high-voltage side of the front passenger seat heater for more than 2000 ms		
B180511	Front passenger seat heater temperature sensor port is short-circuited to ground for more than 2000 ms		
B180513	1. Front passenger seat heater temperature sensor port is short-circuited to power supply for more than 2000 ms 2. The front passenger seat heater temperature sensor port is opened and loaded for more than 2000 milliseconds		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B180112	When the seat heater is on the low side of the seat heater and the power supply is shorted for 200 ms	1. The power supply voltage is higher than 9V and lower than 16V 2. Seat heater does not work 3. Driver seat heating is configured in F101DID	
B180512	When it is detected that the temperature sensor is short circuited to the power supply for 500 ms	1. The power supply voltage is higher than 9V and lower than 16V 2. Seat heater does not work 3. Driver seat heating is configured in F101 DID	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the seat module and front passenger seat heater for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module and front passenger seat heater harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

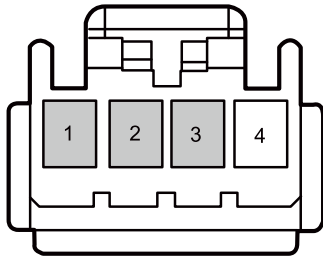
No

Repair or replace the faulty part.

Yes

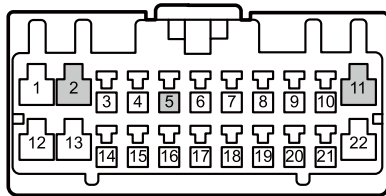
Step 3 Check whether the harness between the front passenger seat heater and seat module is open-circuit.

SO72e front passenger seat heating harness connector



GE11-5978d

SO94 seat module harness connector C



GE11-5979d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO72e of front passenger seat heater.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO72e(1)	SO94(2)	Standard resistance: less than 1Ω
SO72e(2)	SO94(5)	
SO72e(3)	SO94(11)	

- E. Confirm whether the measured value meets the standard.

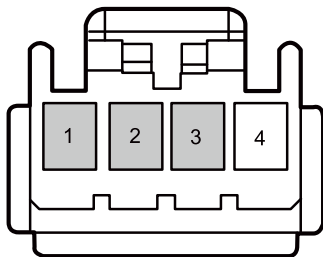
No

Repair or replace the harness.

Step 4

Check whether the harness between the front passenger seat heater and seat module is short to power supply.

SO72e front passenger seat heating harness connector



GE11-5980d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO72e of front passenger seat heater.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO72e(1)	Vehicle body is grounded.	Standard voltage: 0V
SO72e(2)		
SO72e(3)		

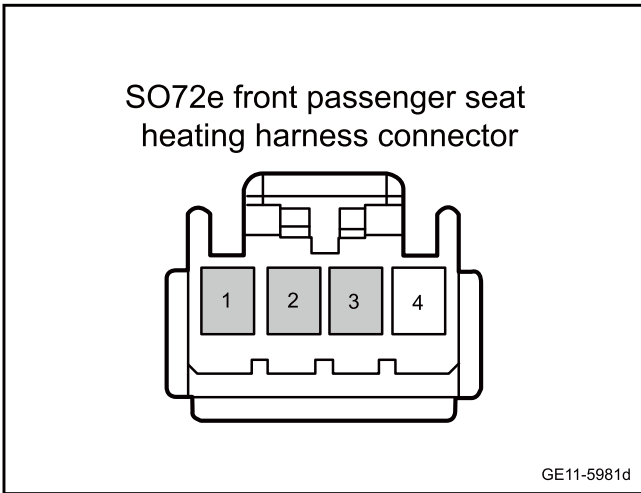
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the harness between the front passenger seat heater and seat module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector S072e of front passenger seat heater.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S072e(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
S072e(2)		
S072e(3)		

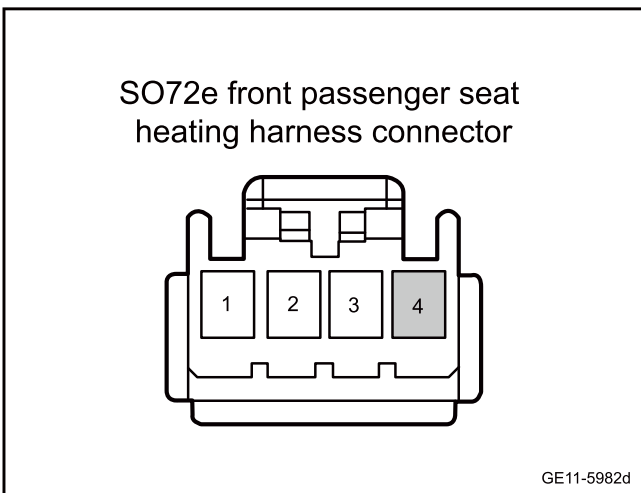
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the grounding circuit of front passenger seat heater is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector S072e of front passenger seat heater.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
S072e(4)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the front passenger's seat heater.

- A. Replace the front passenger's seat heater. Refer to [Replacement of Front Passenger's Seat Heater](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 8 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8 Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 9 Reprogram and reset the seat module.

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.11.7.20 Driver Power Seat Cannot Be Adjusted Forward/Backward(Memory Function)

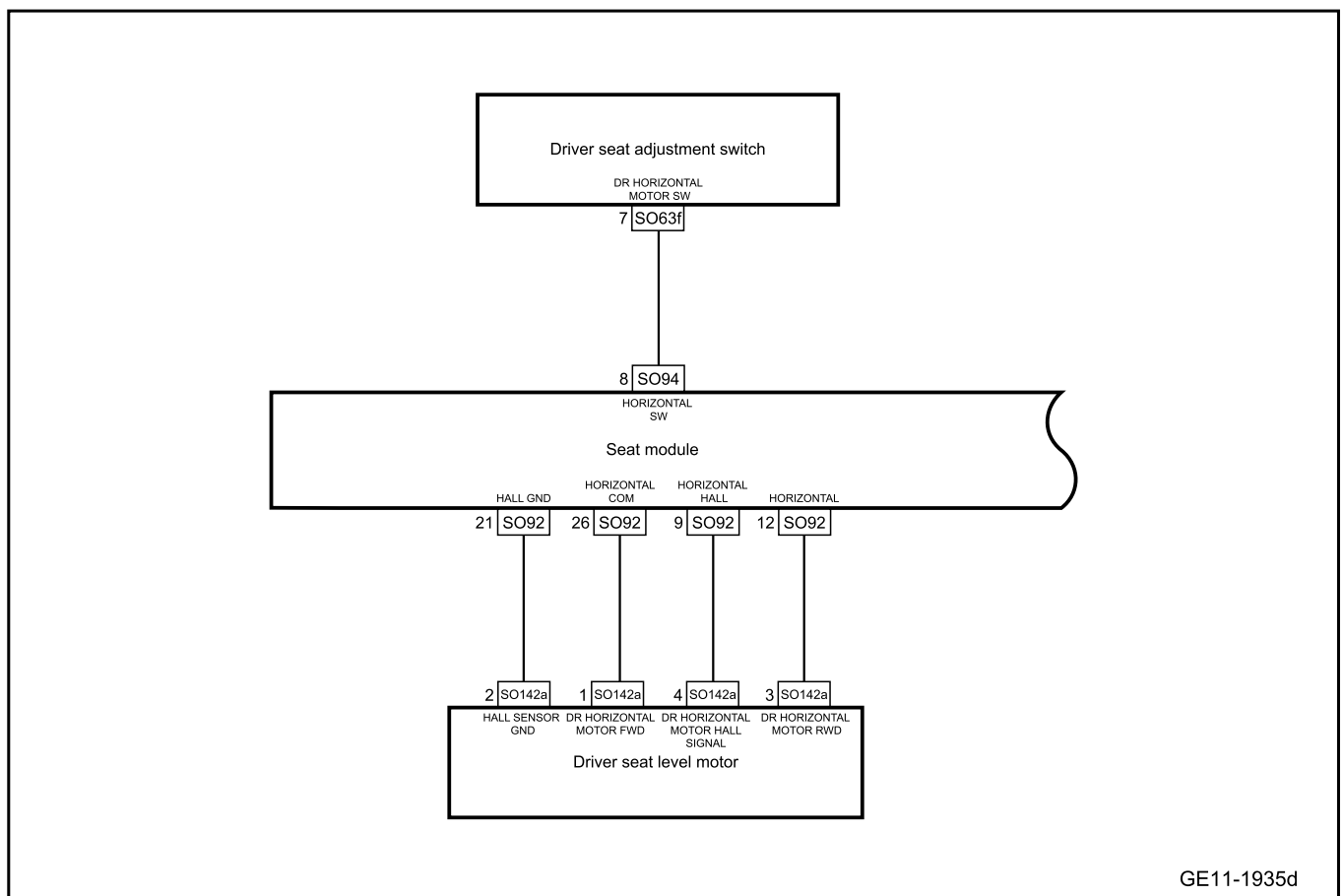
1. DTC description:

Diagnostic Trouble Code	Description
B130129	Seat front and rear motor Hall signal fault
B130154	Seat front and rear motors are not calibrated
B130177	Wrong calibration path of front and rear motor of seat
B130D29	Seat front and rear switch signal is invalid
B130E07	Seat forward/backward front adjustment switch is caught
B130F07	Seat forward/backward rear adjustment switch is caught

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130129	No locked-rotor occurs, no valid Hall signal is detected for 300 ms	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started state 4. Engine running state	1. Driver seat horizontal motor 2. Harness 3 Seat module 4. Adjusting switch outside the driver seat
B130154	Motor not calibrated		
B130177	After normal control, the current distance is lower than the specified distance		
B130D29	The switching in illegal state lasts for more than 2 seconds		
B130E07	Th0		
B130F07	Th0		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

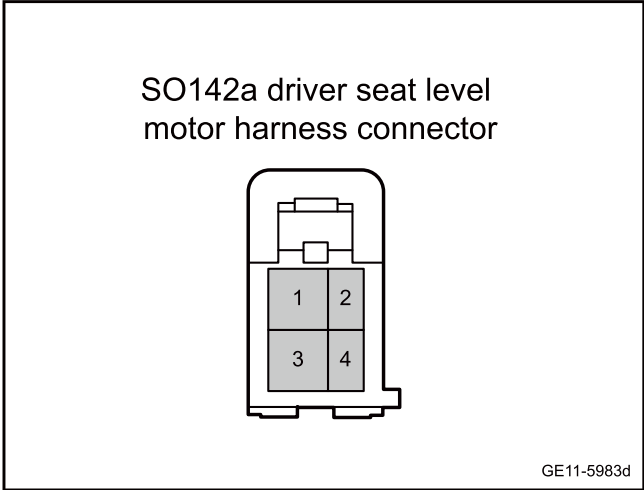
- A. Check the seat module, driver's seat horizontal motor and driver's seat outer adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module, driver's seat horizontal motor and driver's seat outer adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

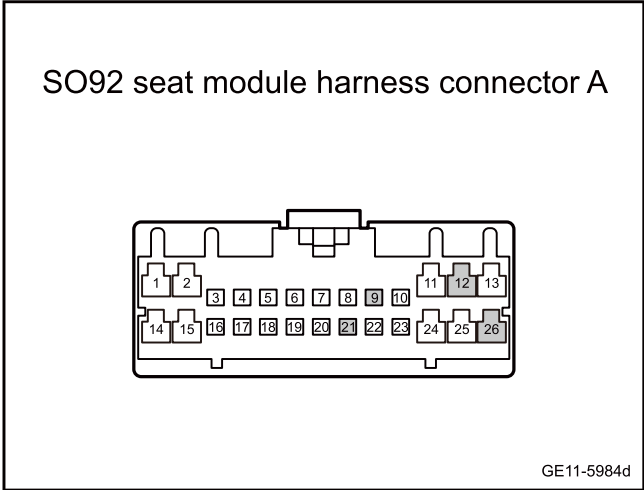
Yes

Step 3 Check whether the harness between driver seat horizontal motor and seat module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO142a of driver seat horizontal motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	SO92(26)	Standard resistance: less than 1Ω
SO142a(2)	SO92(21)	
SO142a(3)	SO92(12)	
SO142a(4)	SO92(9)	



- E. Confirm whether the measured value meets the standard.

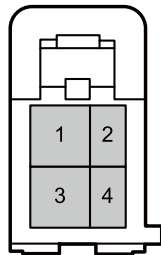
No

Repair or replace the harness.

Yes

Step 4 Check whether the harness between driver seat horizontal motor and seat module is short to power supply.

SO142a driver seat level motor harness connector



GE11-5985d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO142a of driver seat horizontal motor.
- C. Disconnect the seat module harness connector SO92.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO142a(2)		
SO142a(3)		
SO142a(4)		

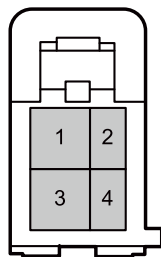
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the harness between the driver seat horizontal motor and seat module is short to GND.

SO142a driver seat level motor harness connector



GE11-5986d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO142a of driver seat horizontal motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO142a(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO142a(2)		
SO142a(3)		
SO142a(4)		

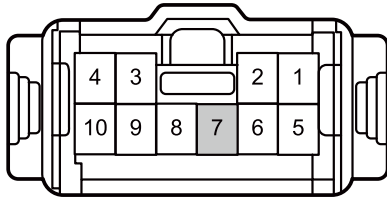
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

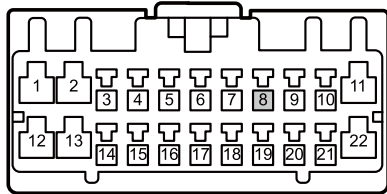
Step 6 Check whether the harness between driver seat outside adjustment switch and seat module is open.

SO63f harness connector of driver seat adjusting switch



GE11-5987d

SO94 seat module harness connector C



GE11-5988d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(7)	SO94(8)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

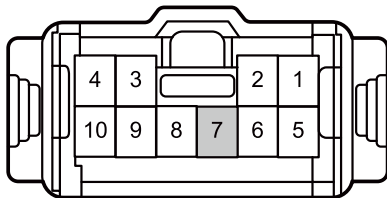
No

Repair or replace the harness.

Step 7

Check whether the power harness of driver seat outside adjustment switch and seat module is open.

SO63f harness connector of driver seat adjusting switch



GE11-5989d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(7)	Vehicle body is grounded.	Standard voltage: 0V

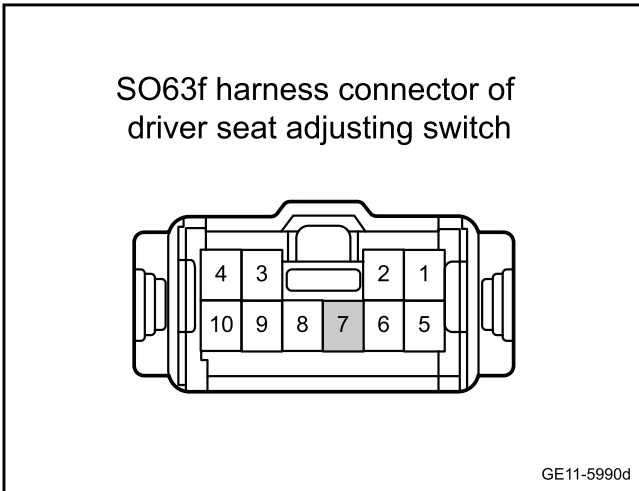
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between driver seat outside adjustment switch and seat module is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(7)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the external adjustment switch of driver seat.

- A. Replace the external adjustment switch of driver seat. Refer to [Replacement of driver seat external adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 10 Replace horizontal motor of driver seat.

- A. Replace horizontal motor of driver seat. Refer to [Replacement of driver seat horizontal motor](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 11 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8. Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 12	Reprogram and reset the seat module.
------------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

11.11.7.21 Driver Power Seat Height Cannot Be Adjusted(with Memory Function)

1. DTC description:

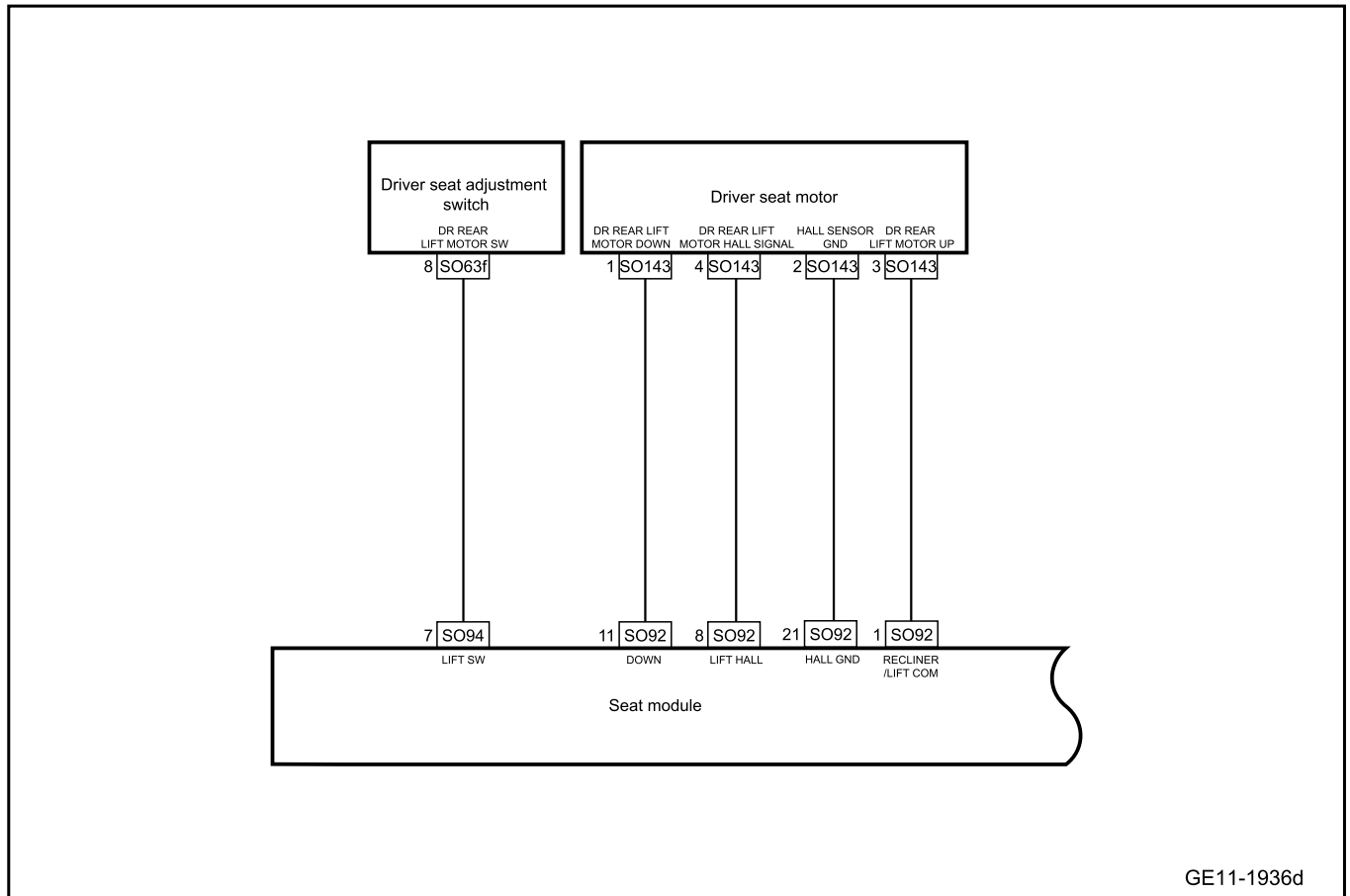
Diagnostic Trouble Code	Description
B130029	Hall signal fault of seat height motor
B130054	Seat height motor is not calibrated
B130077	Wrong calibration path of seat height motor
B130A29	Invalid seat height switch signal

Diagnostic Trouble Code	Description
B130B07	Seat height up switch is stuck
B130C07	Seat height down switch is stuck

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130029	No locked-rotor occurs, no valid Hall signal is detected for 300 ms	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started 4. Engine running state	1. Driver seat up/down motor 2. Harness 3. Seat module 4. Adjusting switch outside the driver seat
B130054	Motor not calibrated		
B130077	After normal control, the current distance is lower than the specified distance		
B130A29	The switching in illegal state lasts for more than 2 seconds		
B130B07	Th0		
B130C07	Th0		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the seat module, driver seat up/down motor and driver seat outer adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module, driver seat up/down motor and driver seat outer adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

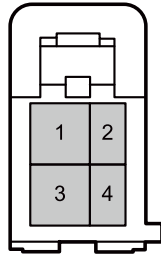
No

Repair or replace the faulty part.

Yes

Step 3 Check whether the harness between the driver seat up/down motor and the seat module is open.

SO143 driver seat motor harness connector



GE11-5991d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat up/down motor harness connector SO143.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure the terminals according to the table below:

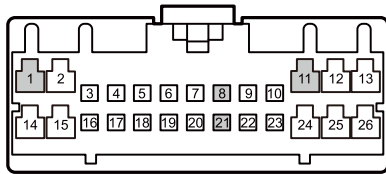
Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	SO92(11)	Standard resistance: less than 1Ω
SO143(2)	SO92(21)	
SO143(3)	SO92(1)	
SO143(4)	SO92(8)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

SO92 seat module harness connector A

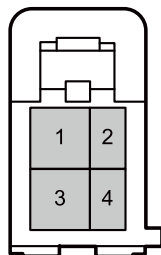


GE11-5992d

Yes

Step 4 Check whether the harness between the driver seat up/down motor and the seat module is short to power supply.

SO143 driver seat motor harness connector



GE11-5993d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat up/down motor harness connector SO143.
- C. Disconnect the seat module harness connector SO92.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard voltage: 0V
SO143(2)		
SO143(3)		
SO143(4)		

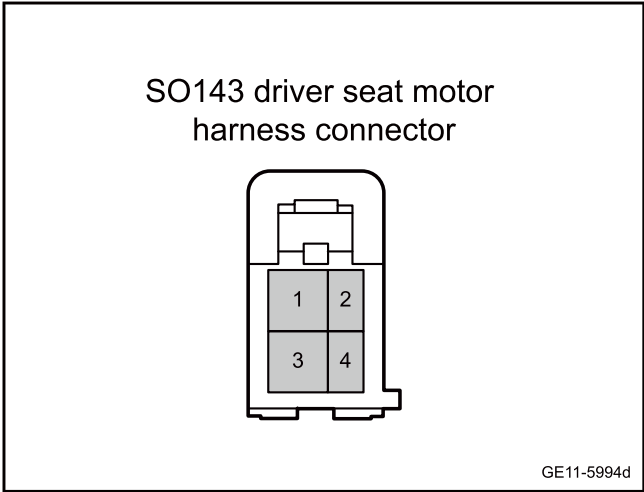
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the harness between the driver seat up/down motor and the driver seat module is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat up/down motor harness connector SO143.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO143(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO143(2)		
SO143(3)		
SO143(4)		

- E. Confirm whether the measured value meets the standard.

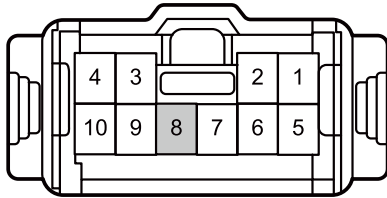
No

Repair or replace the harness.

Yes

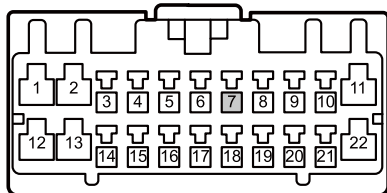
Step 6 Check whether the power harness of driver seat outside adjustment switch and seat module is open.

SO63f harness connector of driver seat adjusting switch



GE11-5995d

SO94 seat module harness connector C

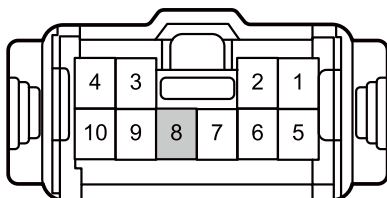


GE11-5996d

Yes

Step 7 Check whether the power harness of driver seat outside adjustment switch and seat module is open to power supply.

SO63f harness connector of driver seat adjusting switch



GE11-5997d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(8)	SO94(7)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(8)	Vehicle body is grounded.	Standard voltage: 0V

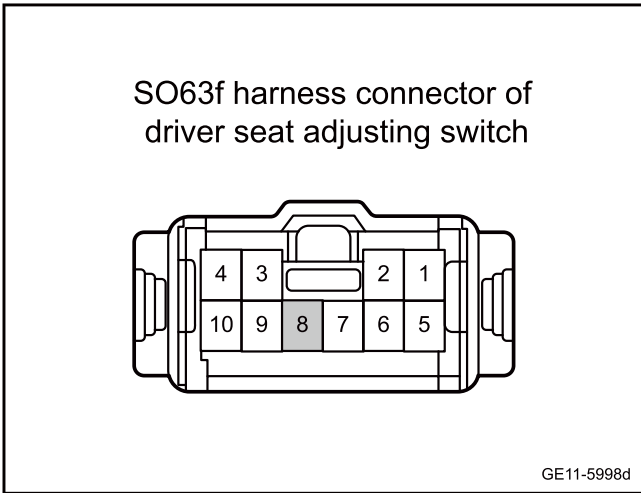
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between driver seat outside adjustment switch and seat module is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(8)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Replace the external adjustment switch of driver seat.

- A. Replace the external adjustment switch of driver seat. Refer to [Replacement of driver seat external adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 10 Replace up/down motor of driver seat.

- A. Replace up/down motor of driver seat. Refer to [Replacement of driver seat up/down motor](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 11 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8. Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 12	Reprogram and reset the seat module.
------------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

11.11.7.22 Driver Power Seat Backrest Cannot Be Adjusted(with Memory Function)

1. DTC description:

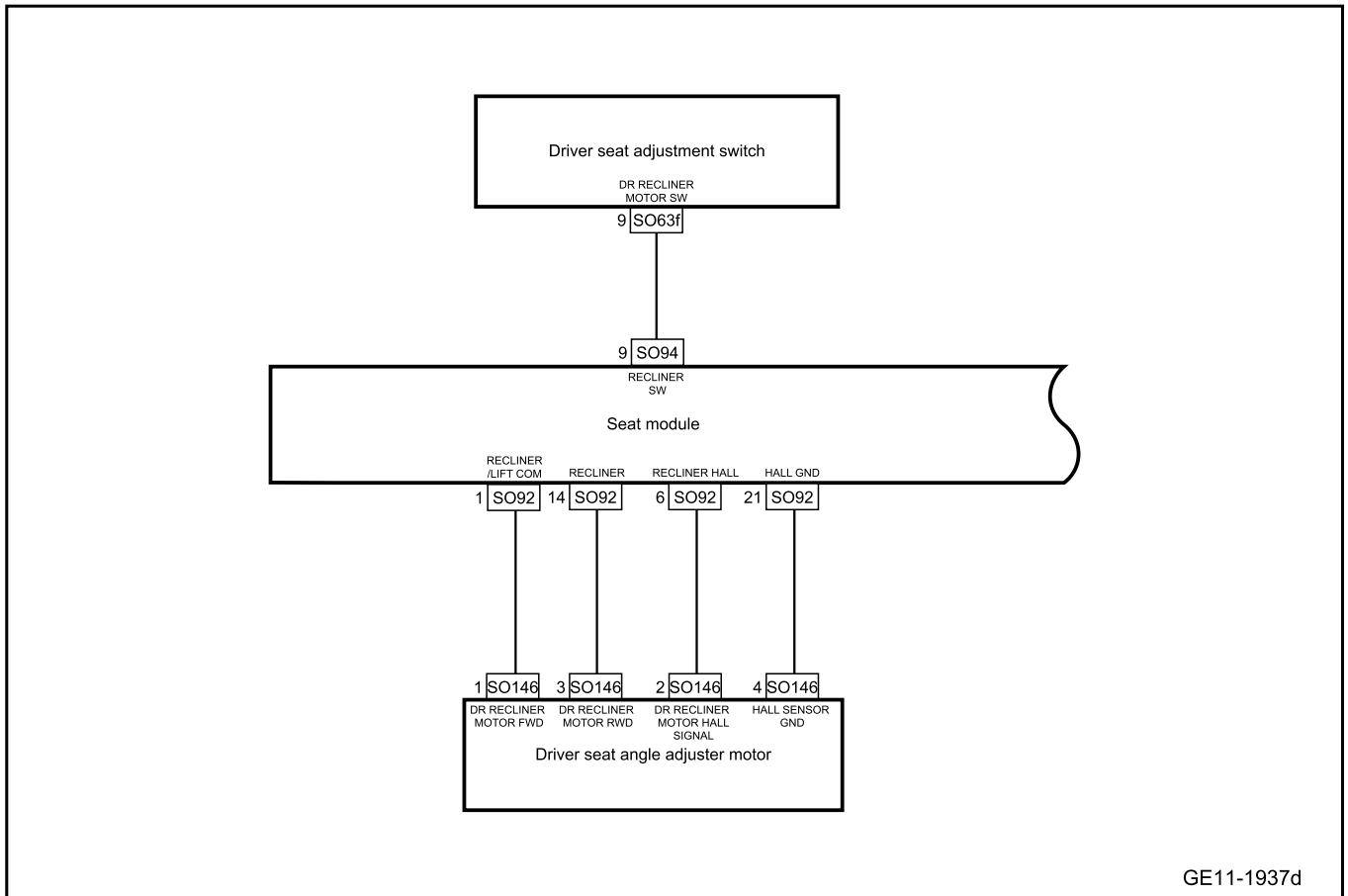
Diagnostic Trouble Code	Description
B130229	Seat backrest motor Hall signal fault
B130254	Uncalibrated backrest motor
B130277	Wrong calibration path of backrest motor
B131029	Invalid seat backrest switch signal

Diagnostic Trouble Code	Description
B131107	Backrest forward adjustment switch is caught
B131207	Backrest adjustment switch is caught

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B130229	No locked-rotor occurs, no valid Hall signal is detected for 300 ms	1. There are no DTC (high level and low level) for voltage level 2. UDS\$85 control DTC settings (status diagnosis) 3. Not started state 4. Engine running state	1. Driver seat angle adjuster motor 2. Harness 3 Seat module 4. Adjusting switch outside the driver seat
B130254	Motor not calibrated		
B130277	After normal control, the current distance is lower than the specified distance		
B131029	Th0		
B131107	Th0		
B131207	Bus switch-off counter cL1 to L2 equals to 10 (bus off occurs for 10 consecutive times).		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the seat module, driver seat angle adjuster motor and driver seat outer adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the seat module, driver's seat angle adjuster motor and driver seat outer adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

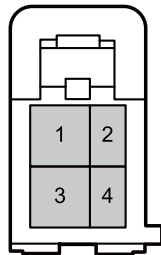
No

Repair or replace the faulty part.

Yes

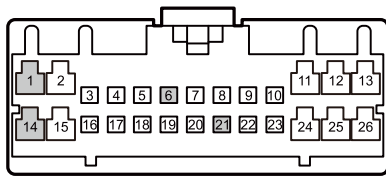
Step 3	Check whether the harness between driver seat angle adjuster motor and seat module of driver seat is open.
--------	--

SO146 harness connector of driver seat angle adjuster motor



GE11-5999d

SO92 seat module harness connector A

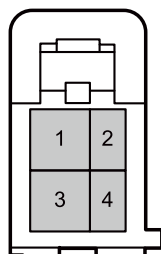


GE11-6000d

Yes

Step 4 Check whether the harness between driver seat angle adjuster motor and seat module of driver seat is short to power supply.

SO146 harness connector of driver seat angle adjuster motor



GE11-6001d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	SO92(1)	Standard resistance: less than 1Ω
SO146(2)	SO92(6)	
SO146(3)	SO92(14)	
SO146(4)	SO92(21)	

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the seat module harness connector SO92.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard voltage: 0V
SO146(2)		
SO146(3)		
SO146(4)		

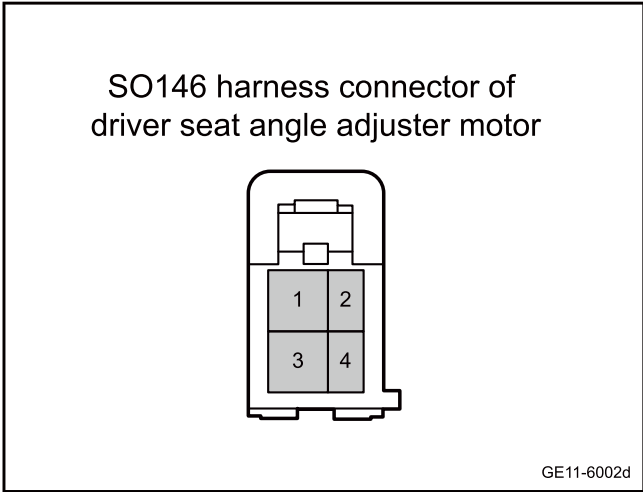
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the harness between driver seat angle adjuster motor and seat module of driver seat is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO146 of driver seat angle adjuster motor.
- C. Disconnect the seat module harness connector SO92.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO146(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO146(2)		
SO146(3)		
SO146(4)		

- E. Confirm whether the measured value meets the standard.

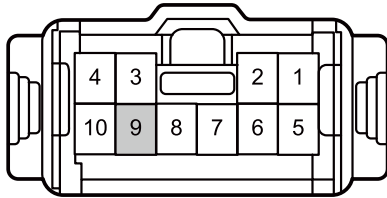
No

Repair or replace the harness.

Yes

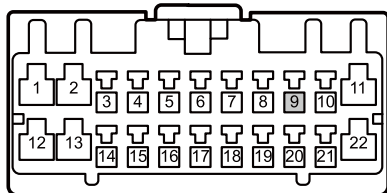
Step 6 Check whether the power harness of driver seat outside adjustment switch and seat module is open.

SO63f harness connector of driver seat adjusting switch



GE11-6003d

SO94 seat module harness connector C



GE11-6004d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(9)	SO94(9)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

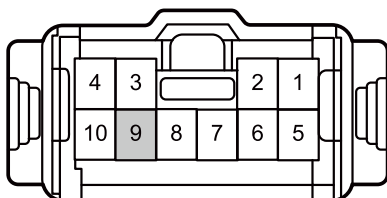
No

Repair or replace the harness.

Step 7

Check whether the power harness of driver seat outside adjustment switch and seat module is open.

SO63f harness connector of driver seat adjusting switch



GE11-6005d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(9)	Vehicle body is grounded.	Standard voltage: 0V

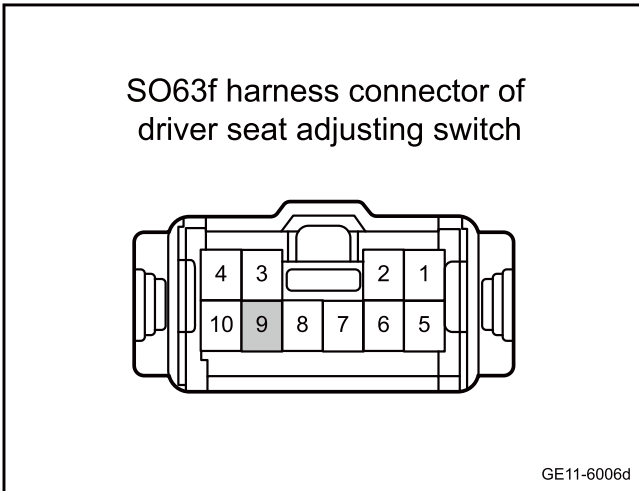
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the circuit between driver seat outside adjustment switch and seat module is short-circuited to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO63f of driver seat outside adjustment switch.
- C. Disconnect the seat module harness connector SO94.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO63f(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace the external adjustment switch of driver seat.

- A. Replace the external adjustment switch of driver seat. Refer to [Replacement of driver seat external adjustment switch](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 10 Replace the driver seat angle adjuster motor

- A. Replace the driver seat angle adjuster motor Refer to [Replacement of Driver Seat Angle Adjuster Motor](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 11 Replace the seat module.

- A. Check the seat module power supply and grounding harness. Refer to [11.11.7.8 Seat Module Power Supply Failure](#)
- B. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 12	Reprogram and reset the seat module.
------------	--------------------------------------

- A. Reprogram and reset the seat module. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

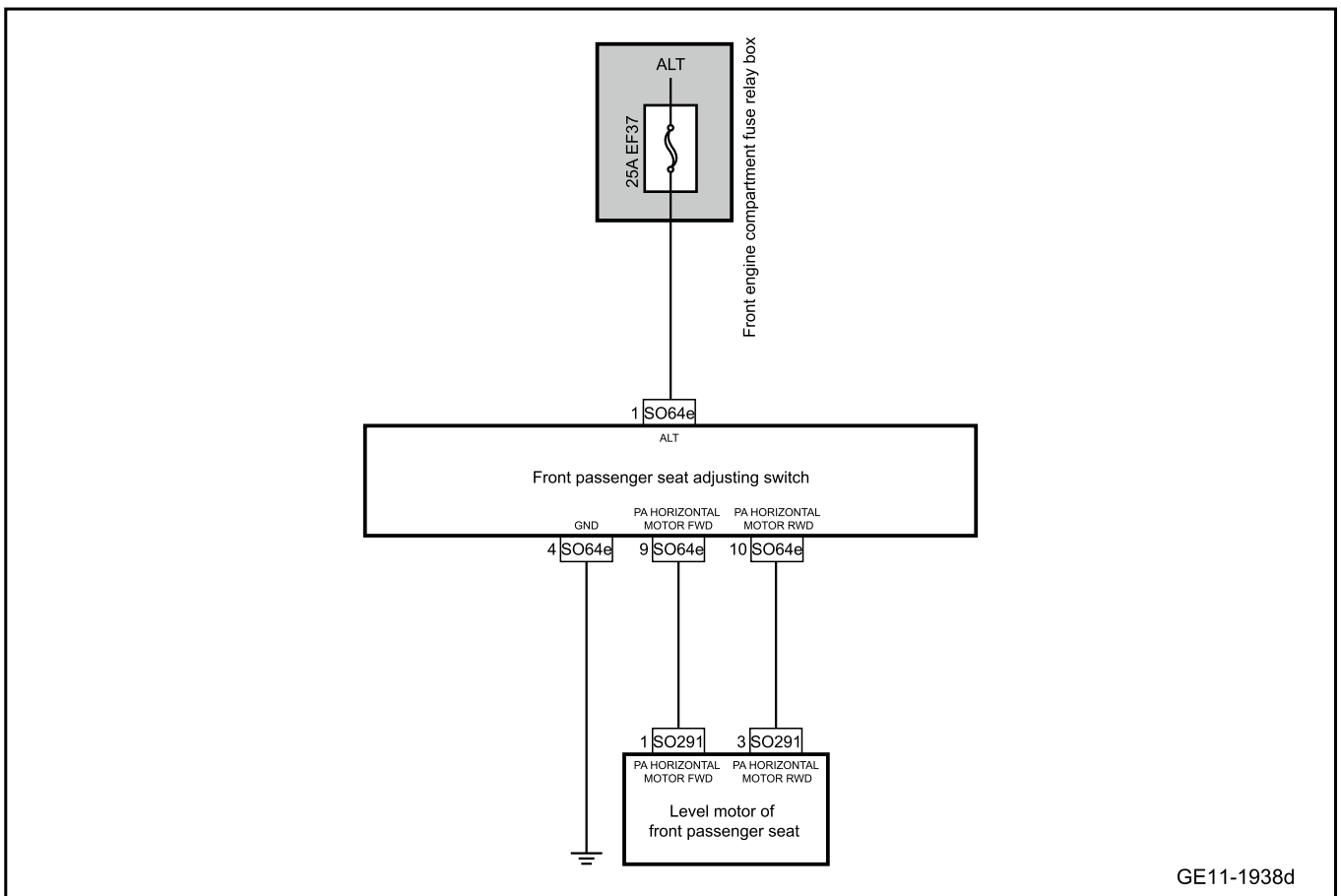
Yes Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

11.11.7.23 Front passenger power seat cannot be adjusted forward and backward (with memory function)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

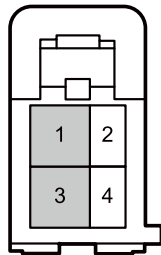
- A. Check the front front passenger seat horizontal motor and the front passenger seat adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the front passenger seat horizontal motor and the front passenger seat adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No ▶ Repair or replace the faulty part.

Yes

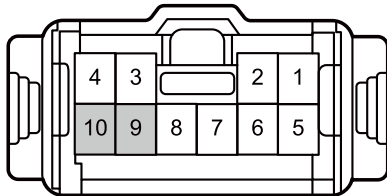
Step 2	Check whether the harness between the front passenger seat horizontal motor and front passenger seat adjusting switch is open-circuit.
--------	--

SO291 harness connector of front passenger seat level motor



GE11-6009d

SO64e harness connector of front passenger seat adjusting switch



GE11-6010d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO291 of front passenger seat horizontal motor.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO291(1)	SO64e(9)	Standard resistance: less than 1Ω
SO291(3)	SO64e(10)	

- E. Confirm whether the measured value meets the standard.

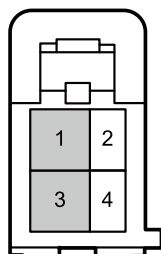
No

Repair or replace the harness.

Yes

Step 3 Check whether the harness between the front passenger seat horizontal motor and front passenger seat adjusting switch is short to power supply.

SO291 harness connector of front passenger seat level motor



GE11-6011d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO291 of front passenger seat horizontal motor.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

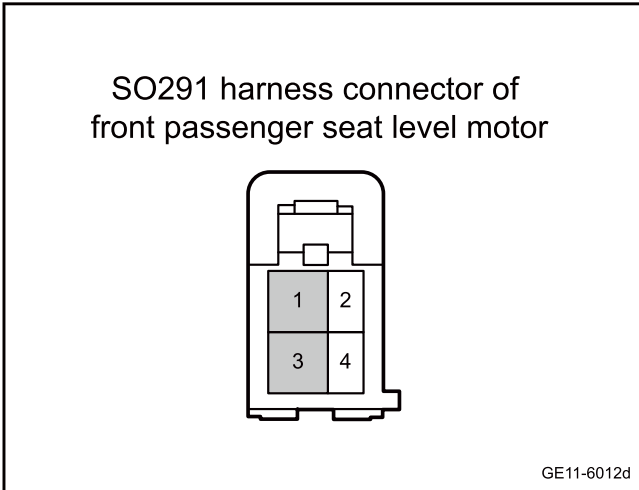
Measure terminal 1	Measure terminal 2	Standard value
SO291(1)	Vehicle body is grounded.	Standard voltage: 0V
SO291(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 4 Check whether the harness between the front passenger seat horizontal motor and front passenger seat adjusting switch is short to GND.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO291 of front passenger seat horizontal motor.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO291(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO291(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the front passenger seat horizontal motor.

- A. Replace the front passenger seat horizontal motor. Refer to [Replacement of Horizontal Motor of Front Passenger Seat](#)
- B. Confirm whether the seat works normally.

Yes System is normal.

No

Step 6 Replace the front passenger seat adjusting switch.

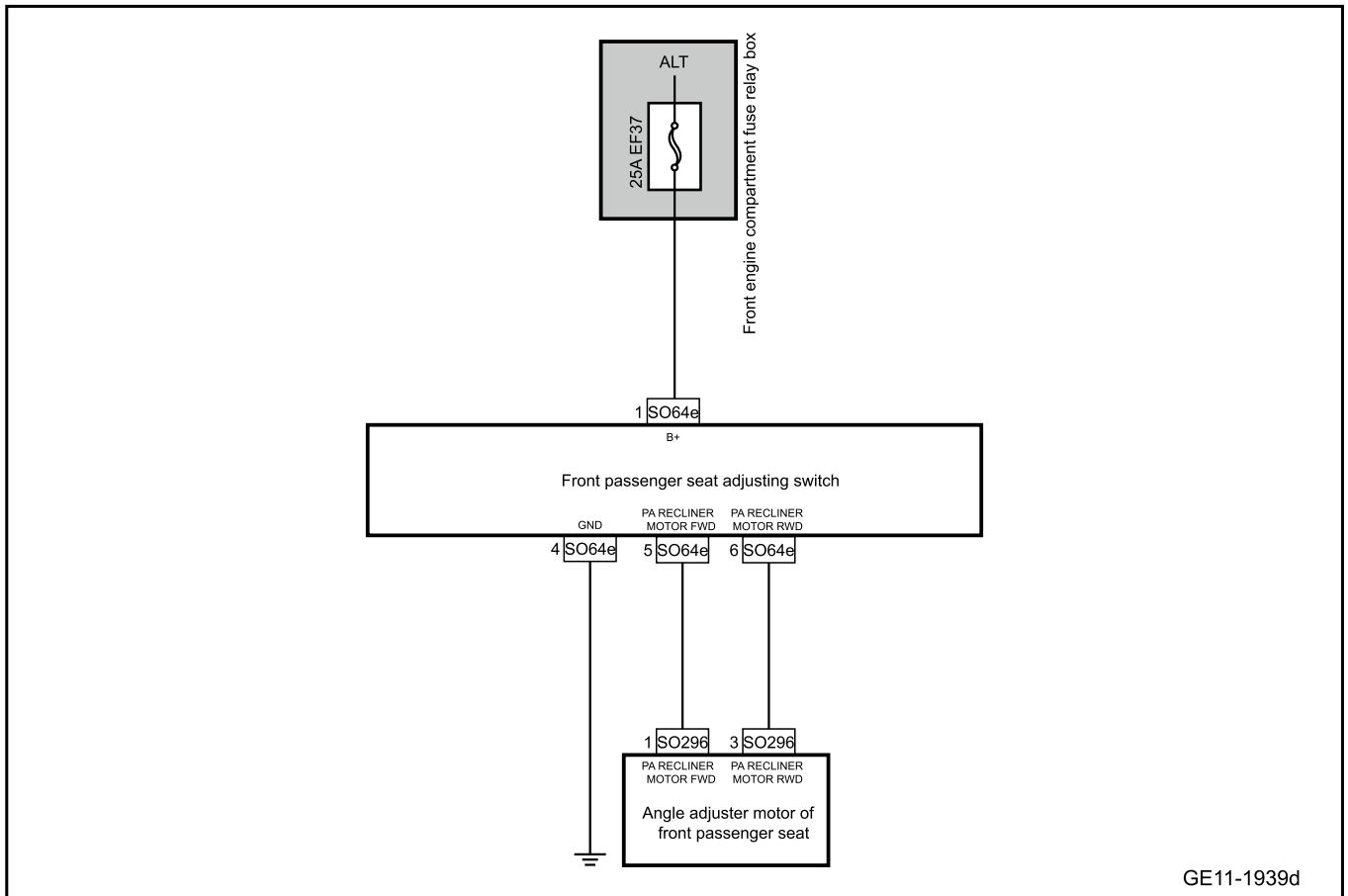
- A. Replace the front passenger seat adjusting switch. Refer to [Replacement of Front Passenger Seat Adjustment Switch](#)

Next step

Step 7 System is normal.

11.11.7.24 Front passenger power seat backrest cannot be adjusted (with memory function)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

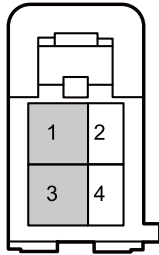
- A. Check the front passenger seat angle adjuster motor and the front passenger seat adjustment switch for signs of damage, deformation, smudges, looseness, etc.
- B. Check the front passenger seat angle adjuster motor and the front passenger seat adjustment switch harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

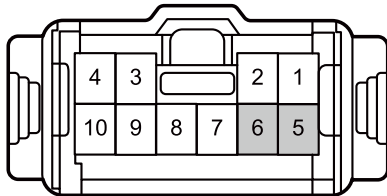
Step 2	Check the harness between the angle adjuster motor of front passenger seat and the adjustment switch of front passenger seat for an open circuit.
--------	---

SO296 harness connector of front passenger seat angle adjuster motor



GE11-6015d

SO64e harness connector of front passenger seat adjusting switch



GE11-6016d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front passenger angle adjuster motor SO296.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO296(1)	SO64e(5)	Standard resistance: less than 1Ω
SO296(3)	SO64e(6)	

- E. Confirm whether the measured value meets the standard.

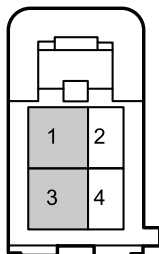
No

Repair or replace the harness.

Yes

Step 3 Check the harness between the angle adjuster motor of front passenger seat and the adjustment switch of front passenger seat for a short to the power supply.

SO296 harness connector of front passenger seat angle adjuster motor



GE11-6017d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front passenger angle adjuster motor SO296.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO296(1)	Vehicle body is grounded.	Standard voltage: 0V
SO296(3)		

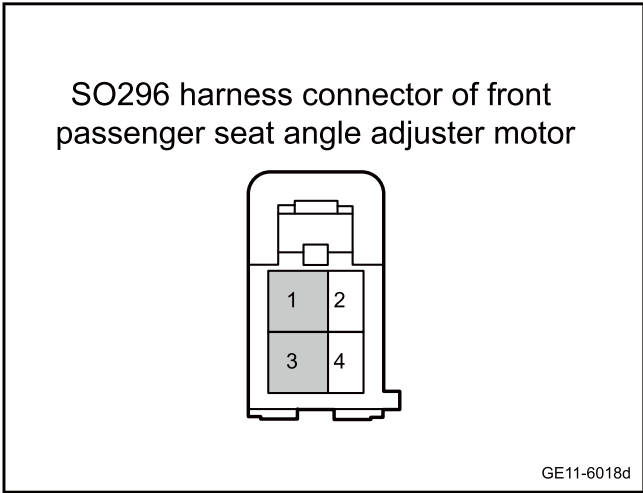
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check the harness between the angle adjuster motor of front passenger seat and the adjustment switch of front passenger seat for a short to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front passenger angle adjuster motor SO296.
- C. Disconnect the harness connector SO64e of front passenger seat adjusting switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO296(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO296(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the angle adjuster motor of front passenger seat.

- A. Replace the angle adjuster motor of front passenger seat. Refer to [Replacement of Angle Adjuster Motor of Front Passenger Seat](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 6 Replace the front passenger seat adjusting switch.

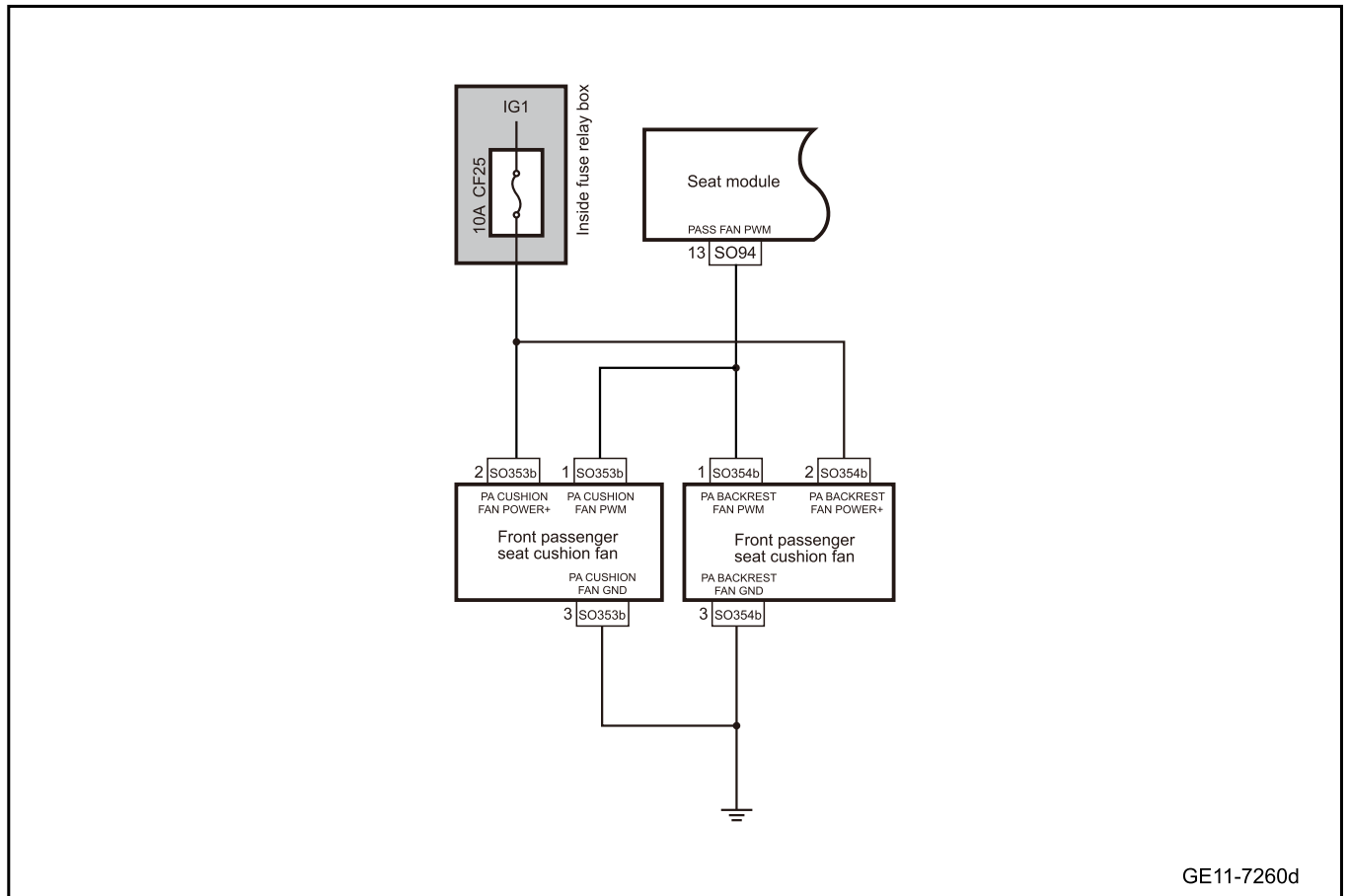
- A. Replace the front passenger seat adjusting switch. Refer to [Replacement of Front Passenger Seat Adjustment Switch](#)

Next step

Step 7 System is normal.

11.11.7.25 Front passenger seat fan does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

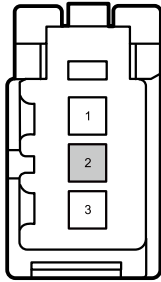
- A. Check the front passenger seat cushion fan, front passenger seat backrest fan for signs of damage, deformation, stain, loosening, catching, etc.
- B. Check the front passenger seat cushion fan and front passenger seat backrest fan harness connector for damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

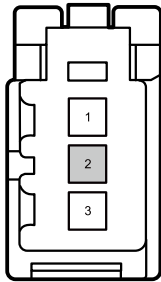
Step 2	Check the power supply circuit of front passenger seat cushion fan and front passenger seat backrest fan.
--------	---

SO353b front passenger seat cushion fan harness connector



GE11-7940d

SO354b front passenger seat backrest cushion harness connector



GE11-7937d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO353b of front passenger seat cushion fan.
- C. Disconnect the harness connector SO354b of front passenger seat backrest fan.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO353b(2)	Vehicle body is grounded.	Standard voltage: 11-14V
SO354b(2)		

- F. Confirm whether the measured value meets the standard.

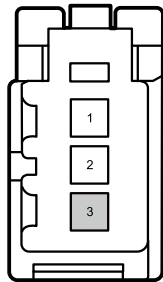
No

Repair or replace the harness.

Yes

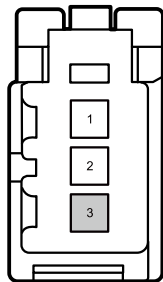
Step 3 | Check the grounding harness of front passenger seat cushion fan and front passenger seat backrest fan.

SO353b front passenger seat cushion fan harness connector



GE11-7941d

SO354b front passenger seat backrest cushion harness connector



GE11-7936d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO353b of front passenger seat cushion fan.
- C. Disconnect the harness connector SO354b of front passenger seat backrest fan.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO353b(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO354b(3)		

- E. Confirm whether the measured value meets the standard.

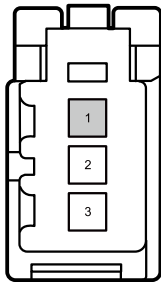
No

Repair or replace the harness.

Yes

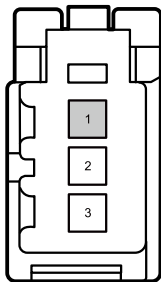
Step 4 Check the harness between front passenger seat cushion fan, front passenger seat backrest fan and seat module.

SO353b front passenger seat cushion fan harness connector



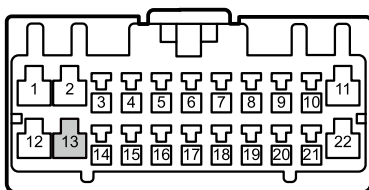
GE11-7939d

SO354b front passenger seat backrest cushion harness connector



GE11-7938d

SO94 seat module harness connector



GE11-7935d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO353b of front passenger seat cushion fan.
- C. Disconnect the harness connector SO354b of front passenger seat backrest fan.
- D. Disconnect the seat module harness connector SO94.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO353b(1)	SO94(13)	Standard resistance: less than 1Ω
SO354b(1)	SO94(13)	
SO354b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO353b(1)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO354b(1)	Vehicle body is grounded.	Standard voltage: 0V
SO353b(1)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace front passenger seat cushion fan.

- A. Replace front passenger seat cushion fan. Refer to [Replacement of Front Passenger Seat Cushion Fan](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 6 Replace the front passenger backrest fan.

- A. Replace the front passenger backrest fan. Refer to [Replacement of Front Passenger Seat Backrest Fan](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 7 Replace the seat module.

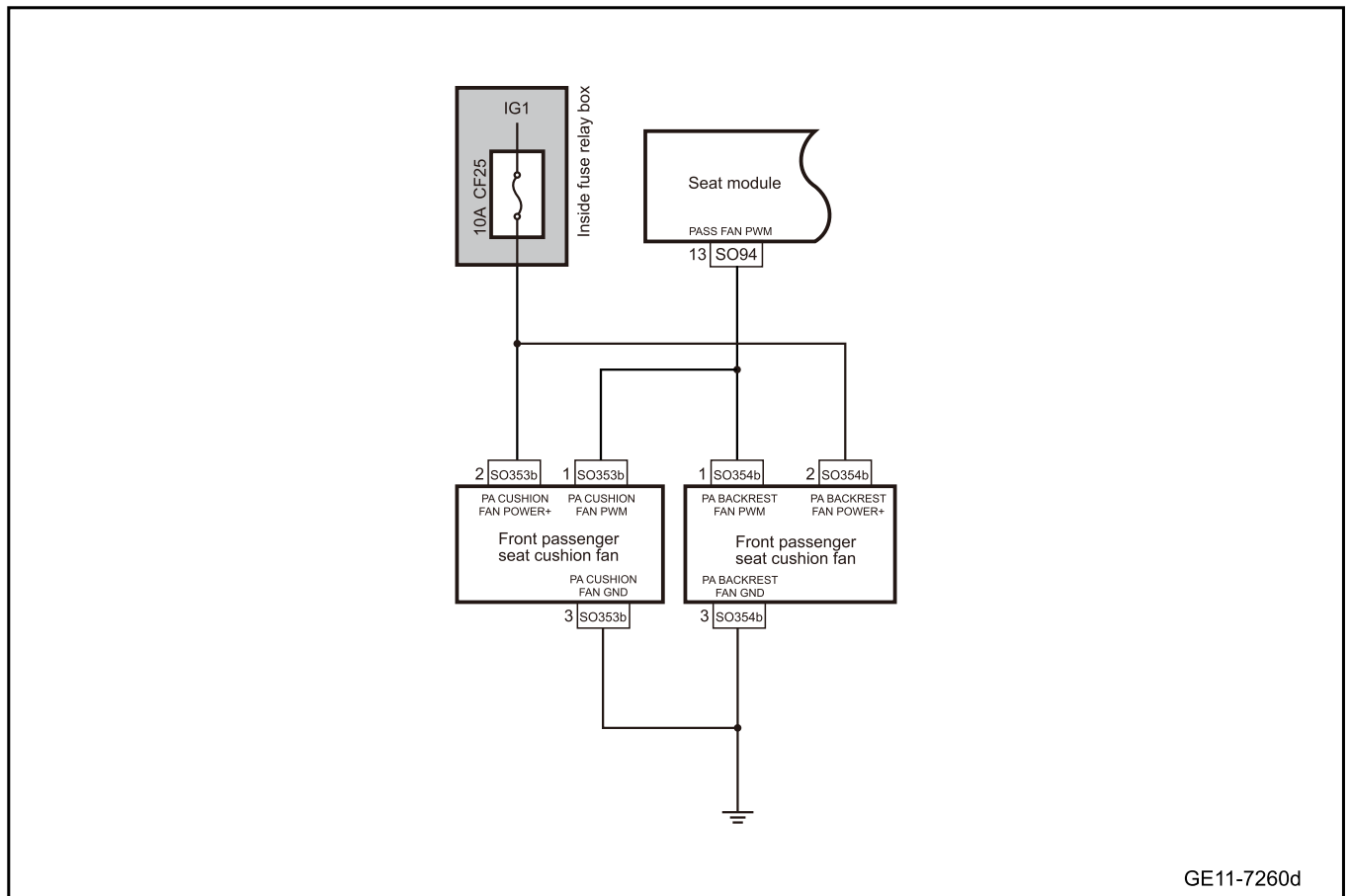
- A. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 8 System is normal.

11.11.7.26 Driver's seat fan does not work

1. Schematic circuit diagram:



GE11-7260d

2. Diagnosis steps

Step 1 Primary check.

- A. Check the driver's seat seat cushion fan and driver seat backrest fan for signs of damage, deformation, smudges, looseness, etc.
- B. Check the driver's seat seat cushion fan and driver seat backrest fan harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

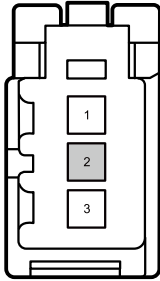
No

Repair or replace the faulty part.

Yes

Step 2 Check the power supply circuit of driver seat cushion fan and driver seat backrest fan.

SO351b driver seat cushion fan harness connector



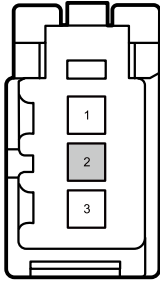
GE11-7933d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion fan harness connector so303c.
- C. Disconnect the driver seat backrest fan harness connector so303c.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO351b(2)	Vehicle body is grounded.	Standard voltage: 11-14V
SO352b(2)		

- F. Confirm whether the measured value meets the standard.

SO352b driver seat backrest fan harness connector



GE11-7929d

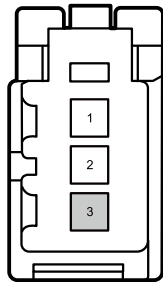
No

Repair or replace the harness.

Yes

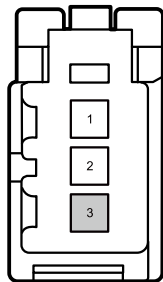
Step 3 Check the grounding harness of driver seat cushion fan and driver seat backrest fan.

SO351b driver seat cushion fan harness connector



GE11-7931d

SO352b driver seat backrest fan harness connector



GE11-7930d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion fan harness connector so303c.
- C. Disconnect the driver seat backrest fan harness connector so303c.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO351b(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO352b(3)		

- E. Confirm whether the measured value meets the standard.

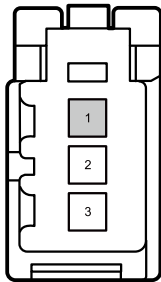
No

Repair or replace the harness.

Yes

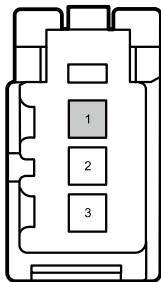
Step 4 | Check the harness between driver seat cushion fan, driver seat backrest fan and seat module.

SO351b driver seat cushion fan harness connector



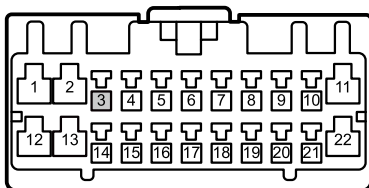
GE11-7932d

SO352b driver seat backrest fan harness connector



GE11-7928d

SO94 seat module harness connector



GE11-7934d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver seat cushion fan harness connector so303c.
- C. Disconnect the driver seat backrest fan harness connector so303c.
- D. Disconnect the seat module harness connector SO94.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO351b(1)	SO94(3)	Standard resistance: less than 1Ω
SO352b(1)	SO94(3)	
SO352b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
SO351b(1)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO352b(1)	Vehicle body is grounded.	Standard voltage: 0V
SO351b(1)		

- H. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Replace the driver's seat cushion fan.

- A. Replace the driver's seat cushion fan. Refer to [Replacement of Driver's Seat Cushion Fan](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 6 Replace the driver's seat backrest fan.

- A. Replace the driver's seat backrest fan. Refer to [Replacement of Driver's Seat Backrest Fan](#)
- B. Confirm whether the seat works normally.

Yes

System is normal.

No

Step 7 Replace the seat module.

- A. Replace the seat module. Refer to [Replacement of Seat Module](#)

Next step

Step 8 System is normal.

11.11.8 Removing and installing

11.11.8.1 Replacement of Left Front Seat Assembly(power seat)

Removal procedure

Caution

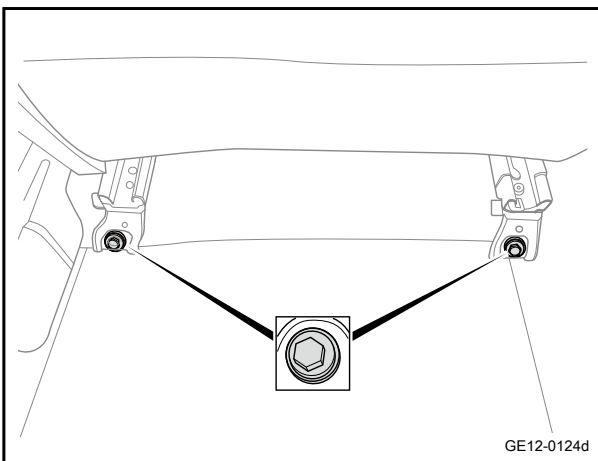
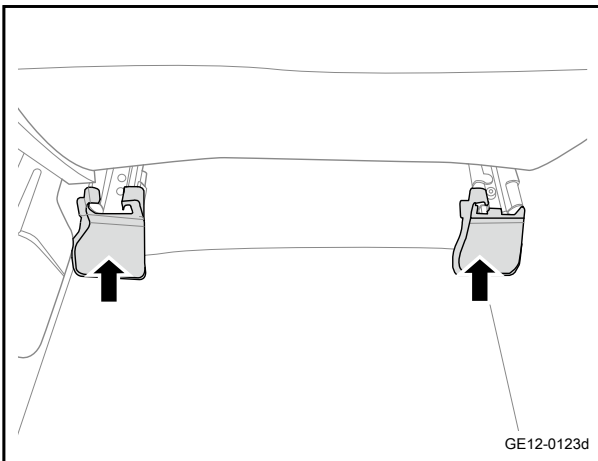
The front seats at left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

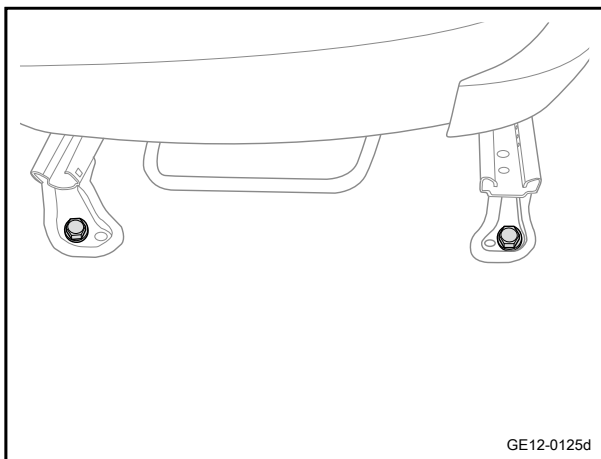
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

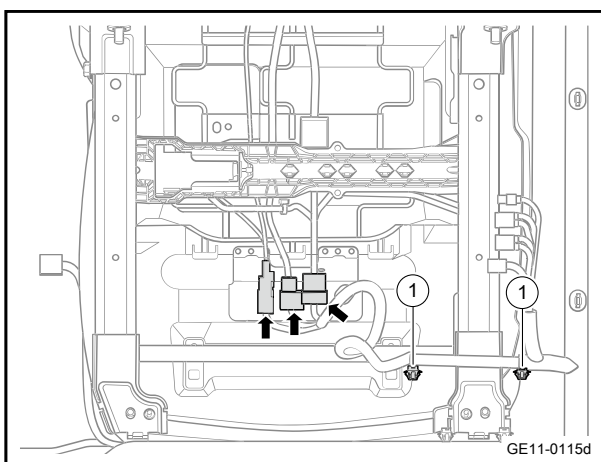
- 2 Take off the left front seat rear end outer sliding rail trim cover and the left front seat rear end inner sliding rail trim cover.



- 3 Adjust the left front seat assembly forward, and remove the 2 fixing bolts at the rear of the left front seat assembly.

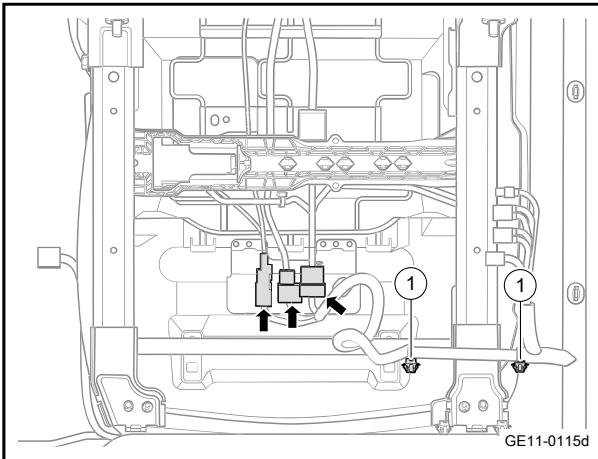


- 4 Adjust the left front seat assembly backward, and remove the 2 fixing bolts at the front of the left front seat assembly.

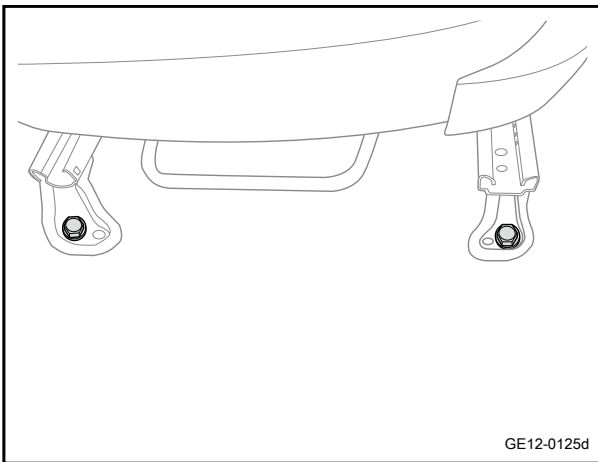


- 5 Flip the left front seat assembly backwards, disconnect the harness clip 1, disconnect the harness connector, and take out the left front seat assembly.

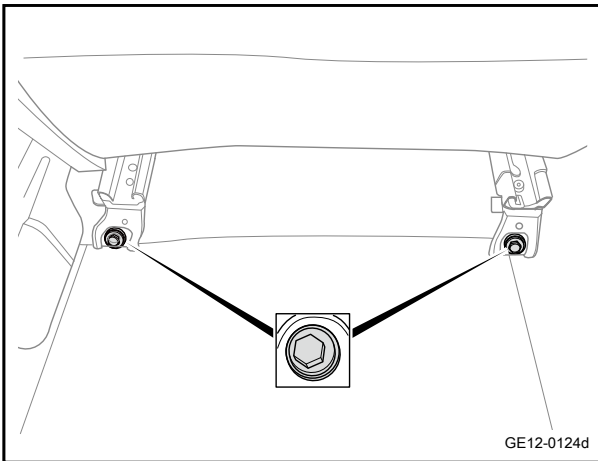
Installation procedure



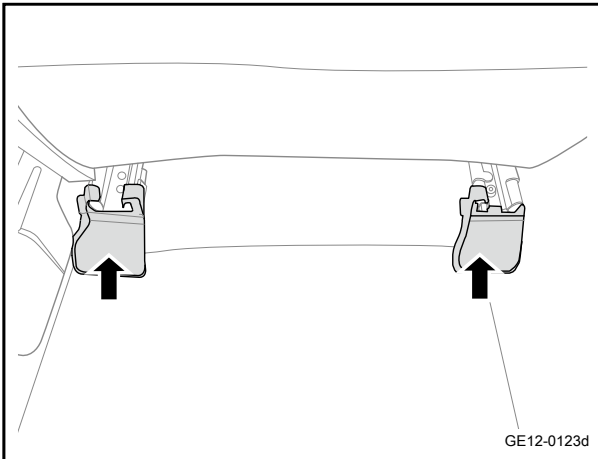
- 1 Put in the front left seat assembly, lift the seat backward, connect the harness connector under the seat and clamp the harness clip 1.



- 2 Move the left front seat assembly to the rear end, and install and tighten the 2 fixing bolts at the front of the left front seat assembly.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 3 Move the left front seat assembly to the front end, and install and tighten the 2 fixing bolts at the rear of the left front seat assembly.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 4 Install the left front seat rear outer sliding rail trim cover and the left front seat rear inner sliding rail trim cover.

- 5 Connect the negative cable of battery.

11.11.8.2 Replacement of Driver's Seat Assembly Module

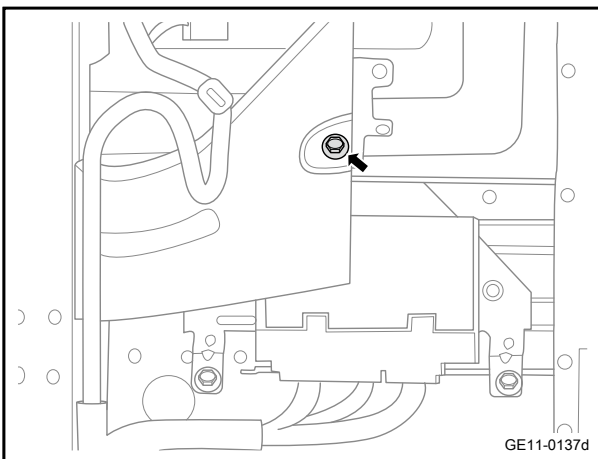
Removal procedure

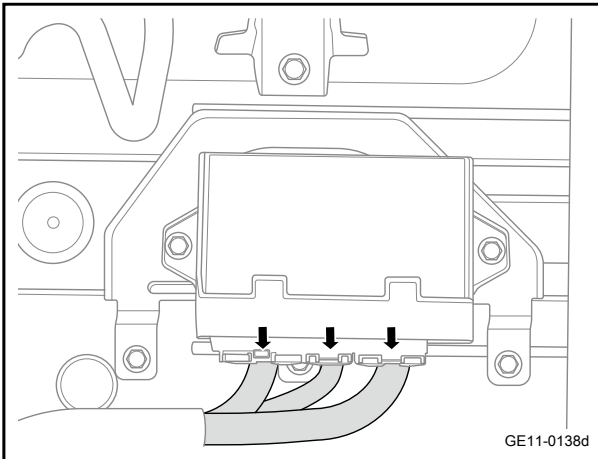
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

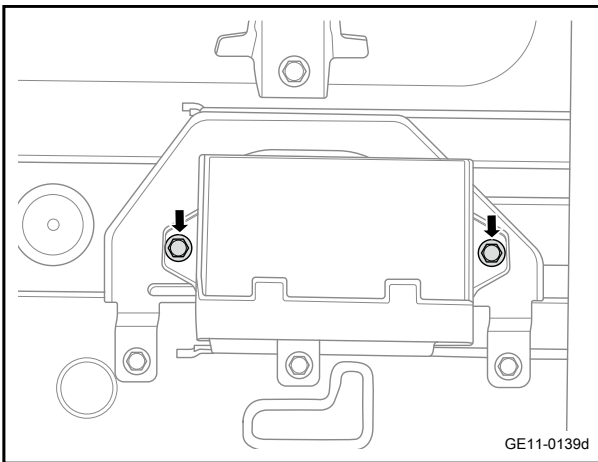
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the inside carpet. Refer to [Replacement of the Interior Carpet](#)
- 3 Remove fixing bolt of the air outlet and remove the air outlet.



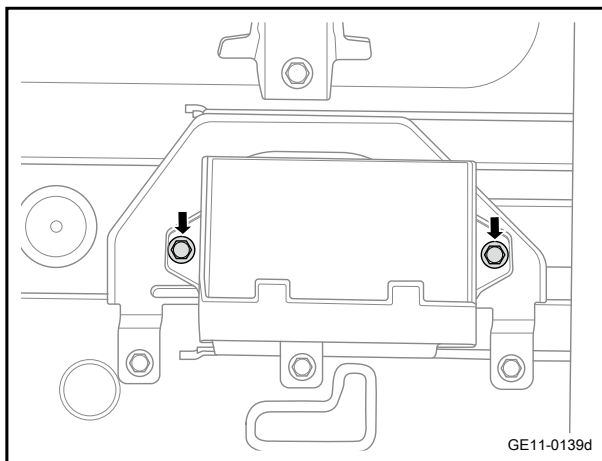


- 4 Disconnect the driver seat assembly harness connector.

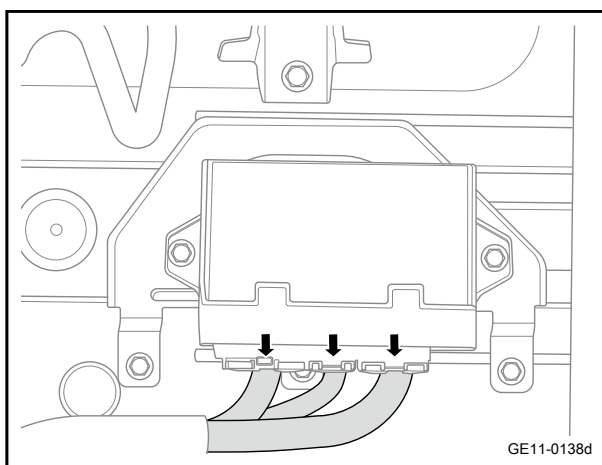


- 5 Remove the 2 fixing bolts of the driver's seat assembly.

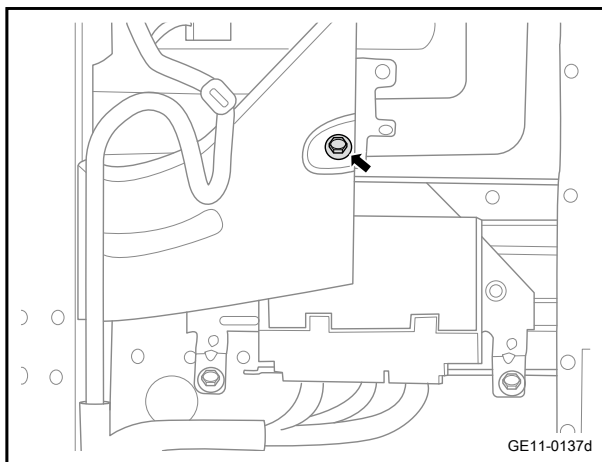
Installation procedure:



- 1 Install and tighten 2 fixing bolts of driver's seat assembly
Torque: 4N·m (metric system) 3lb-ft (imperial system)



- 2 Connect the driver's seat assembly harness connector.



- 3 Install the outlet and tighten the retaining bolts at the outlet.
Torque: 6N·m (metric system) 4.5lb-ft (imperial system)

- 4 Install the inside front carpet.
- 5 Connect the negative cable of battery.

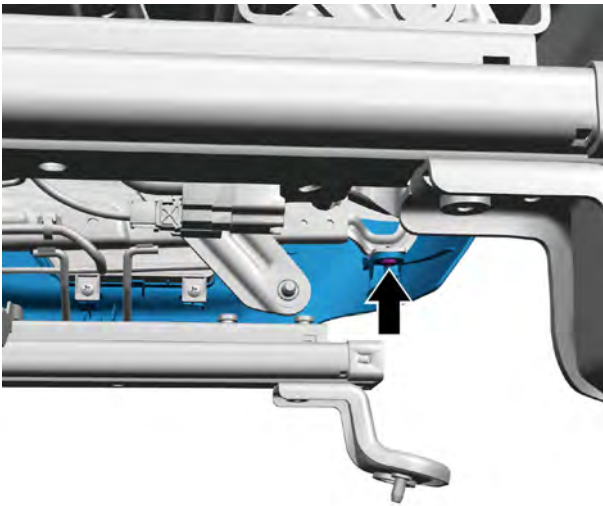
11.11.8.3 Disassembly and assembly of seat assembly

Removal procedure

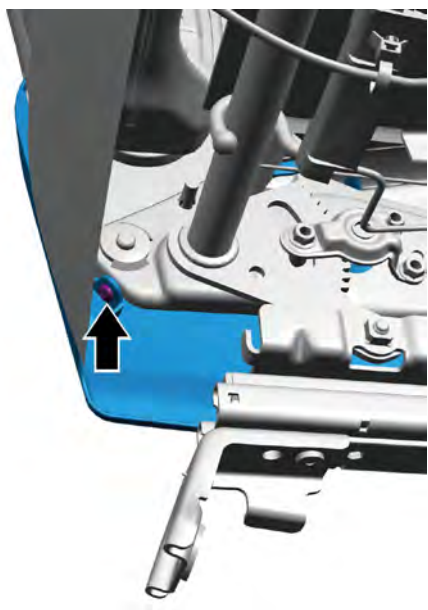
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front seat assembly. Refer to [Replacement of Left Front Seat Assembly](#)
- 3 Remove the driver's seat headrest assembly. Refer to [Replacement of Seat Headrest Assembly](#)
- 4 Use the plastic prying plate to pry off the 2 front left seat adjustment buttons.

Caution

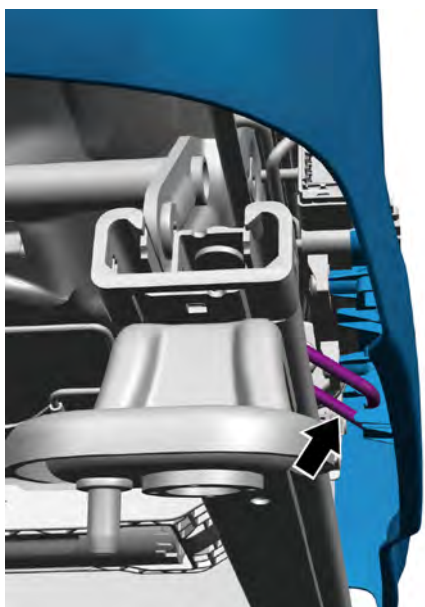
When using the plastic prying plate to remove the part, it is necessary to apply force on both sides of the part evenly, otherwise the part may be damaged.



- 5 Remove the 1 fixing screw connecting the front of the left front seat outer shield and the front of left front seat assembly.



- 6 Remove the 1 fixing screw connecting the front of the left front seat outer shield and the rear of left front seat assembly.



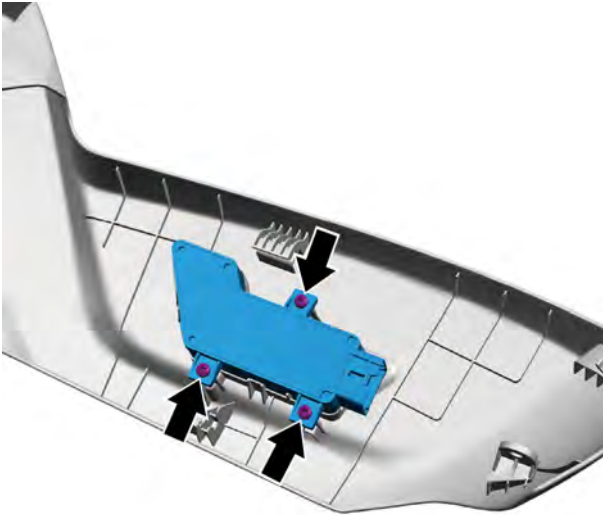
- 7 Remove the 1 fixing clip B connecting the left front seat outer shield and the front left seat assembly.



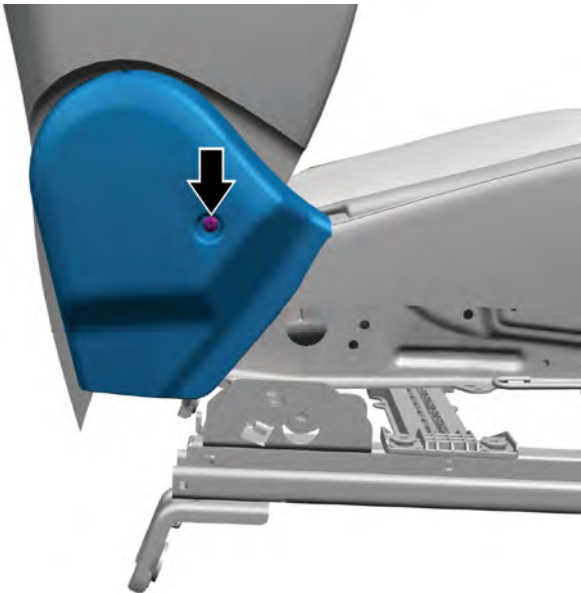
- 8 Move out the left front seat outer shield, and disconnect the 1 harness connector connecting the seat harness and the seat adjustment switch.

Caution

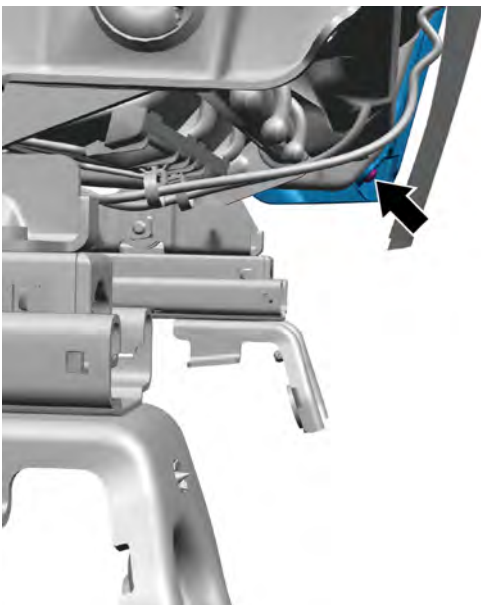
Avoid pulling the harness when removing the side shield.



- 9 Remove the 3 fixing screws connecting the seat adjustment switch and the side of the left front seat outer shield.
- 10 Take down seat adjustment switch



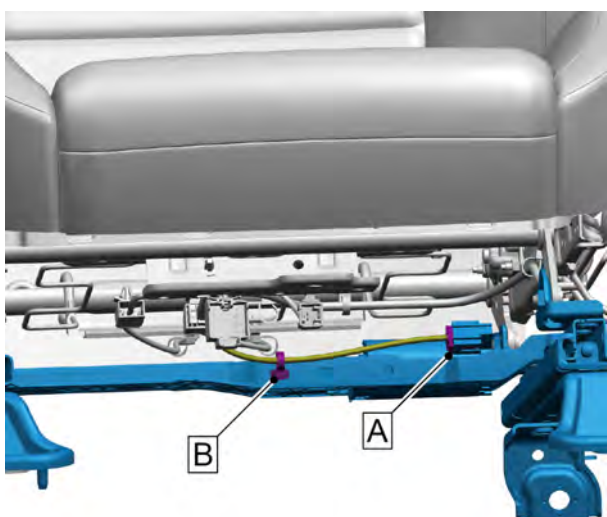
- 11 Remove the 1 fixing screws connecting the left front seat inner shield and the right side of the left front seat assembly.



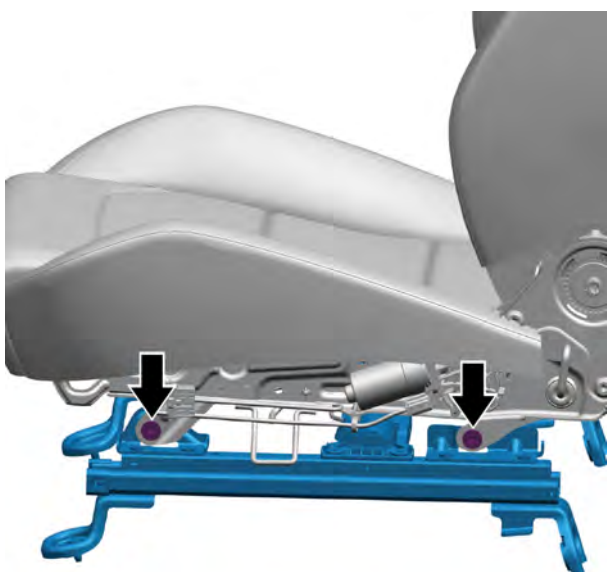
- 12 Remove the 1 fixing screw connecting the left front seat inner shield and the rear of the left front seat assembly.
- 13 Take off the left front seat inner shield.



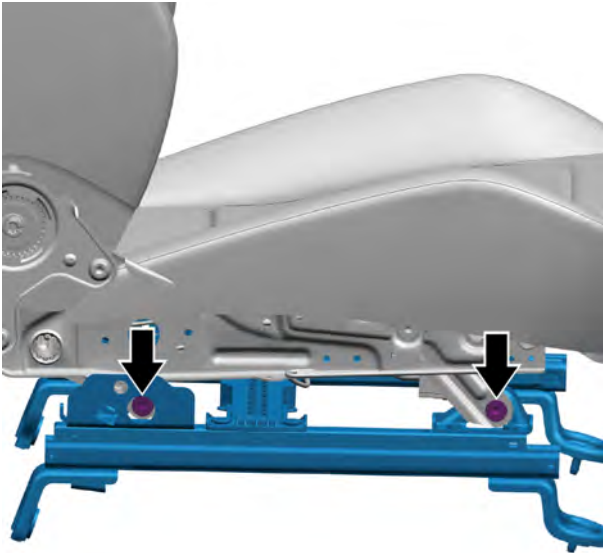
- 14 Use a straight screwdriver to pry out the seat headrest bracket.



- 15 Disconnect the 1 harness connectors A connecting the seat harness and the front left seat slide rail.
- 16 Remove the 1 fixing clip B connecting the seat harness and front left seat slide rail.



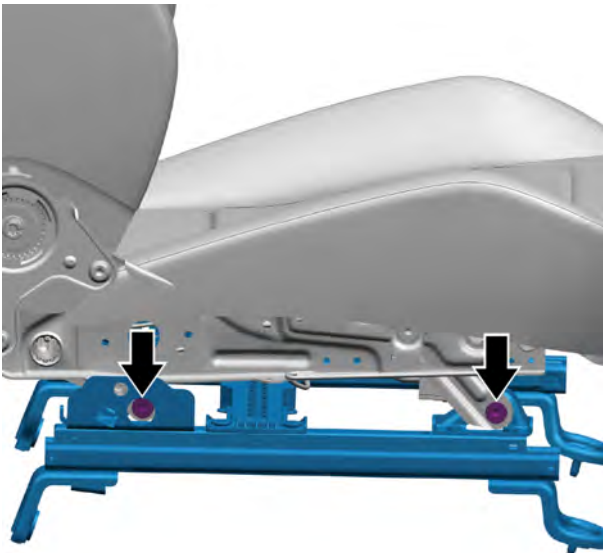
- 17 Remove 2 fixing bolts connecting front left seat slide rail and the left side of the seat frame.

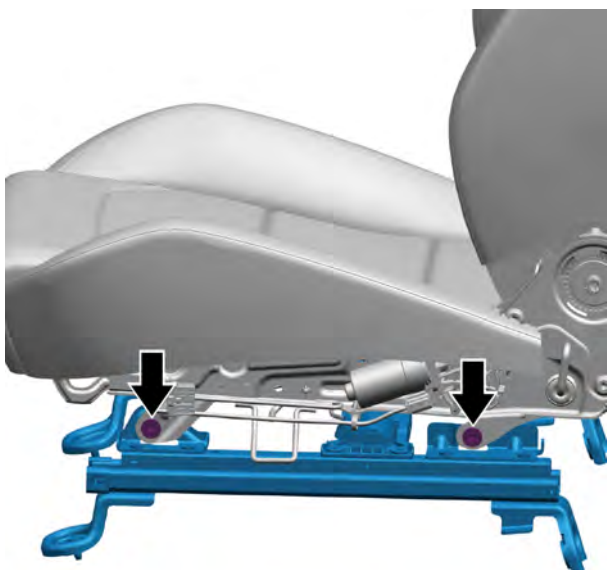


- 18 Remove 2 fixing bolts connecting front left seat slide rail and the right side of the seat frame.
- 19 Remove the front left seat slide rail.

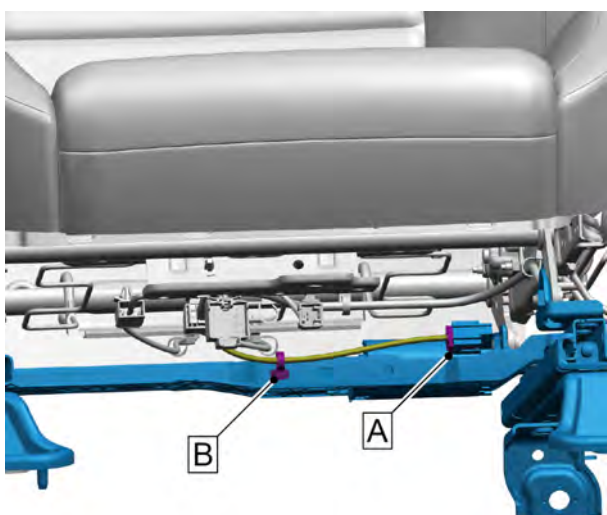
Installation procedure

- 1 Move the left front seat slide rail to the installation position.
- 2 Install and tighten the 2 bolts connecting the front left seat slide rail and the right side of the seat frame.





- 3 Install and tighten the 2 bolts connecting front left seat slide rail and the left side of the seat frame.



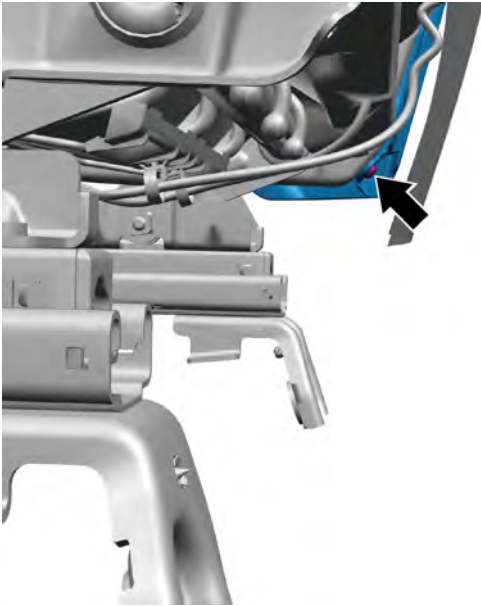
- 4 Install the 1 fixing clip B connecting the front left seat assembly and the seat harness.
- 5 Connect the 1 harness connectors A connecting the seat harness and front left seat slide rail.

Caution

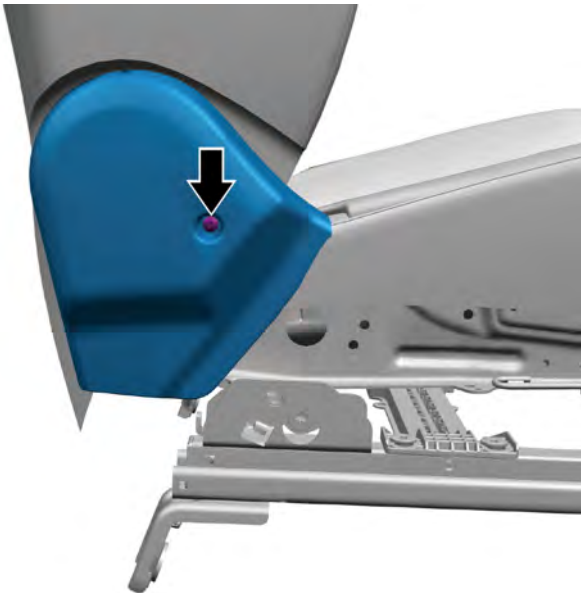
Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



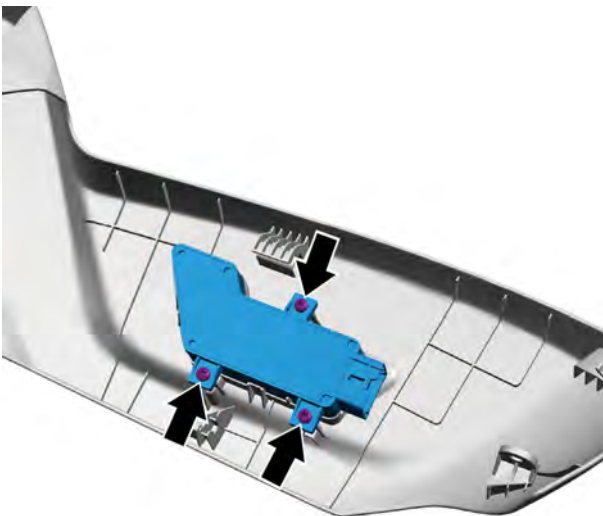
- 6 Install the seat headrest to the left front seat assembly.



- 7 Move the left front seat inner shield to the installation position.
- 8 Install the 1 fixing screw connecting the left front seat inner shield and the rear of left front seat assembly.



- 9 Install and tighten the 1 fixing bolt connecting the left front seat inner shield and the right side of left front seat assembly.



- 10 Move the seat adjustment switch to the installation position.
- 11 Install the 3 fixing screws connecting the seat adjustment switch and the left front seat outer shield.

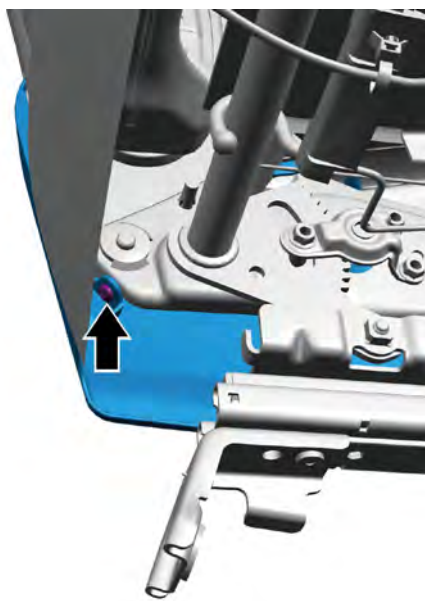
- 12 Connect the 1 harness connector connecting the seat harness and the seat adjustment switch.

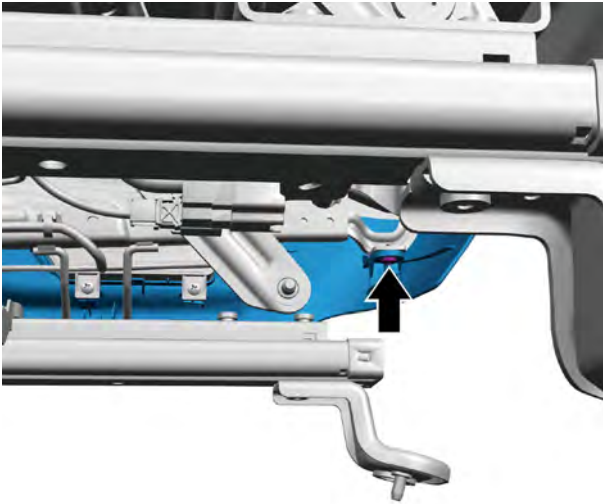


- 13 Clamp the left front seat outer shield to the left front seat assembly and ensure that the clamp is fastened.



- 14 Install the 1 fixing screw connecting the rear of the left front seat outer shield and the rear of left front seat assembly.





- 15 Install the 1 fixing screw connecting the front of the left front seat outer shield and the front of left front seat assembly.



- 16 Install the front left seat adjustment button onto the front left seat assembly, and ensure the 2 front left seat adjustment buttons are installed and fastened.

- 17 Install the driver's seat headrest assembly.

- 18 Install the left front seat assembly.

- 19 Connect the negative cable of battery.

11.12 Defrosting

11.12.1 Description and operation

11.12.1.1 Description and Operations

The main components of the defrosting system are as follows:

- Defrosting switch
- Left and right exterior rearview mirror heaters
- Rear fixed vehicle window heater

The defrosting switch is set on the large display screen of the air conditioning system; the rear fixed window heater is integrated with the glass; the rear-view mirror heaters are integrated in the left and right rear-view mirrors.

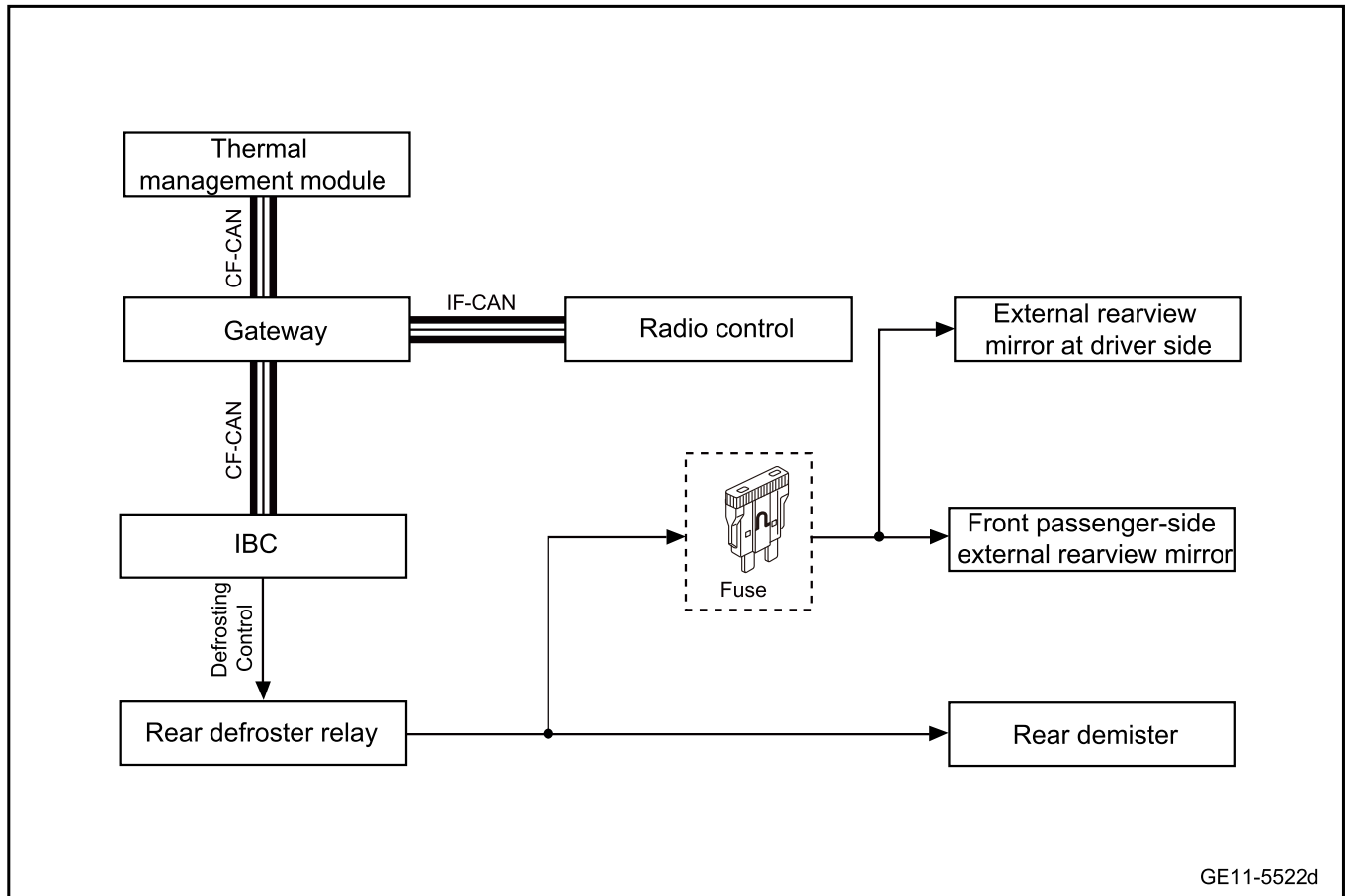
11.12.2 System working principles

11.12.2.1 System Working Principles

Turn on the defrosting switch in the multimedia display screen, transmit the defrosting request signal to the IBC, the IBC controls the defrosting relay, and the body control module (BCM) supplies power to output the rear fixed windows and the exterior rearview mirror heaters. The rear defrosting/rearview mirror heater is automatically turned off after heating for 12 minutes.

11.12.3 Electrical block diagram

11.12.3.1 Electrical Schematic Diagram of Defrosting System



11.12.4 Diagnostic information and procedures

11.12.4.1 Diagnosis Description

Before the diagnosis of the defrost system fault Refer to Description and Operation and System Working Principle. Understand and be familiar with the system working principle of the defrosting system before starting system diagnosis. This helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation. Any fault diagnosis of the defrosting system should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.12.4.2 Routine inspection

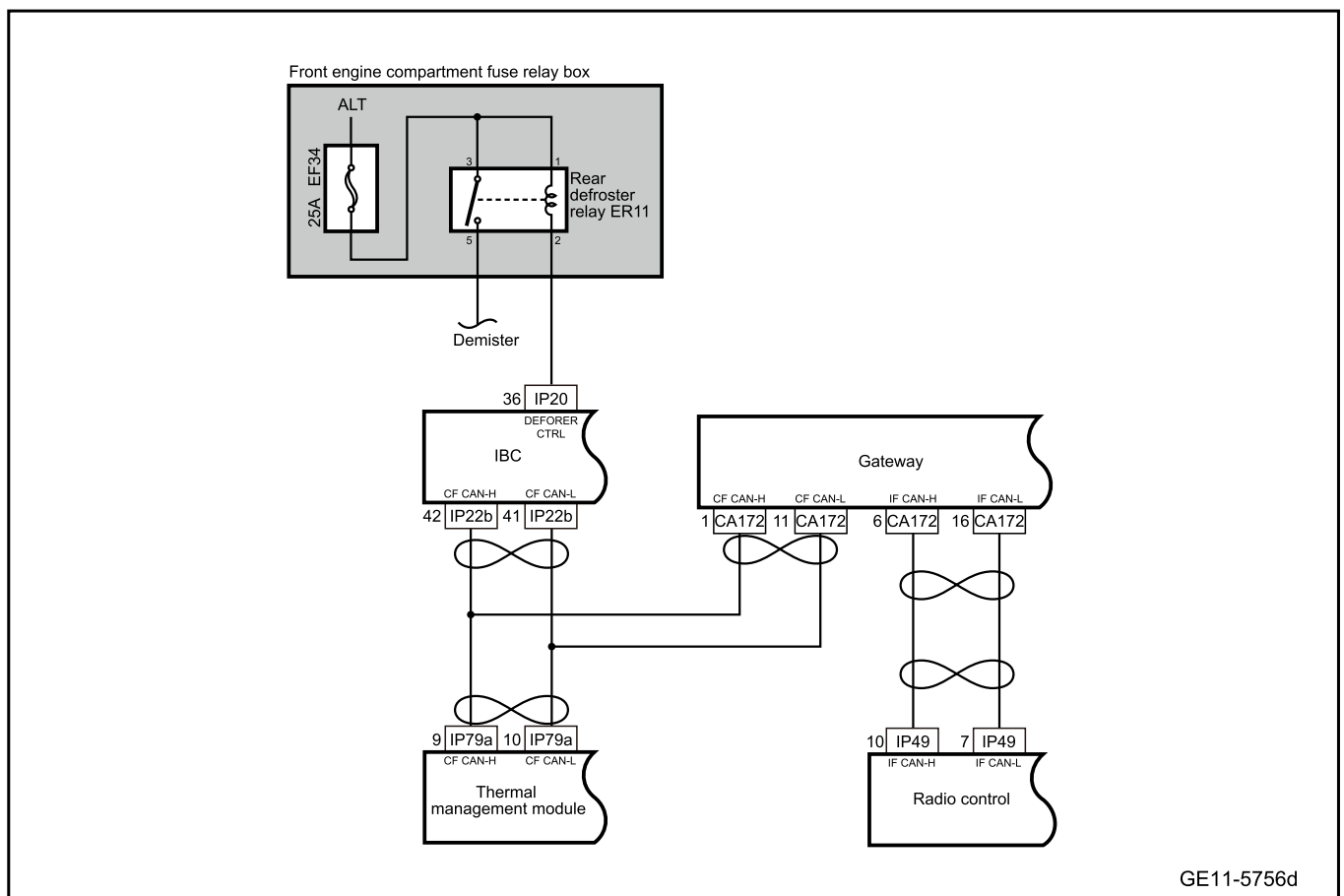
- Check after-sales installations that may affect a defroster to ensure that these devices are unable to affect the defroster.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.12.4.3 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
B103914	Front defrosting circuit is short-circuited to ground or opened	Refer to Defrosting Circuit Failure
B10394B	Front defrosting circuit is overloaded or overheated	
B108798	Front defrosting indicator circuit is overtemperature	
B100014	Rear defrosting circuit is short-circuited to ground or opened	
B10004B	Rear defrosting circuit is overloaded or overheated	
B108698	Rear defrosting indicator circuit is overtemperature	

11.12.4.4 All defrosters are inoperative

1. Circuit diagram:



GE11-5756d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear defroster relay, IBC, head unit and gateway harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the fuse and check whether the fuse EF34 in the front engine compartment fuse relay box is blown.

Rated capacity of fuse: 25A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check rear defroster relay.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug rear defroster relay ER11 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 4 Check rear defroster relay power supply circuit.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug rear defroster relay ER11.
- C. The key activates the power supply of the vehicle to ON.
- D. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
ER11(1)	Vehicle body is grounded.	Standard voltage: 11-14V
ER11(3)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

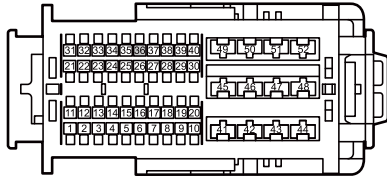
No

Repair or replace the harness.

Yes

Step 5 Check the control harness between the rear defroster relay and IBC.

IP20 body control module harness connector 1



GE11-6023d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connector IP20.
- C. Unplug rear defroster relay ER11.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(36)	ER11(2)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Measure the voltage between the following terminals:

Measure terminal 1	Measure terminal 2	Standard voltage value
IP20(36)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Check the CF-CAN network integrity.

- A. To check the instrument communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No → Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 7 | Check the IF-CAN network integrity.

- A. To check the instrument communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No → Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 8	Replace the gateway.
--------	----------------------

- A. To replace the gateway, please refer to [Replacement of Gateway](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Change the head unit.
--------	-----------------------

- A. Replace the head unit. Refer to the [Replacement of head unit](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Replace the IBC
---------	-----------------

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 11	Reprogram and reset the IBC.
---------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

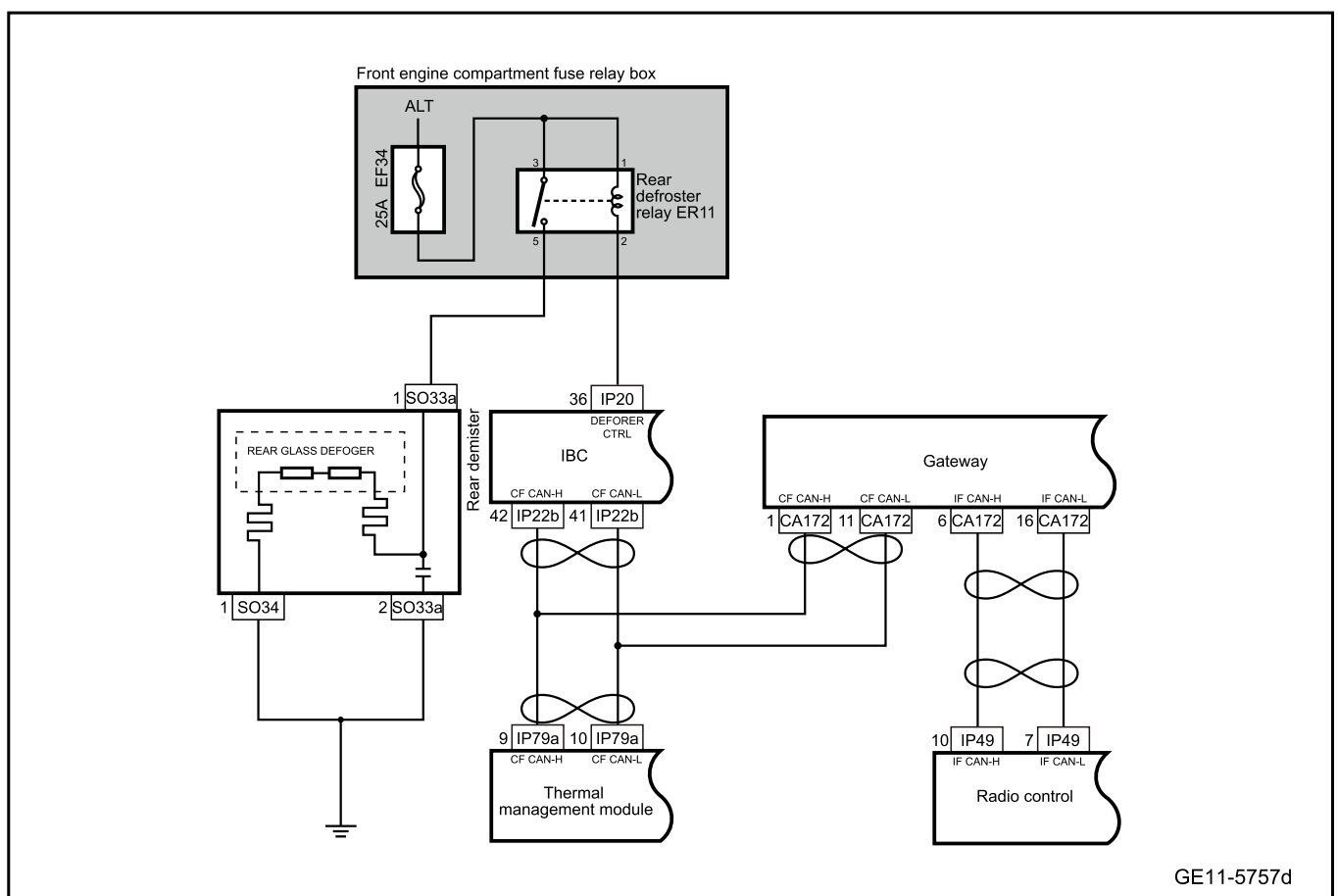
System is normal.

No

Step 12	System is normal.
---------	-------------------

11.12.4.5 Rear defroster does not work

1. Schematic circuit diagram:



GE11-5757d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear defogger for signs of damage, deformation, smudges, looseness, etc.
- B. Check the rear defogger harness connector for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check whether the control line voltage of rear defroster is normal.
--------	---

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Remove the rear defroster relay ER11.
- C. The key activates the power supply of the vehicle to ON.
- D. Turn on the defrosting switch.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
ER11(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω

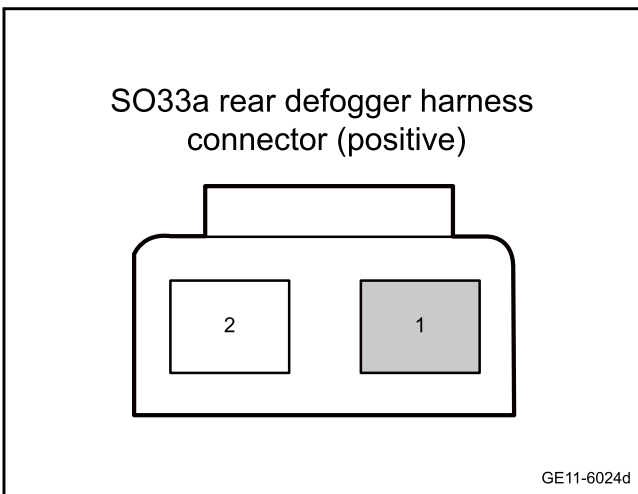
- F. Confirm whether the measured value meets the standard.

No

To repair or replace the harness, please refer to [All defrosters are inoperative](#)

Yes

Step 3 | Check whether the power supply voltage of the rear defogger heater strip is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the rear defogger harness connector SO33a.
- C. The key activates the power supply of the vehicle to ON.
- D. Turn on the defrosting switch.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO33a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

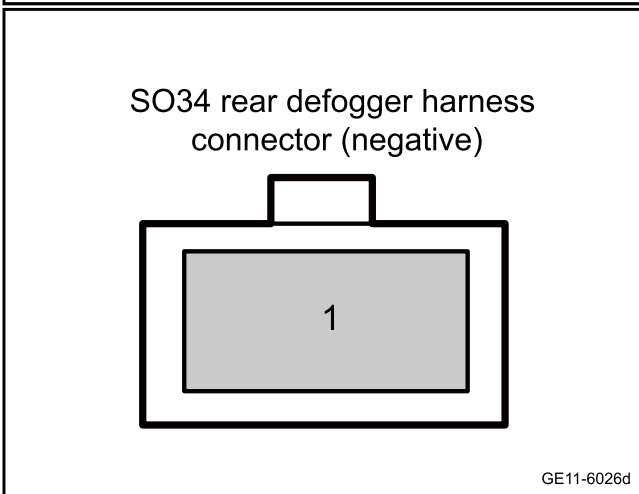
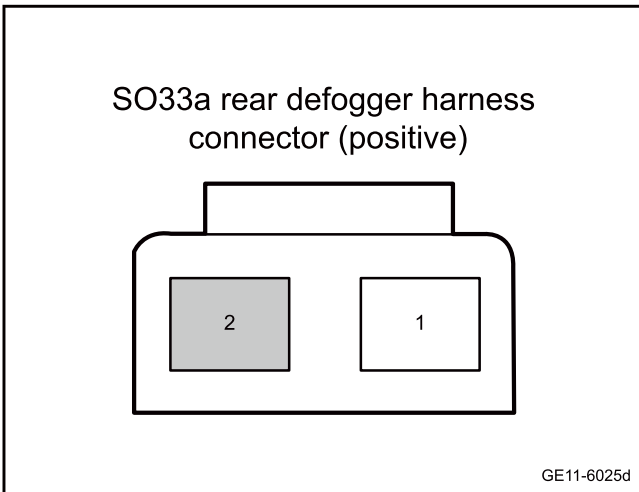
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 | Check whether the grounding harness of the rear defogger is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the rear defogger harness connector SO33a.
- C. Disconnect the rear defogger harness connector SO34.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO33a(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO34(1)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Check IF-CAN bus communication line.

- A. To check the communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No → Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 6 | Check CF-CAN bus communication line.

- A. To check the communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 7 Replace the rear defogger.

- A. Replace the rear defogger. Refer to Replacement of Rear Defogger
- B. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 8 Replace the IBC

- A. Check the IBC power supply and grounding harness. Refer to [IBC Power Supply Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 9 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10 Use diagnostic scanner to check the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

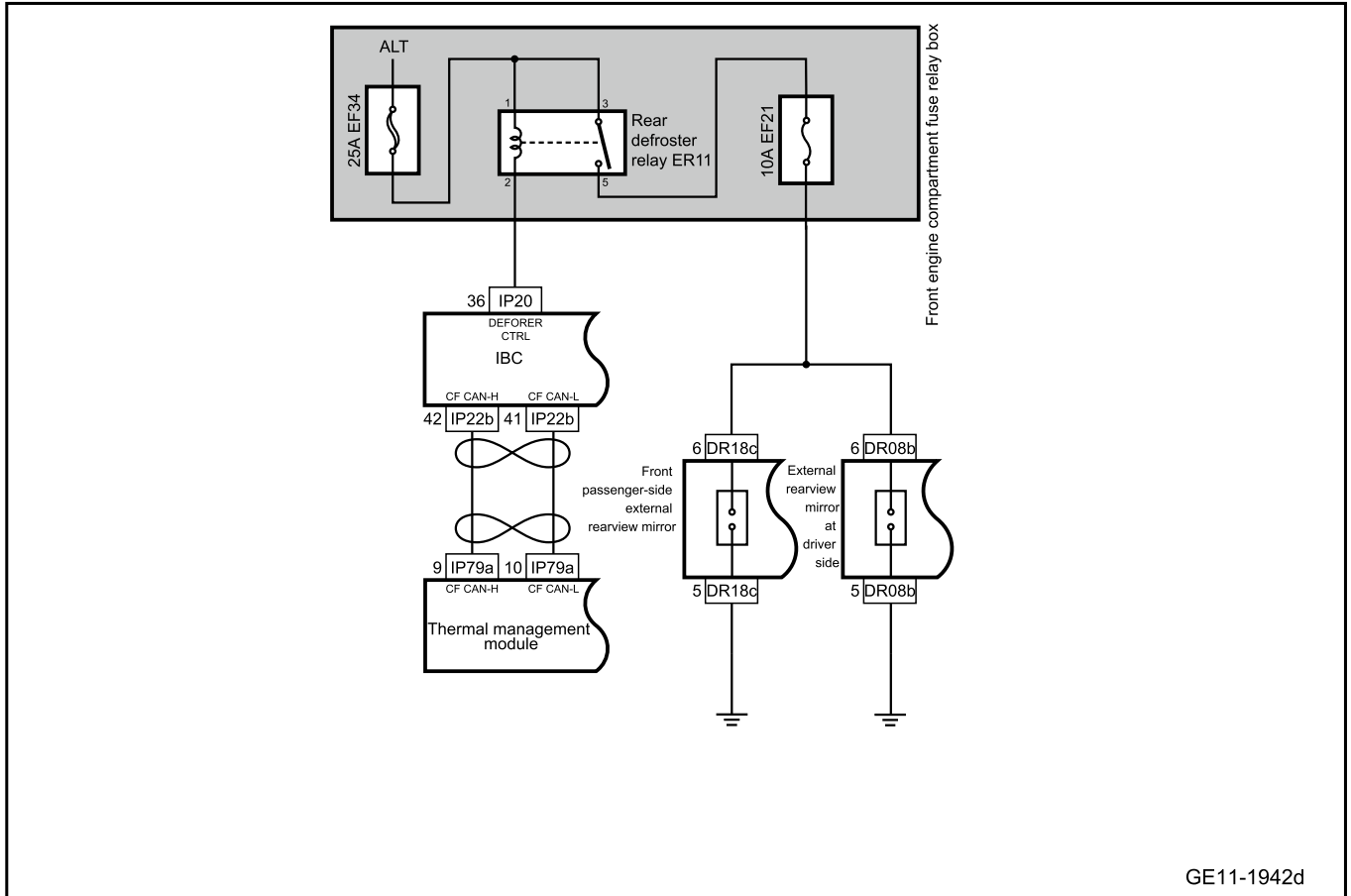
Diagnose according to the output trouble code.

No

Step 11 | System is normal.

11.12.4.6 Inoperative defrosters of electric rearview mirror (two)

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 | Primary check.

- A. Check the driver side exterior rear-view mirror and the front passenger's exterior rear-view mirror for damage, deformation, dirt, loosening and other signs.
- B. Check the harness connectors of the driver's side exterior rear-view mirror and the front passenger's exterior rear-view mirror for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the EF21 fuse in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 10A

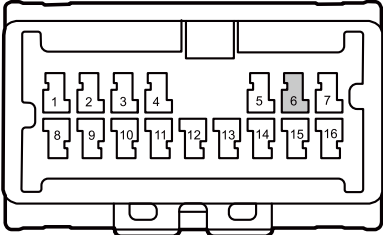
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 Check whether the voltage of the defrosting power supply circuit of the exterior rearview mirror is normal.

DR08b harness connector for exterior rearview mirrors at driver side



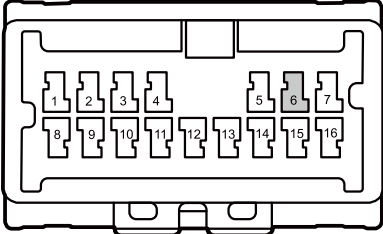
GE11-6027d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. The key activates the power supply of the vehicle to ON.
- E. Operate the multi-functional display screen (air conditioning control panel) to place the air conditioner in the defrosting position.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(6)	Vehicle body is	Standard
DR18c(6)	grounded.	voltage: 11-14V

- G. Confirm whether the measured value meets the standard.

DR18c harness connector for external rearview mirror at front passenger side



GE11-6028d

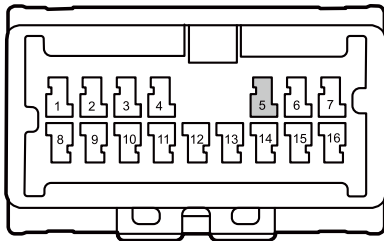
No

Repair or replace the harness.

Yes

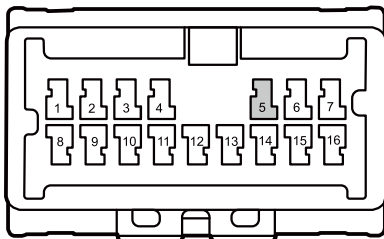
Step 4 Check whether the grounding harness of exterior rearview mirror defrosting is normal.

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6029d

DR18c harness connector for external rearview mirror at front passenger side



GE11-6030d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω
DR18c(5)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Replace the exterior rearview mirrors.

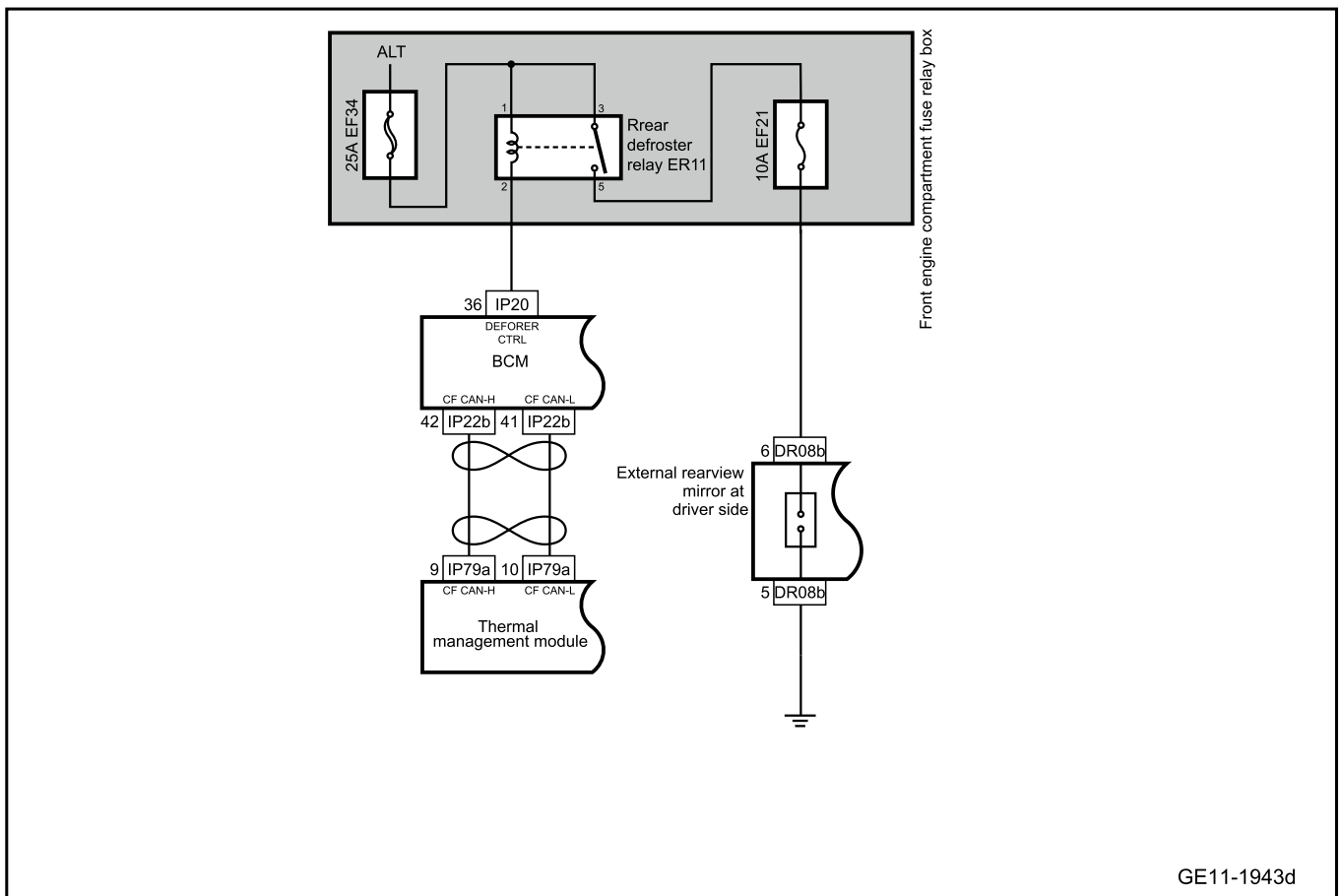
- A. To replace the exterior rearview mirrors, please refer to [Replacement of Exterior Rearview Mirrors](#)

Next step

Step 6 | System is normal.

11.12.4.7 Defroster of left exterior rearview mirror does not work

1. Schematic circuit diagram:



2. Diagnosis steps

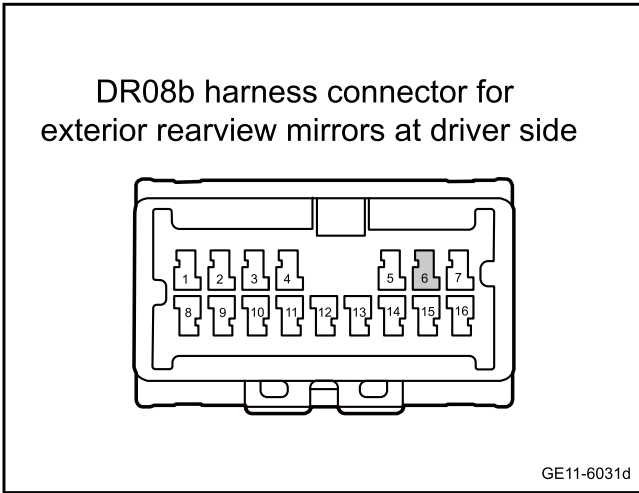
Step 1	Primary check.
--------	----------------

- A. Check the driver's exterior rear-view mirror for damage, deformation, dirt, loosening and other signs.
- B. Check the driver side exterior rearview mirror harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check whether the voltage of exterior rear-view mirror defrosting power supply circuit is normal.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. The key activates the power supply of the vehicle to ON.
- D. Operate A/C control panel to place A/C in defrosting position.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(6)	Vehicle body is grounded.	Standard voltage: 11-14V

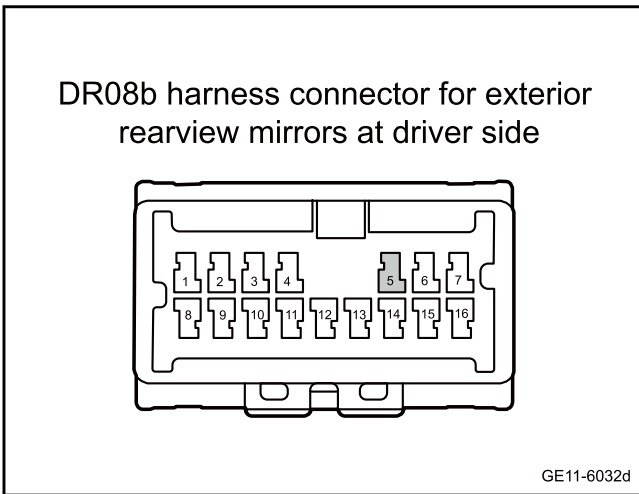
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Check whether the defrosting grounding harness of exterior rearview mirror is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace the driver's side exterior rearview mirror

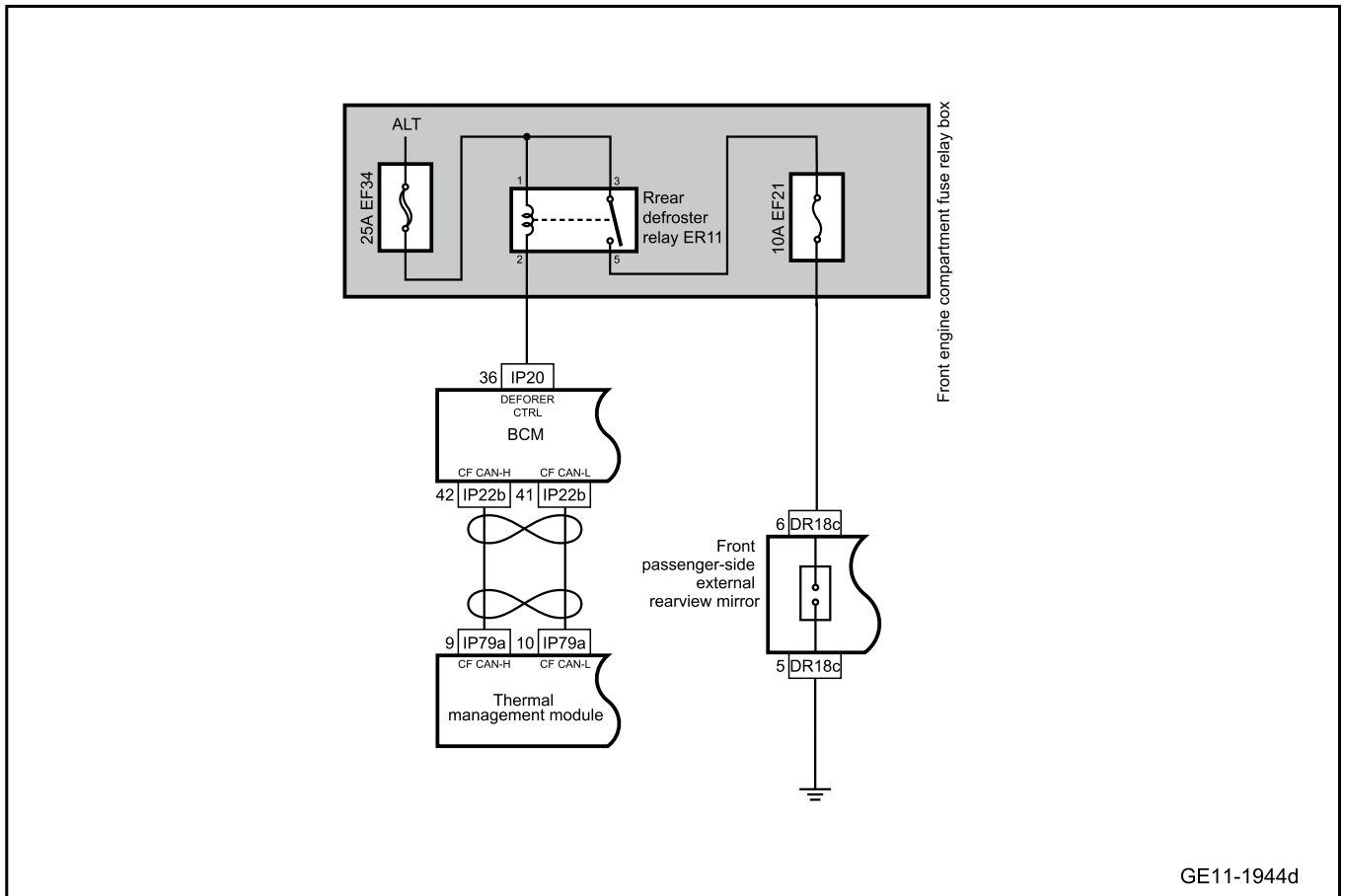
- A. Replace the driver's side exterior rearview mirror Refer to [Replacement of Driver-Side Exterior Rearview Mirror](#)

Next step

Step 5 System is normal.

11.12.4.8 Defroster of right exterior rearview mirror does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

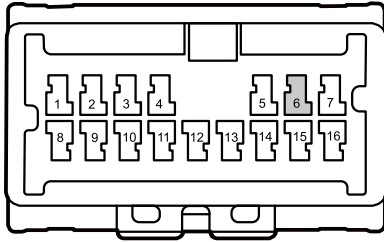
- A. Check the front passenger's exterior rear-view mirror for damage, deformation, dirt, loosening and other signs.
- B. Check the harness connector of front passenger side exterior rearview mirror for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check whether the defrosting power supply circuit of the rearview mirror is normal.
--------	---

DR18c harness connector for external rearview mirror at front passenger side



GE11-6033d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. The key activates the power supply of the vehicle to ON.
- D. Operate A/C control panel to place A/C in defrosting position.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(6)	Vehicle body is grounded.	Standard voltage: 11-14V

- F. Confirm whether the measured value meets the standard.

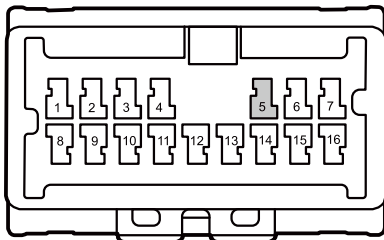
No

Repair or replace the harness.

Yes

Step 3 Check whether the defrosting grounding harness of exterior rearview mirror is normal.

DR18c harness connector for external rearview mirror at front passenger side



GE11-6034d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(5)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace front passenger's side exterior rearview mirror.

- A. Replace front passenger's side exterior rearview mirror. Refer to [Replacement of Front Passenger-Side Exterior Rearview Mirror](#)

Next step

Step 5 System is normal.

11.12.4.9 Defrosting Circuit Failure

1. DTC description:

Diagnostic Trouble Code	Description
B103914	Front defrosting circuit is short-circuited to ground or opened
B10394B	Front defrosting circuit is overloaded or overheated
B108798	Front defrosting indicator circuit is overtemperature
B100014	Rear defrosting circuit is short-circuited to ground or opened
B10004B	Rear defrosting circuit is overloaded or overheated
B108698	Rear defrosting indicator circuit is overtemperature

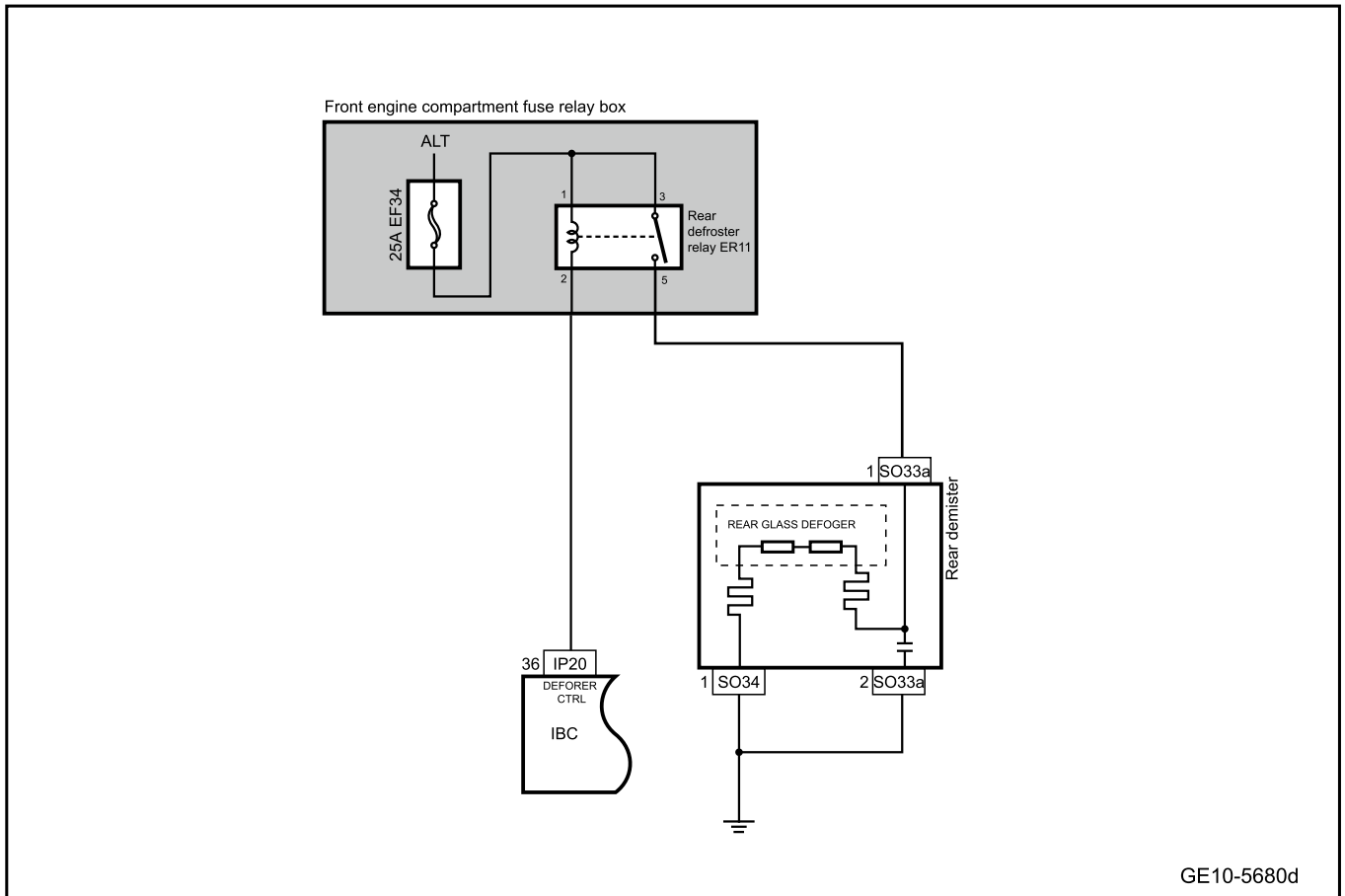
2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B103914	When the output changes from active to inactive, a small diagnostic current (based on hardware thresholds) is turned on and the output voltage is checked: if it is below a certain hardware threshold, a short-to-ground or open-circuit fault is considered. Front defroster circuit is short to ground or open load lasts for 200ms	1. The power supply voltage is 9V-16V 2. The front defroster function is activated for 100ms	1. Circuit 2. Fuse 3. Relay 4. IBC
B10394B	The overload or overtemperature fault is monitored by detecting the output current. When the current is greater than a specific HW threshold, it is considered as an overload or overtemperature fault. Overload of front defroster circuit lasts for 200ms		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108798	The output current is detected to monitor overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overtemperature fault. Overload of front defroster indicating circuit lasts for 200ms		
B100014	When the output changes from active to inactive, a small diagnostic current (based on hardware thresholds) is turned on and the output voltage is checked: if it is below a certain hardware threshold, a short-to-ground or open-circuit fault is considered. Rear defroster circuit is short to ground or open load lasts for 200ms	1. The power supply voltage is 9V-16V 2. The rear defroster function is activated for 100ms	
B10004B	The output current is detected to monitor overload or overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overload or overtemperature fault. Overload of rear defroster circuit lasts for 200ms		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B108698	The output current is detected to monitor overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overtemperature fault. Overload of rear defroster indicating circuit lasts for 200ms		

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the fuse, rear defroster relay and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
 - B. Remove front engine compartment fuse EF34 and check if it is blown.
- Rated capacity of fuse: 25A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check rear defroster relay.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug rear defroster relay ER11 and replace the relay with a new one of the same model.
- C. Confirm whether the trouble is removed.

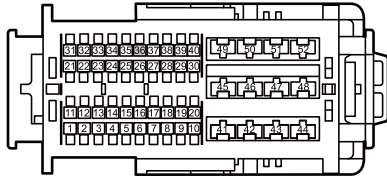
Yes

System is normal.

No

Step 5 Check the control harness between the rear defroster relay and IBC.

IP20 body control module harness connector 1



GE10-5938d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the IBC harness connector IP20.
- C. Unplug rear defroster relay ER11.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(36)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(36)	ER11(2)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(36)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 | Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 9	System is normal.
--------	-------------------

11.12.5 Removing and installing

11.12.5.1 Replacement of defrosting grille of rear windshield

Refer to [Replacement of rear windshield glass assembly](#)

11.12.5.2 Replacement of electric review mirror heater

Refer to [Replacement o left electric rearview mirror lens](#)

11.12.5.3 Repair of defrosting braid lead of rear windshield

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the middle upper interior trim panel of the tailgate. Refer to [Replacement of interior trim panel assembly at the upper middle side of the tailgate](#)
- 3 Remove the right upper interior trim panel of the tailgate. Refer to [Replacement of interior trim panel assembly at the upper left side of the tailgate](#)
- 4 Remove the interior trim panel of the tailgate. Refer to [Replacement of tailgate lower interior trim panel assembly](#)

- 5 Disconnect the defrost harness connector.
- 6 Use a brush to coat some rosin on the repair parts of conductors and bus leads.

Caution

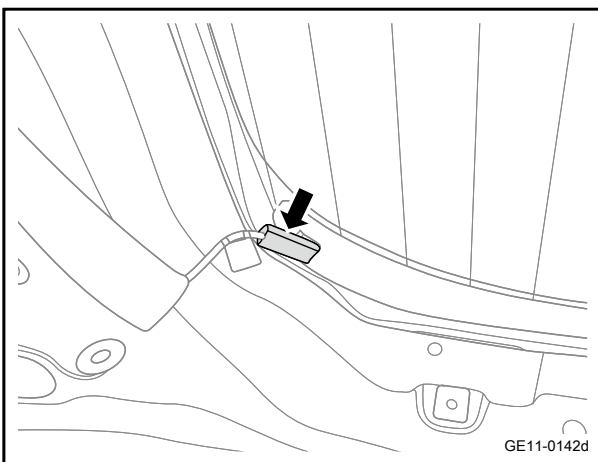
It is required to use the fine steel wool to polish the repair parts before repair of welding bus lead.

- 7 Dip the soldering iron with solders enough for repair.

Caution

Heat to melt the solder is applicable only. Do not overheat the conductors during re-wiring the bus leads.

- 8 Install the lower trim panel assembly of tailgate.
- 9 Install the upper interior trim panel assembly of left and right side of tailgate.



- 10 Install the upper middle interior trim panel assembly of tailgate.
- 11 Connect the negative cable of battery.

11.13 Horn

11.13.1 Specification

11.13.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Left horn fixing bolt	M8×25	13-17
Right horn fixing bolt	M8×25	13-17

11.13.2 Description and operation

11.13.2.1 Description and Operations

Horns are located inside the front engine compartment. They are fixed to radiator at the front of the vehicle. The right side is the right horn and the left side is the left horn. Both are controlled by horn switch on the steering wheel. When the horn switch on the steering wheel is pressed, the horn circuit is powered on. Horns are honked.

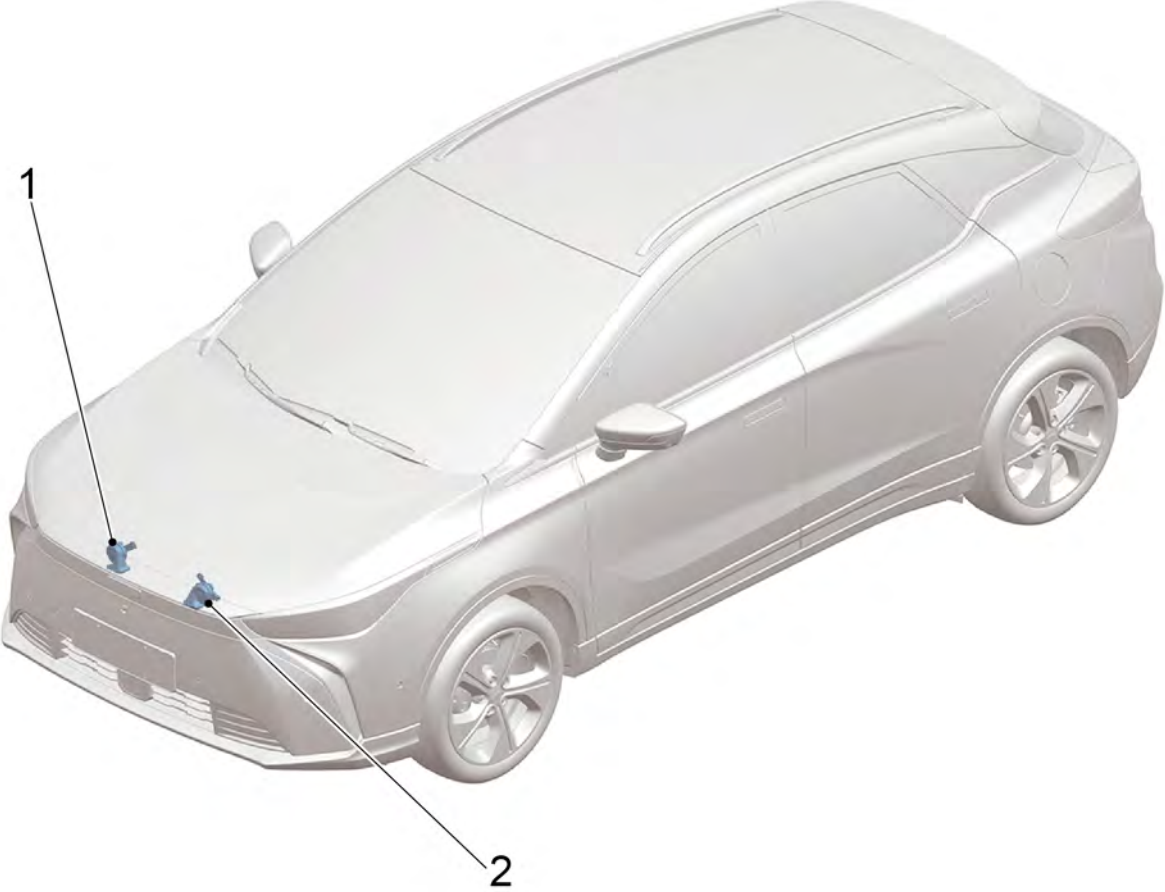
11.13.3 System working principles

11.13.3.1 System Working Principles

The control method of the horn is to control the power supply terminal, that is, the horn switch controls the pull-in of the horn relay, and then the relay supplies power to the horn. The horn is always grounded.

11.13.4 Part position

11.13.4.1 Part Position

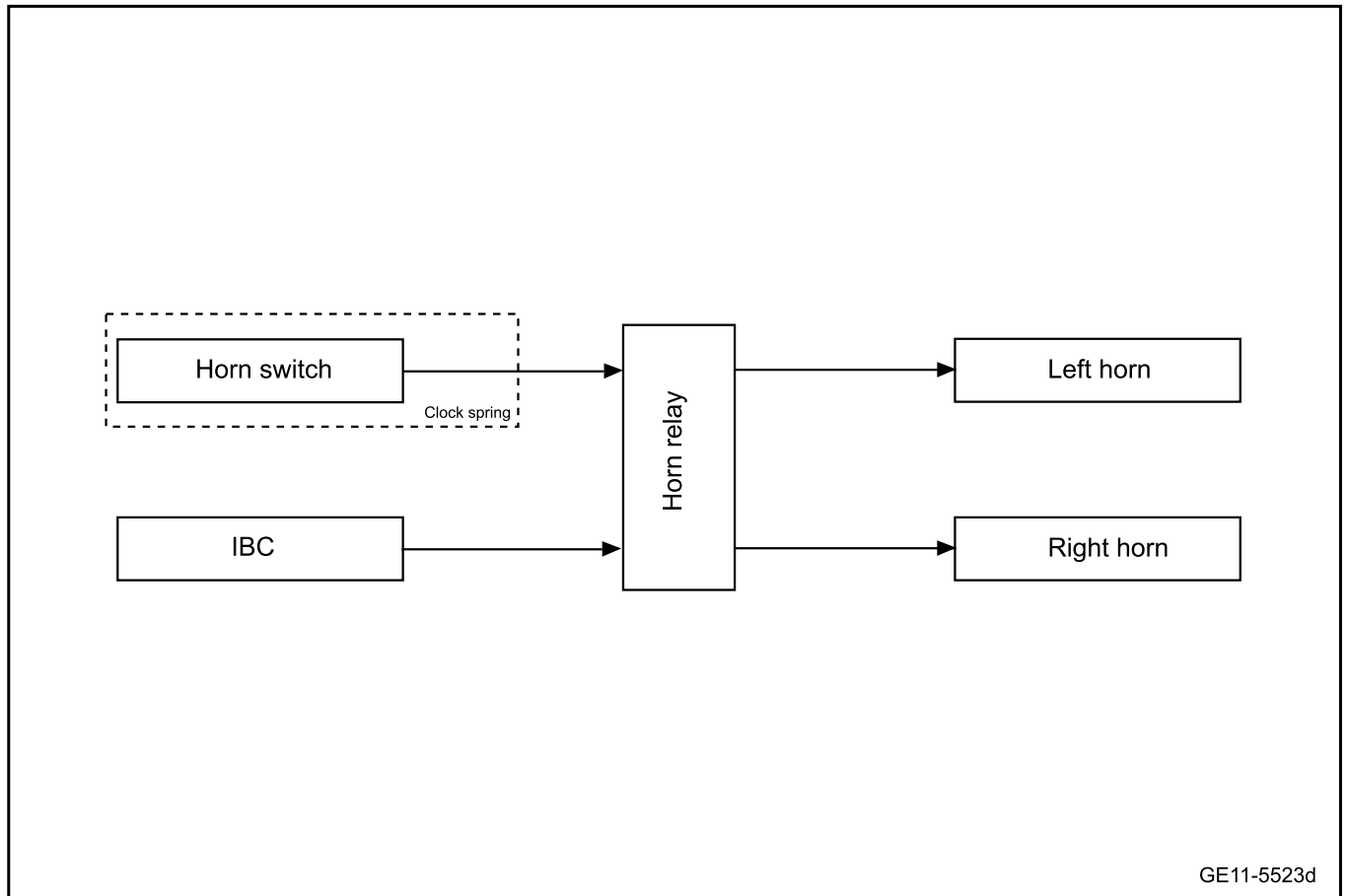


1. Left horn

2. Right horn

11.13.5 Electrical block diagram

11.13.5.1 Electrical Schematic Diagram of Horn System



11.13.6 Diagnostic information and procedures

11.13.6.1 Diagnosis Description

Before fault diagnosis of the horn system is conducted, refer to description and operation and operating and system working principle. Understand and familiarize with the operating principle of the horn system and then carry out the system diagnosis so as to determine the fault diagnosis steps when there is a fault. More importantly, it helps to determine whether the situation described by the distributor is normal operation. Any fault diagnosis of horn system should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.13.6.2 Routine inspection

- Check the after-sales installations that may affect the horn to ensure that these devices cannot affect the horn.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.13.6.3 List of Diagnostic Trouble Codes (DTC)

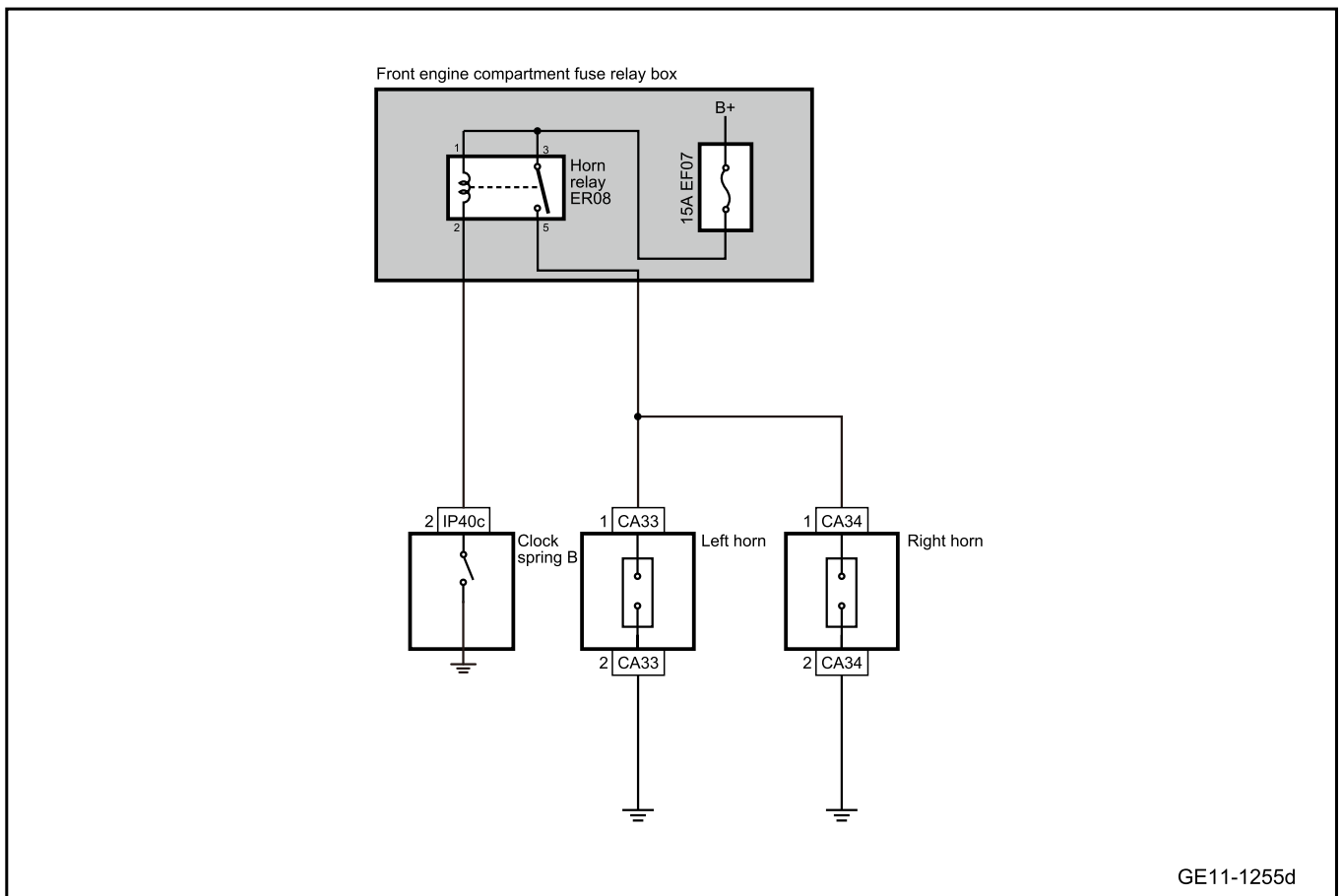
Diagnostic Trouble Code	Description	Fault location/elimination method
B10084B	The horn circuit is overloaded or overheated	Refer to Horn Circuit Failure

11.13.6.4 Contact adjustment of horn switch

When the horn is intermittently inoperative or the horn switch pressed on the steering wheel side fails to work, it is likely that the contact of the horn switch is poor. At this time, the horn switch contact under the airbag on the driver's side should be adjusted.

11.13.6.5 Horn does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the clock spring(horn switch), left horn and right horn for signs of damage, deformation, smudges, looseness, etc.
- B. Check the clock spring(horn switch), left horn and right horn harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 2	Check the horn fuse.
--------	----------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove front engine compartment fuse EF07 and check if it is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 3 | Check the horn relay.

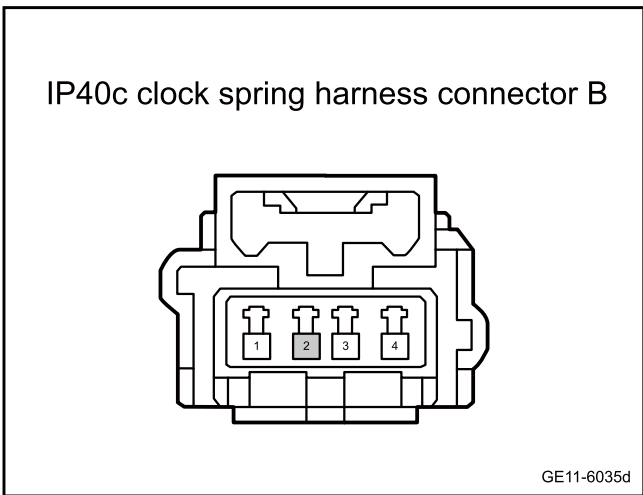
- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the horn relay ER08 and replace it with a new relay of the same specification.
- C. Confirm whether the horn works normally.

Yes

System is normal.

No

Step 4 | Check whether the circuit between clock spring(horn switch) and horn relay is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector IP40c of the horn switch(horn switch).
- C. Pull out the horn relay ER08.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP40c(2)	ER08(2)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP40c(3)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

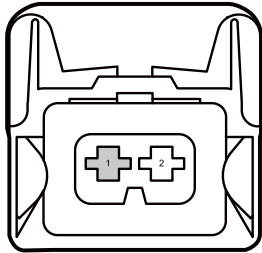
No

Repair or replace the harness.

Yes

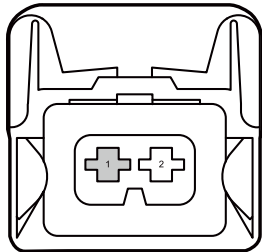
Step 5 | Check whether the power circuit between the left and right horns is normal.

CA33 left horn harness connector



GE11-6036d

CA34 right horn harness connector



GE11-6037d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of left horn CA33
- C. Disconnect the harness connector of right horn CA34
- D. Pull out the horn relay ER08.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA33(1)	ER08(5)	Standard resistance: less than 1Ω
CA34(1)	ER08(5)	
CA33(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
CA34(1)		

- F. Confirm whether the measured value meets the standard.

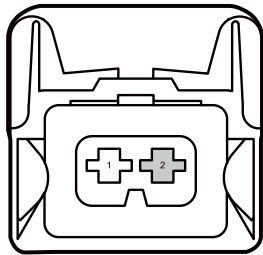
No

Repair or replace the harness.

Yes

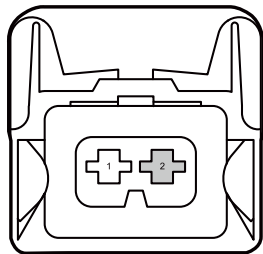
Step 6 | Check whether the grounding circuit between the left and right horns is open.

CA33 left horn harness connector



GE11-6038d

CA34 right horn harness connector



GE11-6039d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of left horn CA33
- C. Disconnect the harness connector of right horn CA34
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA33(2)	Vehicle body is grounded.	Standard resistance: less than 1Ω
CA34(2)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 | Replace the horn.

- A. Replace the horn. Refer to [Replacement of Horn](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 8 | Replace the clock spring (horn switch).

- A. To replace the clock spring, please refer to [Replacement of Clock Spring\(horn switch\)](#)
- B. Confirm whether the system is normal.

Next step

Step 9 | System is normal.

11.13.6.6 Horn Circuit Failure

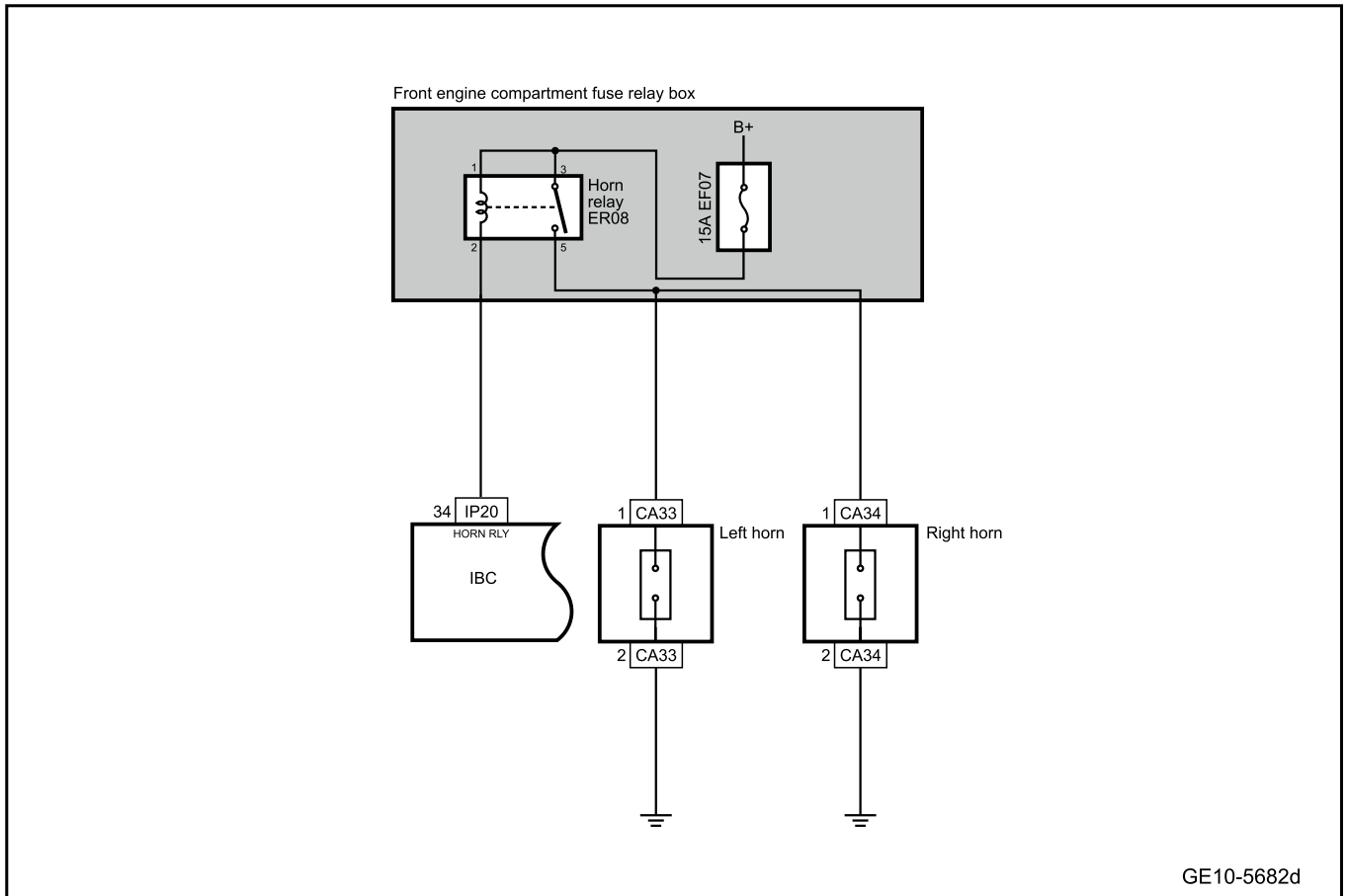
1. DTC description:

Diagnostic Trouble Code	Description
B10084B	The horn circuit is overloaded or overheated

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B10084B	The output current is detected to monitor overload or overtemperature faults, and when the current is greater than a specific HW threshold, it is regarded as an overload or overtemperature fault. Alarm horn circuit overload or over temperature for 200ms	1. The power supply voltage is 9V-16V 2. Alarm horn function is activated for 100ms	1. Circuit 2. Fuse 3. Relay 4. IBC

3. Circuit diagram:



GE10-5682d

4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the fuse, horn relay and IBC harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Inspect the fuse.
--------	-------------------

- A. Multimedia settings from vehicle power supply to OFF.
- B. Remove front engine compartment fuse EF07 and check if it is blown.

Rated capacity of fuse: 15A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the horn relay.
--------	-----------------------

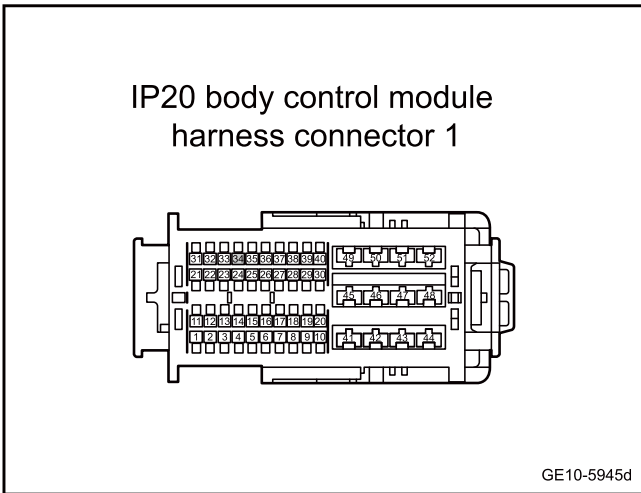
- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out the horn relay ER08 and replace it with a new relay of the same specification.
- C. Confirm whether the trouble is removed.

Yes

System is normal.

No

Step 5 Check the circuit between the horn relay and the IBC.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the IBC harness connector IP20.
- C. Pull out the horn relay ER08.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP20(34)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP20(34)	ER08(2)	Standard resistance: less than 1Ω

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure voltage between the terminal 34 of the IBC harness connector IP20 and the vehicle body ground terminal.

Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC. Refer to [Replacement of Body Control Module](#)

Next step

Step 7 Reprogram and reset the IBC.

- A. Reprogram and reset the IBC. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

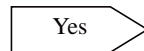
Yes

System is normal.

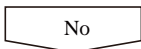
No

Step 8	Use diagnostic scanner to confirm the trouble code.
--------	---

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes 

Diagnose according to the output trouble code.
--

No 

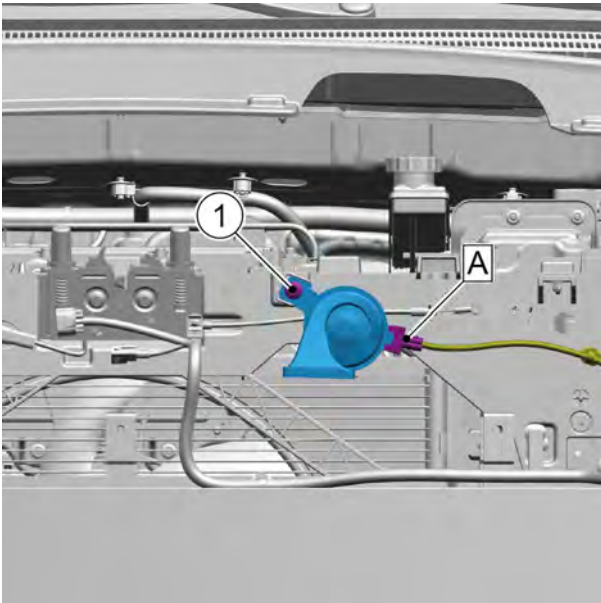
Step 9	System is normal.
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11.13.7 Removing and installing

11.13.7.1 Replacement of Left Horn

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Disconnect the 1 harness connector A of the left horn and the engine compartment harness assembly.
- 4 Remove the 1 fixing bolt 1 connecting the left horn with the front end module.
- 5 Take down Left horn

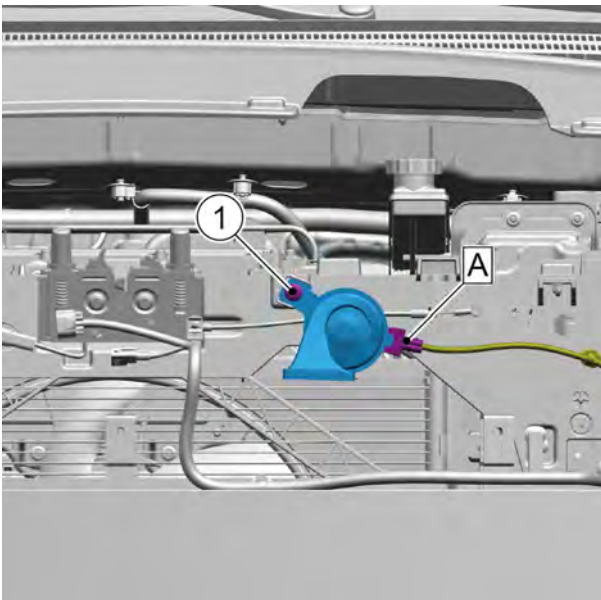


Installation procedure

- 1 Move the left horn to the installation position.
- 2 Install and tighten the 1 fixing bolt 1 connecting the left horn with the front end module.
Torque: 15N·m
- 3 Connect the 1 harness connector A connecting the left horn and the engine compartment harness.

Caution

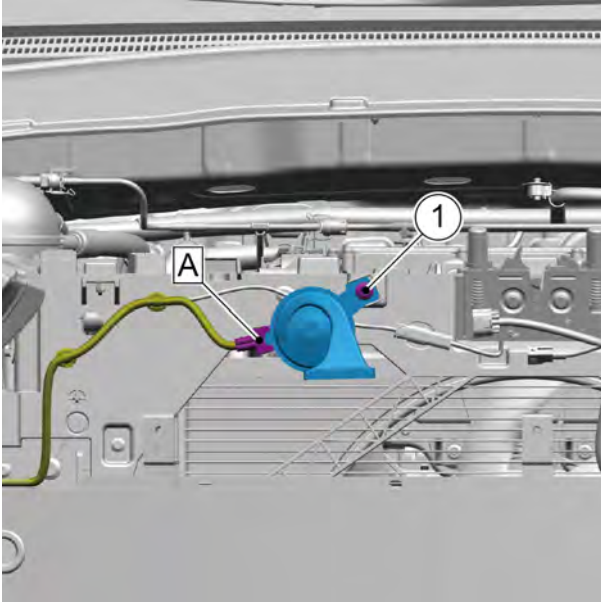
Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.



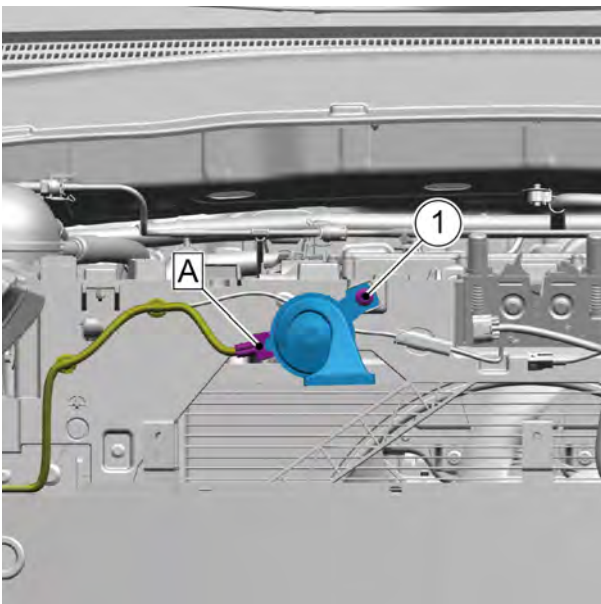
- 4 Install the front bumper assembly.
- 5 Connect the negative cable of battery.

11.13.7.2 Replacement of Right Horn

Removal procedure



- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Disconnect the 1 harness connector A of the right horn and the engine compartment harness assembly.
- 4 Remove the 1 fixing bolt 1 connecting the right horn with the front end module.
- 5 Take down right horn



Installation procedure

- 1 Move the right horn to the installation position.
- 2 Install and tighten the 1 fixing bolt 1 connecting the right horn with the front end module.
Torque: 15N·m
- 3 Connect the 1 harness connector A connecting the right horn and the engine compartment harness.

Caution

Firmly plug in harness in the principle of “first plug, second sound and third confirmation”.

- 4 Install the front bumper assembly.
- 5 Connect the negative cable of battery.

11.14 Parking assist system

11.14.1 Specification

11.14.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
360-degree panorama front parking assist camera fixing screw	ST4.8×16	1.3-1.7
360-degree panorama left parking assist camera fixing screw	ST4.8×16	1.3-1.7
Automatic parking module fixing nut	M6	5-7

11.14.2 Description and operation

11.14.2.1 General

According to the different configurations on this vehicle, the parking assist system is divided into reversing radar system (low configuration), reversing radar+reversing image system (medium configuration), reversing radar+360 AVM system (high configuration)

- The reversing radar system (low configuration) system alarms and displays alarm distance information via sound.
- The reversing radar+reversing image system (middle configuration) alarms through sound and rear image display of the vehicle,
- The full-automatic parking (high configuration) system alarms through sound, and at the same time displays an image of the birds around the vehicle, which can clearly and intuitively understand the vehicle surrounding environment.
- The parking assist system can detect barriers behind the vehicle and send distance signals to the closest objects to the vehicle and driver via acoustic or optical methods.

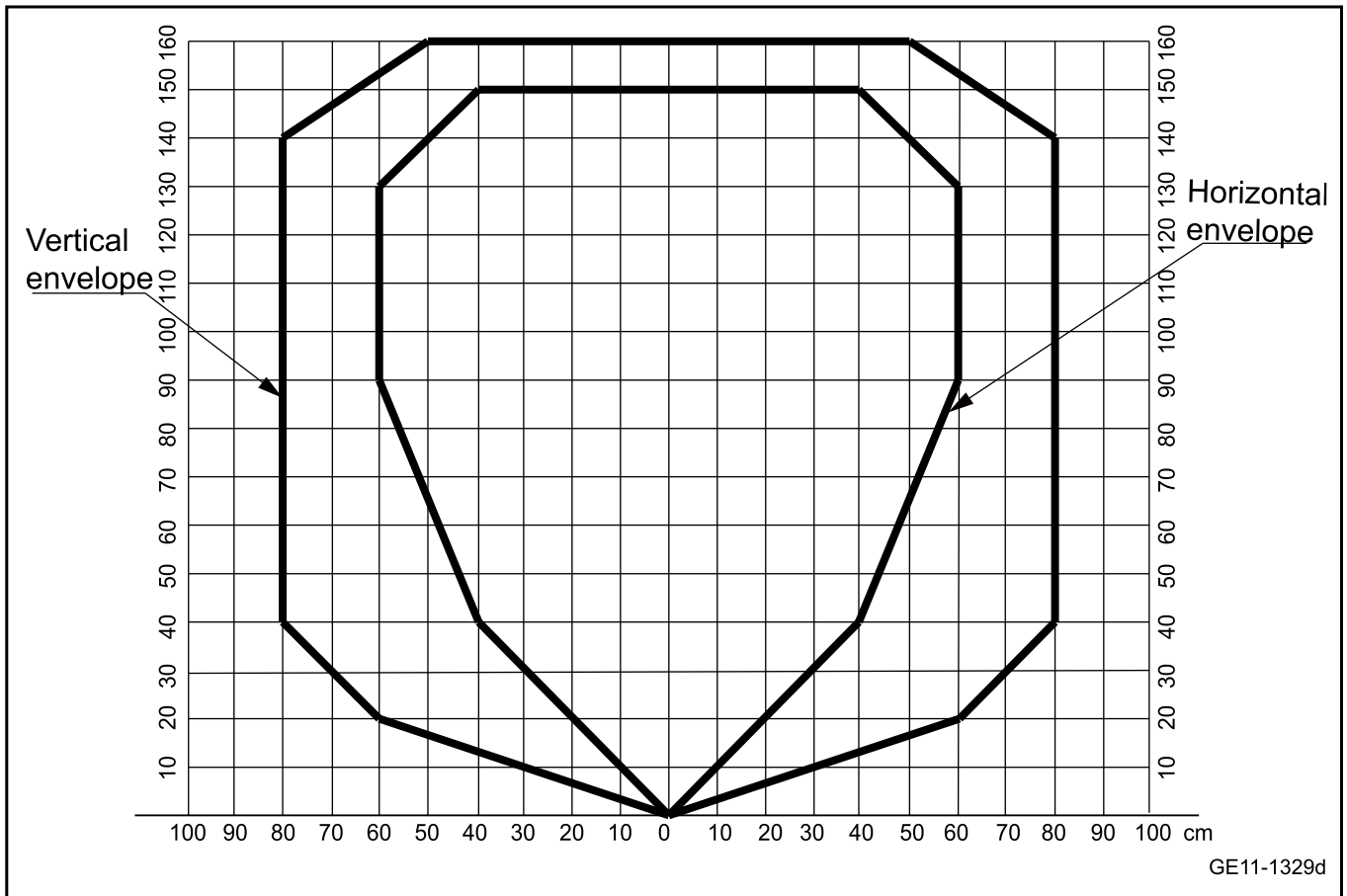
- When reversing, the reversing radar system detects the distance between the obstacle and the vehicle and sends out a corresponding warning signal to ensure safe parking, but obstacles within 30cm(11.8in) from the rear bumper cannot be completely detected.
- The reversing radar system (low configuration) consists of 4 radar probes on the rear bumper, head unit and speakers.
- The reversing radar+reversing camera system (middle configuration) is composed of 4 radar probes on the rear bumper, rear camera, head unit and speakers.
- The full-automatic parking (high configuration) also includes 4 radar probes on the front and rear bumpers, 2 blind spot probes on the side of the front and rear bumpers, an automatic parking module, and four high-definition wide-angle cameras installed on the front, tail and left and right exterior rearview mirrors.

11.14.2.2 Warning tone levels

Alarm level	Distance of obstacle	Alarm time curve	Note
1	0 ~ 30cm	<p>Continuous ringing</p>	Buzzer is always sounding
2	30 ~ 70cm		The buzzer alarms with a switching time of 4Hz and a duty ratio of 50%
3	70 ~ 150cm		The buzzer alarms with a switching time of 2Hz and a duty ratio of 50%

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11.14.2.3 Sensing area



11.14.2.4 Description and operation of the parking radar

Parking Assist System* rear 4

Parking assist-The rear 4 consists of four radar probes. When the gear is reverse, the signal is sent to the vehicle gateway module through HBCAN, and the vehicle gateway module CFCAN sends the reverse signal to IBC. After receiving the reverse gear signal, the IBC outputs the signal voltage to provide power for the radar probe and drive it to work. When the radar probe detects that there are obstacles in the monitoring range, the signal is sent to the infotainment control unit through the LIN line, and the infotainment control unit will display the information on the display.

Parking assist-rear 4 +reversing camera

Parking assist-The rear 4+reversing image consists of four radar probes and a rear camera. When the gear is in reverse, the signal is sent to the vehicle gateway module through HBCAN, and the vehicle gateway module CFCAN sends the reversing signal to IBC. After receiving the reverse gear signal, the IBC outputs the signal voltage to provide power for the radar probe and drive it to work. When the radar probe detects that there are obstacles in the monitoring range, the signal is sent to the infotainment control unit through the LIN

line, the infotainment control unit will display the information on the display, and the infotainment control unit will display the rear image on the display through the rear camera.

Parking Assist-Front 6 rear 6

Parking assist-The front 6 and rear 6 consists of eight radar probes, four blind spot probes and an automatic parking module, four each in front and behind the radar probe, and two each in front and behind the blind spot probe. When the parking assist switch is turned on, the parking assist system is enabled. Or when the gear is in reverse, the signal is sent to the vehicle gateway module through HBCAN. The vehicle gateway module CSCAN sends the reverse signal to the automatic parking module. After the automatic parking module receives the signal, it outputs the signal voltage to provide power for the radar probe and drive it to work.

Caution

1. According to the distance of the obstacle, the system can give the corresponding warning signal (buzzer) for the driver to provide information in safe parking, but in this process, it does not mean that the driver can ignore the parking effect and thus be exempted from the responsibility for the parking failure.

11.14.2.5 Description and operation of AVM**AVM Description**

Through four high-definition wide-angle cameras mounted on the vehicle front, left/right exterior rearview mirrors and the rear of the vehicle, AVM will collect the images of the environment around the vehicle and map the original images to the ground plane or space surface, so as to obtain the bird bat image and 3D local view of the environment around the vehicle, and output the panoramic combined image information to the multimedia display equipment according to the predetermined time sequence of the CAN communication protocol to assist the driver in observing the real-time pictures around the vehicle body, so as to avoid the danger of low-speed driving.

In addition to providing the driver with information about the vehicle surrounding through real-time images to reduce blind spots in driving, AVM can also predict the vehicle motion track by combination of steering angle and vehicle size, so as to allow the driver to fully understand the vehicle direction and judge whether reversing is normal. In addition, by obtain the information such as vehicle gear, steering wheel angle, touch screen button, etc., the system can also switch different functional pictures through human-computer interaction, and assist the driver to watch the image information on the blind spot side.

- a. 2D panorama principle: by collecting 4-channel camera data, the system displays the surrounding environment of the vehicle body on the ground plane after image processing such as projection transformation and adjacent image integration inside the controller. The 2D panoramic image is seamless spliced, and the transition area is treated with a smooth transition method, which is convenient for the driver to observe the surrounding environment of the vehicle body.
- b. 3D panorama principle: the system collects 4-channel camera data, processes the software projection conversion and adjacent image integration inside the controller, and then projects the images of the 4 cameras onto the space surface, and splices them into 4-circle or local stereo splicing images of the vehicle body, so that

2. The effect of detecting the distances and the barriers by the system is limited, so the driver must take care of the conditions behind the vehicle that cannot be detected. Especially when crossing obstacles, the driver cannot simply rely on the system.

the driver can observe the images of the area of attention of the user.

- c. One-side image principle: after collecting data of 4 channels of camera, the system can switch the input according to the driver's touch screen, and separately display the data of a certain camera in a window of the screen. This image is not the original fish-eye image of the camera, but is debuckled to a certain extent. This visual angle is convenient for the driver to observe the independent visual angle image of one side of the vehicle, left and right.

The AVM will also give a driving assistant line to help you better predict the driving track of the vehicle, and provide a ruler reference for the distance judgment, so as to gradually make your vehicle feel better and make your distance judgment more accurate.

Caution

The vehicle may not recognize the low obstacles, resulting in a collision.

AVM Operations

The AVM displays the pictures around the vehicle and understands the blind spots around the vehicle, so as to help the driver park the vehicle more intuitively and safely. When the electronic gear shifter is turned to the R position, a 360-degree top view of the vehicle body will be displayed on the multimedia display screen. The vehicle is switched from other gears to P gear. If it is not operated, it will automatically exit the AVM interface after 5 seconds.

The AVM cameras are respectively located below the front logo, at the lower edge of the left and right exterior rearview mirrors, and on the decorative strips of the rear number plate lamps.

Enter the AVM Interface

- a. Touch the 360 panoramic APP button on multimedia display.
- b. When the "low speed steering linking" function of the AVM is set and activated: When the vehicle speed is less than 30

km/h, make a left/right turn and the AVM view will be switched to the left/right A-pillar blind spot view.

- c. Turn the electronic gear shifter to reversing position (R) and it will automatically enter the AVM interface.
- d. Double-press the AVM button on the switch block on the auxiliary fascia console.
- e. The required speed range of AVM is 0-30 km/h.

Exit the AVM Interface

- a. Touch the "return" button of AVM interface on multimedia display.
- b. When the AVM is triggered by the turn signal to enter, turn off the turn signal and automatically exit the AVM interface.

- c. Touch the AVM button on the switch block on the auxiliary fascia console.
- d. The electronic gear shifter turns to the R position and automatically enters the AVM system. When it is shifted to the D position, it automatically exits when the vehicle speed exceeds 15 km/h.
- e. After clicking the AVM APP icon on the multimedia display or clicking the AVM button on the switch block on the auxiliary fascia console to enter the panoramic image interface, it will automatically exit when the vehicle speed exceeds 30 km/h.

11.14.2.6 Instructions and operations of remote parking

Description of the remote parking system

Remote parking is a remote parking control function. The APP can be used to control the vehicle to park-in, park-out, and straight in and out within a certain range of the vehicle. During the entire remote parking process, the automatic parking module will automatically perform steering and braking operations according to the information detected by the camera and radar.

The following functions are mainly included in the remote parking:

- a. Straight line remote control function.
- b. Remote parking function.
- c. Remote park-out function.

Operations of remote control parking system

Straight-line remote function

- a. Click the [Remote Parking] button in the APP main interface to turn on the remote parking function.
- b. In the remote parking control interface, press and hold the forward and backward icons to control the vehicle to move forward or backward. Release the button and the vehicle stops.
- c. After parking is completed, click the "finish" button to exit the straight line remote control function.

Remote Parking

- a. Activate automatic parking in the central display
- b. The vehicle will drive forward slowly at a speed of less than 22 km/h until the central display shows that the parking space is found.

- c. Select the parking space to be parked on the central display screen.
- d. Click the "remote parking" button and select to use the remote parking function. After getting off the vehicle, in the APP main interface, click the "remote parking" button to turn on the remote parking function.
- e. In the remote parking control interface, click the "remote parking" button to select to use the remote parking function.
- f. Touch the "start parking" button to control the vehicle to park in the parking space.

Remote Park-out Function

- a. In the APP main interface, click the "remote parking" button to turn on the remote parking function.
- b. In the remote parking control interface, click the "remote parking" button to select to use the remote parking out function.
- c. In the park-out selection interface, click the "left/right" button to select the park-out method and park-out direction.
- d. After confirmation, click the "start parking" button to control the vehicle to park out of the parking space.

The remote parking system can support three kinds of parking spaces: horizontal, vertical and diagonal parking spaces.

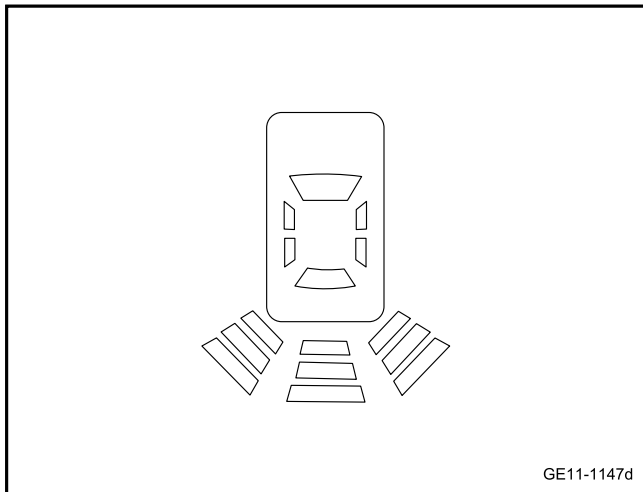
11.14.3 System working principles

11.14.3.1 Parking radar control unit

1. Generate TX signal that drives the sensor to work.
2. Receive RX signal from the barrier.
3. Comparison between RX signal and reference electrical level.
4. Alarm according to the distance of the barrier within the detection scope.
5. Sensor fault diagnosis.
6. Provide the sensor with drive voltage.

11.14.3.2 Parking radar display

When the vehicle is in Reverse, the parking radar interface will be displayed; the parking radar interface will not be displayed at other gears. If the system fails during work, the reversing radar system shall send the radar system fault message within 3s, and the head unit will give a fault prompt.



The corresponding relationship of the instrument warning tone and the barrier position:

Intermediate alarm area	Side alarm area	alarming
> 150cm	> 70cm	No alarming
70cm-150cm		3 sections of arc display 2HZ alarm

Intermediate alarm area	Side alarm area	alarming
30cm-70cm	30cm-70cm	2 sections of arc display 4HZ alarm
≤ 30cm	≤ 30cm	1 section of the arc displays constant sounding

The head unit controls different speakers to perform sound alarm according to the nearest area.

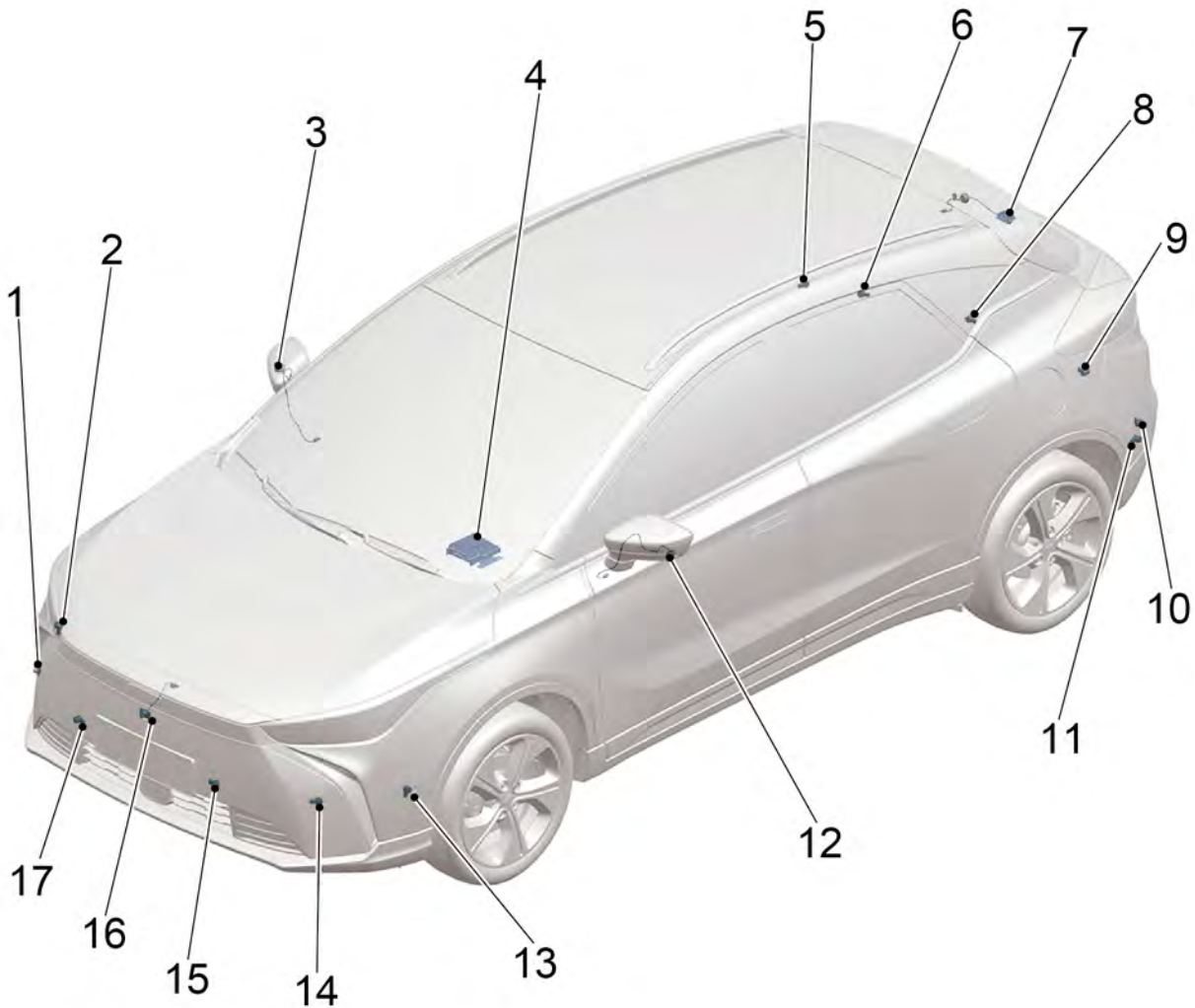
11.14.3.3 Buzzer driving

The radar alarm sound is controlled by the head unit and the speaker will give alarm prompts.

The active radar alarm sound should be given from speakers from different directions according to whether the front radar or the rear radar is armed.

11.14.4 Part position

11.14.4.1 Part Position

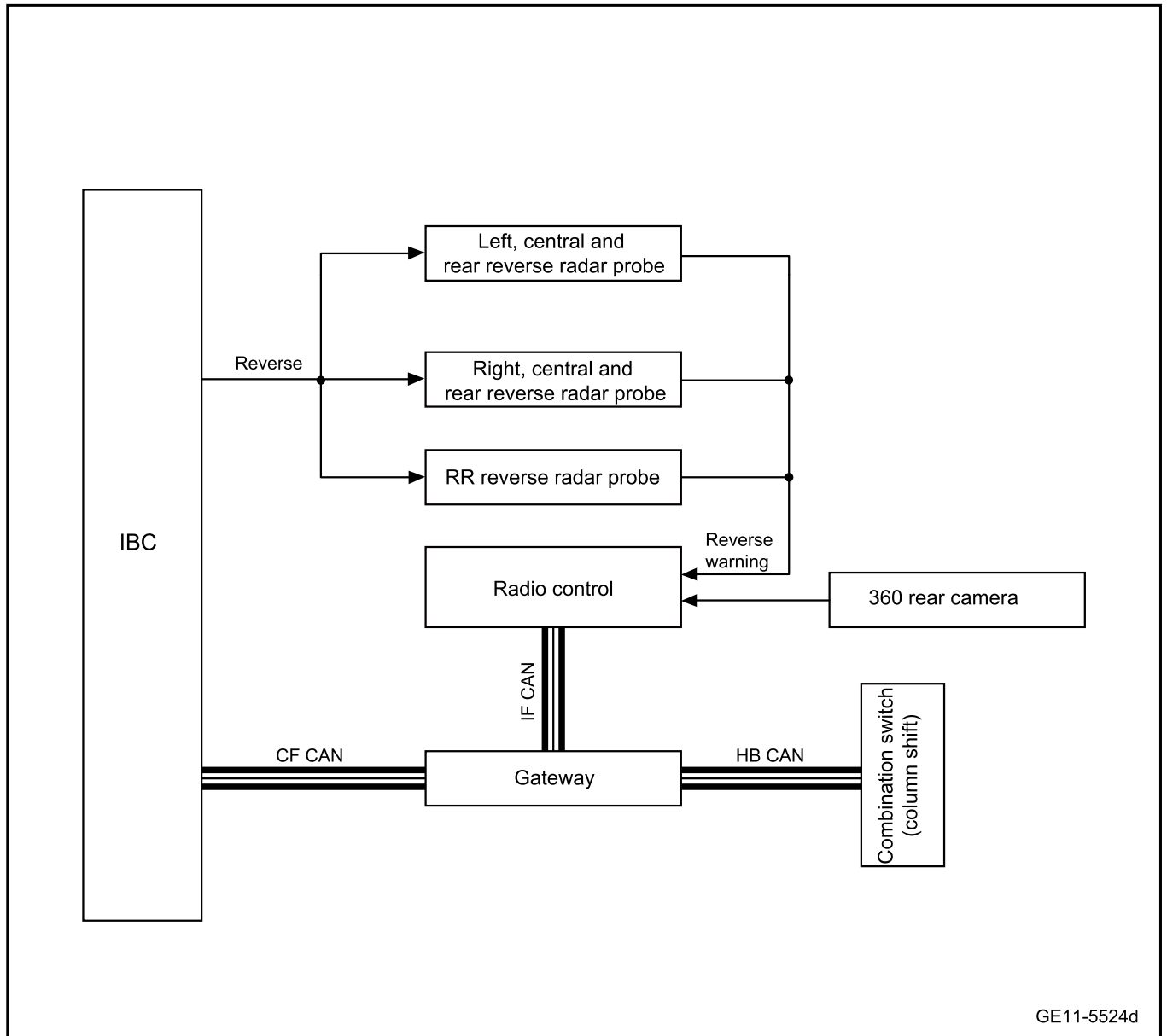


- | | |
|---|---|
| 1. Short-range ultrasonic sensor | 10. Short-range ultrasonic sensor |
| 2. Long-range ultrasonic sensor | 11. Long-range ultrasonic sensor |
| 3. 360°panoramic parking assist right camera assembly | 12. 360°panoramic parking assist left camera assembly |
| 4. Parking assist controller | 13. Long-range ultrasonic sensor |
| 5. Long-range ultrasonic sensor | 14. Short-range ultrasonic sensor |
| 6. Short-range ultrasonic sensor | 15. Short-range ultrasonic sensor |
| 7. 360°panoramic parking assist rear camera assembly | 16. Short-range ultrasonic sensor |
| 8. Short-range ultrasonic sensor | 17. Short-range ultrasonic sensor |
| 9. Short-range ultrasonic sensor | |

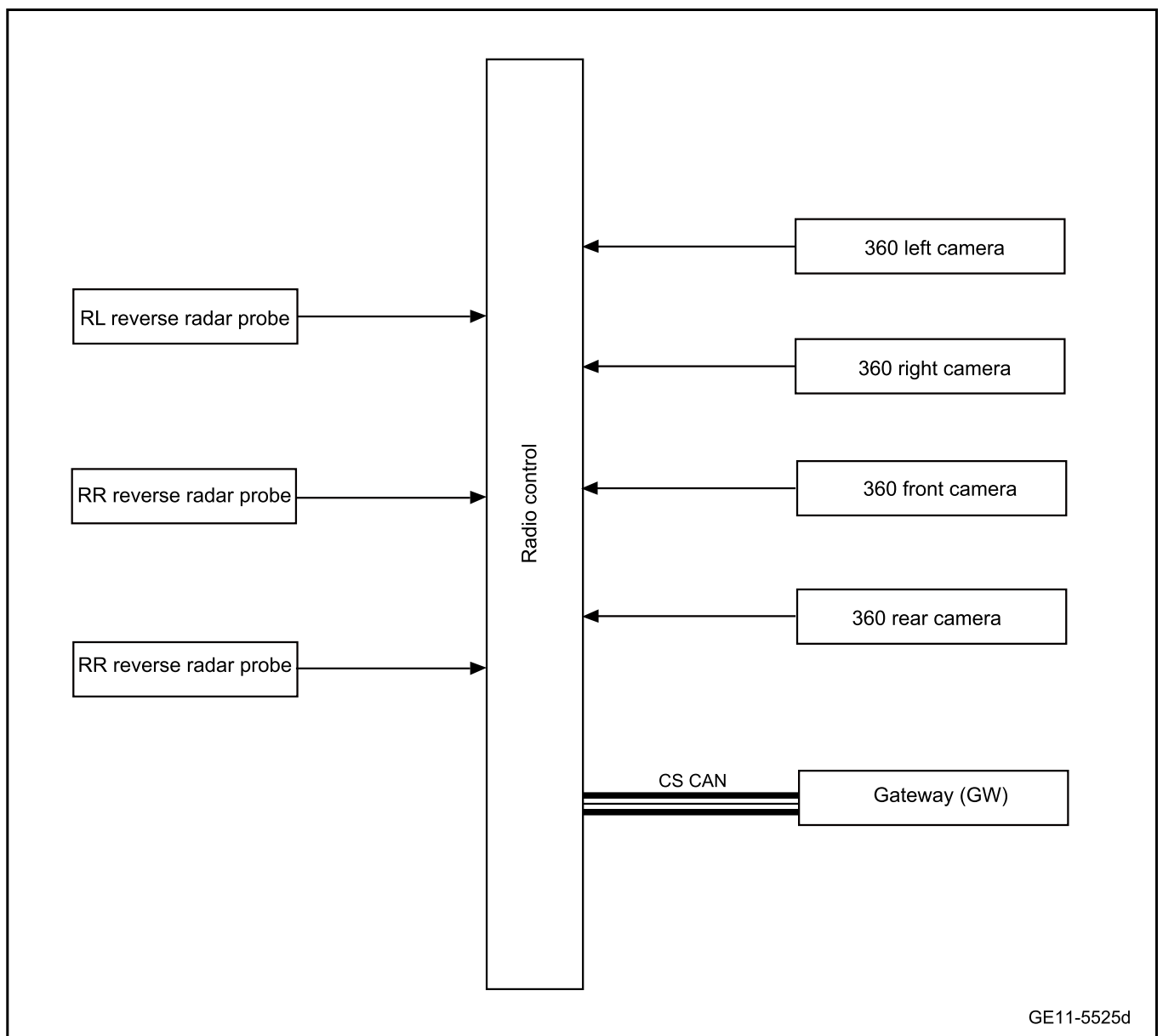
11.14.5 Electrical block diagram

11.14.5.1 Electrical Schematic Diagram of Parking Assist System(Type I)

Reversing radar+Reversing visual

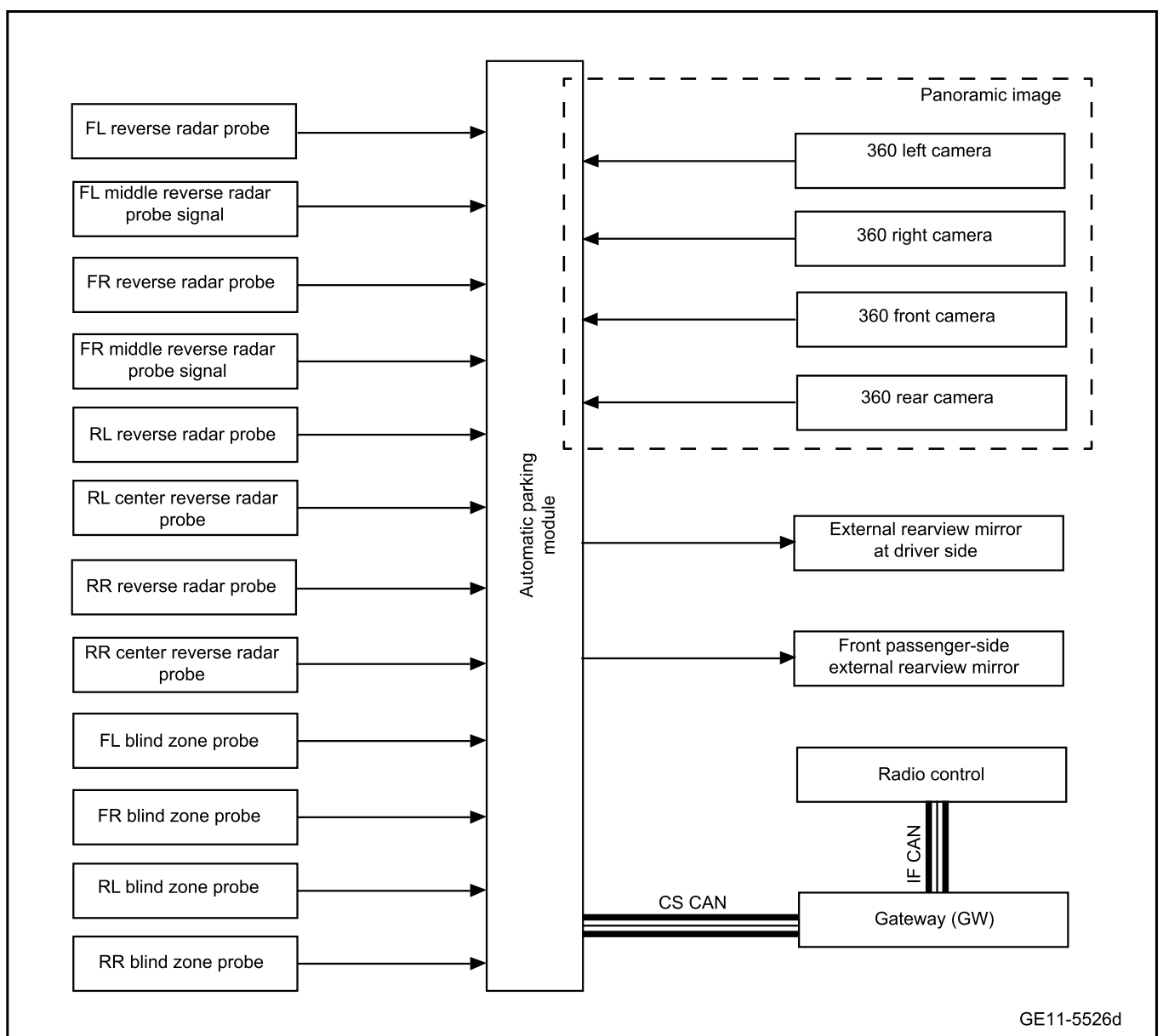


Reversing radar+AVM



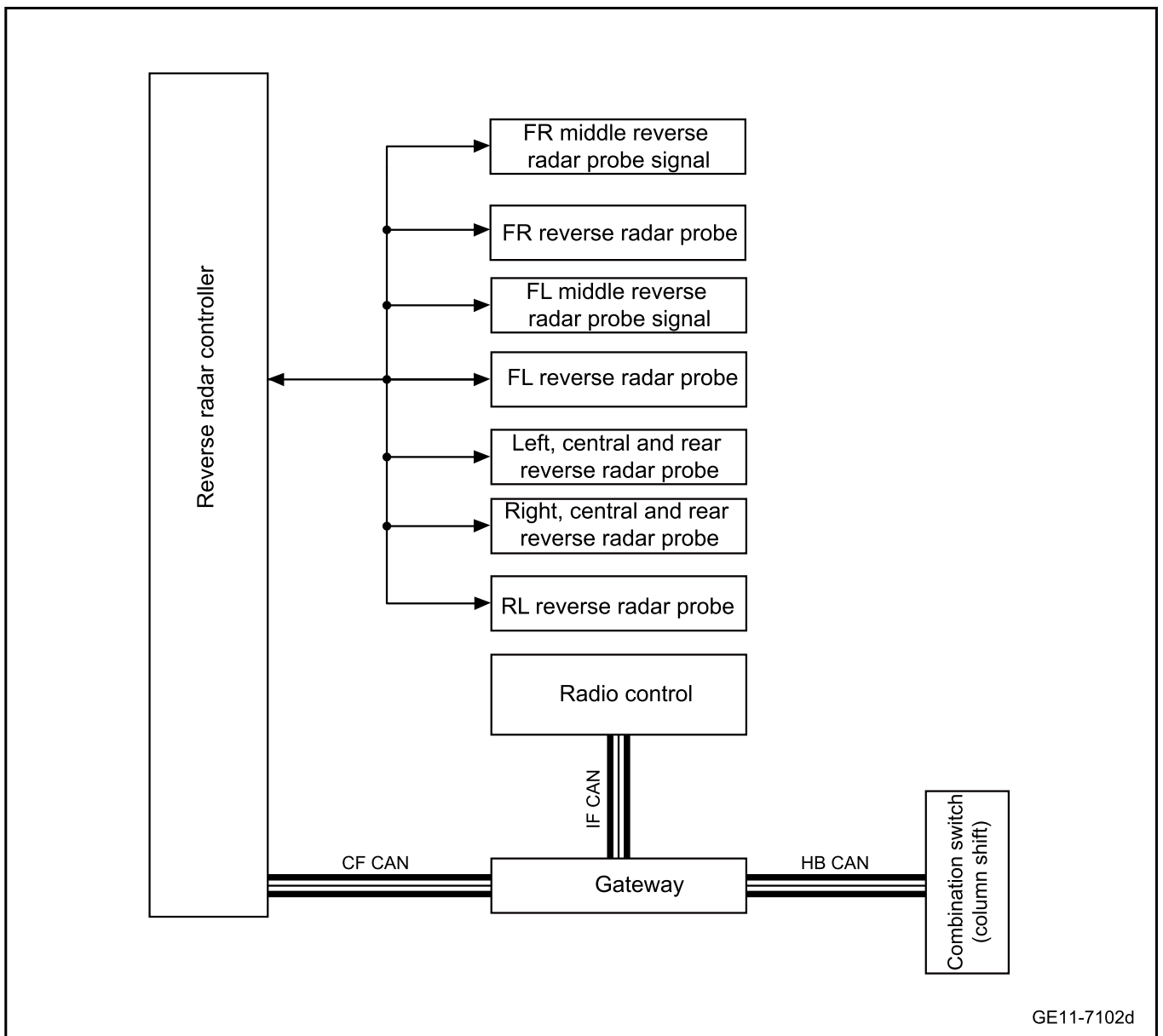
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Auto Hold+AVM

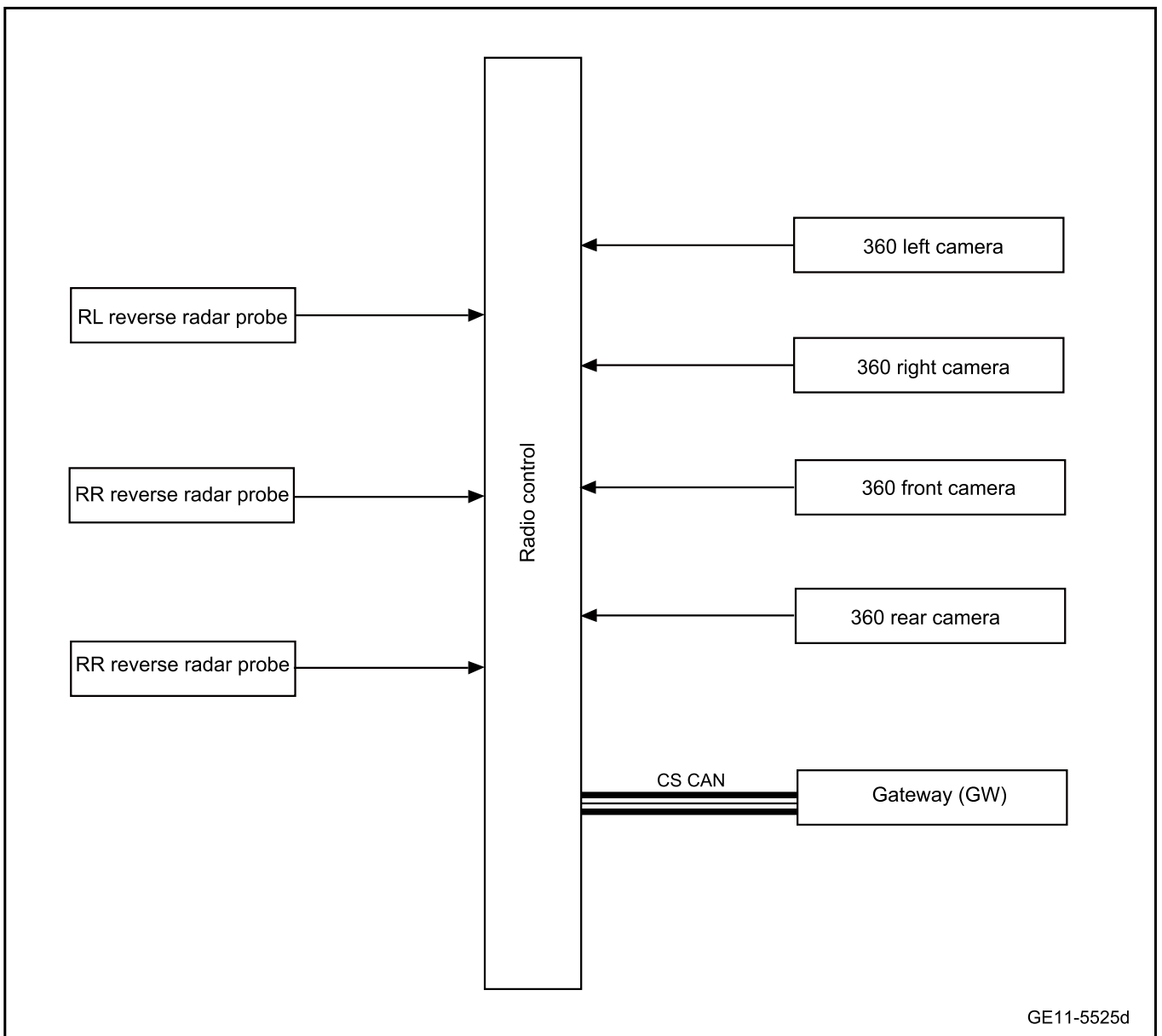


11.14.5.2 Electrical Schematic Diagram of Parking Assist System(Type II)

Automatic parking (eight radars)

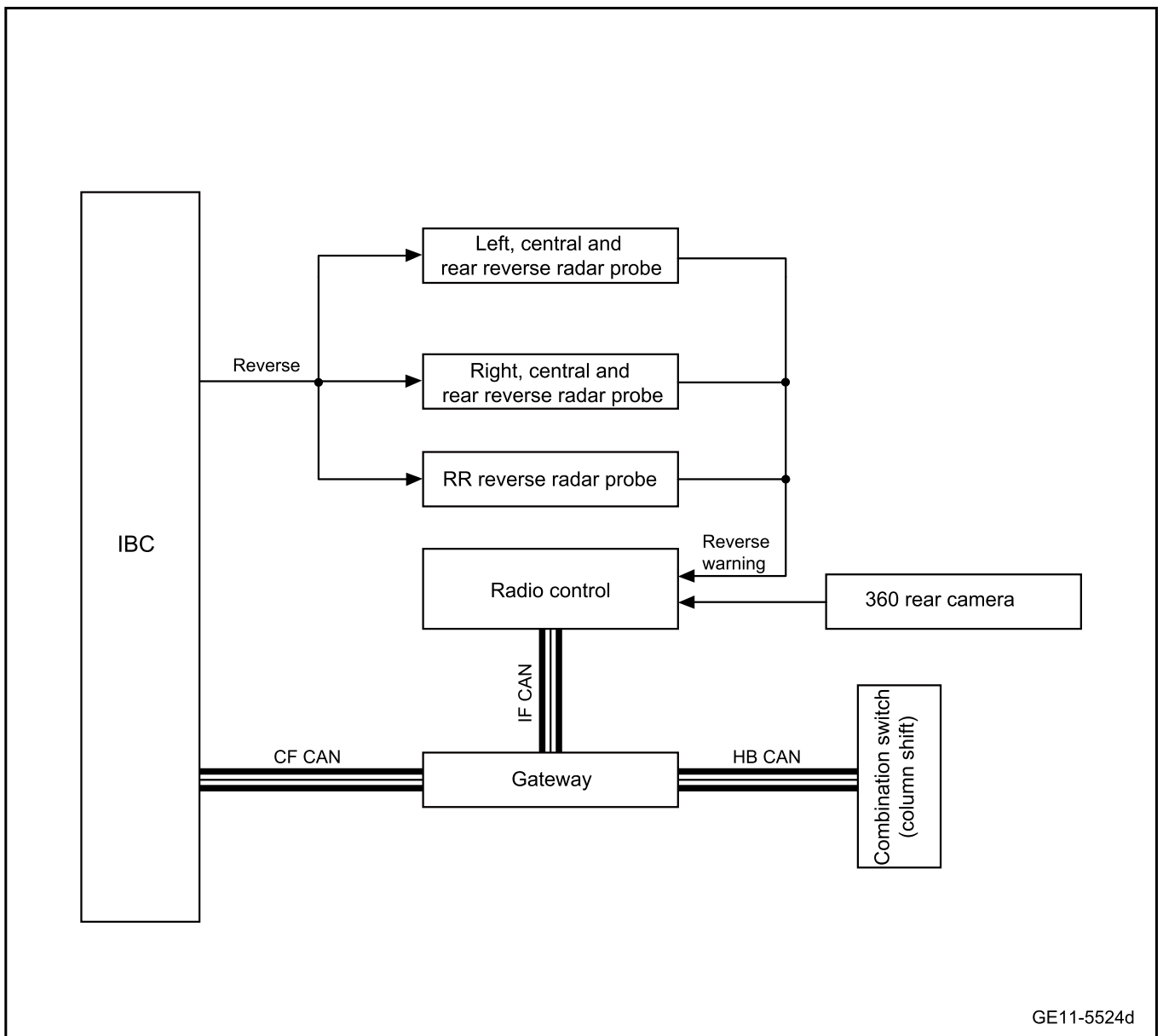


Reversing radar+AVM



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Reversing radar+reversing visual



GE11-5524d

11.14.6 Diagnostic information and procedures

11.14.6.1 Diagnosis Description

Before carrying out the diagnosis of the fault of the parking assist system, please refer to the description and operation and system working principle. Understand and familiarize yourself with the working principle of parking assist system before starting system diagnosis. This helps to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it also helps to confirm whether the operation situation described by the customer is normal. Any fault diagnosis of parking assist system should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.14.6.2 Routine inspection

- Check after-sales installations that may affect the parking assist to ensure that these devices cannot affect parking assist.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.14.6.3 Parking assist data stream list

Serial No.	DID description	Normal value range	Unit
1	ECU supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h

11.14.6.4 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.14.6.5 Read and clear of DTC

1. Read DTC

- Connect the fault diagnostic apparatus to the diagnostic interface.
- The key activates the power supply of the vehicle to ON.
- Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- Connect the fault diagnostic apparatus to the fault diagnostic interface.

- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.14.6.6 Sensor fault diagnosis

1. Check the after-sales installation that may affect the power seat, to ensure that these devices cannot affect the power seat.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage or there is a situation that may cause a malfunction.
3. Check the installation of the reverse radar control unit. Check whether the harness connector is correctly installed.

11.14.6.7 Possible reasons that system cannot operate normally

1. The external fittings of sensor are frozen.
2. There is snow, water drop and the like on the sensor surface.

11.14.6.8 The probable cause of the decrease of sensor's detection ability

1. When snow or water falls on the probe of the sensor.
2. On hot days or very cold days.
3. The obstacle is less than 14 cm (5.5 in) in diameter and less than 1 m (39 in) in length.

11.14.6.9 Possible cause of system false alarm

1. On uneven roads, cobblestone roads and grassland.
2. The system is close to other ultrasonic sources, such as vehicle horn, motorcycle engine noise, commercial vehicle air brake interference when braking, etc.
3. Heavy rain and splashing water.
4. Get close to radio equipment such as walkman.
5. When the sensor is covered by snow etc.

11.14.6.10 The system cannot detect:

1. Objects with sharp corners and ropes, etc.
2. Objects that absorb ultrasonic waves such as cotton, snow and sponges.

11.14.6.11 Situations that might happen

1. The alarm level may not be continuous according to the vehicle speed and the shape of obstacles.
2. False alarms may occur when the sensor height and rear bumper change or when the vehicle's load is located in the detected area.
3. Be careful, the system may not detect objects within 30 cm (11.8 in) from the sensor.
4. When sensor error is detected, check whether the sensor surface is covered with dust, snow, water, etc. Wipe off dust, snow, water, etc. from the surface if any.
5. Avoid the extrusion, impact, scratch, etc. of the sensor surface.
6. Inform the user of these precautions if the vehicle is loaned to others.

11.14.6.12 List of PAS Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U015687	MMI node communication is lost	Refer to Communication Failure of Auto Hold Control Module
U015587	IPK node communication is lost	
U012287	ESC node communication is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U012687	SAS node communication is lost	
U014087	BCM node communication is lost	
U111487	VCU node communication is lost	
U015187	ACU node communication is lost	
U021487	PEPS node communication is lost	
U013187	EPS node communication is lost	
U023587	FRS node communication is lost	
U007300	Bus off	
U016487	AC node communication is lost	
U130155	F110 Vehicle network configuration	
U140481	Incorrect signal at VCU node	
U045781	Incorrect signal at MMI node	
U045281	Incorrect signal at ACU node	
U042881	Incorrect signal at SAS node	
U042481	Incorrect signal at AC node	
U041681	Incorrect signal at ESC node	
U019887	TBOX node communication is lost	
U014687	GW node communication is lost	
U300617	Supply voltage of the controller is too high	Refer to Power Supply Failure of Auto Hold Control Module
U300616	Supply voltage of the controller is too low	
B1D0013	AVM front camera harness open circuit	Refer to 360 Front camera fault
B1D0011	AVM front camera power supply is short to GND.	
B1D0113	AVM left camera harness open circuit	Refer to 360 Left camera fault
B1D0611	AVM left camera power supply short circuit to the ground	
B1D0213	AVM right camera harness open circuit	Refer to 360 Right camera fault
B1D0711	AVM right camera power supply short circuit to the ground	
B1D0313	AVM rear camera harness open circuit	Refer to 360 Rear camera fault
B1D0511	AVM rear camera power supply is short to GND.	
C140C42	Internal Faults of Controller	Refer to Auto Hold Control Module Interior Failure
C140812	RR internal sensor is shorted to power supply	Refer to Right Rear Middle Reversing Radar Probe Does Not Work (Type I)

Diagnostic Trouble Code	Description	Fault location/elimination method
C140814	Right rear internal sensor signal line is open circuit or short circuit signal grounding	
C140835	Right rear internal sensor shock time error	
C140887	Right rear internal sensor no signal/no communication	
C140612	RR outermost sensor signal circuit is shorted to power supply	Refer to Right Rear Blind Spot Probe Does Not Work (Type II)
C140614	Right rear outermost sensor signal line is open circuit or short circuit signal grounding	
C140635	Aftershocks time of the right rear outermost sensor is incorrect	
C140687	Right rear outermost sensor no signal/no communication	
C140712	RR outer sensor signal circuit is shorted to power supply	Refer to Right Rear Reversing Radar Probe Does Not Work (Type II)
C140714	Right rear external sensor signal line is open circuit or short circuit signal grounding	
C140735	Wrong after-shock time of right rear external sensor	
C140787	Right rear external sensor no signal/no communication	
C140A12	RL wheel external sensor is short to power supply	
C140A14	Left rear external sensor signal line is open circuit or short circuit signal grounding	Refer to Left Rear Reversing Radar Probe Does Not Work (Type I)
C140A35	Wrong after-shock time of left rear external sensor	
C140A87	Left rear external sensor no signal/no communication	
C140B12	RL wheel outermost sensor is short to power supply	Refer to Left Rear Blind Spot Probe Does Not Work (Type II)
C140B14	Left rear outermost sensor signal line is open circuit or short circuit signal grounding	
C140B35	Aftershocks time of left rear outermost sensor is incorrect	

Diagnostic Trouble Code	Description	Fault location/elimination method
C140B87	Left rear outermost sensor no signal/no communication	
C140912	RL internal sensor is short to power supply	Refer to Left Middle Rear Reversing Radar Probe Does Not Work (Type I)
C140914	Left rear internal sensor signal line is open circuit or short circuit signal grounding	
C140935	Wrong after-shock time of rear left internal sensor	
C140987	Left rear internal sensor no signal/no communication	
C140312	FR internal sensor is short to power supply	Refer to Right Front Middle Reversing Radar Probe Does Not Work (Type I)
C140314	Right front internal sensor signal line is open circuit or short circuit signal grounding	
C140335	Aftershocks time error of FR internal sensor	
C140387	Right front internal sensor no signal/no communication	
C140512	FR outermost sensor is short to power supply	Refer to FR blind spot probe does not work
C140514	Right front outermost sensor signal line is open circuit or short circuit signal grounding	
C140535	Aftershocks time of the outermost sensor on the right side	
C140587	Right front outermost sensor no signal/no communication	
C140412	FR external sensor is short to power supply	Refer to Right Front Reversing Radar Probe Does Not Work (Type I)
C140414	Right front external sensor signal line is open circuit or short circuit signal grounding	
C140435	Aftershocks time error of FR external sensor	
C140487	Right front external sensor no signal/no communication	
C140112	Left front external sensor is short to power supply	Refer to Left Front Reversing Radar Probe Does Not Work (Type I)

Diagnostic Trouble Code	Description	Fault location/elimination method
C140114	Left front external sensor signal line is open circuit or short circuit signal grounding	
C140135	Wrong after-shock time of left front external sensor	
C140187	Left front external sensor no signal/no communication	
C140012	Left front outermost sensor fault is short to power supply	Refer to Left Front Blind Spot Probe Does Not Work
C140014	Left front outermost sensor signal line is open circuit or short circuit signal grounding	
C140035	Aftershocks time of the outermost left sensor	
C140087	Left front outermost sensor is incorrectly communicated	
C140212	Left front speed sensor fault is short to power supply	Refer to Left Middle Front Reversing Radar Probe Does Not Work (Type I)
C140214	Left front internal sensor signal line is open circuit or short circuit signal grounding	
C140235	Left front internal sensor shock time error	
C140287	Left front internal sensor no signal/no communication	
C140D11	Sensor is short GND	Refer to Radar Probe Power Failure
C140112	The left front outer sensor of PDC is open circuit or short-circuited to power supply	Refer to Left Front Reversing Radar Probe Does Not Work (Type II)
C140114	PDC left front outer sensor is short circuited to ground	
C140196	PDC left front outer sensor is damaged	
C140412	The right front outer sensor of PDC is open circuit or short-circuited to power supply	Refer to Right Front Reversing Radar Probe Does Not Work (Type II)
C140414	PDC right front outer sensor is short circuited to ground	
C140496	Right front outer sensor of PDC is damaged	
C140212	The left front inner sensor of PDC is open circuit or short to power supply	Refer to Left Middle Front Reversing Radar Probe Does Not Work (Type II)

Diagnostic Trouble Code	Description	Fault location/elimination method
C140214	PDC left inner sensor is short to GND	
C140296	PDC left front inner sensor is damaged	
C140312	The right front inner sensor of PDC is open circuit or short-circuited to power supply	
C140314	PDC right front inner sensor is short circuited to ground	Refer to Right Middle Front Reversing Radar Probe Does Not Work (Type II)
C140396	Right front inner sensor of PDC is damaged	
C140A12	The left outer sensor behind the PDC is open circuit or short-circuited to the power supply	
C140A14	The rear left outer sensor of PDC is short to GND	Refer to Left Rear Reversing Radar Probe Does Not Work (Type II)
C140A96	The left rear outer sensor of the PDC is damaged	
C140912	The left inner sensor behind the PDC is open circuit or short-circuited to the power supply	
C140914	The left inner sensor of the rear PDC is short to GND	Refer to Left Middle Rear Reversing Radar Probe Does Not Work (Type II)
C140996	Left inner rear sensor of PDC is damaged	
C140812	The right inner sensor behind the PDC is open circuit or short-circuited to power supply	
C140814	The right inner rear sensor of PDC is short to GND	Refer to Right Middle Rear Reversing Radar Probe Does Not Work (Type II)
C140896	Right inner rear sensor of PDC is damaged	
U300616	Power supply is low	
U300617	Power supply is high	
U007300	CAN bus off	Refer to Communication failure of the Reversing Radar controller
U150082	Error in communication with ICM	
U012187	Communication with ESC is lost	
U016487	Communication with AC is lost	
U015687	Communication with MMI is lost	
U015587	Communication with IPK is lost	
C140712	The right outer sensor behind the PDC is open circuit or short-circuited to the power supply	Refer to Internal Faults of Reversing Radar Controller

Diagnostic Trouble Code	Description	Fault location/elimination method
C140714	The right rear outer sensor of PDC is short to GND	
C140796	Right rear side sensor of PDC is damaged	

11.14.6.13 Power supply failure of Automatic parking control module

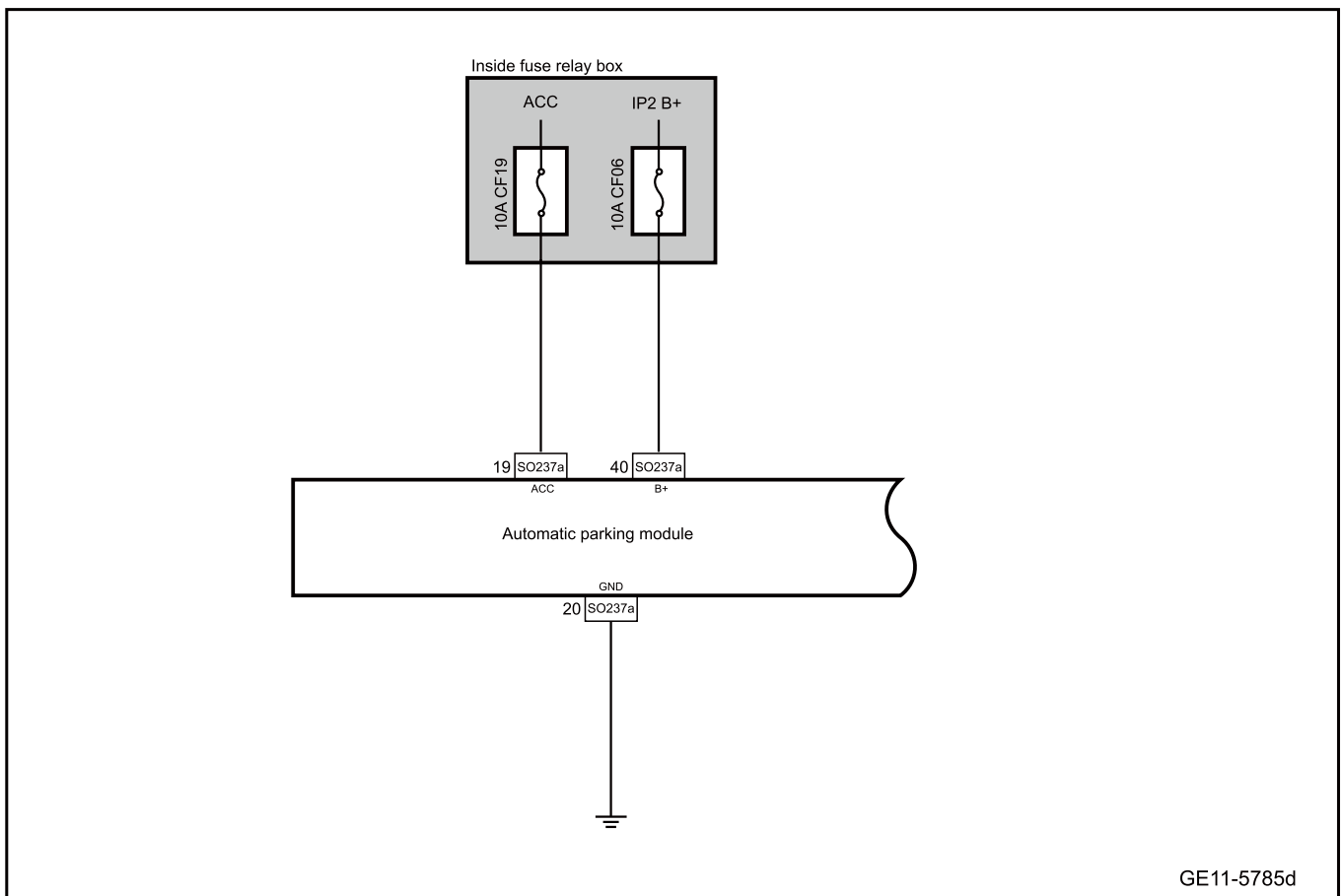
1. DTC description:

Diagnostic Trouble Code	Description
U300617	Supply voltage of the controller is too high
U300616	Supply voltage of the controller is too low

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	Battery voltage $\geq 16V$	1. The ACC status of hard line should be ACC ON.	1. Battery 2. Harness
U300616	Battery voltage $\geq 9V$	1. The ACC status of hard line should be ACC ON.	3. Automatic parking control module 4. Fuse

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

- A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 4.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the automatic parking control module for signs of damage, deformation, stain, loosening, etc.
- B. Check the harness connector of automatic parking control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 4	Inspect automatic parking control module fuse
--------	---

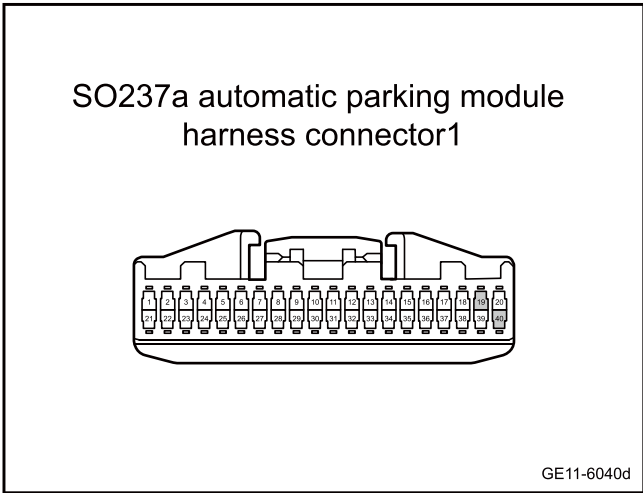
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Remove the indoor fuse box fuse, and check whether the fuse CF06 is blown out.
Rated capacity of fuse: 10A
- C. Remove the indoor fuse box fuse, and check whether the fuse CF19 is blown out.
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 5 Check whether the working voltage of the automatic parking control module is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the automatic parking control module harness connector SO237a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO237a(19)	Vehicle body is grounded.	Standard voltage: 11-14V
SO237a(40)		

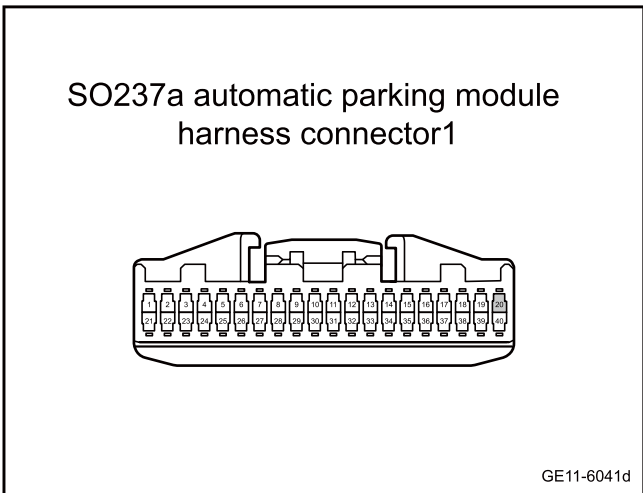
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Check whether the grounding harness of the automatic parking control module is normal.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the automatic parking control module harness connector SO237a.
- C. Use a multimeter to measure the resistance between the terminal No. 20 of the automatic parking control module harness connector SO237a and the vehicle body ground terminal.

Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the automatic parking control module

- A. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking control module.

- A. Reprogram and reset the automatic parking control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.14 Communication failure of automatic parking control module

1. DTC description:

Diagnostic Trouble Code	Description
U015687	MMI node communication is lost
U015587	IPK node communication is lost
U012287	ESC node communication is lost
U012687	SAS node communication is lost
U014087	BCM node communication is lost
U111487	VCU node communication is lost
U015187	ACU node communication is lost
U021487	PEPS node communication is lost
U013187	EPS node communication is lost
U023587	FRS node communication is lost
U130055	F110 configuration words are not written in

Diagnostic Trouble Code	Description
U007300	Bus off
U016487	AC node communication is lost
U130155	F110 Vehicle network configuration
U140481	Incorrect signal at VCU node
U045781	Incorrect signal at MMI node
U045281	Incorrect signal at ACU node
U042881	Incorrect signal at SAS node
U042481	Incorrect signal at AC node
U041681	Incorrect signal at ESC node
U019887	TBOX node communication is lost
U014687	GW node communication is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	Message loss was detected. (ID=0x2A0)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	<ol style="list-style-type: none"> 1. Circuit 2. Automatic parking control module 3. Diagnostic interface
U015587	Message loss was detected. (ID=0x26D)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U012287	Message loss was detected. (ID=0x125)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U012687	Message loss was detected. (ID=0xE0)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. Diagnosis service \$85 is not activated 6. Offline configuration is diagnosed to be effective 	
U014087	Message loss was detected. (ID=0x1F0)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U111487	Message loss was detected. (ID=0xA6)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	

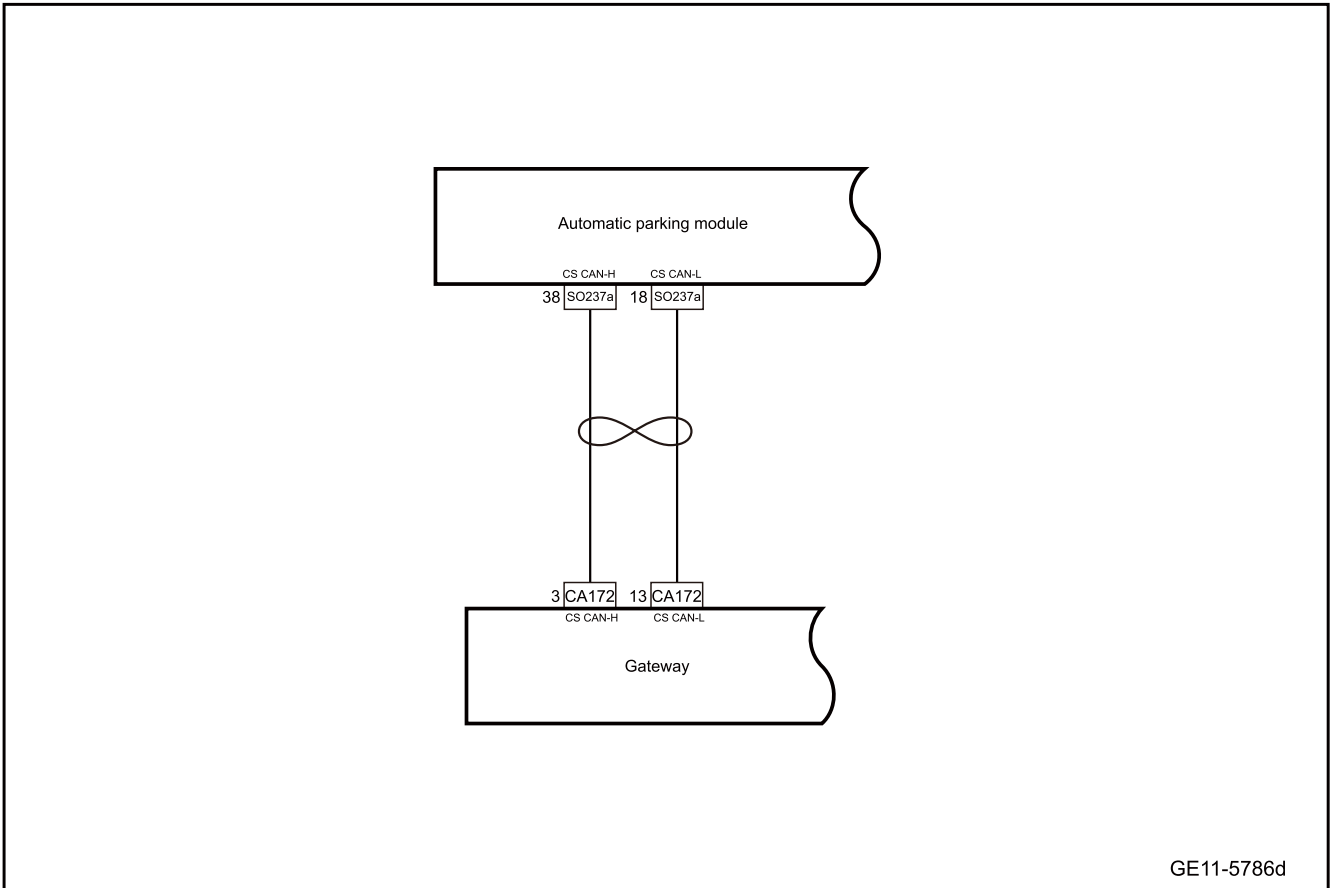
DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	Message loss was detected. (ID=0x380)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U021487	Message loss was detected. (ID=0x1E2)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. The hard line ACC status should be: ACC ON 	
U013187	Message loss was detected. (ID=0x150)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U023587	Message loss was detected. (ID=0x1A2)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U007300	busoff for 10 consecutive times	<ol style="list-style-type: none"> 1. Power supply voltage range is 9V-16V 2. The hard line ACC status should be ACC ON 	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U016487	Message loss was detected. (ID=0x2F1)	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON	
U130155	F110 configuration words are not written in	1. Power supply voltage range is 9V-16V 2. The hard line ACC status should be ACC ON	
U140481	VCU_CurrentGearPosition=1~9 or VCU_CurrentGearPosition=D~E	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON	
U045781	MMI_AVM_SoftKeyRequest=0x3:invalid	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U045281	Abnormal value of any of the following signals: YRS_LateralAcce= 0x0FA1~0xFFFF: Invalid YRS_YawRate= 0x8CA1~0xFFFF: Invalid YRS_LongitAcce= 0x0FA1~0xFFFF: Invalid	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON	
U042881	Abnormal value of any of the following signals: SAS_SteerWheelRotSpd= 0 xFF: Invalid SAS_SteerWheelAngle=0x7FFF: Invalid	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON	
U042481	Abnormal value of any of the following signals: AC_AmbientTemperature= 0xC9~0xFF: Invalid	1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U041681	Abnormal value of any of the following signals: ESC_ FLWheelSpeedRCSts= 0 x 1: Invalid ESC_ FRWheelSpeedRCSts=0x1: Invalid ESC_ RLWheelSpeedRCSts=0x1: Invalid ESC_ RRWheelSpeedRCSts=0x1: InvalidESC_ FLWheelSpeedKPH= 0 x1FFF: InvalidESC_ FRWheelSpeedKPH= 0 x1FFF: InvalidESC_ RLWheelSpeedKPH= 0 x1FFF: InvalidESC_ RRWheelSpeedKPH= 0 x1FFF: Invalid ESC_ VehicleSpeed=0x1FFF: Invalid value	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U019887	Message loss was detected. (ID=0x197)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	
U014687	Message loss was detected. (ID=0x28E)	<ol style="list-style-type: none"> 1. Power supply voltage of CAN bus node is between 9V-16V 2. Meet the TDiagEnable condition 3. No bus-off is detected 4. Ignition status is ignition ON 5. The hard line ACC status should be ACC ON 	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2	Primary check.
--------	----------------

- A. Check the automatic parking control module for signs of damage, deformation, stain, loosening, etc.
- B. Check the harness connector of automatic parking control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 | Check the CS-CAN network integrity.

- A. To check the instrument communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CS-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 | Replace the automatic parking control module

- A. Check the airbag control module power supply and grounding harness. Refer to [Power Failure of Automatic parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic parking Control Module](#)

Next step

Step 5 | Reprogram and reset the automatic parking control module.

- A. Reprogram and reset the automatic parking control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

11.14.6.15 Automatic parking control module interior failure

1. DTC description:

DTC	Trouble description
C140C42	Internal Faults of Controller

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140C42	Internal error of system	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Automatic parking control module

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the automatic parking control module for signs of damage, deformation, stain, loosening, etc.
- B. Check the harness connector of automatic parking control module for damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the automatic parking control module.

- A. Reprogram and reset the automatic parking control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 4 Replace the automatic parking control module

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 5 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 6 System is normal.

11.14.6.16 Left front blind spot probe does not work

1. DTC description:

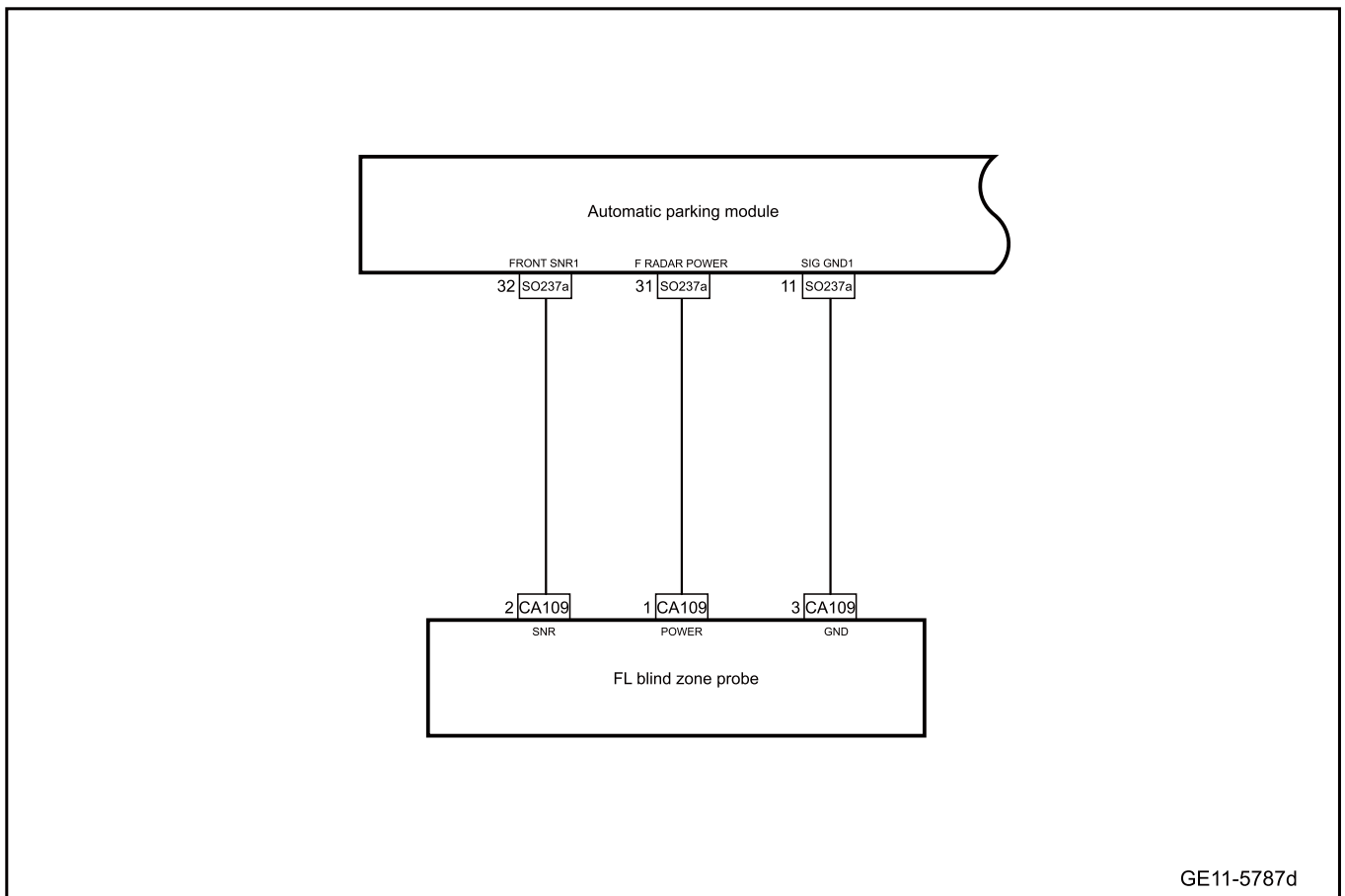
Diagnostic Trouble Code	Description
C140012	Left front outermost sensor signal line is short to power supply
C140014	Left front outermost sensor signal line is open circuit or short circuit signal grounding

Diagnostic Trouble Code	Description
C140035	Aftershocks time of the outermost left sensor
C140087	Left front outermost sensor is incorrectly communicated

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140012	Sensor signal line fault: short circuit to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Front left blind spot probe
C140014	Sensor signal wire is short to GND or OC		
C140035	Sensor ring time fault		
C140087	Signal decoding, communication verification error		

3. Schematic circuit diagram:



GE11-5787d

4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the left front blind spot probe for signs of looseness, wear, and cracking.
- B. Check the left front blind spot harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

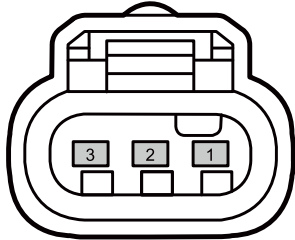
No

Repair or replace the faulty part.

Yes

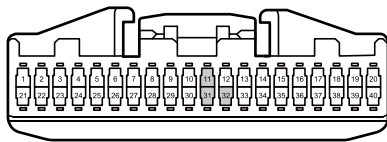
Step 3	Check whether the circuit between the left front blind spot probe and the automatic parking module is opened.
--------	---

CA109 FL blind zone probe harness connector



GE11-6042d

SO237a automatic parking module harness connector1



GE11-6043d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA109 of left front blind spot probe.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA109(1)	SO237a(31)	Standard resistance: less than 1Ω
CA109(2)	SO237a(32)	
CA109(3)	SO237a(11)	

- E. Confirm whether the measured value meets the standard.

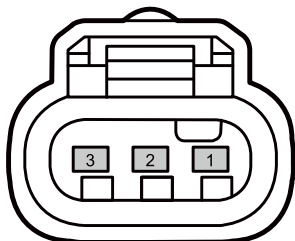
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the left front blind spot probe and automatic parking module is short to ground.

CA109 FL blind zone probe harness connector



GE11-6044d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA109 of left front blind spot probe.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA109(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA109(2)		
CA109(3)		

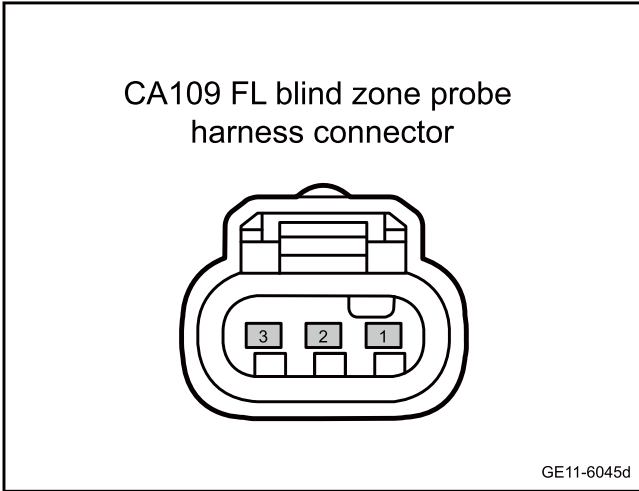
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the left front blind spot probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA109 of left front blind spot probe.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA109(1)	Vehicle body is grounded.	Standard voltage: 0V
CA109(2)		
CA109(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the front left blind spot probe.

- A. To replace the FL blind spot probe, please refer to [Replacement of FL blind spot probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.17 Right front blind spot probe does not work

1. DTC description:

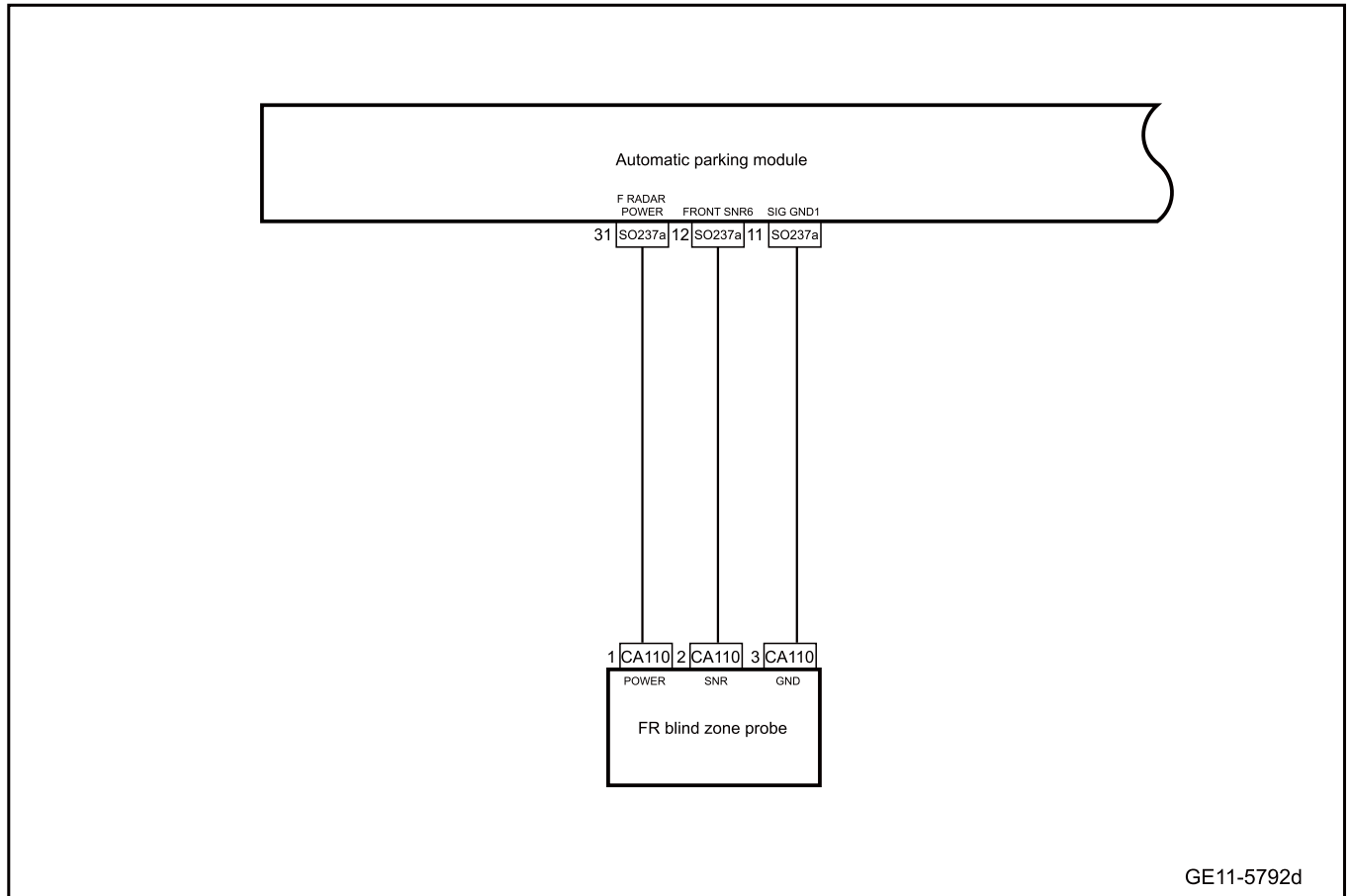
Diagnostic Trouble Code	Description
C140512	FR outermost sensor signal line is short to power supply
C140514	Right front outermost sensor signal line is open circuit or short circuit signal grounding
C140535	Aftershocks time of the outermost sensor on the right side
C140587	Right front outermost sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140512	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Right front blind spot probe
C140514	Sensor signal wire is short to GND or OC		
C140535	Sensor ring time fault		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140587	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

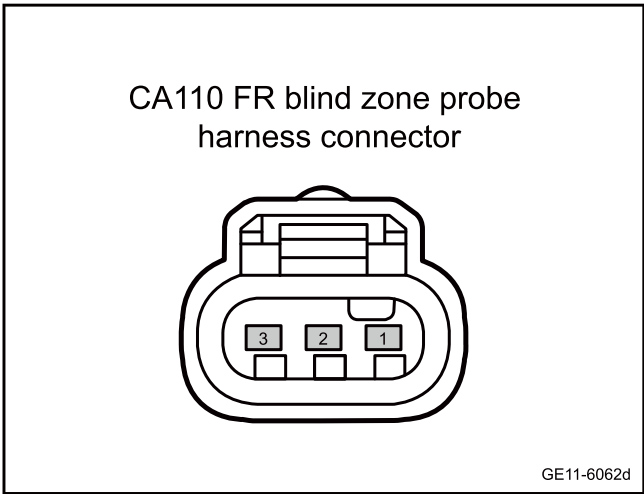
- A. Check the right front blind spot probe for signs of loosening, wear, break, etc.
- B. Check the right front blind spot probe harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

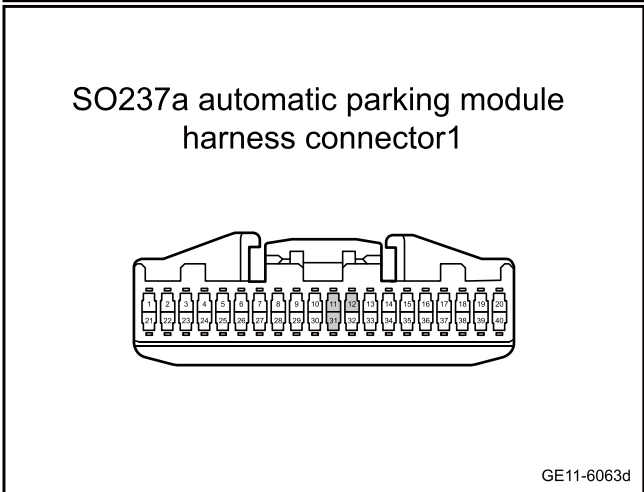
Step 3 Check whether the circuit between the probe of the right front blind spot and automatic parking module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA110 of FR blind spot probe.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA110(1)	SO237a(31)	Standard resistance: less than 1Ω
CA110(2)	SO237a(12)	
CA110(3)	SO237a(11)	

- E. Confirm whether the measured value meets the standard.



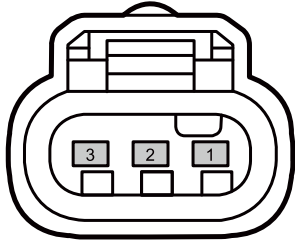
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the right front blind spot probe and automatic parking module is short to ground.

CA110 FR blind zone probe harness connector



GE11-6064d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA110 of FR blind spot probe.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA110(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA110(2)		
CA110(3)		

- E. Confirm whether the measured value meets the standard.

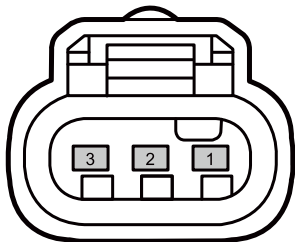
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the right front blind spot probe and automatic parking module is short to power supply.

CA110 FR blind zone probe harness connector



GE11-6065d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect harness connector CA110 of FR blind spot probe.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA110(1)	Vehicle body is grounded.	Standard voltage: 0V
CA110(2)		
CA110(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the FR blind spot probe.

- A. To replace the FR blind spot probe, please refer to [Replacement of FR blind spot probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the airbag control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.18 Left Rear Blind Spot Probe Does Not Work

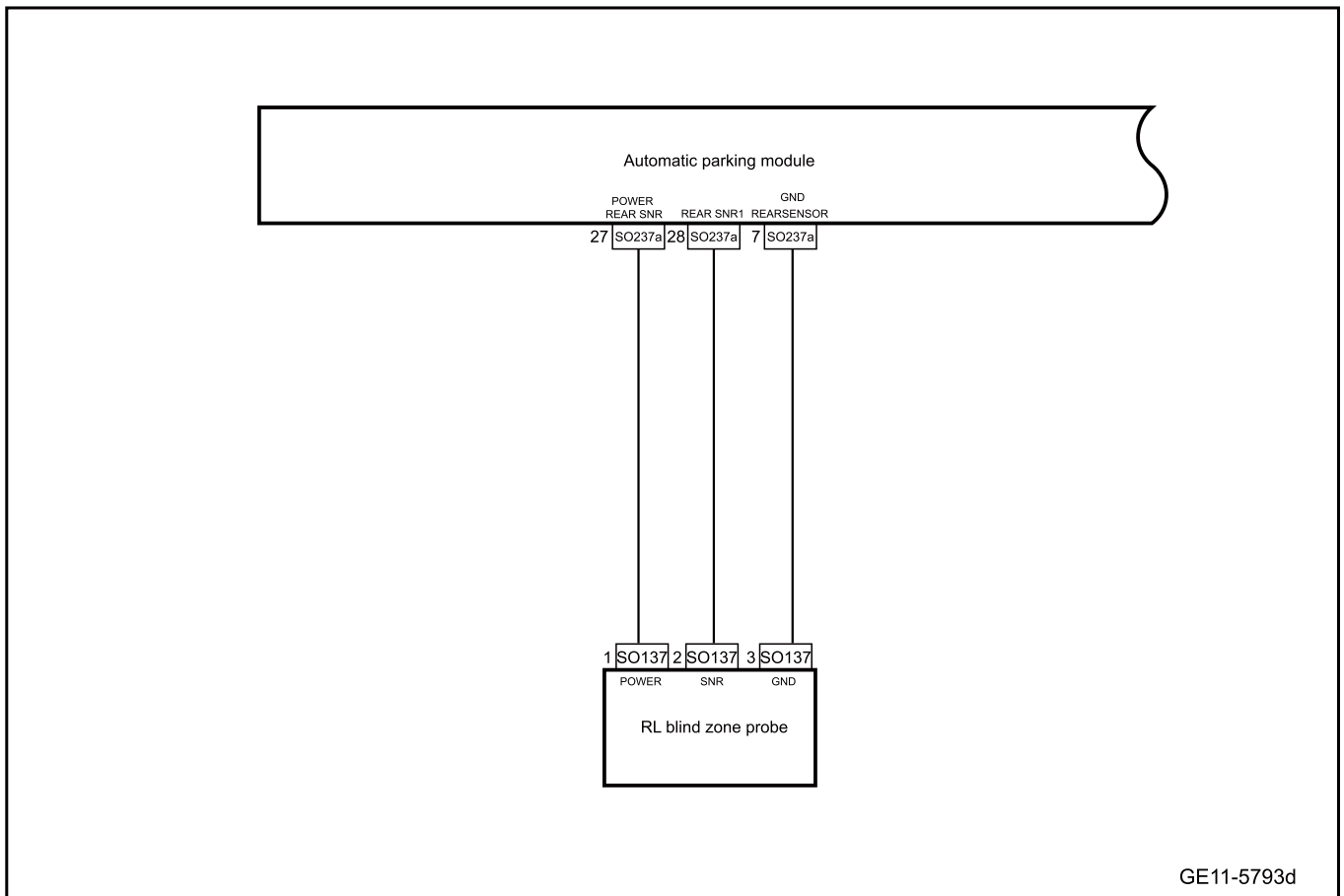
1. DTC description:

Diagnostic Trouble Code	Description
C140B12	Left rear outermost speed sensor signal line is short to power supply
C140B14	Left rear outermost sensor signal line is open circuit or short circuit signal grounding
C140B35	Aftershocks time of left rear outermost sensor is incorrect
C140B87	Left rear outermost sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140B12	Sensor signal line fault: short circuit to Ubat	1. The power supply voltage is 9V-16V 2. The hard wire ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Rear left blind spot probe
C140B14	Sensor signal wire is short to GND or OC		
C140B35	Sensor ring time fault		
C140B87	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the rear left blind spot probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of rear left blind spot probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

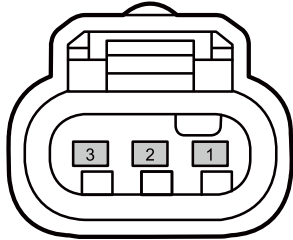
No

Repair or replace the faulty part.

Yes

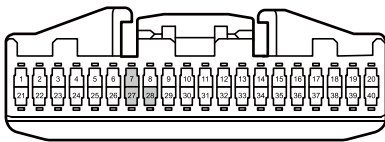
Step 3 Check whether the circuit between the left rear blind spot probe and automatic parking module is opened.

SO137 RL blind zone probe harness connector



GE11-6066d

SO237a automatic parking module harness connector1



GE11-6067d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left blind spot probe SO137
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO137(1)	SO237a(27)	Standard resistance: less than 1Ω
SO137(2)	SO237a(28)	
SO137(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.

No

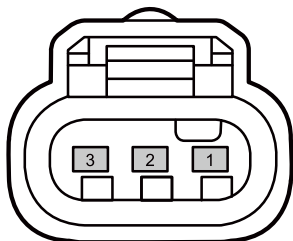
Repair or replace the harness.

Yes

Step 4

Check whether the circuit between the left rear blind spot probe and BCM is short to ground.

SO137 RL blind zone probe harness connector



GE11-6068d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left blind spot probe SO137
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO137(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO137(2)		
SO137(3)		

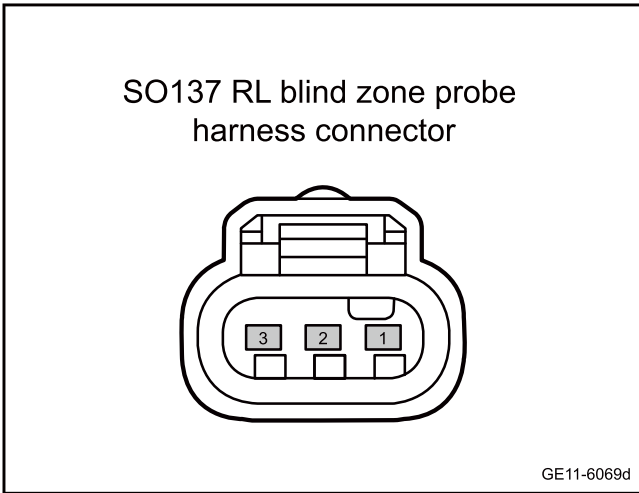
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the left rear blind spot probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left blind spot probe SO137
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO137(1)	Vehicle body is grounded.	Standard voltage: 0V
SO137(2)		
SO137(3)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the rear left blind spot probe.

- A. To replace the rear left blind spot probe, please refer to [Replacement of Rear Left Blind Spot Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.19 Left Front Reversing Radar Probe Does Not Work (Type I)

1. DTC description:

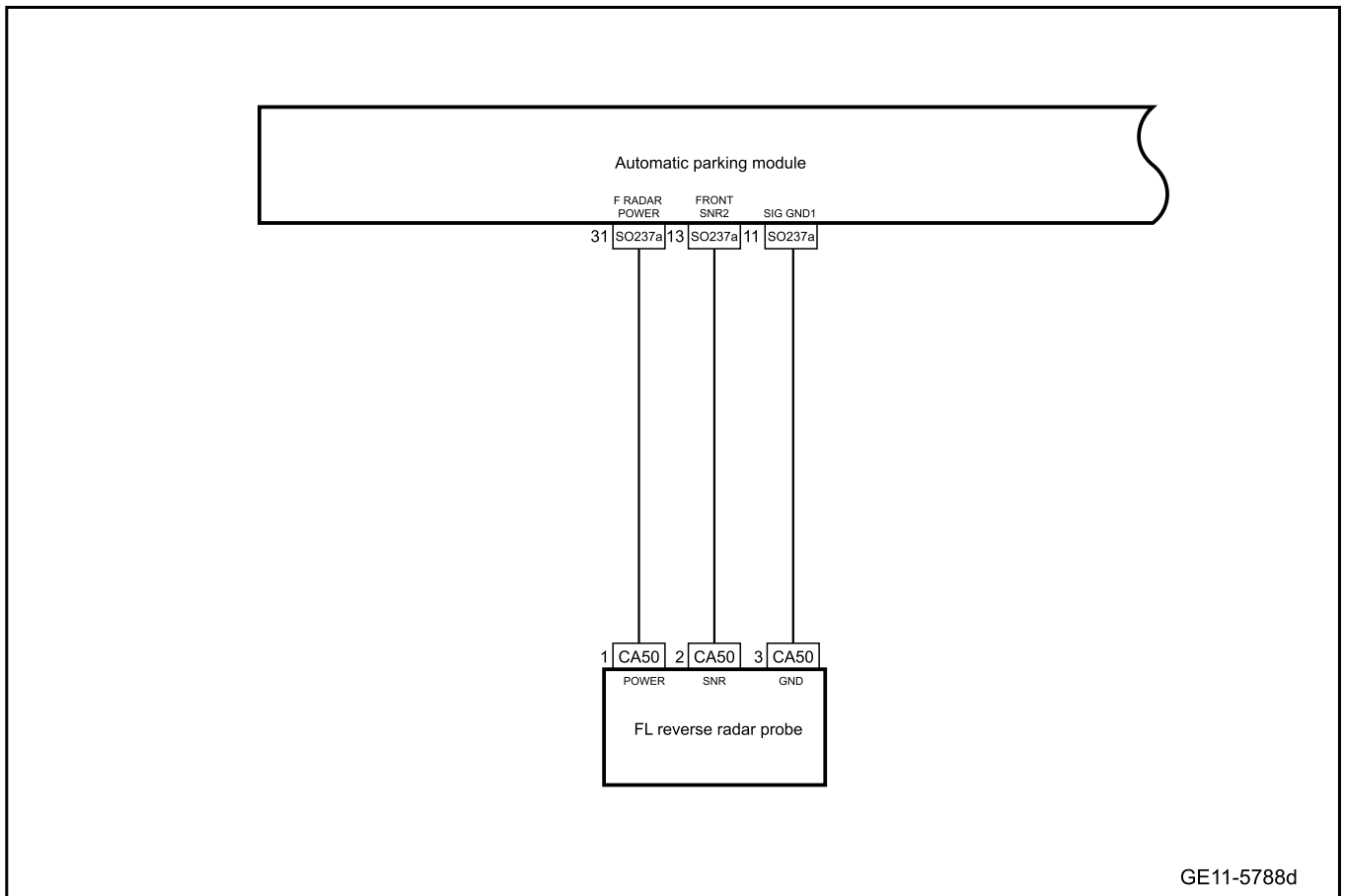
Diagnostic Trouble Code	Description
C140112	Left front external sensor signal line is short to power supply
C140114	Left front external sensor signal line is open circuit or short circuit signal grounding
C140135	Wrong after-shock time of left front external sensor
C140187	Left front external sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140112	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Front left reverse radar probe

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140114	Sensor signal wire is short to GND or OC	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	
C140135	Sensor ring time fault	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	
C140187	Signal decoding, communication verification error	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the front left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of front left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

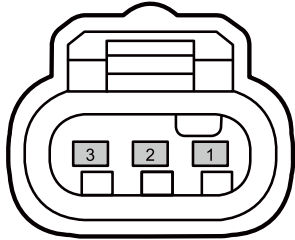
No

Repair or replace the faulty part.

Yes

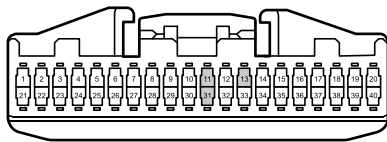
Step 3	Check whether the circuit between the left front reversing radar probe and BCM is opened.
--------	---

CA50 FL reverse radar probe harness connector



GE11-6046d

SO237a automatic parking module harness connector1



GE11-6047d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA50
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA50(1)	SO237a(31)	Standard resistance: less than 1Ω
CA50(2)	SO237a(13)	
CA50(3)	SO237a(11)	

- E. Confirm whether the measured value meets the standard.

No

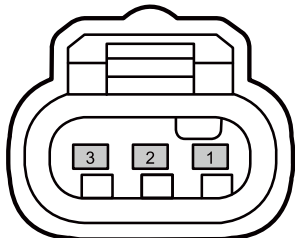
Repair or replace the harness.

Yes

Step 4

Check whether the circuit between the left front reversing radar probe and automatic parking module is short to ground.

CA50 FL reverse radar probe harness connector



GE11-6048d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA50
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

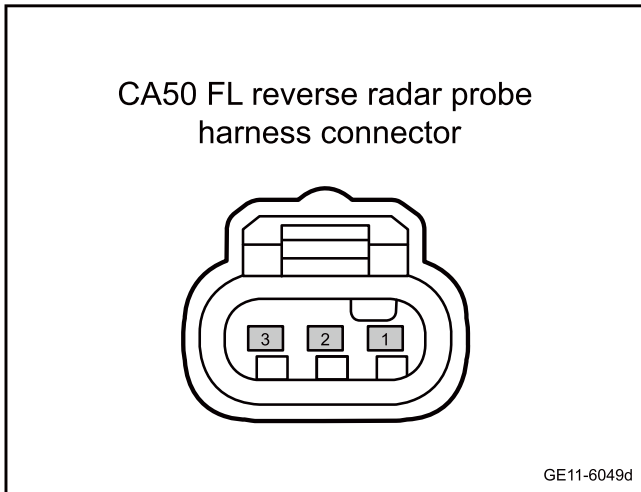
Measure terminal 1	Measure terminal 2	Standard value
CA50(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA50(2)		
CA50(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the left front reversing radar probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA50
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA50(1)	Vehicle body is grounded.	Standard voltage: 0V
CA50(2)		
CA50(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the front left reverse radar probe.

- A. To replace the front left reverse radar probe, please refer to [Replacement of Front Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module.
Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.20 Left Front Reversing Radar Probe Does Not Work (Type I)

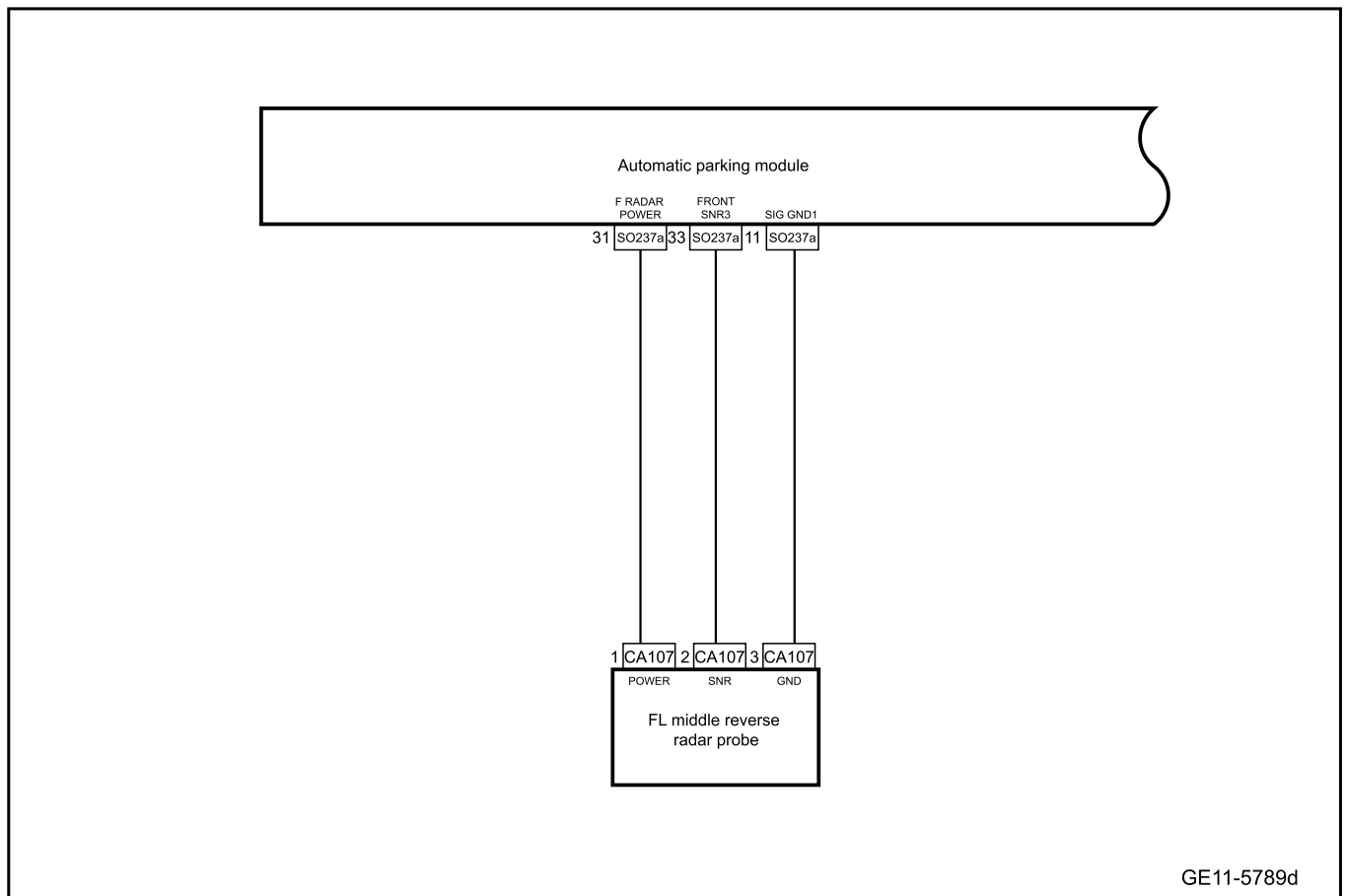
1. DTC description:

Diagnostic Trouble Code	Description
C140212	Left front internal sensor signal line is short to power supply
C140214	Left front internal sensor signal line is open circuit or short circuit signal grounding
C140235	Left front internal sensor shock time error
C140287	Left front internal sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140212	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Front left reverse radar probe
C140214	Sensor signal wire is short to GND or OC		
C140235	Sensor ring time fault		
C140287	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

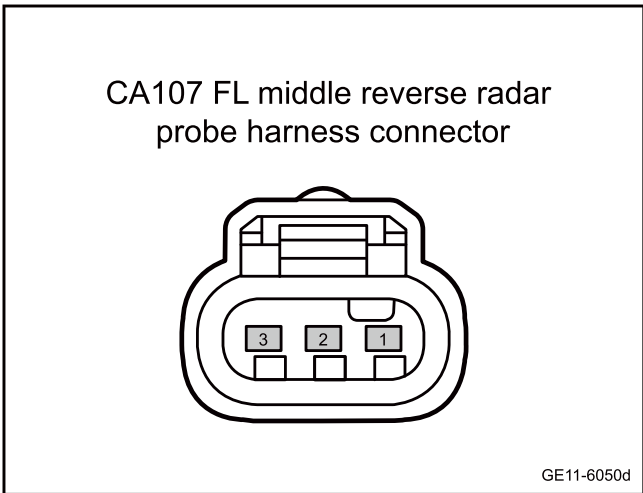
- A. Check the front left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of front left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

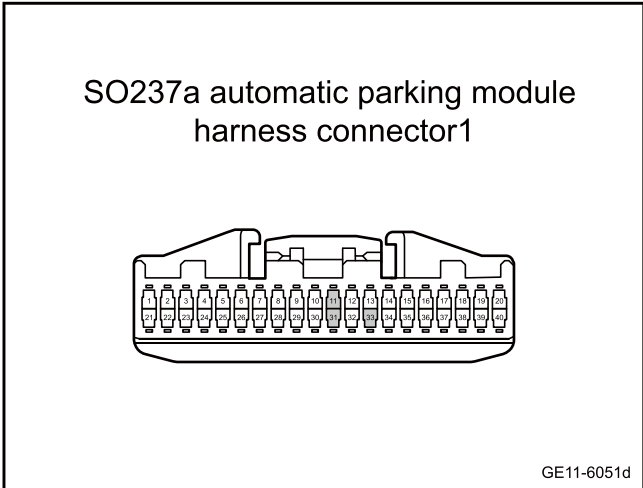
Yes

Step 3 Check whether the circuit between the left front reversing radar probe and automatic parking module is opened.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA107
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(1)	SO237a(31)	Standard resistance: less than 1Ω
CA107(2)	SO237a(33)	
CA107(3)	SO237a(11)	



- E. Confirm whether the measured value meets the standard.

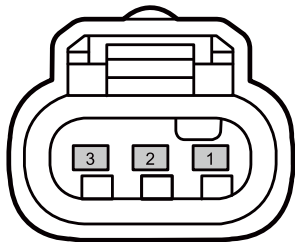
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the left front reversing radar probe and automatic parking module is short to ground.

CA107 FL middle reverse radar probe harness connector



GE11-6052d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA107
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA107(2)		
CA107(3)		

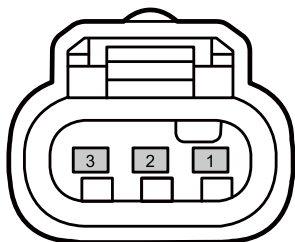
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5	Check whether the circuit between the left front reversing radar probe and automatic parking module is short to power supply.
--------	---

CA107 FL middle reverse radar probe harness connector



GE11-6053d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA107
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(1)	Vehicle body is grounded.	Standard voltage: 0V
CA107(2)		
CA107(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6	Replace the front left reverse radar probe.
--------	---

- A. To replace the front left middle reverse radar probe, please refer to [Replacement of Front Middle Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.21 Right Front Reversing Radar Probe Does Not Work (Type I)

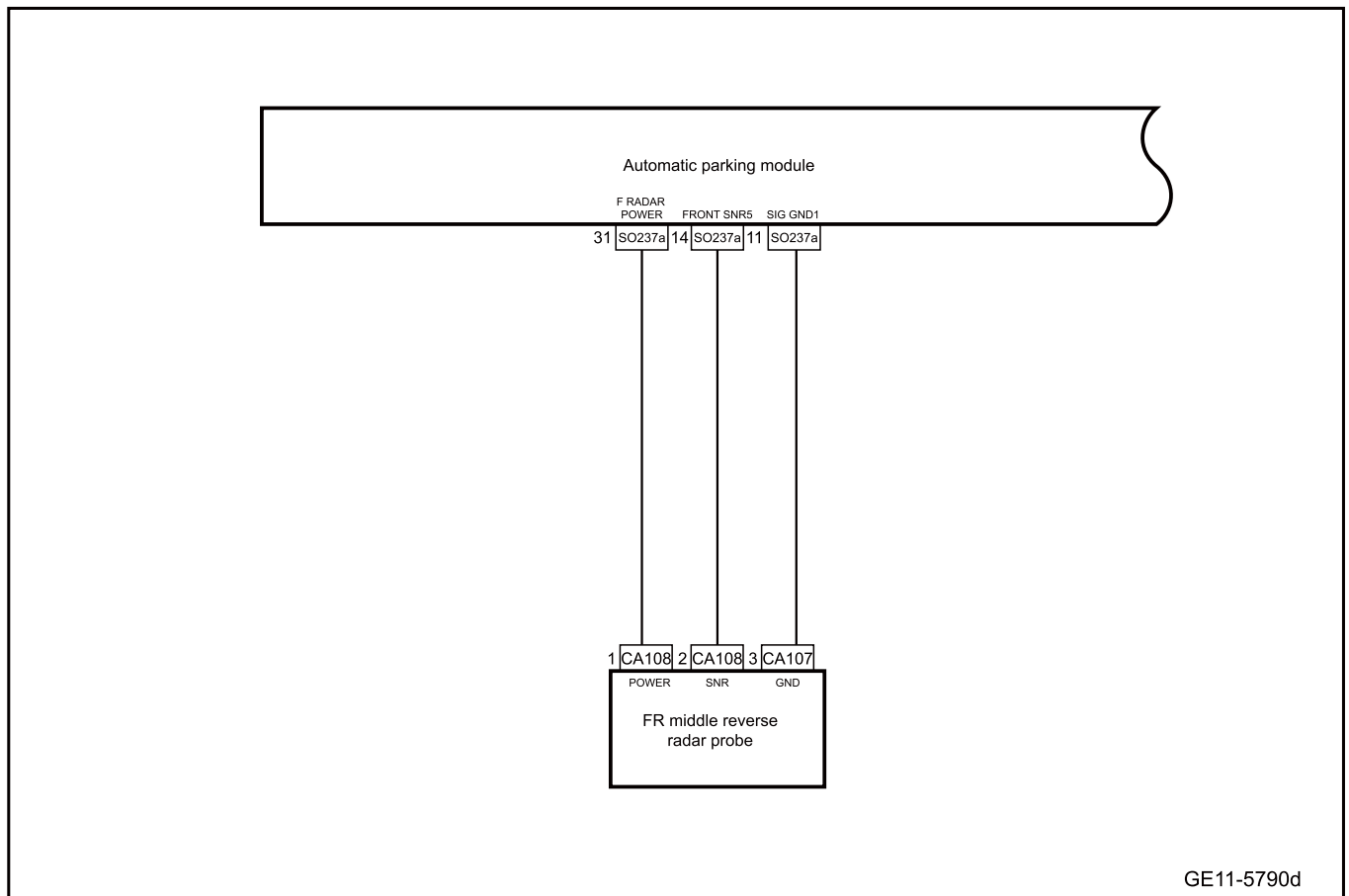
1. DTC description:

Diagnostic Trouble Code	Description
C140312	Right front internal sensor signal line is short to power supply
C140314	Right front internal sensor signal line is open circuit or short circuit signal grounding
C140335	Aftershocks time error of FR internal sensor
C140387	Right front internal sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140312	Sensor signal wire is short to GND	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Right front reverse radar probe
C140314	Sensor signal wire is short to GND		
C140335	Sensor ring time fault		
C140387	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the probe of the right front parking sensor for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the right front parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

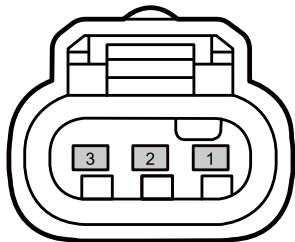
No

Repair or replace the faulty part.

Yes

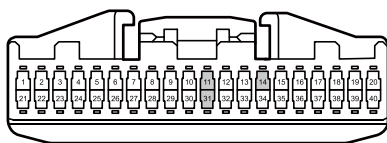
Step 3	Check whether the circuit between the right front reversing radar probe and automatic parking module is open.
--------	---

CA108 FR middle reverse radar probe harness connector



GE11-6054d

SO237a automatic parking module harness connector1



GE11-6055d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA108 of the probe of the right front parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA108(1)	SO237a(31)	Standard resistance: less than 1Ω
CA108(2)	SO237a(14)	
CA108(3)	SO237a(11)	

- E. Confirm whether the measured value meets the standard.

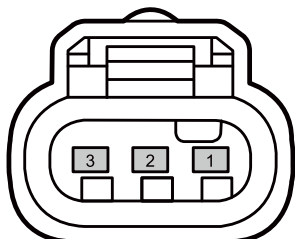
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the right front reversing radar probe and automatic parking module is short to ground.

CA108 FR middle reverse radar probe harness connector



GE11-6056d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA108 of the probe of the front parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

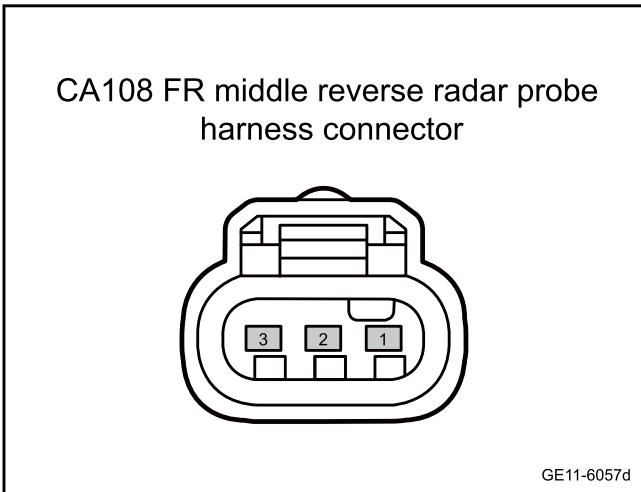
Measure terminal 1	Measure terminal 2	Standard value
CA108(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA108(2)		
CA108(3)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the right front reversing radar probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA108 of the probe of the front parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA108(1)	Vehicle body is grounded.	Standard voltage: 0V
CA108(2)		
CA108(3)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the probe of the front parking sensor.

- A. To replace the front right middle reverse radar probe, please refer to [Replacement of Front Middle Right Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module.
Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.22 Right Front Reversing Radar Probe Does Not Work (Type I)

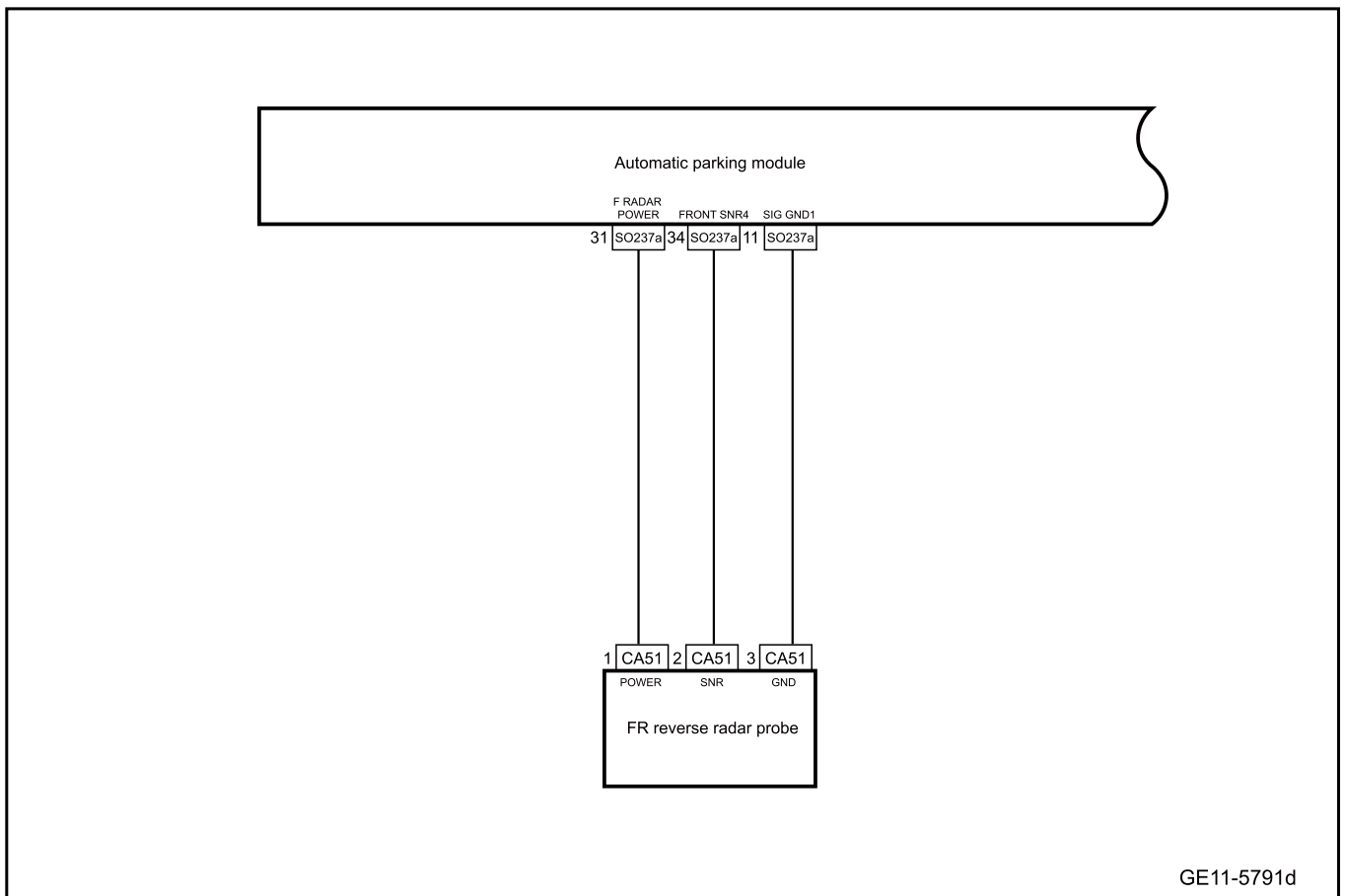
1. DTC description:

Diagnostic Trouble Code	Description
C140412	Right front external sensor signal line is short to power supply
C140414	Right front external sensor signal line is open circuit or short circuit signal grounding
C140435	Aftershocks time error of FR external sensor
C140487	Right front external sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140412	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Right front reverse radar probe
C140414	Sensor signal wire is short to GND or OC		
C140435	Sensor ring time fault		
C140487	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Refer to Intermittent Fault Detection
----	---

Yes

Step 2 Primary check.

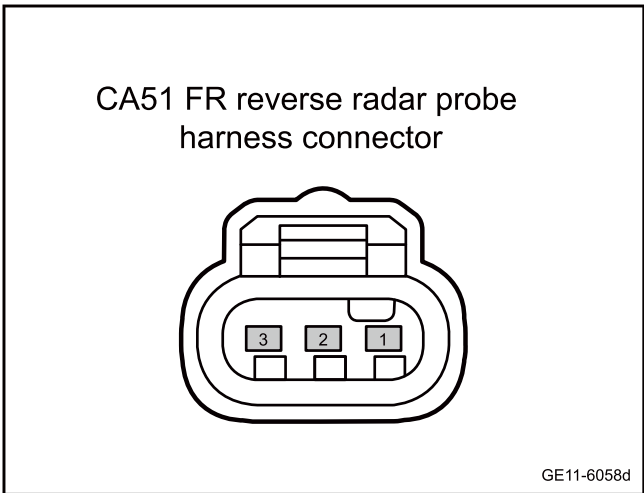
- A. Check the probe of the right front parking sensor for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the right front parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

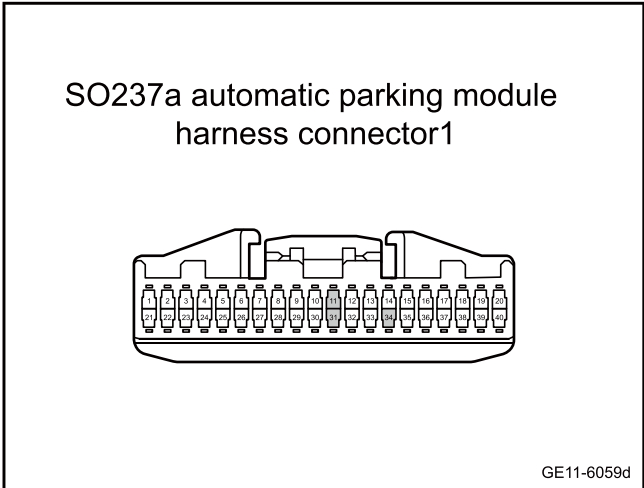
Step 3 Check whether the circuit between the right front reversing radar probe and automatic parking module is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA51 of the probe of the front parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(1)	SO237a(31)	Standard resistance: less than 1Ω
CA51(2)	SO237a(34)	
CA51(3)	SO237a(11)	

- E. Confirm whether the measured value meets the standard.



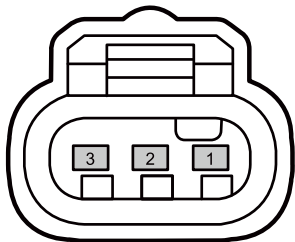
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the right front reversing radar probe and automatic parking module is short to ground.

CA51 FR reverse radar probe harness connector



GE11-6060d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA51 of the probe of the front parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA51(2)		
CA51(3)		

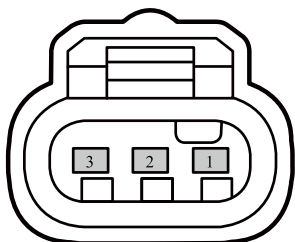
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the right front reversing radar probe and automatic parking module is short to power supply.

CA51 FR reverse radar probe harness connector



GE11-6061d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA51 of the probe of the front parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(1)	Vehicle body is grounded.	Standard voltage: 0V
CA51(2)		
CA51(3)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the probe of the front reverse radar probe.

- A. To replace the front right reverse radar probe, please refer to [Replacement of Front Right Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.23 Left Rear Reversing Radar Probe Does Not Work (Type I)

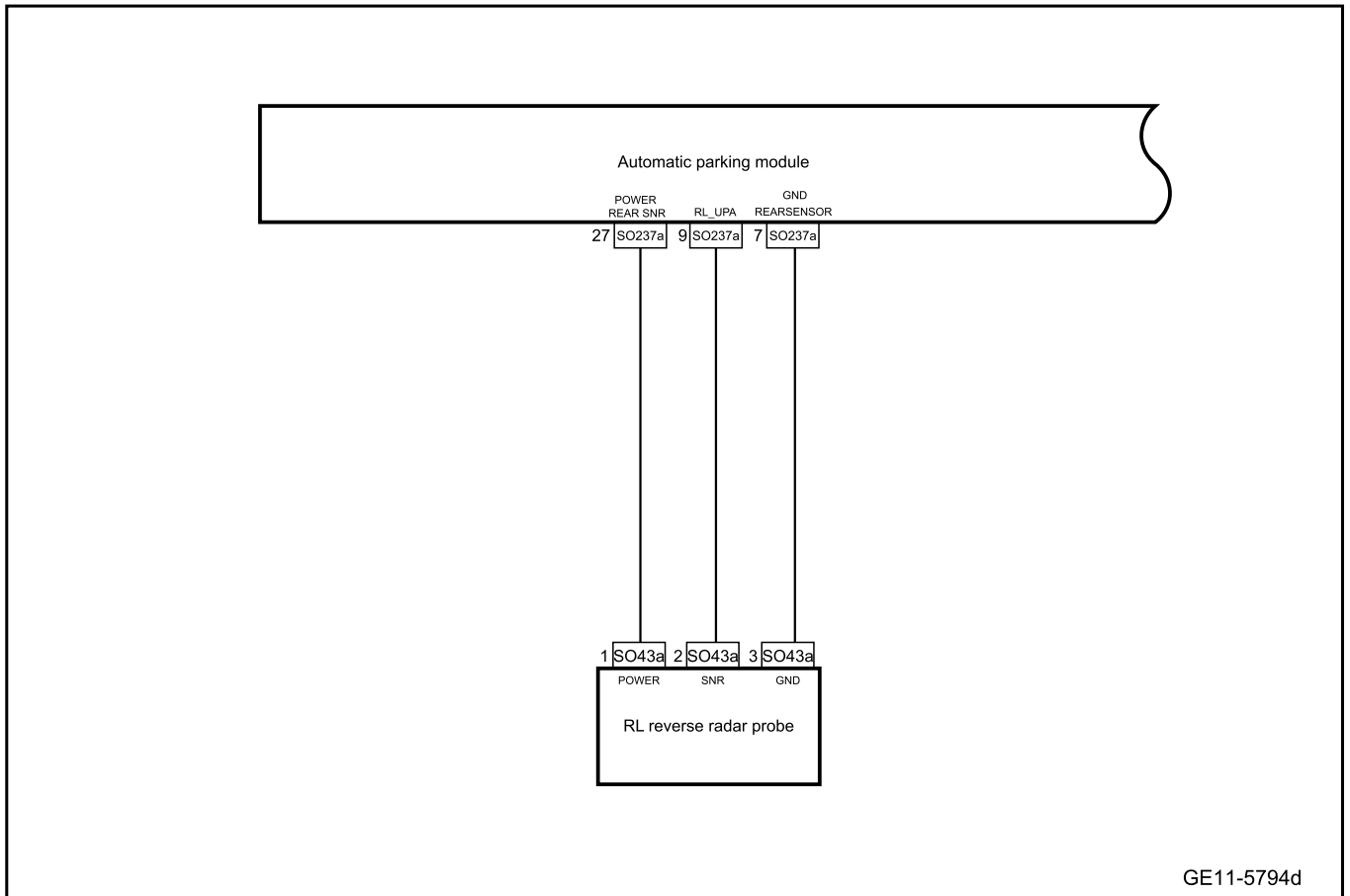
1. DTC description:

Diagnostic Trouble Code	Description
C140A12	Left rear external sensor signal line is short to power supply
C140A14	Left rear external sensor signal line is open circuit or short circuit signal grounding
C140A35	Wrong after-shock time of left rear external sensor
C140A87	Left rear external sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140A12	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Rear left reverse radar probe
C140A14	Sensor signal wire is short to GND or OC		
C140A35	Sensor ring time fault		
C140A87	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the rear left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of rear left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

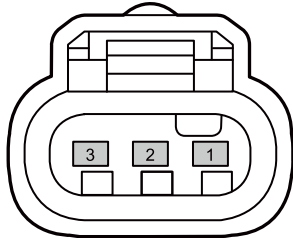
No

Repair or replace the faulty part.

Yes

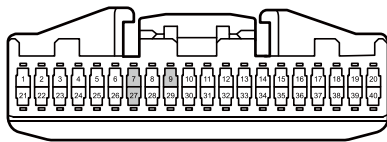
Step 3	Check whether the circuit between the left rear reversing radar probe and automatic parking module is opened.
--------	---

SO43a RL reverse radar probe harness connector



GE11-6070d

SO237a automatic parking module harness connector1



GE11-6071d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO43a(2)	SO237a(9)	
SO43a(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.

No

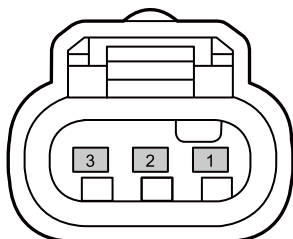
Repair or replace the harness.

Yes

Step 4

Check whether the circuit between the left rear reversing radar probe and automatic parking module is short to ground.

SO43a RL reverse radar probe harness connector



GE11-6072d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

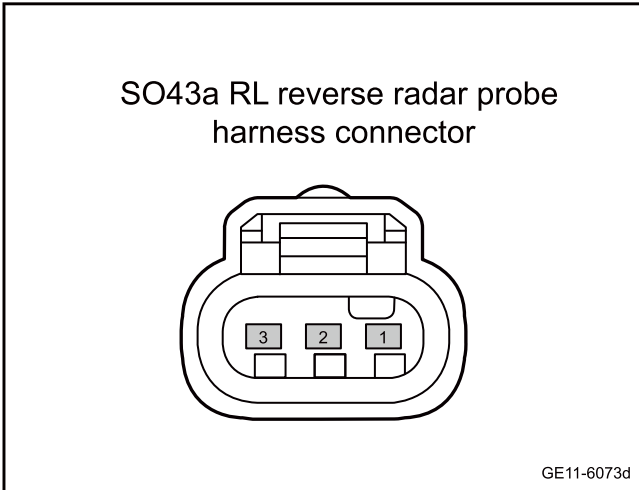
Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO43a(2)		
SO43a(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the left rear reversing radar probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO43a(2)		
SO43a(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the rear left reverse radar probe.

- A. To replace the rear left reverse radar probe, please refer to [Replacement of Rear Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking module control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module.
Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.24 Left Rear Middle Reversing Radar Probe Does Not Work (Type I)

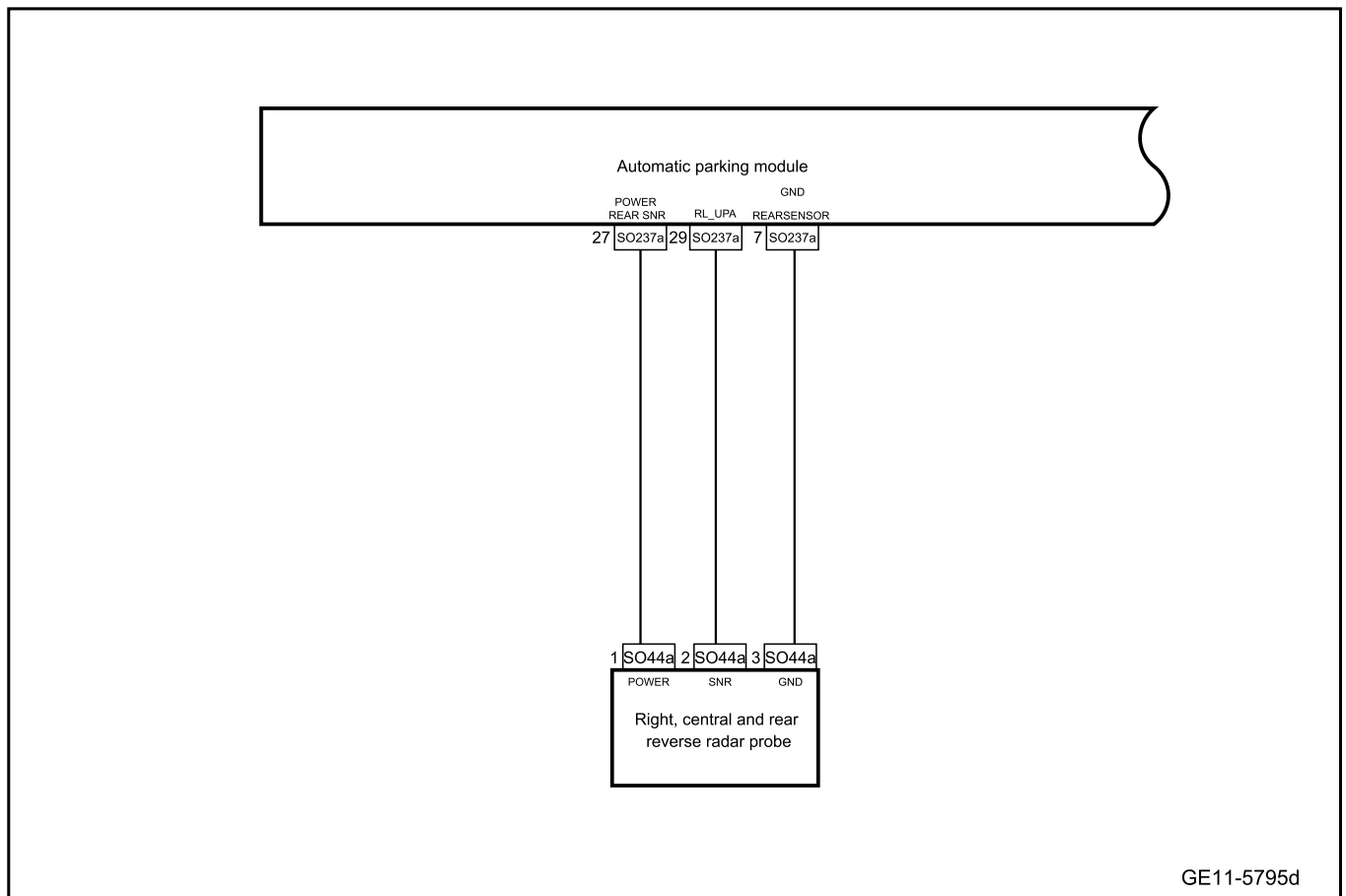
1. DTC description:

Diagnostic Trouble Code	Description
C140912	Left rear internal sensor signal line is short to power supply
C140914	Left rear internal sensor signal line is open circuit or short circuit signal grounding
C140935	Wrong after-shock time of rear left internal sensor
C140987	Left rear internal sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140912	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Rear left middle reverse radar probe
C140914	Sensor signal wire is short to GND		
C140935	Sensor ring time fault		
C140987	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No
Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

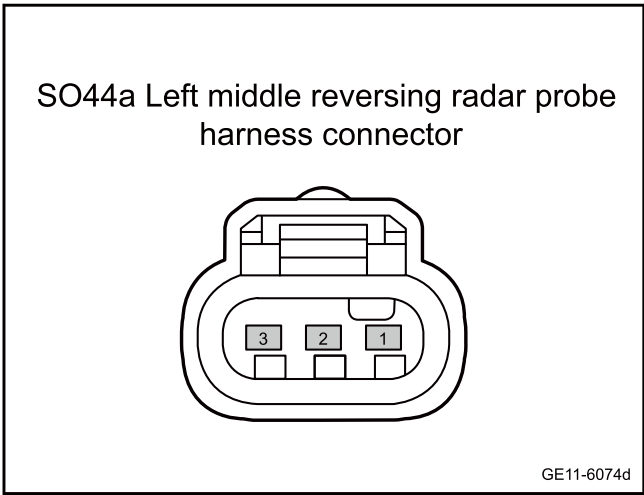
- A. Check the rear left middle reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of rear left middle reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

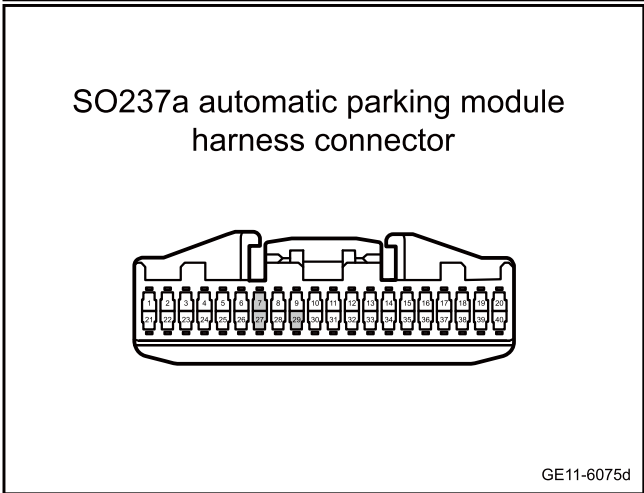
Yes

Step 3 Check whether the circuit between the left rear middle reversing radar probe and automatic parking module is opened.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector of rear left middle reverse radar probe SO44a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO44a(2)	SO237a(9)	
SO44a(3)	SO237a(7)	



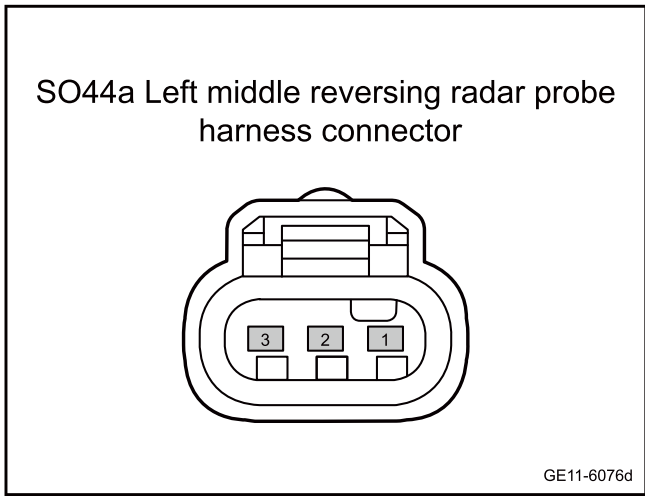
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the left rear reversing radar probe and automatic parking module is short to ground.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector of rear left middle reverse radar probe SO44a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

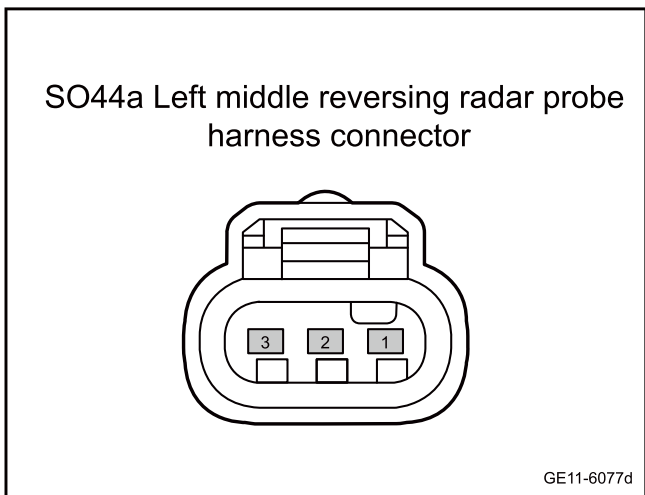
Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO44a(2)		
SO44a(3)		

- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the left rear middle reversing radar probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector of rear left middle reverse radar probe SO44a
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO44a(2)		
SO44a(3)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the rear left middle reverse radar probe.

- A. To replace the rear left middle reverse radar probe, please refer to [Replacement of Rear Left Middle Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.14.6.25 Right Rear Middle Reversing Radar Probe Does Not Work (Type I)

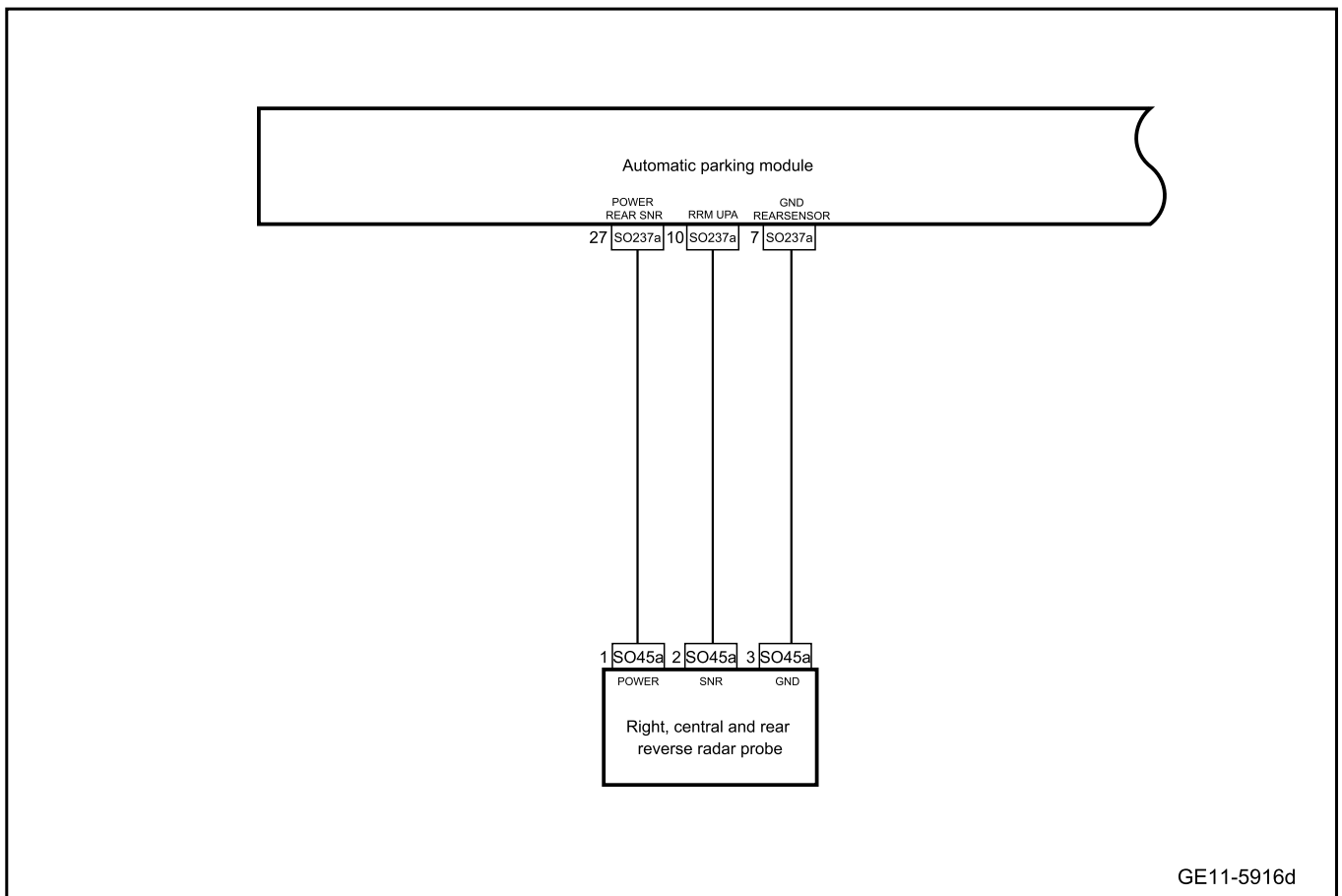
1. DTC description:

Diagnostic Trouble Code	Description
C140812	Right rear internal sensor signal line is shorted to power supply
C140814	Right rear internal sensor signal line is open circuit or short circuit signal grounding
C140835	Right rear internal sensor shock time error
C140887	Right rear internal sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140812	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Right rear middle reverse radar probe
C140814	Sensor signal wire is short to GND or OC		
C140835	Sensor ring time fault		
C140887	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

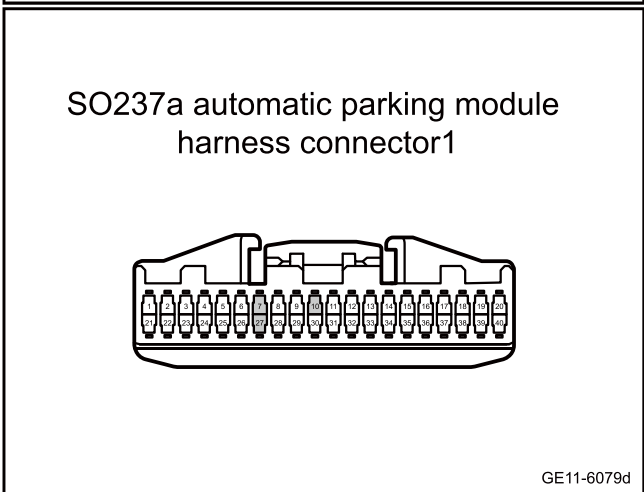
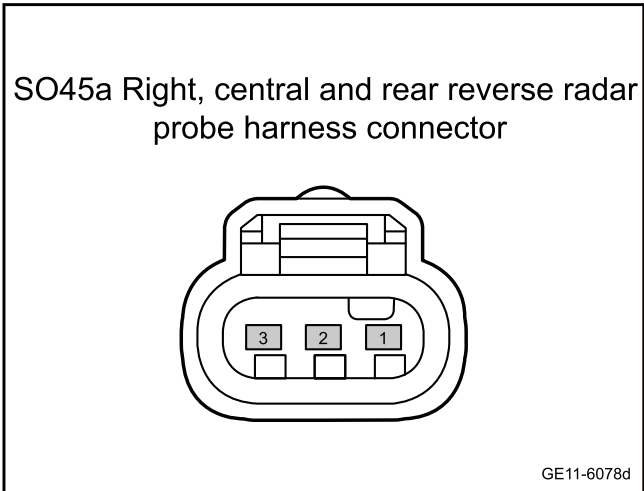
- A. Check the probe of the rear right middle parking sensor for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the rear right middle parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the right rear middle reversing radar probe and automatic parking module is open.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector SO45a of the probe of the rear right middle parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO45a(2)	SO237a(10)	
SO45a(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.

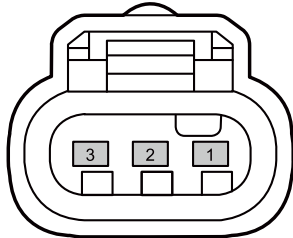
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the right rear middle reversing radar probe and automatic parking is short to ground.

SO45a Right, central and rear reverse radar probe harness connector



GE11-6080d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector SO45a of the probe of the rear right middle parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO45a(2)		
SO45a(3)		

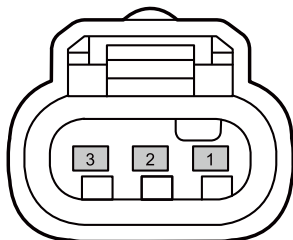
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the right rear middle reversing radar probe and automatic parking module is short to power supply.

SO45a Right, central and rear reverse radar probe harness connector



GE11-6081d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector SO45a of the probe of the rear right middle parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO45a(2)		
SO45a(3)		

- F. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 Replace the probe of the right rear middle parking sensor.

- A. To replace the rear right middle reverse radar probe, please refer to [Replacement of Rear Right Middle Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.26 Right Rear Reversing Radar Probe Does Not Work

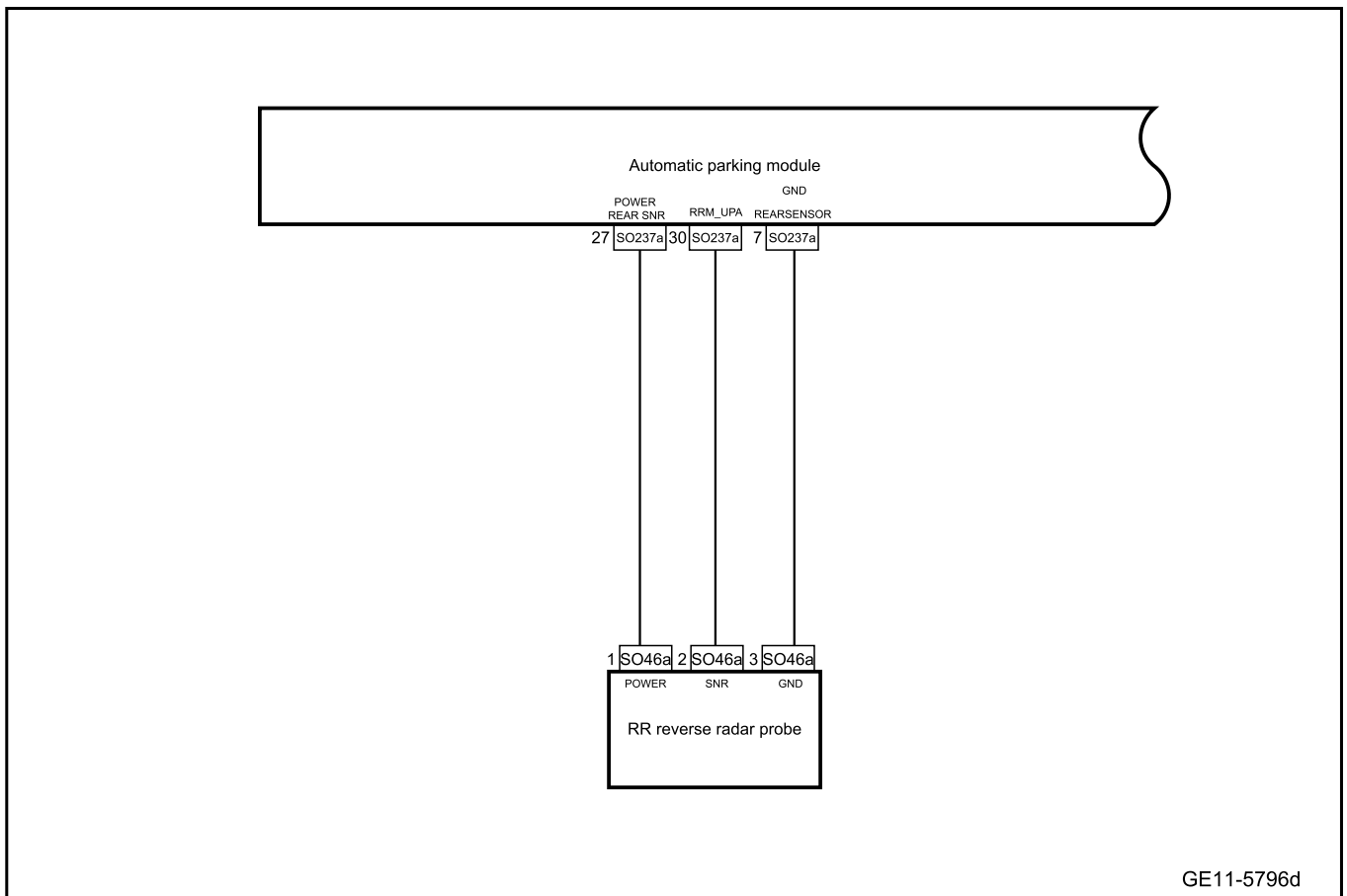
1. DTC description:

Diagnostic Trouble Code	Description
C140712	Right rear external sensor signal line is shorted to power supply
C140714	Right rear external sensor signal line is open circuit or short circuit signal grounding
C140735	Wrong after-shock time of right rear external sensor
C140787	Right rear external sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140712	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Right rear reverse radar probe
C140714	Sensor signal wire is short to GND or OC		
C140735	Sensor ring time fault		
C140787	Signal decoding, communication verification error		

3. Schematic circuit diagram:



GE11-5796d

4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the probe of the rear parking sensor for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the rear parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

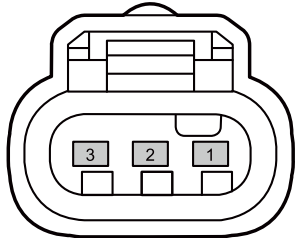
No

Repair or replace the faulty part.

Yes

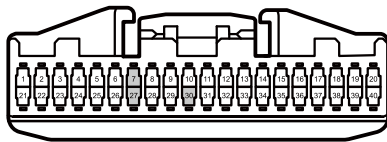
Step 3	Check whether the circuit between the right rear reversing radar probe and automatic parking module is open.
--------	--

SO46a RR reverse radar probe harness connector



GE11-6082d

SO237a automatic parking module harness connector1



GE11-6083d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO46a of the probe of the rear parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO46a(1)	SO237a(27)	Standard resistance: less than 1Ω
SO46a(2)	SO237a(30)	
SO46a(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.

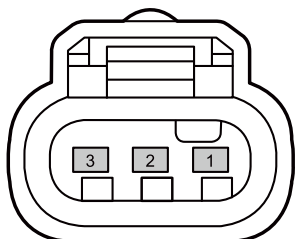
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the right rear reversing radar probe and automatic parking module is short to ground.

SO46a RR reverse radar probe harness connector



GE11-6084d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO46a of the probe of the rear parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

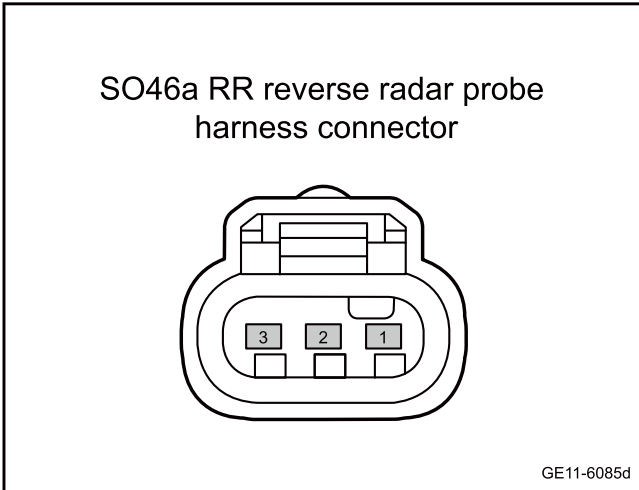
Measure terminal 1	Measure terminal 2	Standard value
SO46a(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO46a(2)		
SO46a(3)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the right rear reversing radar probe and automatic parking module is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO46a of the probe of the rear parking sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO46a(1)	Vehicle body is grounded.	Standard voltage: 0V
SO46a(2)		
SO46a(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the probe of the rear parking sensor.

- A. To replace the rear right reverse radar probe, please refer to [Replacement of Rear Right Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module.
Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.27 Right Rear Blind Spot Probe Does Not Work

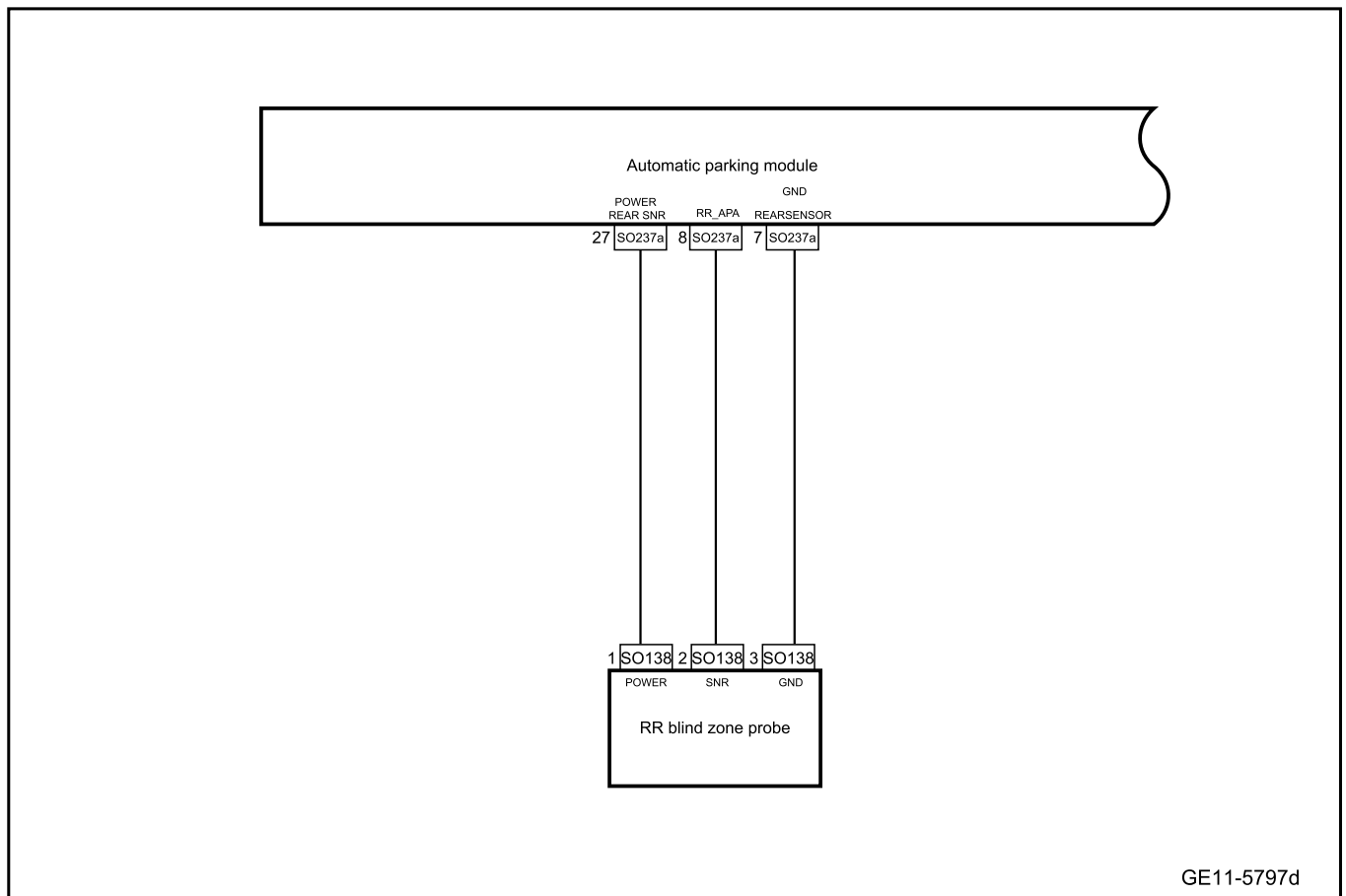
1. DTC description:

Diagnostic Trouble Code	Description
C140612	Right rear outermost sensor signal line is shorted to power supply
C140614	Right rear outermost sensor signal line is open circuit or short circuit signal grounding
C140635	Aftershocks time of the right rear outermost sensor is incorrect
C140687	Right rear outermost sensor no signal/no communication

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140612	Sensor signal wire is short to Ubat	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Automatic parking module 3. Right rear blind spot probe
C140614	Sensor signal wire is short to GND or OC		
C140635	Sensor ring time fault		
C140687	Signal decoding, communication verification error		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No
Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

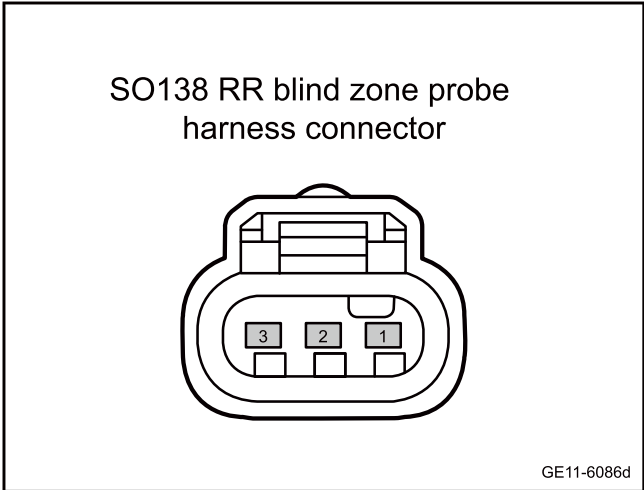
- A. Check the probe of the rear right blind spot probe for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the rear blind spot probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

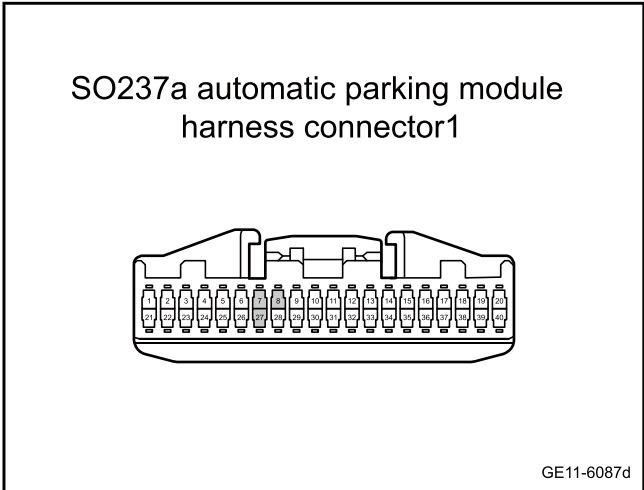
Step 3 Check whether the circuit between the right rear blind spot probe and automatic parking module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO138 of the probe of the rear right blind spot probe sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO138(1)	SO237a(27)	Standard resistance: less than 1Ω
SO138(2)	SO237a(8)	
SO138(3)	SO237a(7)	

- E. Confirm whether the measured value meets the standard.



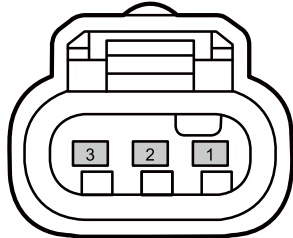
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the right rear blind spot probe and automatic parking module is short to ground.

SO138 RR blind zone probe harness connector



GE11-6088d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO138 of the probe of the rear right blind spot probe sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO138(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
SO138(2)		
SO138(3)		

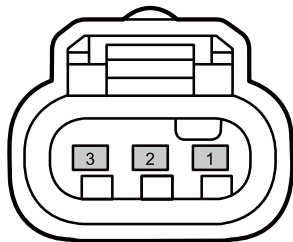
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the right rear blind spot probe and automatic parking module is short to power supply.

SO138 RR blind zone probe harness connector



GE11-6089d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO138 of the probe of the rear right blind spot probe sensor.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO138(1)	Vehicle body is grounded.	Standard voltage: 0V
SO138(2)		
SO138(3)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the probe of the rear right blind spot probe.

- A. To replace the rear right reverse radar probe, please refer to [Replacement of Rear Right Blind Spot Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 | Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 | Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 | System is normal.

11.14.6.28 360 Front Camera fault

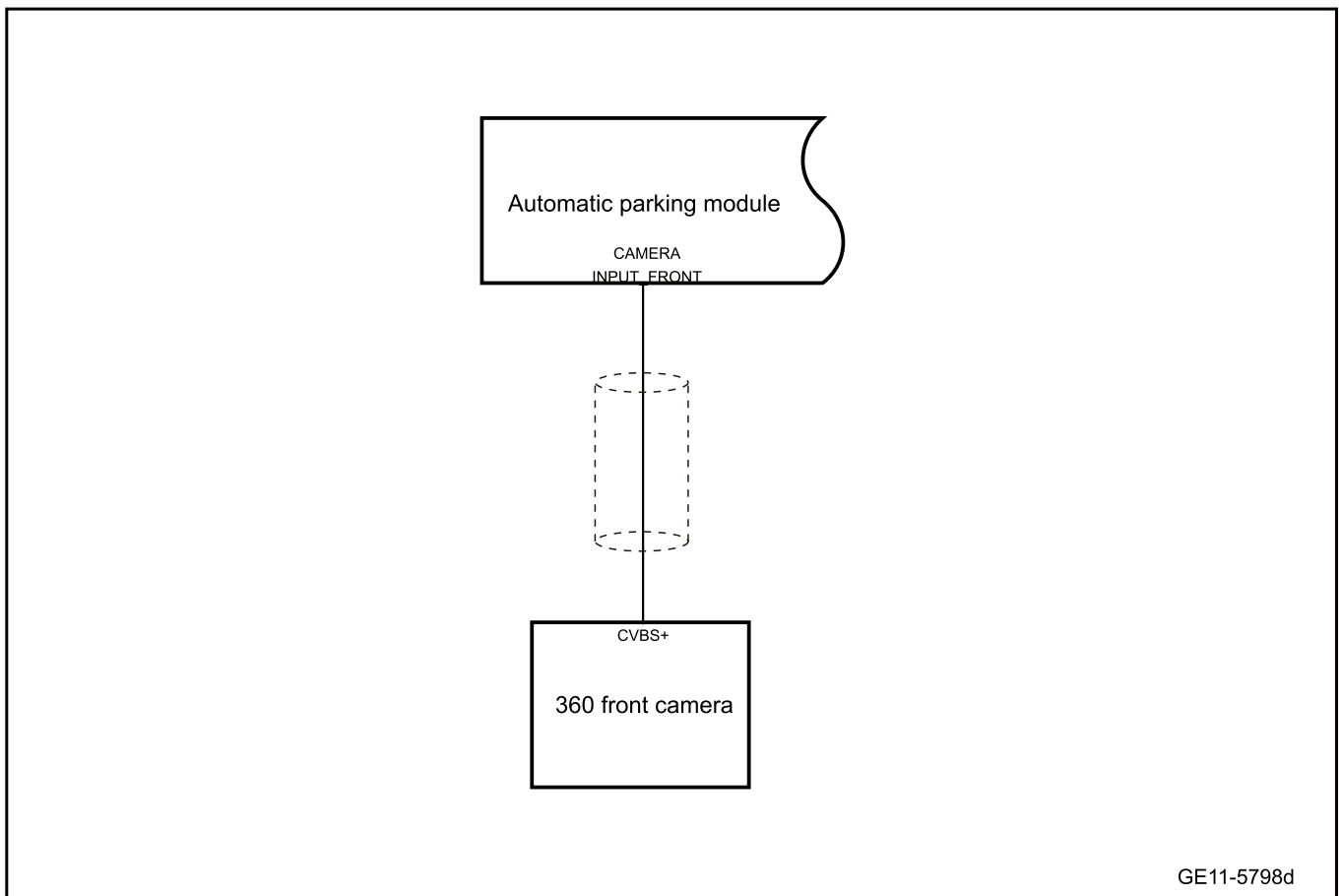
1. DTC description:

Diagnostic Trouble Code	Description
B1D0013	AVM front camera harness open circuit
B1D0011	AVM front Camera power supply is short to GND.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0013	Front camera video signal is on.	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON 3. AVM power-on startup is completed	1. Circuit 2. Automatic parking control module 3. 360 front Camera
B1D0011	Camera power supply is short to GND.	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON 3. AVM power-on startup is completed	

3. Circuit diagram:



4. Diagnosis steps:

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

Step 2	Primary check.
--------	----------------

- A. Check the 360 front cameras for signs of damage, deformation, stain, loosening, etc.
- B. Check the 360 front camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 3 Replace the 360 front camera.

- A. To replace the 360 front camera, please refer to [Replacement of 360 Front Camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the automatic parking module.

- A. Check whether the power supply of automatic parking module and the grounding harness are normal. Refer to [11.2.6.7. Automatic parking Power Supply Failure](#)
- B. To replace the automatic parking control module, please refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 5 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

11.14.6.29 360 Front Camera fault

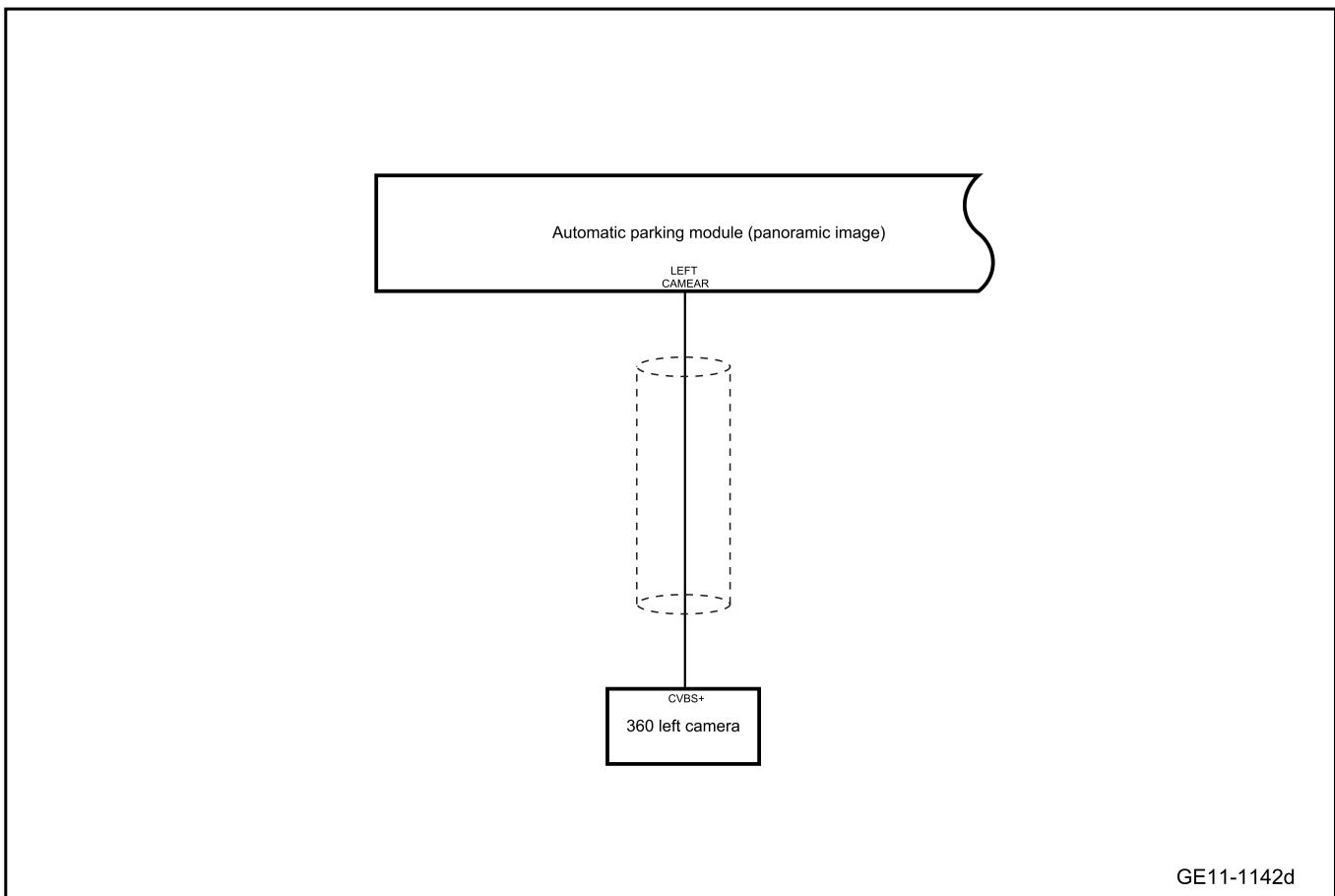
1. DTC description:

Diagnostic Trouble Code	Description
B1D0113	AVM left camera harness open circuit
B1D0611	AVM left camera power supply short circuit to the ground

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0113	Left camera video signal is on	<ol style="list-style-type: none"> The power supply voltage is 9V-16V The hard line ACC status should be ACC ON AVM power-on startup is completed 	<ol style="list-style-type: none"> Circuit Automatic parking control module 360 left Camera
B1D0611	The battery voltage has been lower than 0.5V for 100ms after the camera is power on	<ol style="list-style-type: none"> ACC open status The power supply voltage is 9V-16V Turn on the camera power supply Diagnosis service \$85 is not activated 	

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

Step 2	Primary check.
--------	----------------

- A. Check the 360 left camera for signs such as damage and falling off.
- B. Check the 360 left camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between 360 left camera and radio control is open.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect 360 left camera harness connector
- C. Disconnect the automatic parking control module harness connector 1.
- D. Use a multimeter to measure the resistance between the harness connector of the 360 left camera and the harness connector of the automatic parking module.

Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the 360 left camera and automatic parking control module is short to ground.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the 360 left camera harness connector
- C. Disconnect the automatic parking control module harness connector.
- D. Use a multimeter to measure the resistance between the 360 left camera harness connector terminal and the body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between 360 left camera and automatic parking control module is short to power supply.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the 360 left camera harness connector
- C. Disconnect the automatic parking control module harness connector 1.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between the 360 left camera harness connector terminal and the body grounding.

Standard voltage: 0V
- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the 360 left camera.

- A. Replace the 360 left camera. Refer to [Replacement of 360 left camera](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the automatic parking control module

- A. Check the airbag control module power supply and grounding harness. Refer to [Power Failure of Automatic parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking control module.

- A. Reprogram and reset the automatic parking control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.
--

No

Step 10	System is normal.
---------	-------------------

11.14.6.30 360 Right Camera fault

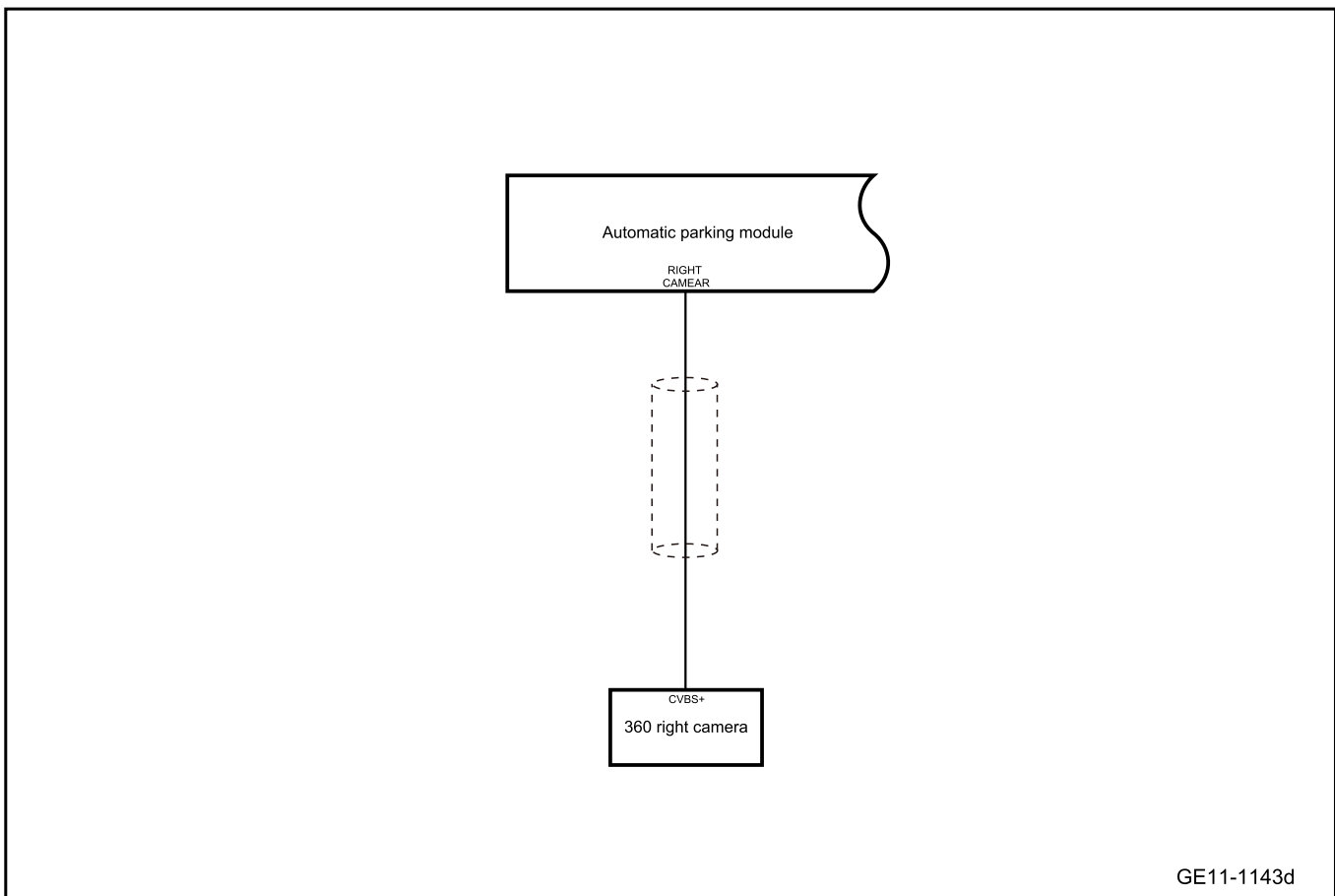
1. DTC description:

Diagnostic Trouble Code	Description
B1D0213	AVM right camera harness open circuit
B1D0711	AVM right camera power supply short circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0213	The deserialization program does not send Fsync (status indicates Unlock)	1. ACC open status 2. The power supply voltage is 9V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking control module 3.360 right Camera
B1D0711	After the camera is powered on, the camera voltage has been lower than 0.5V for 100ms	1. ACC open status 2. The power supply voltage is 9V-16V 3. Turn on the camera power supply 4. Diagnosis service \$85 is not activated	

3. Circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No ➤ Refer to [Intermittent Fault Detection](#)

Yes ➤

Step 2	Primary check.
--------	----------------

- A. Check the 360 right camera for signs such as damage and falling off.
- B. Check the 360 right camera harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between 360 right camera and automatic parking control module is open.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the 360 right camera harness connector
- C. Disconnect the automatic parking control module harness connector.
- D. Use a multimeter to measure the resistance between the harness connector of the 360 right camera and the harness connector of the automatic parking module.

Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between 360 right camera and automatic parking control module is short to ground.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the 360 right camera harness connector
- C. Disconnect the automatic parking control module harness connector.
- D. Use a multimeter to measure the resistance between the 360 right camera harness connector terminal and the body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between 360 rear camera and automatic parking control module is short to power supply.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the 360 right camera harness connector
- C. Disconnect the automatic parking control module harness connector.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between the 360 right camera harness connector terminal and the body grounding.

Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace 360 right camera.

- A. Replace 360 right camera. Refer to [Replacement of 360 right camera](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 Replace the automatic parking control module

- A. Check the airbag control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking control module.

- A. Reprogram and reset the automatic parking control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.14.6.31 360 rear camera fault

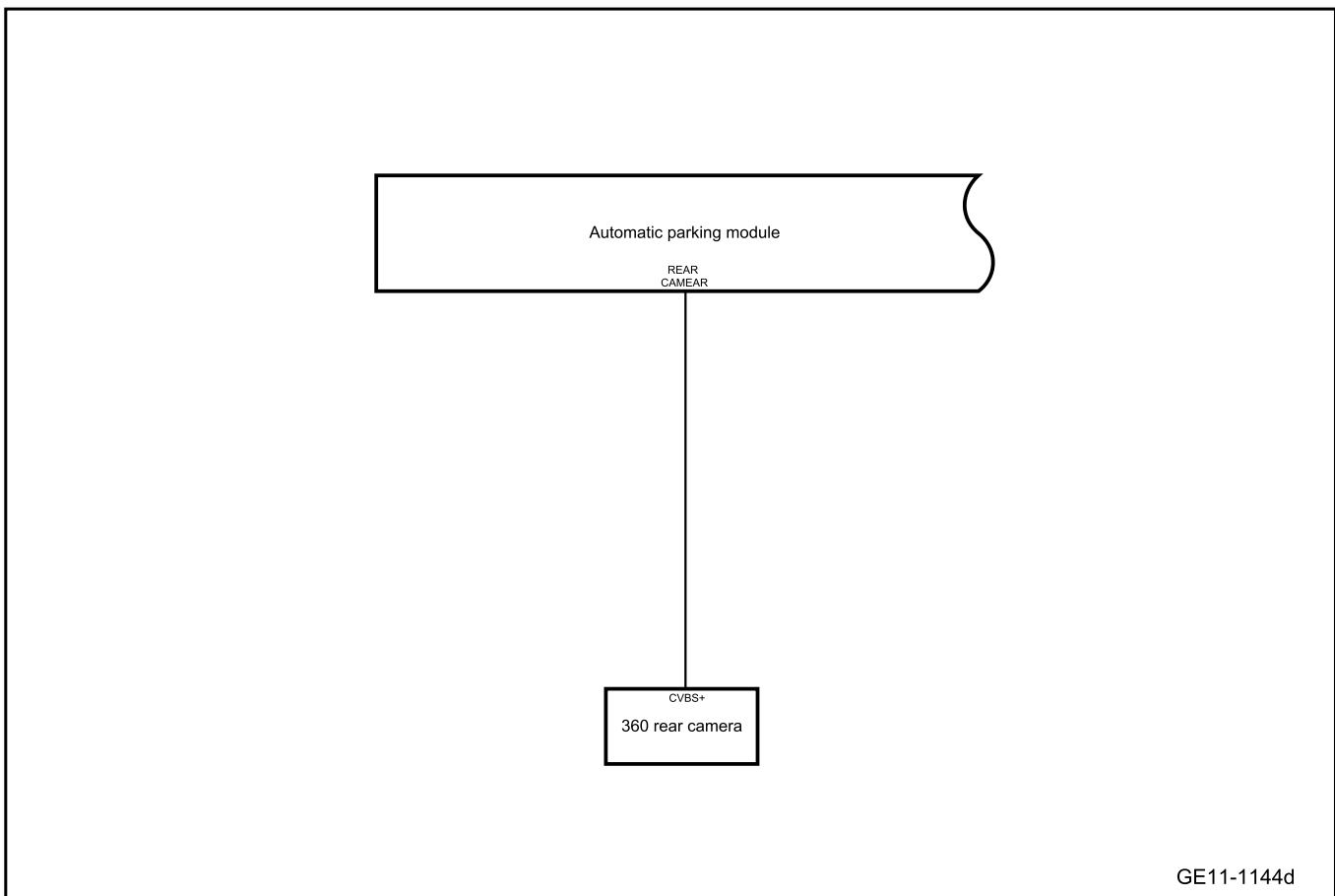
1. DTC description:

Diagnostic Trouble Code	Description
B1D0313	AVM rear camera harness open circuit
B1D0511	AVM rear camera power supply is short to GND.

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B1D0313	The deserialization program does not send Fsync (status indicates Unlock)	1. ACC open status 2. The power supply voltage is 9V-16V 3. Diagnosis service \$85 is not activated	1. Circuit 2. Automatic parking control module 3. 360 rear camera
B1D0511	The camera is powered on and camera voltage has been lower than 0.5V for 100ms	1. ACC open status 2. The power supply voltage is 9V-16V 3. Turn on the camera power supply 4. Diagnosis service \$85 is not activated	

3. Circuit diagram:



4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the 360 rear camera for signs such as damage and falling off.
- B. Check the 360 rear camera and automatic parking control module harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check whether the circuit between 360 rear camera and automatic parking control module is open.
--------	---

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect 360 rear camera harness connector.
- C. Disconnect the automatic parking control module harness connector 1.
- D. Use a multimeter to measure the resistance between the harness connector of the 360 right camera and the harness connector of the automatic parking module.

Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Check whether the circuit between 360 rear camera and automatic parking module is short to ground.
--------	--

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect 360 rear camera harness connector.
- C. Disconnect the automatic parking control module harness connector 1.
- D. Use a multimeter to measure the resistance between the 360 rear camera harness connector terminal and the body grounding.

Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5	Check whether the circuit between 360 rear camera and automatic parking control module is short to power supply.
--------	--

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect 360 rear camera harness connector.
- C. Disconnect the automatic parking control module harness connector 1.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the voltage between the 360 rear camera harness connector terminal and the body grounding.

Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace 360 rear camera.

- A. Replace 360 rear camera. Refer to [Replacement of 360 rear camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking control module

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking control module.

- A. Reprogram and reset the automatic parking control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

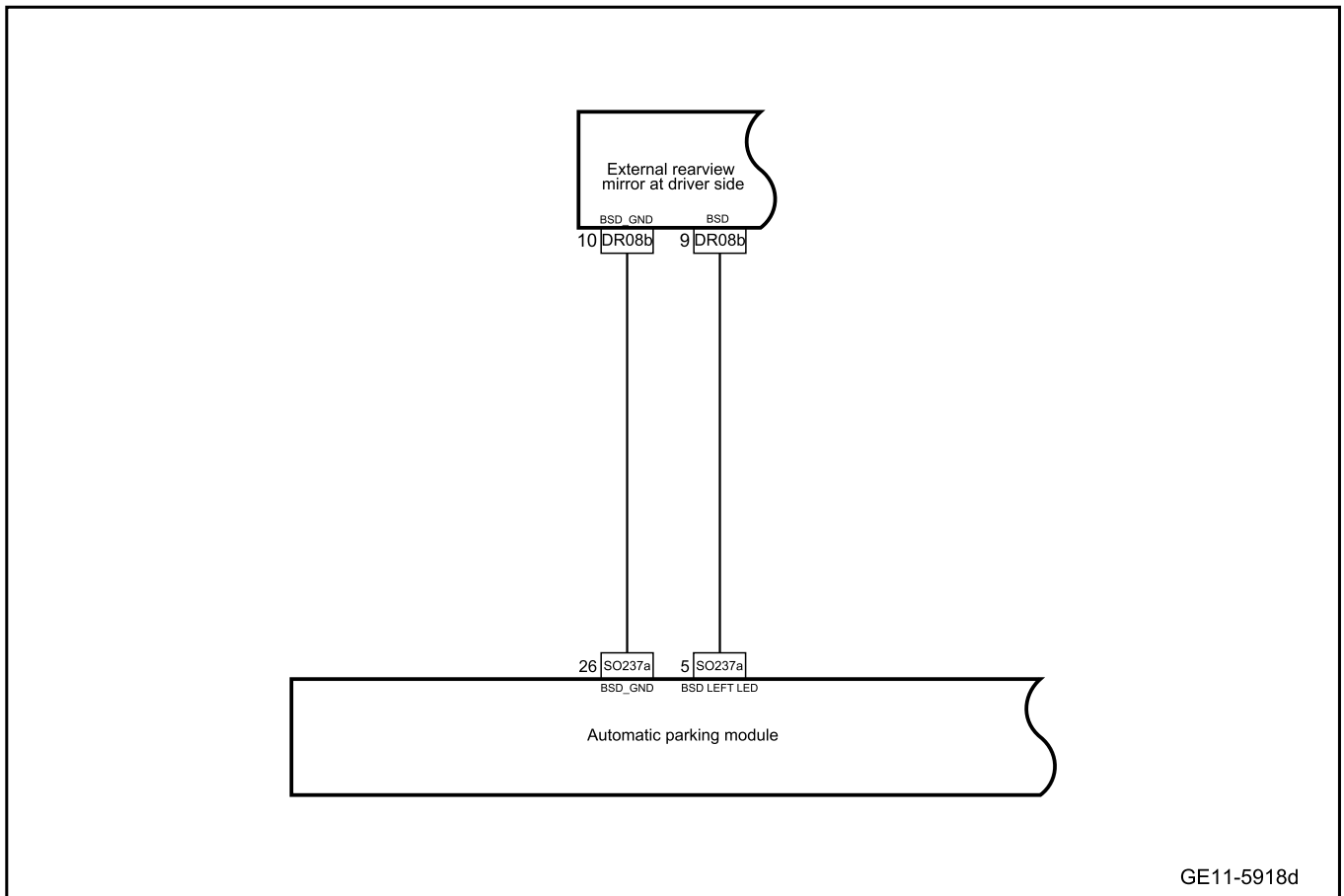
Diagnose according to the output trouble code.

No

Step 10	System is normal.
------------	-------------------

11.14.6.32 Left blind spot indicator lamp fault (Type I)

1. Circuit diagram:



2. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the driver side exterior rearview mirror for signs such as damage and falling off.
- B. Check the driver side exterior rearview mirror and automatic parking module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

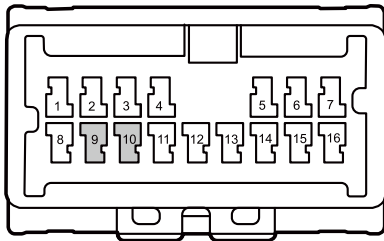
No

Repair or replace the faulty part.

Yes

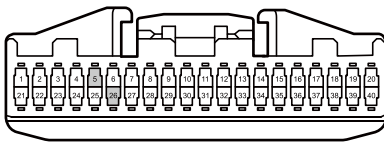
Step 3	Check whether the circuit between automatic parking module and exterior rearview mirror is open.
--------	--

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6090d

SO237a automatic parking module harness connector1



GE11-6091d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	SO237a(5)	Standard resistance: less than 1Ω
DR08b(10)	SO237a(26)	

- E. Confirm whether the measured value meets the standard.

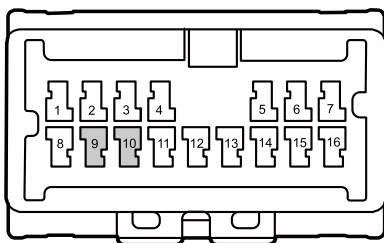
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between automatic parking module and driver side exterior rearview mirror is shorted to GND.

DR08b harness connector for exterior rearview mirrors at driver side



GE11-6092d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR08b(10)		

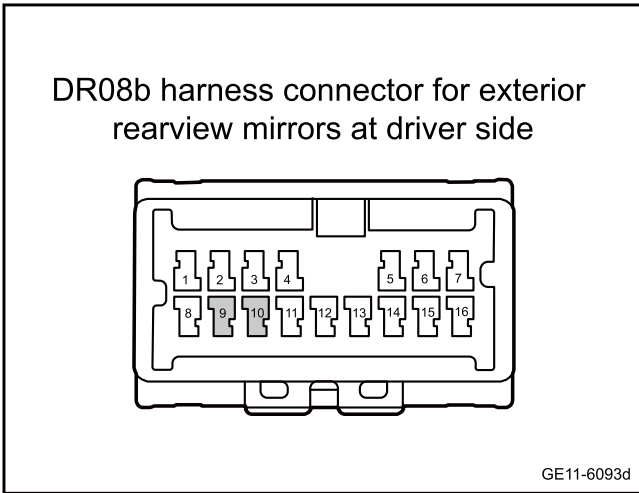
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between automatic parking module and driver side exterior rearview mirror is shorted to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the driver side exterior rearview mirror harness connector DR08b
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR08b(9)	Vehicle body is grounded.	Standard voltage: 0V
DR08b(10)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the driver's side exterior rearview mirror

- A. Replace the driver's side exterior rearview mirror Refer to [Replacement of driver-side exterior rearview mirror](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the airbag control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

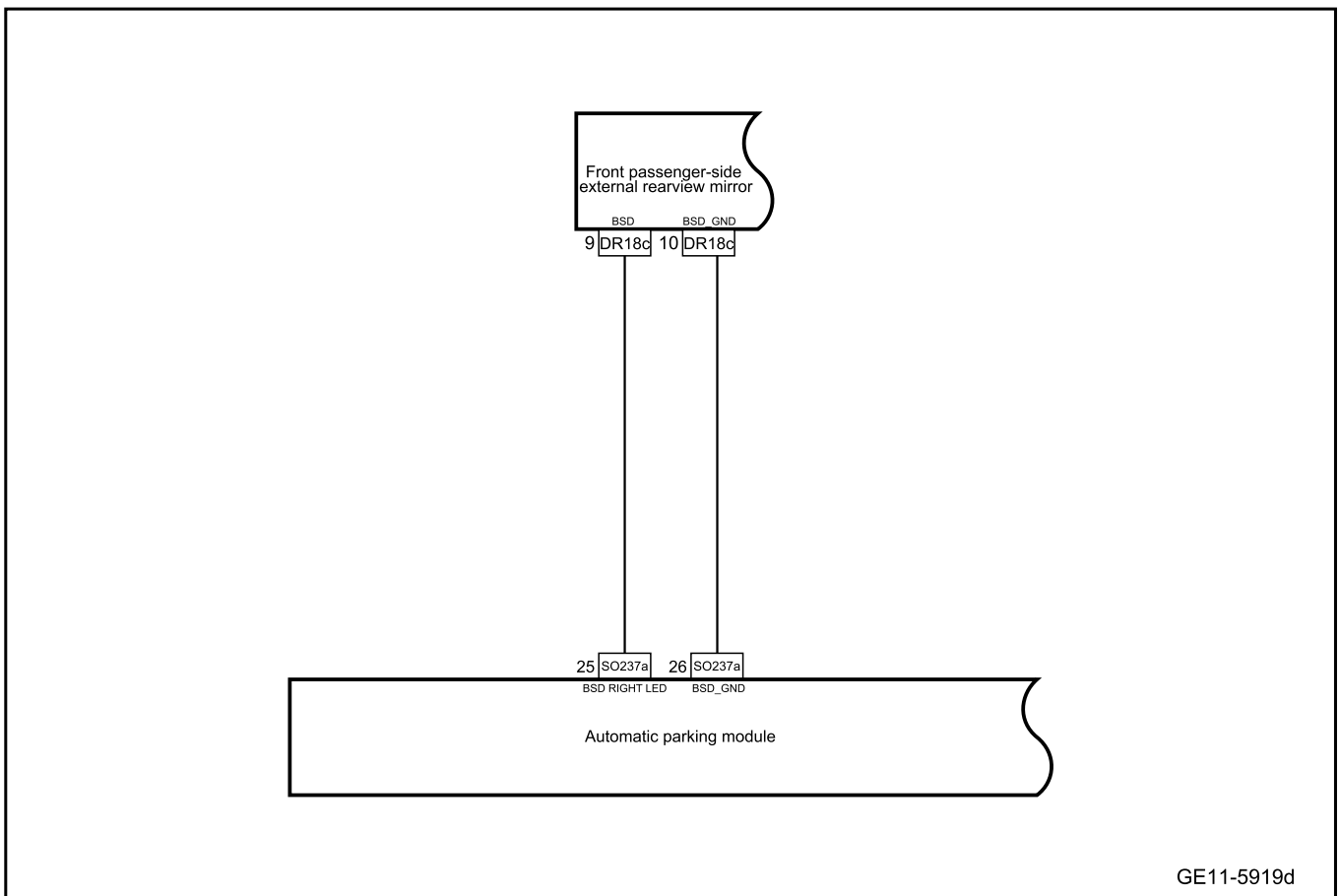
Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

11.14.6.33 Right Blind Spot indicator fault

1. Circuit diagram:



4. Diagnosis steps

Step 1 Use the fault diagnostic apparatus to confirm whether the fault code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

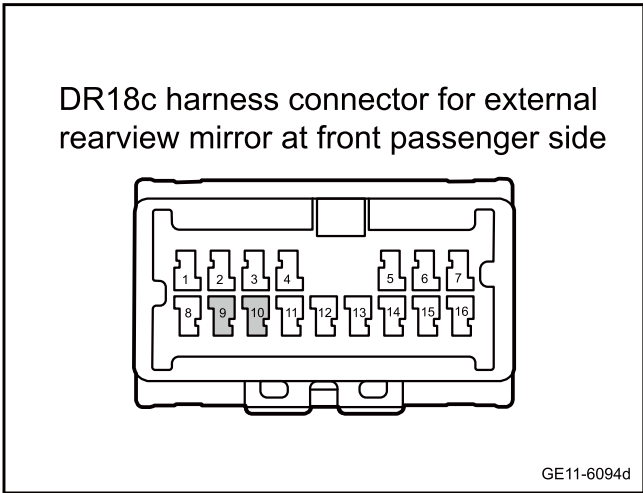
- A. Check the front passenger side exterior rearview mirror for signs such as damage and falling off.
- B. Check the harness connector of front passenger side exterior rearview mirror and automatic parking module for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

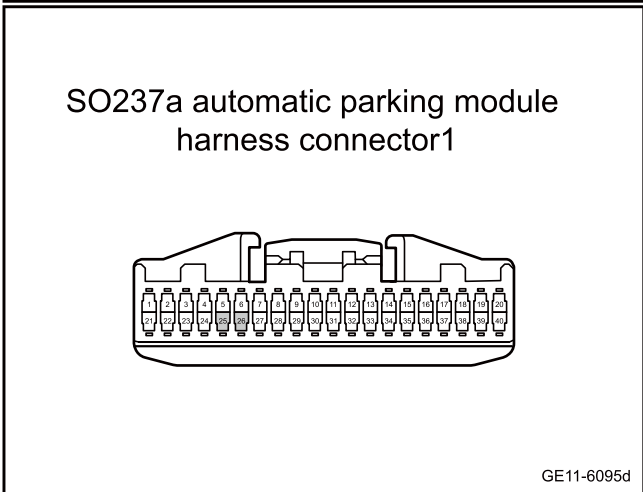
Yes

Step 3 Check whether the circuit between the front passenger side exterior rearview mirror and automatic parking module is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	SO237a(25)	Standard resistance: less than 1Ω
DR18c(10)	SO237a(26)	



- E. Confirm whether the measured value meets the standard.

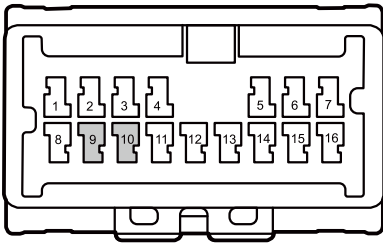
No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the front passenger side exterior rearview mirror and the automatic parking module is short to ground.

DR18c harness connector for external rearview mirror at front passenger side



GE11-6096d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
DR18c(10)		

- E. Confirm whether the measured value meets the standard.

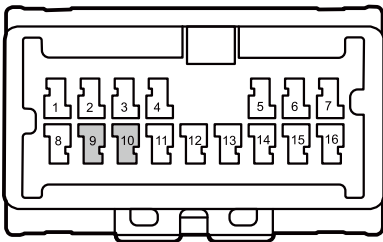
No

Repair or replace the harness.

Yes

Step 5 Check whether the circuit between automatic parking module and front passenger side exterior rearview mirror is shorted to power supply.

DR18c harness connector for external rearview mirror at front passenger side



GE11-6097d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector DR18c of front passenger side exterior rearview mirror.
- C. Disconnect the automatic parking module harness connector SO237a.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
DR18c(9)	Vehicle body is grounded.	Standard voltage: 0V
DR18c(10)		

- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace front passenger's side exterior rearview mirror.

- A. Replace front passenger's side exterior rearview mirror. Refer to [Replacement of front passenger-side exterior rearview mirror](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the automatic parking module.

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of automatic parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of automatic parking Control Module](#)

Next step

Step 8 Reprogram and reset the automatic parking module.

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

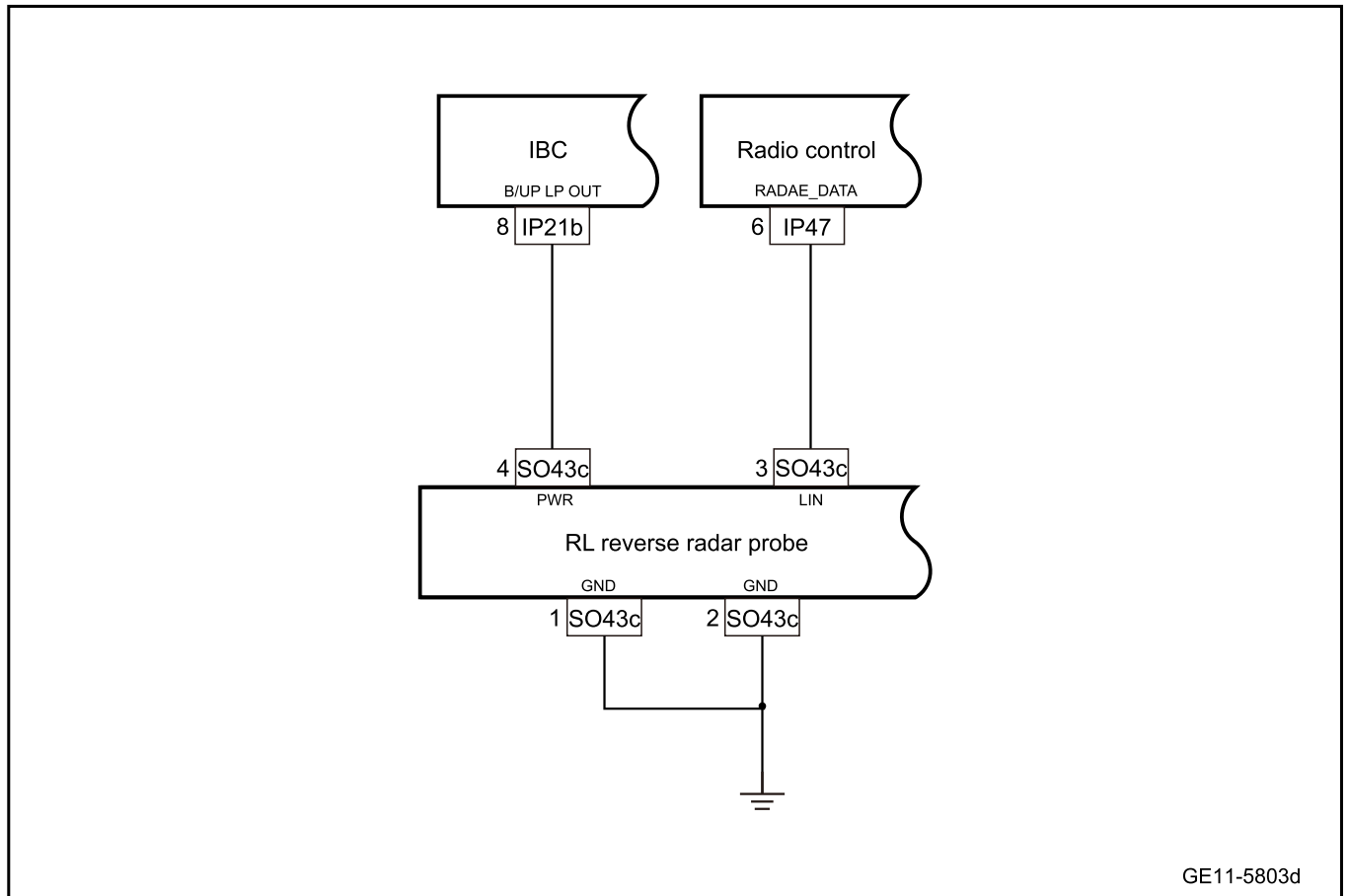
Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.14.6.34 Reverse Radar Does Not Work

1. Schematic circuit diagram:



2. Diagnosis steps

This manual is only used to diagnose the fault of left middle right reversing radar probe. The diagnosis of other radar probe is the same as that of left middle right reversing radar probe.

Step 1	Primary check.
--------	----------------

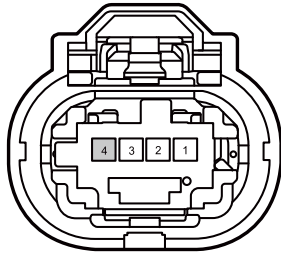
- A. Check the reversing radar probe, IBC and head unit for signs of loosening, wear, break, etc.
- B. Check the harness connector of the reversing radar probe, IBC and head unit for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

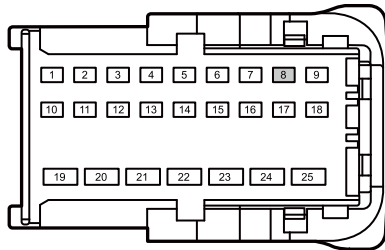
Step 2	Check whether the circuit between the left middle rear reversing radar probe and IBC is open.
--------	---

SO43c RL reverse radar probe harness connector



GE11-6098d

IP21b body control module harness connector 2



GE11-6099d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle rear reversing radar probe harness connector SO43c.
- C. Disconnect the IBC harness connector IP21b.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(4)	IP21b(8)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

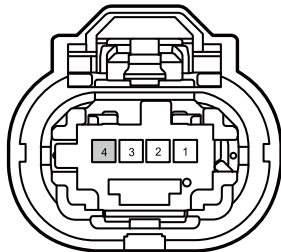
No

Repair or replace the harness.

Yes

Step 3 Check whether the circuit between the left middle rear reversing radar probe and IBC is short to ground.

SO43c RL reverse radar probe harness connector



GE11-6100d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle rear reversing radar probe harness connector SO43c.
- C. Disconnect the IBC harness connector IP21b.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(4)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

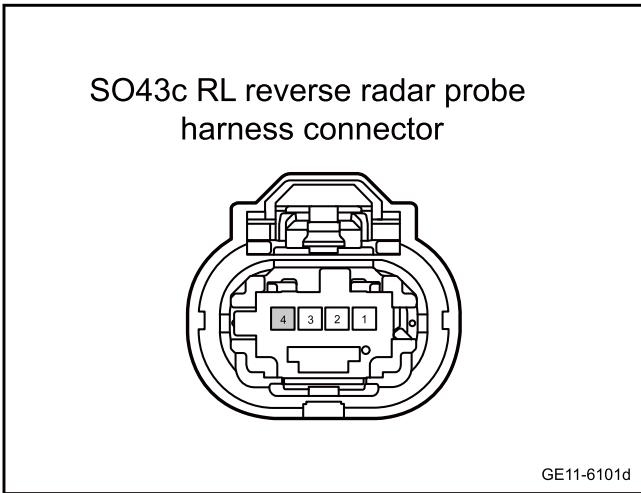
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the left middle rear reversing radar probe and IBC is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle reversing radar probe harness connector SO43c.
- C. Disconnect the IBC harness connector IP21b.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(4)	Vehicle body is grounded.	Standard voltage: 0V

- F. Confirm whether the measured value meets the standard.

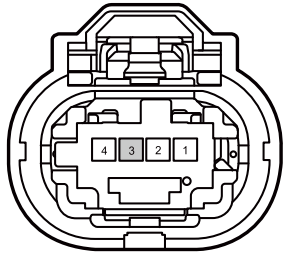
No

Repair or replace the harness.

Yes

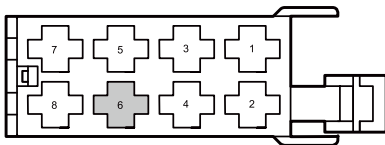
Step 5 Check whether the line between the left middle rear radar probe harness parking sensor and the head unit is open.

SO43c RL reverse radar probe harness connector



GE11-6102d

IP47 audio control unit harness connector A



GE11-6103d

Yes

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle rear reversing radar probe harness connector SO43c.
- C. Disconnect the head unit harness connector IP47.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(3)	IP47(6)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

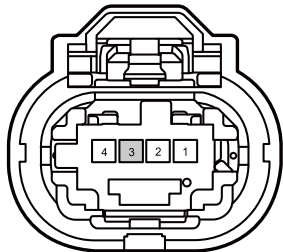
No

Repair or replace the harness.

Step 6

Check whether the line between the left middle rear radar probe harness and the head unit is short to grounding.

SO43c RL reverse radar probe harness connector



GE11-6104d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle reversing radar probe harness connector SO43c.
- C. Disconnect the head unit harness connector IP47.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(3)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

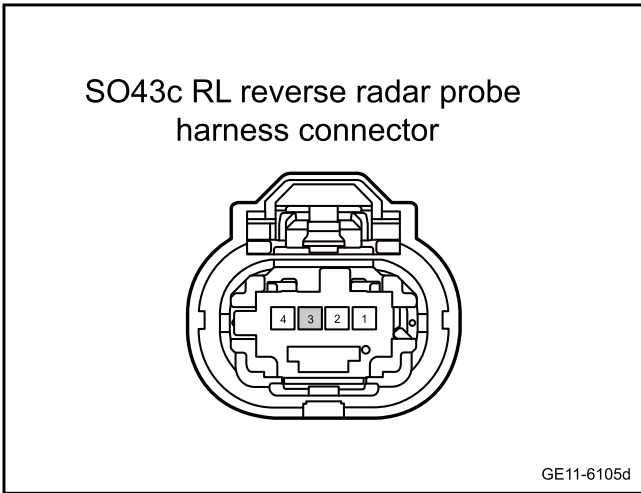
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Check whether the line between the left middle rear reversing radar probe harness and the head unit is short to power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle reversing radar probe harness connector SO43c.
- C. Disconnect the head unit harness connector IP47.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(3)	Vehicle body is grounded.	Standard voltage: 0V

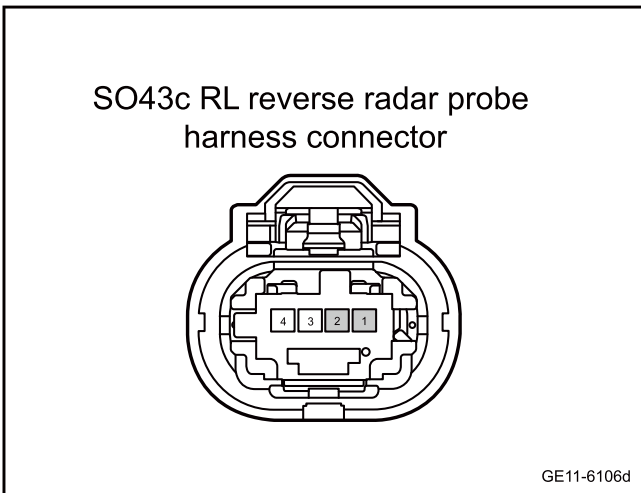
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 8 Check whether the grounding circuit of the left middle rear reversing radar probe is normal.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle reversing radar probe harness connector SO43c.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43c(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω
SO43c(2)		

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 9 Replace the left middle reversing radar probe.

- A. To replace the rear left middle reverse radar probe, please refer to [Replacement of Rear Middle Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 10	Change the head unit.
------------	-----------------------

- A. Replace the head unit. Refer to the [Replacement of head unit](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 11	Replace the IBC
---------	-----------------

- A. Replace the IBC control module, refer to [Replacement of body control module](#)

Next step

Step 12	Reprogram and reset the IBC.
------------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 13	Use the diagnostic scanner to determine whether the trouble is eliminated.
------------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

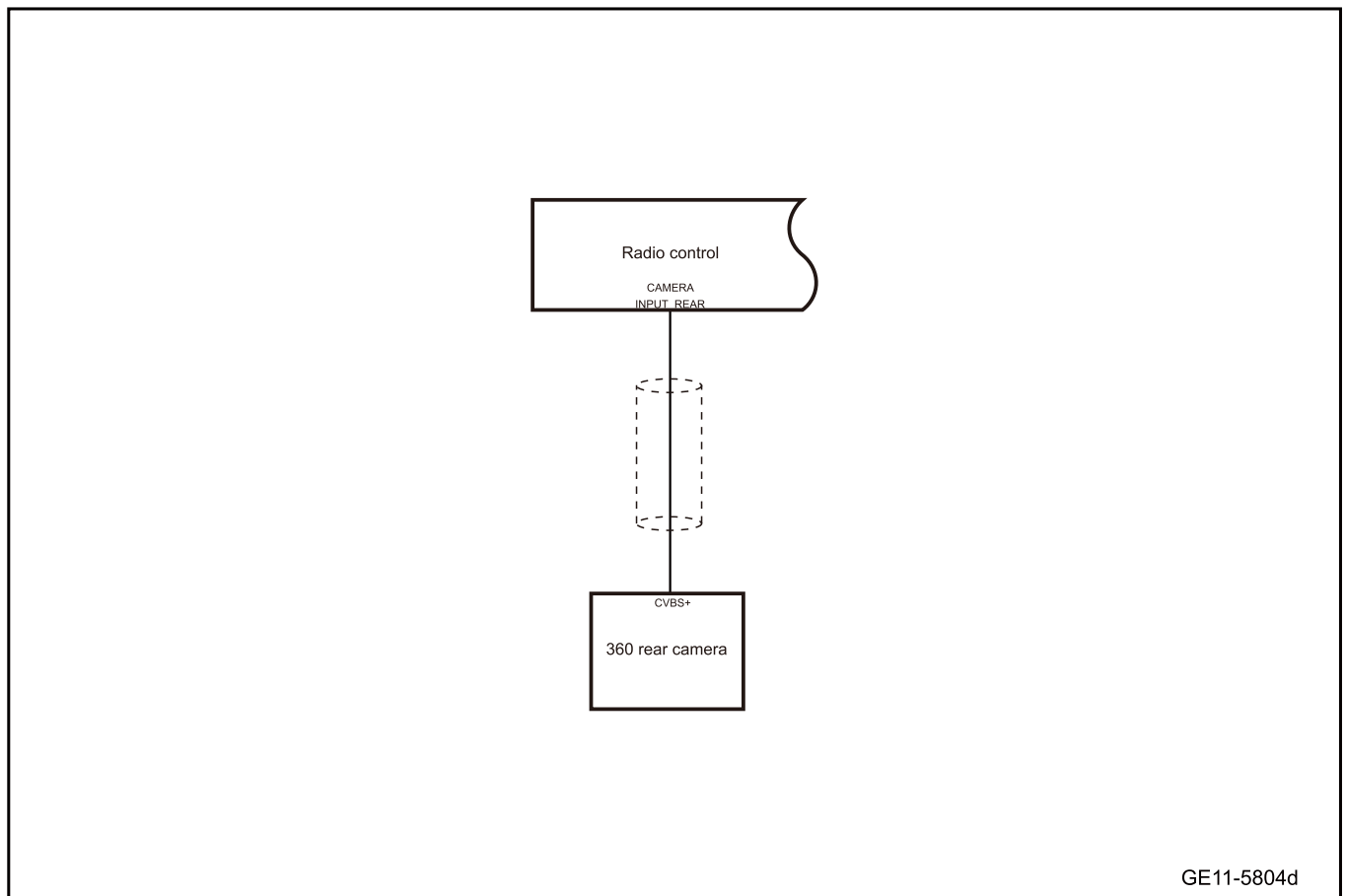
Diagnose according to the output trouble code.

No

Step 14	System is normal.
------------	-------------------

11.14.6.35 Reversing Visual System Does Not Work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the 360 rear camera and head unit for signs of loosening, wear, breakage, etc.
- B. Check the 360 rear camera and head unit harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 | Replace 360 rear camera.

- A. To replace the 360 rear camera, please refer to [Replacement of 360 Rear Camera](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 3 | Change the head unit.

- A. Replace the head unit. Refer to the [Replacement of head unit](#)
- B. Confirm whether the system is normal.

Next step

Step 4 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 6 | System is normal.

11.14.6.36 The radar probe power supply fault

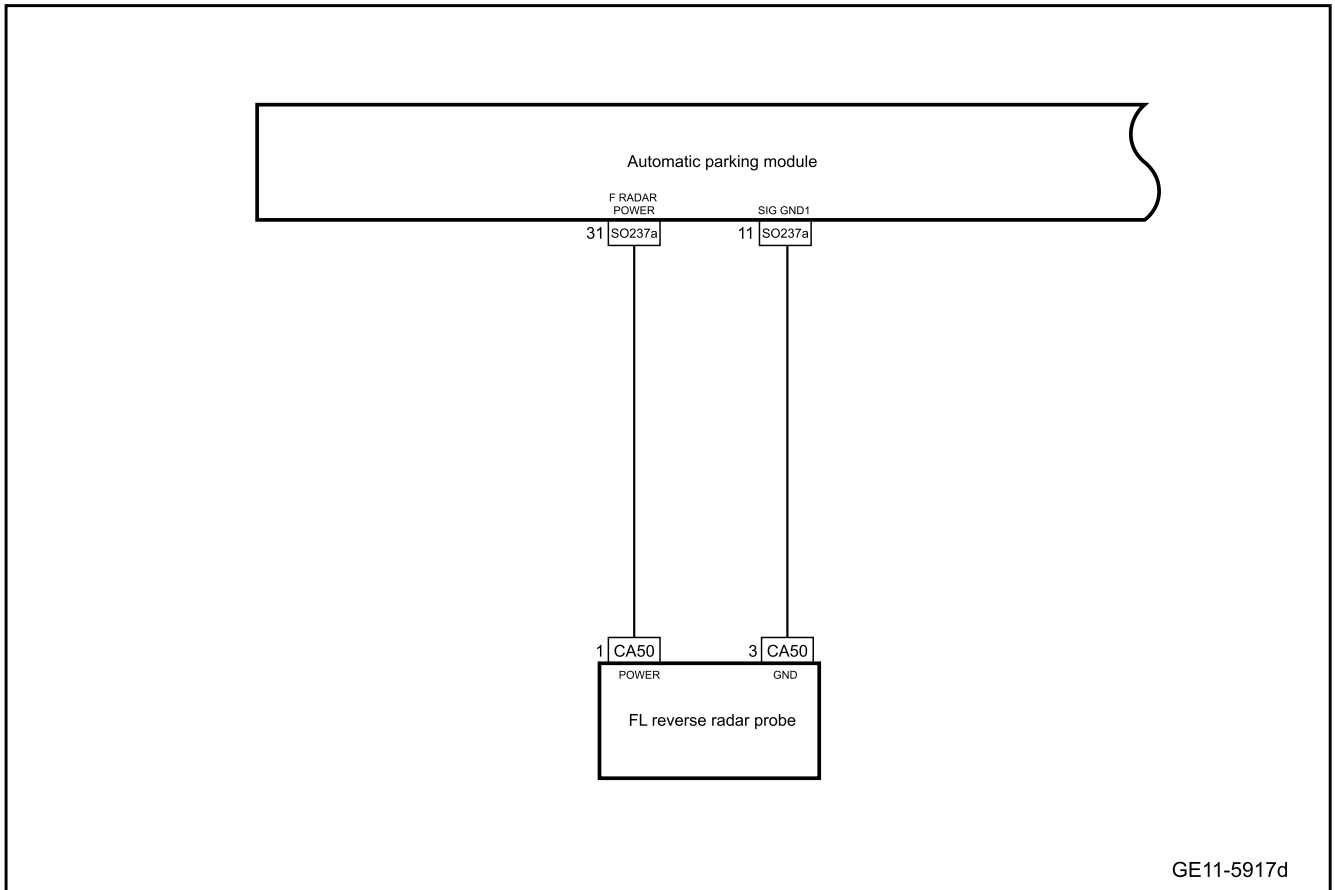
1. DTC description:

Diagnostic Trouble Code	Description
C140D11	Sensor is short GND

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140D11	Voltage<=7.5V	1. The power supply voltage is 9V-16V 2. The hard line ACC status should be ACC ON	1. Circuit 2. Radar probe 3. Automatic parking module

3. Schematic circuit diagram:



This manual is only used to diagnose the power supply fault of the left front radar probe. The diagnosis of the power supply fault of other radar probes is the same as that of the power supply fault of the left front radar probe.

4. Diagnosis steps

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

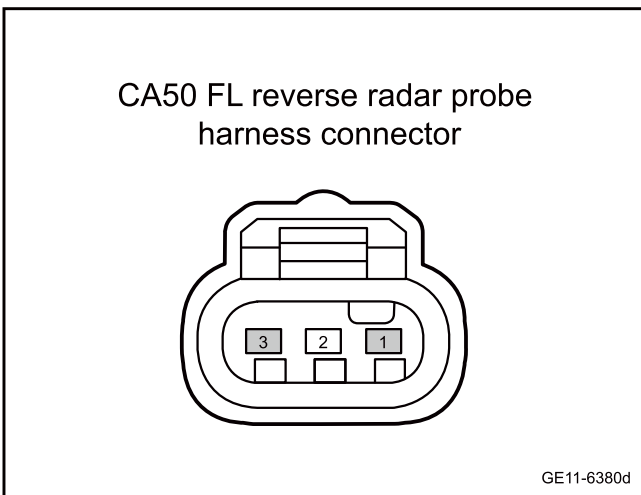
- A. Check the front left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of front left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the left front reversing radar probe and automatic parking module is short to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA50
- C. Disconnect the automatic parking module harness connector SO237a.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA50(1)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher
CA50(3)		

- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Replace the front left reverse radar probe.
--------	---

- A. To replace the front left reverse radar probe, please refer to [Replacement of Front Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 5	Replace the automatic parking module.
--------	---------------------------------------

- A. Check the automatic parking control module power supply and grounding harness. Refer to [Power Failure of Automatic Parking Control Module](#)
- B. Replace the automatic parking control module Refer to [Replacement of Automatic Parking Control Module](#)

Next step

Step 6	Reprogram and reset the automatic parking module.
--------	---

- A. Reprogram and reset the automatic parking module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes	Diagnose according to the output trouble code.
-----	--

No

Step 8	System is normal.
--------	-------------------

11.14.6.37 Reverse Radar Controller Power Supply Fault(Type II)

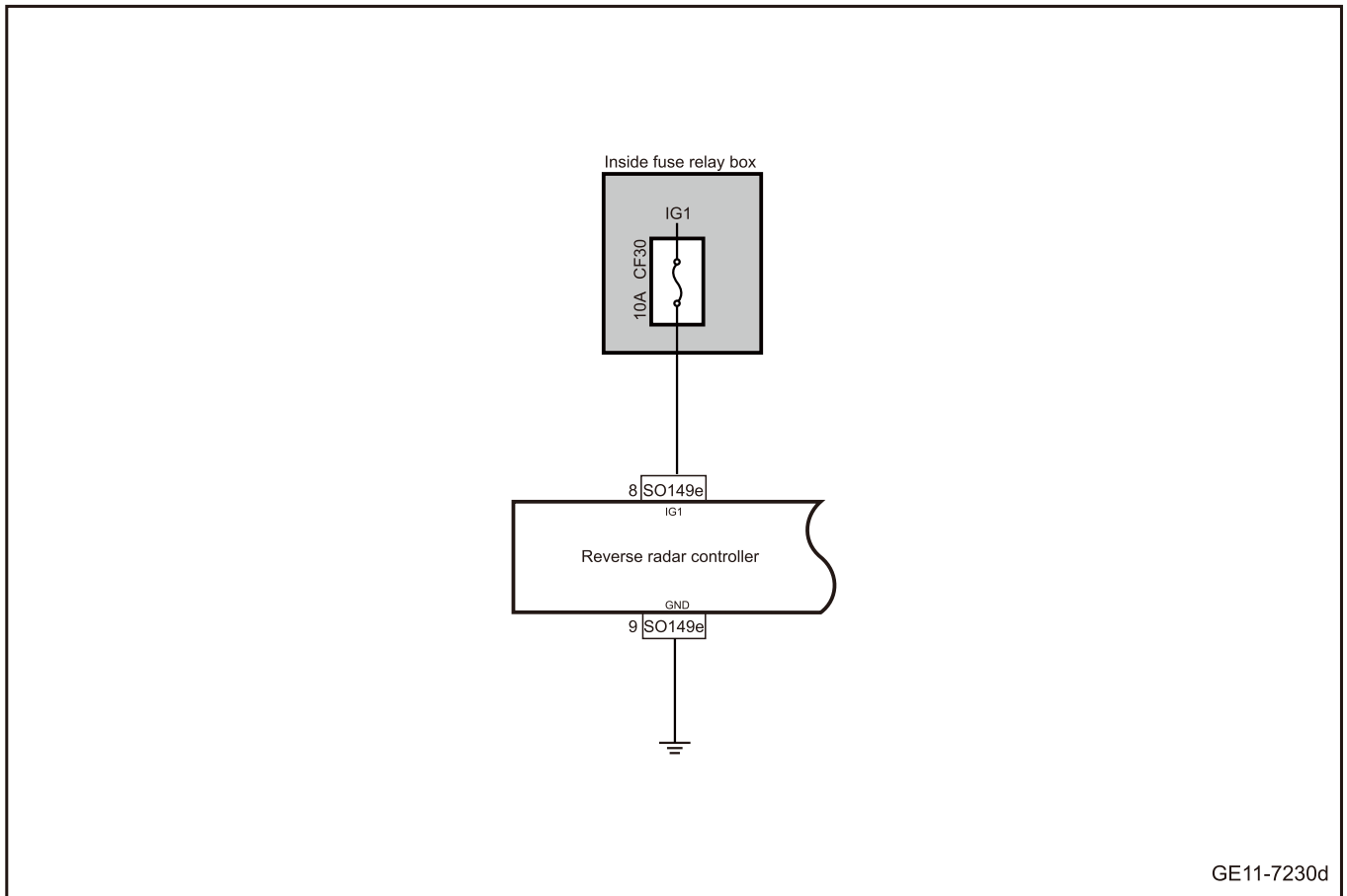
1. DTC description:

DTC	Trouble description
U300616	Power supply is low
U300617	Power supply is high

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	The battery voltage is less than 9V, with the status kept for at least 1 second	1. Fuse 2. Harness 3. Reverse radar controller
U300617		The battery voltage should not be less than 16V, with its status maintained for at least 1 second	

3. Schematic circuit diagram:



GE11-7230d

2. Diagnosis steps

Step 1 | Check whether other modules have power failure codes.

- A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 3.

Yes

Step 2 | Check the battery voltage.

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Check whether the fuse is blown according to the below table.

Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

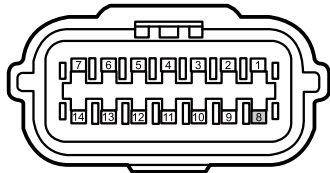
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the reverse radar power circuit.

SO149e reverse radar controller harness connector



GE11-7959d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the reverse radar controller harness connector SO149e.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO149e(8)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

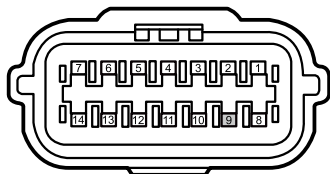
No

Repair or replace the harness.

Yes

Step 5 Check the reverse radar controller grounding circuit.

SO149e reverse radar controller harness connector



GE11-7958d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the reverse radar controller harness connector SO149e.
- C. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
SO149e(9)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.14.6.38 Internal Faults of Reverse Radar Controller (Type II)

1. DTC description:

DTC	Trouble description
C140712	The right outer sensor behind the PDC is open circuit or short-circuited to the power supply
C140714	The right rear outer sensor of PDC is short to GND
C140796	Right rear side sensor of PDC is damaged

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140712	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Reverse radar controller
C140714	Short circuit between signal cable and GND is detected		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140796	"Program error (verification error) activation, sensor failure, receiving interruption < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected. "		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the reverse radar controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the harness connector of the reverse radar controller for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Reprogram and reset the reverse radar controller.
--------	---

- A. Reprogram and reset the reverse radar controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 4 | Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 5 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 6 | System is normal.

11.14.6.39 Communication Failure of Reversing Radar Controller (Type II)

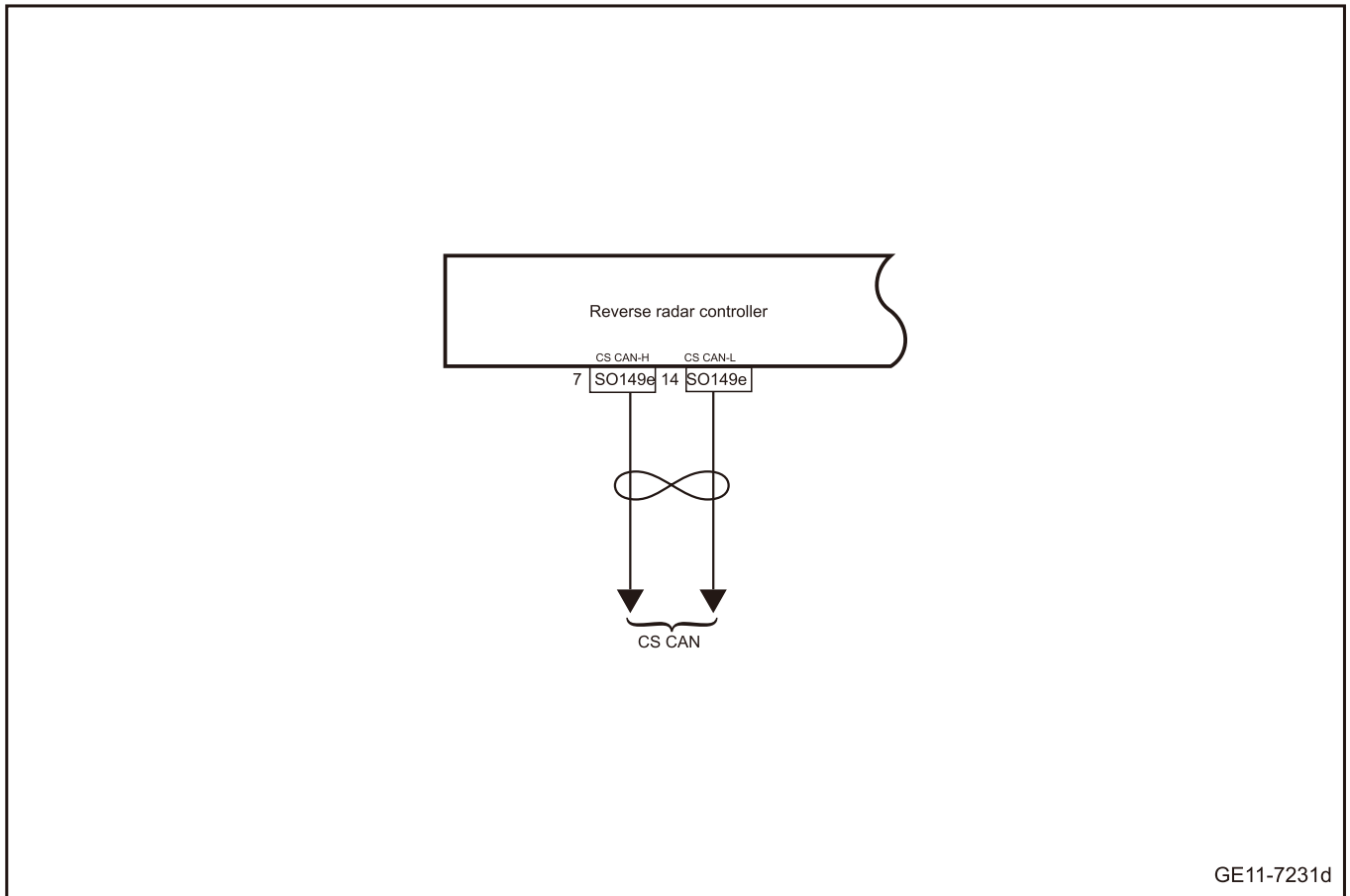
1. DTC description:

DTC	Trouble description
U007300	CAN bus off
U150082	Error in communication with ICM
U012187	Communication with ESC is lost
U016487	Communication with AC is lost
U015687	Communication with MMI is lost
U015587	Communication with IPK is lost

2. Trouble code setting and fault location:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Circuit off detected 3. Diagnosis service \$85 is not activated 4. The ignition status should be IGN ON	1. Harness 2. Diagnostic interface 3. Reverse radar controller
U150082	Detected activity counter errors or checksum errors or DLC < 8 equals 10		
U012187	ESC (ID=0x125) message is lost for 250ms		
U016487	5T (T is the message period) of AC (ID=0x2F1) information is lost		
U015687	5T (T is the message period) of MMI (ID=0x2A8) information is lost		
U015587	5T (T is the message period) of IPK (ID=0x3F1) information is lost		

3. Circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the reverse radar controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the reverse radar controller harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the CS-CAN bus integrity.
--------	---------------------------------

- A. To check the integrity of the CS-CAN bus, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 4	Reprogram and reset the reverse radar controller.
--------	---

- A. Reprogram and reset the reverse radar controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 5 | Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 6 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 7 | System is normal.

11.14.6.40 Left Front Reversing Radar Probe Does Not Work (Type II)

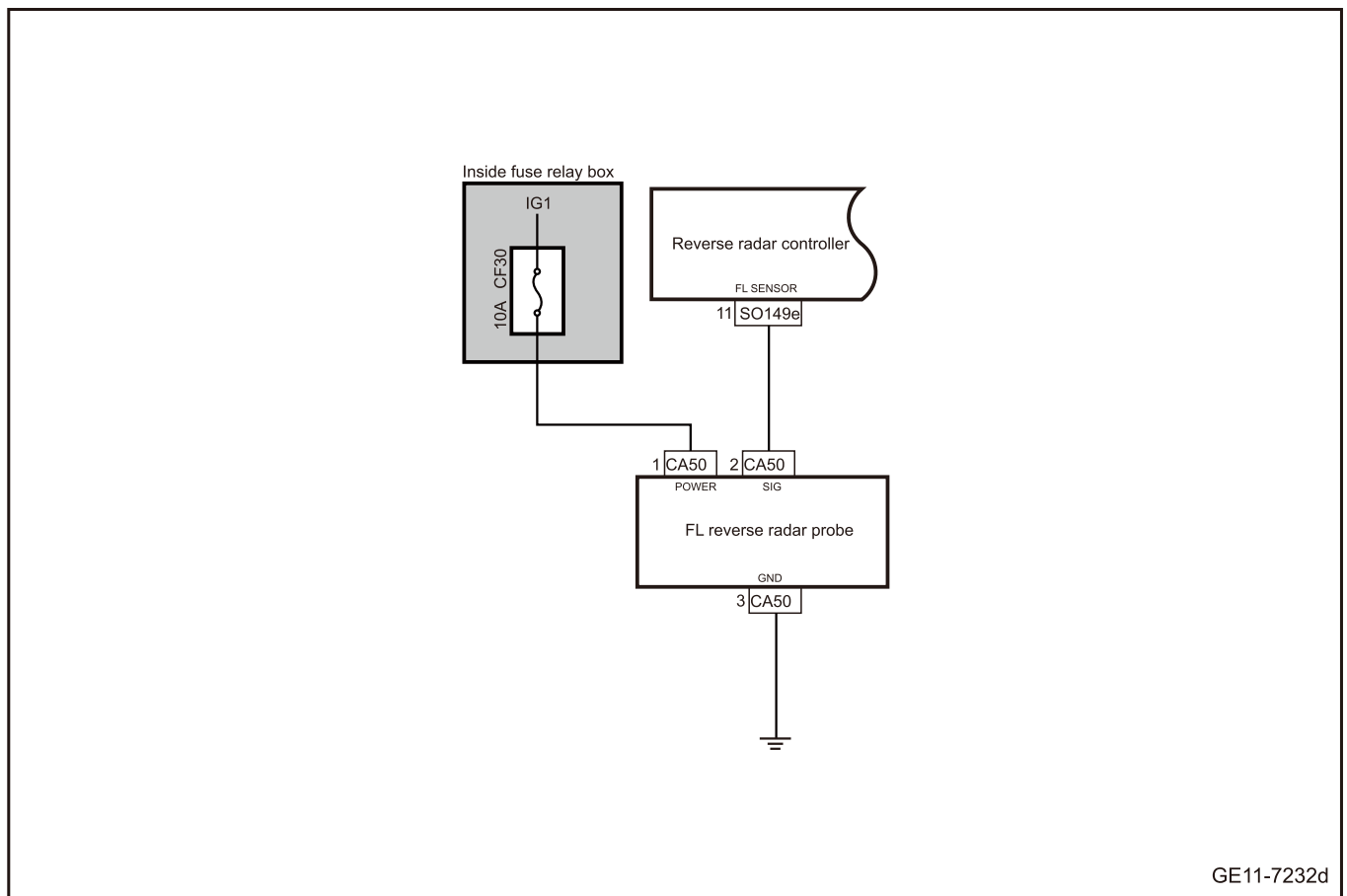
1. DTC description:

DTC	Trouble description
C140112	The left front outer sensor of PDC is open circuit or short-circuited to power supply
C140114	PDC left front outer sensor is short circuited to ground
C140196	PDC left front outer sensor is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140112	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Front left reverse radar probe 4. Reverse radar controller
C140114	Short circuit between signal cable and GND is detected		
C140196	Programming error (verification error) activation, sensor fault, receive interruption, stability time < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected.		

3. Schematic circuit diagram:



GE11-7232d

4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the front left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of front left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

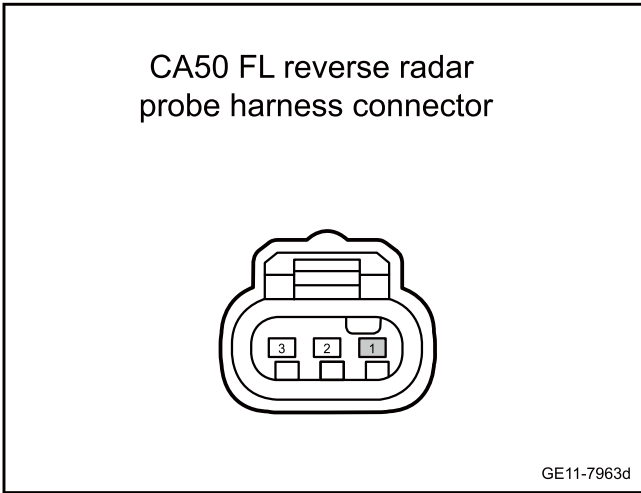
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power wire to the front left reverse radar probe.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA50 of front left reverse radar probe.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

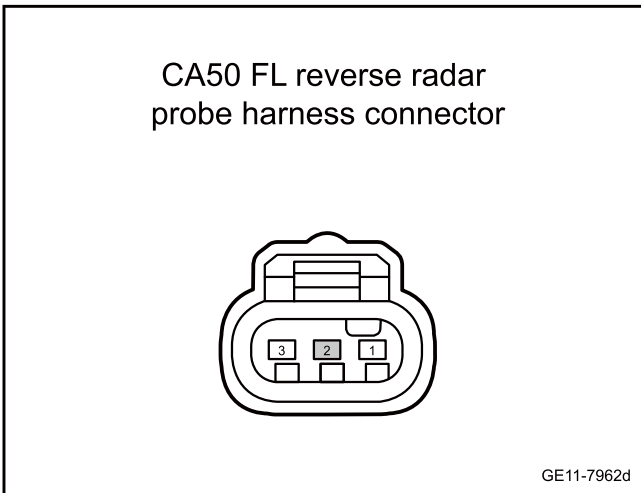
Measure terminal 1	Measure terminal 2	Standard value
CA50(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the circuit between the left front reversing radar probe and reverse radar controller is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA50
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

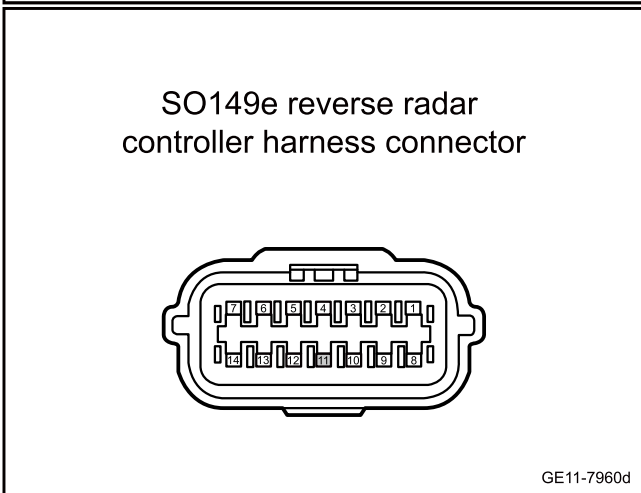
Measure terminal 1	Measure terminal 2	Standard value
CA50(2)	SO149e(11)	Standard resistance: less than 1Ω
CA50(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA50(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

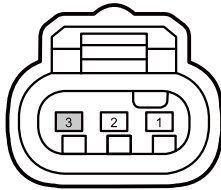
No Repair or replace the harness.



Yes

Step 6 Check the ground wire to the front left reverse radar probe.

CA50 FL reverse radar probe harness connector



GE11-7961d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of front left reverse radar probe CA50
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA50(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the front left reverse radar probe.

- A. To replace the front left reverse radar probe, please refer to [Replacement of Front Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10	Use the diagnostic scanner to determine whether the trouble is eliminated.
---------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.14.6.41 Left Front Middle Reversing Radar Probe Does Not Work (Type II)

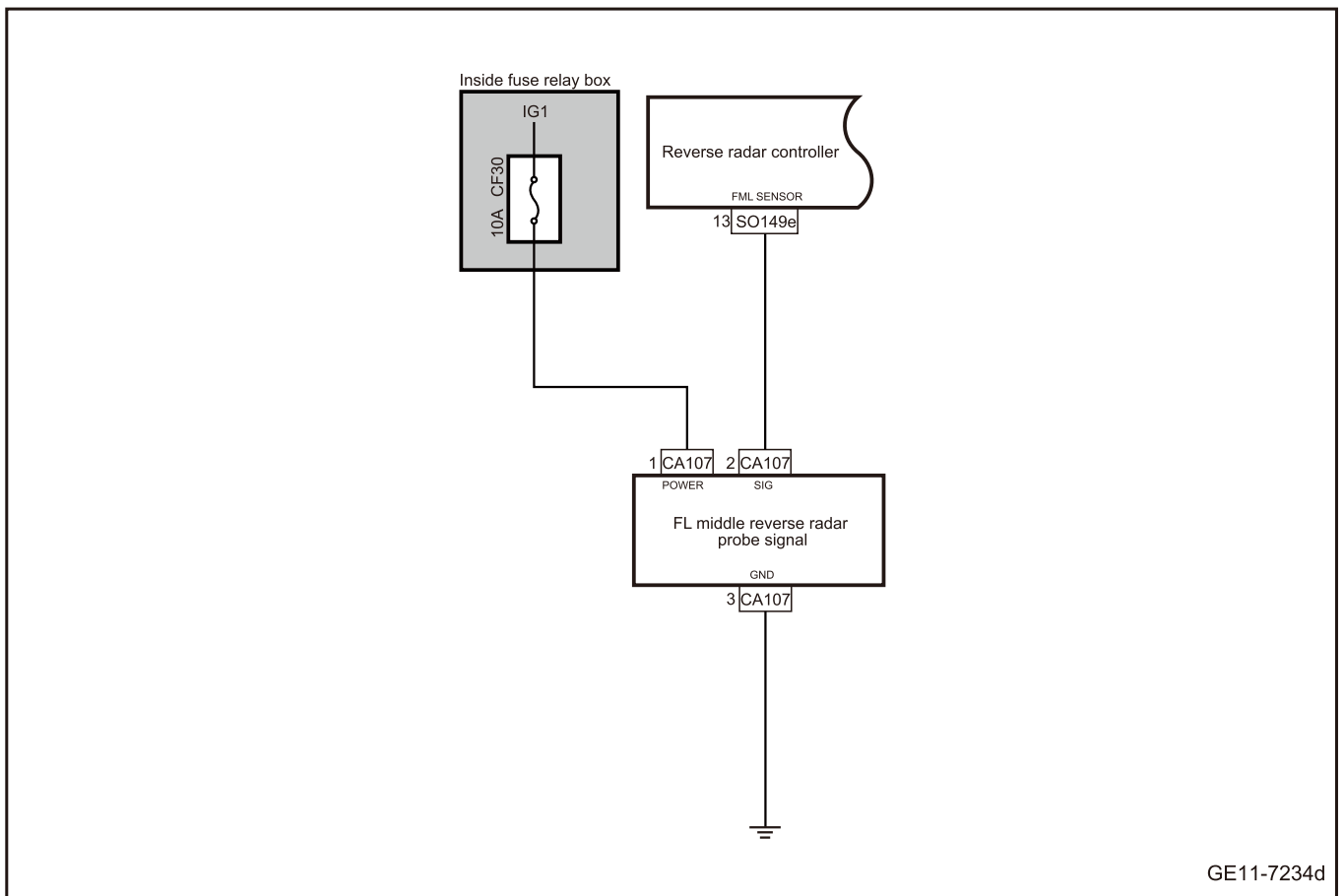
1. DTC description:

DTC	Trouble description
C140212	The left front inner sensor of PDC is open circuit or short to power supply
C140214	PDC left inner sensor is short to GND
C140296	PDC left front inner sensor is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140212	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Front left middle reverse radar probe 4. Reverse radar controller
C140214	Short circuit between signal cable and GND is detected		
C140296	Programming error (verification error) activation, sensor fault, receive interruption, stability time < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected.		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the front left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of front left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 | Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

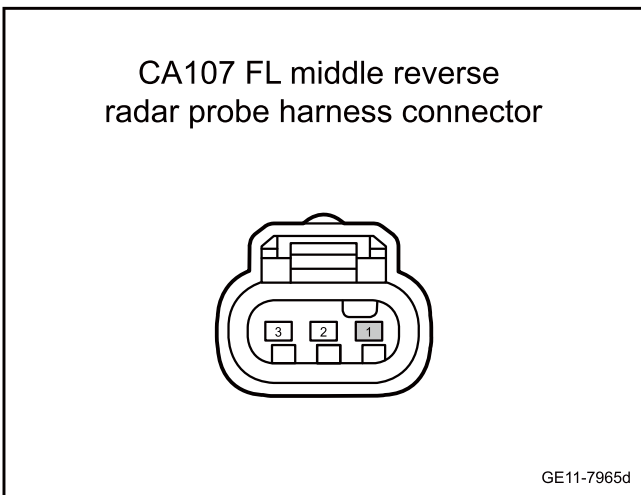
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the power wire to the left front middle reverse radar probe.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of left front middle reverse radar probe CA107
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

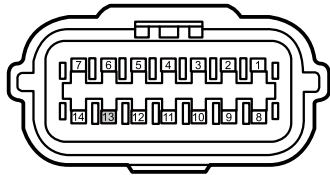
No

Repair or replace the harness.

Yes

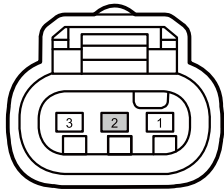
Step 5 | Check whether the circuit between the left front middle reversing radar and reverse radar controller is open.

SO149e reverse radar controller harness connector



GE11-7964d

CA107 FL middle reverse radar probe harness connector



GE11-7966d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of left front middle reverse radar probe CA107
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(2)	SO149e(13)	Standard resistance: less than 1Ω
CA107(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(2)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

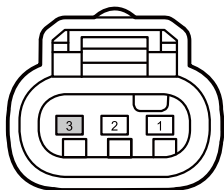
No

Repair or replace the harness.

Yes

Step 6 Check the ground wire to the left front middle reverse radar probe.

CA107 FL middle reverse radar probe harness connector



GE11-7967d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of left front middle reverse radar probe CA107
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA107(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the left front middle reverse radar probe.

- A. To replace the left front middle reverse radar probe, please refer to [Replacement of Front Middle Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.14.6.42 Right Front Middle Reversing Radar Probe Does Not Work (Type II)

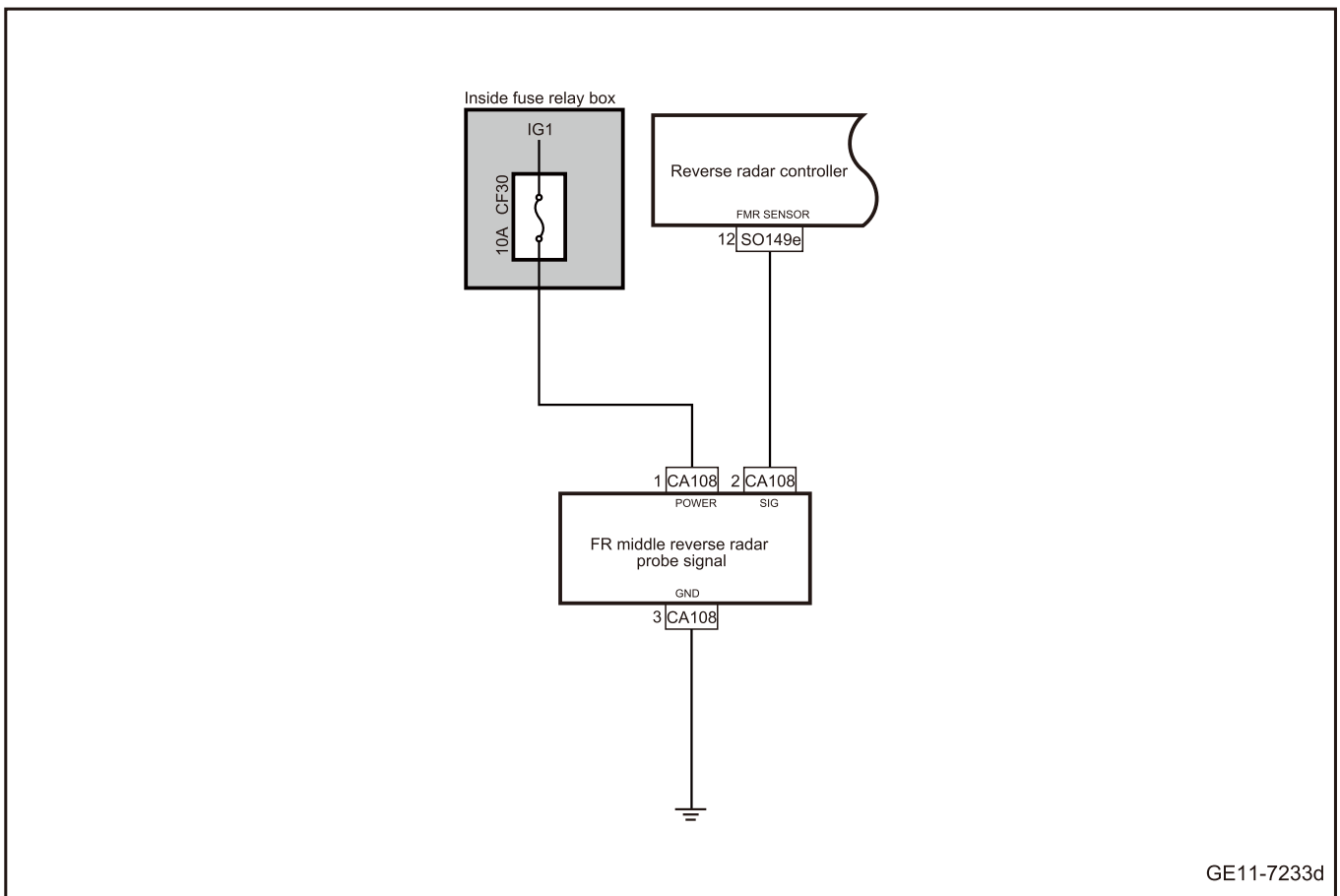
1. DTC description:

DTC	Trouble description
C140312	The right front inner sensor of PDC is open circuit or short-circuited to power supply
C140314	PDC right front inner sensor is short circuited to ground
C140396	Right front inner sensor of PDC is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140312	Sensor signal wire is short to Ubat	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Right front middle reverse radar probe 4. Reverse radar controller
C140314	Short circuit between signal cable and GND is detected		
C140396	"Program error (verification error) activation, sensor failure, receiving interruption < 500 μ s, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected. "		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the probe of the right front middle reverse radar probe for signs of loosening, wear, break, etc.
- B. Check the right front middle reverse radar probe harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

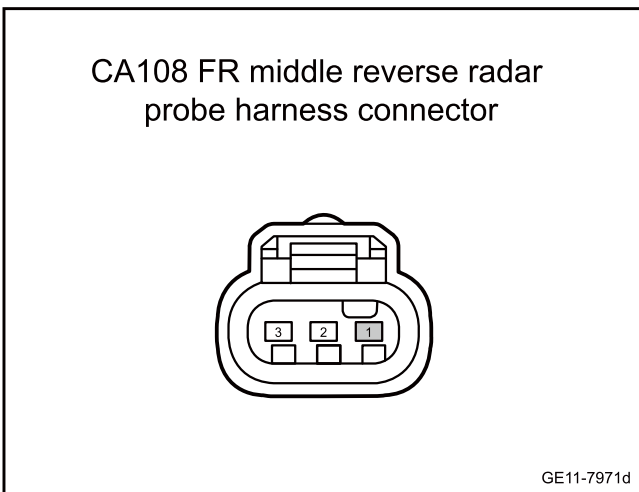
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power circuit of the right front middle reverse radar probe.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA108 of the right front middle reverse radar probe.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA108(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

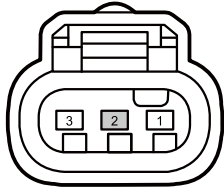
No

Repair or replace the harness.

Yes

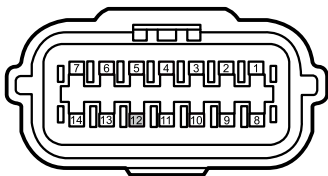
Step 5 Check whether the circuit between the r right front middle reverse radar probe and reverse radar controller is open.

CA108 FR middle reverse radar probe harness connector



GE11-7970d

SO149e reverse radar controller harness connector



GE11-7968d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA108 of the right front middle reverse radar probe.
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA108(2)	SO149e(12)	Standard resistance: less than 1Ω
CA108(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA108(2)	Vehicle body is grounded.	Standard voltage: 0V

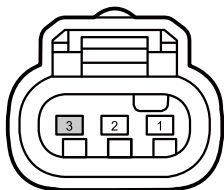
- G. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Check the grounding circuit of the right front middle reverse radar probe.

CA108 FR middle reverse radar probe harness connector



GE11-7969d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector CA108 of the right front middle reverse radar probe.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA108(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 7 Replace the right front middle reverse radar probe.

- A. To replace the right front middle reverse radar probe, please refer to [Replacement of Right Front Middle Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.14.6.43 Right Front Reversing Radar Probe Does Not Work (Type II)

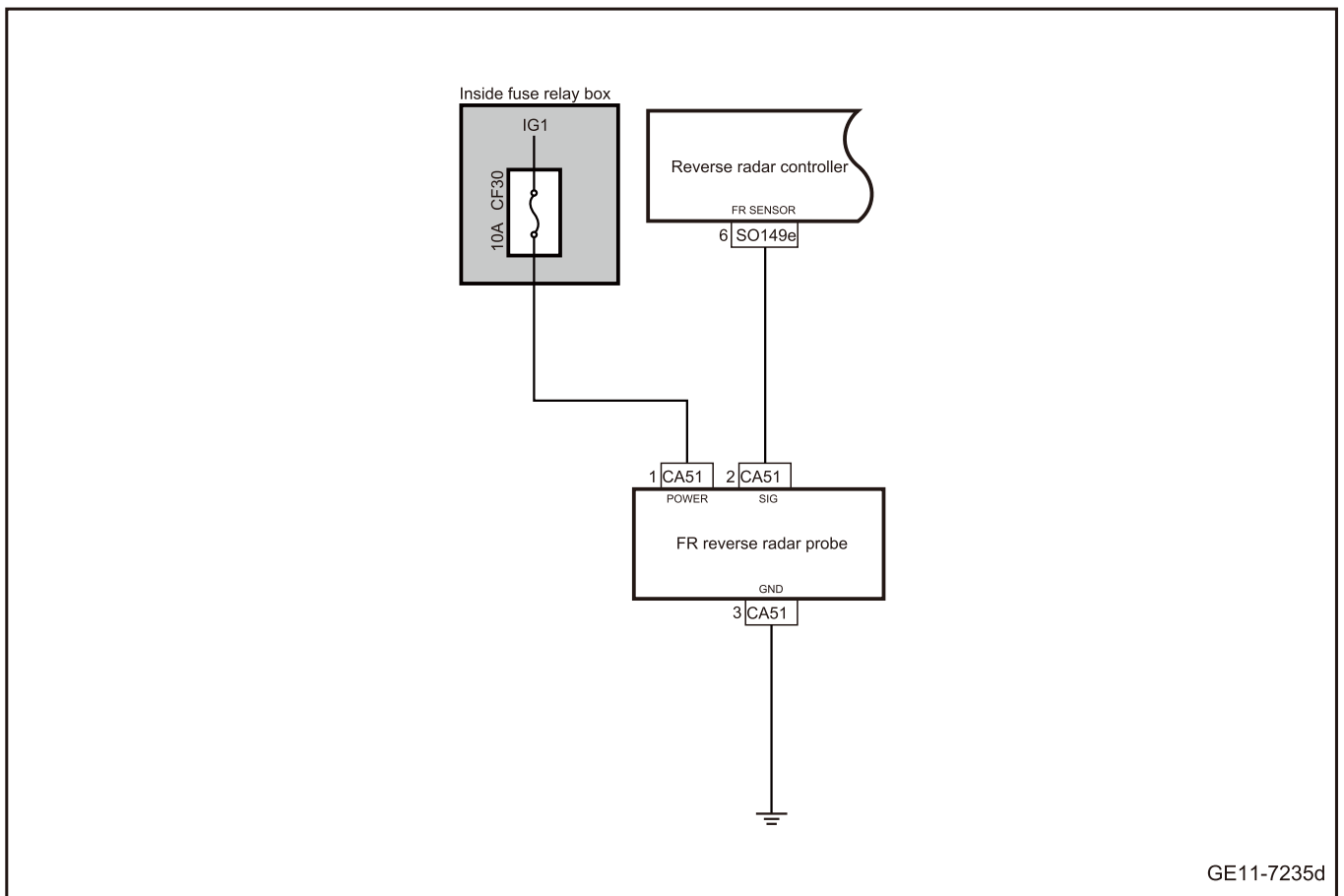
1. DTC description:

DTC	Trouble description
C140412	The right front outer sensor of PDC is open circuit or short-circuited to power supply
C140414	PDC right front outer sensor is short circuited to ground
C140496	Right front outer sensor of PDC is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140412	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Right front reverse radar probe 4. Reverse radar controller
C140414	Short circuit between signal cable and GND is detected		
C140496	"Program error (verification error) activation, sensor failure, receiving interruption < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected. "		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the probe of the right front reverse radar probe for signs of loosening, wear, break, etc.
- B. Check the harness connector of the probe of the right front reverse radar for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Check whether the fuse is blown according to the below table.

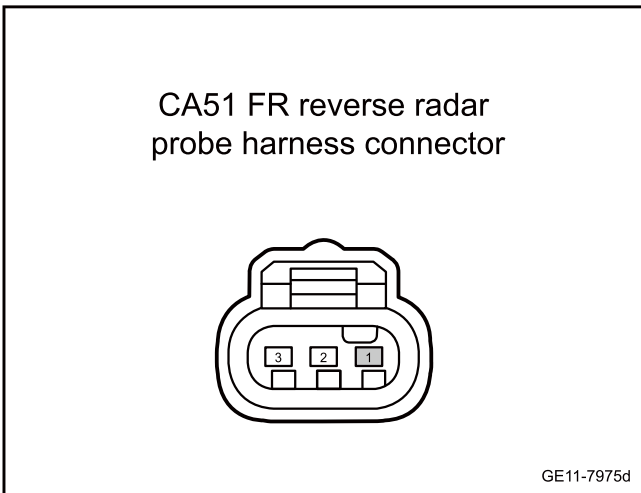
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the grounding circuit of the probe of the right front reverse radar.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA51 of the probe of the right front reverse radar.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

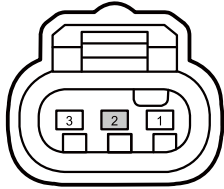
No

Repair or replace the harness.

Yes

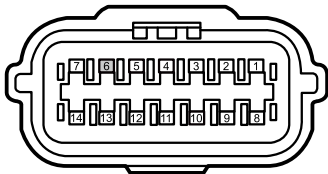
Step 5 Check whether the circuit between the right front reversing radar and reverse radar controller is open.

CA51 FR reverse radar probe harness connector



GE11-7974d

SO149e reverse radar controller harness connector



GE11-7972d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA51 of the probe of the right front reverse radar.
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(2)	SO149e(6)	Standard resistance: less than 1Ω
CA51(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(2)	Vehicle body is grounded.	Standard voltage: 0V

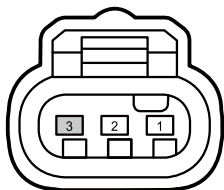
- G. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 6 | Check the grounding circuit of the probe of the front reverse radar.

CA51 FR reverse radar probe harness connector



GE11-7973d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the harness connector CA51 of the probe of the right front reverse radar.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA51(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 7 Replace the probe of the front reverse radar.

- A. To replace the front right reverse radar probe, please refer to [Replacement of front Right Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11	System is normal.
---------	-------------------

11.14.6.44 Left Rear Reversing Radar Probe Does Not Work (Type II)

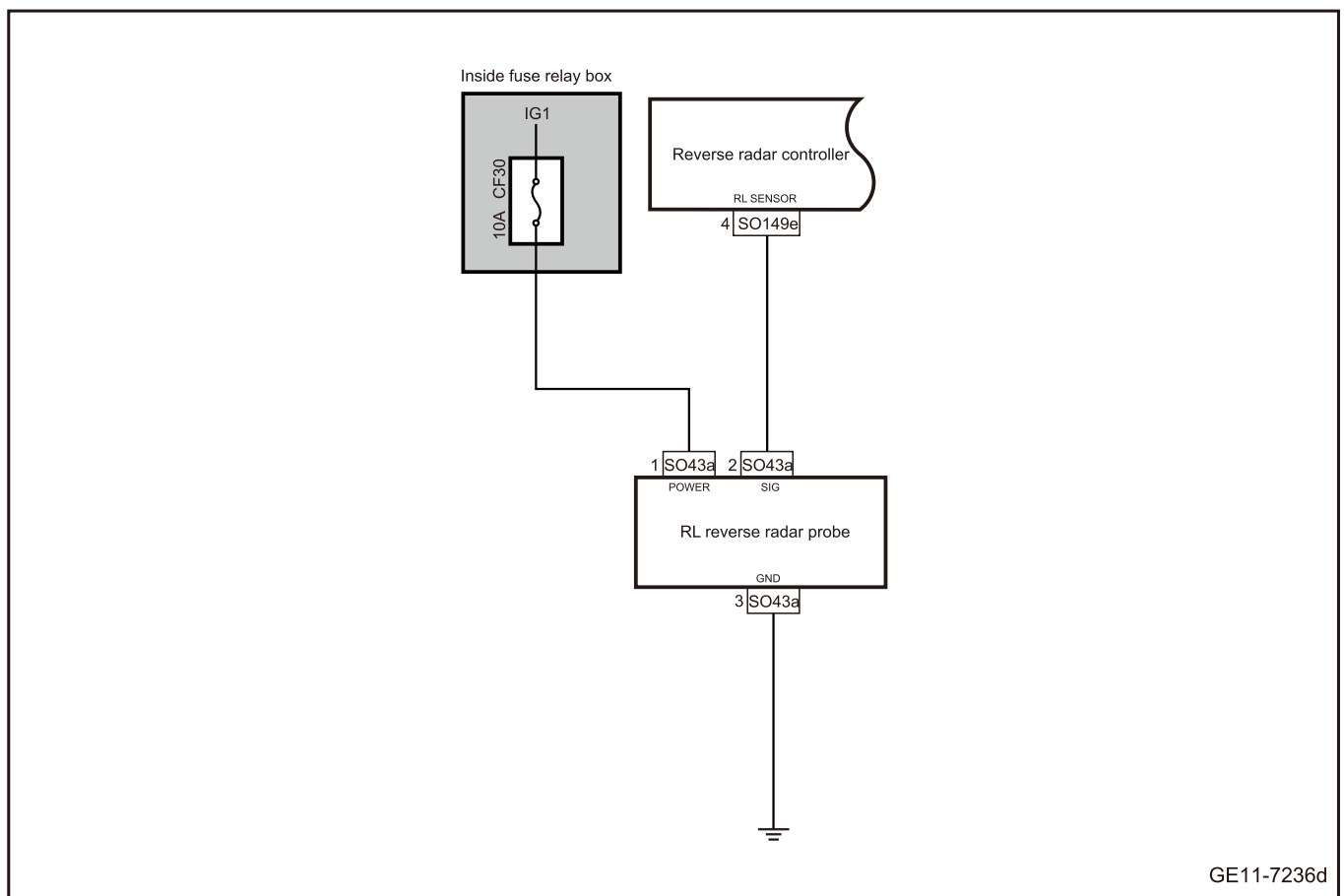
1. DTC description:

DTC	Trouble description
C140A12	The left outer sensor behind the PDC is open circuit or short-circuited to the power supply
C140A14	The rear left outer sensor of PDC is short to GND
C140A96	The left rear outer sensor of the PDC is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140A12	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. The power supply voltage at CAN bus node is in the range of 9-16V 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Rear left reverse radar probe 4. Reverse radar controller
C140A14	Short circuit between signal cable and GND is detected		
C140A96	Programming error (verification error) activation, sensor fault, receive interruption, stability time < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected.		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the rear left reverse radar probe for signs of looseness, wear, and cracking.
- B. Check the harness connector of rear left reverse radar probe for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

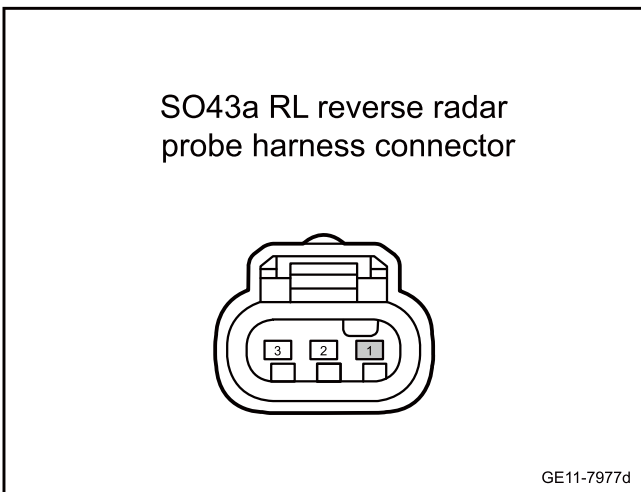
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power wire to the rear left reverse radar probe.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

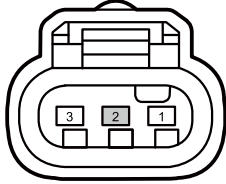
No

Repair or replace the harness.

Yes

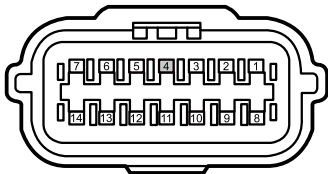
Step 5 Check whether the circuit between the left rear reversing radar and reverse radar controller is open.

SO43a RL reverse radar probe harness connector



GE11-7978d

SO149e reverse radar controller harness connector



GE11-7976d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(2)	SO149e(4)	Standard resistance: less than 1Ω
SO43a(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(2)	Vehicle body is grounded.	Standard voltage: 0V

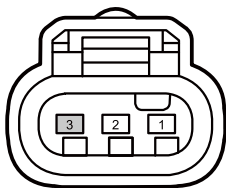
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check the ground wire to the rear left reverse radar probe.

SO43a RL reverse radar probe harness connector



GE11-7979d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of rear left reverse radar probe SO43a
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO43a(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the rear left reverse radar probe.

- A. To replace the rear left reverse radar probe, please refer to [Replacement of Rear Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.14.6.45 Left Middle Rear Reversing Radar Probe Does Not Work (Type II)

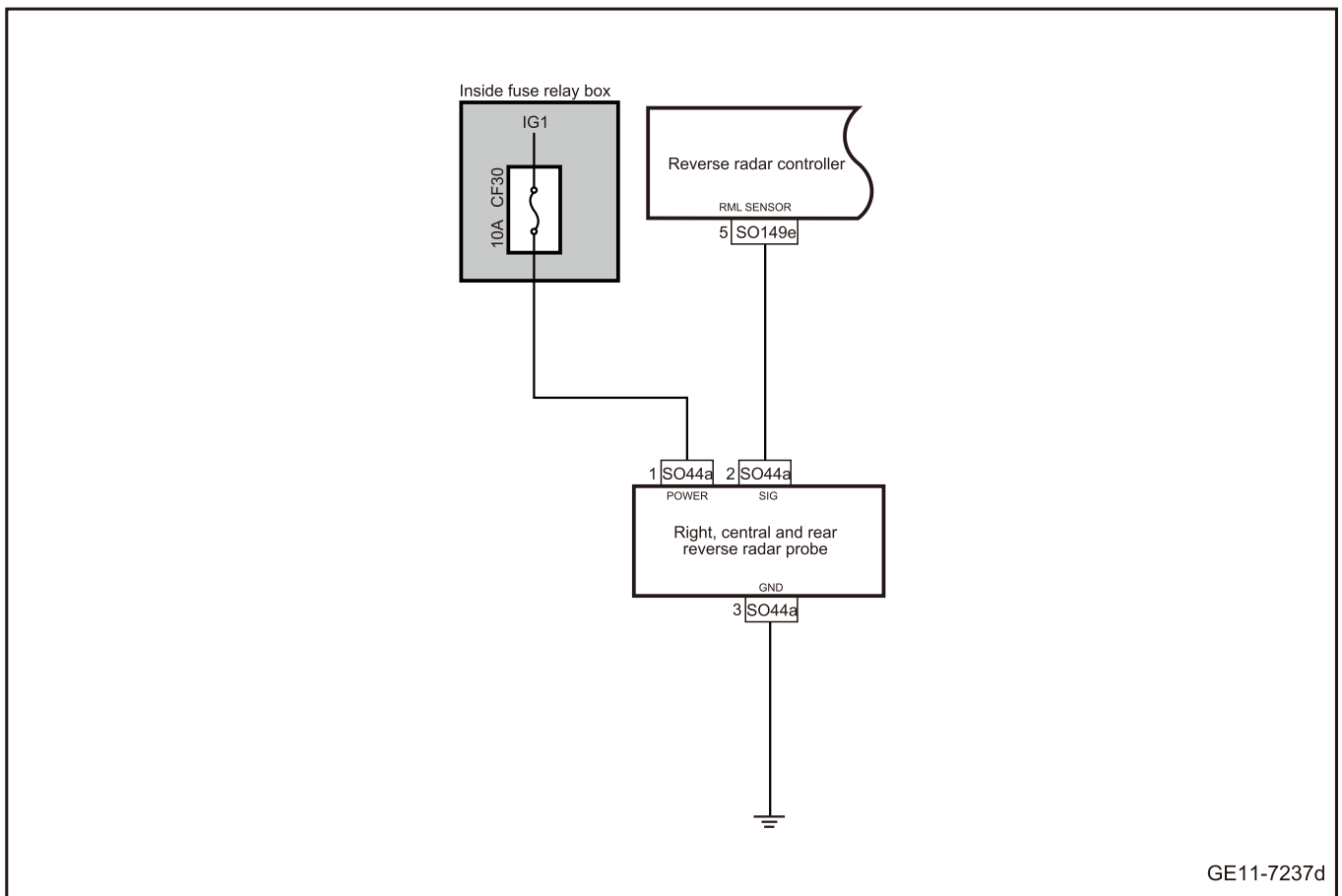
1. DTC description:

DTC	Trouble description
C140912	The left inner sensor behind the PDC is open circuit or short-circuited to the power supply
C140914	The left inner sensor of the rear PDC is short to GND
C140996	Left inner rear sensor of PDC is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140912	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. Power supply voltage of nodes of the CAN bus is within the scope of 9-16V. 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Left middle rear reverse radar probe 4. Reverse radar controller
C140914	Short circuit between signal cable and GND is detected		
C140996	"Program error (verification error) activation, sensor failure, receiving interruption < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected. "		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check left middle rear astern radar probe for signs of loosening, wear, breakage, etc.
- B. Check the left middle rear astern radar probe harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

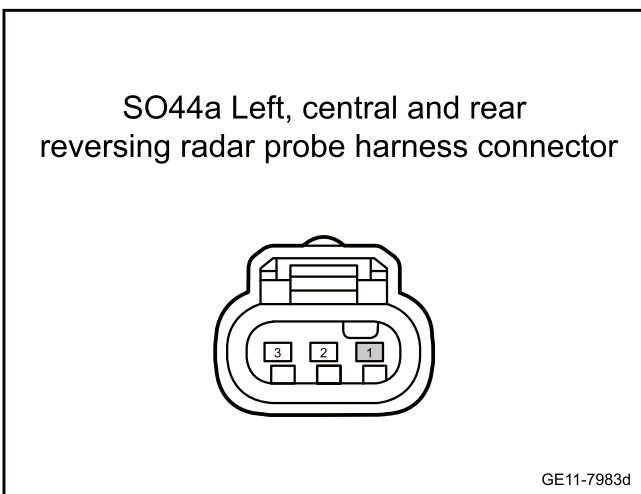
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power wire to the left middle rear left reverse radar probe.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle reversing radar probe harness connector SO44a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

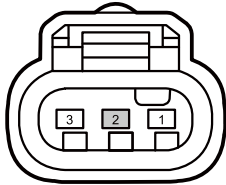
No

Repair or replace the harness.

Yes

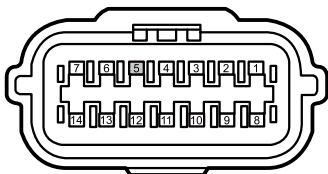
Step 5 Check whether the circuit between the left middle rear reversing radar and reverse radar controller is open.

SO44a Left, central and rear reversing radar probe harness connector



GE11-7982d

SO149e reverse radar controller harness connector



GE11-7981d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle rear reversing radar probe harness connector SO44a.
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(2)	SO149e(5)	Standard resistance: less than 1Ω
SO44a(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(2)	Vehicle body is grounded.	Standard voltage: 0V

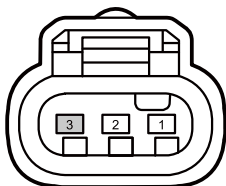
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check the ground wire to the left middle rear reverse radar probe.

SO44a Left , central and rear reversing radar probe harness connector



GE11-7980d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the left middle rear reversing radar probe harness connector SO44a.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO44a(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the left middle reversing radar probe.

- A. To replace the rear left middle reverse radar probe, please refer to [Replacement of Rear Middle Left Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.14.6.46 Right Middle Rear Reversing Radar Probe Does Not Work (Type II)

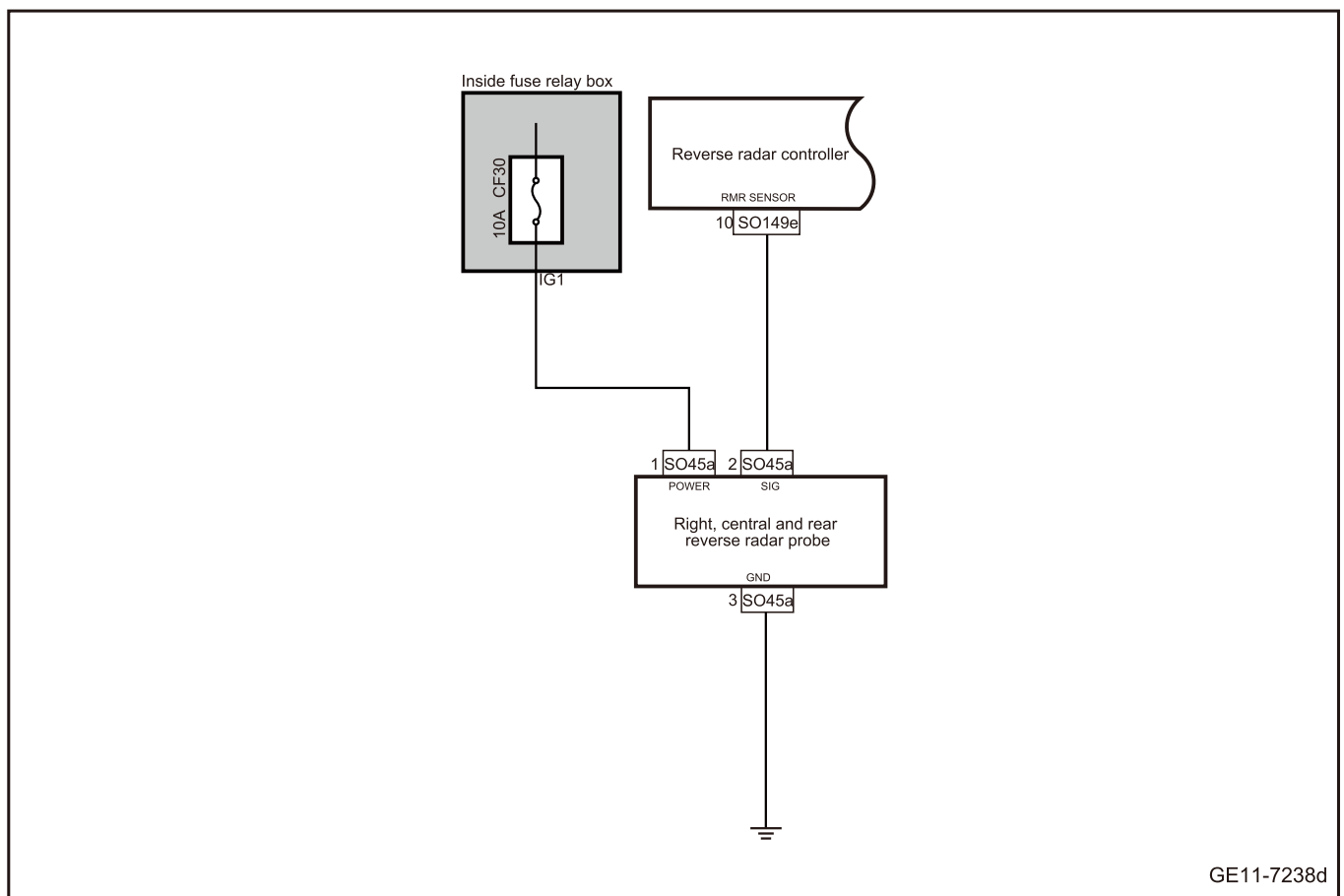
1. DTC description:

DTC	Trouble description
C140812	The right inner sensor behind the PDC is open circuit or short-circuited to power supply
C140814	The right inner rear sensor of PDC is short to GND
C140896	Right inner rear sensor of PDC is damaged

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
C140812	Signal cable is detected to be disconnected or short to UBat	All of the following conditions must be satisfied: 1. Power supply voltage of nodes of the CAN bus is within the scope of 9-16V. 2. Diagnosis service \$85 is not activated 3. The ignition status should be IGN ON	1. Fuse 2. Harness 3. Right middle rear reverse radar probe 4. Reverse radar controller
C140814	Short circuit between signal cable and GND is detected		
C140896	"Program error (verification error) activation, sensor failure, receiving interruption < 500 μs, if a verification error occurs, ECU will try to reprogram the sensor again. If the reprogramming fails after multiple attempts, verify that errors are detected. "		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check right middle rear astern radar probe for signs of loosening, wear, breakage, etc.
- B. Check the harness connector of right middle rear probe of parking sensor for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

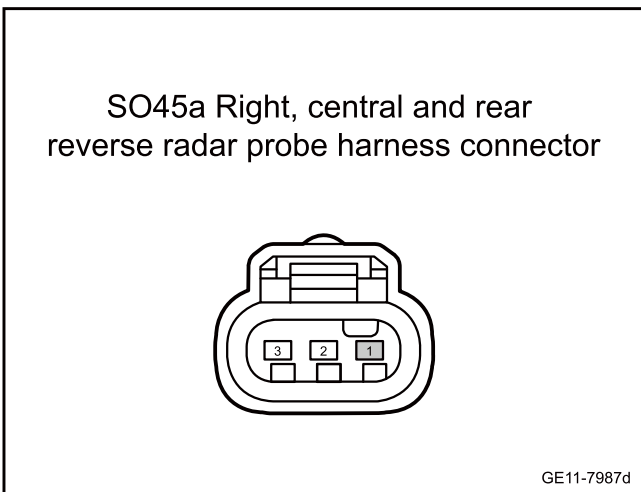
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF30	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the power wire to the right middle rear probe of reverse radar.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

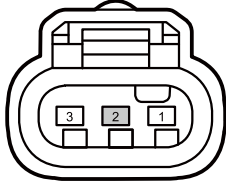
No

Repair or replace the harness.

Yes

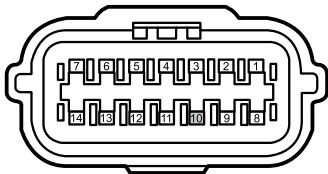
Step 5 Check whether the circuit between the right middle rear reversing radar and reverse radar controller is open.

SO45a Right, central and rear reverse radar probe harness connector



GE11-7986d

SO149e reverse radar controller harness connector



GE11-7985d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45a.
- C. Disconnect the reverse radar controller harness connector SO149e.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(2)	SO149e(10)	Standard resistance: less than 1Ω
SO45a(2)	Vehicle body is grounded.	Standard resistance: 10kΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(2)	Vehicle body is grounded.	Standard voltage: 0V

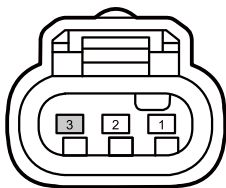
- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Check the ground wire to the right middle rear probe of parking sensor.

SO45a Right, central and rear reverse radar probe harness connector



GE11-7984d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector of right middle rear probe of parking sensor SO45a.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO45a(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 7 Replace the right middle rear probe of parking sensor.

- A. To replace the rear right middle reverse radar probe, please refer to [Replacement of Rear Middle Right Reverse Radar Probe](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 Reprogram and reset the reverse radar controller.

- A. Reprogram and reset the reverse radar controller . Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 9 Replace the reverse radar controller.

- A. Replace the reverse radar controller. Refer to [Replacement of Reverse Radar Controller](#)

Next step

Step 10 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 11 System is normal.

11.14.7 Removing and installing

11.14.7.1 Replace of Reverse Radar Probe

Removal procedure

Warning

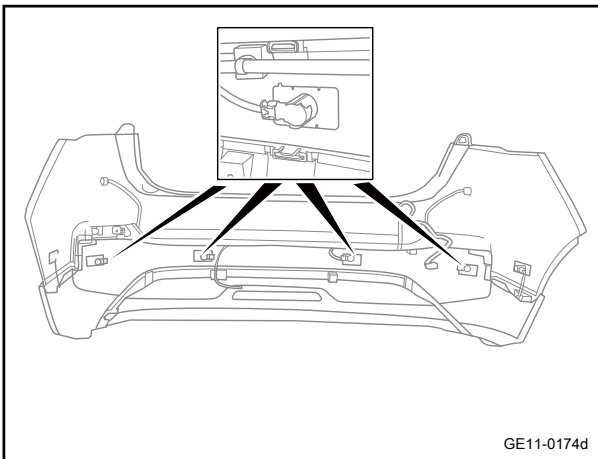
The front and rear reverse radar probes are disassembled in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

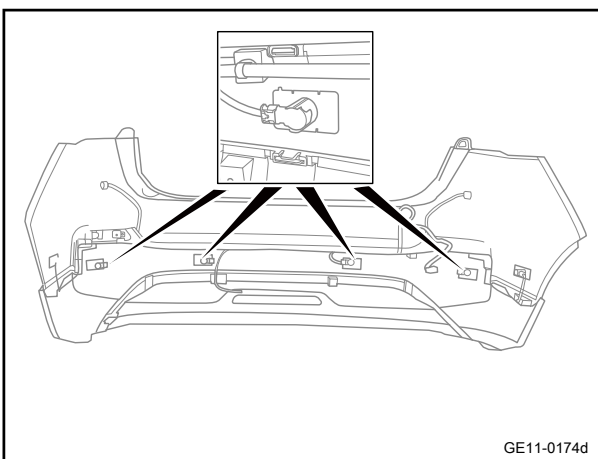
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 3 Disconnect the reverse radar probe harness connector.
- 4 Remove the 4 reverse radar probes.



Installation procedure

- 1 Install the 4 reverse radar probes.
- 2 Connection the reverse radar probe harness connector.



- 3 Install the rear bumper.
- 4 Connect the negative cable of battery.

11.14.7.2 Replacement of ultrasonic wave sensor for automatic parking

Removal procedure

Warning

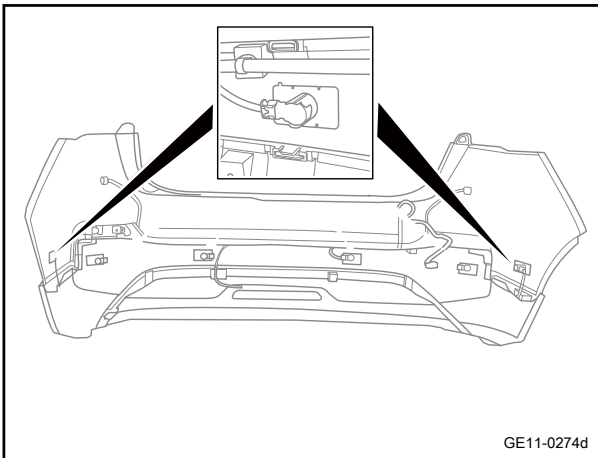
The ultrasonic sensors of front and rear automatic parking are removed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

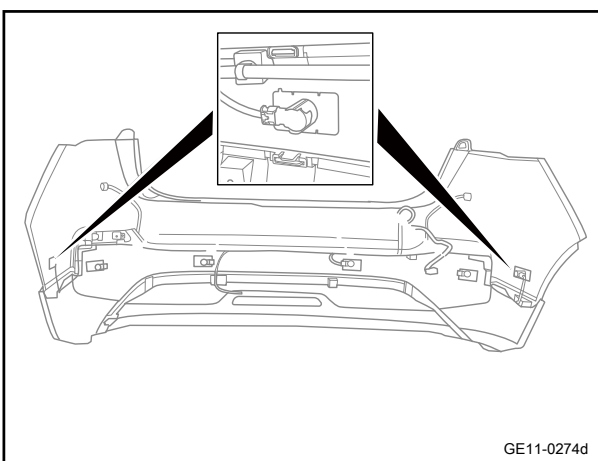
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 3 Disconnect the automatic parking ultrasonic sensor harness connector.
- 4 Pry off 2 ultrasonic sensors of automatic parking.



Installation procedure

- 1 Install 2 upper automatic parking ultrasonic sensors.
- 2 Connect the automatic parking ultrasonic sensor harness connector.



- 3 Install the rear bumper.
- 4 Connect the negative cable of battery.

11.14.7.3 Replacement of 360 panoramic rear parking assist camera

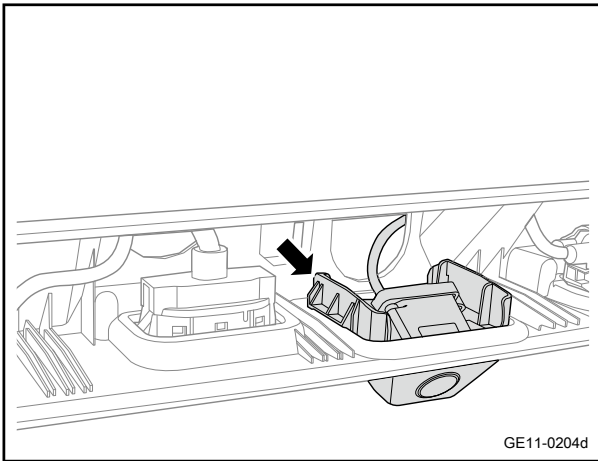
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

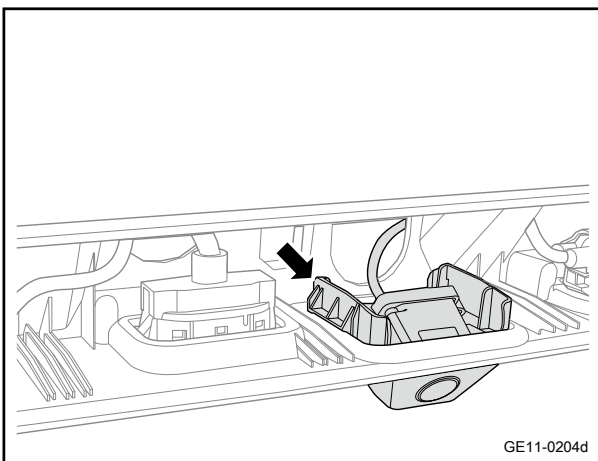
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the tailgate exterior trim panel assembly. Refer to [Replacement of Tailgate Exterior Trim Panel Assembly](#)
- 3 Remove the tailgate through lamp. Refer to [Replacement of Tailgate Through Lamps](#)
- 4 Pry off 360 panoramic rear parking assist camera.



Installation procedure

- 1 Install 360 panoramic rear parking assist camera.



- 2 Install the tailgate through lamp.
- 3 Install the tailgate exterior trim panel assembly.
- 4 Connect the negative cable of battery.

11.14.7.4 Replacement of 360° panoramic front parking assist camera

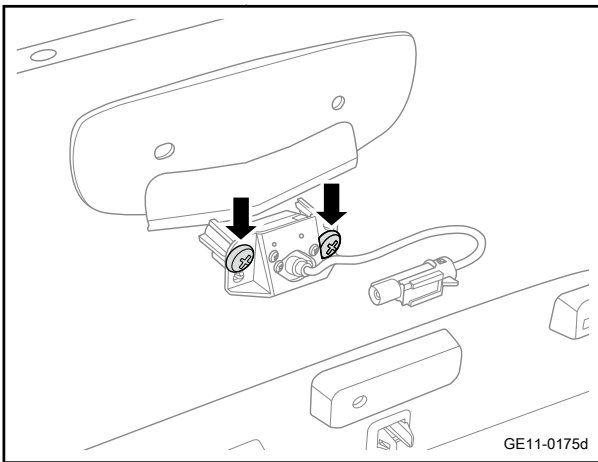
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

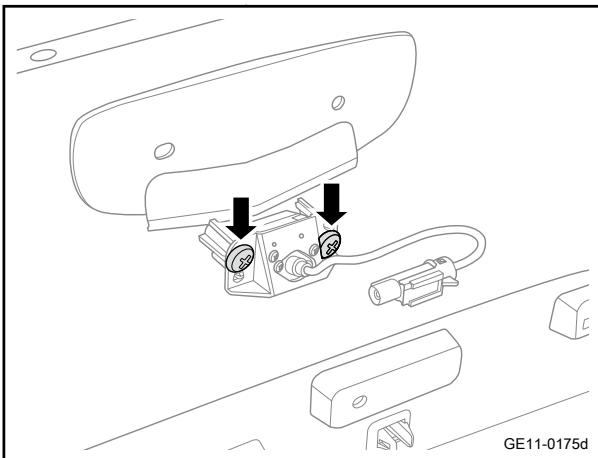
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Remove 360-degree panorama front parking assist camera fixing screws
- 4 Remove the 360-degree panoramic front parking assist camera.



Installation procedure

- 1 Move 360 panoramic front parking assist camera to the installation position.
- 2 Install 360-degree panorama front parking assist camera fixing screws
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

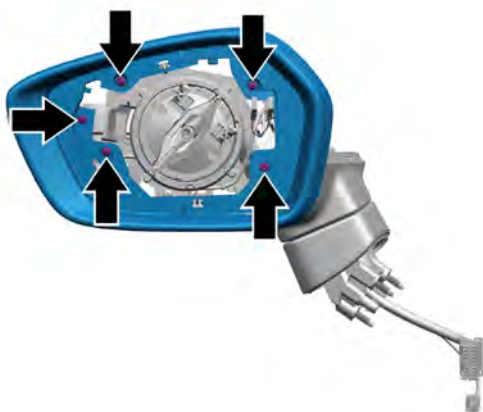


- 3 Install the front bumper assembly.
- 4 Connect the negative cable of battery.

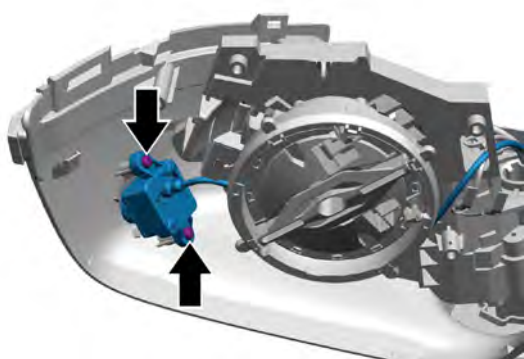
11.14.7.5 Replacement of 360° panoramic front parking assist left camera assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Replacement of left exterior rearview mirror Refer to [Replacement of Left Exterior Rearview Mirrors](#)
- 3 Replacement of the left power rearview mirror glass Refer to [Replacement of left power rearview mirror lens](#)
- 4 Remove the 5 fixing bolts of the left exterior rearview mirror fixing frame and left exterior rearview mirror.
- 5 Remove the left exterior rearview mirror fixing frame.

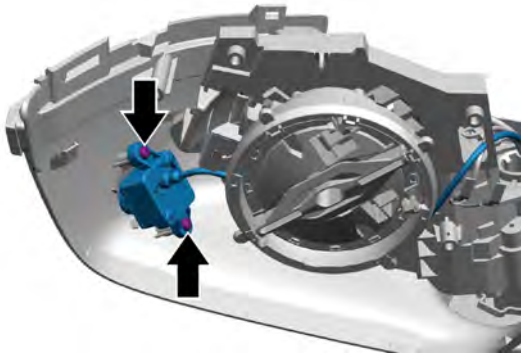


- 6 Remove the 2 fixing screws connecting the 360-degree panoramic parking assist left camera assembly with the left exterior rearview mirror.
- 7 Remove the 360-degree panoramic parking assist left camera assembly.

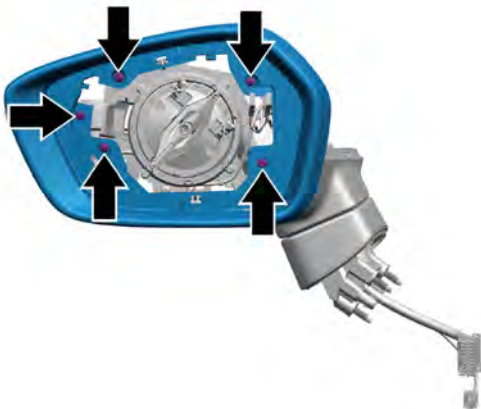


Installation procedure

- 1 Move the 360-degree panoramic parking assist left camera assembly to the installation position.
- 2 Install and tighten the 2 fixing screws connecting the 360-degree panoramic parking assist left camera assembly with the left exterior rearview mirror.



- 3 Move the left exterior rearview mirror retaining frame to the installation position.
- 4 Install and tighten the 5 fixing screws connecting the retaining frame of the left exterior rearview mirror and the left exterior rearview mirror.

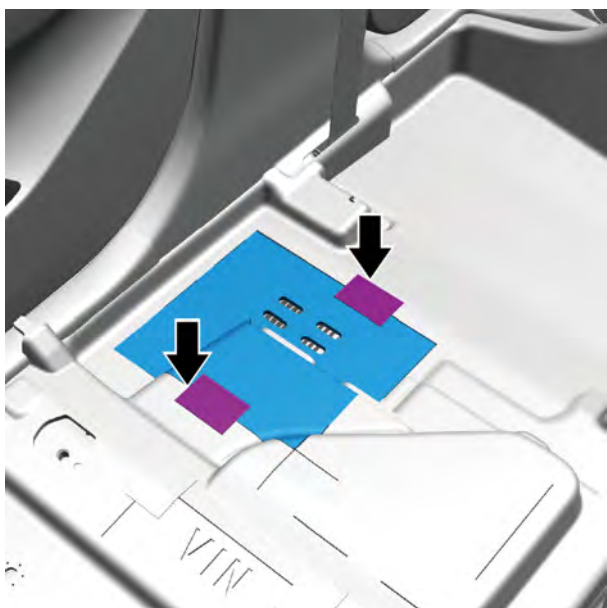


- 5 Install the left power exterior rearview mirror lens.
- 6 Install left exterior rearview mirror
- 7 Connect the negative cable of battery.
- 8 Perform the calibration procedure of the automatic parking module. Refer to [360 AVM calibration](#)

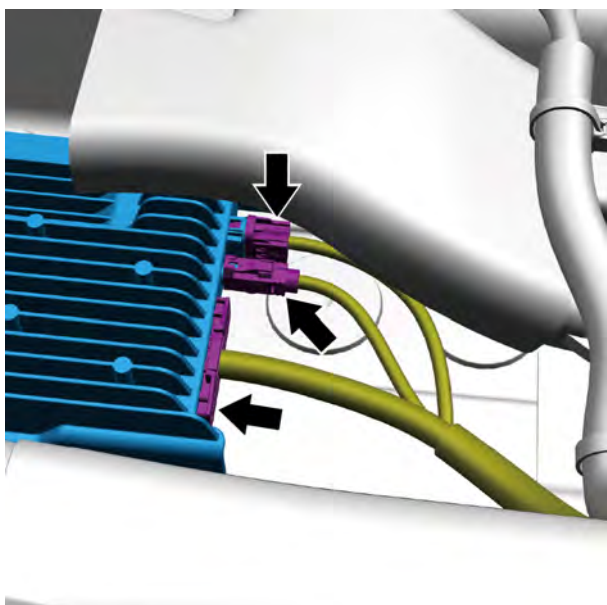
11.14.7.6 Replacement of Automatic Parking module

Removal procedure

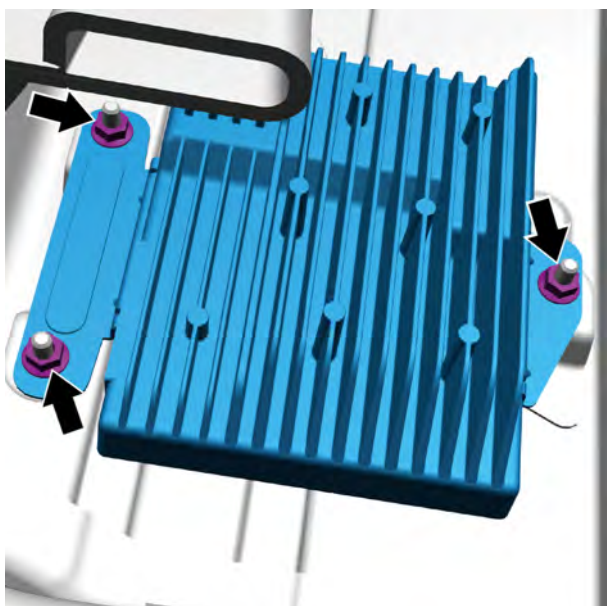
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the passenger seat assembly. Refer to [Replacement of Left Front Seat Assembly](#)



- 3 Open the connection between the AVM repair cover and the carpet assembly.

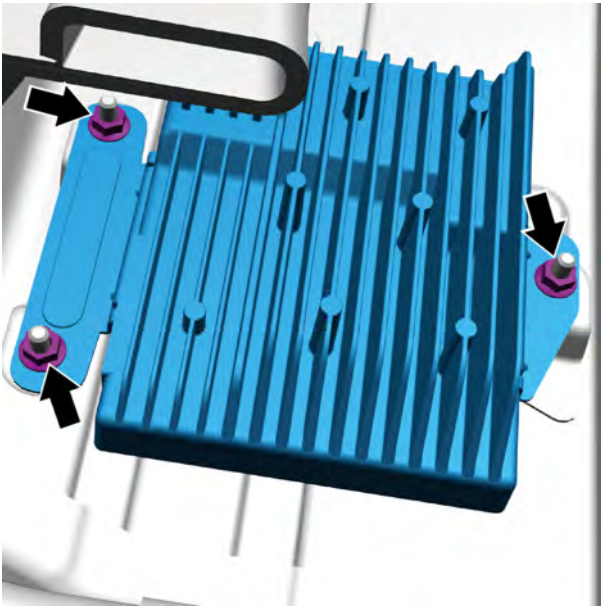


- 4 Disconnect the 3 harness connectors connecting the floor harness with the automatic parking module .

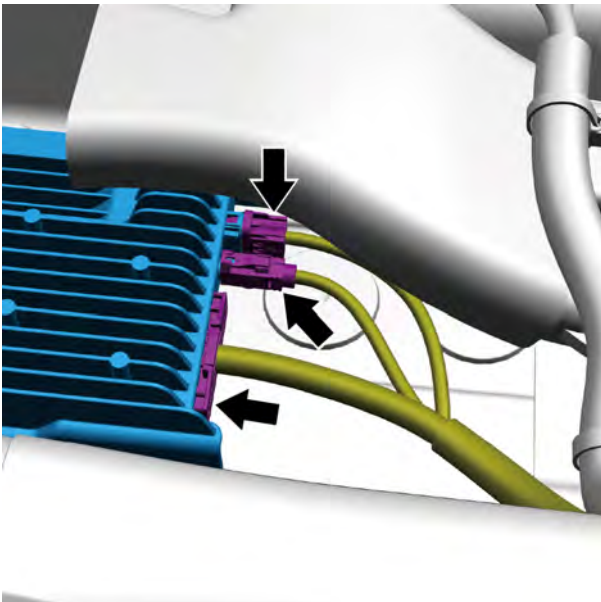


- 5 Remove the 3 fixing bolts of the automatic parking module and the vehicle body.
- 6 Take off the automatic parking module.

Installation procedure



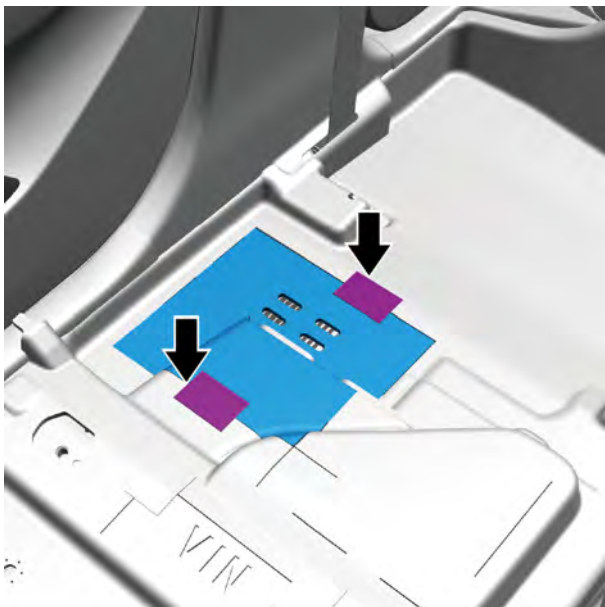
- 1 Move the automatic parking module to the installation position.
- 2 Install the 3 fixing bolts connecting automatic parking module and the vehicle body
Torque: 6N·m



- 3 Connect the 3 harness connectors connecting the floor harness with the automatic parking module.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



4 Paste the AVM access cover to the carpet assembly.

5 Install the passenger seat assembly.

6 Connect the negative cable of battery.

11.15 Standby power supply

11.15.1 Description and operation

11.15.1.1 Description and Operations

The vehicle is equipped with two multimedia interfaces, a front standby power supply and a USB socket in the second row.

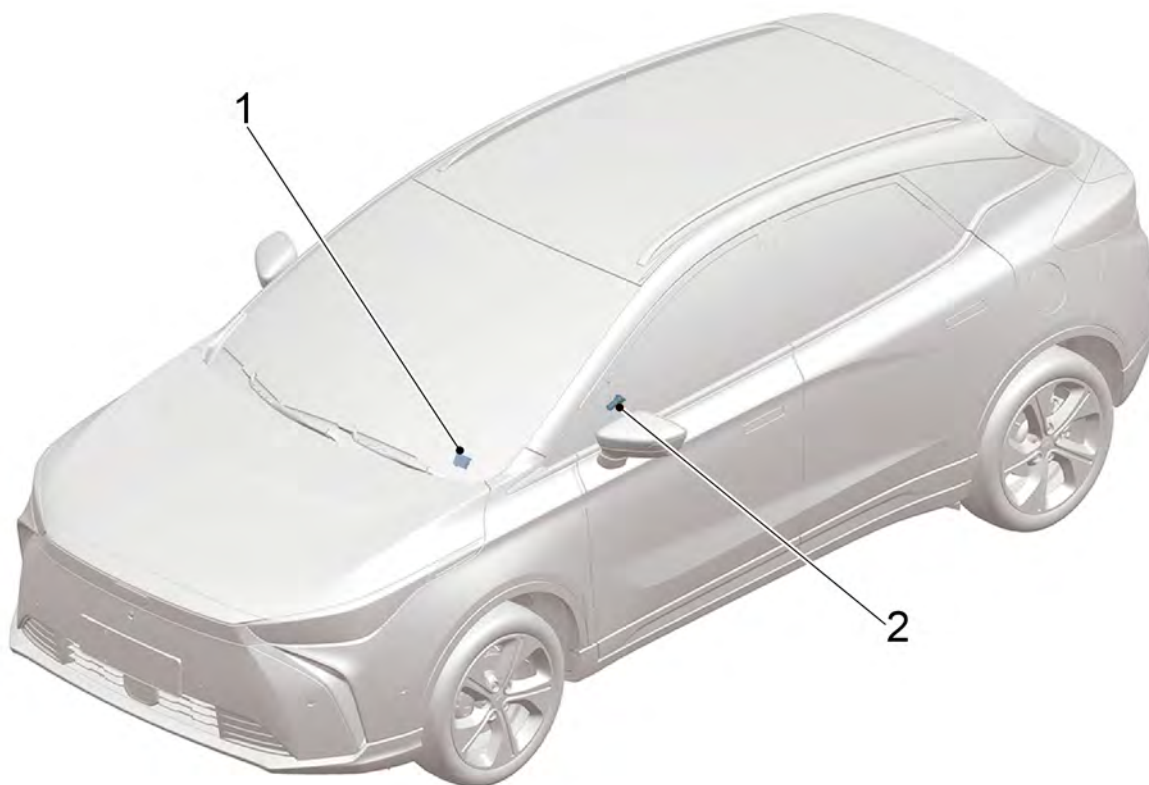
The front standby power supply is located above the storage box at the lower part of auxiliary console, and is provided by CF1820A fuse. It can be used to connect electrical equipment with a maximum power of 120W.

The multimedia interface is located above the storage box at the lower part of the auxiliary console, and is connected to the had unit through USB data cable. It can charge USB devices and supports multimedia playback.

The USB socket of the second row is located at the rear of the auxiliary dashboard, powered by the CF2115A fuse. It can charge USB devices.

11.15.2 Part position

11.15.2.1 Part Position

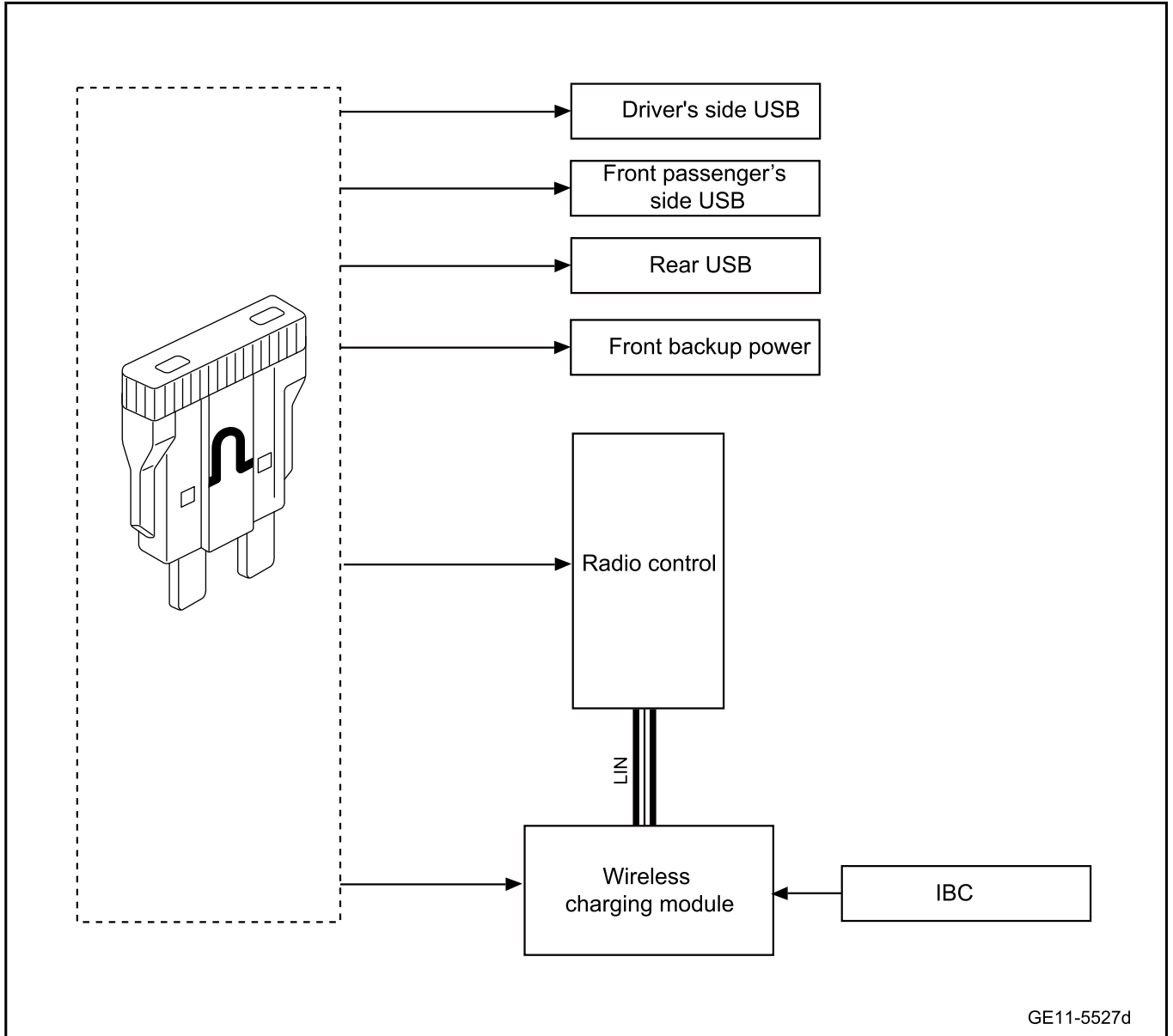


1. USB box

2. Standby power supply

11.15.3 Electrical block diagram

11.15.3.1 Electrical Schematic Diagram of Standby Power Supply System



11.15.4 Diagnostic information and procedures

11.15.4.1 Diagnosis Description

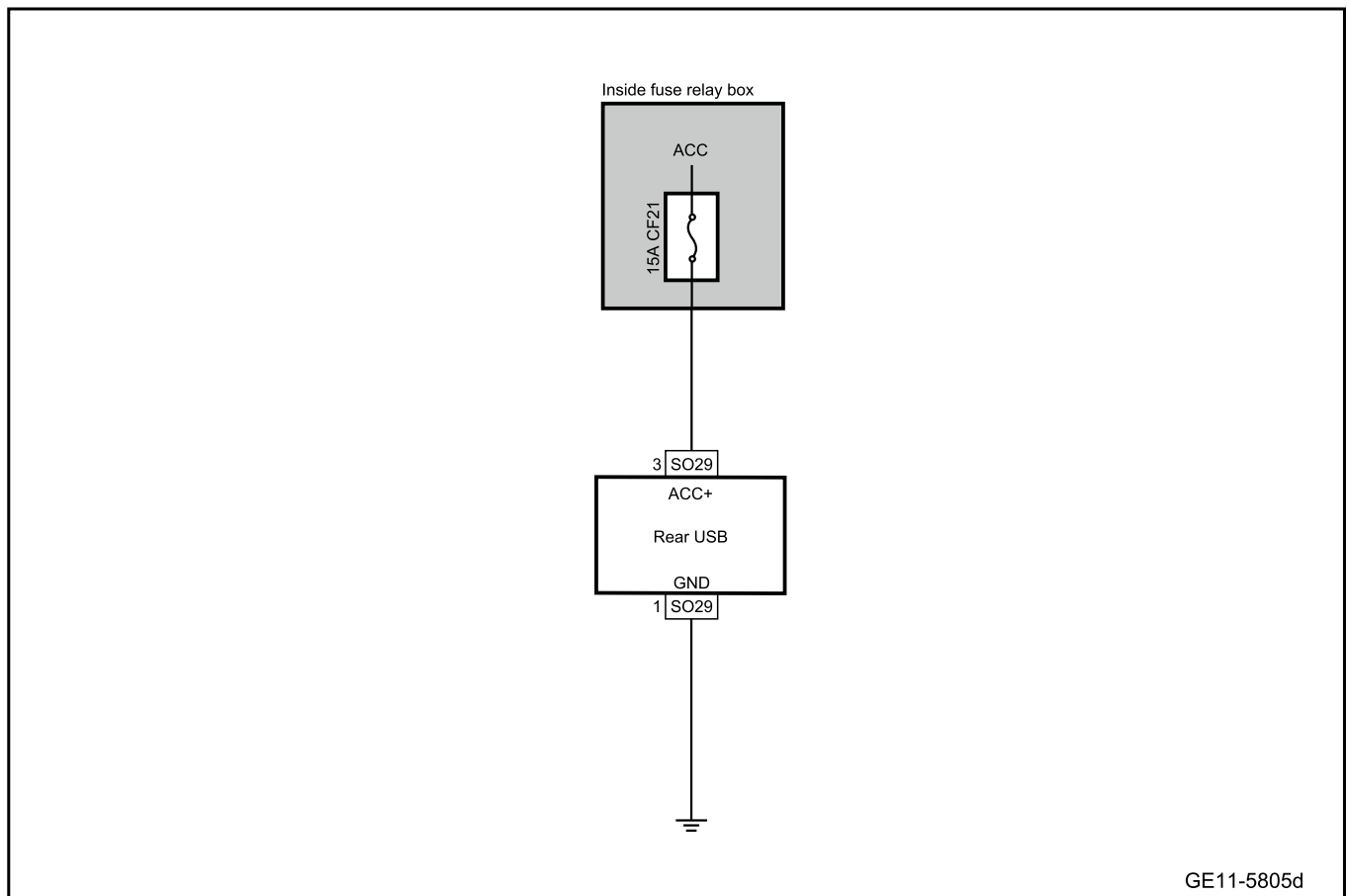
When diagnosing the back-up power supply faults, refer to description and operation, and system working principle. Understand and be familiar with the working principle of back-up power supply, and then start system diagnosis. This will help to confirm the correct fault diagnosis steps when the fault occurs. More importantly, it can also help to determine whether the situation described by the customer belongs to normal operation. Any fault diagnosis of standby power supply should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.15.4.2 Routine inspection

- Check after-sales installations that may affect the back-up power supply, to ensure that these devices cannot affect the back-up power supply.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.15.4.3 Rear USB Power Supply Does Not Work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the rear USB socket power interface for signs of damage, dirt, rust, etc.
- B. Check the rear USB socket power harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3	Check the fuse of rear USB socket power supply.
--------	---

- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the indoor fuse CF21 and check whether the fuse is blown.
Rated capacity of fuse: 15A

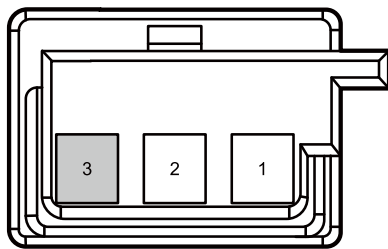
Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check the power supply circuit of rear USB socket .
--------	---

SO29 rear USB harness connector



GE11-6108d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear USB socket power supply harness connector SO29.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between terminal 3 of USB socket harness connector SO29 and body grounding.

Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

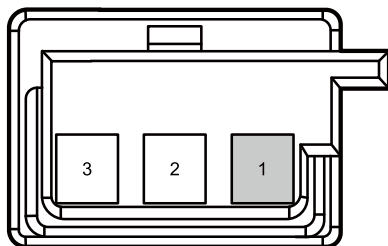
No

Repair or replace the harness.

Yes

Step 5 Check the rear USB socket grounding circuit.

SO29 rear USB harness connector



GE11-6107d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the rear USB socket power supply harness connector SO29.
- C. Use a multimeter to measure the resistance between the terminal 1 of USB socket harness connector SO29 and body grounding

Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the rear USB socket power supply.

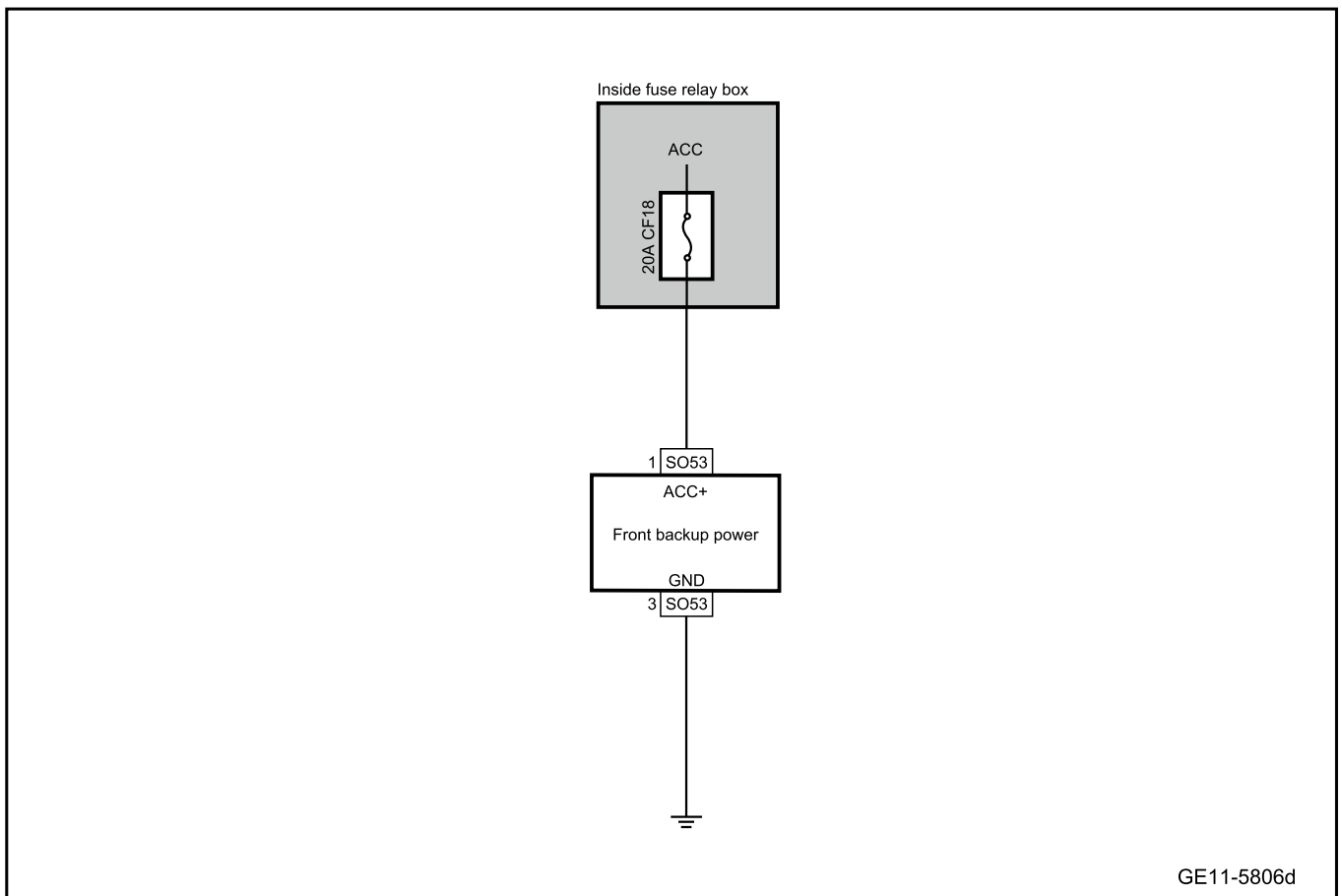
- A. To replace the rear USB socket power supply, please refer to [Replacement of Rear USB Socket Power Supply](#)

Next step

Step 7 System is normal.

11.15.4.4 Front Standby Power Supply Does Not Work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the front standby power interface for signs of damage, dirt, rust, etc.
- B. Check the front standby power harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No Replace the battery or repair the charging system.

Yes

Step 3 | Check the front standby power supply fuse.

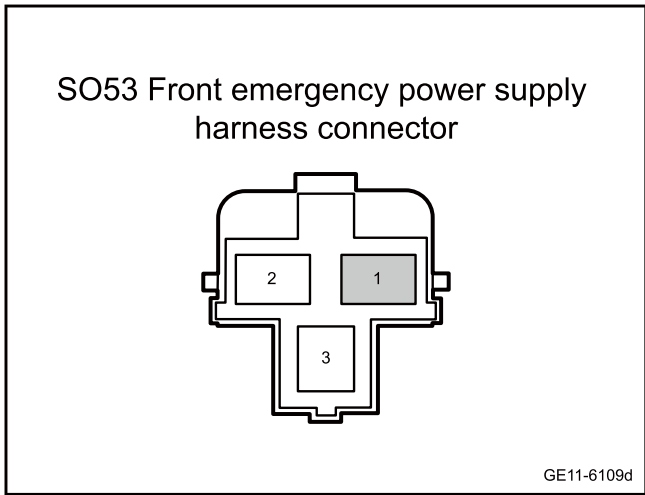
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse CF18 and check whether the fuse is blown.

Rated capacity of fuse: 20A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check the front standby power supply circuit.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front standby power supply harness connector SO53.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

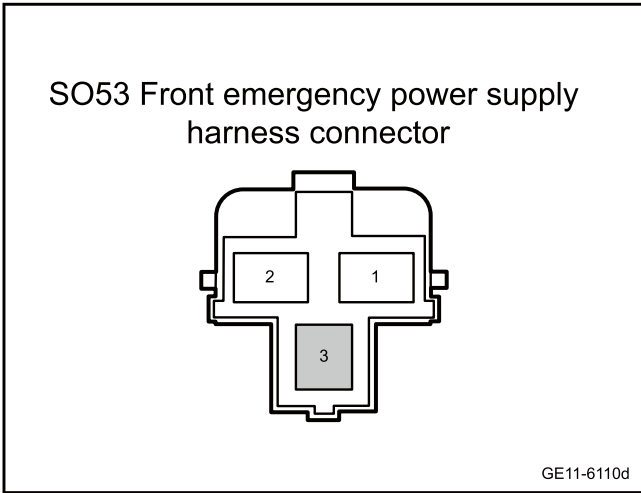
Measure terminal 1	Measure terminal 2	Standard value
SO53(1)	Vehicle body is grounded.	Standard voltage: 11-14V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check the grounding circuit of front standby power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the front standby power supply harness connector SO53.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO53(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the front standby power supply.

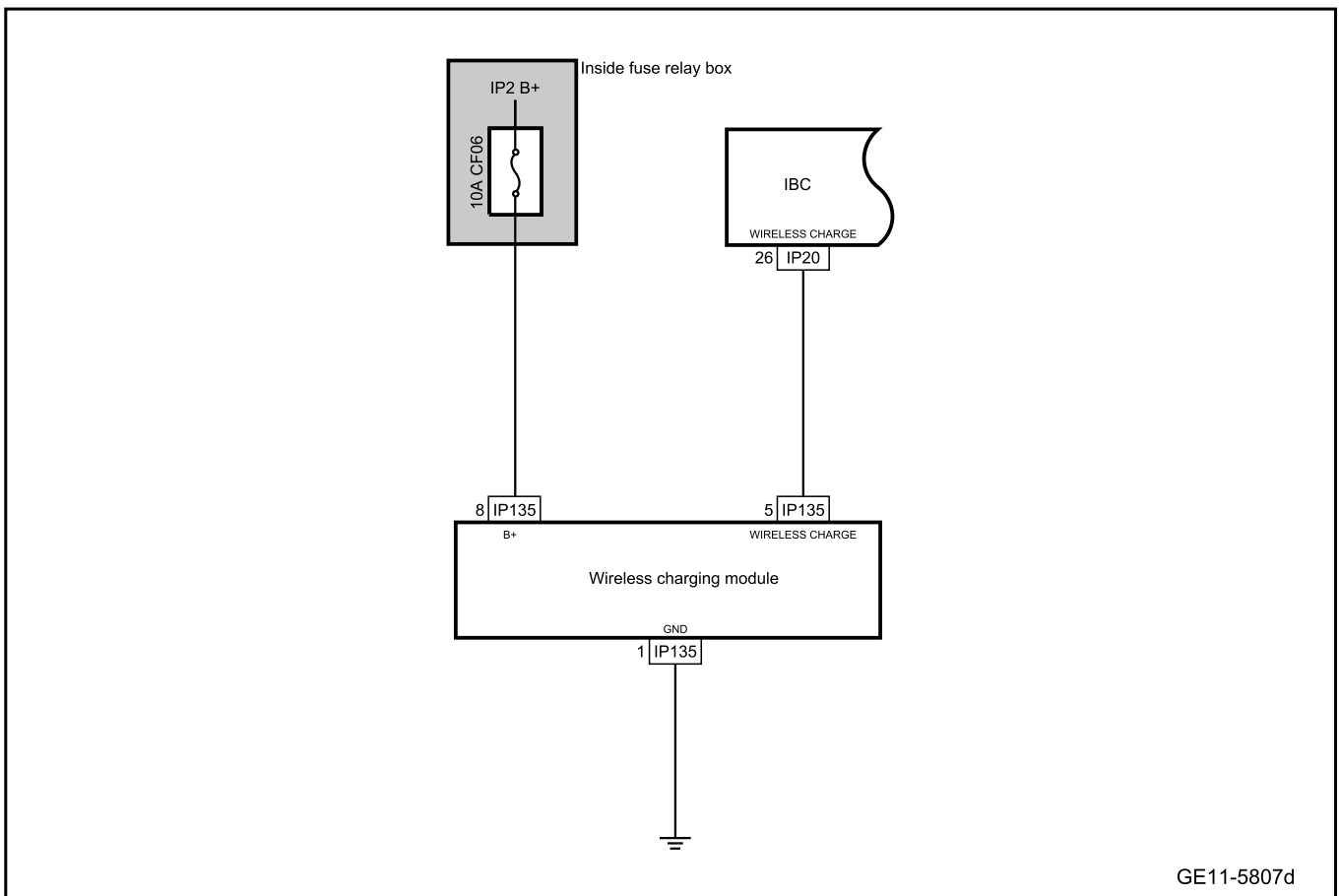
- A. To replace the front standby power supply, please refer to [Replacement of Front Standby Power Supply](#)

Next step

Step 7 | System is normal.

11.15.4.5 Wireless charging does not work

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the wireless charging module for signs of damage, dirt, rust, etc.
- B. Check the wireless charging module harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No ➤ Repair or replace the faulty part.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.
Standard voltage: 9-16V
- C. Confirm whether the measured value meets the standard.

No → Replace the battery or repair the charging system.

Yes

Step 3 | Inspect wireless charging module power supply fuse

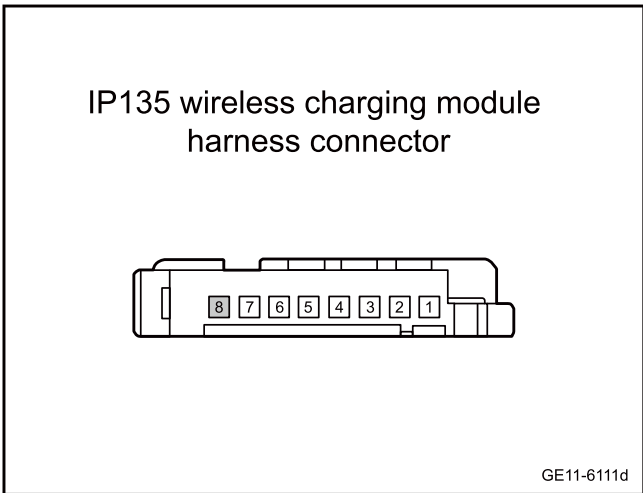
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Unplug the indoor fuse CF06 and check whether the fuse is blown.

Rated capacity of fuse: 10A

Yes → Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 | Check power circuits of wireless charging module.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(8)	Vehicle body is grounded.	Standard voltage: 11-14V

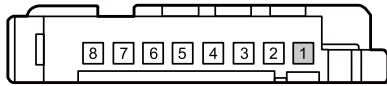
- E. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 5 | Inspect wireless charging module grounding circuit

IP135 wireless charging module harness connector



GE11-6112d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the wireless charging module harness connector IP135.
- C. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(1)	Vehicle body is grounded.	Standard resistance: less than 1Ω

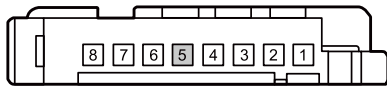
- D. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Check whether the circuit between wireless charging module and IBC motor is open.

IP135 wireless charging module harness connector



GE11-6113d

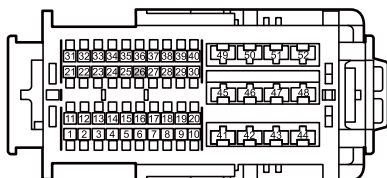
- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	IP20(26)	Standard resistance: less than 1Ω

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

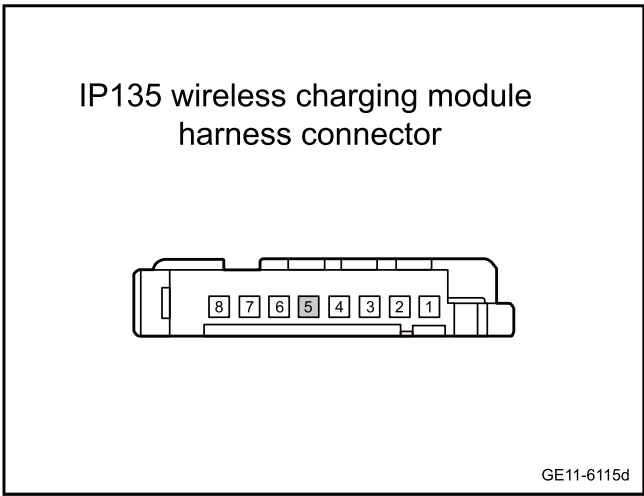
IP20 body control module harness connector 1



GE11-6114d

Yes

Step 7 Check whether the harness between the wireless charging module and the IBC motor is short to GND.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the terminals according to the table below:

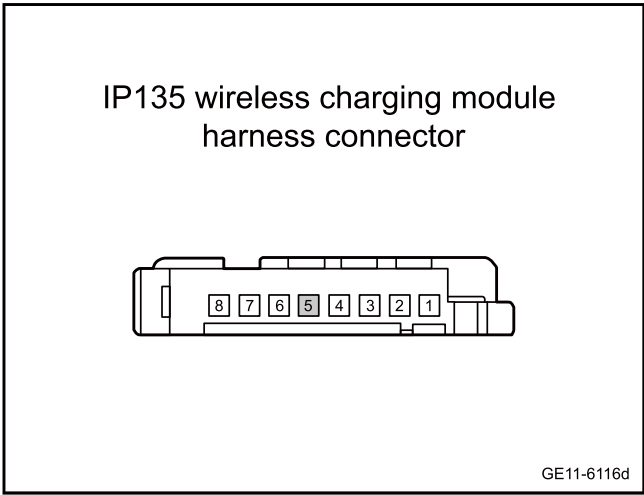
Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 8 Check whether the circuit between the wireless charging module and the IBC is short-circuited to power supply.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the wireless charging module harness connector IP135.
- C. Disconnect the IBC harness connector IP20.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP135(5)	Vehicle body is grounded.	Standard voltage: 0V

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 9 Replace wireless charging module

- A. To replace the wireless charging module, please refer to [Replacement of Wireless Charging Module](#)

Yes

System is normal.

No

Step 10	Replace the IBC
------------	-----------------

- A. Replace the IBC Refer to [Replacement of the body control module](#)

Next step

Step 11	Reprogram and reset the IBC.
---------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 12	System is normal.
------------	-------------------

11.15.5 Removing and installing

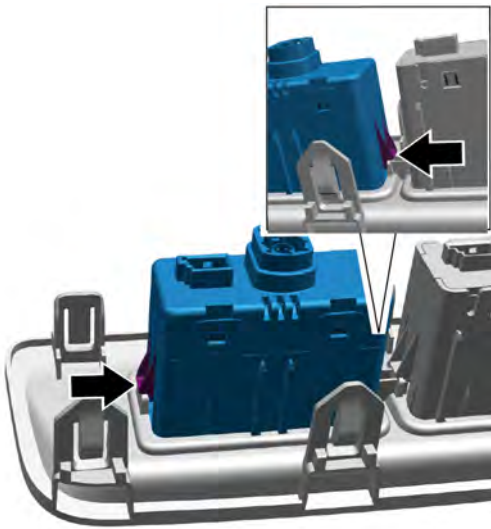
11.15.5.1 Replacement of USB Box

Removal procedure

Caution

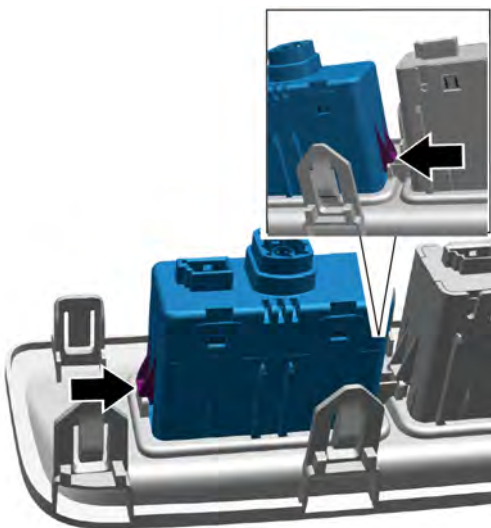
The left and right USB boxes are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the USB cover plate assembly. Refer to [Replacement of USB Cover Plate Assembly](#)
- 3 Press the clips at both sides of the USB box.
- 4 Take out the USB box downward.



Installation procedure

- 1 Move the USB box to the installation position.
- 2 Pass through the USB box cover plate hole as shown in the figure, and ensure that the clips on both sides are installed in place.

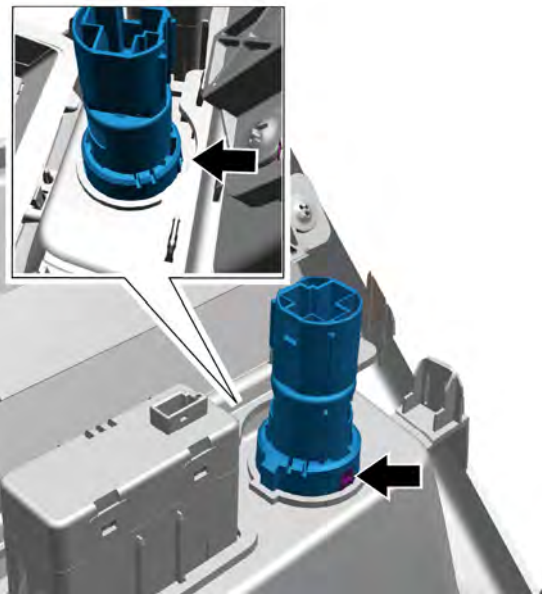


- 3 Mount the USB box cover plate.
- 4 Connect the negative cable of battery.

11.15.5.2 Replacement of Rear Standby Power Supply

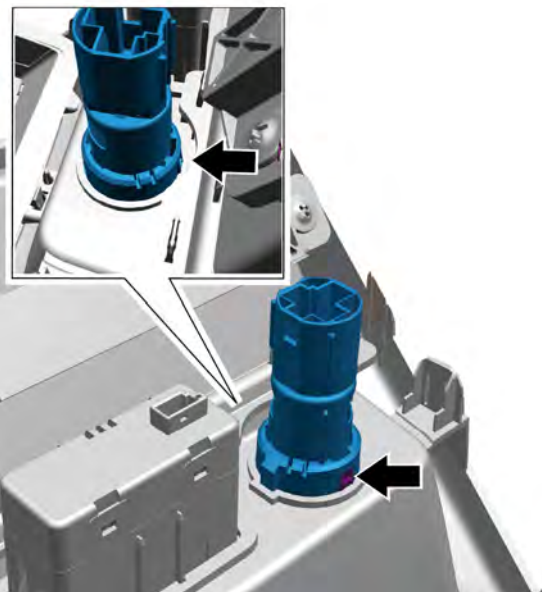
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console rear panel assembly. Refer to [Replacement of Rear Panel of Auxiliary Fascia Console](#)
- 3 Press the clips at both sides of the rear standby power supply.
- 4 Take out rear standby power supply.



Installation procedure

- 1 Move the rear standby power supply to the installation position.
- 2 Install the clips at both sides of rear standby power supply.



- 3 Install the auxiliary fascia console rear panel assembly.
- 4 Connect the negative cable of battery.

11.16 Data communication system

11.16.1 Specification

11.16.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Gateway fixing nuts	M6	5-7

11.16.2 Description and operation

11.16.2.1 General

System composition

the vehicle communicate with each other and with the diagnostic instrument via serial data circuits.

The main functions of GW are:

- Bi-directional data transmission by bus
- Management of the nodes of the entire network
- Diagnosis of the running state of the whole network
- Meet ISO 14229 and support a variety of diagnostic services

System advantages

- Reduced number of control circuit wires.
- Greatly reduced weight of the wiring harness.
- Fewer pins in the control plug.
- Improved reliability and durability.

Functions overview

CAN is the abbreviation of ControllerAreaNetwork, the full name is the controller area network bus, that is, the control devices are connected to each other for data exchange. It is one of the most widely used fieldbuses in the world. It is designed as a communication bus for micro-controllers in the automotive environment, exchanging information between various electronic control units (ECUs) to form an automotive electronic control network.

Lin is a new type of low-cost serial communication system for distributed electronic control system of automobiles, mainly used for serial communication between intelligent sensors and actuators. LIN bus features include:

- Data format based on UART
- Single master multi slave structure
- Single wire transmission via single master multi slave structure: 0-12V
- Communication rate: 19.2kbps

The DLC is the result of negotiation and regulation among the world's car manufacturers. When using fault diagnosis tester to communicate with vehicle or program the communication system of the vehicle, this connector must surely be used.

This connector must meet the following conditions:

- be able to connect 16-pin connector of all fault diagnosis testers.
- Always supply battery power to fault diagnosis tester through Pin No.16.
- Always supply grounding connection for fault diagnosis tester through Pin No.4.
- The other pins are used for serial data communication with vehicle systems. The microprocessor-controlled modules in

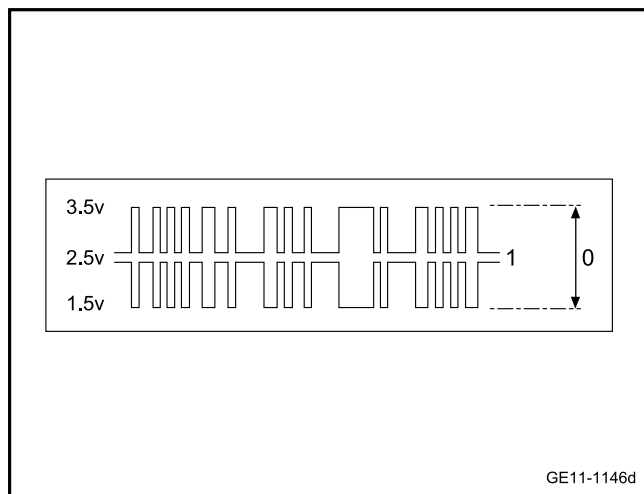
11.16.3 System working principles

11.16.3.1 System Working Principles

Description of the CAN bus

The communication media of CAN bus is the twisted pair with the communication speed of high-speed CAN bus of 500kbps. Terminals of the twisted pair are 2 120Ω resistances.

High-speed CAN bus is differential bus. Serial data bus (H) of high-speed CAN bus and serial data bus (L) of high-speed CAN bus are driven from the still or unused level to the opposite limits. About 2.5V unused level is regarded as implicit data transmission and explained as logic 1. When the line is driven to the limit, the serial data bus (H) of high-speed CAN bus will rise by 1V and serial data bus (L) of high-speed CAN bus will decrease by 1V. The limit voltage difference of 2V is considered as explicit transmission data and interpreted as logic 0 (as shown in the figure below).



When a CAN signal is sent, the current flows from the sending end of controller to CAN-H line, then to CAN-L line through the terminal resistance and returns back to the receiving end of controller. Where communication signals are lost, the program will set communication loss fault diagnosis code for all control modules. This fault diagnosis code can be read by the fault diagnostic apparatus.

Caution

Fault diagnosis code of serial data loss doesn't present a fault of module of this fault diagnosis code.

CAN bus application

The vehicle has 5 CAN communication buses.

CF-CAN: gateway, diagnostic interface, low-speed alarm controller, thermal management control module, IBC and seat module

CS-CAN: gateway, steering wheel angle sensor, front monocular camera, VCU, EPS, ONE BOX module, airbag control module, automatic parking module and combination switch(lamps and wipers).

HB-CAN: gateway, combination switch(column shift), VCU, T-box, BMS, high and low voltage charging system, integrated power controller and diagnosis interface.

IF-CAN: gateway, diagnostic interface, HUD, had unit, T-BOX

IB private CAN: integrated power controller, automatic parking module, VCU, ONEBOX module

The external test equipment can access the diagnostic data of the gateway and all modules through the CAN bus between the vehicle-mounted diagnostic interfaces.

LIN bus application

IBC uses LIN bus to communicate data with power window lifting motor, door handle control module and RF receiver module and shading module.

The thermal management control module uses LIN bus for data communication with air conditioning compressor, electric heater (PTC), refrigeration pipe solenoid valve, three-way solenoid valve, four-way valve, electronic expansion valve, and electromagnetic water valve.

11.16.4 Part position

11.16.4.1 Part Position

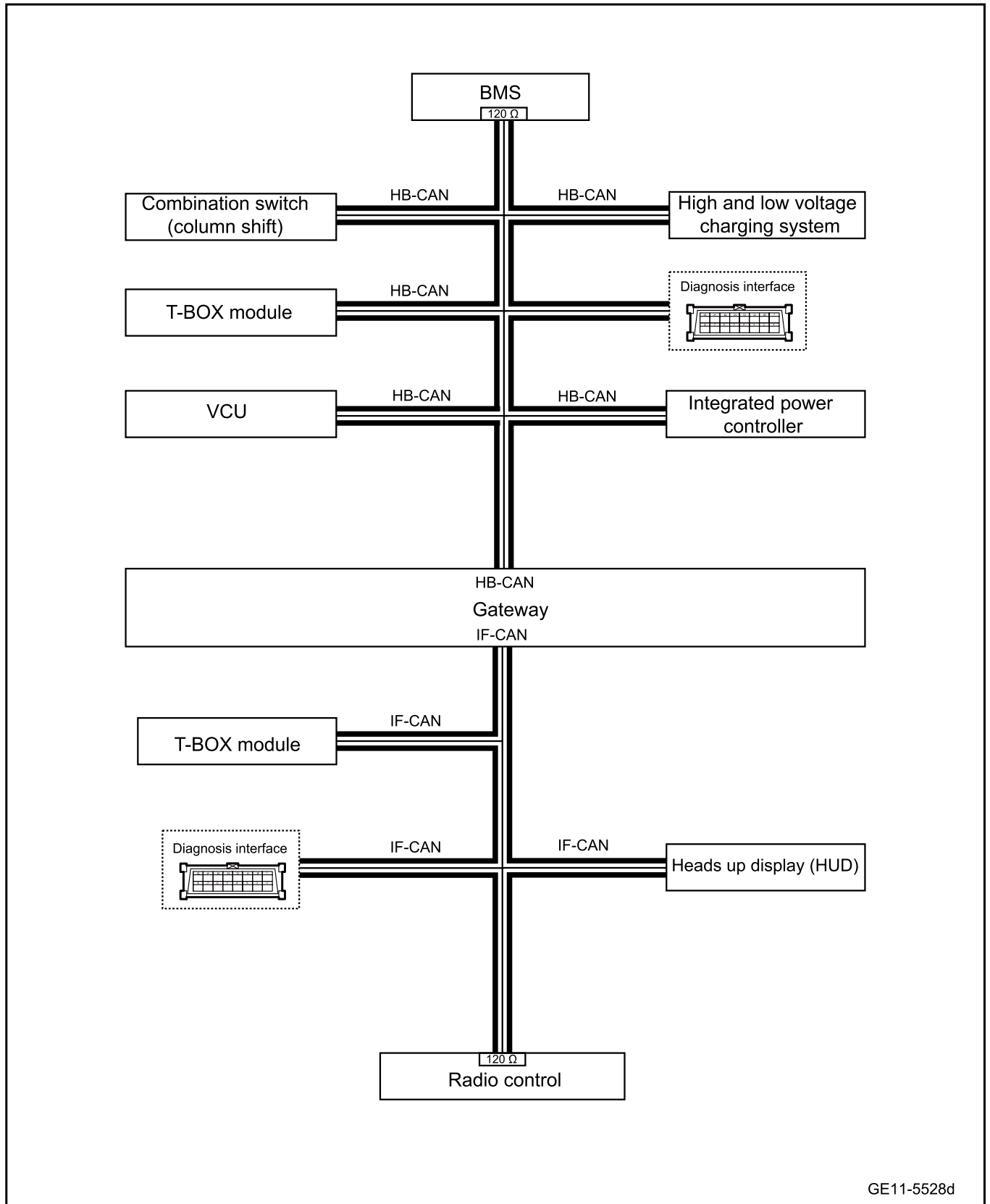


1. Gateway

11.16.5 Electrical block diagram

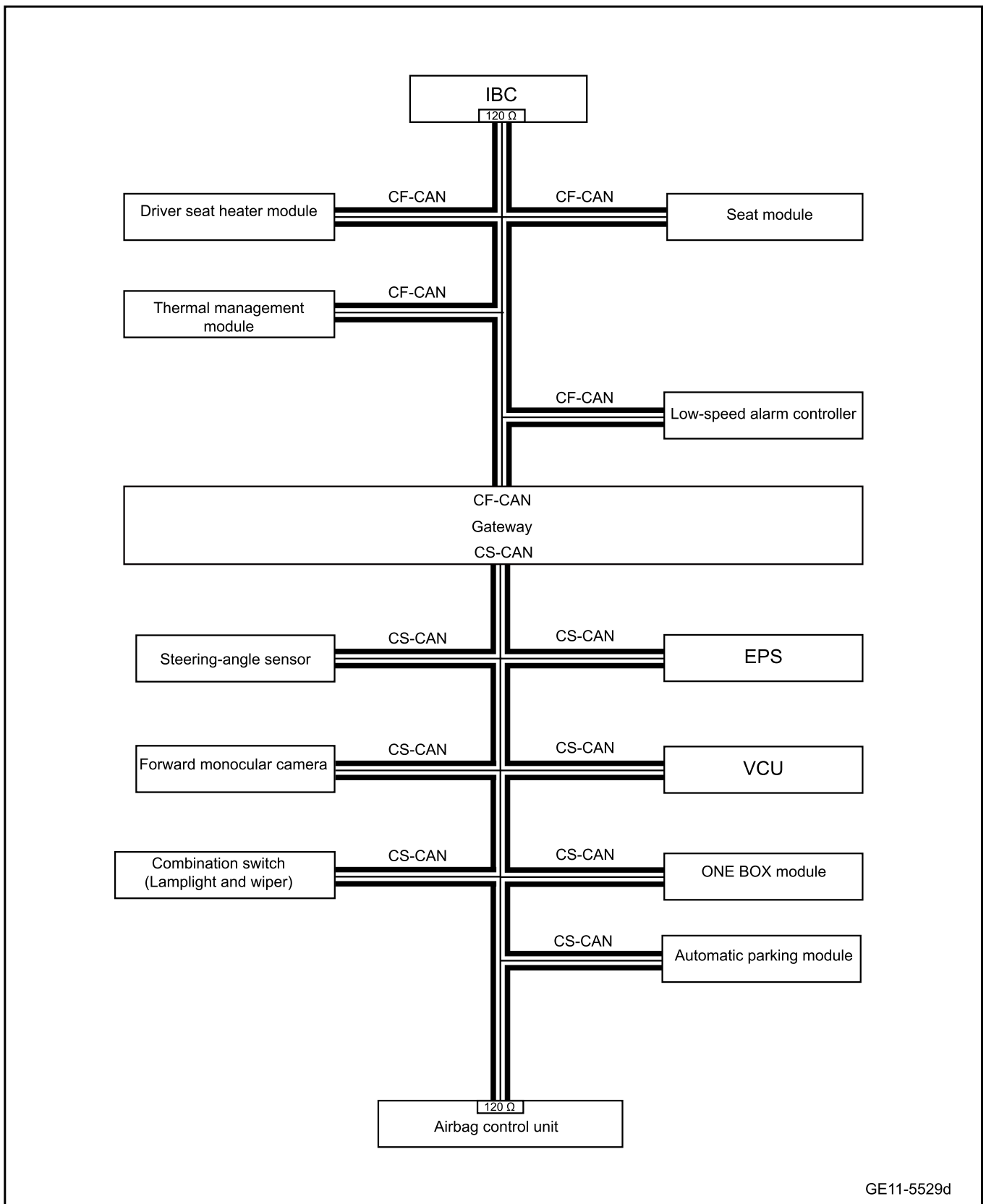
11.16.5.1 Electrical Schematic Diagram of Data Communication System(Type I)

Data communication 1



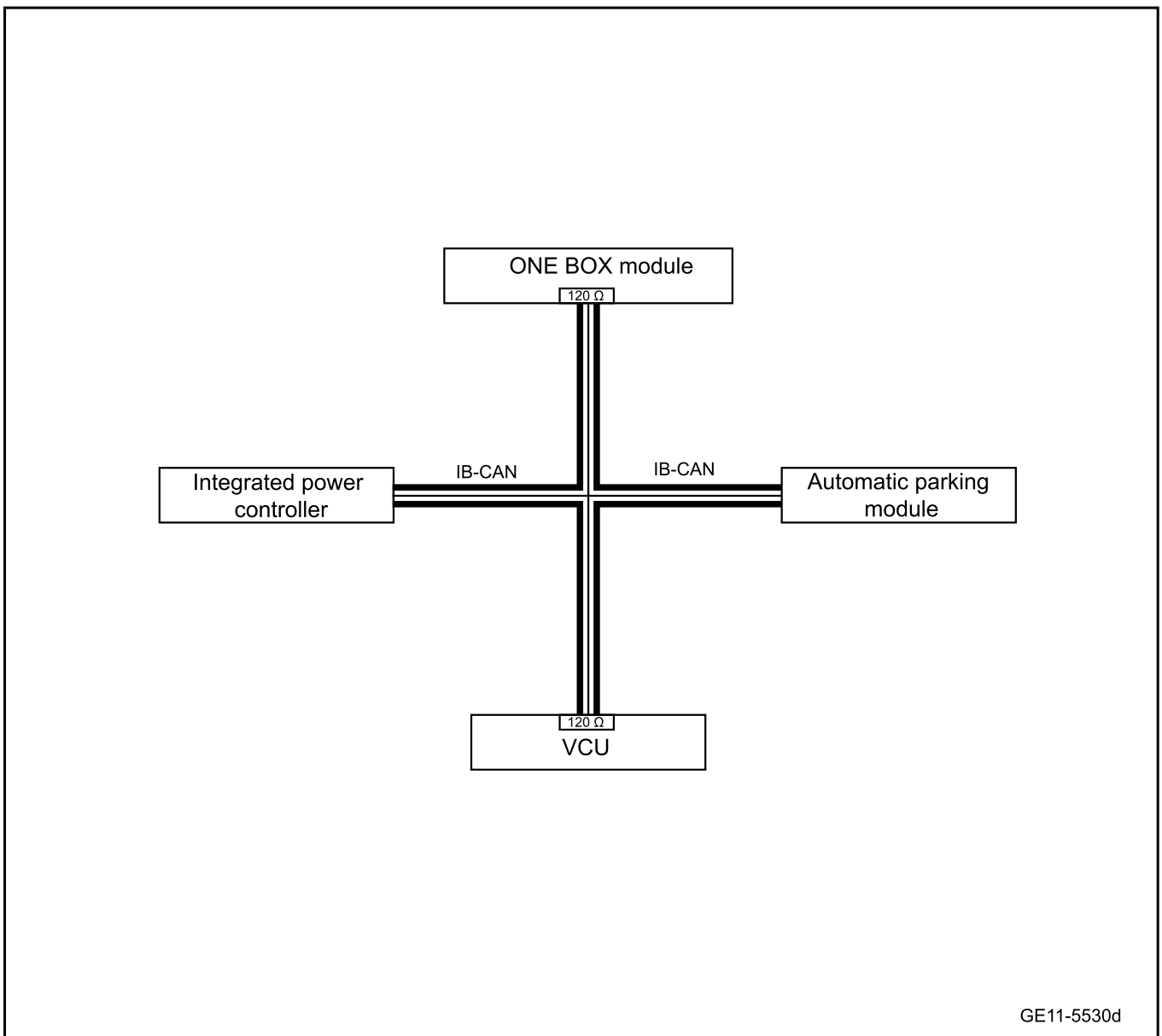
GE11-5528d

Data communication 2



GE11-5529d

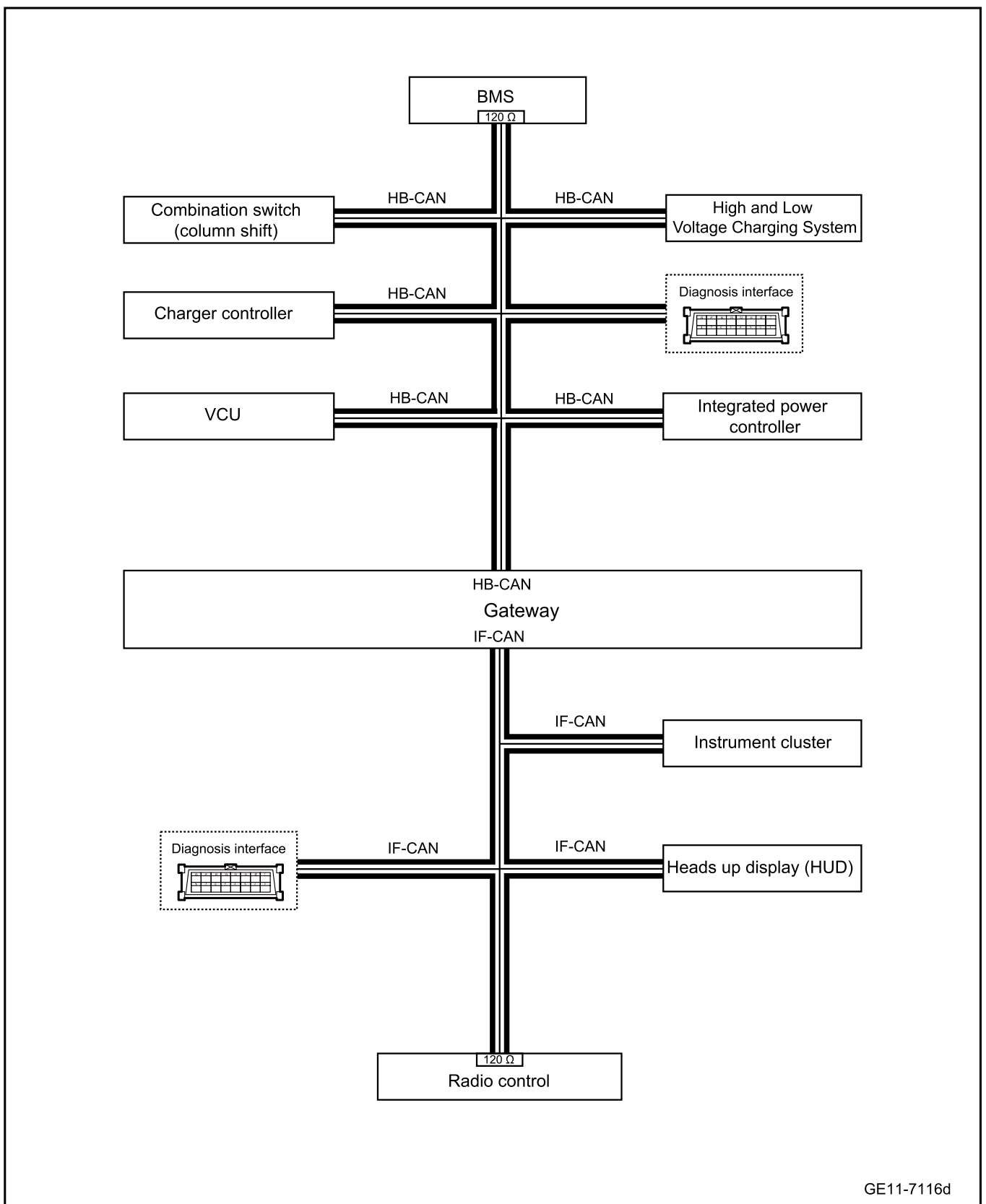
Data communication 3



GE11-5530d

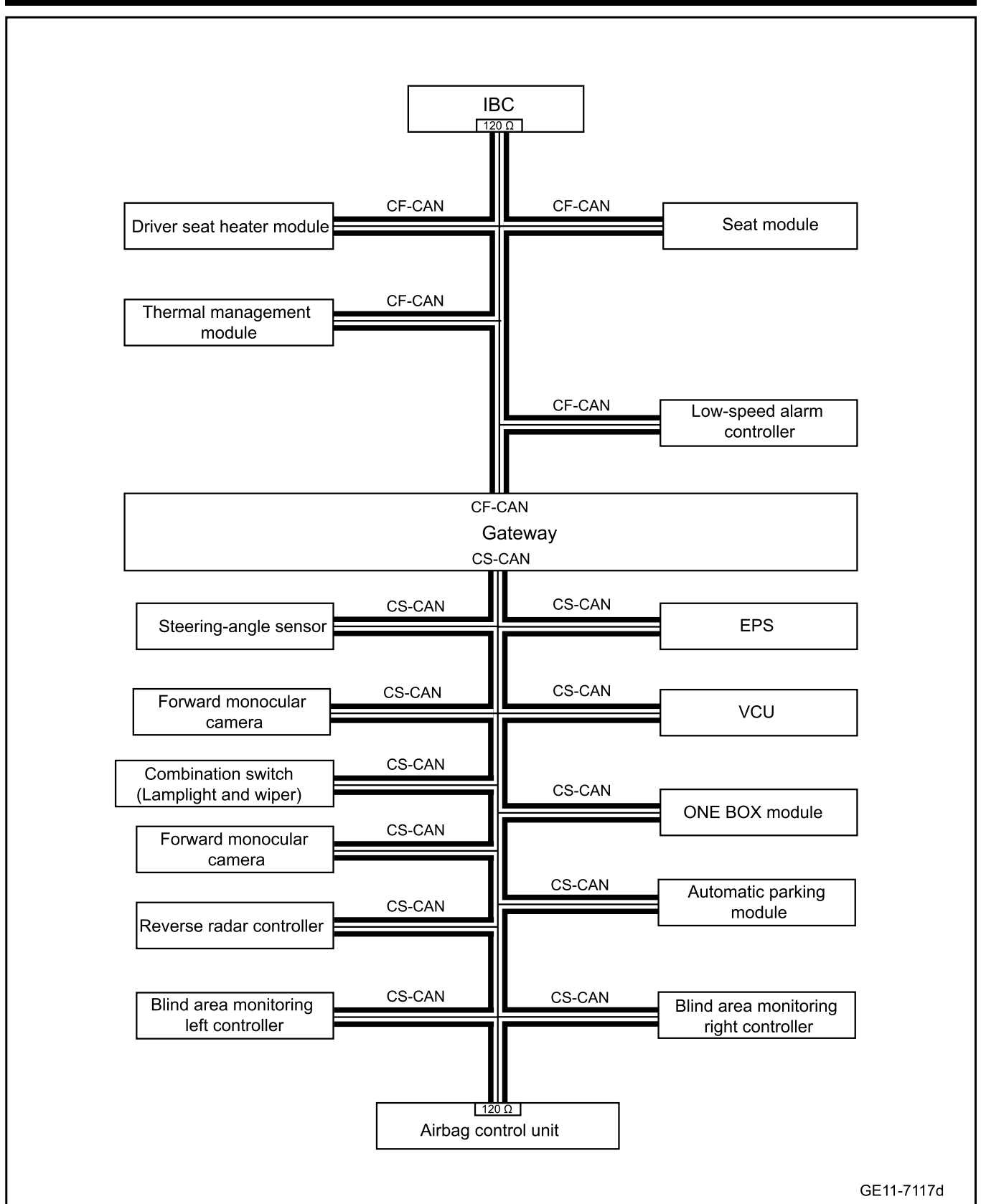
11.16.5.2 Electrical Schematic Diagram of Data Communication System (Type II)

Data communication 1

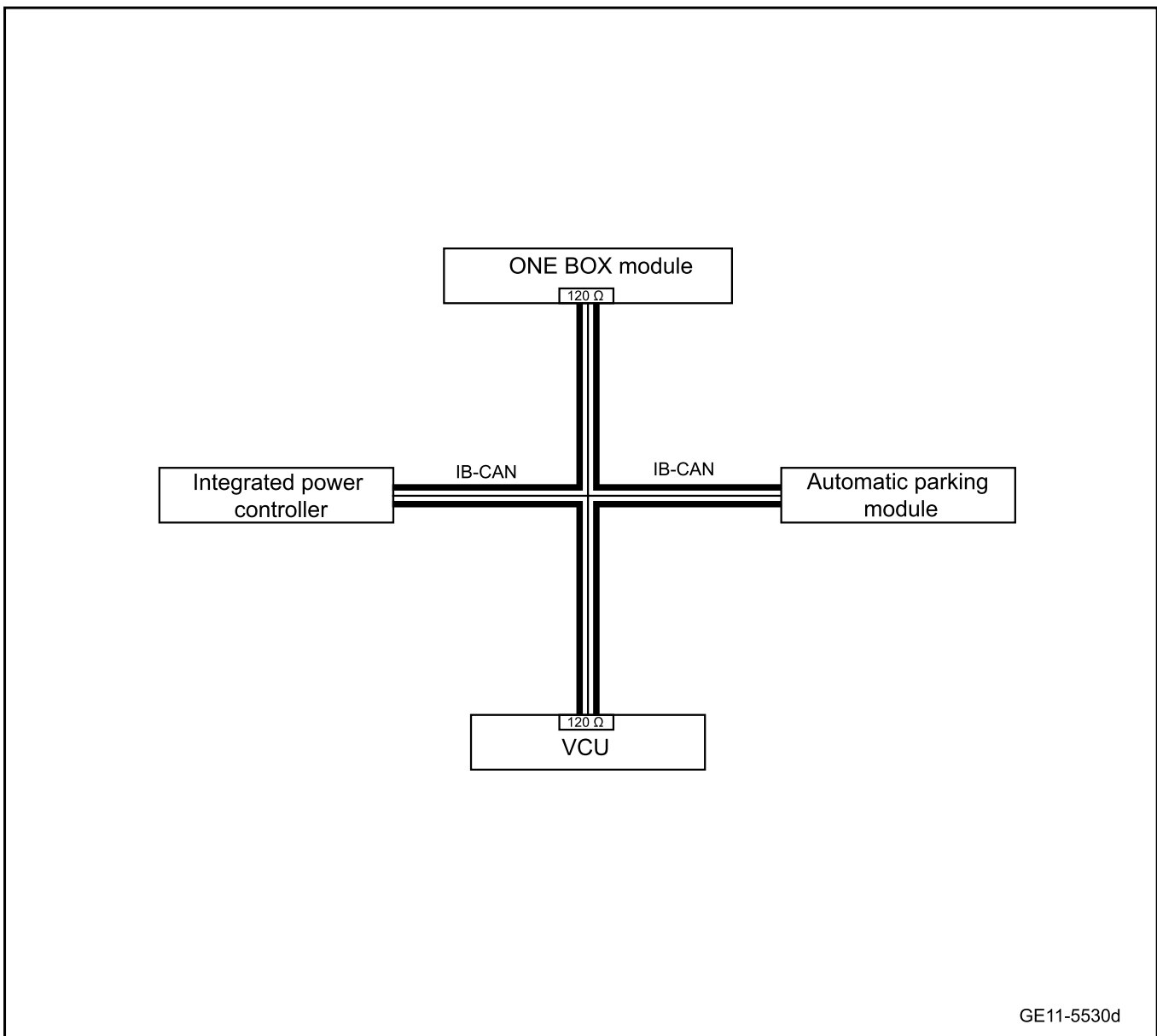


GE11-7116d

Data communication 2



GE11-7117d



11.16.6 Diagnostic information and procedures

11.16.6.1 Diagnosis Description

Before diagnosing the trouble of the data communication system, refer to Description and Operation. Understand and be familiar with system working principle of the data communication system, and then restart system diagnosis. This helps to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the customer belongs to normal operation. Any fault diagnosis of data communication system should start with a routine inspection that guides the serviceman to take the next logical step for troubleshooting. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.16.6.2 Routine inspection

1. Check the after-sales installations that may affect the normal operation of the data communication system to ensure that such installations do not affect the normal operation of the data communication system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
3. Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.16.6.3 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	KL30 undervoltage	Refer to Power Supply Failure of Gateway Controller
U300617	KL30 overvoltage	
U100445	Gateway ROM error	Refer to Internal faults of the Gateway Controller
U100446	Gateway EEPROM error	
U100444	Gateway RAM error	
U003788	CS-CAN bus off	Refer to Communication Failure of the Gateway Controller
U005588	IF-CAN bus off	
U002888	CF-CAN bus off	
U006488	HB-CAN bus off	
U003887	Global loss of CS-CAN bus	
U002987	Global loss of CF-CAN bus	
U010387	EGSM node is lost	
U015687	MMI node is lost	
U019887	T-BOX node is lost	
U015587	IPK node is lost	
U015987	PAS node is lost	
U120387	FCS node is lost	
U023587	FRS node is lost	
U012687	TCM(SAS) node is lost	
U013187	EPS node is lost	
U012287	ESC node is lost	
U015187	ACU(YRS) node is lost	
U020887	DSCU node is lost	
U021487	PEPS node is lost	
U014087	BCM(TPMS) node is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U016487	AC node is lost	
U012187	BMSH node is lost	
U111487	VCU node is lost	
U112287	VCU node is lost	
U011087	IPU node is lost	
U111587	OBC node is lost	
U016087	AVAS node is lost	
U111A87	IB node is lost	
U111B87	RSRS node is lost	
U005687	Global loss of IF-CAN bus	
U006587	Global loss of HB-CAN bus	
U02A887	RML node is lost	

11.16.6.4 CAN bus fault precaution

- The CAN bus harness should not be stretched.
- The CAN bus harness should not be opened more than 4cm (1.6in).
- The CAN bus harness should not be connected with other wires.
- The fault diagnosis should be conducted with the diagnostic apparatus recommended by manufacturers.

11.16.6.5 CAN bus harness repair norms

- The two wires CAN_H and CAN_L must be articulated.
- When the CAN bus has an open circuit fault, the length of the wire connection part cannot exceed L1: 50mm (1.97in).
- If there are more than two open circuit points, the two open circuit points must meet the distance of L2: more than 100mm (3.94in) before the repair is allowed, otherwise the CAN bus wire should be replaced.

11.16.6.6 Signal diagnosis of CAN field-bus

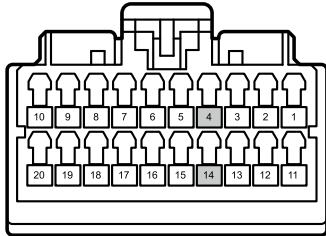
An oscilloscope and its double channel input can be applied to monitor signals transmitted at the CAN field-bus. These signals shall have the following features:

- The voltage signal at CANH bus is 2.5-3.5V, and that at CANL bus is 1.5-2.5V.
- These two signals are mirror images of each other.
- Signal transmission starts with the key to activate the power supply of the vehicle to the ON gear, but the signal transmission ends after the multimedia sets the power supply of the vehicle to the OFF gear for 2 s.

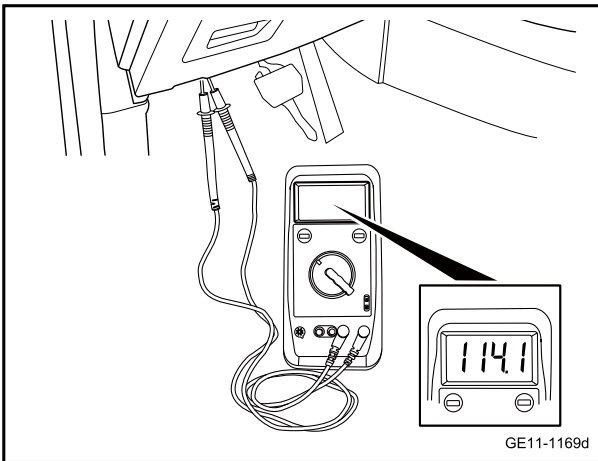
11.16.6.7 HB-CAN Bus Network Integrity Check

Removal procedure

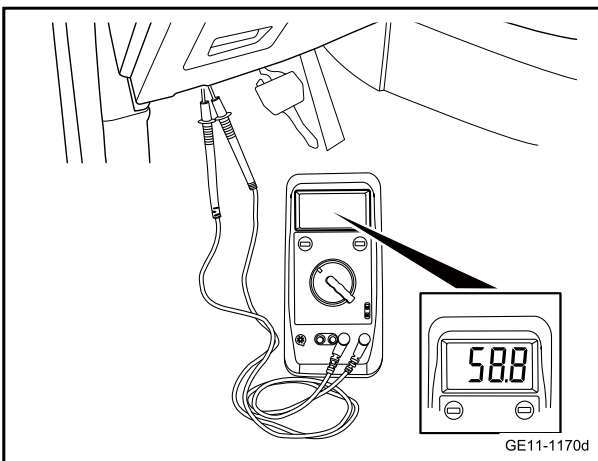
IP112 gateway harness connector



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GE11-1169d



GE11-1170d

Warning

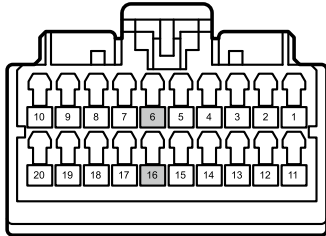
See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

- 1 Multimedia settings the power supply level to OFF of the vehicle, and use a multimeter to measure the resistance between port 4 and port 14 of the gateway connector.
 - 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
 - 3 Check the harness connectors of T-BOX, combination switch (arm), vehicle controller (VCU), diagnostic interface, integrated power controller, high and low voltage charging system and battery management system (BMS) in turn, and make sure the connection of CAN bus is normal. If there is any open circuit or poor connection, repair it.
- Caution**
- The repair of CAN bus must abide by repair norms. Refer to [Repair of Bus](#)
- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the HB-CAN bus network is complete.

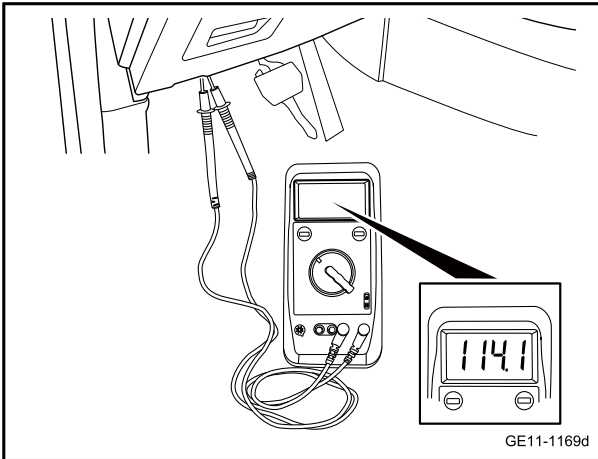
11.16.6.8 IF-CAN Bus Network Integrity Check

Removal procedure

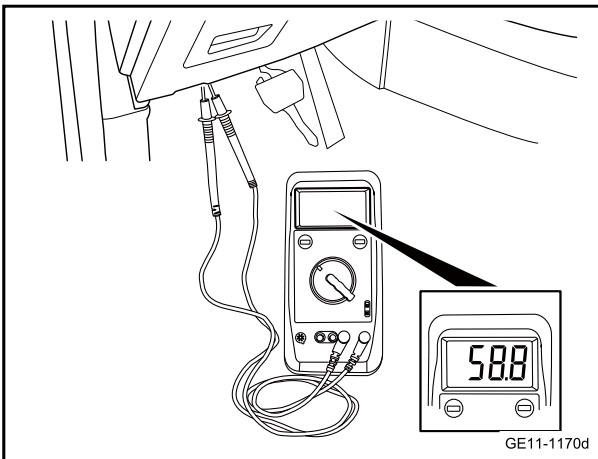
IP112 gateway harness connector



GE11-0538d



GE11-1169d



GE11-1170d

Warning

See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

- 1 Multimedia settings the power supply level to OFF of the vehicle, and use a multimeter to measure the resistance between the B4 port and the B3 port of the VCU connector.
- 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
- 3 Check the harness connectors of the integrated power controller, automatic parking module and ONE BOX module in turns to confirm that the connection of CAN bus is normal. Repair shall be conducted in case of any open circuit or poor connection.

Caution

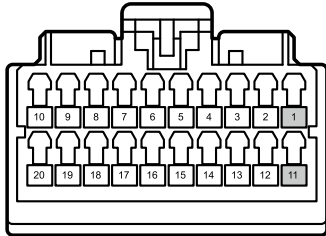
The repair of CAN bus must abide by repair norms. Refer to Specification for [Repair of Bus](#)

- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the IF-CAN bus network is complete.

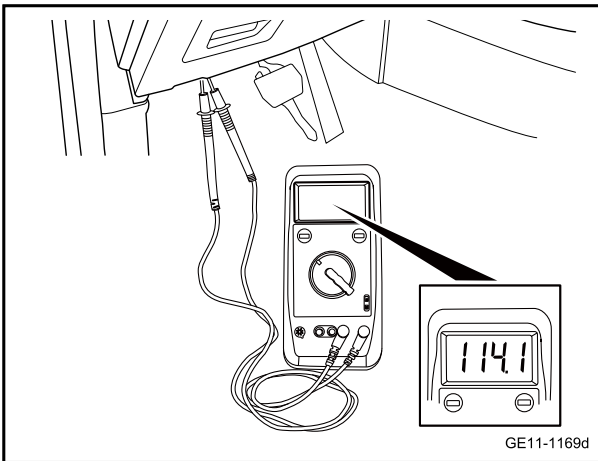
11.16.6.9 CF-CAN Bus Network Integrity Check

Removal procedure

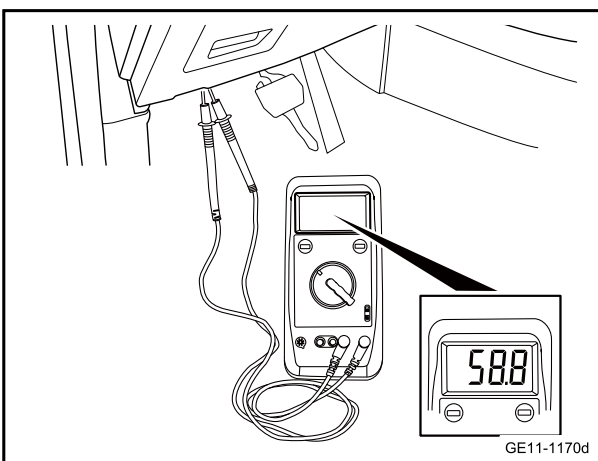
IP112 gateway harness connector



GE11-0540d



GE11-1169d



GE11-1170d

Warning

See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

- 1 Multimedia settings the power supply level to OFF of the vehicle, and use a multimeter to measure the resistance between port 1 and port 11 of the gateway connector.

- 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
- 3 Check the harness connectors of the floor harness to the driver's seat, low-speed alarm controller, seat module, thermal management control module and IBC in turns to confirm that the connection of CAN bus is normal. Repair shall be conducted in case of any open circuit or poor connection.

Caution

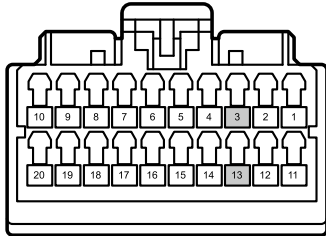
The repair of CAN bus must abide by repair norms. Refer to Specification for [Repair of Bus](#)

- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the CF-CAN bus network is complete.

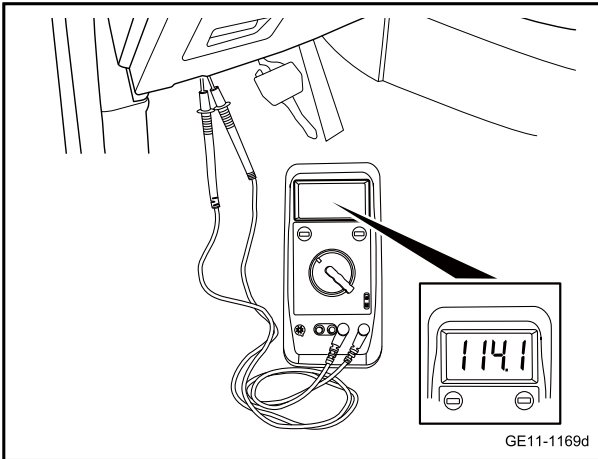
11.16.6.10 CS-CAN Bus Network Integrity Check

Removal procedure

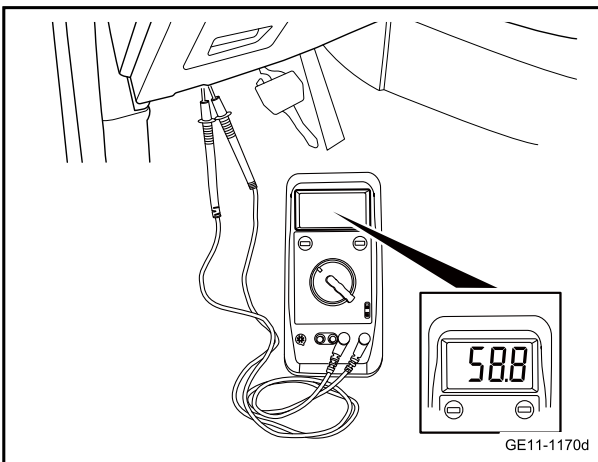
IP112 gateway harness connector



GE11-0539d



GE11-1169d



GE11-1170d

Warning

See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".

- 1 Multimedia settings the power supply level to OFF of the vehicle, and use a multimeter to measure the resistance between port 3 and port 13 of the gateway connector.
- 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
- 3 Check the harness connectors of the steering wheel angle sensor (SAS), electric power steering system (EPS), front monocular camera, combination switch (light and wiper), vehicle control module (VCU), ONEBOX module, automatic parking module and airbag control module (ACU) in turn, to confirm that the connection of CAN bus is normal, and repair if there is open circuit or poor connection.

Caution

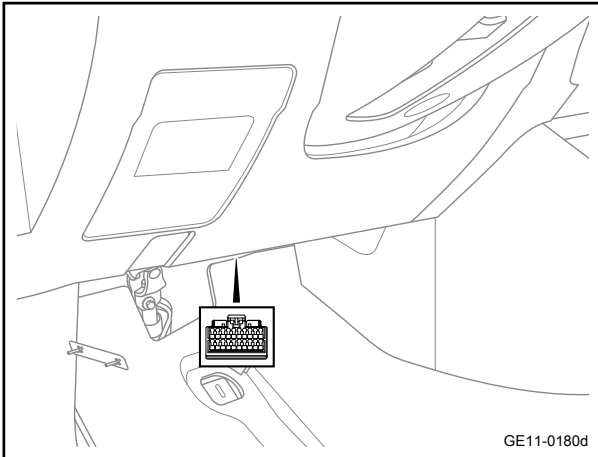
The repair of CAN bus must abide by repair norms. Refer to [Repair of Bus](#)

- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the CS-CAN bus is complete.

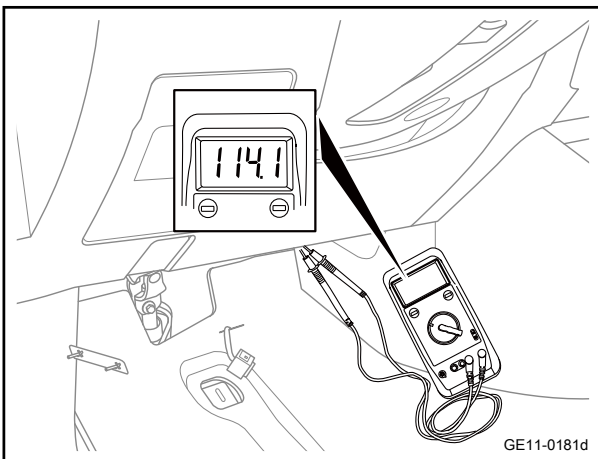
11.16.6.11 IB Private-CAN Bus Network Integrity Check

Warning

See "Warnings Regarding Battery Disconnection" in "Warnings and Precautions".



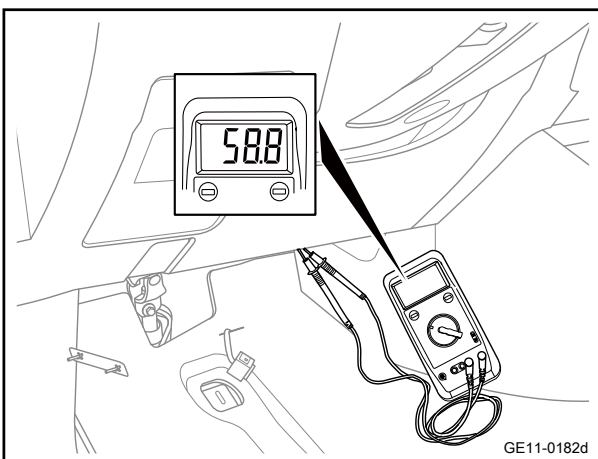
- 1 Multimedia settings the power supply level to OFF of the vehicle, and use a multimeter to measure the resistance between the B4 port and the B3 port of the VCU connector.



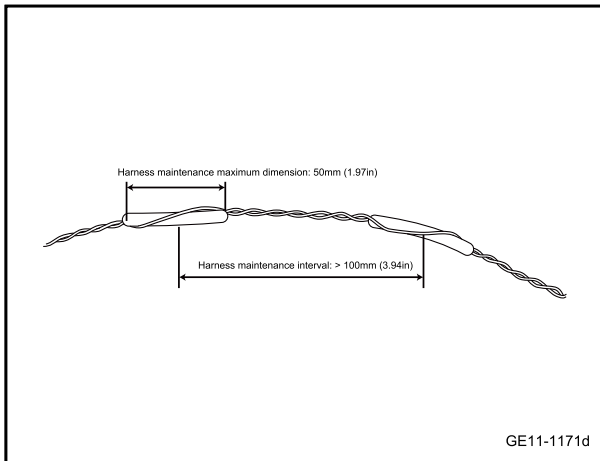
- 2 If the resistance shown by the multimeter is about 110-125Ω or conduction fails, it is indicated that the CAN bus is incomplete.
- 3 Check the harness connectors of the integrated power controller, the automatic parking module and the ONE BOX module in turns to confirm that the connection of CAN bus is normal. Repair shall be conducted in case of any open circuit or poor connection.

Caution

The repair of CAN bus must abide by repair norms. Refer to [Bus repair](#)



- 4 If the multimeter shows that the resistance value is about 55-63Ω, it means that the IB private-CAN bus is complete.



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11.16.6.12 Bus repair

- 1 Wrap the repaired parts with PVC tape after welding the bus.
- 2 Interwine the two buses during installing. If the buses are not wound, the CAN bus will be vulnerable to noise interference.
- 3 The length difference between CANL bus and CANH bus should be within 100mm.
- 4 Don't place bypass wires between connectors. If bypass wires are used, the protective effect of the wound harnesses will not be exerted.
- 5 Insert the tester probe from the rear side of the connector (harness side) when checking the resistance with the tester. Check the connector with a service wire if conductivity cannot be checked from the rear of the connector.
- 6 In case of open circuit failure of CAN bus, the length of wire connection shall not exceed L1: 50mm (1.97in).
- 7 If there are more than two open circuit points, repair is allowed only when the distance between the two open circuit points is above L2: 100mm (3.94in), otherwise the CAN bus conductor should be replaced.

11.16.6.13 Fault of power supply of the gateway controller

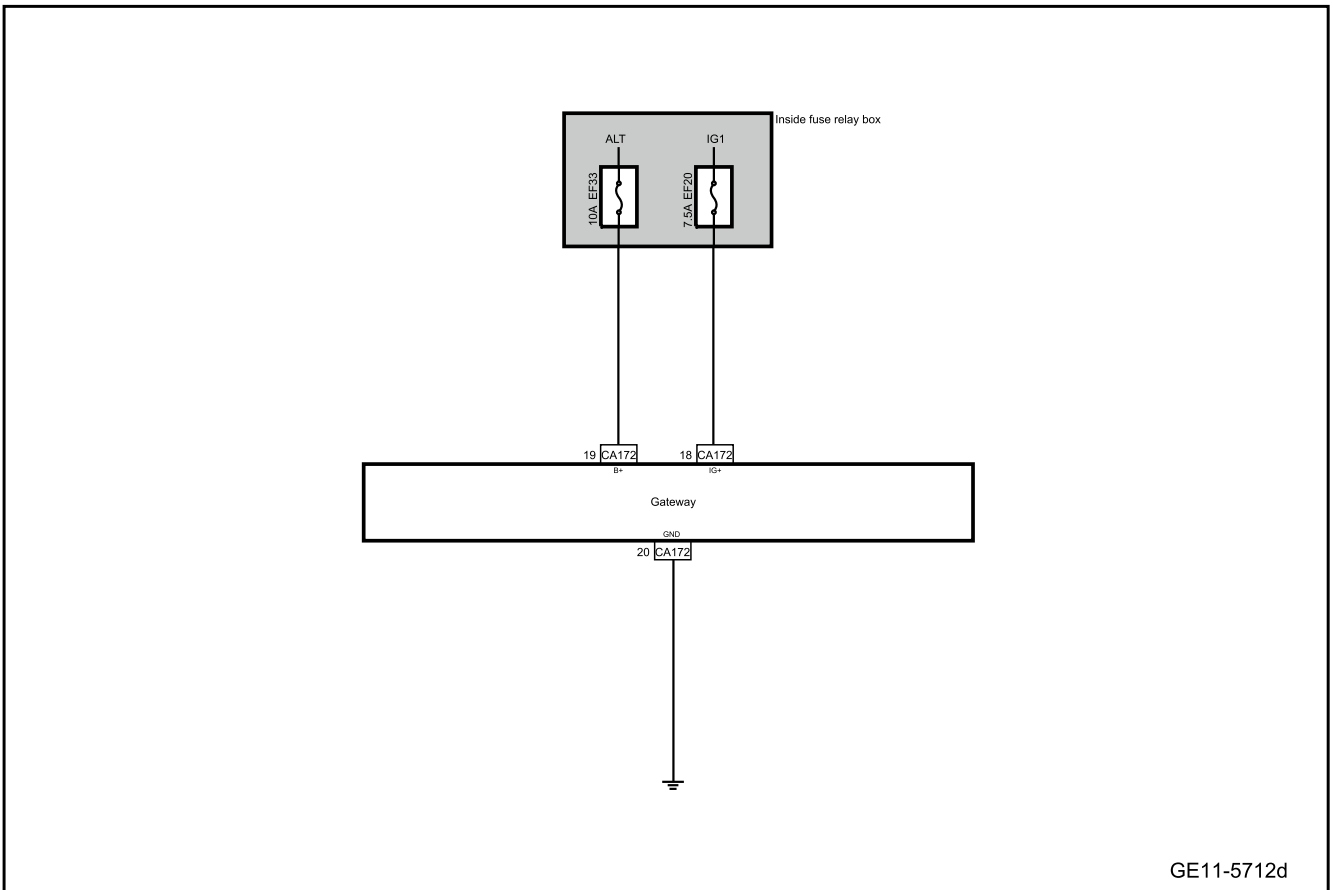
1. DTC description:

Diagnostic Trouble Code	Description
U300616	KL30 undervoltage
U300617	KL30 overvoltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Internal local voltage <9V, KL15 is open	1. Diagnosis service \$85 is not activated	1. Battery 2. Circuit
U300617	Internal local voltage >16V, KL15 is open	2. IG15 Off -> On, delay 3000ms	3. Fuse 4. Gateway controller

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of gateway controller for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Inspect the gateway fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Pull out fuse EF33 of the indoor fuse relay box. Check whether fuse EF33 is blown.

Rated capacity of fuse: 5A

- C. Pull out fuse EF20 of the indoor fuse relay box. Check whether fuse EF20 is blown.

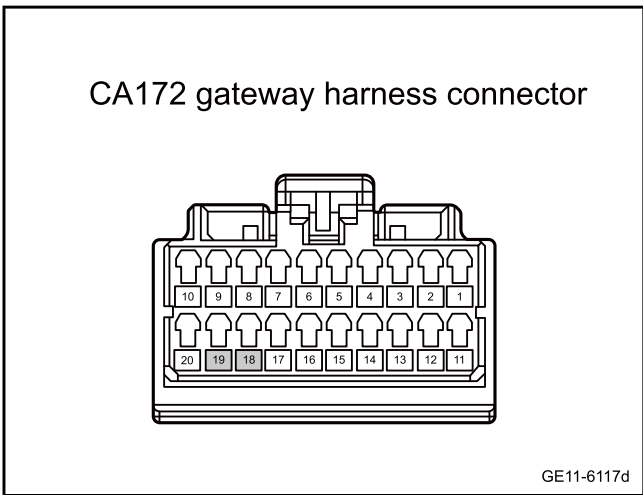
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check whether the gateway controller power supply circuit is an open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the gateway controller harness connector CA172.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA172(18)	Vehicle body is grounded.	Standard voltage: 11-14V
CA172(19)	Vehicle body is grounded.	

- E. Confirm whether the measured value meets the standard.

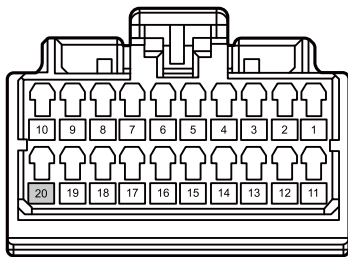
No

Repair or replace the harness.

Yes

Step 5 Check whether the gateway controller grounding circuit is an open circuit.

CA172 gateway harness connector



GE11-6118d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the gateway controller harness connector CA172.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
CA172(20)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the gateway.

- A. To replace the gateway, please refer to [Replacement of Gateway](#)

Yes

System is normal.

No

Step 7 Reprogram and reset the gateway.

- A. Reprogram and reset the gateway. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9	System is normal.
--------	-------------------

11.16.6.14 Fault of gateway controller internal

1. DTC description:

DTC	Trouble description
U100444	Gateway RAM error
U100445	Gateway ROM error
U100446	Gateway EEPROM error

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U100444	The data to be written and read is different	1. Diagnosis service \$85 is not activated	Gateway
U100445	The code CRC is incorrect	2. IG15 close-open delays 3000ms	
U100446	Incorrect checksum date	3. Normal diagnostic voltage range 4. Push-CAN No bus-off error	

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of gateway for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the gateway.

- A. Reprogram and reset the gateway. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 4 Replace the gateway.

- A. Check whether the gateway power and grounding wire are normal. Refer to [11.16.6.14 Power Supply Failure of Gateway Controller](#)
- B. Replace the gateway. Refer to [Replacement of Gateway](#)
- C. Confirm whether the system is normal.

Yes System is normal.

No

Step 5 Reprogram and reset the gateway.

- A. Reprogram and reset the gateway. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.16.6.15 Data communication fault of gateway controller bus

1. DTC description:

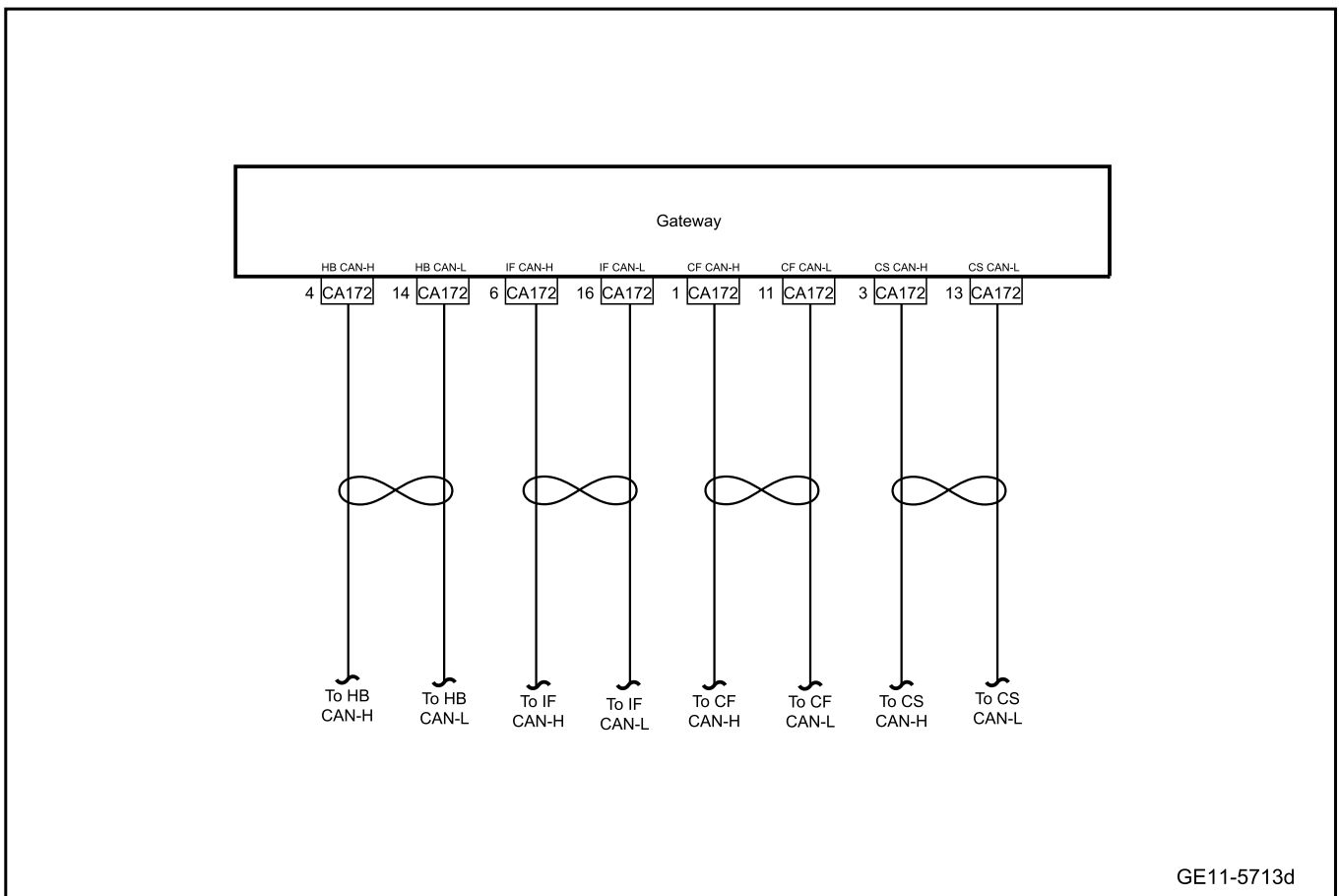
Diagnostic Trouble Code	Description
U003788	CS-CAN bus off
U005588	IF-CAN bus off
U002888	CF-CAN bus off
U006488	HB-CAN bus off
U003887	Global loss of CS-CAN bus
U002987	Global loss of CF-CAN bus
U010387	EGSM node is lost
U015687	MMI node is lost
U019887	T-BOX node is lost
U015587	IPK node is lost
U015987	PAS node is lost
U120387	FCS node is lost
U023587	FRS node is lost
U012687	TCM(SAS) node is lost
U013187	EPS node is lost
U012287	ESC node is lost
U015187	ACU(YRS) node is lost
U020887	DSCU node is lost
U021487	PEPS node is lost
U014087	BCM(TPMS) node is lost
U016487	AC node is lost
U012187	BMSH node is lost
U111487	VCU node is lost
U112287	VCU node is lost
U011087	IPU node is lost
U111587	OBC node is lost
U016087	AVAS node is lost
U111A87	IB node is lost
U111B87	RSRS node is lost
U005687	Global loss of IF-CAN bus
U006587	Global loss of HB-CAN bus
U02A887	RML node is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U003788	Bus is switched off wrongly	1. Diagnosis service \$85 is not activated 2. IG15 Off -> On, delay 3000ms 3. Normal diagnostic voltage range	1. Circuit 2. Gateway 3. Diagnostic interface
U005588	Bus is switched off wrongly		
U002888	Bus is switched off wrongly		
U006488	Bus is switched off wrongly		
U003887	All nodes are lost	1. Diagnosis service \$85 is not activated 2. IG15 Off -> On, delay 3000ms 3. Normal diagnostic voltage range 4. Body-CAN bus is not switched off wrongly	
U002987	All nodes are lost		
U010387	EGSM (ID=0x145) message lost for 250 milliseconds	1. Diagnosis service \$85 is not activated 2. IG15 Off -> On, delay 3000ms 3. Normal diagnostic voltage range 4. Push-No bus-off error	
U015687	5T lost MMI (ID=0x2A1) message		
U019887	5T lost T-BOX (ID=0x292) message		
U015587	5T lost IPK (ID=0x3F1) message		
U015987	5T lost PAS (ID=0x390) message		
U120387	Loss of FCS (ID=0x1B0) message within 250ms		
U023587	FRS (ID=0x1A2) The message is lost for 250 milliseconds		
U012687	TCM (ID=0x0E0) The message is lost for 250 milliseconds		
U013187	EPS (ID=0x150) The message is lost for 250 milliseconds		
U012287	ESC(ID=0x125) message is lost for 250 milliseconds		
U015187	5T lost ACU/YRS (ID=0x380) message		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U020887	5T lost DSCU (ID=0x2D2) message		
U021487	PEPS (ID=0x1E2) The message is lost for 250 milliseconds		
U014087	BCM (ID=0x1F0) The message is lost for 250 milliseconds		
U016487	5T lost AC (ID=0x2F1) message		
U012187	BMSH (ID=0x17B) The message is lost for 250 milliseconds		
U111487	VCU_HBCAN (ID=0x162) message is lost for 250ms		
U112287	VCU CSCAN (ID=0x165) message loss lasts for 250 milliseconds		
U011087	IPU (ID=0x0A8) The message is lost for 250 milliseconds		
U111587	5T lost OBC (ID=0x220) message		
U016087	5T lost AVAS (ID=0x2B2) message		
U111A87	5T lost IB (ID=0x225) message		
U111B87	5T lost RSRS (ID=0x2E4) message		
U005687	All nodes are lost		
U006587			
U02A887	RML (ID=0x381) message is lost for 5T		

3. Schematic circuit diagram:



4. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the harness connector of gateway for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the CF-CAN bus integrity.

- A. Refer to [CF](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 4 Check the HB-CAN bus integrity.

- A. Refer to [HB](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 5 Check the CS-CAN bus integrity.

- A. Refer to [CS](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 6 Check the IF-CAN bus integrity.

- A. Refer to [IF](#)
- B. Confirm whether the communication line is integral.

No

Preferentially clear communication line fault.

Yes

Step 7 Replace the gateway.

- A. Check whether the gateway power and grounding wire are normal. Refer to [11.16.6.14 Power Supply Failure of Gateway Controller](#)
- B. Replace the gateway. Refer to [Replacement of Gateway](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8	Reprogram and reset the gateway.
--------	----------------------------------

- A. Reprogram and reset the gateway. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

11.16.7 Removing and installing

11.16.7.1 Replacement of gateway

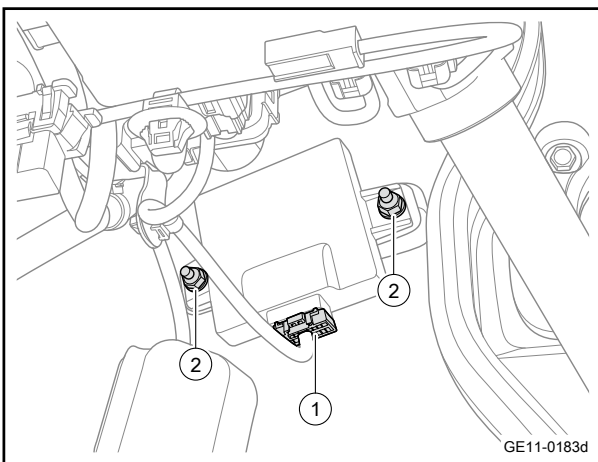
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

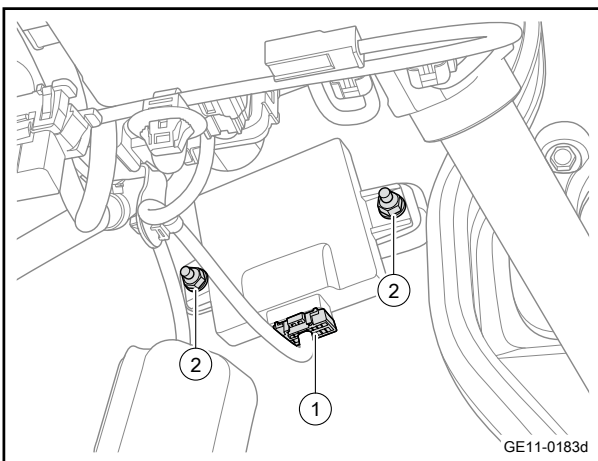
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Disconnect the gateway harness connector 1.
- 4 Remove the 2 fixing nuts 2 of the gateway.
- 5 Take off the gateway.



Installation procedure

- 1 Move the gateway to the installation position.
- 2 Install the 2 fixing nuts 2 of the gateway.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 3 Connect the gateway harness connector 1.



- 4 Install the left lower shield assembly of the dashboard.
- 5 Connect the negative cable of battery.

11.17 Cruise control system

11.17.1 Description and operation

11.17.1.1 Description and operation

Cruise control

The cruise control switch signal is collected by the IBC and then sent to the VCU through the CAN bus. The VCU controls the cruise control function

The vehicle is in D gear, the current vehicle speed is ≥ 30 km/h, the brake pedal is not depressed, the EPB is released, and there is no cruise function fault. The vehicle enters the cruise control state.

Cruise status

- a. Cruise Control accuracy at fixed speed: ± 2 km/h
- b. Vehicle speed setting range 30 km/h- 150 km/h
- c. In any mode, the target speed can be adjusted and set.
- d. Detect the speed increase and decrease signals sent by the IBC, and perform continuous increase and decrease operation at the target vehicle speed of the VCU.

Cruise exit conditions:

- a. Depress the brake pedal to exit cruise control system;
- b. Turn the electronic gear shifter to neutral (N), and the cruise control system will exit.
- c. Press the cruise switch button for a short time to close the cruise control system.
- d. Press the cruise switch button twice or for a long time to close thoroughly the cruise control system.

Intelligent cruise control (ICC) system

– ICC is an upgrade of the traditional adaptive cruise system, which can provide cruise control and direction assist control (lane assist) for vehicles on highways or elevated roads with good road conditions.

– When the function is activated in accordance with the road conditions, the ICC intelligent navigation system can control the vehicle in the range of 0 ~ 150 km/h.

– ICC intelligent navigation system is mainly used to identify the preceding vehicle and the lane lines on both sides by the front camera fixed on the front windshield, and sends relevant information and instructions to other modules of the vehicle body through the CAN network, which is used to control the inter-vehicle time distance, vehicle speed and direction.

– The ICC intelligent navigation system recognizes the road conditions ahead of the vehicle through the front camera, and detects the distance between the vehicle and the preceding vehicle running in the same lane. According to the inter-vehicle time distance set by the driver, control the

vehicle speed and then control the distance between the vehicle and the preceding vehicle to keep the set distance position.

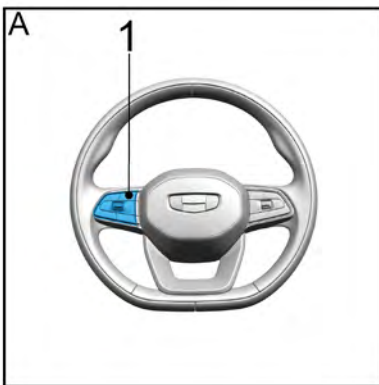
– ICC identifies the lane lines on both sides of the current road with the front camera, and calculates the distance between the vehicle and the lane lines. When the vehicle deviates from the lane, the system will remind the driver to control the vehicle in the lane and correct the vehicle's direction through the electronic power system to ensure that the vehicle runs in the lane.

Caution

ICC is a comfort system, which can assist the driver, but can't drive instead of the driver. The driver must always keep control of the vehicle and control the vehicle.

11.17.2 Part position

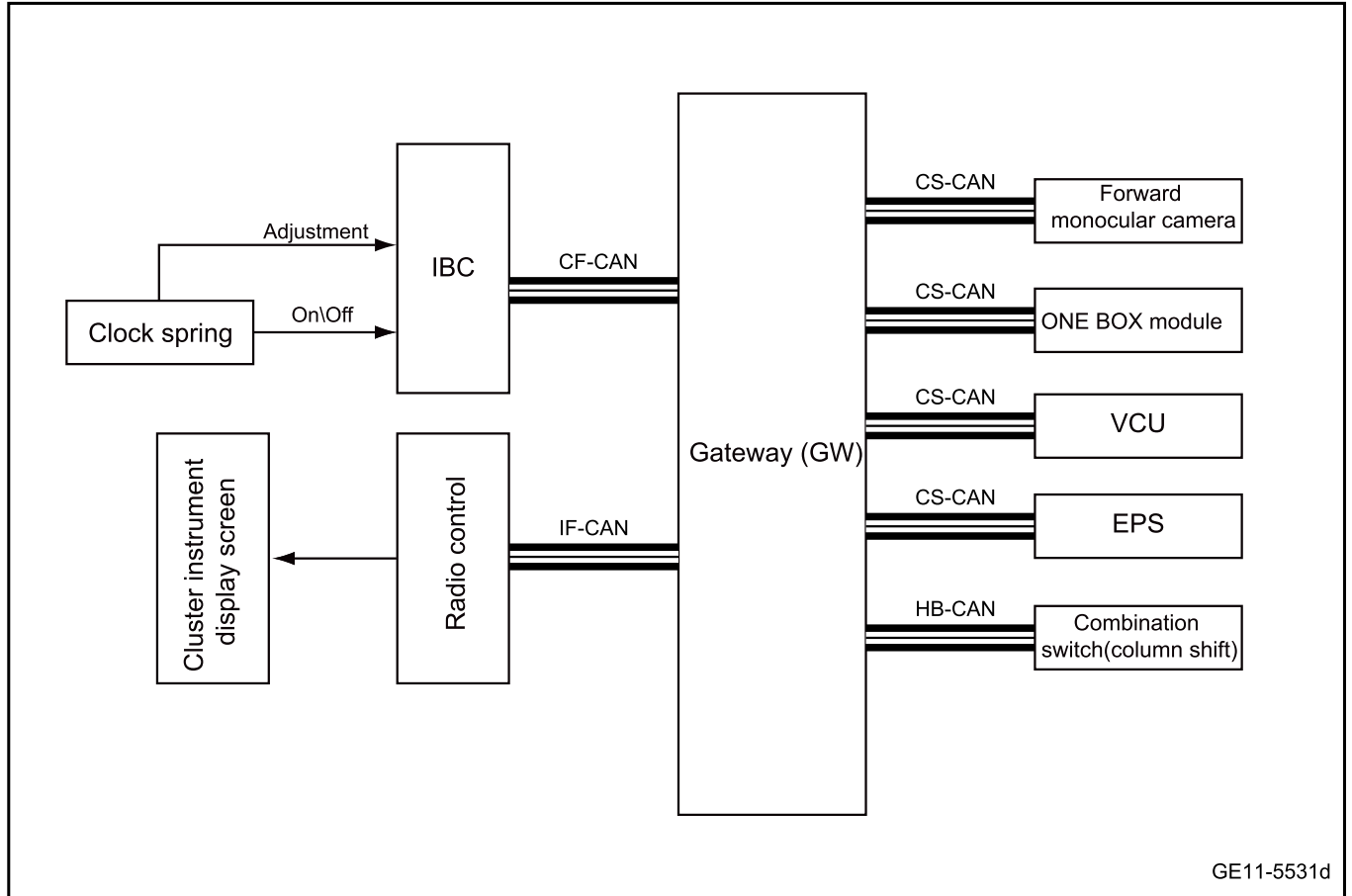
11.17.2.1 Part Position



1. Cruise control switch

11.17.3 Electrical block diagram

11.17.3.1 Electrical Schematic Diagram of Cruise Control System



11.17.4 Diagnostic information and procedures

11.17.4.1 Diagnosis Description

Before diagnosing the fault of the cruise control system. Refer to Description and operation and System working principle. Understand and familiarize yourself with the working principle of the cruise control system, and then start system diagnosis. This helps to confirm the correct fault diagnosis steps when a fault occurs. More importantly, it can also help to confirm whether the situation described by the distributor is normal operation. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.17.4.2 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

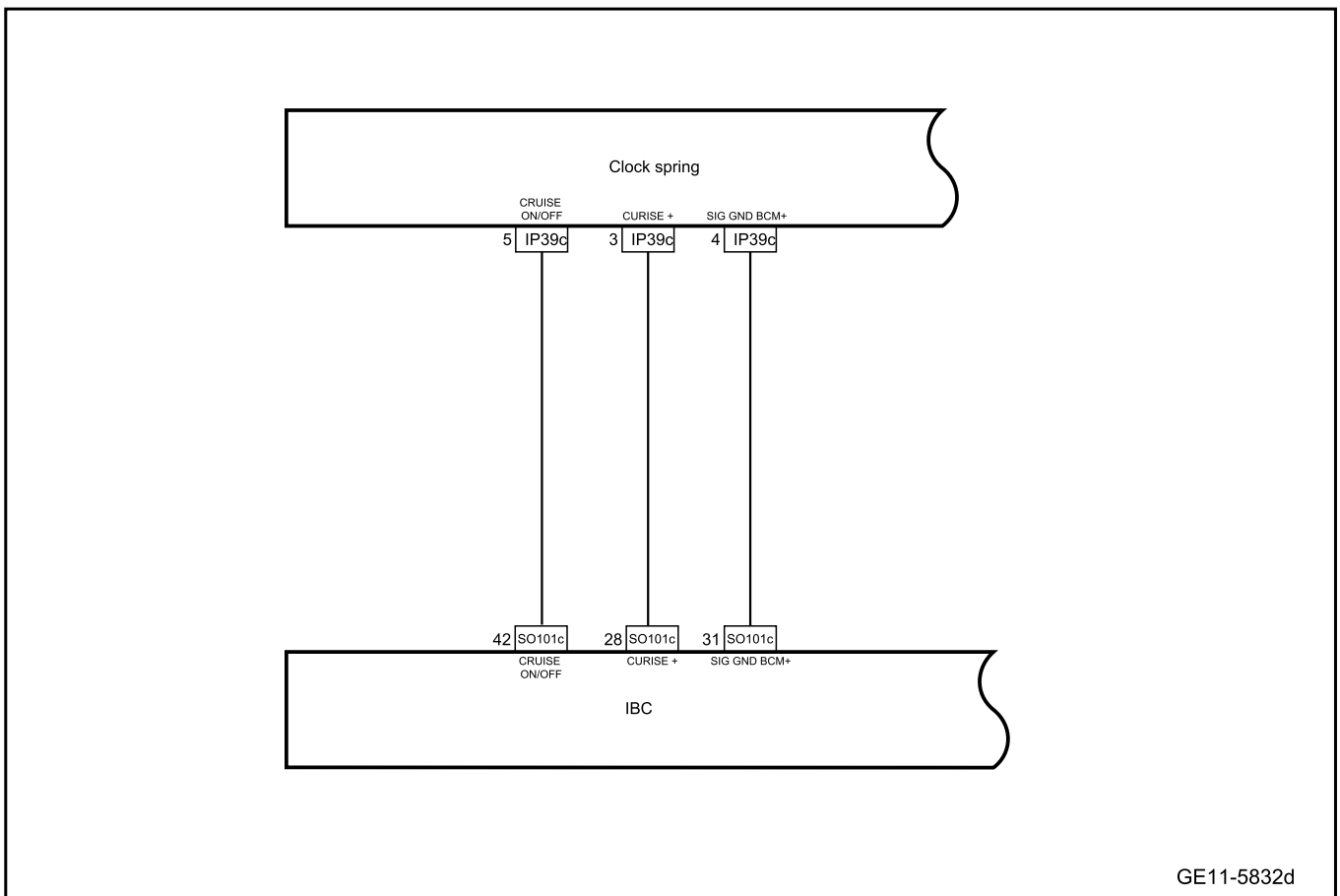
Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.17.4.3 Inoperative cruise control system

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Primary check.
--------	----------------

- A. Check the IBC harness connector for signs of damage, poor contact, aging, looseness, etc.
- B. Confirm whether the above items are normal.

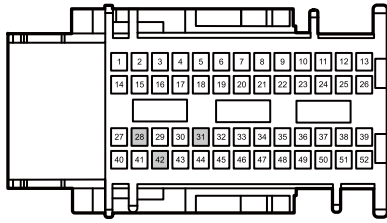
No

Repair or replace the faulty part.

Yes

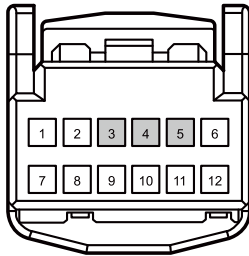
Step 2	Check whether the circuit between the cruise switch and IBC is normal.
--------	--

S0101c body control module harness connector



GE11-6119d

IP39c Clock spring harness connector A



GE11-6120d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the clock spring harness connector IP39.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(42)	IP39c(5)	Standard resistance: less than 1Ω
SO101c(31)	IP39c(4)	
SO101c(28)	IP39c(3)	
SO101c(42)	Vehicle body is grounded.	Standard resistance: 10 KΩ or higher
SO101c(31)		
SO101c(28)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(42)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(31)		
SO101c(28)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 Replace the cruise switch.

- A. Replace the cruise switch. Refer to [Replacement of cruise switch](#)

Yes System is normal.

No

Step 4 Replace the IBC

- A. Confirm whether the IBC power and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)
- C. Confirm whether the system is normal.

Yes → System is normal.

No

Step 5 | Reprogram and reset the IBC.

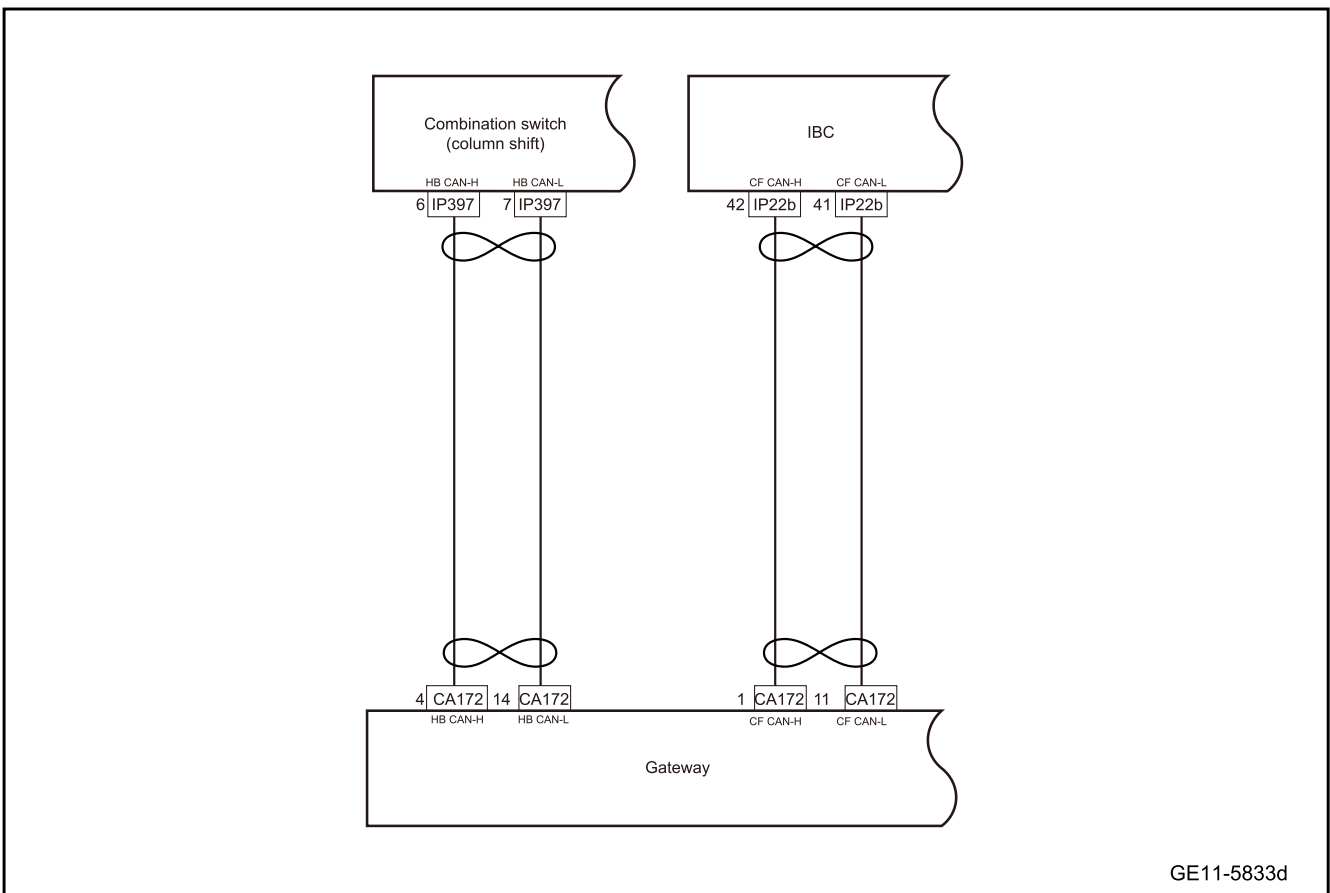
A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6 | System is normal.

11.17.4 Inoperative cruise control system indicator light

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1 | Primary check.

- A. Check combination switch(column shift) harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check whether the cruise control system working is normal.

A. Check whether the cruise control system working is normal.

No

Repair or replace the faulty part. Refer to [Inoperative Cruise Control System](#)

Yes

Step 3 Check whether CF-CAN communication network is normal.

- A. Check whether the CF-CAN communication network is normal, refer to CF-CAN bus network integrity check
- B. Confirm whether the CF-CAN communication network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Check whether HB-CAN communication network is normal.

- A. Check whether the HB-CAN communication network is normal, refer to [HB-CAN bus network integrity check](#)
- B. Check whether the HB-CAN communication network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5 Replace the combination switch(column shift)

- A. Check whether the combination switch(column shift) power supply, grounding harness is normal. Refer to [Combination Switch\(column shift\) Power Supply Failure](#)
- B. To replace the wiper combination switch, please refer to [Replacement of Combination Switch\(column shift\) Assembly](#)
- C. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 | Reprogram and reset the combination switch(column shift).

- A. Reprogram and reset the combination switch(column shift). Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 7 | Replace the IBC

- A. Check whether IBC power supply and grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of Central Controller](#)
- C. Confirm whether the system is normal.

Yes System is normal.

No

Step 8 | Reprogram and reset the IBC.

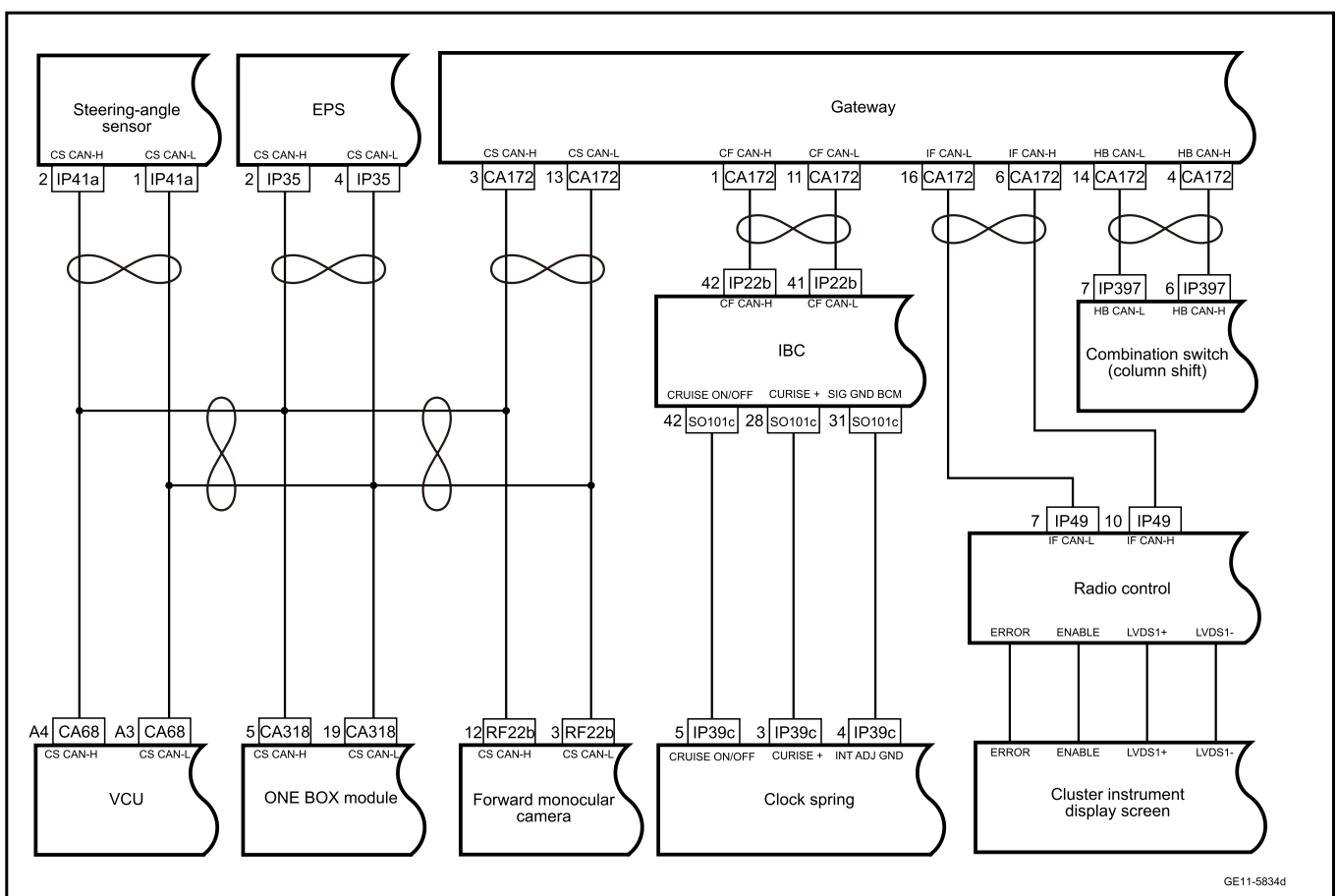
- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 9 | System is normal.

11.17.4.5 Inoperative Adaptive Cruise Control System

1. Schematic circuit diagram:



2. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Operate the start switch to place the power in mode "ON".
- B. Connect the fault diagnostic apparatus and read the fault code of ONEBOX module, gateway, head unit, front monocular camera, IBC, VCU, EPS, steering wheel steering sensor system.
- C. Check if there are fault codes in the system.

Yes

Priority is given to excluding fault codes for ONEBOX module, gateway, head unit, front monocular camera, IBC, VCU, EPS, steering wheel steering sensor system.

No

Step 2	Primary check.
--------	----------------

- A. Check the harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Check components for obvious scratches or damage.
- C. Are the above items normal?

No

Repair or replace the damaged components.

Yes

Step 3	Inspect input signal
--------	----------------------

- A. Check whether the brake signal, wheel speed signal, accelerator signal, throttle opening signal and monocular camera CAN communication signal are input normally.

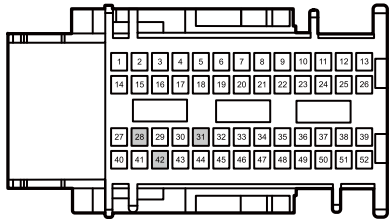
No

Give priority to troubleshooting the speed signal failure.

Yes

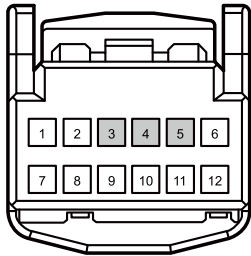
Step 4	Check whether the harness between the clock spring and the IBC is normal.
--------	---

S0101c body control module harness connector



GE11-6119d

IP39c Clock spring harness connector A



GE11-6120d

- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the clock spring harness connector IP39c.
- C. Disconnect the IBC harness connector SO101c.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(42)	IP39c(5)	Standard resistance: less than 1Ω
SO101c(31)	IP39c(4)	
SO101c(28)	IP39c(3)	
SO101c(42)	Vehicle body is grounded.	Standard resistance: 10 KΩ or higher
SO101c(31)		
SO101c(28)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
SO101c(42)	Vehicle body is grounded.	Standard voltage: 0V
SO101c(31)		
SO101c(28)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Replace the cruise switch.

- A. Replace the cruise switch. Refer to [Replacement of cruise switch](#)

Yes System is normal.

No

Step 6 Replace the IBC

- A. Confirm whether the IBC power supply and the grounding harness are normal. Refer to [IBC Power Failure](#)
- B. Replace the IBC Refer to [Replacement of the body control module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Reprogram and reset the IBC.
--------	------------------------------

- A. Reprogram and reset the IBC. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8	System is normal.
--------	-------------------

11.17.5 Removing and installing

11.17.5.1 Replacement of cruise control switch

Removal procedure

Refer to [Replacement of Steering Wheel Assembly](#)

11.18 System of low-speed prompt tone

11.18.1 Specification

11.18.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Low-speed alarm controller fixing bolt	M10×20	8 - 10

11.18.2 Description and operation

11.18.2.1 General

Function Introduction

When the electric vehicle runs in the purely electric-powered state, the vehicle is less noisy. Pedestrians with impaired vision or careless observation may be dangerous when passing through the driving direction of new energy vehicles. Therefore, electric vehicles often have a low-speed prompt tone system. When the vehicle speed is less than 30km/h, the prompt tone will be automatically issued to prompt pedestrians, so as to reduce the injury rate in case of collision between electric vehicles and pedestrians.

System composition

The low-speed prompt tone system is mainly composed of a low-speed prompt tone controller and relevant harnesses. Low-speed prompt tone controller is composed of power module, power amplifier module, voice module, MCU module, CAN communication module and so on.

11.18.3 System working principles

11.18.3.1 System Working Principles

Functions	Summary
Functions of low-speed prompt tone	When the power gear is ON, not P or R, and the vehicle speed is within the range of $1 \pm 0.5 \text{ km/h} \leq \text{vehicle speed} \leq 30 \pm 1 \text{ km/h}$, the low-speed prompt tone starts.
	When the vehicle speed is between 1km/h and 20km/h, the prompt volume increases with the increase of the vehicle speed.
	When the vehicle speed is between 20km/h and 30km/h, the prompt volume decreases with the increase of the vehicle speed.
	When the vehicle speed is less than or equal to 1km/h, stop issuing prompt.
	When the vehicle speed is greater than or equal to 30km/h, stop issuing prompt.
	When the power supply mode is ON and the R-gear is engaged, the low-speed prompt tone controller drives the low-speed prompt tone speaker to warn the pedestrians of the presence of the running vehicle.
Overvoltage and undervoltage detection	When the voltage is higher than 16V, the system will give an overvoltage alarm.
	When the voltage drops to 15V, the overvoltage alarm is cancelled.
	When the voltage is lower than 10V, the system will give an overvoltage alarm.
	When the voltage rises to 11V, the undervoltage alarm is cancelled.
Open circuit detection	When it is detected that the speaker is short-circuited, pull down the enable pin of the power amplifier chip, so that the power amplifier module enters sleep mode and stops output until the short circuit phenomenon is eliminated, thus preventing the speaker from spontaneous combustion due to short circuit.
Sleep and wakeup	In sleep mode, the power consumption is less than 500mW, the system stops all activities and only waits for the wake up command. After the system wakes up, all functions are restored and the system works normally.

11.18.4 Part position

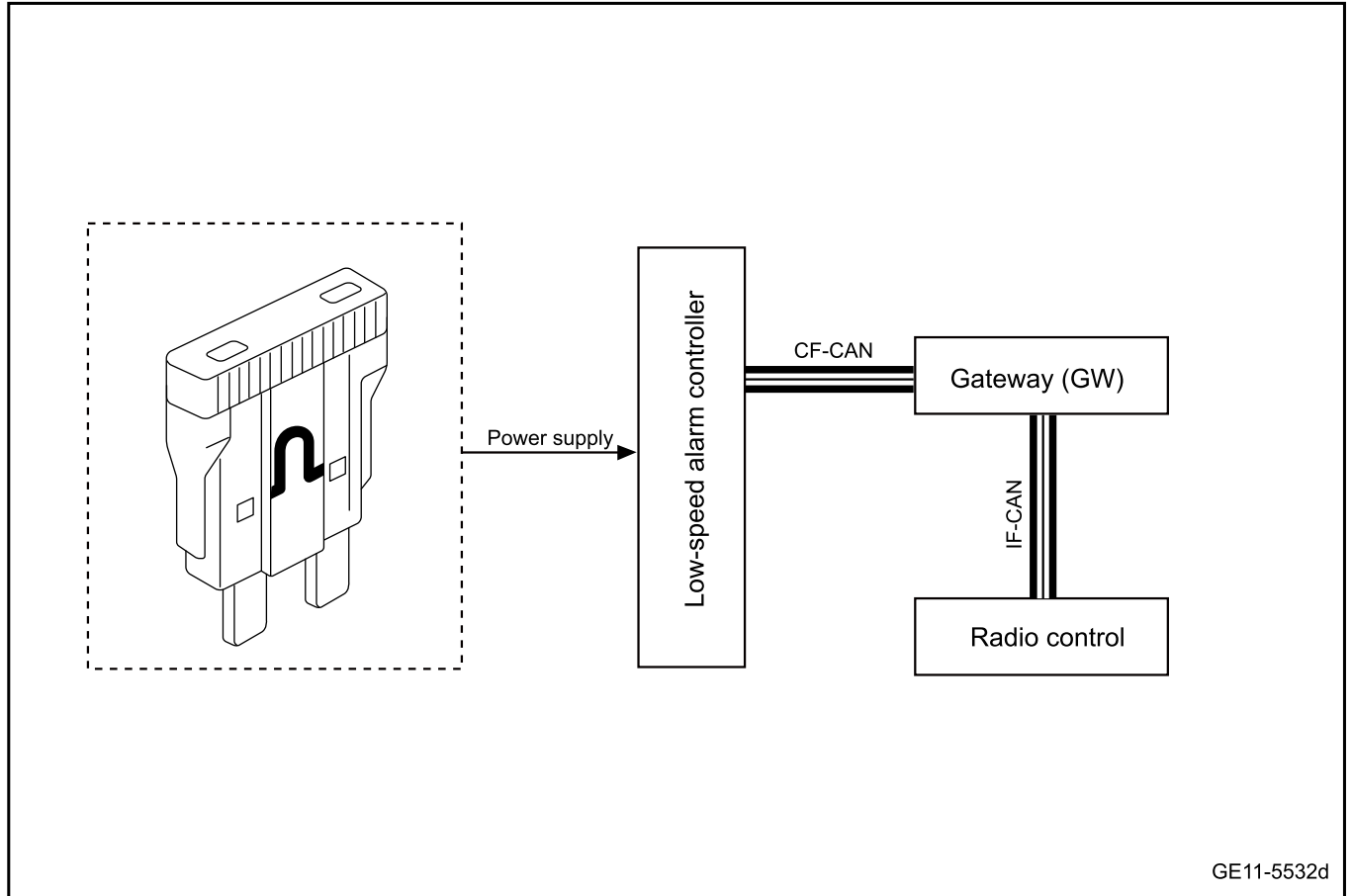
11.18.4.1 Part Position



1. Low-speed alarm controller

11.18.5 Electrical block diagram

11.18.5.1 Electrical Schematic Diagram of the Low-speed Alarm System



11.18.6 Diagnostic information and procedures

11.18.6.1 Diagnosis Description

Before diagnosing the trouble of the low-speed alarm system. Refer to Description and operation and System working principle. Understand and be familiar with the working principle of low-speed alarm system, and then start system diagnosis, which helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it helps to determine whether the condition described by the customer is normal. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.18.6.2 Visual Check

- Check after-sales installations that may influence low-speed alarm system and ensure that these installations do not affect the low-speed alarm system.
- Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
- Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.18.6.3 Fault symptom table

Symptom	Possibility and cause	Measures
Low-speed alarm controller does not ring or rings long.	1. Low-speed alarm controller power circuit	Refer to Power Supply Failure of Low-speed Alarm Controller
	2. Low-speed alarm controller communication circuit	Refer to Communication Failure of Low-speed Alarm Controller
	3. Low-speed alarm controller fault	Refer to Internal faults of the Low-speed Alarm Control Module

11.18.6.4 Data list

Data identifier	DID description	Normal value range	Unit
1	ECU power supply voltage	0-25.4	V
2	Vehicle speed	0-460.6875	km/h
3	Gear	reverse gear/parking gear/ neutral gear/driving gear	/
4	AVAS function switch state	Enable/failure	/

11.18.6.5 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.18.6.6 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.18.6.7 List of Diagnostic Trouble Codes (DTC)

Diagnostic Trouble Code	Description	Fault location/elimination method
U007300	CAN bus is switched off wrongly	Refer to Communication Failure of Low-speed Alarm Controller
U012187	Communication with ABS_ESC is lost	
U111487	Communication with VCU is lost	
U021487	Communication with PEPS is lost	
U041681	ABS_ESC signal indicates that VehicleSpeed is invalid	
U300616	Control module input voltage is low	Refer to Power Supply Failure of Low-speed Alarm Controller
U300617	Control module input voltage is high	
B210012	Warning module output failure	Refer to Internal faults of the Low-speed Alarm Control Module

11.18.6.8 Power supply failure of low-speed alarm controller

1. DTC description:

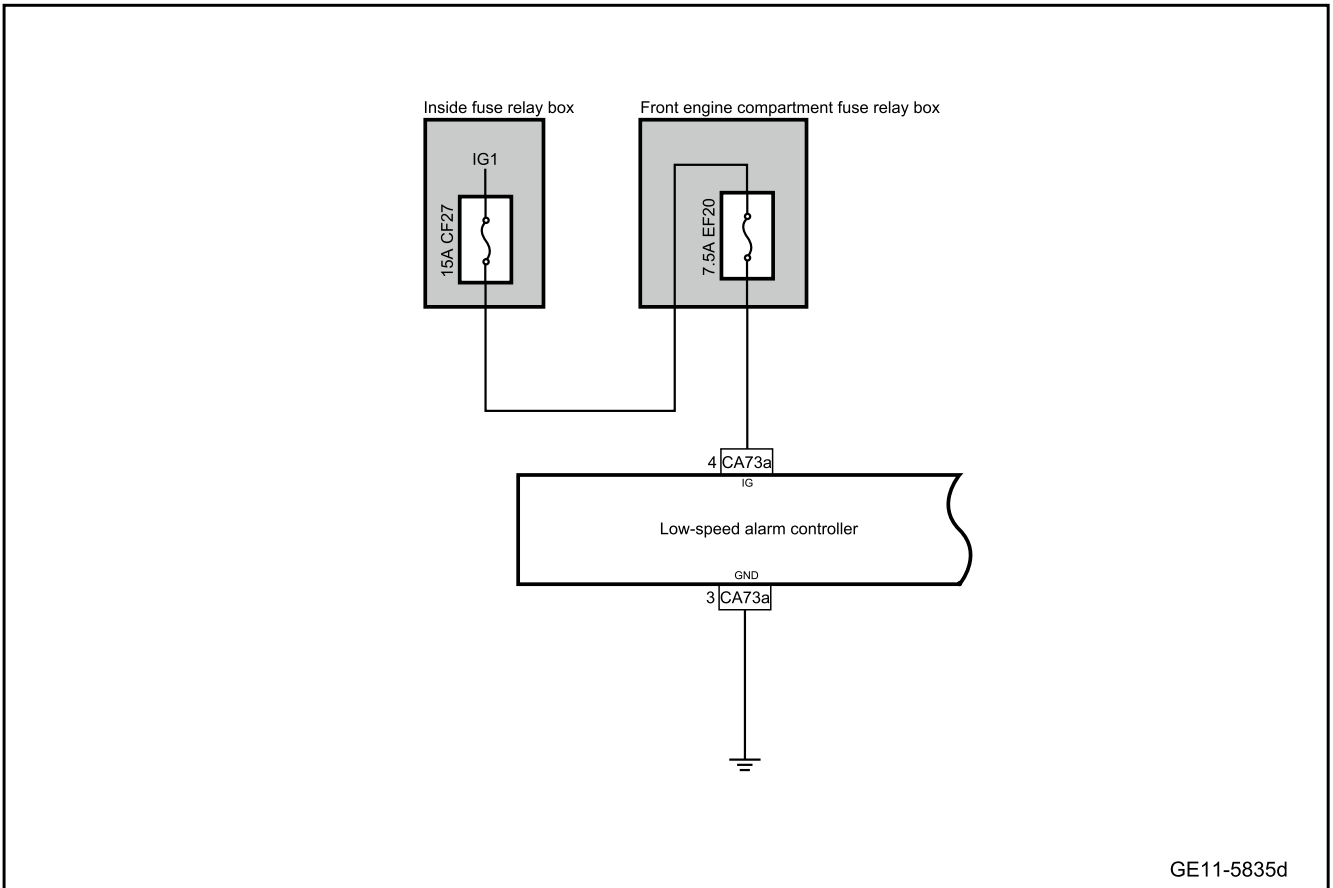
Diagnostic Trouble Code	Description
U300616	Control module input voltage is low
U300617	Control module input voltage is high

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Internal local voltage <9V	<ol style="list-style-type: none"> 1. Turn on the power supply 2. Diagnosis service \$85 is not activated 3. Stability over 6 volts after 3s 4. PEPS power mode is ACC or ON 	<ol style="list-style-type: none"> 1. Battery 2. Circuit 3. Fuse 4. Low-speed alarm controller

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300617	Internal local voltage >16V	1. Turn on the power supply 2. Diagnosis service \$85 is not activated 3. PEPS power mode ACC or ON	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to Intermittent Fault Detection

Yes

Step 2	Primary check.
--------	----------------

- A. Check the low-speed alarm controller harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3	Check the low-speed alarm controller fuse.
--------	--

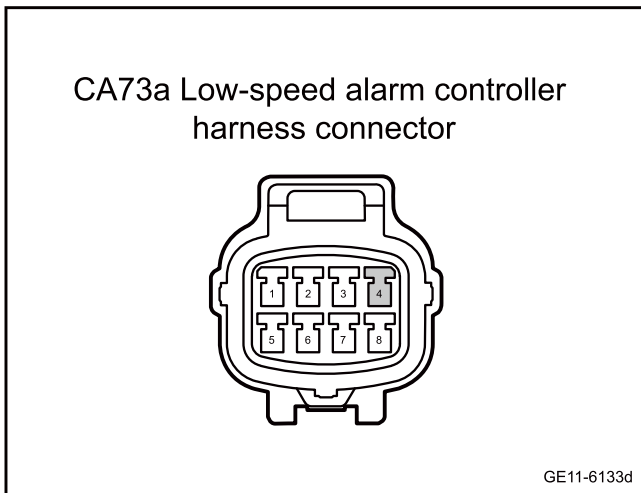
- A. Multimedia settings from vehicle power supply to OFF.
- B. Unplug the fuse EF20 in the fuse relay box in the front engine compartment and check whether the fuse is blown out.

Rated capacity of fuse: 7.5A

Yes Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4	Check whether the power supply circuit of the low-speed alarm controller is open.
--------	---



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the low-speed alarm controller harness connector CA73a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure the voltage between the terminal 4 of the low-speed alarm controller harness connector CA73a and body grounding.

Standard voltage: 11-14V

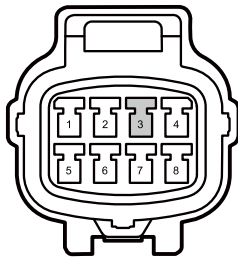
- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5	Check whether the grounding circuit of the low-speed alarm controller is open.
--------	--

CA73a Low-speed alarm controller harness connector



GE11-6134d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the low-speed alarm controller harness connector CA73a.
- C. Use a multimeter to measure the resistance between low-speed alarm controller harness connector CA73a terminal 3 and the vehicle body ground.

Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the low-speed alarm controller.

- A. To replace the low-speed alarm controller, please refer to [Replacement of Low-speed Alarm Controller](#)

Yes

System is normal.

No

Step 7 Reprogram and reset the low-speed alarm controller.

- A. Reprogram and reset the low-speed alarm controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.18.6.9 Communication failure of low-speed alarm controller

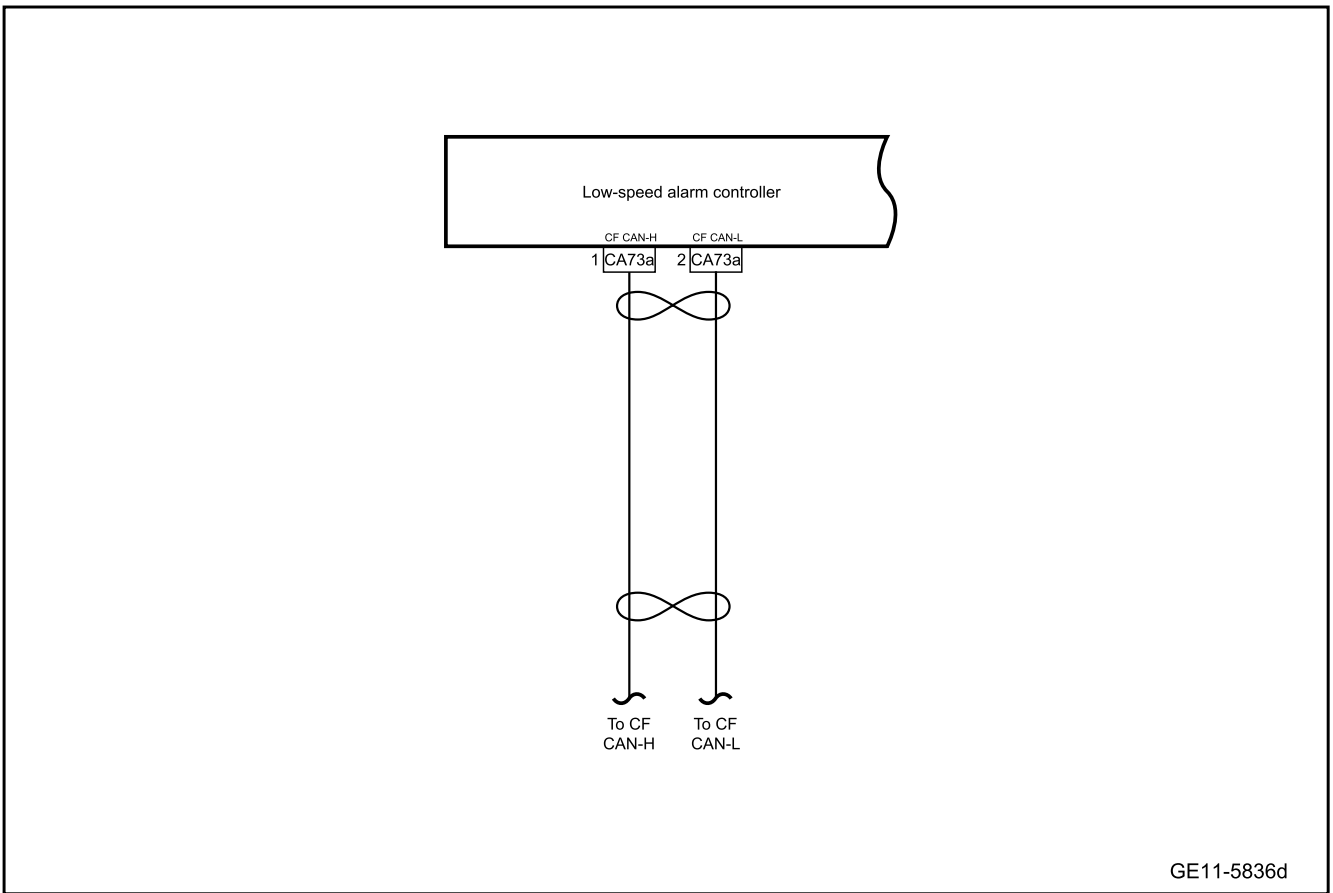
1. DTC description:

Diagnostic Trouble Code	Description
U007300	CAN bus is switched off wrongly
U012187	Communication with ABS_ESC is lost
U111487	Communication with VCU is lost
U021487	Communication with PEPS is lost
U041681	ABS_ESC signal indicates that VehicleSpeed is invalid

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	CAN bus off	<ol style="list-style-type: none"> The electronic control unit of the tester communicates normally Normal working voltage Communication is normal No overvoltage or undervoltage PEPS U power mode is ACC or ON 	<ol style="list-style-type: none"> Circuit Low-speed alarm controller Diagnostic interface
U012187	Frame loss is tested. Speed signal loss KC-2HB/FE-5HA/GE12A: 0x125 FE-3ZA: 0x068 FE-3HP-AC: 0x068 FE-3HP-AB: 0x068	<ol style="list-style-type: none"> CAN bus power supply voltage is within the range of 9-16V Meet the TDiagEnable condition No bus-off is detected Ignition status is ignition ON Diagnosis service \$85 is not activated PEPS U power mode ACC or ON 	
U111487	Frame loss is tested. Gear signal loss KC-2HB/FE-5HA/GE12A: 0x165 or 0x162 FE-3ZA: 0x115 FE-3HP-AC: 0x115 or 0x28A FE-3HP-AB: 0x115 or 0x28A		
U021487	Frame loss is tested. PEPS Power Mode KC-2HB/FE-5HA/GE12A: 0x1E2 FE-3ZA: 0x0E2 FE-3HP-AC: 0x0E2 FE-3HP-AB: 0x0E2		
U041681	Invalid vehicle speed signal KC-2HB/FE-5HA/GE12A:0x125 FE-3ZA:0x068 FE-3HP-AC:0x068 FE-3HP-AB:0x068		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the low-speed alarm controller for signs of damage, deformation, smudges, looseness, etc.
- B. Check the low-speed alarm controller harness connectors for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No Repair or replace the faulty part.

Yes

Step 3 Check the CF-CAN network integrity.

- A. To check the instrument communication network, please refer to [CF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the CF-CAN bus network is normal.

No Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Replace the low-speed alarm controller.

- A. To check the power supply and grounding harness of the low-speed alarm controller, please refer to [11.19.6.9 Power Supply Failure of Low-speed Alarm Controller](#)
- B. To replace the low-speed alarm controller, please refer to [Replacement of Low-speed Alarm Controller](#)

Next step

Step 5 Reprogram and reset the low-speed alarm controller.

- A. Reprogram and reset the low-speed alarm controller. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.18.6.10 Internal faults of the Low-speed Alarm Control Module

1. DTC description:

DTC	Trouble description
B210012	Warning module output failure

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B210012	When the output is valid, the output is equal to "low", and the output is short-circuited	1. Meet the TDiagEnable condition 2. Diagnosis service \$85 is not activated 3. PEPS power mode ACC or ON	Low-speed alarm control module

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use the diagnostic scanner to determine whether the trouble code is saved again.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Road test for at least 10min.
- D. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the low-speed alarm control module harness connectors for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the low-speed alarm control module.

- A. Reprogram and reset the low-speed alarm control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the low-speed alarm control module.

- A. Check whether the low-speed alarm control module power supply and grounding circuit are normal. Refer to [11.19.6.9 Power Supply Failure of Low-speed Alarm Controller](#)
- B. Replace the low-speed alarm control module. Refer to [Replacement of Low-speed Alarm Control Module](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Reprogram and reset the low-speed alarm control module.

- A. Reprogram and reset the low-speed alarm control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7	System is normal.
--------	-------------------

11.18.7 Removing and installing

11.18.7.1 Replacement of Low-speed Alarm Speaker

Refer to [Replacement of Low-speed Alarm Controller](#)

11.18.7.2 Replacement of Low-speed Alarm Controller

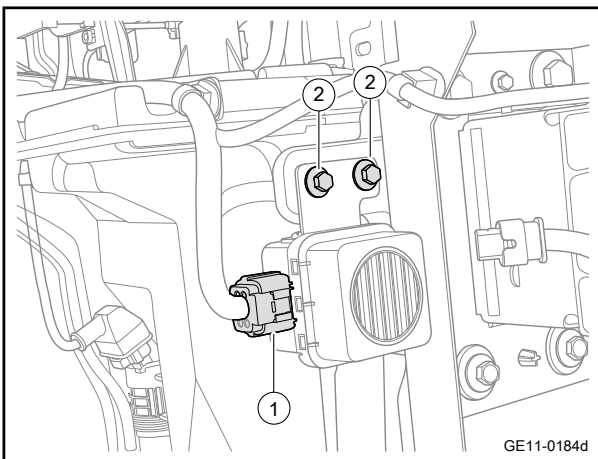
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

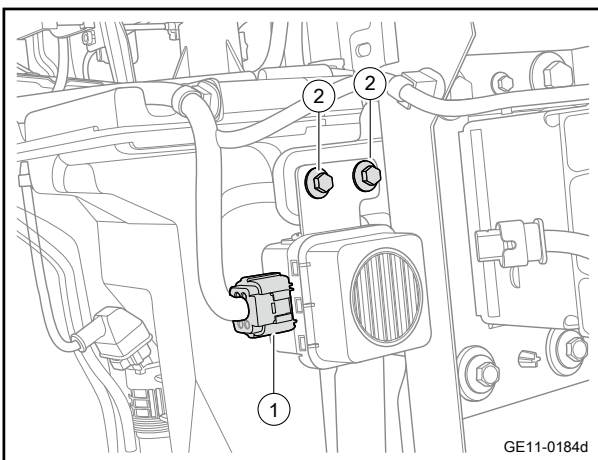
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Disconnect the low-speed alarm controller harness connector 1.
- 4 Remove the 2 fixing bolts 2 of low-speed alarm controller.
- 5 Take off the low-speed alarm controller.



Installation procedure

- 1 Move the low-speed alarm controller to the installation position.
- 2 Install the 2 fixing bolts 2 of low-speed alarm controller. Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Connect the low-speed alarm controller harness connector 1.



- 4 Install the front bumper assembly.
- 5 Connect the negative cable of battery.

11.19 Telemonitoring System

11.19.1 Specification

11.19.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Vehicle-mounted wireless control module fixing bolt	M6×16	8 -10
Vehicle-mounted wireless control module fixing nut	M6	8.5-11.5

11.19.2 Description and operation

11.19.2.1 General

The vehicle is equipped with a remote information processing controller (T-BOX). The T-BOX includes functions such as remote instrument panel, driving journal, remote vehicle status query and remote diagnosis, remote powering on at a high voltage, OTA, new energy monitoring, etc. The specific function strategy is shown in the following table:

Control strategy	Description
Remote Dashboard	Remotely query the information displayed on the instrument through the mobile phone APP
Driving Log	T-BOX collects relevant driving data and sends it to the TSP background, and the TSP pushes the driving journal to the APP
Remote status query	Mobile phone APP operations to remotely query vehicle location information, etc.
local diagnosis	T-BOX self-check
Remote control	Remote control of vehicle through mobile phone APP
Remote starting	Remote starting of the vehicle through the mobile phone APP, such as A/C
Remote appointment charging	Remote appointment charging can be realized on the mobile phone APP/ onboard side
Anti-theft track	TSP background support requests to track the route of the vehicle according to the alarm work order

Control strategy	Description
OTA over the air	Push the T-BOX software upgrade pack to the onboard terminal through the TSP background for online upgrade
Monitoring of new energy vehicles	According to the requirements of badges/ national standards. Read the values of related modules on the new energy vehicle bus through the T-BOX in the vehicle, transmit them to the TSP background and upload them to the national platform according to the specified agreement and format.

11.19.3 System working principles

11.19.3.1 System Working Principles

1. Activation

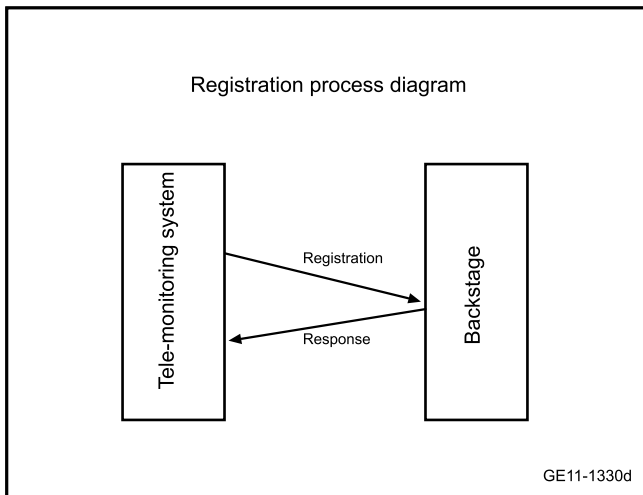
After the remote monitoring system is connected to the network for the first time after being mounted, the integrated platform or enterprise platform can manage the remote monitoring system. The management content includes actions such as software upgrade, parameter upgrade, activation, etc.

Caution

The remote monitoring system can only be used normally by users after it is activated.

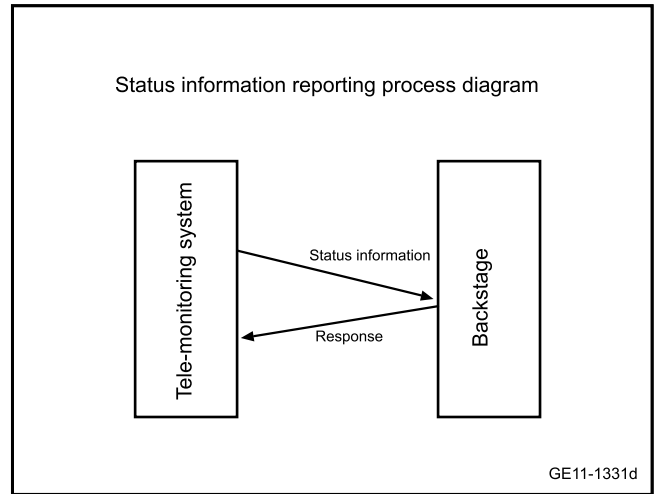
2. Registration

After the establishment of the communication link of the remote monitoring system, the registration information shall be automatically sent to the background for identification. The background shall check the received data; when the check is correct, the background shall return a successful response; the remote monitoring system shall complete this registration and transmission after receiving the response command from the background.



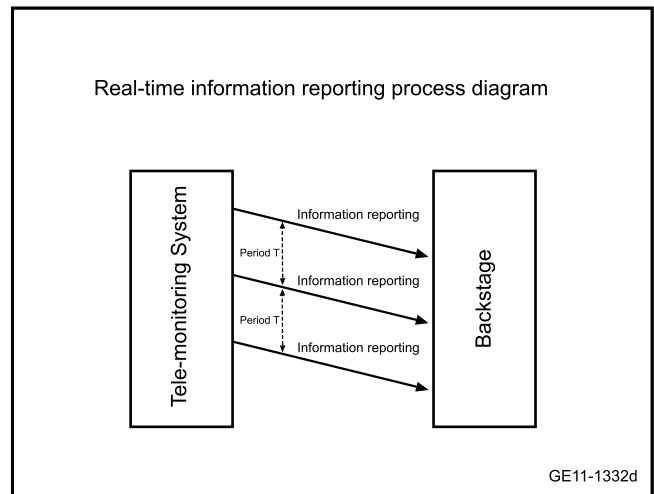
3 Status report

When the remote monitoring system is successfully registered and its status changes, the remote monitoring system should report the status information to the background.



4. Real-time information transmission

After the remote monitoring system is successfully registered, the real-time data received at CAN should be reported to the background according to a certain period of time. The data includes: cell voltage data, power battery pack temperature data, vehicle data (charging), satellite positioning system data, extreme data and alarm data, and real-time information within 3 minutes after power failure.



Wake-up and sleep of CAN

Sleep mode: if no CAN signal is received in 30 s, the remote monitoring system will enter the sleep mode and maintain the first level of low power consumption.

Wake-up mode: when the charging signal is received from the CAN signal, the remote monitoring system returns to the normal working mode.

Caution

The remote monitoring system cannot send messages to the CAN.

6. Disconnect from background

The background should disconnect the session connection with the vehicle-mounted terminal according to the following conditions:

1. The transmission control protocol connection is interrupted.
2. No response is received after the transmission control reaches the number of retransmissions.
3. A new connection is established for a vehicle of the same identity, disconnecting the original connection.
4. The heartbeat message from the vehicle-mounted terminal has not been received within a certain period of time.

7. Replenish function

When the data communication link is abnormal, the vehicle-mounted terminal shall store the real-time reported data locally. After the data communication link returns to normal, the real-time report data are sent while the stored report data is released. The reported data of the supplementary release shall be the data stored during the abnormal communication link on that day, and the data format shall be the same as that of the real-time report data, and shall be marked as the report of supplementary release.

8. Configuration parameter query and settings

The background sends a query command to the remote monitoring system, which should send parameter information after the command is checked.

The background can send a setting command to the remote monitoring system to change the parameter information of the remote monitoring system. Server remote configuration parameters include: data reporting cycle, IP address and port number of the server, etc.

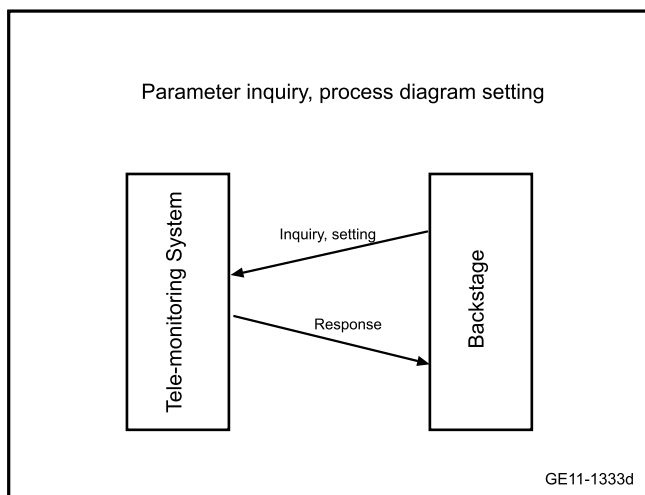
The GPS module is integrated in the remote monitoring system, which can provide positioning information such as longitude and latitude of the vehicle.

The GPS positioning function should meet the following requirements:

1. Horizontal positioning accuracy should not be greater than 15 m.
2. Height positioning accuracy shall not be greater than 30 m.
3. Differential positioning (optional) accuracy is 1-5 m.
4. The minimum position update rate is 1Hz.
5. Positioning time: cold start: the capture time from system power-on operation should not exceed 120 s; Thermal start: the capture time should be less than 10 s.
6. When the GPS signal is invalid, save the last valid GPS status.

10. Upgrade

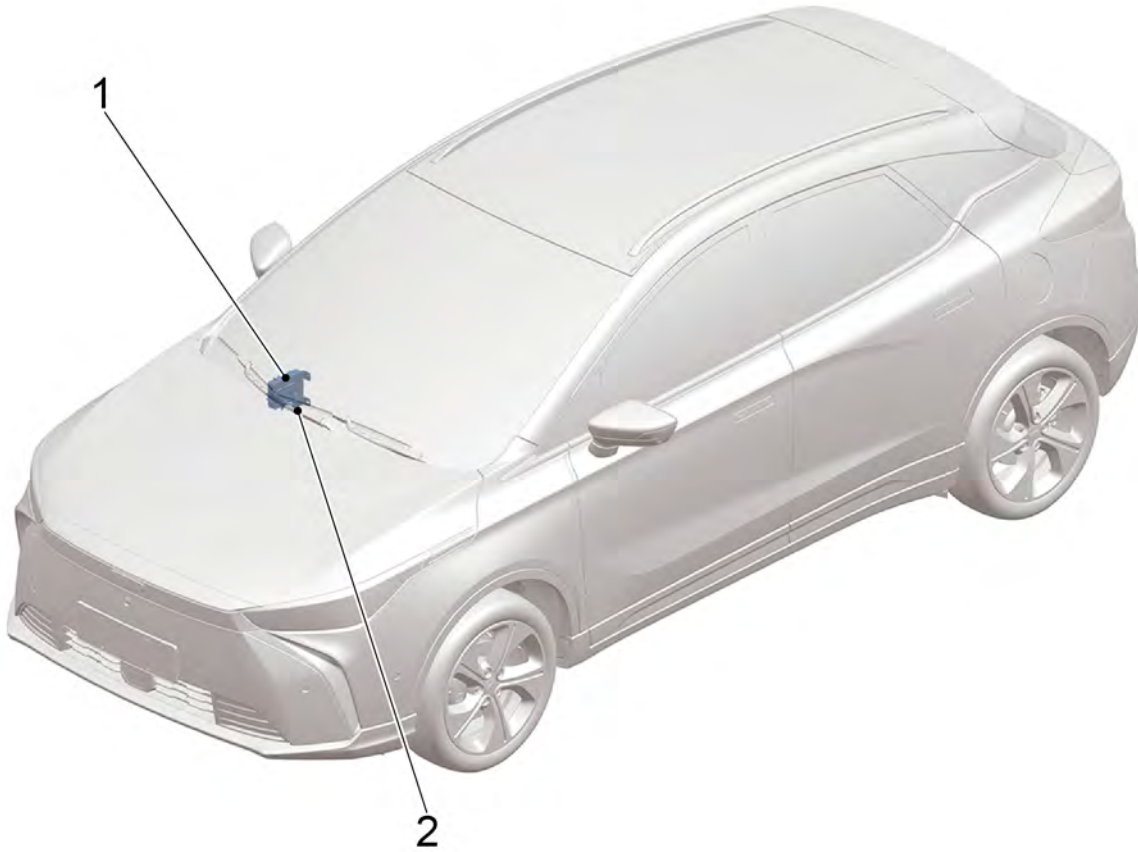
Upgrade means that the user can upgrade the software and parameters of the remote monitoring system during product development or after the product is released. The system needs to support both local and remote upgrade methods. During the process of system upgrade, the CAN interface should be turned off. The upgrade data downloaded from the service terminal to the device needs to be transmitted through the GSM channel.



9. GPS positioning

11.19.4 Part position

11.19.4.1 Part Position

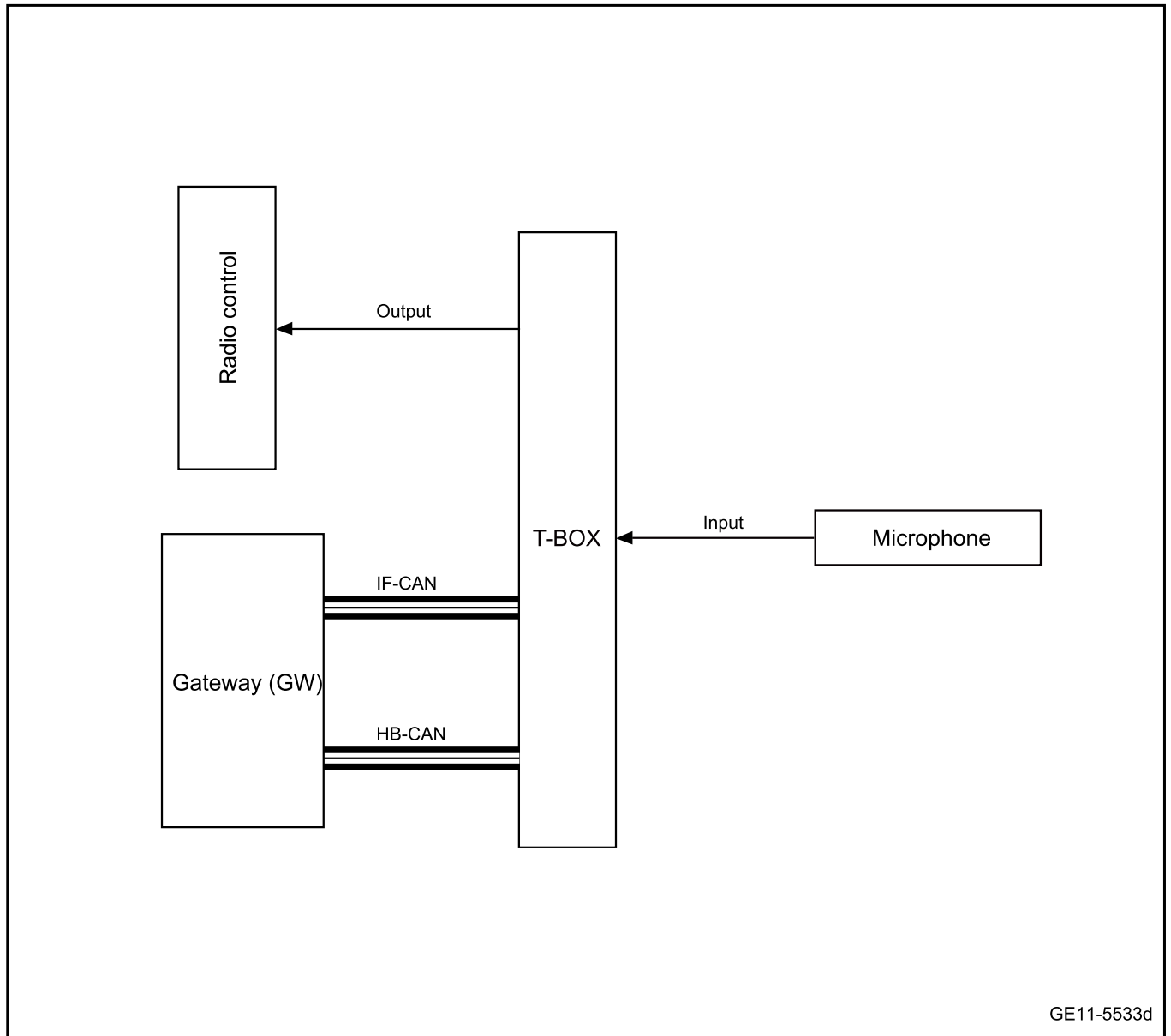


1. Vehicle-mounted mobile terminal

2. Bluetooth antenna

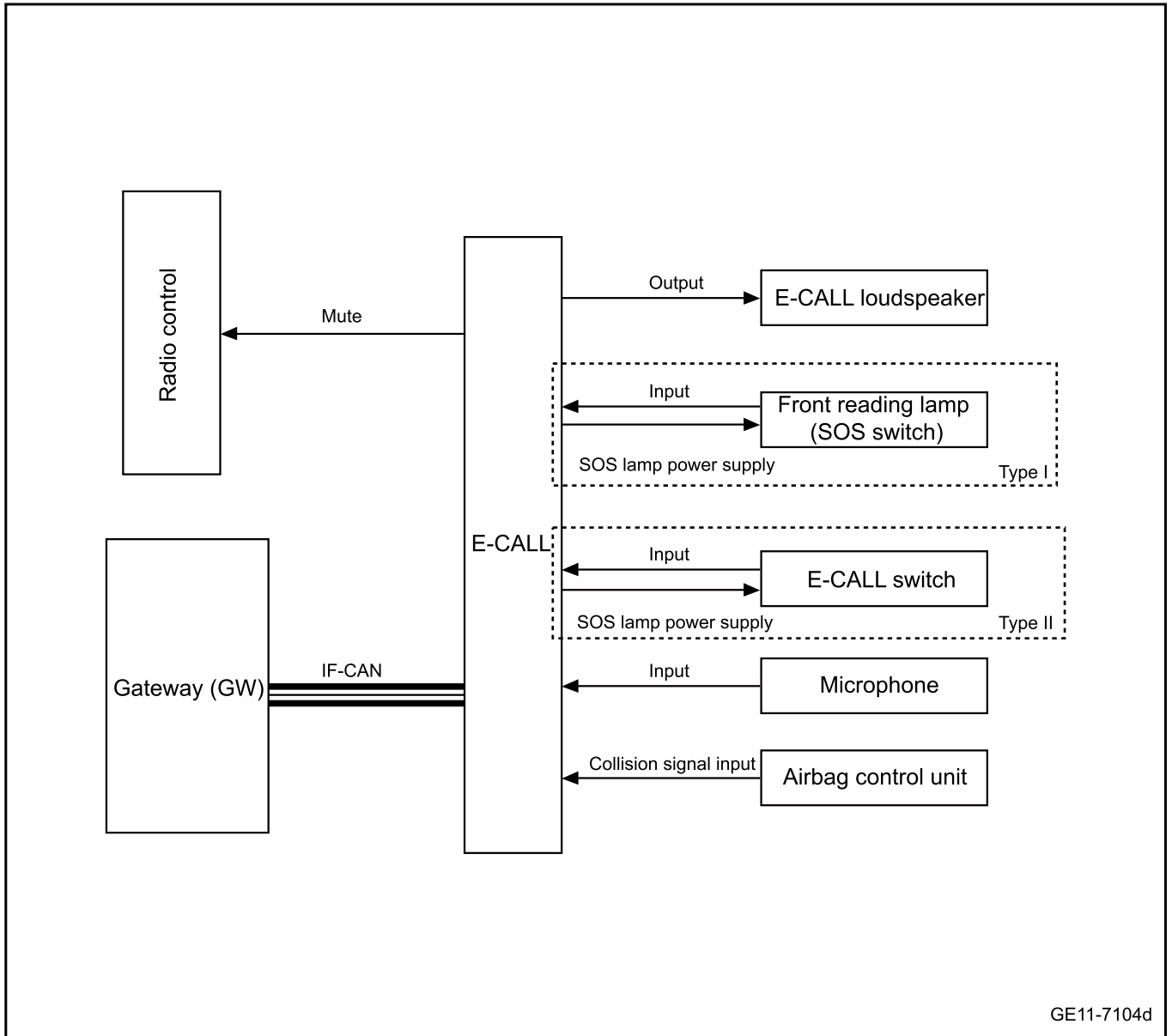
11.19.5 Electrical block diagram

11.19.5.1 Electrical Schematic Diagram of Road Rescue System(Type I)



GE11-5533d

11.19.5.2 Electrical Schematic Diagram of Road Rescue System(Type II)



11.19.6 Diagnostic information and procedures

11.19.6.1 Diagnosis Description

Before diagnosing the trouble of the road rescue system. Refer to Description and operation and System working principle. Understand and be familiar with the working principle of road rescue system, and then start system diagnosis, which helps to determine the correct fault diagnosis steps when a fault occurs. More importantly, it helps to determine whether the condition described by the customer is normal. Understand and use the diagnosis flow chart correctly to shorten the diagnosis time and avoid misjudgment of fault parts.

11.19.6.2 Routine inspection

1. Check the after-sales installations that may affect the normal operation of the road rescue system to ensure that such installations do not affect the normal operation of the road rescue system.
2. Check system components that are easily accessible or can be seen to find out if there is any obvious damage of the component or there is a situation that may cause a fault.
3. Check the harness and harness connector to ensure that there is no sign of loosening, damage, poor contact, aging, etc.

11.19.6.3 Diagnosis system

1. Description

When fault elimination of a vehicle equipped with multiplex communication on-board diagnostics (OBD) is carried out, the vehicle must be connected to an intelligent detector. Then various data output by control module can be read.

OBD specifications require the on-board computer to light up the fault lamp when faults in parts and components of system are detected. The corresponding DTC will then be recorded in control module storage. If a fault does not appear again in 3 continuous cycles, the fault lamp will go out automatically. But DTC is still recorded in control module storage.

Connect the cable of fault diagnostic instrument to the diagnostic interface. The key activates the power supply of the vehicle to ON status. The diagnostic instrument is then enabled. If there is a communication error on the display screen, there is a problem either in the vehicle or in the diagnostic instrument.

Caution

If communication is normal when the diagnostic instrument is connected to another vehicle, then the diagnostic interface on the previous vehicle should be checked.

If the communication fails when the diagnostic instrument is connected to another vehicle, then there may be a problem in the diagnostic instrument. Please consult service department listed in the service manual of the diagnostic instrument.

11.19.6.4 Data list

Data identifier	DID description	Normal value range	Unit
1	Integrated circuit card identification number	/	/
2	International mobile user identification number	/	/
3	International identity card code of mobile equipment	/	/
4	e-call default call center number	/	/

Data identifier	DID description	Normal value range	Unit
5	Network registration status	No service/network search/ network registration succeeds/network registration failed/refused/ network roaming	/
6	Internal battery status	Normal status/need replacement/battery is not installed	/
7	Network operator code	/	/
8	Network signal strength	0- 255	/
9	Network communication system	Network not registered/GSM/ m ² CDMA-v network/CDMA-v network/WCDMA-v network/ FDD-√-4G network/TDD- √-4G network	/
10	System Time	/	DataTime
11	Antenna status	Communication with external antenna/ with built-in antenna Not Connected/Connected	/
12	T-Box temperature	-48- 207	°C
13	T-Box phone number	/	/
14	GNSS positioning position information	0- 4294967295	degree
15	GNSS positioning parameters	0~12/31/999911:59:59 PM	DataTime
16	Login address of APN special line in public network	/	/
17	Login account name of APN special line in public network	/	/
18	Login account password of APN special line in public network	/	/
19	Login address of APN special line in private network	/	/
20	Login account name of APN special line in private network	/	/
21	Login account password of APN special line in private network	/	/
22	TSP access address	0- 255	/
23	PKI is written	0- 255	/

Data identifier	DID description	Normal value range	Unit
24	Interval time of regular uploading of air quality information (time of reading air quality information again after XX minutes of previous uploading)	0- 255	Minute
25	ESK is written	0- 255	/
26	PKI password write status	0- 255	/
27	GB32960 new energy monitoring function ON/OFF status	0-255	/

E-CALL

Serial No.	DID description	Physical value range	Unit
1	Number of successful flashes	0-255	/
2	Number of flash attempts	0-255	/
3	ECU supply voltage	/	/
4	Vehicle name	/	/
5	Diagnostic protocol version	/	/
6	Bootloader software ID	/	/
7	Diagnostic activity session	/	/
8	BOM number of part	/	/
9	ECU software version number	/	/
10	Supplier identification number	/	/
11	ECU manufacturing date	/	/
12	ECU serial number	/	/
13	Vehicle VIN	/	/
14	Supplier ECU hardware version number	/	/
15	Supplier ECU software version number	/	/
16	ECU controller name	/	/
17	Serial number of diagnostic instrument	/	/
18	ECU software updating date	/	/
19	ECU assembly date	/	/
20	Part number of ECU core component	/	/
21	Part number of ECU software	0-255	/

Serial No.	DID description	Physical value range	Unit
22	Integrated circuit card identification number	/	/
23	International mobile user identification number	/	/
24	International identity card code of mobile equipment	/	/
25	e-call default call center number	/	/
26	Network registration status	0- 255	/
27	48V battery status	0- 255	/
28	Network operator code	/	/
29	Network signal strength	0- 255	/
30	Network communication system	0- 255	/
31	System time-year	0- 9999	/
32	System time-month	0- 99	/
33	System time-day	0- 99	/
34	System time-hour	0- 99	/
35	System time-minute	0- 99	/
36	System time-second	0- 99	/
37	T-Box temperature	-48- 207	/
38	T-Box phone number	/	/
39	GNSS positioning position information, in which the positive number indicates the east longitude and the negative number indicates the west longitude	0- 4294967295	/
40	GNSS positioning position information, in which the positive number indicates the Southern latitude and the negative number indicates the Northern latitude;	0- 4294967295	/
41	GNSS positioning parameter last positioning time	0~12/31/9999 11:59:59 PM	/
42	GNSS positioning parameter final positioning level accuracy factor	0- 25.5	/

Serial No.	DID description	Physical value range	Unit
43	GNSS positioning parameter last positioning speed	0- 255	/
44	GNSS positioning parameter last positioning direction	0- 255	/
45	GNSS positioning parameters number of final positioning resource satellites	0- 256	/

11.19.6.5 Read and clear of DTC

1. Read DTC

- a. Connect the fault diagnostic apparatus to the diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Read the value of DTC according to the prompts on the diagnostic apparatus screen.

2. Clear DTC

- a. Connect the fault diagnostic apparatus to the fault diagnostic interface.
- b. The key activates the power supply of the vehicle to ON.
- c. Follow the prompts on the diagnostic instrument screen to clear the DTC.

11.19.6.6 List of Diagnostic Trouble Codes (DTC)

T-BOX

Diagnostic Trouble Code	Description	Fault location/elimination method
U007300	Bus bus-off fault	Refer to T-BOX data communication failure
U015587	Communication with IPK is lost	
U014687	Communication with GW is lost	
U111587	Communication with OBC is lost	
U011287	Communication with BMSH is lost	
U111487	Communication with VCU_HBCAN is lost	
U011087	Communication with IPU is lost	
U006488	The new energy bus is switched off	
U150082	Error in communication with ICM	
U015687	Communication with MMI is lost	
U020887	Communication with DSCU is lost	
U015187	Communication with ACU is lost	
U013187	Communication with EPS is lost	
U012687	Communication with SAS is lost	
U012287	Communication with ESC is lost	
U015987	Communication with PAS is lost	
U120387	Communication with FCS is lost	
U023587	Communication with FRS is lost	

Diagnostic Trouble Code	Description	Fault location/elimination method
U016487	Communication with AC is lost	
U014087	Communication with BCM is lost	
U021487	Communication with PEPS is lost	
U111687	Communication with DVR is lost	
U015887	Communication with HUD is lost	
U010387	Communication with EGSM_HBCAN is lost	
U112287	Communication with VCU_CSCAN is lost	
B140331	Communication failure with MMI USB	Refer to USB Circuit Fault
U300616	Fault of too low voltage	Refer to T-BOX Power Supply Failure
U300617	Fault of too high voltage	
B140411	Microphone input is short-circuited to ground	Refer to Fault of Microphone Circuit
B140413	Microphone input circuit is open	
B140511	Microphone output is short circuit	
B140513	Microphone output is open circuit	
B140076	SIM card is not inserted	Refer to Internal Faults of T-BOX
B140631	G-Sens module failure	
B140771	E-Call button gets stuck	
B140A16	Internal battery voltage is too low	
B140A17	Internal battery voltage is too high	
B140A1B	Internal battery aging fault	
B141511	The E-call or B-Call key is short-circuited to the ground	
B141513	The E-call or B-Call key circuit is open	
B140111	GNSS antenna is short-circuited to ground	
B140113	GNSS antenna circuit is open	
B140211	WAN antenna is short-circuited to ground	
B140213	WAN antenna circuit is open	
B140231	WAN communication module failure	
B141311	BLE (Bluetooth) antenna is short-circuited to ground	
B141313	BLE (Bluetooth) antenna circuit is open	
B140E51	PKI is not written	
B140F51	ESK is not written	
B141051	VIN is not written	
B141451	Function configuration word mismatch	

Diagnostic Trouble Code	Description	Fault location/elimination method
B140B11	Airbag signal line is short-circuited to the ground	Refer to Crash Signal Failure
B140B15	Airbag signal line is short-circuited to the power supply or is an open circuit	

E-CALL

Diagnostic Trouble Code	Description	Fault location/elimination method
U300616	Fault of too low voltage	Refer to E-CALL Power Failure
U300617	Fault of too high voltage	
B140076	SIM card is not inserted	Refer to Internal Faults of E-CALL
B140111	GNSS antenna is short-circuited to ground	
B140113	GNSS antenna circuit is open	
B140231	WAN communication module failure	
B140771	E- E-CALL button gets stuck	
B140A16	Internal battery voltage is too low	
B140A17	Internal battery voltage is too high	
B140A1B	Internal battery aging fault	
B141051	VIN is not written	
U007300	Bus bus-off fault	
U015187	Communication with ACU is lost	
B140411	Microphone input is short-circuited to ground	Refer to Fault of Microphone Circuit (Type II)
B140412	Microphone input is short-circuited to power supply	
B140413	Microphone input circuit is open	
B140511	Microphone output is short circuit (loudspeaker)	
B140512	Microphone output is short circuit to power supply(loudspeaker)	
B140513	Microphone output is open circuit (loudspeaker)	
B140B11	Airbag signal line is short-circuited to the ground	Refer to Crash Signal Failure(Type II)
B140B15	Airbag signal line is short-circuited to the power supply or is an open circuit	

11.19.6.7 T-BOX power supply failure

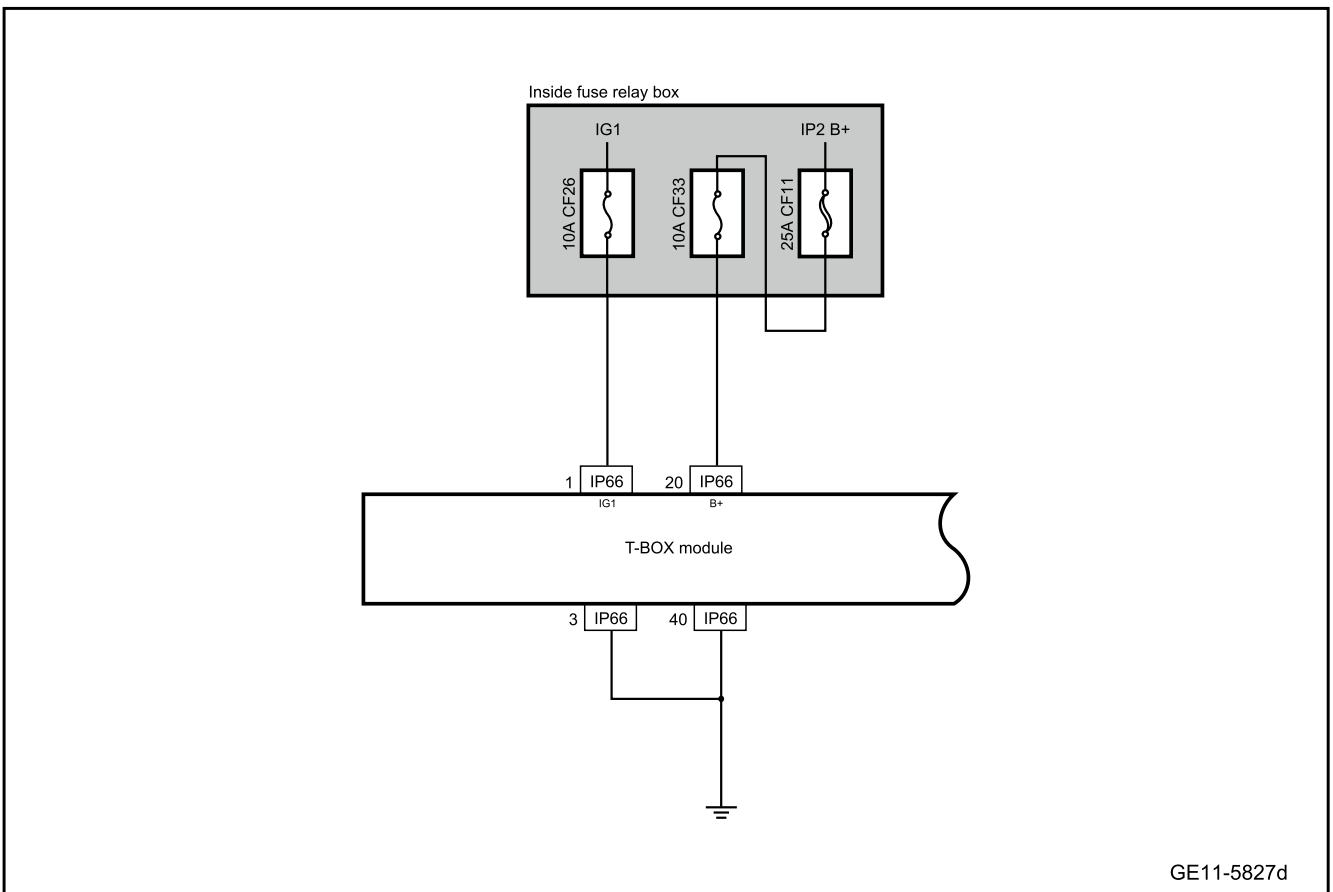
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Fault of too low voltage
U300617	Fault of too high voltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Voltage is out of range. Internal local voltage >7.5V	1.EC1: meet the condition of kl15 on = 4S.	1. Battery 2. Circuit 3. Fuse 4. T-BOX
U300617	Voltage is out of range Internal local voltage > 16.5V		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

- A. Check the T-BOX harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the T-BOX fuse.

- A. Multimedia settings from vehicle power supply to OFF.
 - B. Pull out fuse CF11 of the indoor fuse relay box. Check whether fuse CF11 is blown.
- Rated capacity of fuse: 25A
- C. Unplug the indoor fuse relay box and check whether the fuses CF26 and CF33 are blown.

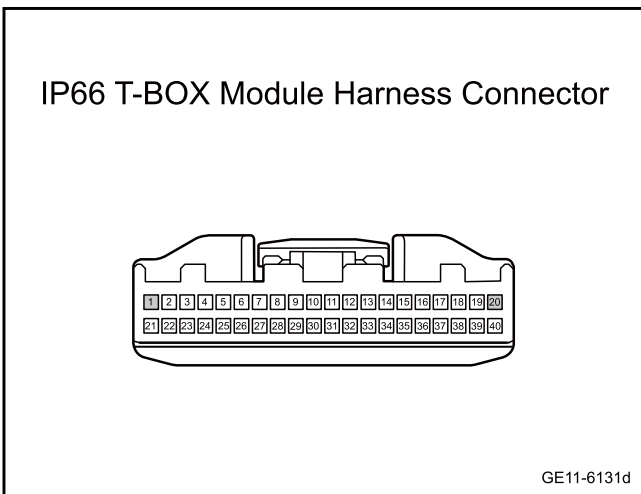
Rated capacity of fuse: 10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check whether the T-BOX power circuit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the T-BOX harness connector IP66.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP66(1)	Vehicle body is grounded.	Standard voltage: 11-14V
IP66(20)	Vehicle body is grounded.	

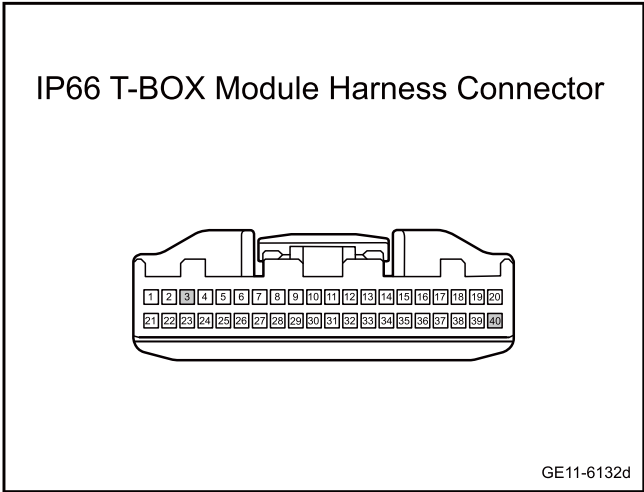
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 Check whether the T-BOX grounding circuit is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the T-BOX harness connector IP66.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP66(3)	Vehicle body is grounded.	Standard resistance: less than 1Ω
IP66(40)	Vehicle body is grounded.	

- D. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 6 Replace the T-BOX.

- A. Replace the T-BOX. Refer to [Replacement of Vehicle-Mounted Wireless Control Module](#)

Yes

System is normal.

No

Step 7 Reprogram and reset the T-BOX.

- A. Reprogram and reset the T-BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 8 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.19.6.8 T-BOX Data Communication Failure

1. DTC description:

Diagnostic Trouble Code	Description
U007300	Bus bus-off fault
U015587	Communication with IPK is lost
U014687	Communication with GW is lost
U111587	Communication with OBC is lost
U011287	Communication with BMSH is lost
U111487	Communication with VCU_HBCAN is lost
U011087	Communication with IPU is lost
U006488	The new energy bus is switched off
U150082	Error in communication with ICM
U015687	Communication with MMI is lost
U020887	Communication with DSCU is lost
U015187	Communication with ACU is lost
U013187	Communication with EPS is lost
U012687	Communication with SAS is lost
U012287	Communication with ESC is lost
U015987	Communication with PAS is lost
U120387	Communication with FCS is lost
U023587	Communication with FRS is lost
U016487	Communication with AC is lost
U014087	Communication with BCM is lost
U021487	Communication with PEPS is lost
U111687	Communication with DVR is lost
U015887	Communication with HUD is lost
U010387	Communication with EGSM_HBCAN is lost
U112287	Communication with VCU_CSCAN is lost

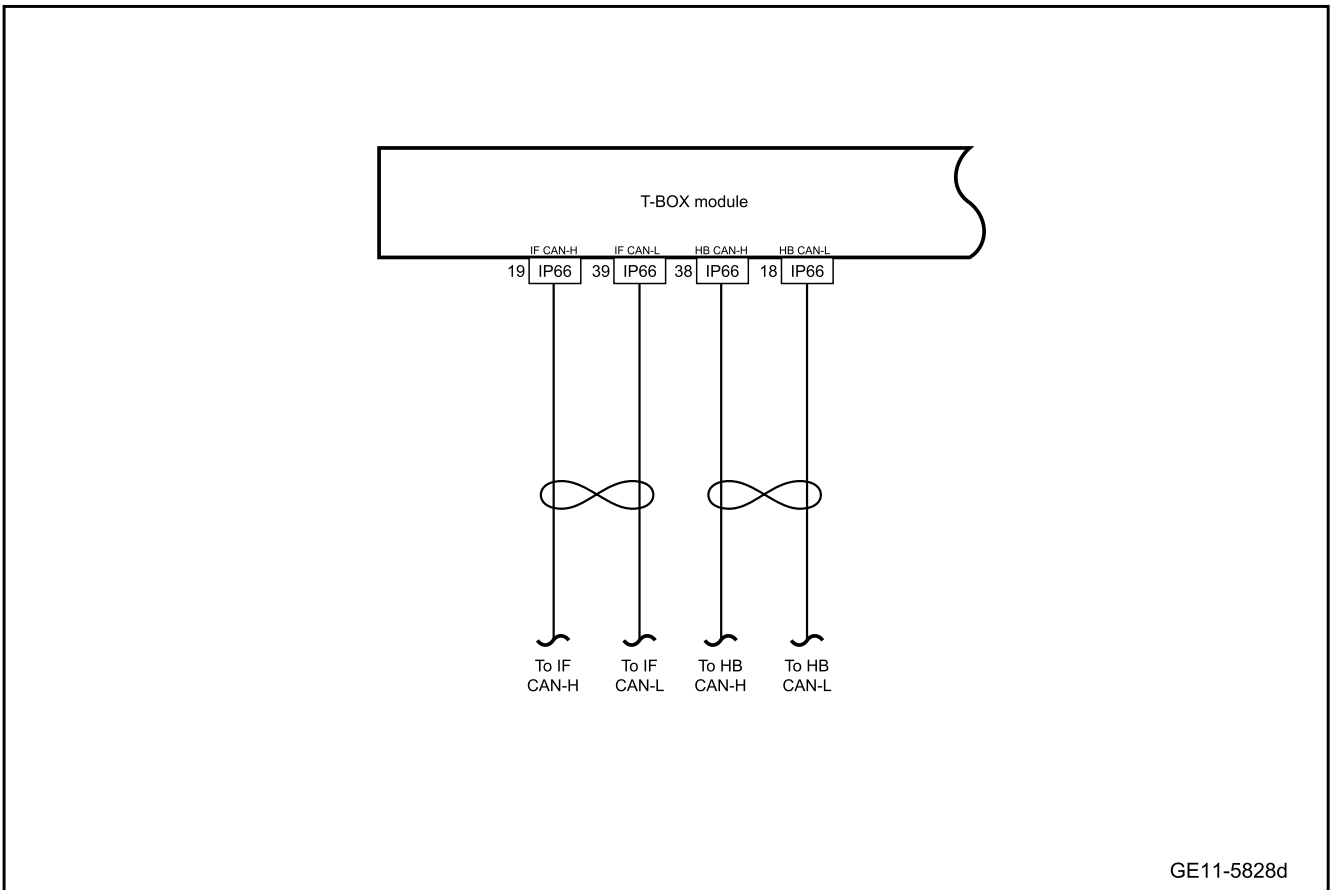
2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	The bus switching off counter cL1ToL2 equals to 10.	1.EC1: meet the condition of kI15 on = 4S.	1. Circuit 2. T-BOX 3. Diagnostic interface
U015587	IPK (ID=0x3F1) message is lost for 5000ms	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. Meet the TDiagEnable condition 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. Ignition status is ignition ON	
U014687	GW (ID=0x2FB) message is lost for 500ms		
U111587	OBC (ID=0x220) message is lost for 500 milliseconds		
U011287	BMSH (ID=0x0B0) message is lost for 250ms		
U111487	VCU_HBCAN (ID=0x162) message is lost for 250ms		
U011087	IPU (ID=0x0A8) message is lost for 250ms		
U006488	The bus switching off counter cL1ToL2 equals to 10.		
U150082	1. Activity counter error 2. Checksum error 3. Detected DLC < 8, equal to 10	1. The power supply voltage of the CAN bus node is in the range of 9-16V. 2. Meet the TDiagEnable condition. 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery 4. The ignition state should be IGN ON. 5. Checksum error or activity counter error with DLC < 8 6. Error conditions are initialized when the DTC is cleared	

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015687	MMI (ID=0x2A2) message is lost for 500 milliseconds	1. The power supply voltage of the CAN bus node is in the range of 9-16V. 2. Meet the TDiagEnable condition. 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery 4. The ignition status should be IGN ON	
U020887	DSCU (ID=0x2C1) The message is lost for 500 milliseconds		
U015187	ACU(ID=0x380) message is lost for 1000 milliseconds		
U013187	EPS (ID=0x150) message is lost for 250ms		
U012687	TCM SAS (ID=0x0E0) message loss lasts for 250 milliseconds		
U012287	ESC (ID=0x125) message is lost for 250 milliseconds		
U015987	PAS(ID=0x390) message is lost for 2500 milliseconds		
U120387	FCS (ID=0x1B0) message is lost for 250 milliseconds		
U023587	FRS (ID=0x1A3) message is lost for 250 milliseconds		
U016487	AC (ID=0x2F1) message is lost for 500 milliseconds		
U014087	BCM(ID=0x1F0) message is lost for 250ms		
U021487	For Message ID=0x2FC The signal "PEPS_0 x1E2 _TimeoutFlag" is coded for 1 consecutive 5 times; or the signal "PEPSU0 x 270UTimeoutFlag" is coded for 1 consecutive 5 times; or the signal "PEPS_0 x 272 _TimeoutFlag" is coded for 1 consecutive 5 times		

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U111687	DVR (ID=0x2B1) message is lost for 500 milliseconds	1. The power supply voltage of the CAN bus node is in the range of 9-16V. 2. Meet the TDiagEnable condition. 3. No bus off is detected, and more than 1000ms after the last bus disconnection recovery 4. The ignition state should be IGN ON.	
U015887	HUD(ID=0x2CA) message is lost for 1000 milliseconds		
U010387	EGSM_HB (ID=0x145) message is lost for 250 milliseconds		
U112287	VCU_HBCAN (ID=0x165) message is lost for 250ms		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2 Primary check.

- A. Check the T-BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the T-BOX harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Check the IF-CAN network integrity.

- A. To check the instrument communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4 Check the HB-CAN network integrity.

- A. To check the instrument communication network, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm whether the HB-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5 Replace the T-BOX.

- A. Check the T-BOX power supply and grounding harness. Refer to [T-BOX Power Supply Failure](#)
- B. Replace the BOX. Refer to [Replacement of Vehicle Mounted Wireless Control Module](#)

Next step

Step 6	Reprogram and reset the T-BOX.
--------	--------------------------------

- A. Reprogram and reset the T-BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 8	System is normal.
--------	-------------------

11.19.6.9 Internal Faults of T-BOX

1. DTC description:

DTC	Trouble description
B140076	SIM card is not inserted
B140631	G-Sens module failure
B140771	E-Call button gets stuck
B140A16	Internal battery voltage is too low
B140A17	Internal battery voltage is too high
B140A1B	Internal battery aging fault
B141511	The E-call or B-Call key is short-circuited to the ground
B141513	The E-call or B-Call key circuit is open
B140111	GNSS antenna is short-circuited to ground
B140113	GNSS antenna circuit is open
B140211	WAN antenna is short-circuited to ground

DTC	Trouble description
B140213	WAN antenna circuit is open
B140231	WAN communication module failure
B141311	BLE (Bluetooth) antenna is short-circuited to ground
B141313	BLE (Bluetooth) antenna circuit is open
B140E51	PKI is not written
B140F51	ESK is not written
B141051	VIN is not written
B141451	Function configuration word mismatch

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140076	SIM card initialization process through AT command, return SIM card exception	EC1: meet the condition of kl15 on = 4S.	T-BOX
B140631	Continuous communication failure with Sensor module		
B140771	It is detected that the button is pressed continuously for 45s		
B140A16	-		
B140A17	The detected voltage is too high, exceeding the battery specification		
B140A1B	It is detected that the internal resistance of the battery exceeds 5 times of the reference value		
B141511	The short-circuit state of the key circuit to ground is continuously detected		
B141513	The open-circuit state of the key is continuously detected		
B140111	The detected voltage is 0, and the interface is short circuited to the ground		
B140113	No current is detected and the interface is open circuit		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140211	The detected voltage is 0, and the interface is short circuited to the ground		
B140213	Detect the interface voltage, which is in open circuit state		
B140231	LTE Module communication does not respond for 1 minute		
B141311	The detected voltage is 0, and the interface is short circuited to the ground		
B141313	Detect the interface voltage, which is in open circuit state		
B140E51	When the PKI password write status is detected as 0		
B140F51	When the ESK password write status is detected as 0	1. Vehicles is not started. 2. 3s after KL15 is turned on 3. The supply voltage is 9V-16V.	
B141051	When the detected Vin is equal to all 20		
B141451	When the detected configuration (DID F101) equals all 00		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the T-BOX harness connector for damage, poor contact, aging, loosening and other signs.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the T-BOX.

- A. Reprogram and reset the T-BOX. Refer to the Programming and Setting of Each Module of the Complete Vehicle
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4 Replace the T-BOX.

- A. Check whether the T-BOX power supply or grounding circuit is open. Refer to [T-BOX Power Supply Failure](#)
- B. Replace the T-BOX. Refer to [Replacement of Vehicle Mounted Wireless Network](#)
- C. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 Reprogram and reset the T-BOX.

- A. Reprogram and reset the T-BOX. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 | System is normal.

11.19.6.10 Microphone circuit fault

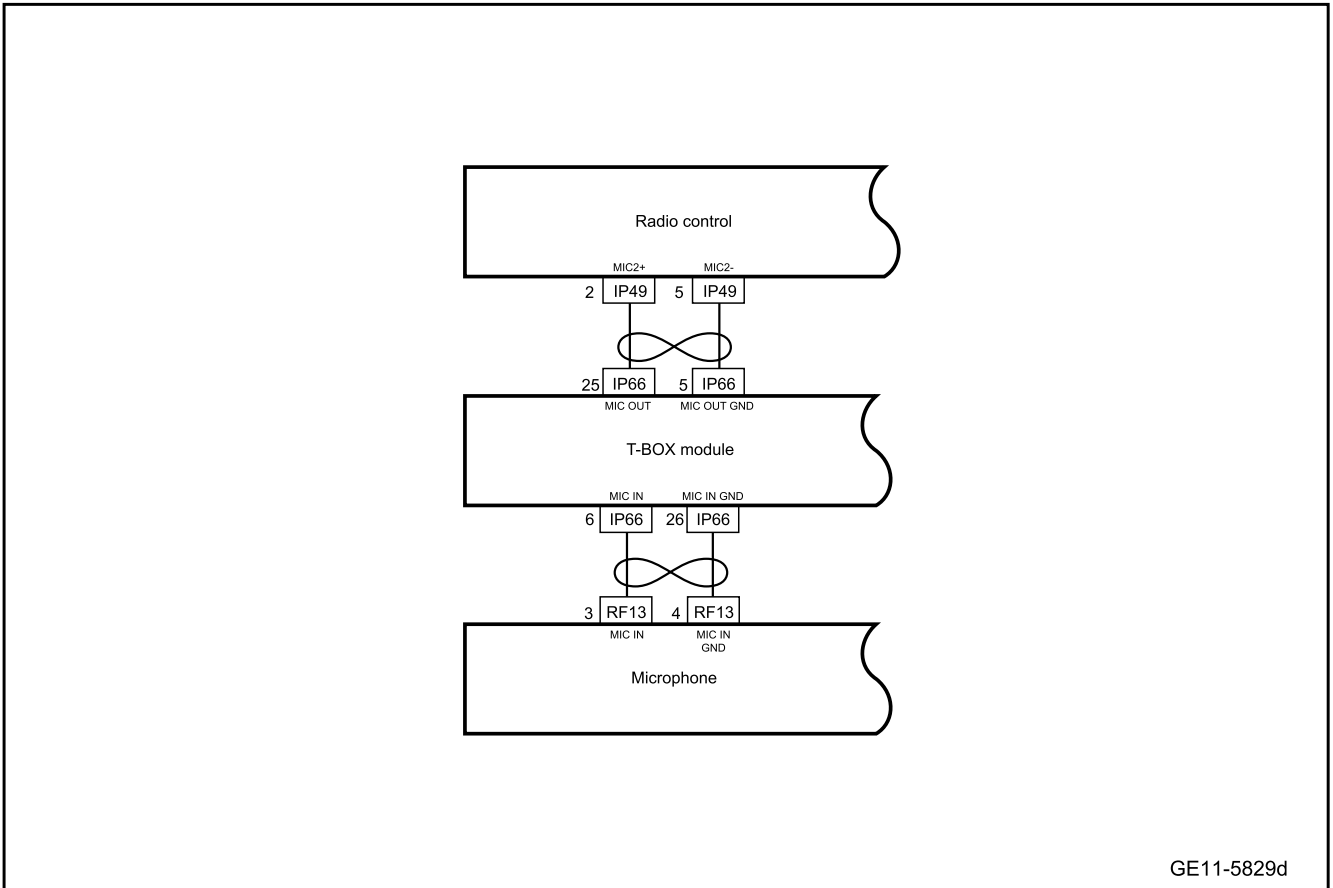
1. DTC description:

DTC	Trouble description
B140411	Microphone input is short-circuited to ground
B140413	Microphone input circuit is open
B140511	Microphone output is short circuit
B140513	Microphone output is open circuit

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140411	When KL15 is On, a short circuit to ground is detected	EC1: meet the condition of kl15 on = 4S.	1. T-BOX 2. Circuit 3. Microphone
B140413	When KL15 is On, an open circuit is detected		
B140511	When KL15 is On, a short circuit to ground is detected		
B140513	When KL15 is On, open circuit and short circuit are detected		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No	Give priority to troubleshooting other fault codes.
----	---

Yes

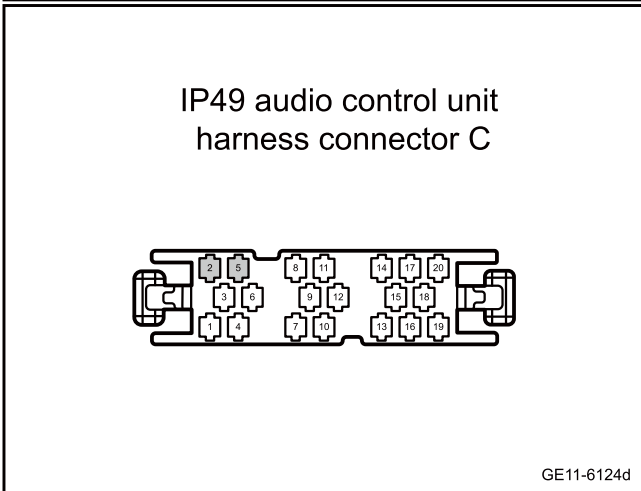
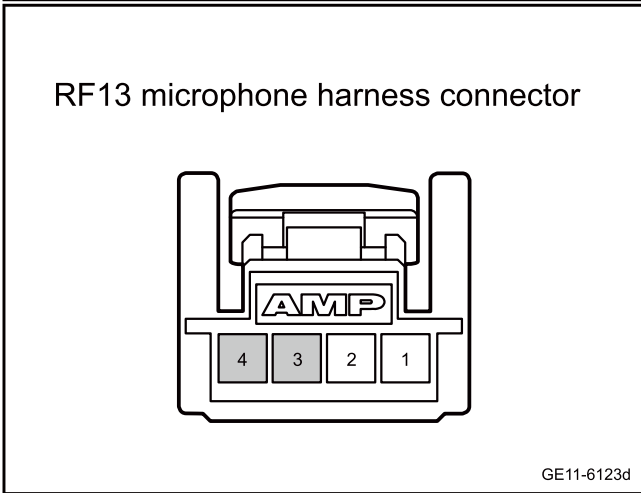
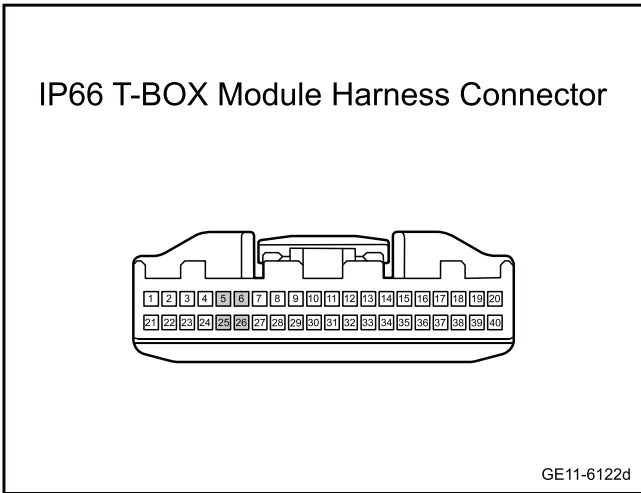
Step 2	Primary check.
--------	----------------

- A. Check the appearance of microphone, T-BOX and head unit for signs of damage, rust, dirt, etc.
- B. Check the microphone, T-BOX and head unit harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

Step 3 Check whether the circuit between the T-BOX and Microphone output is open.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the T-BOX harness connector IP66.
- C. Disconnect microphone harness connector RF13.
- D. Disconnect the head unit harness connector IP49.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP66(6)	RF13(3)	Standard resistance: less than 1Ω
IP66(26)	RF13(4)	
IP66(5)	IP49(5)	
IP66(25)	IP49(2)	

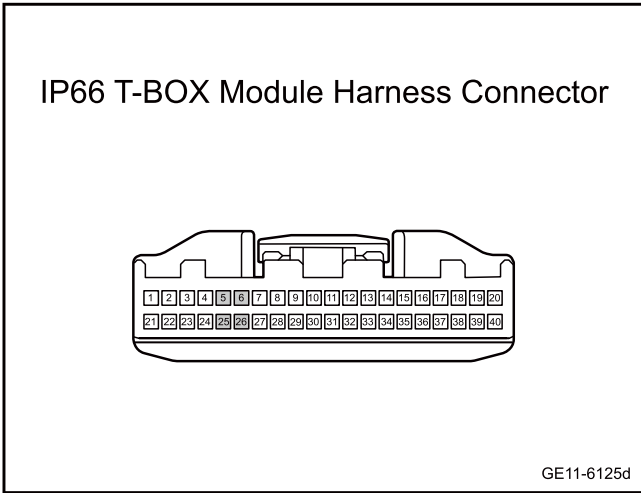
- F. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the T-BOX and microphone output is short to the power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the T-BOX harness connector IP66.
- C. Disconnect microphone harness connector RF13.
- D. Disconnect the head unit harness connector IP49.
- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

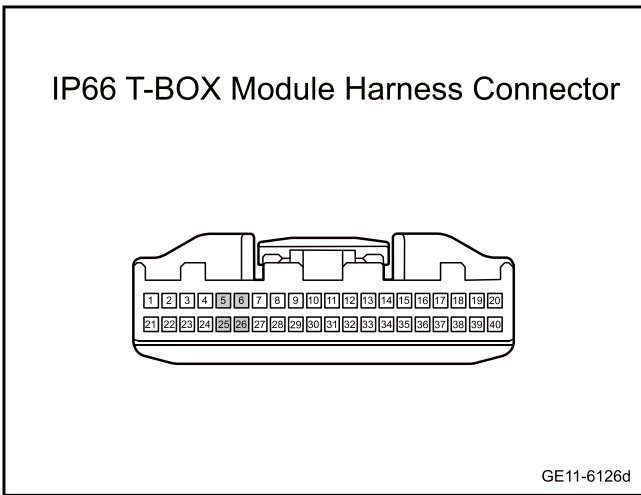
Measure terminal 1	Measure terminal 2	Standard value
IP66(6)	Vehicle body is grounded.	Standard voltage: 0V
IP66(26)		
IP66(5)		
IP66(25)		

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 | Check whether the circuit between the T-BOX and microphone output is short to grounding.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the T-BOX harness connector IP66.
- C. Disconnect microphone harness connector RF13.
- D. Disconnect the head unit harness connector IP49.
- E. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP66(6)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP66(26)		
IP66(5)		
IP66(25)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 | Replace the microphone.

- A. Replace microphone , refer to [Replacement of microphone](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 7	Replace the T-BOX.
--------	--------------------

- A. Check whether the power supply of control module T-BOX and the grounding harness are normal. Refer to [T-BOX Power Supply Failure](#)
- B. Replace the T-BOX. Refer to [Replacement of Vehicle-Mounted Wireless Control Module](#)

Next step

Step 8	Reprogram and reset the T-BOX.
--------	--------------------------------

- A. Reprogram and reset the T-BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 9	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10	System is normal.
---------	-------------------

11.19.6.11 Crash Signal Failure

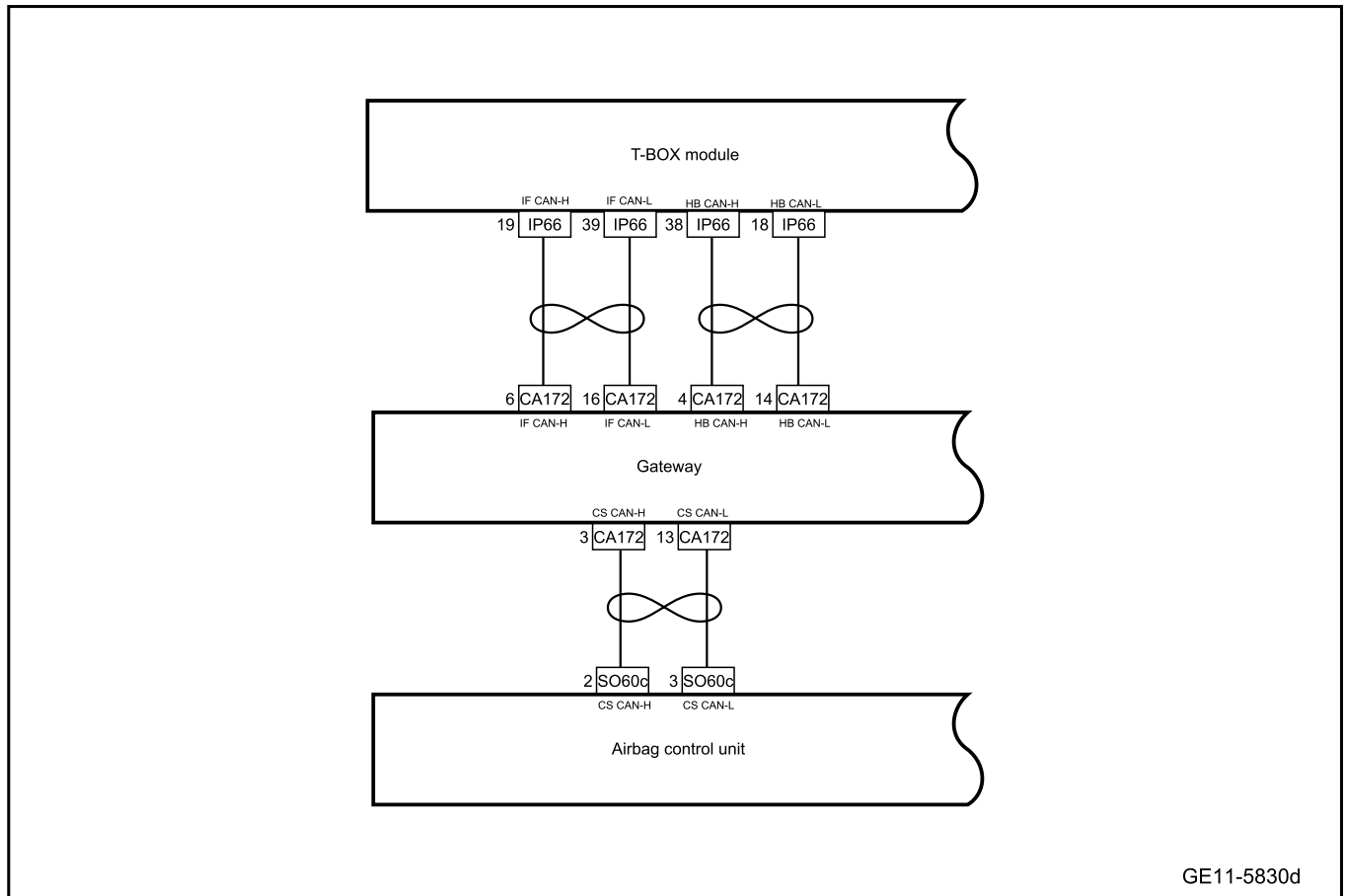
1. DTC description:

Diagnostic Trouble Code	Description
B140B11	Airbag signal line is short-circuited to the ground
B140B15	Airbag signal line is short-circuited to the power supply or is an open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140B11	Set when the value of the SRS airbag deployment signal is detected to be logic 0 for 3 seconds	1. Vehicles is not started. 2. 3s after KL15 is turned on 3. The supply voltage is 9V-16V.	1. Circuit 2. T-BOX
B140B15	When it is detected that the SRS airbag deployment signal is always logic 1 for 3 seconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the fault diagnostic apparatus to confirm whether the fault code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the airbag control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the T-BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the T-BOX harness connector for damage, poor contact, aging, loosening and other signs.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. To check the IF-CAN communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Check the HB-CAN network integrity.
--------	-------------------------------------

- A. To check the HB-CAN communication network, please refer to [HB-CAN Bus Network Integrity Check](#)
- B. Confirm whether the HB-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 5 | Check the CS-CAN network integrity.

- A. To check the communication network, please refer to [CS-CAN Bus Network Integrity Check](#)
- B. Confirm whether the HB-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 6 | Replace the T-BOX.

- A. Check the T-BOX power supply and grounding harness. Refer to [T-BOX Power Supply Failure](#)
- B. Replace the T-BOX. Refer to [Replacement of Vehicle Mounted Wireless Control Module](#)
- C. Confirm whether the system is working normally.

Yes

System is normal.

No

Step 7 | Reprogram and reset the T-BOX.

- A. Reprogram and reset the T-BOX. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 8 | System is normal.

11.19.6.12 USB circuit fault

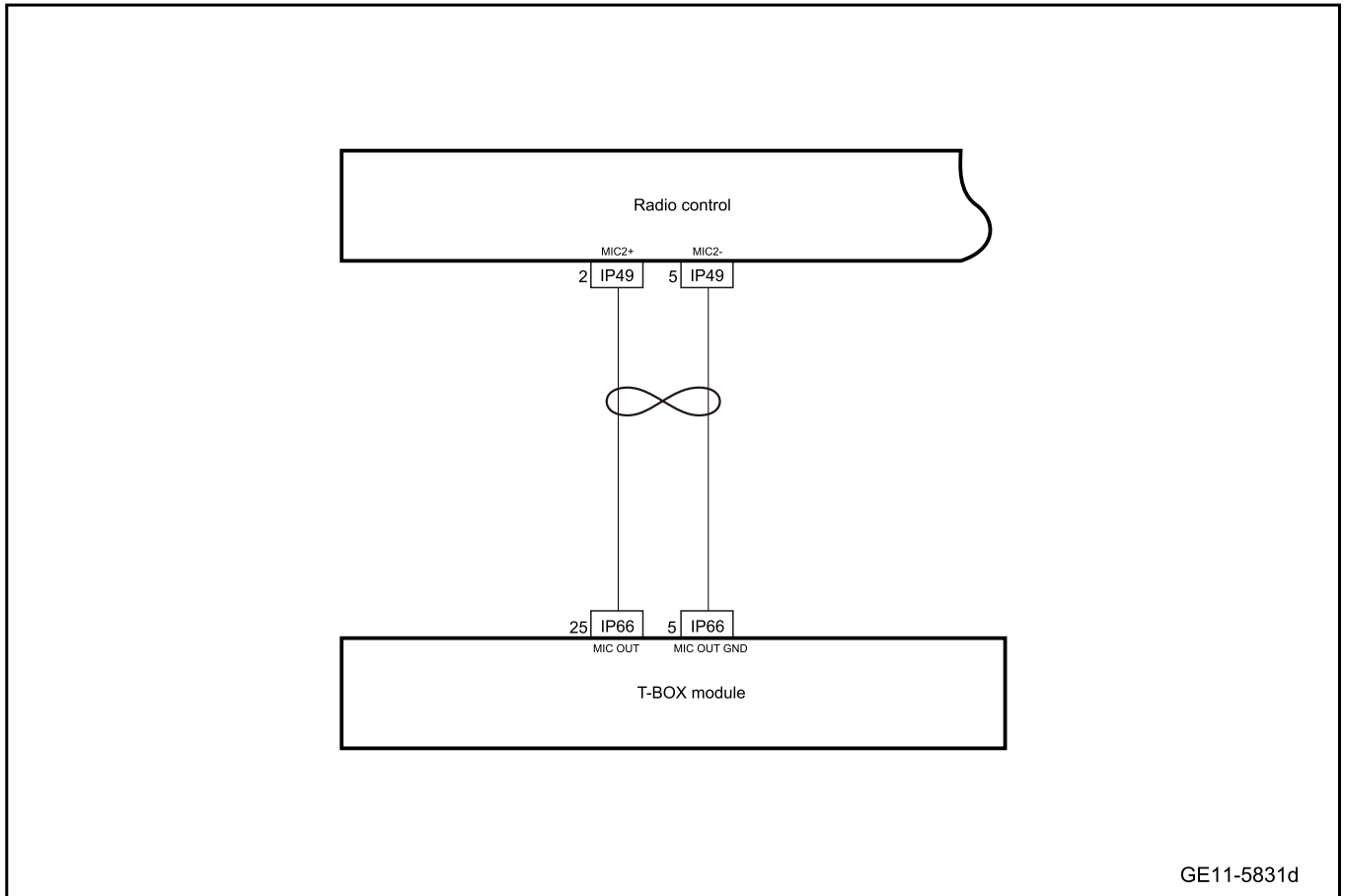
1. DTC description:

Diagnostic Trouble Code	Description
B140331	Communication failure with MMI USB

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140331	Set when VBUS signal (from Hu) is less than 2V for 4 seconds	1. Vehicles is not started. 2. 3s after KL15 is turned on 3. The supply voltage is 9V-16V.	1. Circuit 2. T-BOX 3. Head unit

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use the diagnostic scanner to determine whether the trouble code is saved again.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Give priority to troubleshooting other fault codes.

Yes

Step 2	Primary check.
--------	----------------

- A. Check the head unit and T-BOX for signs of damage, deformation, smudges, looseness, etc.
- B. Check the head unit and T-BOX harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

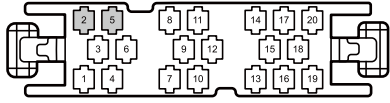
No

Repair or replace the faulty part.

Yes

Step 3 Check whether the circuit between the head unit and T-BOX is open.

IP49 audio control unit
harness connector C



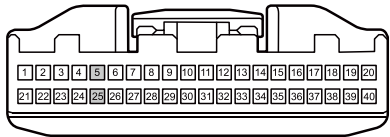
GE11-6127d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the T-BOX harness connector IP66.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP49(2)	IP66(25)	Standard resistance: less than 1Ω
IP49(5)	IP66(5)	

- E. Confirm whether the measured value meets the standard.

IP66 T-BOX Module Harness Connector



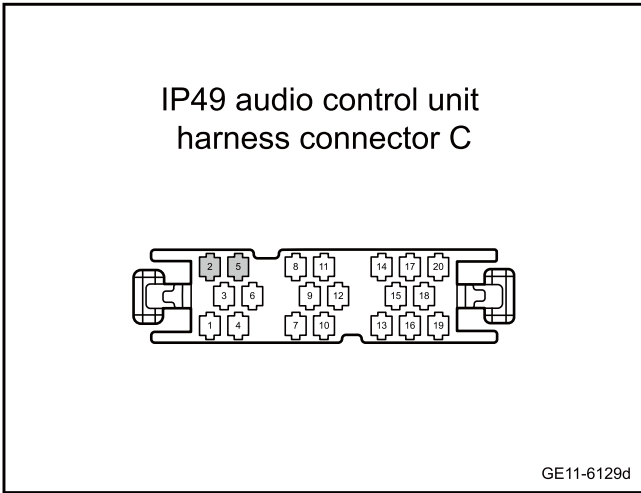
GE11-6128d

No

Repair or replace the harness.

Yes

Step 4 Check whether the circuit between the head unit and T-BOX is short to the power supply.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the T-BOX harness connector IP66.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure each terminal according to the table below:

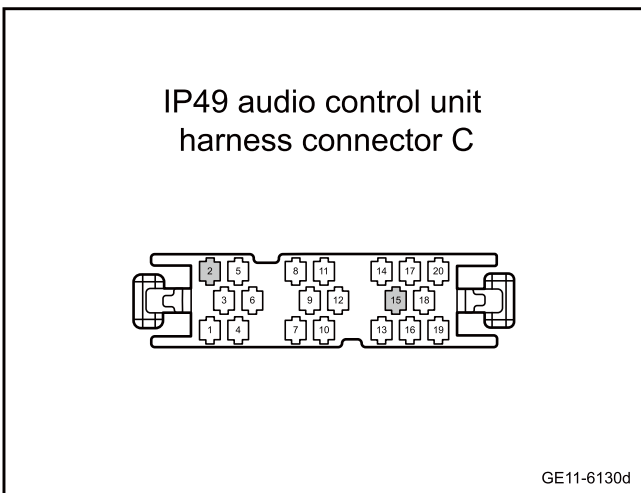
Measure terminal 1	Measure terminal 2	Standard value
IP49(2)	Vehicle body is grounded.	Standard voltage: 0V
IP49(5)		

- F. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 5 Check whether the harness between the head unit and T-BOX is short to ground.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the head unit harness connector IP49.
- C. Disconnect the T-BOX harness connector IP66.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP49(2)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP49(15)		

- E. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 6 Replace the T-BOX.

- A. Check the T-BOX power supply and grounding harness. Refer to [T-BOX Power Supply Failure](#)
- B. Replace the T-BOX. Refer to [Replacement of Vehicle-Mounted Wireless Control Module](#)
- C. Confirm whether the system is working normally.

Yes System is normal.

No

Step 7 Change the head unit.

- A. Check the power supply and grounding circuits of head unit. Refer to [Head unit power supply fault](#)
- B. Change the head unit. Refer to [Replacement of head unit](#)

Next step

Step 8 Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Next step

Step 9 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 10 System is normal.

11.19.6.13 E-CALL power supply failure

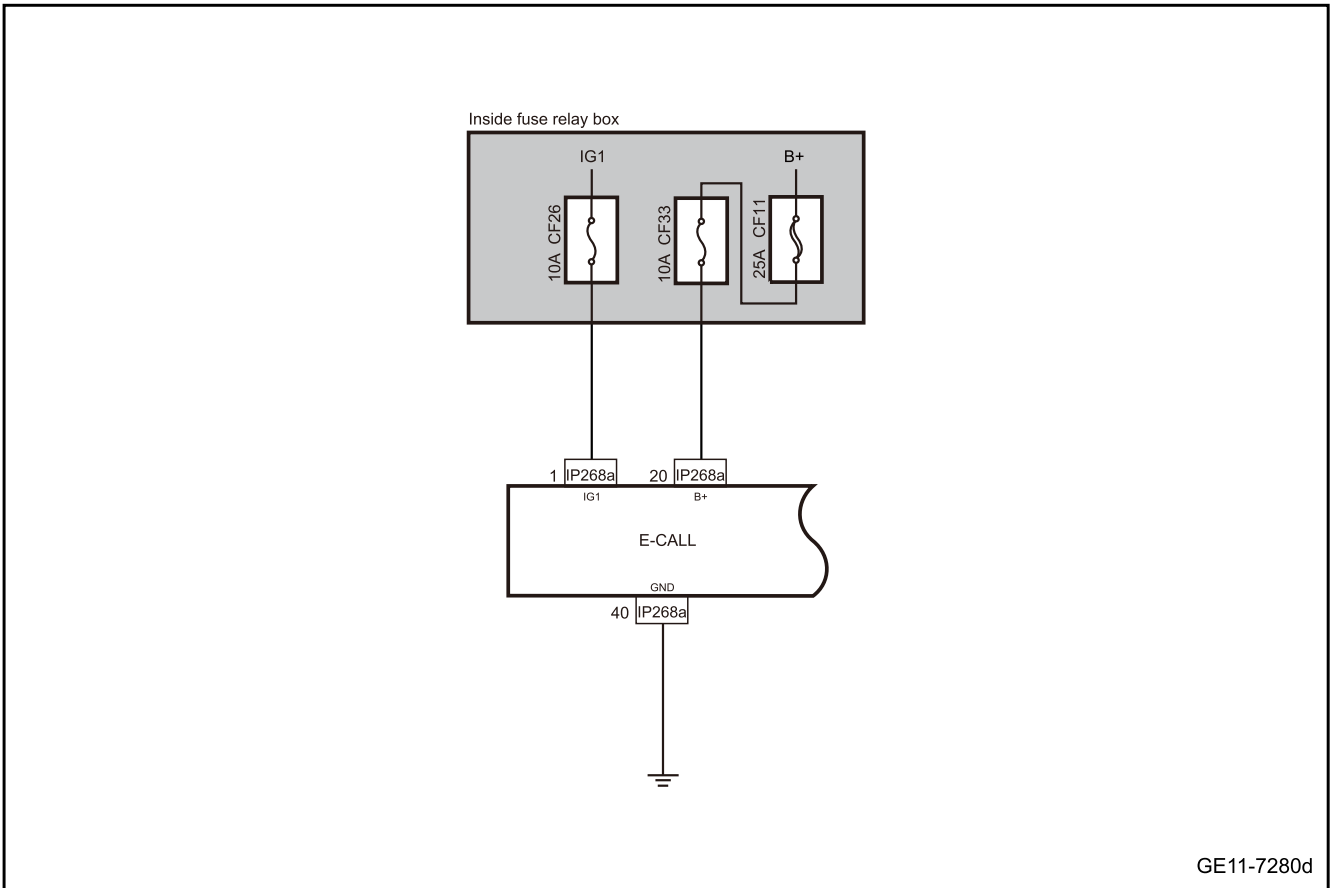
1. DTC description:

Diagnostic Trouble Code	Description
U300616	Fault of too low voltage
U300617	Fault of too high voltage

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U300616	Voltage is out of range. Internal local voltage <7.5V	1. Ignition status should be IGN ON	1. Battery 2. Circuit
U300617	Voltage is out of range Internal local voltage > 16.5V	2. Engine state is not in the crank 3. After 3 s IGN is turned on	3. Fuse 4.E-CALL

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Check whether other modules have power failure codes.
--------	---

A. Read the fault code and confirm whether other modules have output power failure code.

No

To Step 3.

Yes

Step 2	Check the battery voltage.
--------	----------------------------

- A. The key activates the power supply of the vehicle to ON.
- B. Use a multimeter to measure the battery voltage.

Standard voltage: 9-16V

- C. Confirm whether the measured value meets the standard.

No

Replace the battery or repair the charging system.

Yes

Step 3 Inspect the fuse.

- A. Multimedia settings from vehicle power supply to OFF.
- B. Check whether the fuse is blown according to the below table.

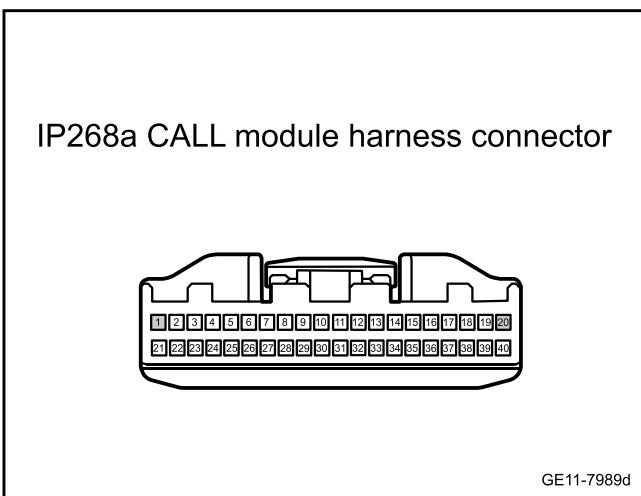
Fuse Position	Fuse Code	Fuse Rated Capacity
Indoor fuse relay box	CF11	25A
	CF26	10A
	CF33	10A

Yes

Inspect and repair fuse circuit and replace new fuse with rated capacity.

No

Step 4 Check the E-CALL power supply line.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the E-CALL harness connector IP268a.
- C. The key activates the power supply of the vehicle to ON.
- D. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(1)	Vehicle body is grounded.	Standard voltage: 11-14V
IP268a(20)	Vehicle body is grounded.	

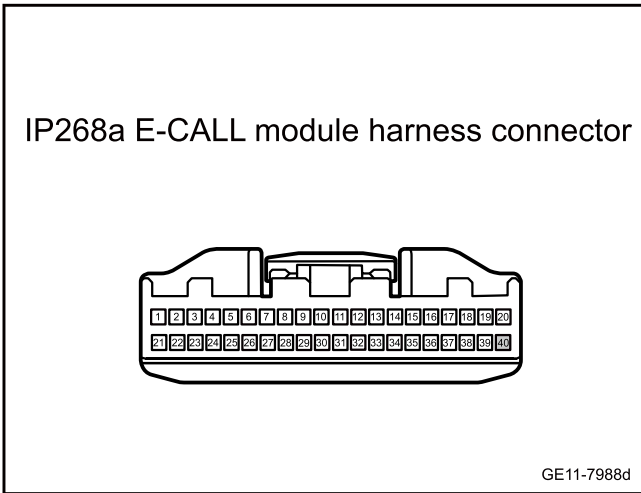
- E. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 5 | Check the E-CALL grounding circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the E-CALL harness connector IP268a.
- C. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(40)	Vehicle body is grounded.	Standard resistance: less than 1Ω

- D. Confirm whether the measured value meets the standard.

No → Repair or replace the harness.

Yes

Step 6 | Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes → System is normal.

No

Step 7 | Replace E-CALL

- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)

Next step

Step 8 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.19.6.14 Internal Faults of E-CALL

1. DTC description:

DTC	Trouble description
B140076	SIM card is not inserted
B140111	GNSS antenna is short-circuited to ground
B140113	GNSS antenna circuit is open
B140231	WAN communication module failure
B140771	E-Call button gets stuck
B140A16	Internal battery voltage is too low
B140A17	Internal battery voltage is too high
B140A1B	Internal battery aging fault
B141051	VIN is not written

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140076	eSIM is incorrect or cannot be detected	1. Not in the crank 2. 3 seconds after KL15 is on 3. The power supply voltage is 9V-16V 4. 3s after Ignition ON	E-CALL
B140111	Set when the detected GPS ANT is short-circuited to GND for 4 seconds		
B140113			
B140231	Set when MCU does not receive AT CMD response from internal Wan module for 60 consecutive seconds		
B140771	Set when the detected incoming call button is continuously pressed for 45 s		
B140A16	Set when the internal battery voltage is lower than 2.7V for 10 second		
B140A17	Set when the internal battery voltage is more than 5V for 10 second		

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140A1B	Set when the internal resistance of internal battery is greater than or equal to the warning value		
B141051	When the detected VIN equals all 20h		

3. Diagnosis steps

Caution

Before performing these steps, observe the data list of the diagnostic scanner and analyze the accuracy of each data, which helps to quickly remove the trouble!

Step 1 Use diagnostic scanner to read the trouble code.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

- A. Check the E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- B. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3 Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 4	Replace E-CALL
--------	----------------

- A. Replace E-CALL Refer to [Replacement of E-CALL](#)
- B. Confirm whether the system is normal.

Yes
System is normal.

No

Step 5	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes
Diagnose according to the output trouble code.

No

Step 6	System is normal.
--------	-------------------

11.19.6.15 E-CALL data communication fault

1. DTC description:

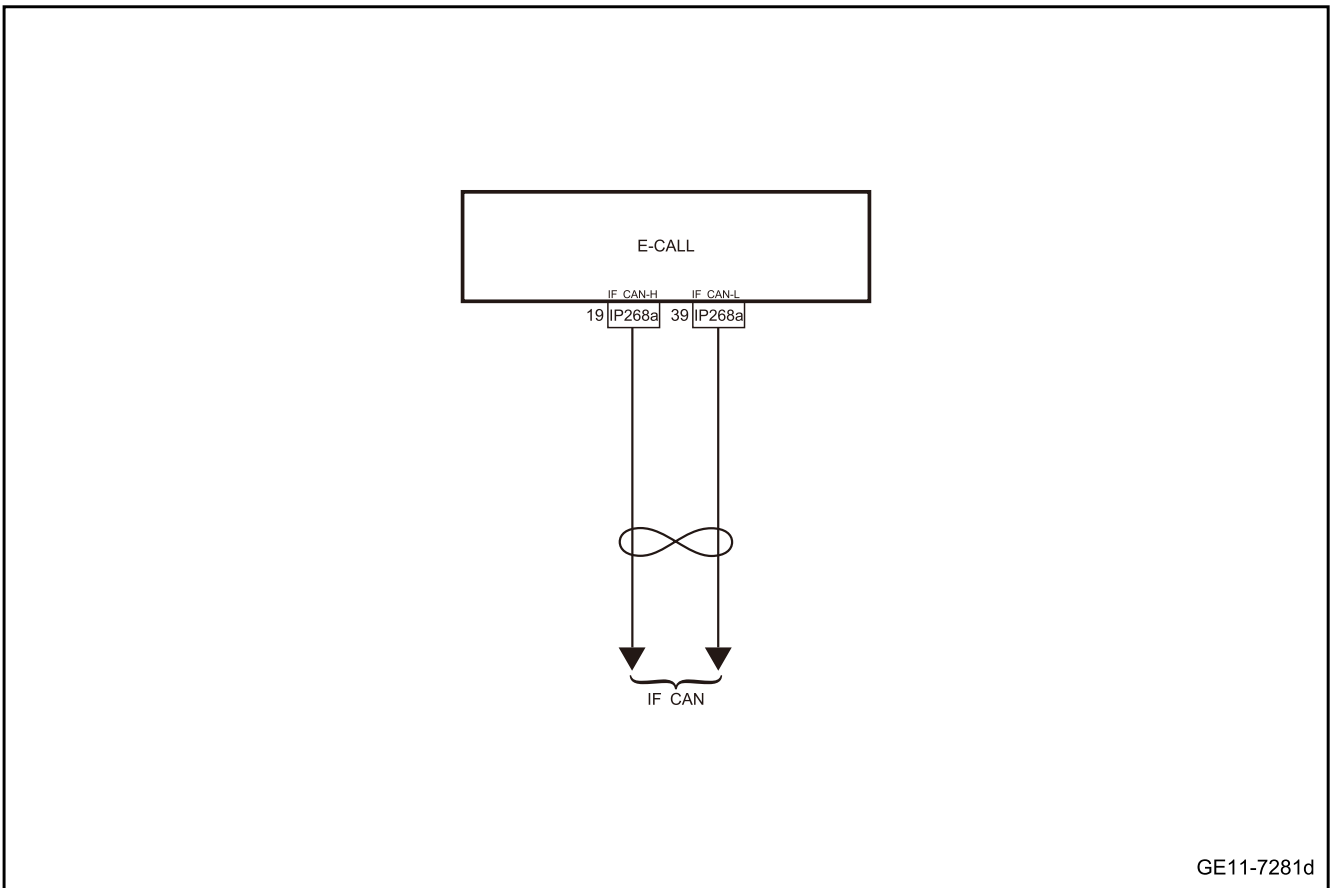
Diagnostic Trouble Code	Description
U007300	Bus bus-off fault
U015187	Communication with ACU is lost

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U007300	Bus switch-off counter cL1ToL2 equals 10.	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. It is detected that the bus is switched off. 3. The ignition status should be IGN ON 4. 3s after Ignition ON	1. Circuit 2.E-CALL

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
U015187	Loss of ACU (ID=0x380) information lasts for 5T (T is the message period)	1. The power supply voltage at the CAN bus node is in the range of 9-16V (see the definition of communication diagnostic voltage for details) 2. It is detected that the bus is switched off. 3. No bus off is detected, more than 1000ms after the last bus disconnection recovery 4. The ignition status should be IGN ON 5. 3s after Ignition ON	

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

- A. Check the E-CALL for signs of damage, deformation, stain, loosening, etc.
- B. Check the E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 3	Check the IF-CAN network integrity.
--------	-------------------------------------

- A. To check the instrument communication network, please refer to [IF-CAN Bus Network Integrity Check](#)
- B. Confirm whether the IF-CAN bus network is normal.

No

Check and troubleshoot the abnormal communication of the vehicle, and replace the harness if necessary.

Yes

Step 4	Reprogram and reset the E-CALL.
--------	---------------------------------

- A. Reprogram and reset the E-CALL. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5	Replace E-CALL
--------	----------------

- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)

Next step

Step 6 Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
 B. The key activates the power supply of the vehicle to ON.
 C. Clear the trouble code.
 D. Road test for at least 10min.
 E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

Diagnose according to the output trouble code.

No

Step 7 System is normal.

11.19.6.16 Microphone circuit fault(Type II)

1. DTC description:

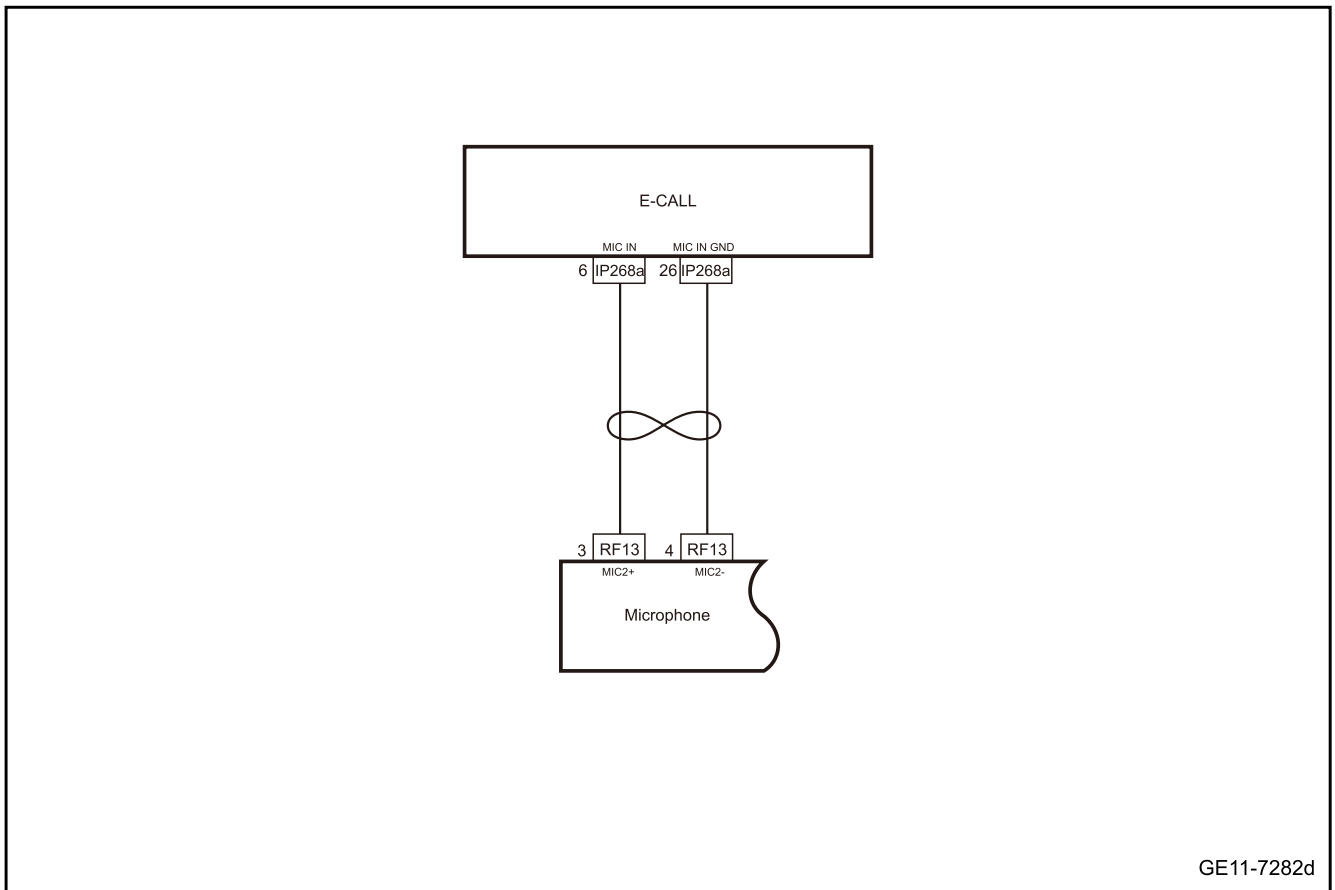
DTC	Trouble description
B140411	Microphone input is short-circuited to ground
B140412	Microphone input is short-circuited to power supply
B140413	Microphone input circuit is open
B140511	Microphone output is short circuit(speaker)
B140512	Microphone output is short circuit to power supply(speaker)
B140513	Microphone output is open circuit(speaker)

2. Trouble code setting and trouble locations:

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140411	Set when it is detected that microphone input is short-circuited to GND after IGN is turned off/turned on	1. Not in the crank 2. 3 seconds after KL15 is on 3. The power supply voltage is 9V-16V	1.E-CALL 2. Circuit 3. Microphone
B140412	Set when microphone input is detected on after IGN is turned off/on	4. Not in voice call	
B140413		5. Non-remote startup mode	

DTC	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140511	Set when it is detected that microphone output is short-circuited to GND after IGN is turned off/on		
B140512			
B140513			

3. Circuit schematic



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No Refer to [Intermittent Fault Detection](#)

Yes

Step 2	Primary check.
--------	----------------

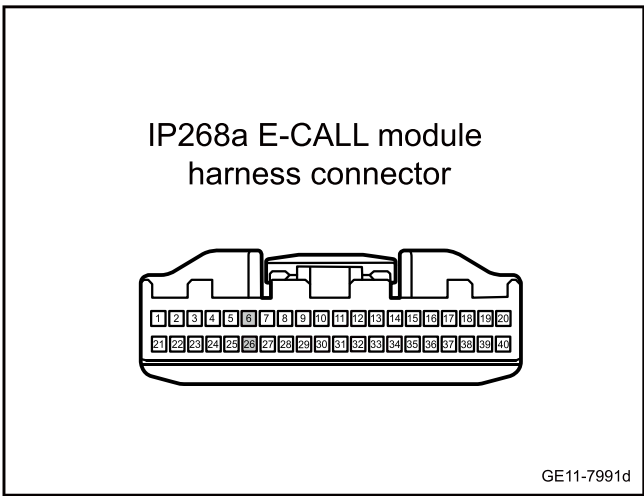
- A. Check the appearance of microphone and E-CALL for signs of damage, rust, dirt, etc.
- B. Check the microphone and E-CALL harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

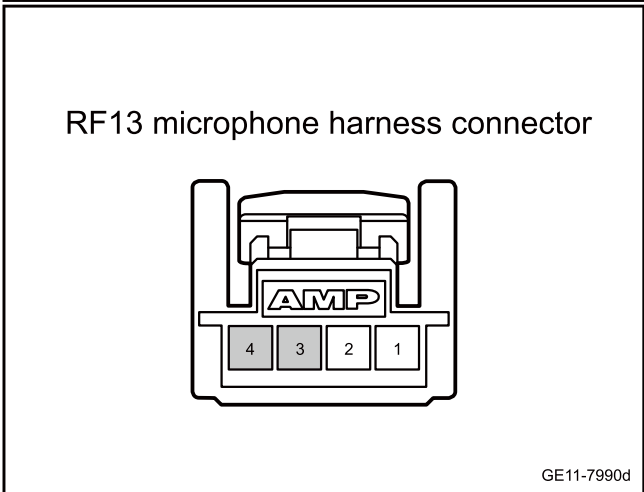
Yes

Step 3 Check the circuit between E-CALL and the microphone.



- A. Multimedia settings from vehicle power supply to OFF gear.
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect microphone harness connector RF13.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(6)	RF13(3)	Resistance: less than 1Ω
IP268a(26)	RF13(4)	
IP268a(6)	Vehicle body is grounded.	Resistance: 10KΩ or higher
IP268a(26)		



- E. Operate the start switch to place the power in mode "ON".
- F. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(6)	Vehicle body is grounded.	Voltage: 0V
IP268a(26)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4 Replace the microphone.

- A. Replace microphone 2, refer to [Replacement of microphone](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 5 | Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to the [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 6 | Replace E-CALL

- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)

Next step

Step 7 | Use the diagnostic scanner to determine whether the trouble is eliminated.

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Road test for at least 10min.
- E. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes Diagnose according to the output trouble code.

No

Step 8 | System is normal.

11.19.6.17 Crash Signal Failure(Type II)

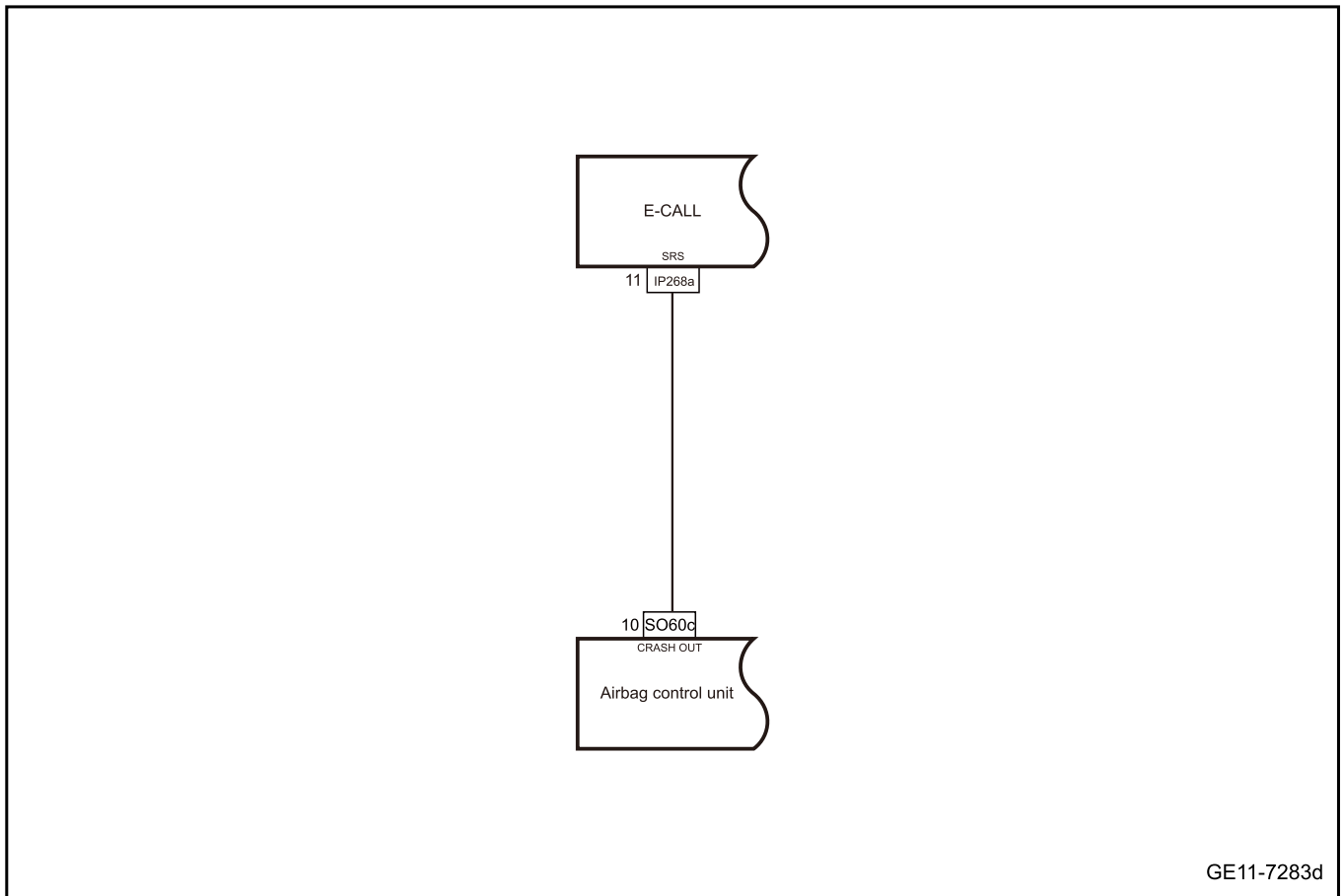
1. DTC description:

Diagnostic Trouble Code	Description
B140B11	Airbag signal line is short-circuited to the ground
B140B15	Airbag signal line is short-circuited to the power supply or is an open circuit

2. Trouble code setting and trouble locations:

DTC No.	DTC triggering conditions	DTC detecting conditions (control strategy)	Trouble location
B140B11	Set when the value of the SRS airbag deployment signal is detected to be logic 0 for 3 seconds	1. Vehicles is not started. 1. 3s after KL15 is turned on. 3. The supply voltage is 9V-16V.	1. Circuit 2. E-CALL 3. Airbag module
B140B15	When it is detected that the SRS airbag deployment signal is always logic 1 for 3 seconds		

3. Schematic circuit diagram:



4. Diagnosis steps

Step 1	Use diagnostic scanner to read the trouble code.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. Operate the start switch to place the power in mode "ON".
- C. Read the trouble code of the control system to confirm whether the system has output a DTC.

No

Refer to [Intermittent Fault Detection](#)

Yes

Step 2 Primary check.

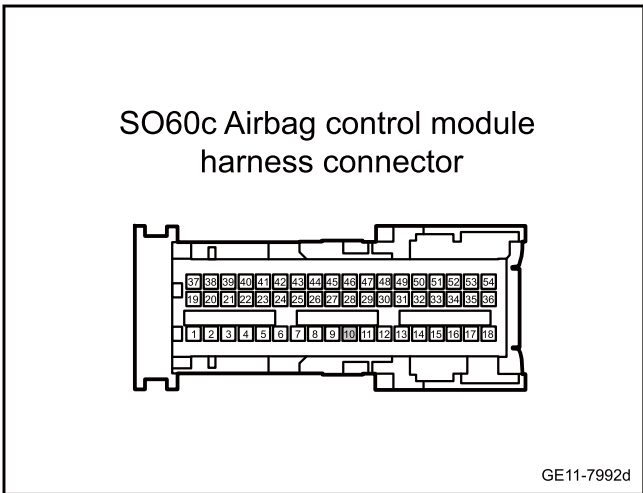
- A. Check the E-CALL and airbag control module for signs of damage, deformation, smudges, looseness, etc.
- B. Check the E-CALL and airbag control module harness connectors for signs of damage, deformation, smudges, looseness, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

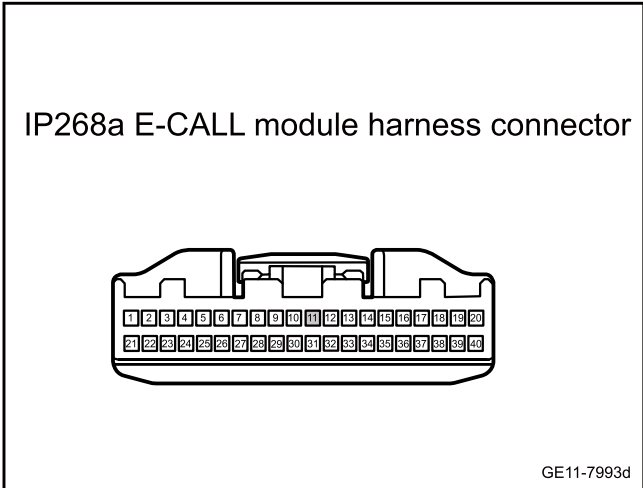
Yes

Step 3 Check whether the line between airbag control module and E-CALL is open circuit.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the harness connector SO60c of airbag control module.
- C. Disconnect the E-CALL harness connector IP268a.
- D. Use a multimeter to measure each terminal according to the following table:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(11)	SO60c(10)	Standard resistance: less than 1Ω
IP268a(11)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher



- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure each terminal according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(11)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 4	Reprogram and reset the E-CALL.
--------	---------------------------------

- A. Reprogram and reset the E-CALL. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 5	Replace E-CALL
--------	----------------

- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)
- B. Confirm whether the system is working normally.

Yes	System is normal.
-----	-------------------

No

Step 6	Reprogramme and reset the airbag control module.
--------	--

- A. Reprogramme and reset the airbag control module. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 7	Replace the airbag control module.
--------	------------------------------------

- A. To replace the airbag control module, please refer to [Replacement of Airbag Control Module](#)

Next step

Step 8	Use the diagnostic scanner to determine whether the trouble is eliminated.
--------	--

- A. Connect the diagnostic scanner to the DLC.
- B. The key activates the power supply of the vehicle to ON.
- C. Clear the trouble code.
- D. Read the trouble code of the control system again to confirm whether the system has output a DTC.

Yes

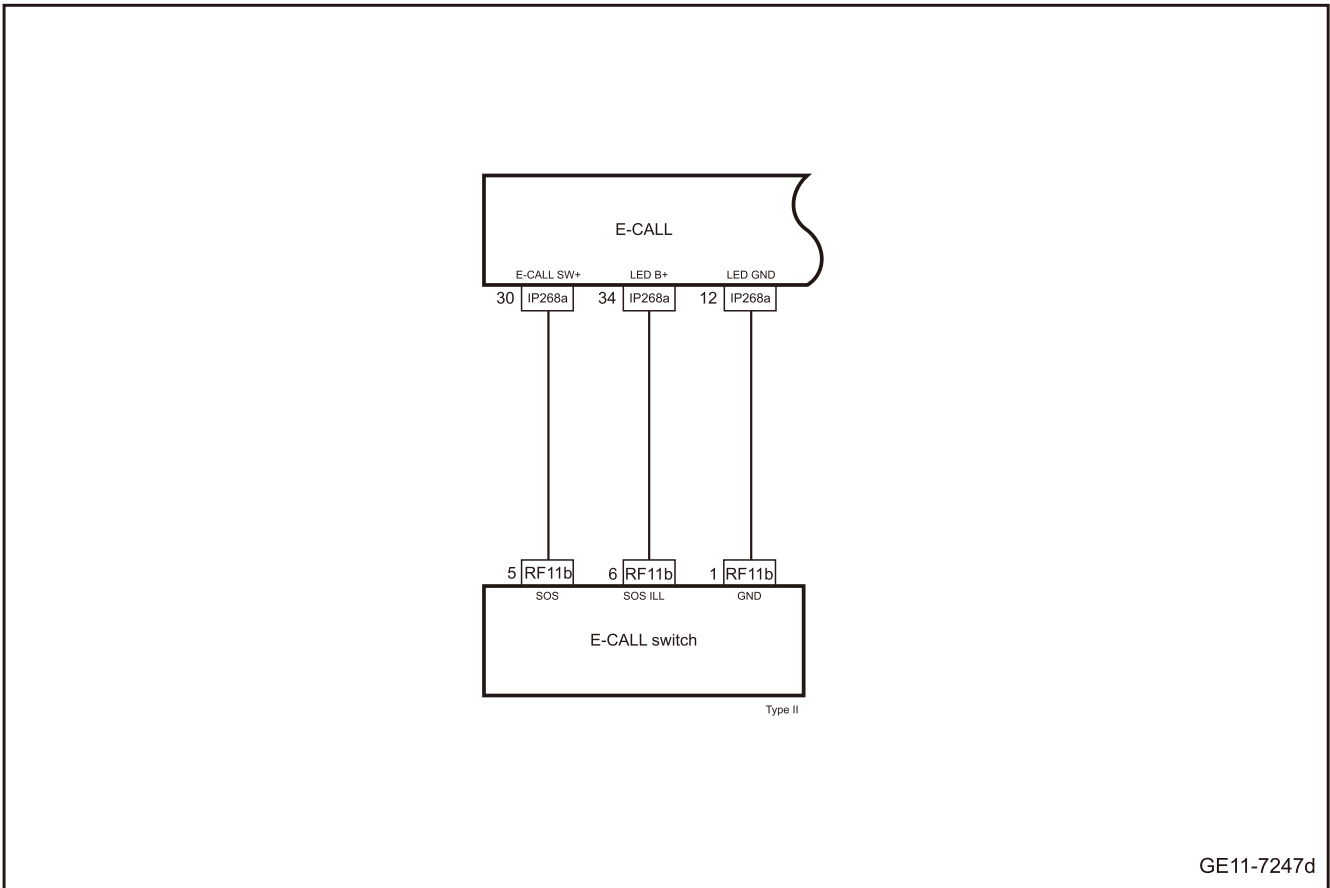
Diagnose according to the output trouble code.

No

Step 9 System is normal.

11.19.6.18 SOS switch fault

1. Schematic circuit diagram:



2. Diagnosis steps:

Caution

This manual is only used to diagnose the E-CALL switch fault of type II. The diagnosis method of type 1 E-CALL switch fault is the same as that of type II E-CALL switch fault.

Step 1 Primary check.

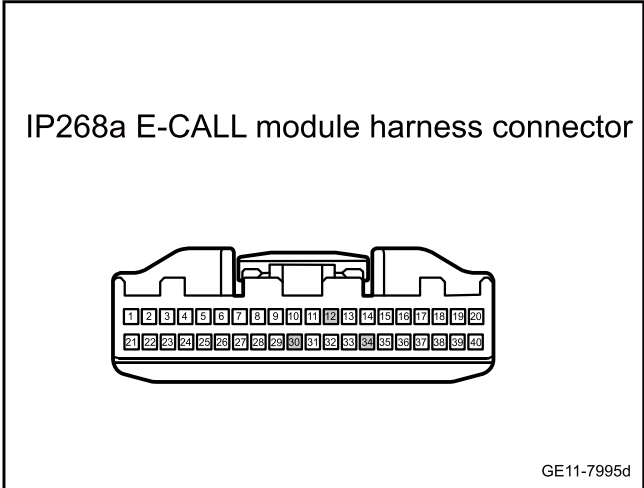
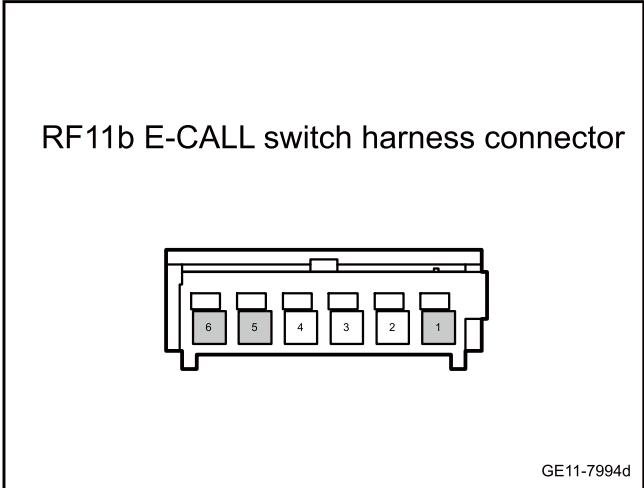
- A. Check the E-CALL switch and E-CALL for signs of damage, deformation, smudges, looseness, etc.
- B. Check the E-CALL switch and the E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No

Repair or replace the faulty part.

Yes

Step 2 Check the circuit between E-CALL switch and E-CALL.



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect harness connector RF11b of the E-CALL switch.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF11b(1)	IP268a(12)	Standard resistance: less than 1Ω
RF11b(5)	IP268a(30)	
RF11b(6)	IP268a(34)	
RF11b(1)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
RF11b(5)		
RF11b(6)		

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
RF11b(1)	Vehicle body is grounded.	Standard voltage: 0V
RF11b(5)		
RF11b(6)		

- G. Confirm whether the measured value meets the standard.

No

Repair or replace the harness.

Yes

Step 3 Replace E-CALL switch.

- A. Replace E-CALL switch. Refer to [Replacement of E-CALL Switch](#)
- B. Check whether the system is normal

Yes

System is normal.

No

Step 4 Program and set the E-CALL.

- A. Program and set the E-CALL. Refer to the [Programing and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 5 E- E-CALL

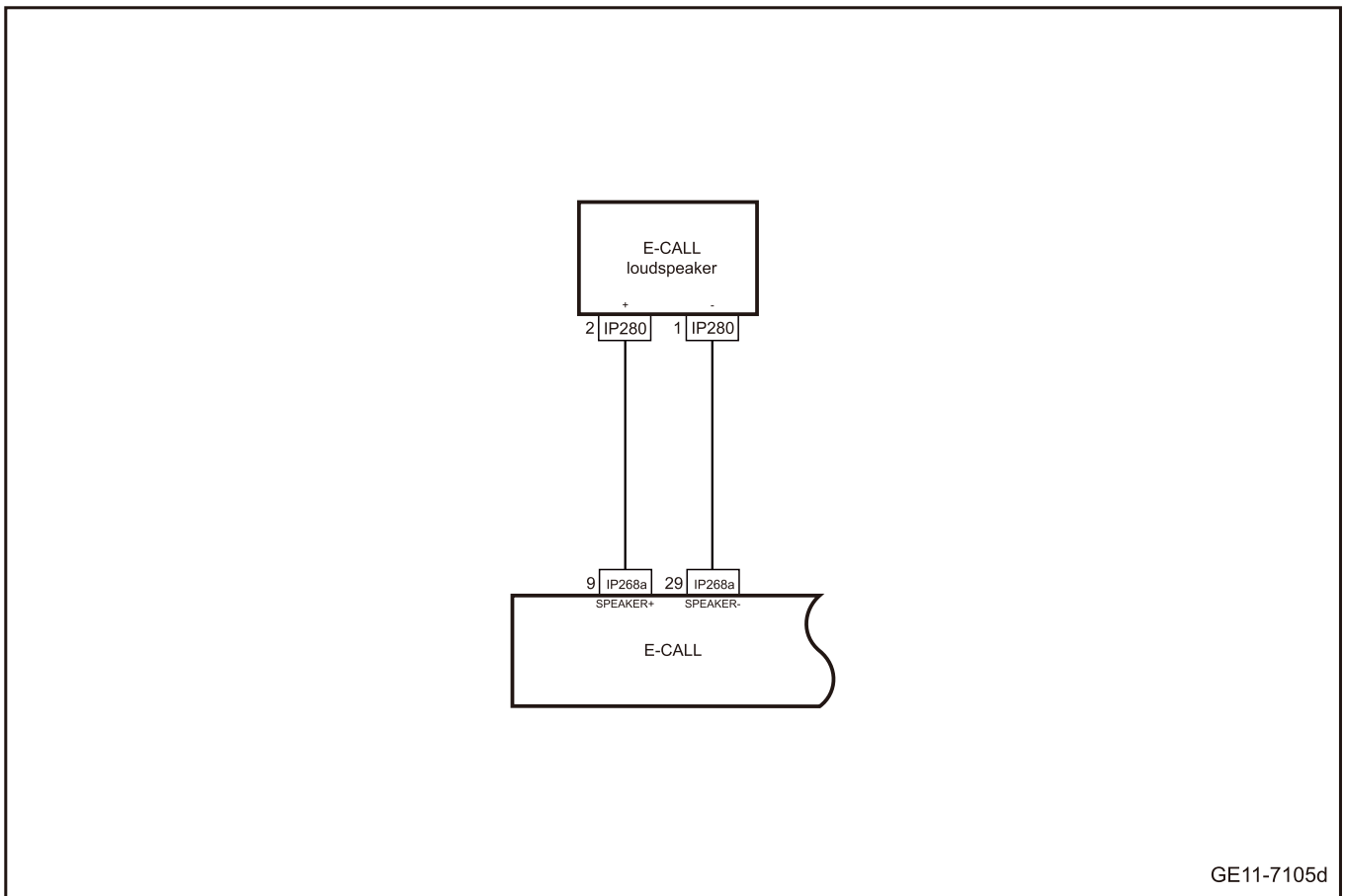
- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)

Next step

Step 6 System is normal.

11.19.6.19 E-CALL loudspeaker fault

1. Schematic circuit diagram:



GE11-7105d

2. Diagnosis steps

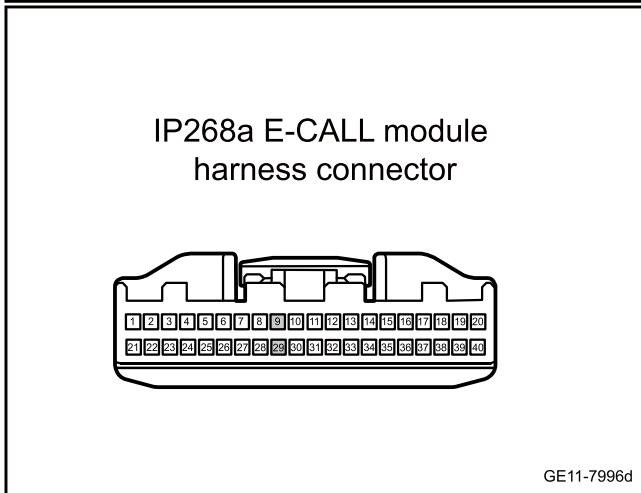
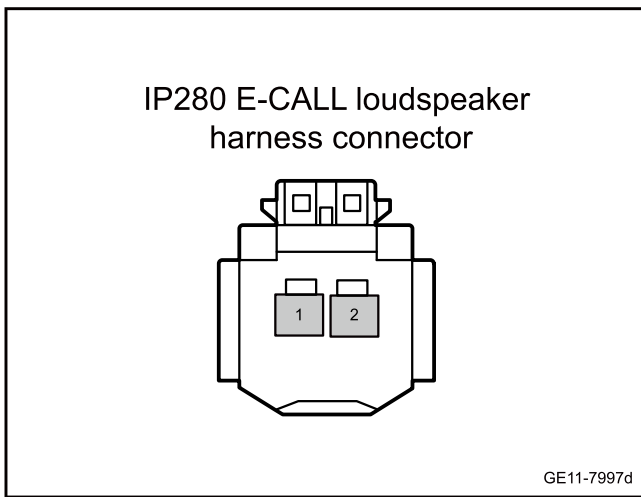
Step 1	Primary check.
--------	----------------

- A. Check the E-CALL loudspeaker for signs such as damage and falling off.
- B. Check the E-CALL loudspeaker and E-CALL harness connector for signs of damage, poor contact, aging, looseness, etc.
- C. Confirm whether the above items are normal.

No
Repair or replace the faulty part.

Yes

Step 2	Check the circuit between the E-CALL and the E-CALL loudspeaker.
--------	--



- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect the E-CALL loudspeaker harness connector IP280.
- D. The key activates the power supply of the vehicle to ON.
- E. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(9)	IP280(2)	Standard resistance: less than 1Ω
IP268a(29)	IP280(1)	
IP268a(9)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher
IP268a(29)		

- F. The key activates the power supply of the vehicle to ON.
- G. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(9)	Vehicle body is grounded.	Standard voltage: 0V
IP268a(29)		

- H. Confirm whether the measured value meets the standard.

No
Repair or replace the harness.

Yes

Step 3	Replace the E-CALL loudspeaker.
--------	---------------------------------

- A. To replace the E-CALL loudspeaker, please refer to [Replacement of E-CALL Loudspeaker](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 4	Reprogram and reset the E-CALL.
--------	---------------------------------

- A. Reprogram and reset the E-CALL. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes	System is normal.
-----	-------------------

No

Step 5	Replace E- E-CALL
--------	-------------------

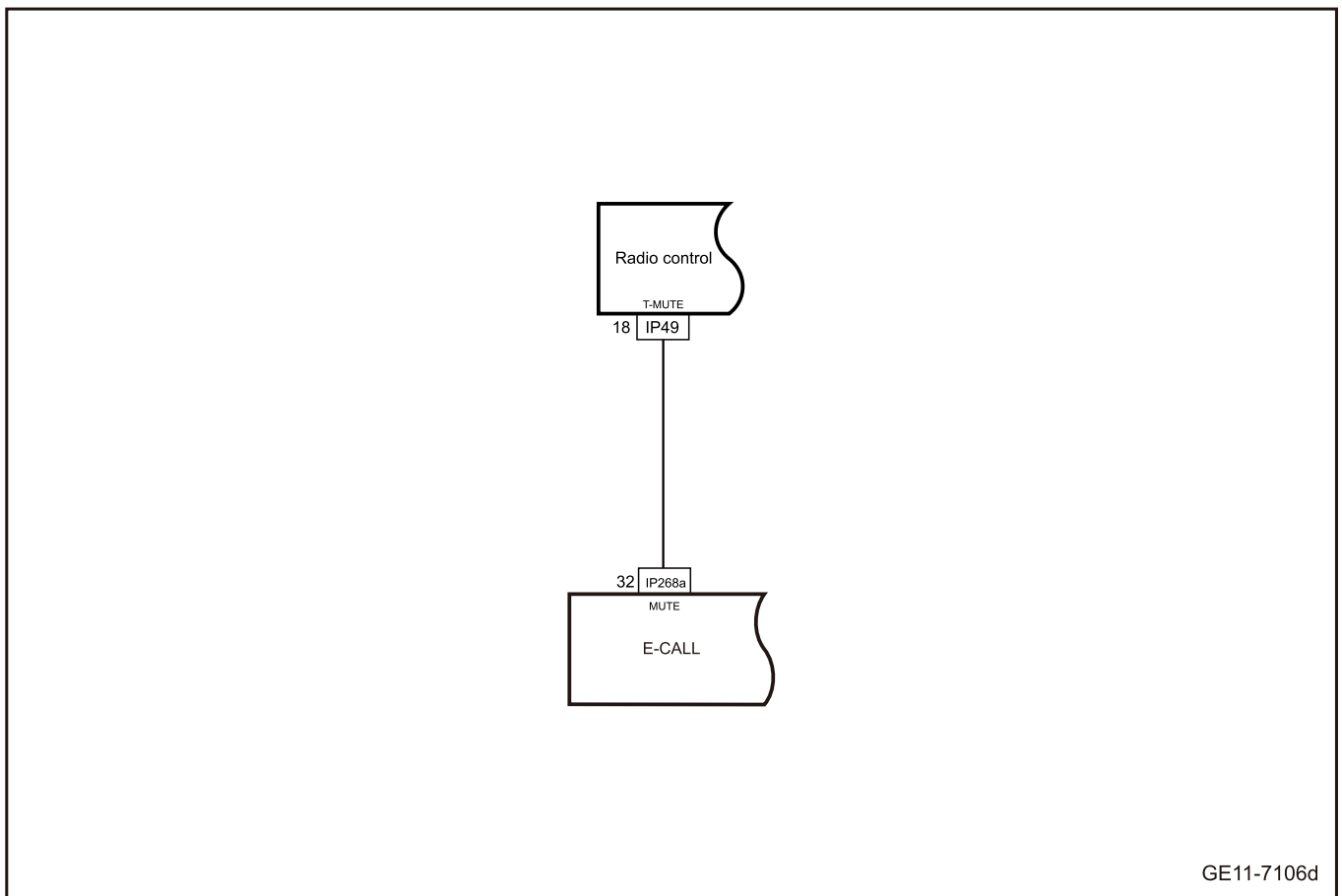
- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)

Next step

Step 6	System is normal.
--------	-------------------

11.19.6.20 E-CALL cannot mute the head unit

1. Schematic circuit diagram:



GE11-7106d

2. Diagnosis steps

Step 1	Primary check.
--------	----------------

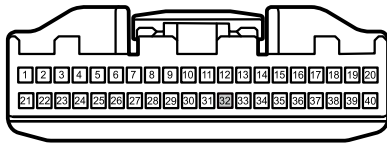
- A. Check the head unit and E-CALL for the signs of damage, smudge, corrosion, etc.
- B. Check the head unit and E-CALL harness connector for signs of damage, poor contact, aging, loosening, etc.
- C. Confirm whether the above items are normal.

No	Repair or replace the faulty part.
----	------------------------------------

Yes

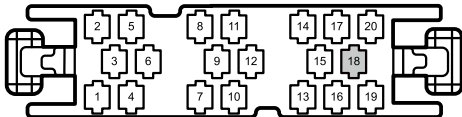
Step 2	Check the circuit between the front E-CALL and the head unit.
--------	---

IP268a E-CALL module harness connector



GE11-7999d

IP49 radio control unit harness connector



GE11-7998d

- A. Multimedia settings from vehicle power supply to OFF.
- B. Disconnect the E-CALL harness connector IP268a.
- C. Disconnect the head unit harness connector IP49.
- D. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(32)	IP49(18)	Standard resistance: less than 1Ω
IP268a(32)	Vehicle body is grounded.	Standard resistance: 10KΩ or higher

- E. The key activates the power supply of the vehicle to ON.
- F. Use a multimeter to measure the terminals according to the table below:

Measure terminal 1	Measure terminal 2	Standard value
IP268a(32)	Vehicle body is grounded.	Standard voltage: 0V

- G. Confirm whether the measured value meets the standard.

No Repair or replace the harness.

Yes

Step 3 | Reprogram and reset the E-CALL.

- A. Reprogram and reset the E-CALL. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes System is normal.

No

Step 4 | Replace E-CALL.

- A. To replace the E-CALL, please refer to [Replacement of E-CALL](#)
- B. Check whether the system is normal

Yes System is normal.

No

Step 5 | Reprogram and reset the head unit.

- A. Reprogram and reset the head unit. Refer to [Programming and Setting of Each Module of the Complete Vehicle](#)
- B. Confirm whether the system is normal.

Yes

System is normal.

No

Step 6 | Change the head unit.

- A. Replace the head unit. Refer to the [Replacement of head unit](#)

Next step

Step 7 | System is normal.

11.19.7 Removing and installing

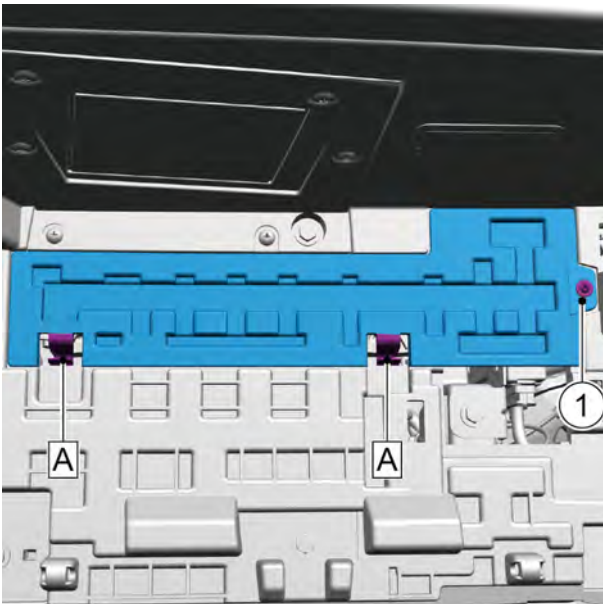
11.19.7.1 Replacement of Remote Monitoring module

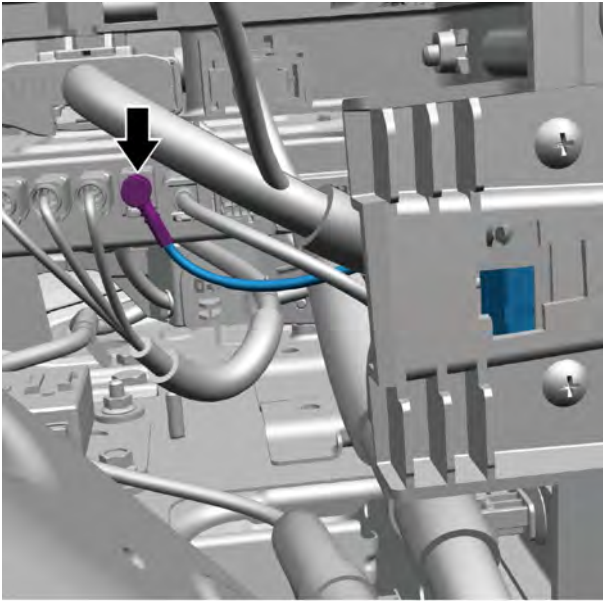
Refer to [Replacement of the Vehicle Mounted Wireless control module](#)

11.19.7.2 Replacement of Bluetooth Antenna

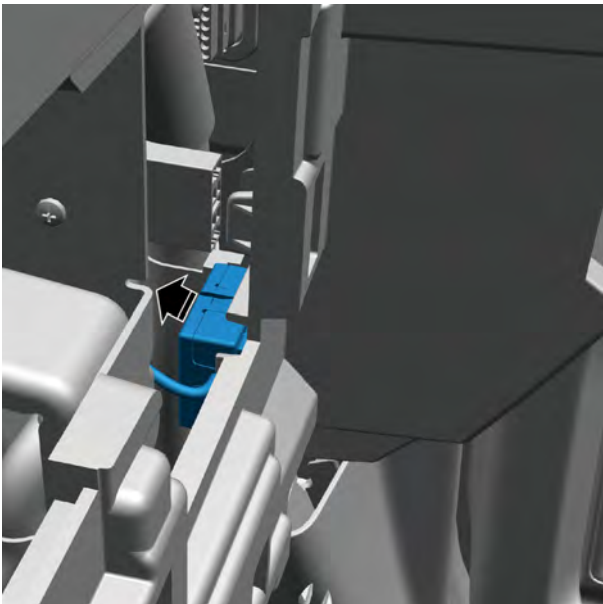
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the right lower fender of the dashboard. Refer to [Replacement of Right Lower Fender of Dashboard](#)
- 3 Remove the glove box. Refer to [Replacement of Glove Box](#)
- 4 Remove the 1 fixing bolt 1 connecting the A/C maintenance cover plate and cross beam of instrument panel.
- 5 Disconnect the 2 fixing clips A connecting the A/C maintenance cover plate with the lower body of the instrument panel.
- 6 Take off the A/C maintenance cover.



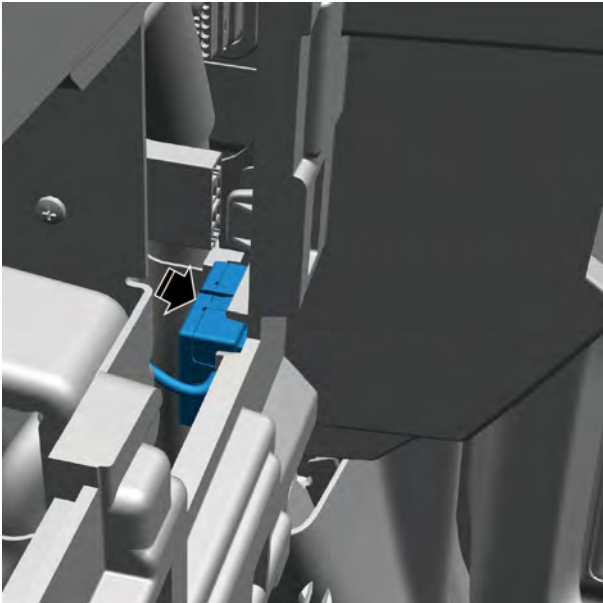


- 7 Disconnect the 1 harness connector connecting bluetooth antenna and vehicle-mounted mobile terminal.



- 8 Use a plastic prying plate to pry off the Bluetooth antenna.

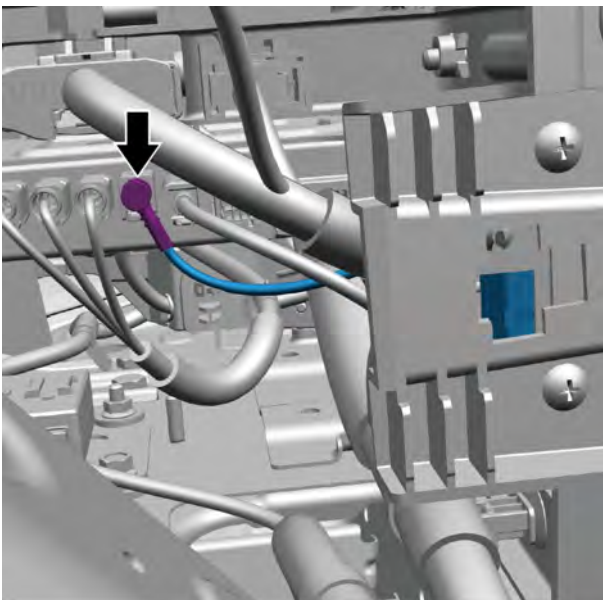
Installation procedure



- 1 Install the Bluetooth antenna on dashboard lower body assembly.

Caution

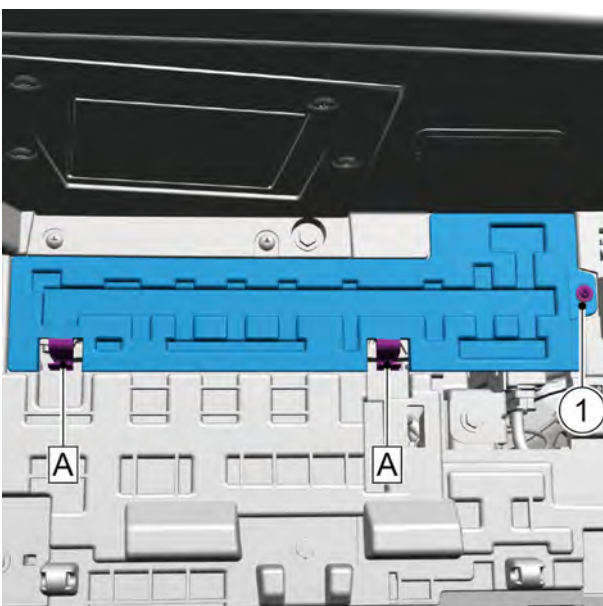
Remove dust on the bonding surface and ensure the bonding surface is clean and free of oil. When installing, press the Bluetooth antenna body firmly to ensure that the Bluetooth antenna is pasted properly.



- 2 Connect the one harness connector connecting Bluetooth antenna and vehicle-mounted mobile terminal harness connector.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 3 Move the A/C maintenance cover plate to the installation position.
- 4 Install the 2 fixing clips A connecting the A/C maintenance cover plate and the instrument panel lower body assembly.

Caution

Check whether the 2 fixing clips A connecting the cover plate and the lower body of the instrument panel are installed in place.

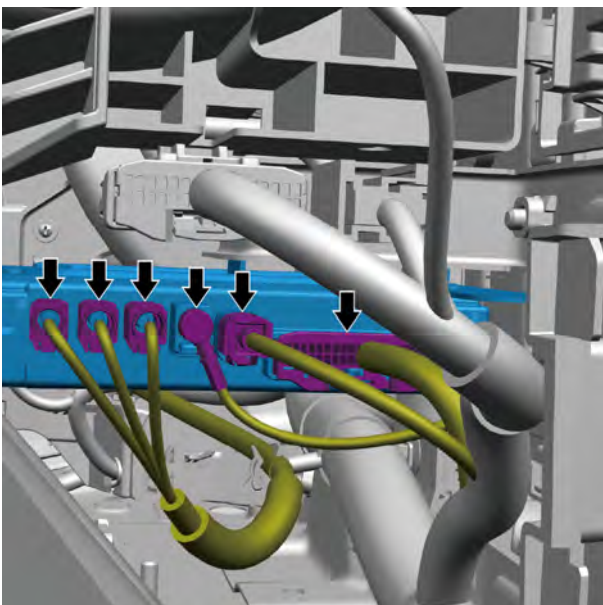
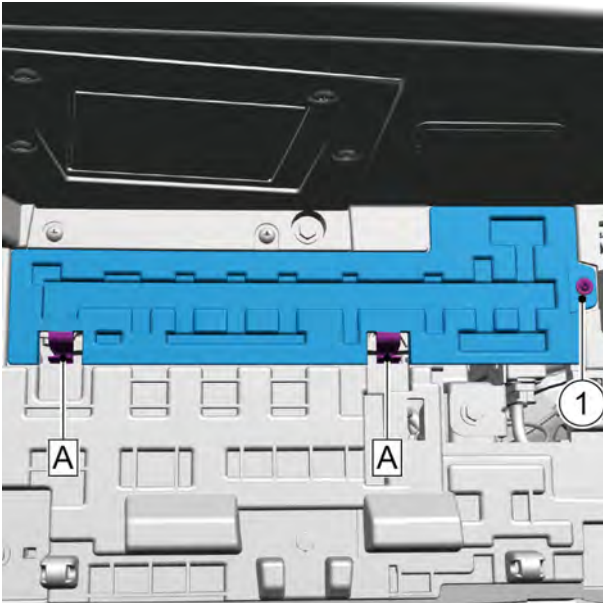
- 5 Install and tighten the 1 fixing bolt 1 connecting the A/C maintenance cover plate with the lower body of the instrument panel.

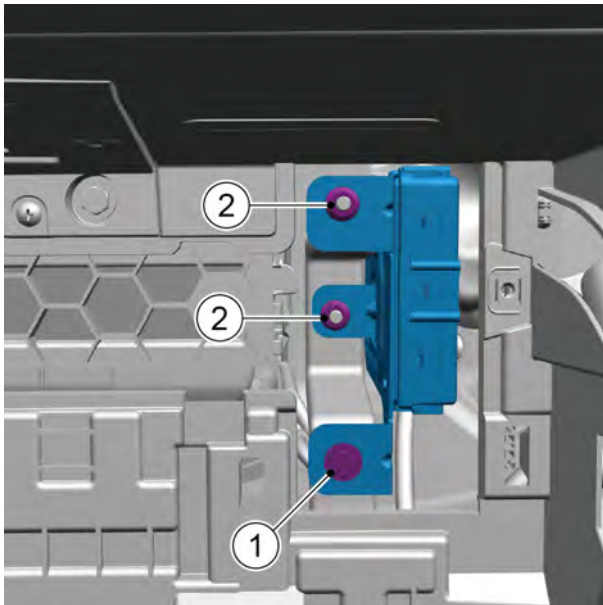
- 6 Install the glove box.
- 7 Install the right lower fender of the instrument panel.
- 8 Connect the negative cable of battery.

11.19.7.3 Replacement of vehicle mounted wireless control module

Removal procedure

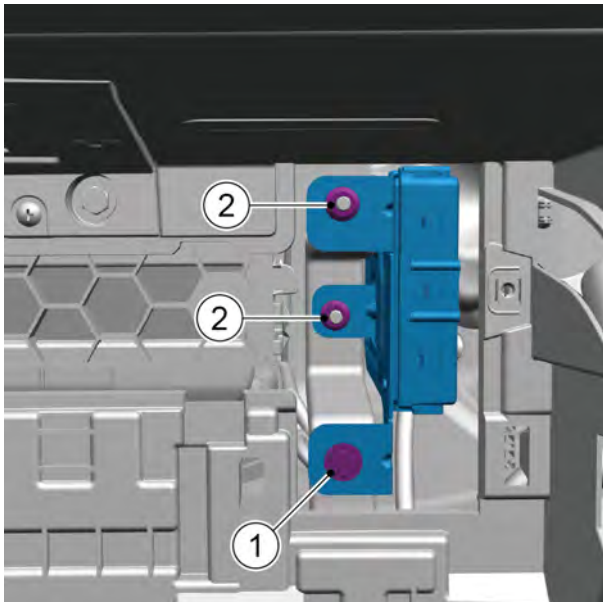
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the right lower fender of the dashboard. Refer to [Replacement of Right Lower Fender of Dashboard](#)
- 3 Remove the glove box. Refer to [Replacement of Glove Box](#)
- 4 Remove the 1 fixing bolt 1 connecting the A/C maintenance cover plate and cross beam of instrument panel.
- 5 Disconnect the 2 fixing clips A connecting the A/C maintenance cover plate with the lower body of the instrument panel.
- 6 Take off the A/C maintenance cover.
- 7 Disconnect the 6 harness connectors connecting the instrument harness and the vehicle wireless control module.



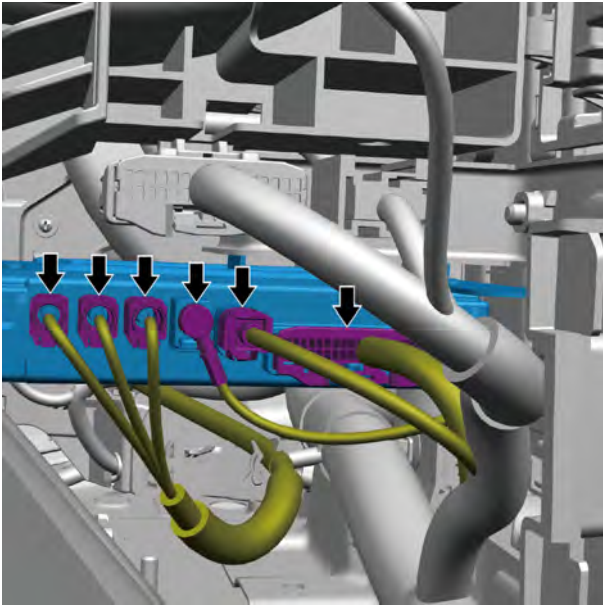


- 8 Remove the 1 fixing bolt 1 connecting the vehicle mounted wireless control module and the cross beam of instrument panel.
- 9 Remove the 2 fixing nuts 2 connecting the vehicle mounted wireless control module and the cross beam of instrument panel.
- 10 Remove the vehicle mounted wireless control module.

Installation procedure



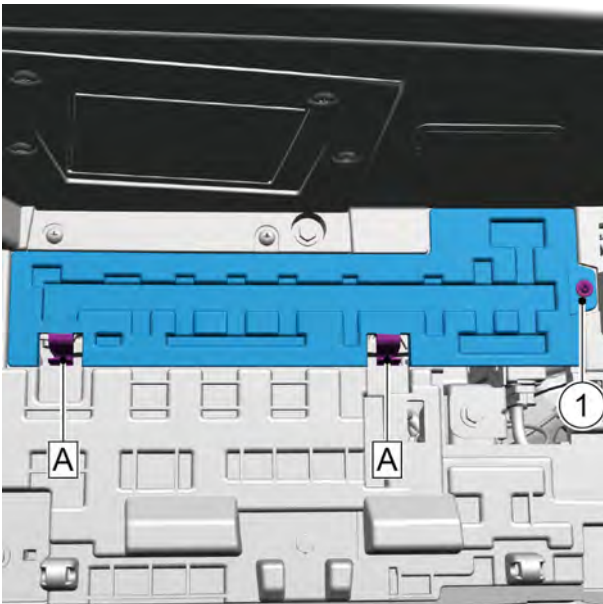
- 1 Move the vehicle mounted wireless control module to the installation position.
- 2 Install the 2 fixing nuts 2 connecting the vehicle mounted wireless control module and the cross beam of instrument panel.
Torque: 10N·m
- 3 Install 1 fixing bolt 1 connecting the i vehicle mounted wireless control module and the cross beam of instrument panel.
Torque: 10N·m



- 4 Connect the 6 harness connectors connecting the instrument panel harness and the vehicle mounted wireless control module.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 5 Move the A/C maintenance cover plate to the installation position.
- 6 Install the 2 fixing clips A connecting the A/C maintenance cover plate and the instrument panel lower body assembly.

Caution

Check whether the 2 fixing clips A connecting the cover plate and the lower body of the instrument panel are installed in place.

- 7 Install and tighten the 1 fixing bolt 1 connecting the A/C maintenance cover plate with the lower body of the instrument panel.
- 8 Install the glove box.
- 9 Install the right lower fender of the instrument panel.
- 10 Connect the negative cable of battery.

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12.1 Warnings and precautions

12.1.1 Warnings and precautions

12.1.1.1 Warnings and Precautions

Warning regarding collision and cutting

Warning

Only cut at recommended locations. Otherwise, the integrity of the vehicle structure will be damaged, and personal injury may be caused in the event of a vehicle collision.

Warning regarding cracked windows

Warning

If a window glass is cracked but remains intact, the protective tape should be cross-pasted to the window glass to prevent further damage to the window glass and personal injury.

Warning regarding glass and metal plates treatment

Warning

When any type of glass or metal plate with sharp edges or burrs is handled, it is needed to wear approved goggles and gloves to reduce the risk of personal injury.

Warnings about goggles and compressed air

Warning

When using compressed air, wear goggles to avoid eye damage. Important notes on exterior logo removal

Caution

When removing badges/nameplates, use a plastic flat-blade tool to avoid damage to the paint.

Notice of machining surface damage

Caution

Do not cut, scratch or damage the sealing surface. The sealing surface is machined. Damage to the machined surface can cause leakage.

Notice of sealant

Caution

Do not let room temperature hardening sealant enter the blind threaded hole. If room temperature hardening sealant enters the threaded blind hole, a hydraulic lock nut effect will be produced when fasteners are tightened. The hydraulic lock nut of fastener tightening can cause damage to fastener tightening and/or other components. In addition, the correct clamp force will not be obtained when fasteners are tightened. Incorrect clamping force can prevent components from getting the correct seal, which can lead to leakage. If the fastener cannot be tightened properly, components will become loose or separated, causing serious damage to the vehicle.

Notice of damage to window edges

Caution

Avoid damaging vehicle windows due to the impact caused by exposed edges. Vehicle windows must be 1 mm (0.025 in) below sheet metal surface to avoid damage to vehicle windows.

12.2 Body Front End

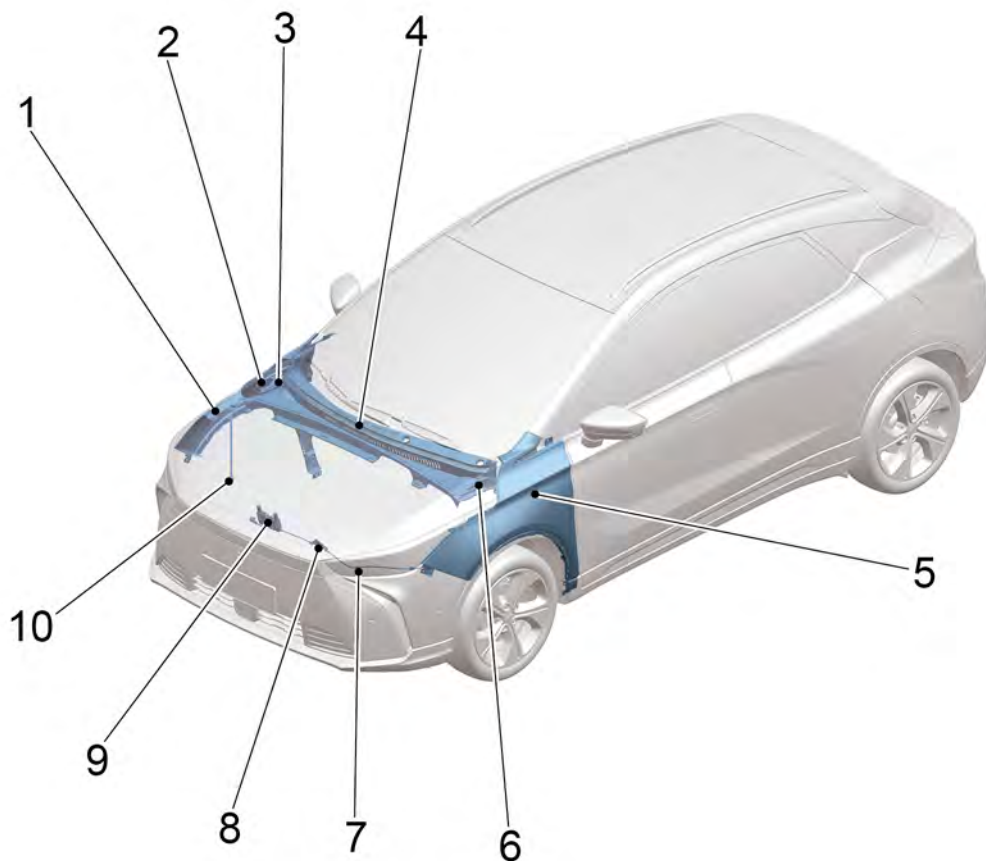
12.2.1 Specification

12.2.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Front engine compartment cover lock assembly fixing bolt	M8	20-26
Front engine compartment cover release cable fixing bracket fixing screw	ST4.8×20	3-5
Front engine compartment cover support rod fixing bolt	M6×12	8 -10
Fixing nut connecting front left fender and the rear mounting bracket	M6	9-11
Fixing bolt connecting front left fender and lower trim panel of left side outer door sill.	ST4.8×14	1-2
Install the fixing bolts connecting front left fender and the vehicle body.	ST5.5×13	1-2
Install the fixing bolts connecting front left fender and the vehicle body.	M6×12	9-11
	M6×16	9-11
Fixing bolt connecting front left fender and the front bumper	M6×20	5-7
Front engine compartment cover assembly and hinge assembly fixing nut	M8	21-25
Fixing bolt connecting the front engine compartment cover left hinge assembly and the vehicle body	M8×20	20-26

12.2.2 Part position

12.2.2.1 Part Position



- | | |
|--|--|
| 1. Front right fender | 6. Engine hood left hinge assembly |
| 2. Outer plate of the DC charging port cover | 7. Engine hood Interior Release Cable |
| 3. Engine hood right hinge assembly | 8. Engine hood lock release cable fixing bracket screw |
| 4. Ventilation cover plate assembly. | 9. Engine hood lock assembly |
| 5. Front left fender | 10. Engine Hood Support Rod Assembly |

12.2.3 Removing and installing

12.2.3.1 Replacement of Engine Hood Interior
Release Cable Connecting Wire Assembly

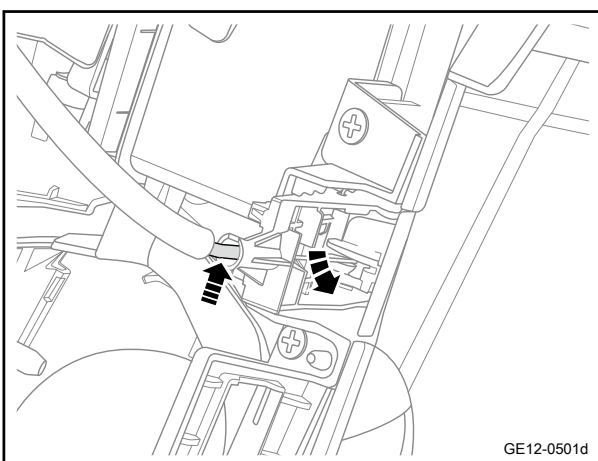
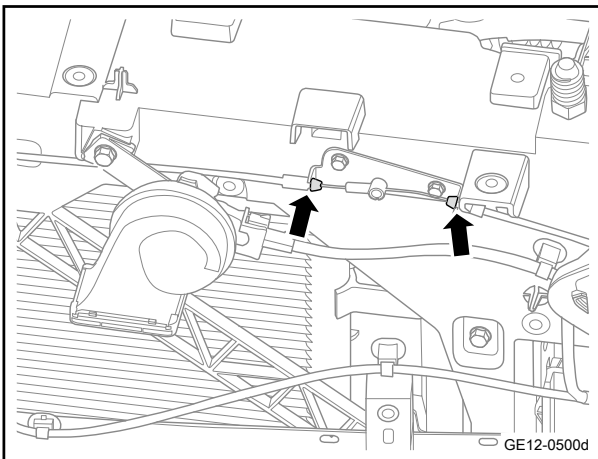
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

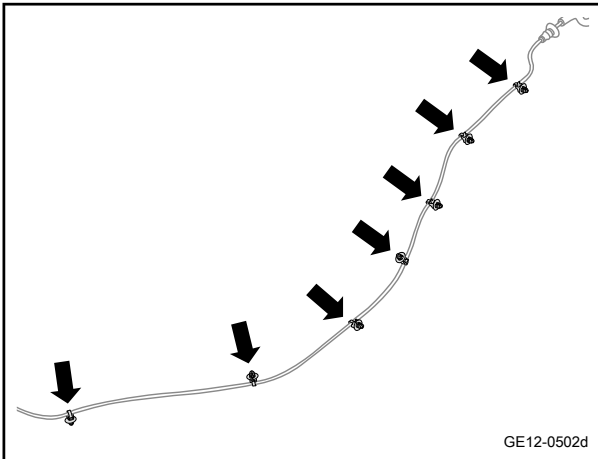
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front engine compartment cover lock assembly Refer to [Replacement of Front engine Compartment Cover Lock Assembly](#)
- 3 Remove the left front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 4 Disconnect the engine hood interior release cable c/w connecting wire assembly from the mounting bracket.

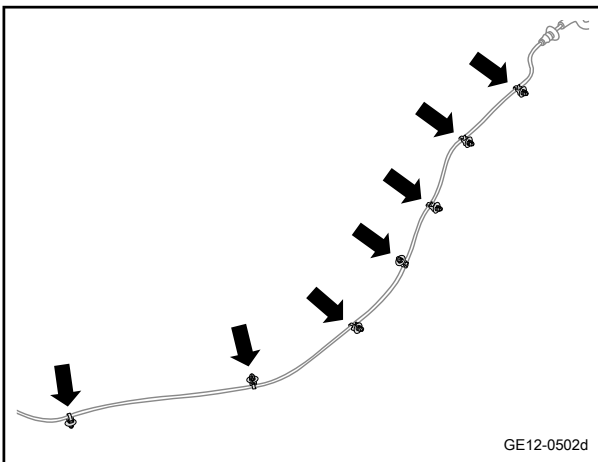


- 5 Disconnect the engine hood interior release cable c/w connecting wire assembly from the front engine compartment cover release handle.

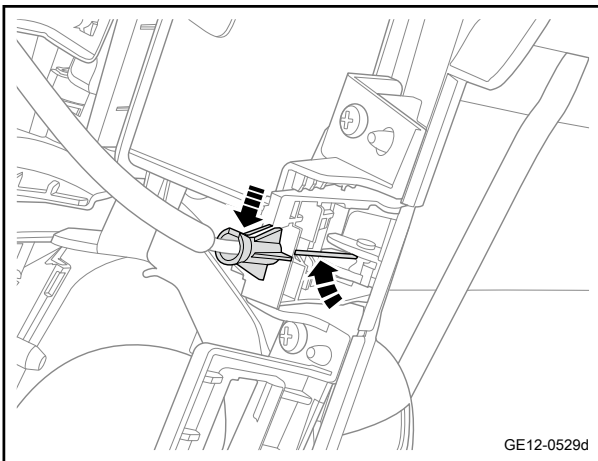


- 6 Disconnect the 1 fixing clip of the engine hood interior release cable connecting wire assembly.
- 7 Remove the bonnet lock opening cable connecting wire assembly.

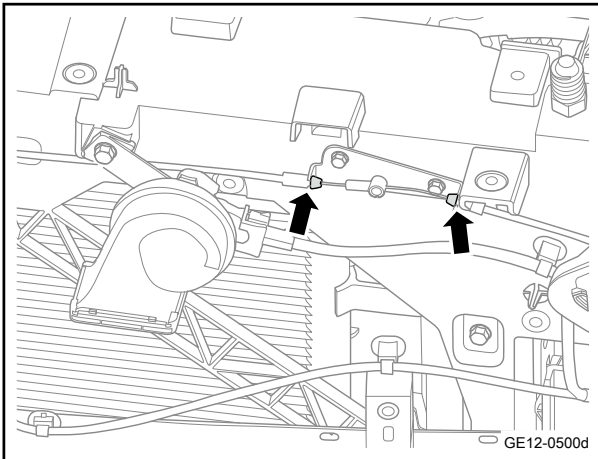
Installation procedure



- 1 Move the front door interior release cable connecting wire assembly to the installation position.
- 2 Install the 1 clip of the engine hood lock release cable connecting wire assembly.



- 3 Connect the engine hood lock opening cable connecting wire assembly and the front engine compartment cover opening handle.



- 4 Connect the engine hood interior release cable c/w connecting wire assembly and the mounting bracket.

- 5 Install the left front fender liner.
- 6 Install the front engine compartment trim cover assembly.
- 7 Connect the negative cable of battery.

12.2.3.2 Replacement of front engine compartment cover lock assembly

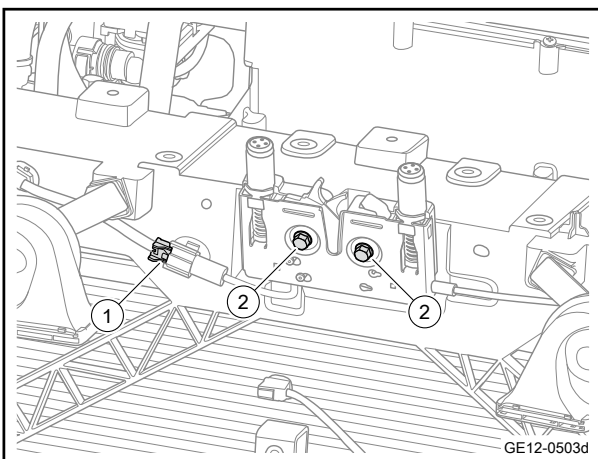
Removal procedure

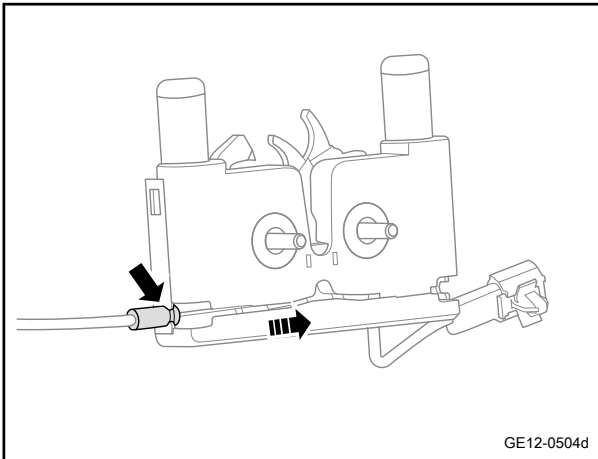
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

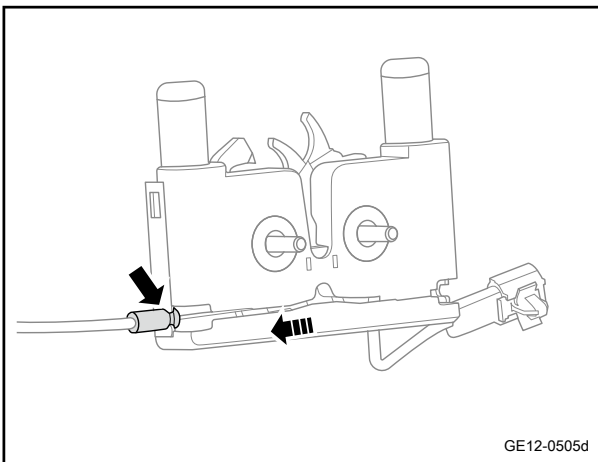
- 2 Remove the front engine compartment trim cover assembly. Refer to [Replacement of Front engine Compartment Trim Cover Assembly](#)
- 3 Disconnect the front engine compartment cover lock assembly harness connector 1.
- 4 Remove the 2 fixing bolts 2 of the front engine compartment cover lock assembly.



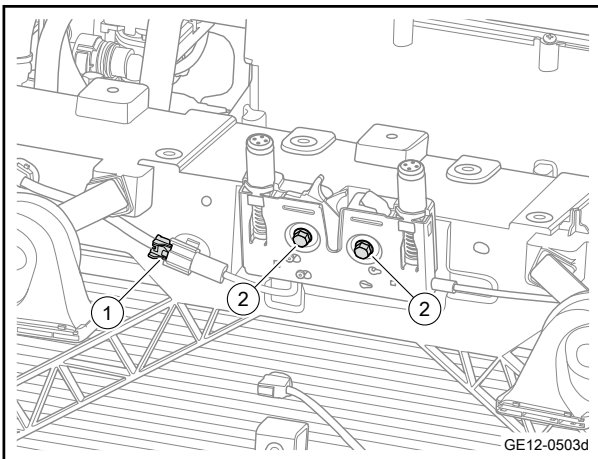


- 5 Disconnect the lock release cable of the front engine compartment cover.
- 6 Remove the front engine compartment cover lock assembly.

Installation procedure



- 1 Move the front engine compartment cover lock lock assembly to the installation position.
- 2 Connect the lock release cable of the front engine compartment cover.

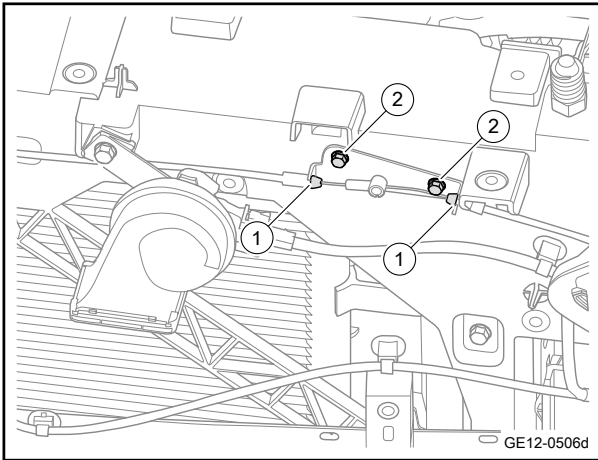


- 3 Install the 2 fixing bolts 2 of the front engine compartment cover lock assembly.
Torque: 23N·m (metric system) 16.9lb-ft (Imperial system)
- 4 Connect the 1 harness connector 1 of the front engine compartment cover lock assembly.

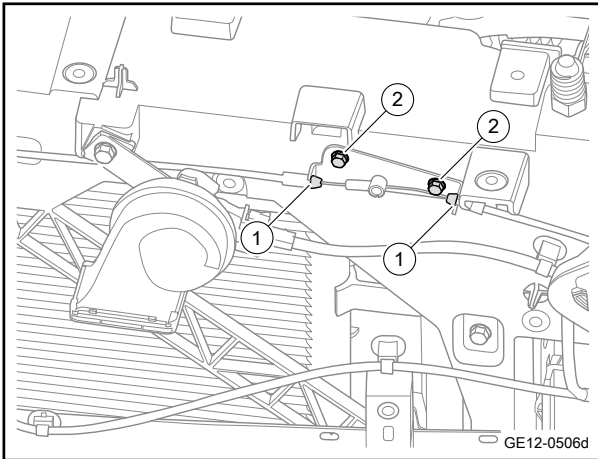
- 5 Install the front engine compartment trim cover assembly.
- 6 Connect the negative cable of battery.

12.2.3.3 Replacement of front engine compartment cover lock release cable fixing bracket

Removal procedure



- 1 Open the front engine compartment cover.
- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Disconnect the lock release cable 1 of the front engine compartment cover.
- 4 Remove 2 fixing screws 2 of front engine compartment cover lock release cable fixing bracket.
- 5 Take down front engine compartment cover lock release cable fixing bracket.



Installation procedure

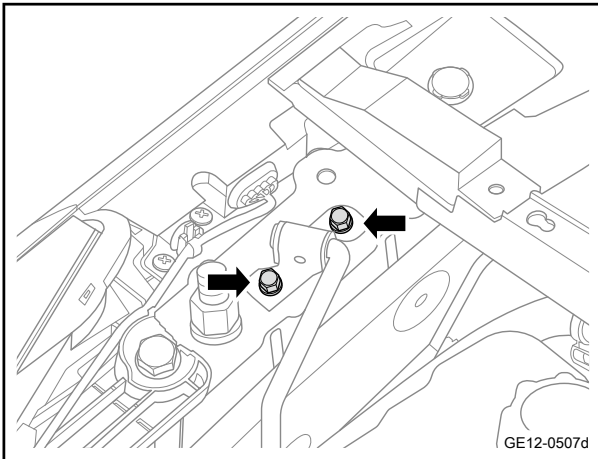
- 1 Move the front engine compartment cover release cable fixing bracket to the installation position.
- 2 Install 2 fixing screws 2 on front engine compartment cover lock release cable fixing bracket.
Torque: 4N·m (metric system) 3lb-ft (Imperial system)
- 3 Connect the lock release cable 1 of the front engine compartment cover.

- 4 Install the front bumper assembly.
- 5 Close the front engine compartment cover.

12.2.3.4 Replacement of front engine compartment cover support rod assembly

Removal procedure

- 1 Open the front engine compartment cover.
- 2 Remove the front engine compartment trim cover assembly. Refer to [Replacement of Front engine Compartment Trim Cover Assembly](#)

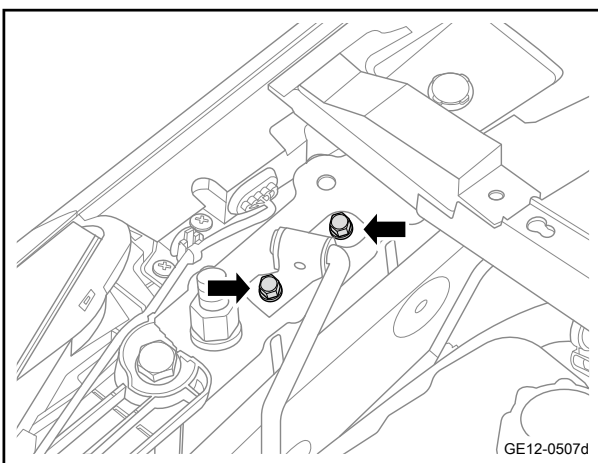


- 3 Remove front engine compartment cover support rod assembly two fixing bolts.

Caution

Let the assistant support the front compartment cover before the removal.

- 4 Remove the front engine compartment cover support rod assembly.



Installation procedure

- 1 Move the front engine compartment cover support rod assembly to the mounting position.
- 2 Install front engine compartment cover support rod assembly two fixing bolts.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 3 Install the front engine compartment trim cover assembly.
- 4 Close the front engine compartment cover.

12.2.3.5 Replacement of left front fender

Removal procedure

Note

Replacement at left and right sides are performed in the same way.

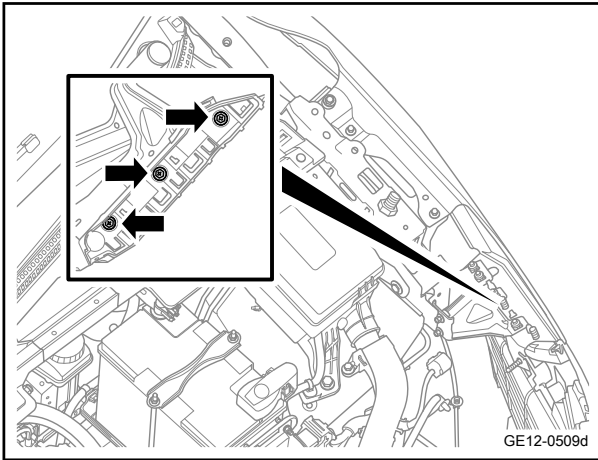
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

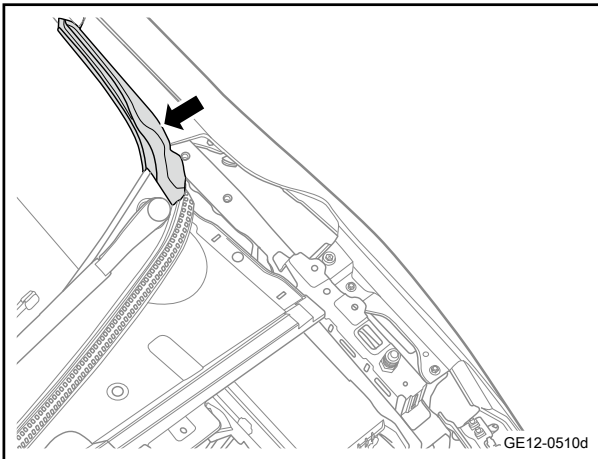
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the left front wheel brow assembly. Refer to [Replacement of front left wheel brow assembly](#)

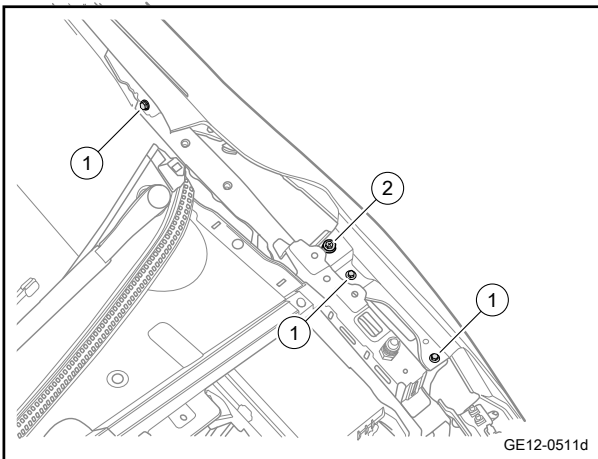
- 4 Remove the left front fender liner. Refer to [Replacement of Left Front Fender Liner](#)
- 5 Remove the left front combination lights. Refer to [Replacement of left front combination lights](#)
- 6 Remove the 3 fixing bolts connecting left front fender and the front bumper.

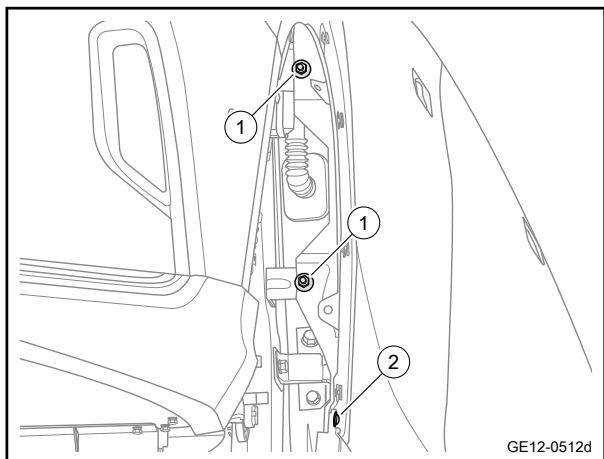


- 7 Remove the left corner trim panel of ventilation cover plate.



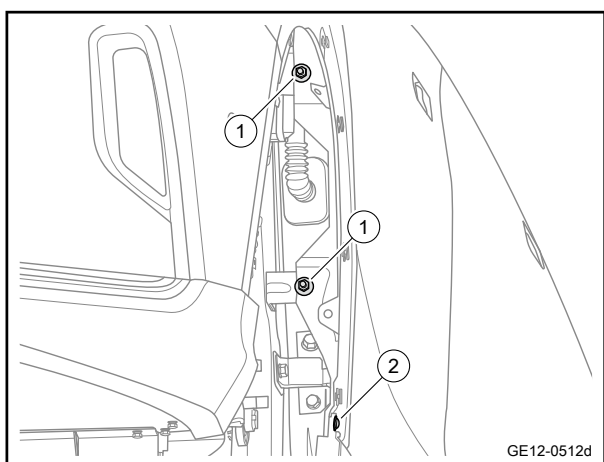
- 8 Remove the 3 fixing bolts 1 connecting left front fender and the vehicle body.
- 9 Remove the 1 fixing bolt 2 connecting left front fender and the vehicle body.



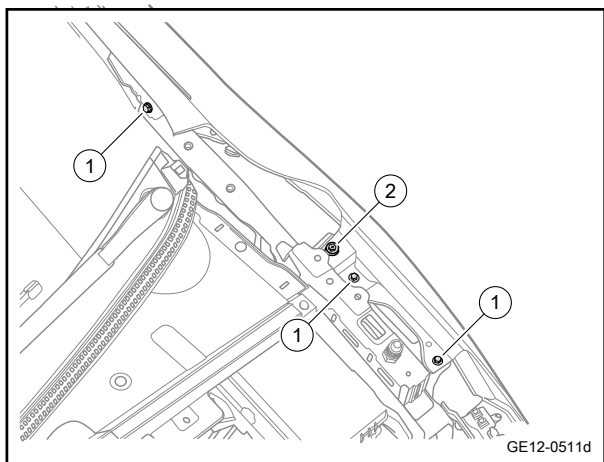


- 10 Remove the 2 fixing nuts 1 of the front left fender and rear mounting bracket.
- 11 Remove the 1 fixing bolt 2 connecting left front fender and the lower trim panel of left outer rocker panel.
- 12 Take off the front left fender.

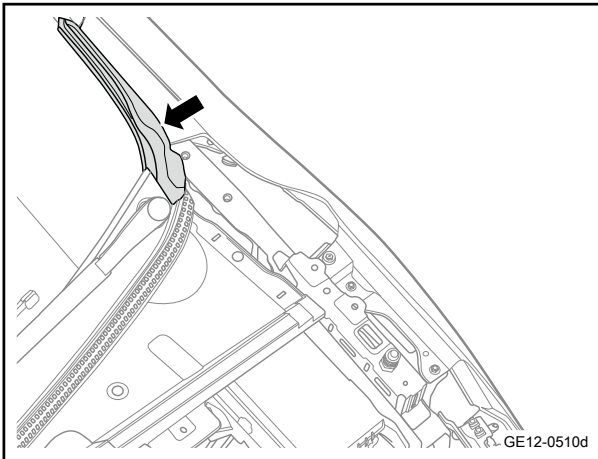
Installation procedure



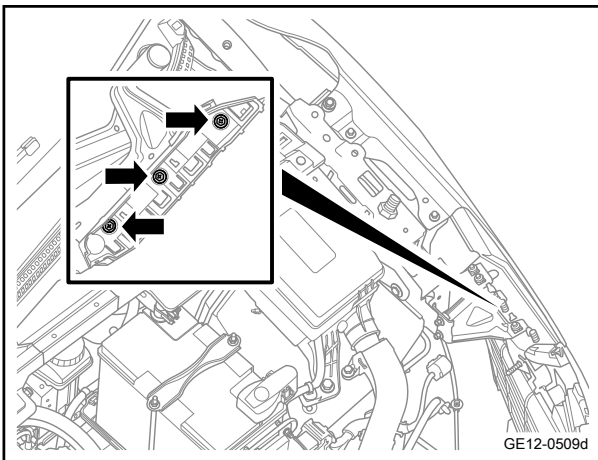
- 1 Move the left front fender to the installation position.
- 2 Install the 1 fixing bolt 2 connecting left front fender and the lower trim panel of left outer rocker panel.
Torque: 1.5N.m (metric system) 1.1lb-ft (Imperial system)
- 3 Install the 2 fixing nuts 1 connecting left front fender and the rear mounting bracket.
Torque: 10N.m (metric system) 7.4lb-ft (Imperial system)



- 4 Install the 1 fixing bolt 2 connecting left front fender and the vehicle body.
Torque: 1.5N.m (metric system) 1.1lb-ft (Imperial system)
- 5 Install the 3 fixing bolts 1 connecting left front fender and the vehicle body.
Torque: 10N.m (metric system) 7.4lb-ft (Imperial system)



- 6 Install the left corner trim panel of the ventilation cover plate.



- 7 Install the 3 fixing bolts connecting left front fender and the front bumper.
Torque: 6N.m (metric system) 4.4lb-ft (Imperial system)

- 8 Install the front left combination lights.
- 9 Install the left front fender liner.
- 10 Install the front left wheel brow assembly.
- 11 Lower the vehicle.
- 12 Connect the negative cable of battery.

12.2.3.6 Replacement of DC Charging Port Cover Assembly

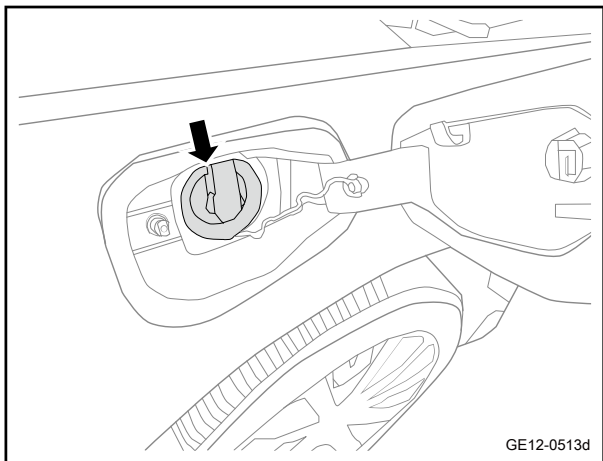
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

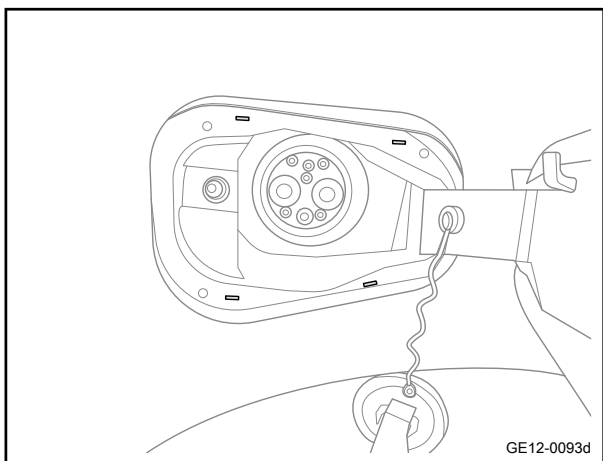
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

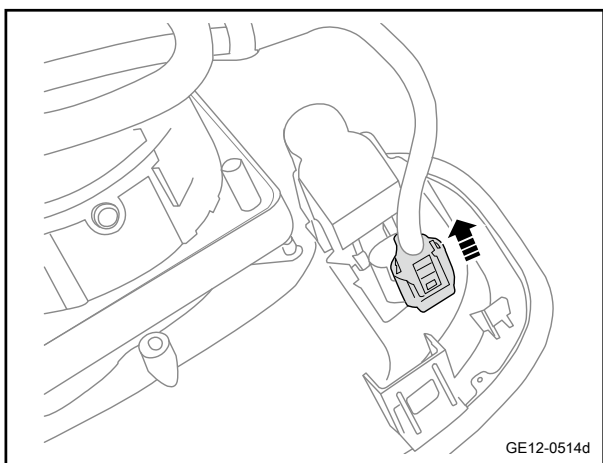
- 2 Open the outer plate of the DC charging port.
- 3 Take off the inner blanking plug of the DC charging port.

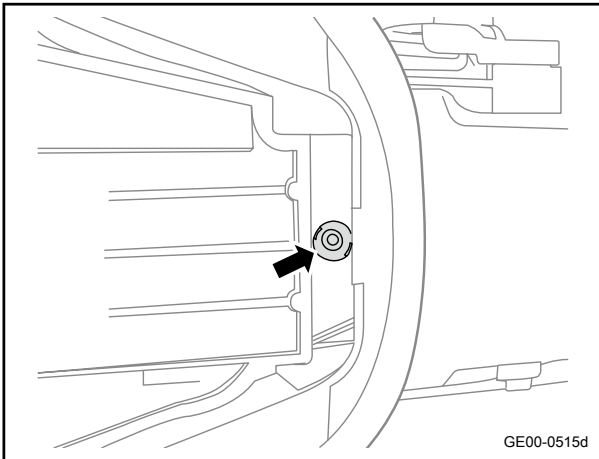


- 4 Pry off the DC charging port cover assembly.



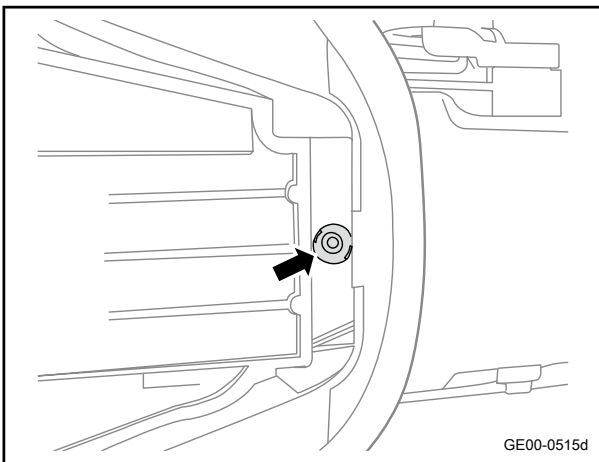
- 5 Disconnect the DC charging port cover assembly harness connector.



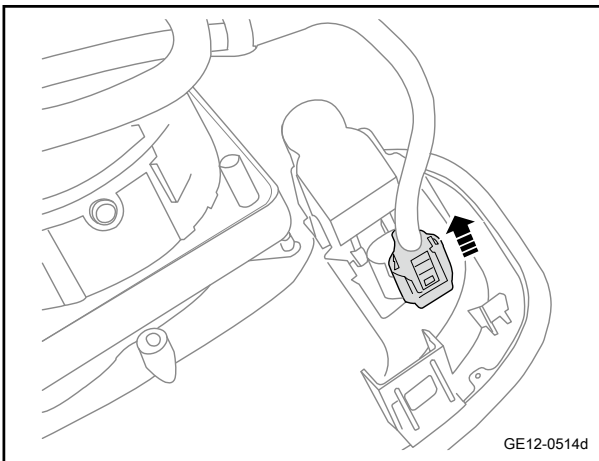


- 6 Remove the fixing clip between the DC charging port cover assembly and the DC charging socket.
- 7 Take off the DC charging port cover assembly.

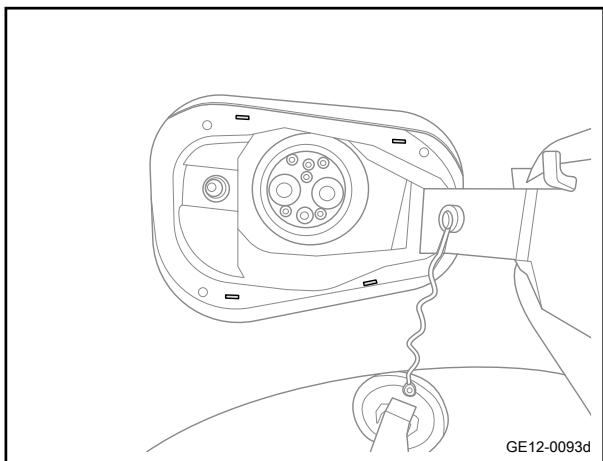
Installation procedure



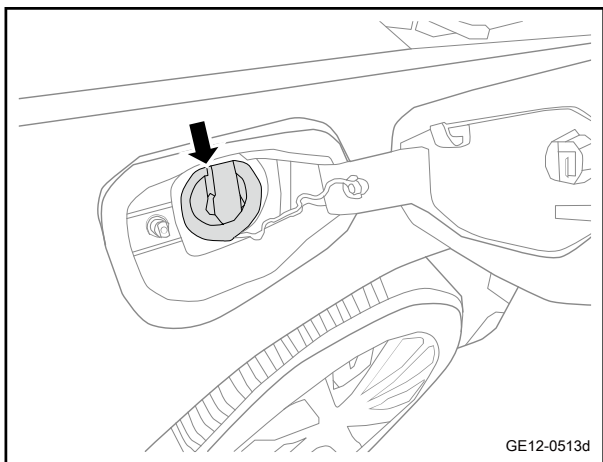
- 1 Move the DC charging port cover assembly to the installation position.
- 2 Install the fixing clip between the DC charging port cover assembly and the DC charging socket.



- 3 Connect the DC charging port cover assembly harness connector.



4 Clamp the DC charging port cover assembly.



5 Install the inner plug cover of the DC charging port.

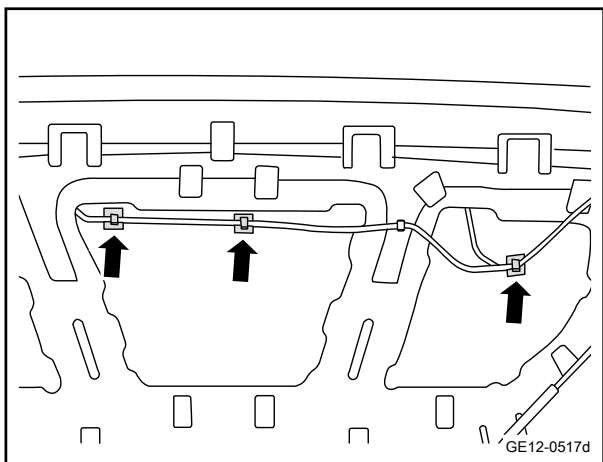
6 Install the outer cover plate of the DC charging port.

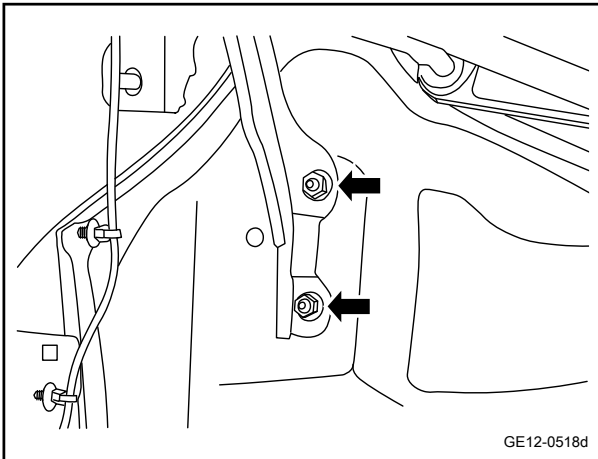
7 Connect the negative cable of battery.

12.2.3.7 Replacement of front engine compartment cover assembly

Removal procedure

- 1 Open the front engine compartment cover.
- 2 Remove the front washer nozzle assembly. Refer to [Replacement of Front Washer Nozzle Assembly](#)
- 3 Disconnect the washer hose from the front engine compartment cover assembly.





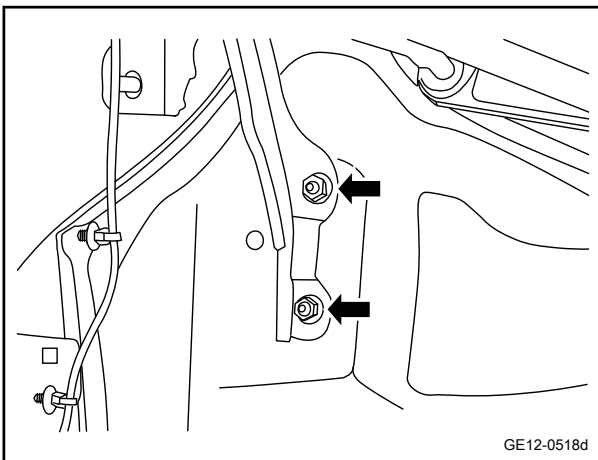
- 4 Remove the 2 fixing nuts connecting the front engine compartment cover assembly and left and right hinge assemblies each.

Caution

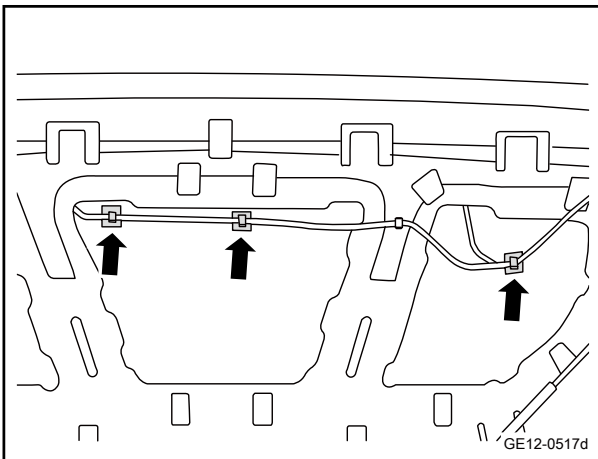
An assistant is required to support the front compartment cover.

- 5 Front engine compartment cover assembly is removed.

Installation procedure



- 1 Move the front engine compartment cover to the installation position.
- 2 Install and tighten the 2 fixing nuts connecting the front engine compartment cover assembly and left and right hinge assemblies each.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)



- 3 Install the washer hose of front engine compartment cover assembly

- 4 Install the front washer nozzle assembly.
- 5 Close the front engine compartment cover.

12.2.3.8 Replacement of front engine compartment cover left hinge assembly

Removal procedure

Note

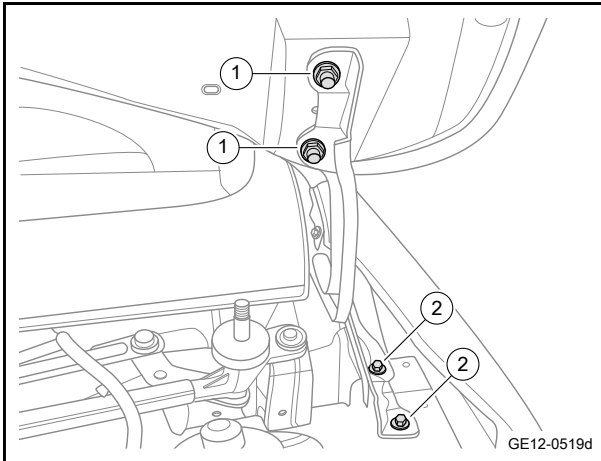
Replacement at left and right sides are performed in the same way.

- 1 Open the front engine compartment cover.
- 2 Remove the upper trim panel of the left fender. Refer to [Replacement of Upper Trim Panel of the Left Fender](#)
- 3 Remove 2 fixing nuts 1 connecting the front compartment cover left hinge assembly and front compartment cover.

Caution

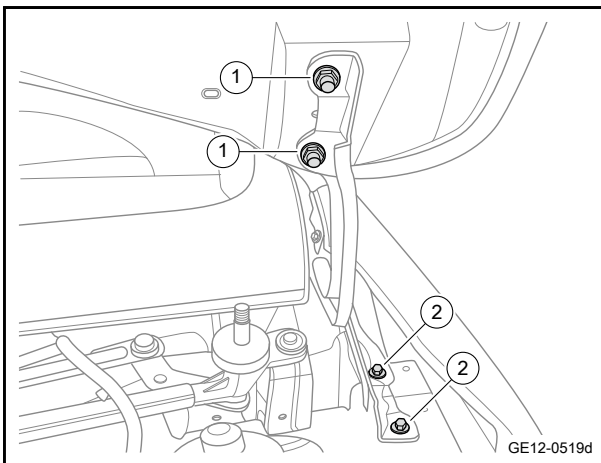
An assistant is required to support the front compartment cover.

- 4 Remove 2 fixing bolts 2 connecting the front compartment cover left hinge assembly and the vehicle body.
- 5 Remove the front compartment cover left hinge assembly.



Installation procedure

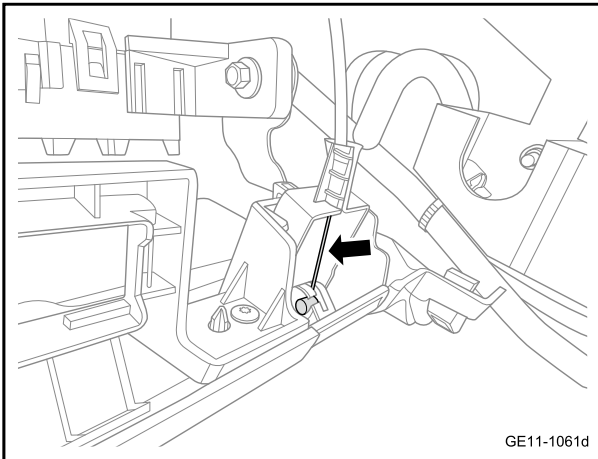
- 1 Move the front compartment cover left hinge assembly to the installation position.
- 2 Install 2 fixing bolts 2 connecting the front compartment cover left hinge assembly and the vehicle body.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)
- 3 Install the 2 fixing nuts 1 of the front engine compartment cover left hinge assembly and front engine compartment cover.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)



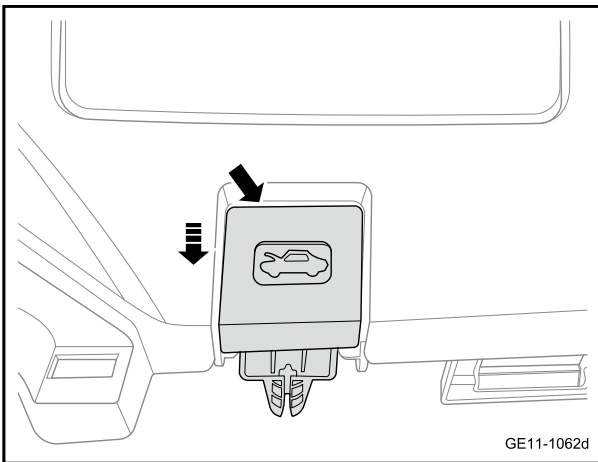
- 4 Install the upper trim panel of the left fender.
- 5 Close the front engine compartment cover.

12.2.3.9 Replacement of engine hood lock opening cable assembly

Removal procedure

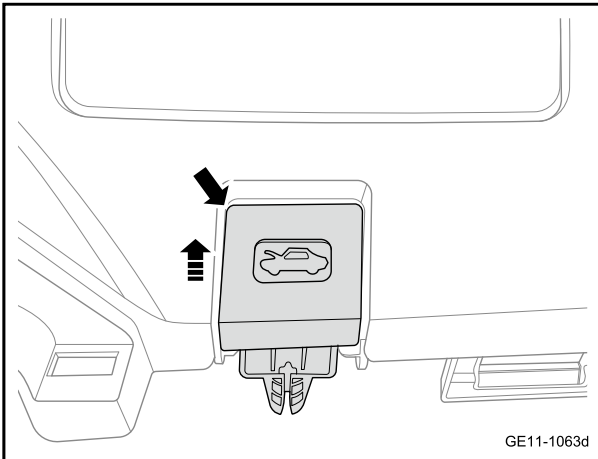


- 1 Disconnect engine hood lock release cable and engine hood lock opening handle assembly.

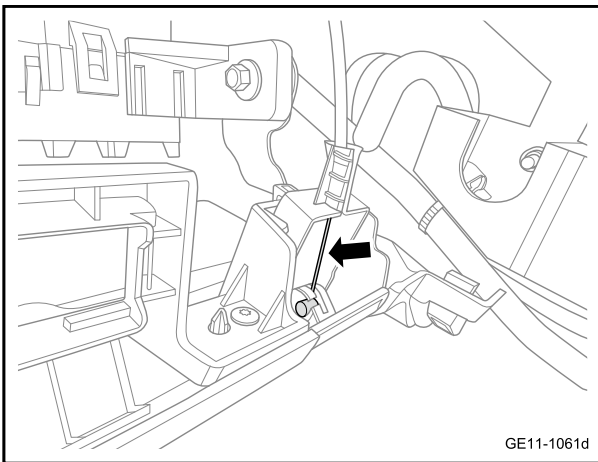


- 2 Pry off downward the engine hood lock opening handle assembly.

Installation procedure



- 1 Install the engine hood lock opening handle assembly to the lower left shield of the dashboard.



- 2 Connect the engine hood lock release cable and the engine hood lock opening handle.

12.3 Body Rear End

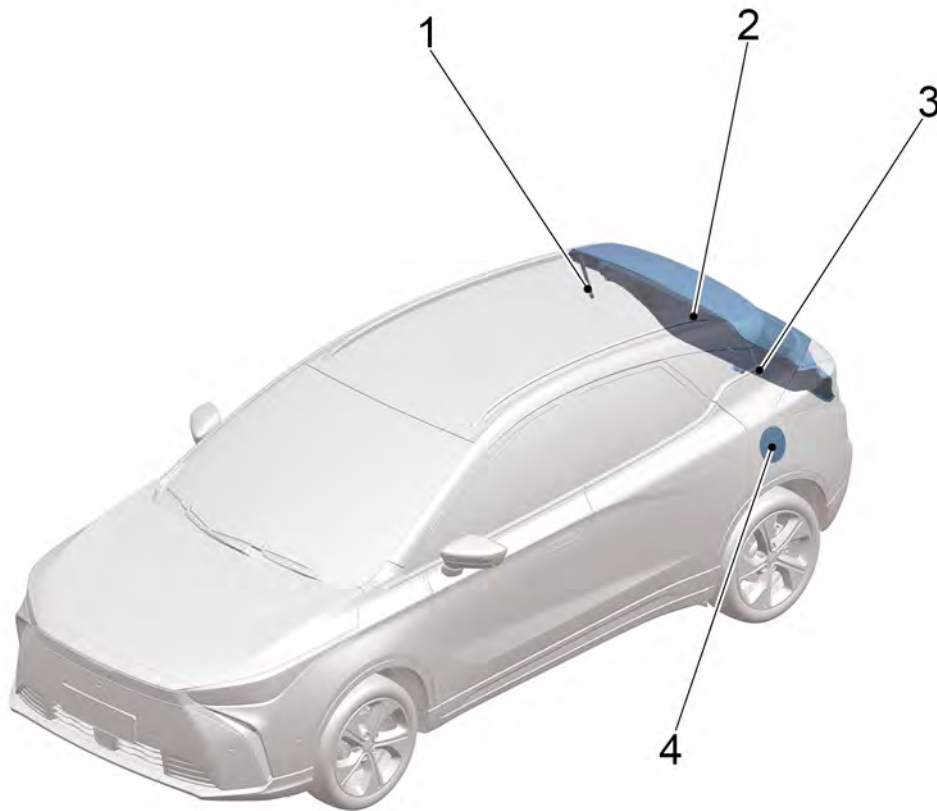
12.3.1 Specification

12.3.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing bolt connecting the tailgate assembly with the tailgate hinge	M8×20	20-26

12.3.2 Part position

12.3.2.1 Part Position



1. Back door right gas spring assembly

2. Back door assembly

3. Back door left gas spring assembly

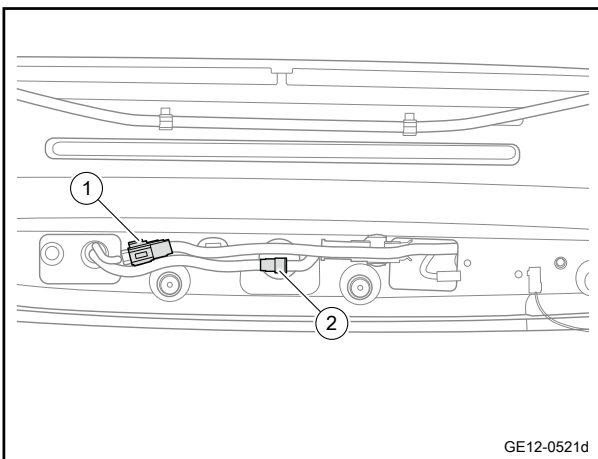
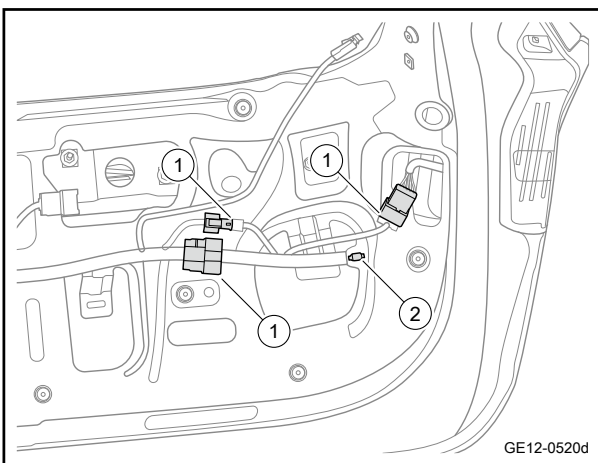
4. AC charging port cover exterior panel

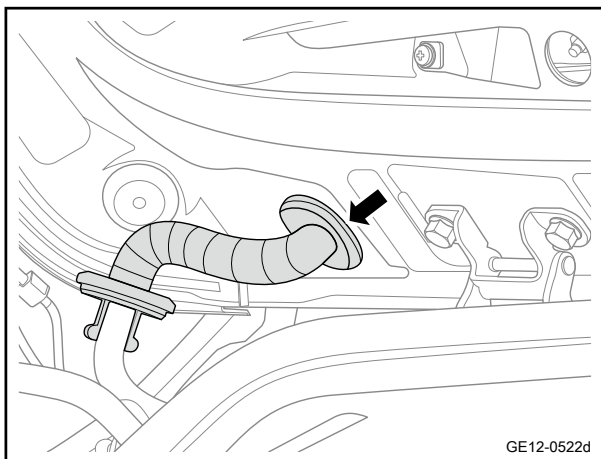
12.3.3 Removing and installing

12.3.3.1 Replacement of tailgate assembly

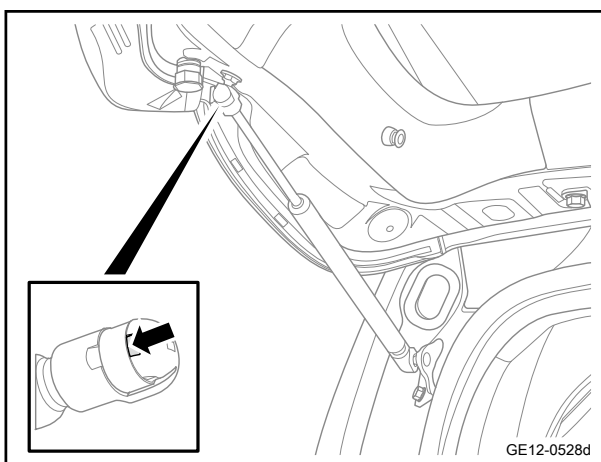
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the lower interior trim panel of the tailgate. Refer to [Replacement of tailgate lower interior trim panel assembly](#)
- 3 Disconnect the harness connector 1 of tail gate.
- 4 Disengage retaining clip 2 of tail gate harness connector.
- 5 Disconnect the high-mounted stop light harness connector 1.
- 6 Disconnect the rear washer nozzle assembly from the rear washer hose 2.

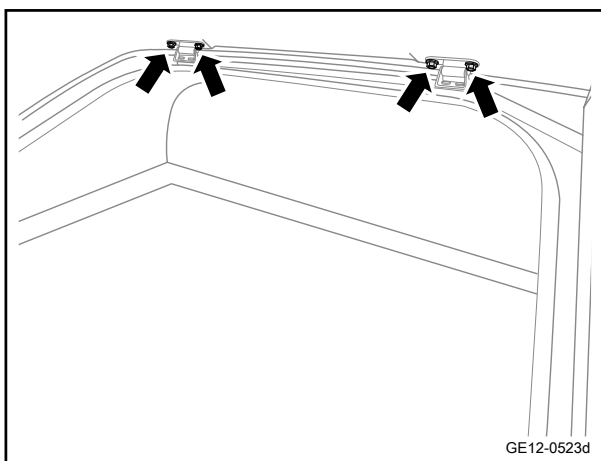




7 Pull the tailgate harness out of the tailgate.



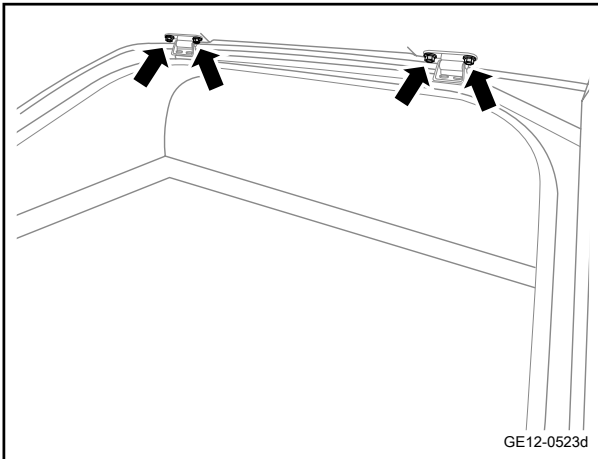
8 Use a straight screwdriver to remove the upper clamp springs of the left and right air spring assemblies of the tailgate, and disconnect the left and right air spring assemblies from the tailgate assembly.



9 Remove the 4 fixing bolts connecting the tailgate assembly with the tailgate hinge.

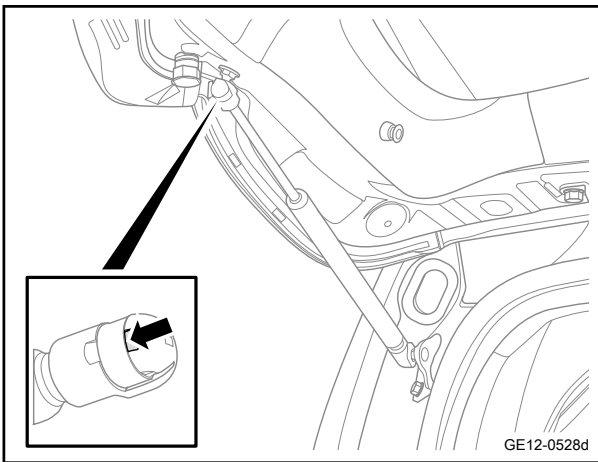
10 Remove the tailgate assembly.

Installation procedure

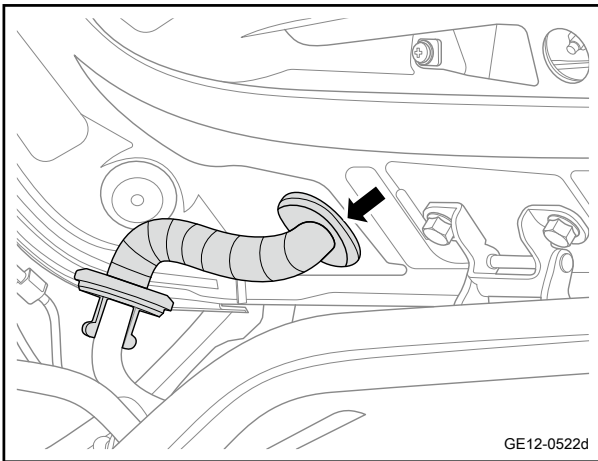


- 1 Move the tailgate assembly to the installation position.
- 2 Install the 4 fixing bolts connecting the tailgate assembly with the tailgate hinge.

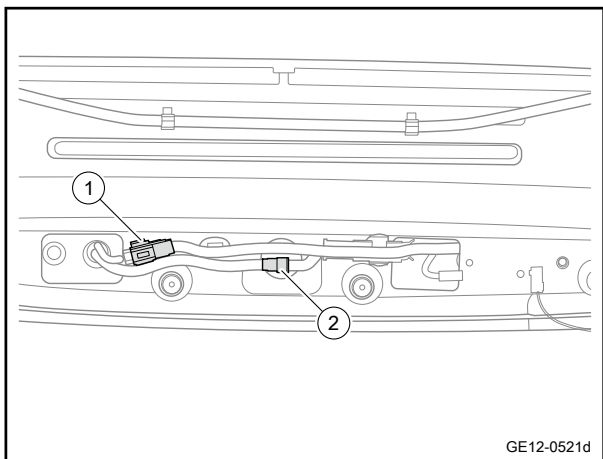
Torque: 23N·m (metric system) 17lb·ft (Imperial system)



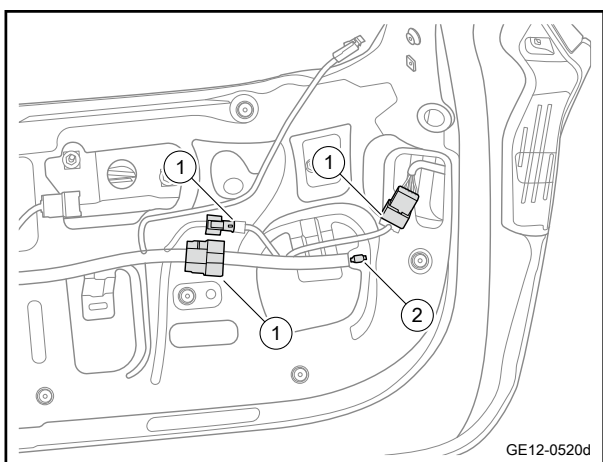
- 3 Connect the left and right air spring assembly to the tailgate assembly, and install the upper circlip of the left and right air spring assembly of the tailgate.



- 4 Move the tailgate assembly to the installation position.



- 5 Connect the rear washer nozzle assembly with the rear washer hose 2.
- 6 Connect high-mounted stop light harness connector 1.



- 7 Install the fastening clip 2 of the harness.
- 8 Connect the harness connector 1 of tail gate.

- 9 Install the tailgate lower trim panel assembly.
- 10 Connect the negative cable of battery.

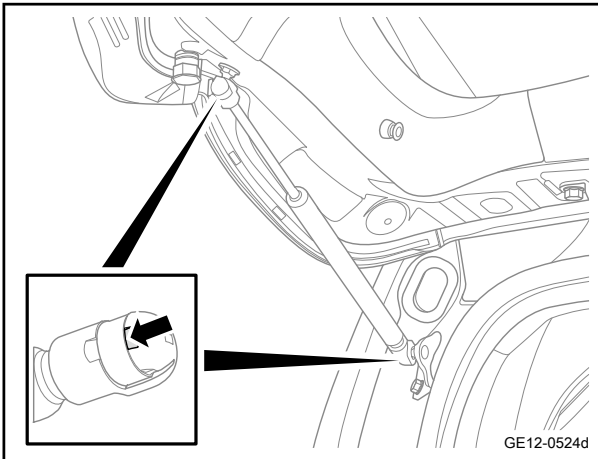
12.3.3.2 Replacement of tailgate left air spring assembly

Removal procedure

Note

Replacement at left and right sides are performed in the same way.

- 1 Open the tailgate.



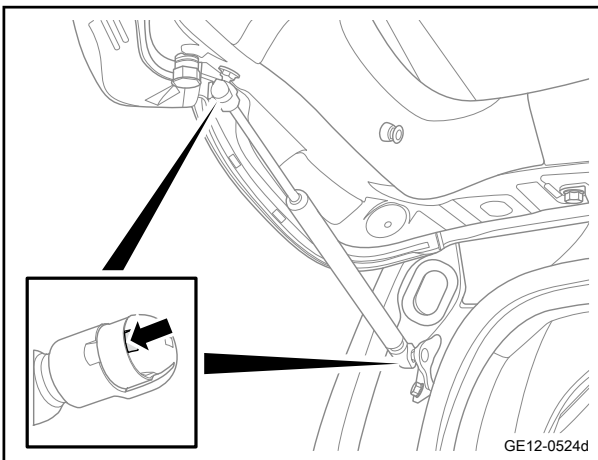
- 2 Use a straight screwdriver to remove the clamp springs at both ends of the left air spring assembly of the tailgate.

Caution

An assistant is required to support the tailgate.

- 3 Remove the tailgate left air spring assembly.

Installation procedure



- 1 Move the tailgate left air spring assembly to the installation position.
- 2 Install the clamp springs at both ends of the left air spring assembly of the tailgate.

- 3 Close the tailgate.

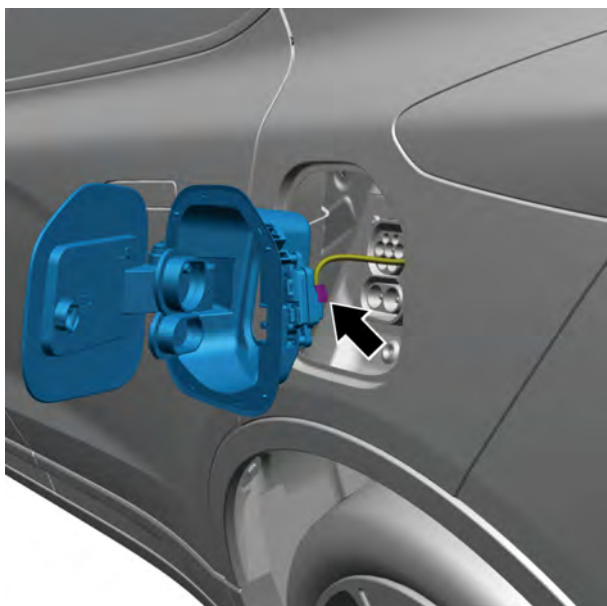
12.3.3.3 Replacement of Charging Port Cover Assembly

Removal procedure

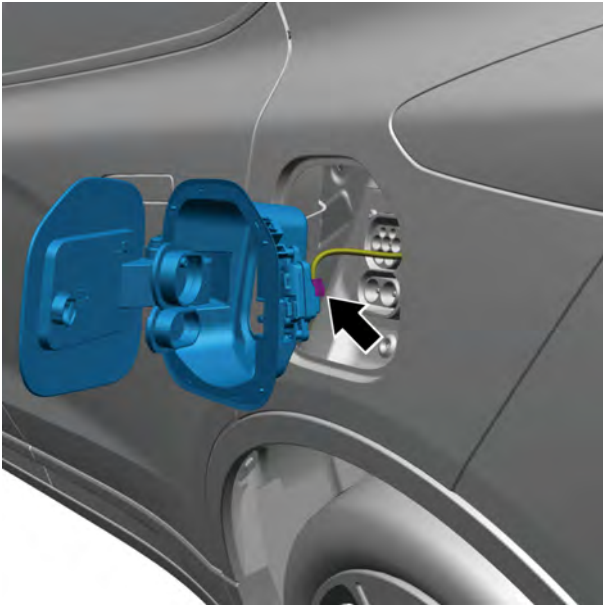
- 1 Disconnect the negative cable of battery. Refer to Disconnection and connection procedures for battery cable.
- 2 Open the outer plate of the charging port cover.
- 3 Charging port cover is removed.



- 4 Use a straight screwdriver to pry off the charging port cover.
- 5 Disconnect the 1 harness connectors connecting the floor harness with the charging port cover assembly.
- 6 Take off the charging port cover assembly.



Installation procedure



- 1 Move the charging port cover assembly to the installation position.
- 2 Connect the 1 harness connectors connecting the floor harness with the charging port cover assembly.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 3 Install the charging port cover assembly.



- 4 Install the charging port cover.
- 5 Close the outer plate of the charging port cover.

- 6 Connect the negative cable of battery.

12.3.3.4 Replacement of AC Charging Port Cover Assembly

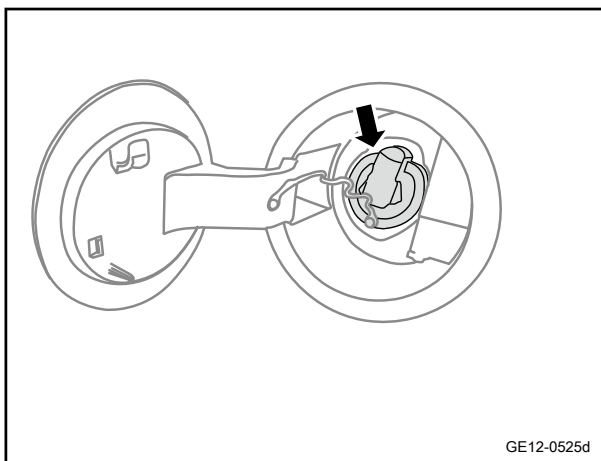
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

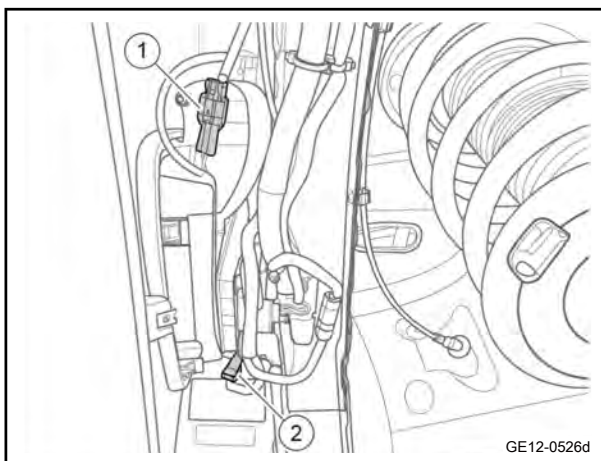
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

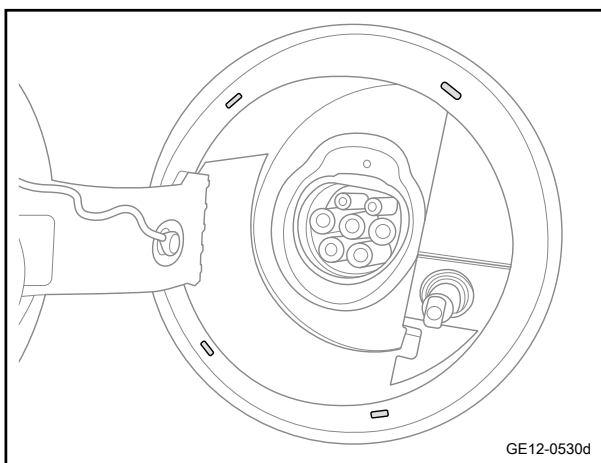
- 2 Open the outer panel of the AC charging port.
- 3 Take off the inner blanking plug of the AC charging port.



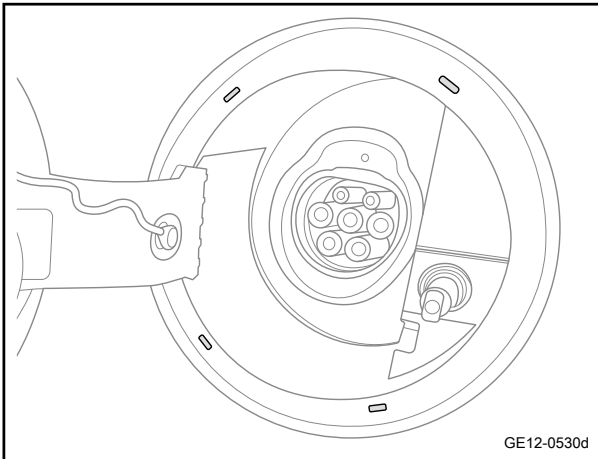
- 4 Disconnect the AC charging port cover indicator switch harness connector 1 and the charging port cover actuator harness connector 2.



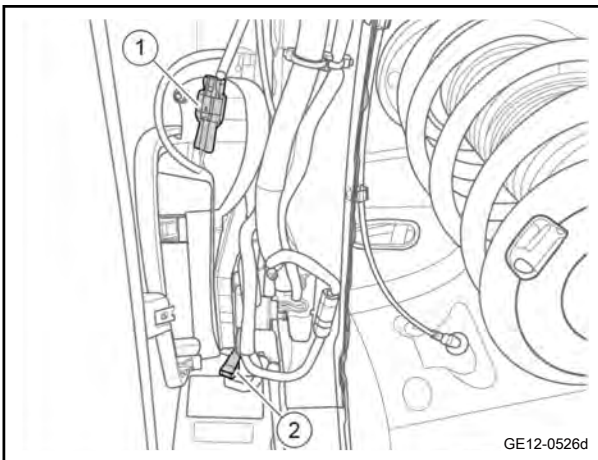
- 5 Pry off the AC charging port cover assembly with a flat screwdriver.



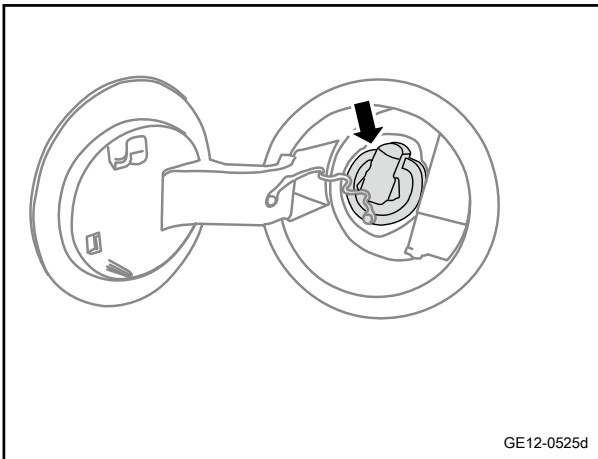
Installation procedure



- 1 Move the AC charging port cover assembly to the installation position.
- 2 Clamp the AC charging port cover assembly.



- 3 Connect the AC charging port cover indicator switch harness connector 1 and the charging port cover actuator harness connector 2.



- 4 Install the inner blanking plug of the AC charging port.

- 5 Close the outer plate of the AC charging port.
- 6 Connect the negative cable of battery.

12.4 Bumper

12.4.1 Specification

12.4.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing screws for connecting the front bumper assembly and the mounting bracket of the front bumper	ST4.8×16	1.3-1.7
Fixing screws connecting the front fender liner with the front bumper assembly	ST4.8×16	1.3-1.7
Fixing bolts for connecting the front bumper assembly and the front combination lights assembly	ST4.8×16	1.3-1.7
Fixing bolt connecting the front bumper assembly and the anti-dive bracket of the front bumper	ST4.8×16	1.3-1.7
Fixing bolt for leg protection bracket for pedestrian	M6×35	8 -10
Front bumper left mounting bracket retaining bolt	M6×35	5-7
Fixing screws for connecting the rear bumper assembly and the mounting bracket of the rear bumper	ST4.8×16	1.3-1.7
Fixing screw of rear fender and rear bumper	ST4.8×16	1.3-1.7
Fixing screws for connecting the rear bumper and the rear fender liner cover plate	ST4.8×16	1.3-1.7
Fixing screw connecting the rear bumper and the vehicle body	ST4.8×16	1.3-1.7
Fixing bolts at both sides of front anti-intrusion beam assembly	M10×40	55-75
Fixing nuts at both sides of rear anti-intrusion beam assembly	M10	20-26
Fixing screws for connecting the front bumper lower body assembly and the the front bumper upper body	ST4.8×16	1.3-1.7
Fixing screws connecting the front bumper lower grill with the front bumper upper body assembly	ST4.8×16	1.3-1.7

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing screws connecting the front bumper middle bracket with the front bumper upper body assembly	ST4.8×16	1.3-1.7
Fixing screw connecting front headlamp supporting bracket and the front bumper upper body assembly	ST4.8×16	1.3-1.7
Install the 8 fixing screws connecting the front number plate mounting plate and the front bumper upper body assembly.	ST4.8×16	1.3-1.7
Fixing screws connecting the right ventilation pipe of the front bumper with the front bumper assembly	ST4.8×16	1.3-1.7
Fixing screws connecting the left ventilation pipe of the front bumper with the front bumper assembly	ST4.8×16	1.3-1.7

12.4.2 Part position

12.4.2.1 Part Position



1. Front bumper assembly

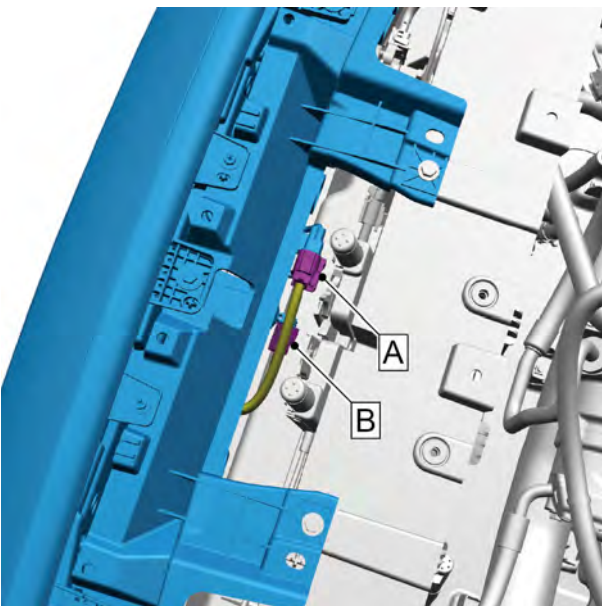
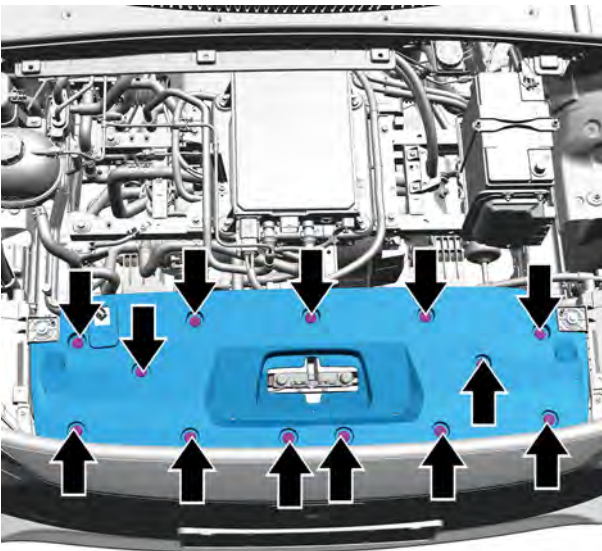
2. Rear bumper assembly

12.4.3 Removing and installing

12.4.3.1 Replacement of front bumper assembly

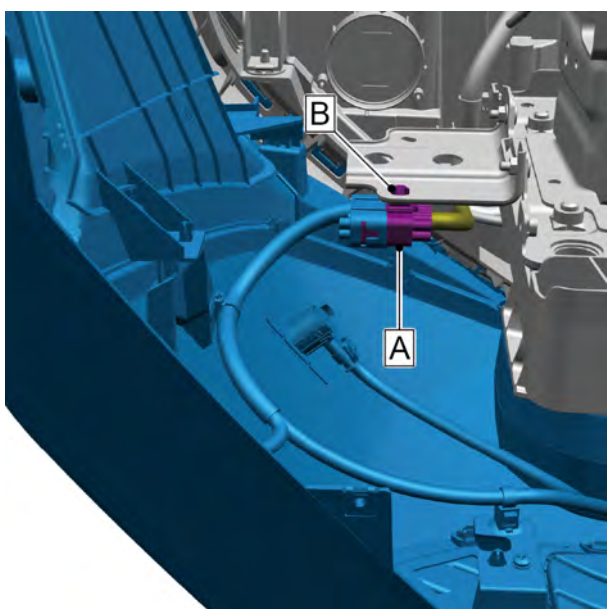
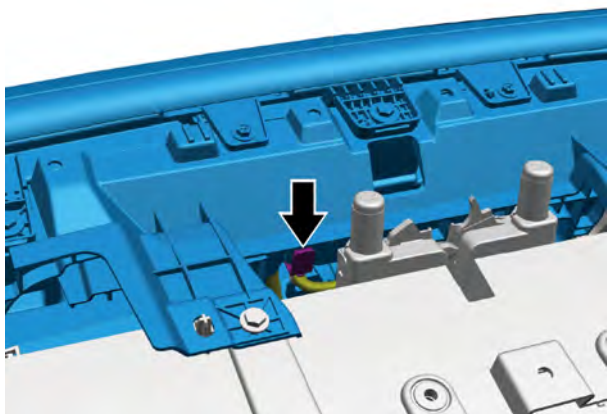
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the left and right wheel brow assembly. Refer to [Replacement of left front wheel brow assembly](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front Motor Compartment Bottom Shield](#)
- 5 Remove the 13 fixing clips on the upper trim panel of the front bumper and take off the upper trim panel of the front bumper.

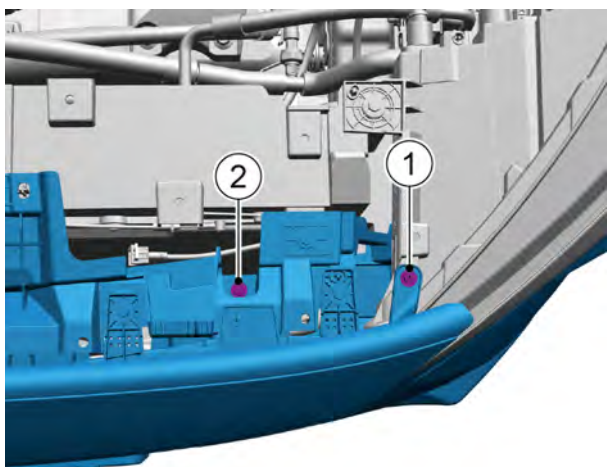


- 6 Disconnect the 1 harness connector A connecting the front compartment harness with the front middle position lamp.
- 7 Disconnect the 1 harness connector 1 connecting the front compartment harness with the 360 panoramic parking assist camera assembly.

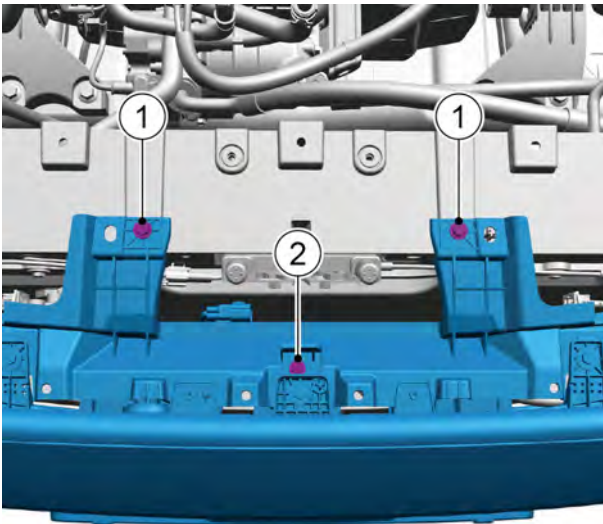
- 8 Disconnect the 1 clip connecting the front compartment harness with the front bumper assembly.



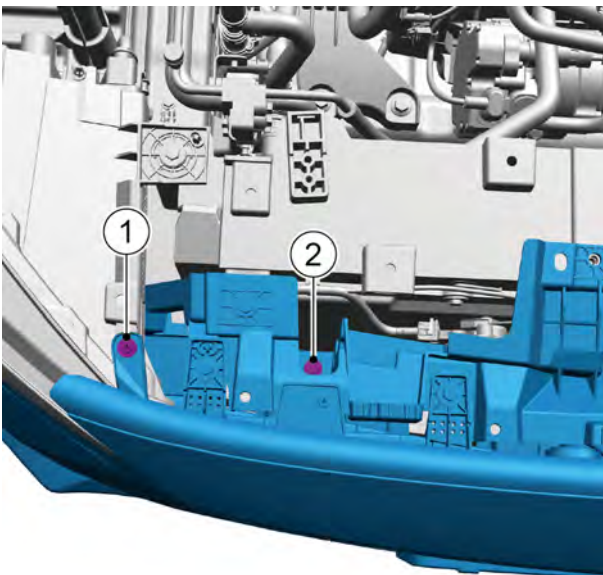
- 9 Disconnect the 1 harness connector A connecting the front compartment harness with the front bumper assembly.
- 10 Disconnect the 1 clip 2 connecting the front compartment harness bracket with the front compartment harness assembly



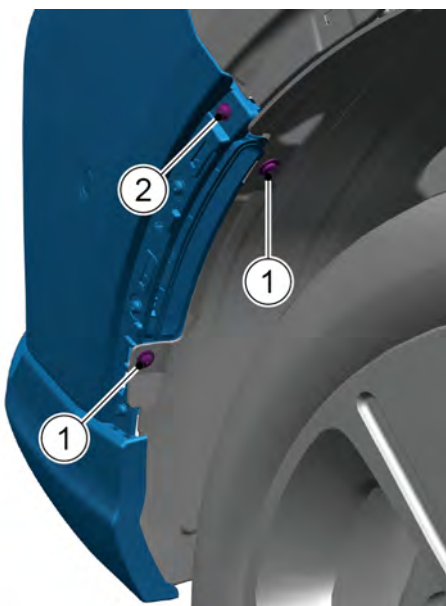
- 11 Remove the 1 fixing screw 1 of the front bumper assembly and left combination lights.
- 12 Remove the 1 fixing bolt 2 connecting the front bumper assembly and the front bumper anti-diving bracket.



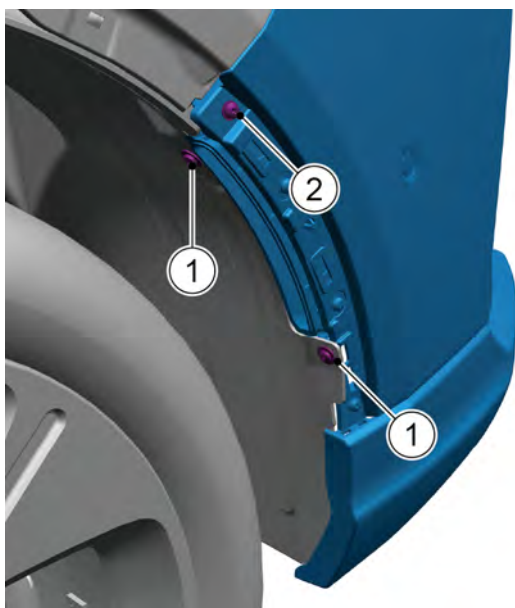
- 13 Remove the 2 fixing bolts 1 of the front bumper assembly front end module.
- 14 Remove the 1 fixing bolt 2 connecting the front bumper assembly and the front bumper anti-diving bracket.



- 15 Remove the 1 fixing screw 1 of the front bumper assembly and right front combination lights assembly.
- 16 Remove the 1 fixing screw 2 connecting the front bumper assembly and the front bumper anti-diving bracket.



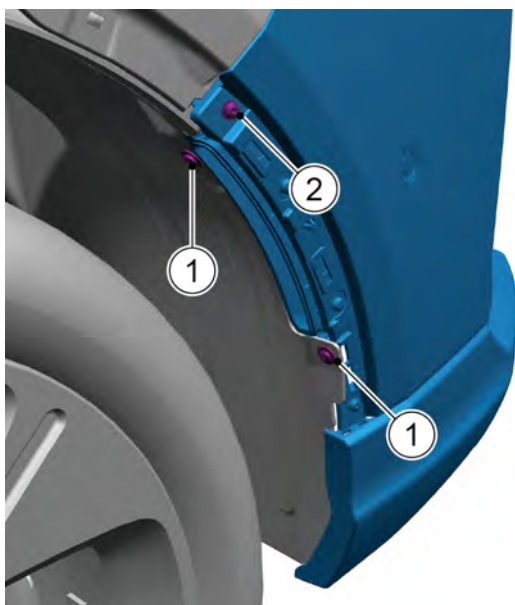
- 17 Remove 2 fixing screws 1 connecting the left front fender with the front bumper assembly
- 18 Remove the 1 fixing screw 2 connecting the front bumper and the left mounting bracket of the front bumper.



- 19 Remove the 2 fixing screws 1 connecting right front fender liner and the front bumper assembly.
- 20 Remove the 1 fixing screw 2 connecting the front bumper assembly and the left mounting bracket of the front bumper.
- 21 Remove the front bumper assembly.

Caution

Two people are required to take it down in coordination.



Installation procedure

- 1 Move the front bumper assembly to the installation position.

Caution

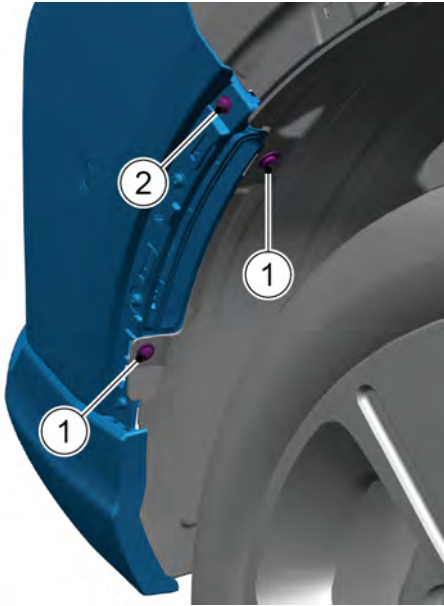
Two persons are required to install the vehicle in coordination.

- 2 Install and tighten the 1 fixing screw 2 connecting the rear bumper and the left upper mounting bracket of the front bumper.

Torque: 1.5N·m

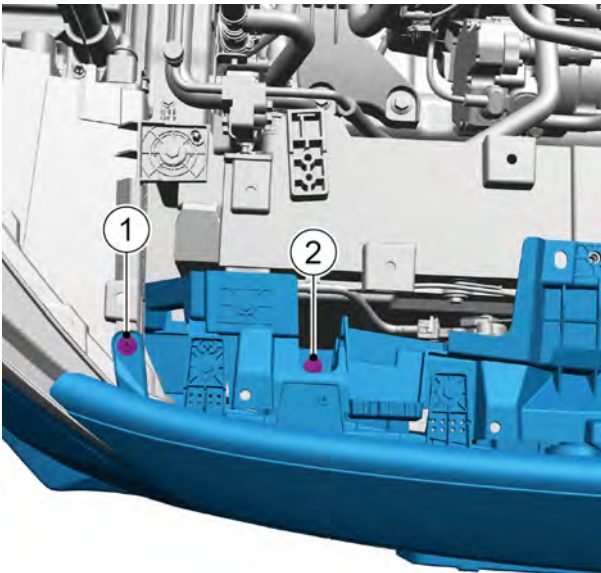
- 3 Install the 2 fixing screws 1 connecting the right front fender liner with the front bumper assembly.

Torque: 1.5N·m

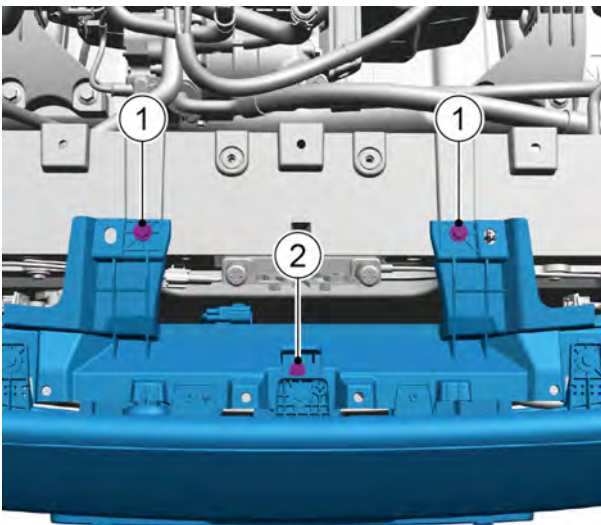


- 4 Install and tighten the 1 fixing screw 2 connecting the front bumper assembly and the left upper mounting bracket of the front bumper.
Torque: 1.5N·m

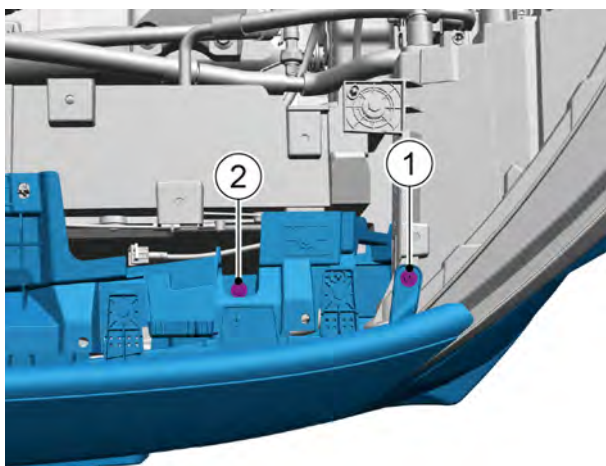
- 5 Install 2 fixing screws 1 connecting the left front fender liner with the front bumper assembly
Torque: 1.5N·m



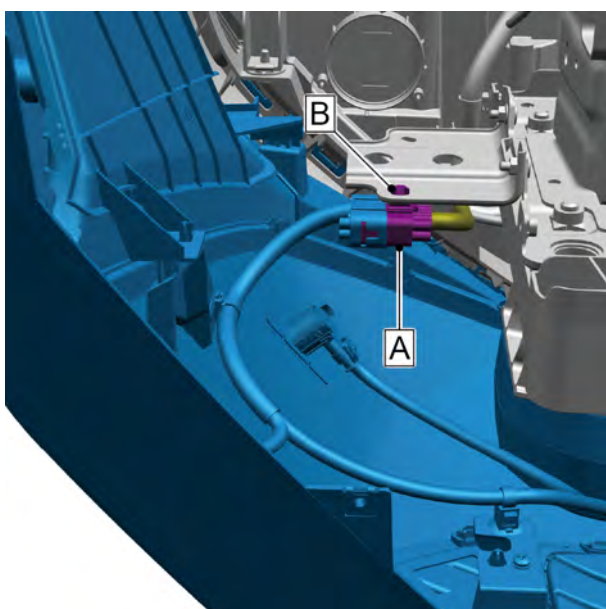
- 6 Install the 1 fixing bolt 2 connecting the front bumper assembly and the front bumper anti-diving bracket.
7 Install the 1 fixing screw 1 connecting the front bumper assembly and the right front combination lights assembly.
Torque: 1.5N·m



- 8 Install the 1 fixing screw 2 connecting the front bumper body and the front bumper anti-diving bracket.
9 Install and tighten the 2 fixing bolts 1 connecting the front bumper with the front end module.



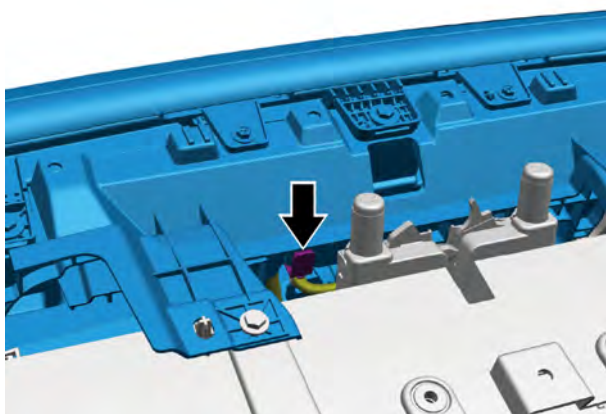
- 10 Install the 1 fixing bolt 2 connecting the front bumper assembly and the front bumper anti-diving bracket.
- 11 Install the 1 fixing screw 1 connecting the front bumper body and the left front combination lights.
Torque: 1.5N·m



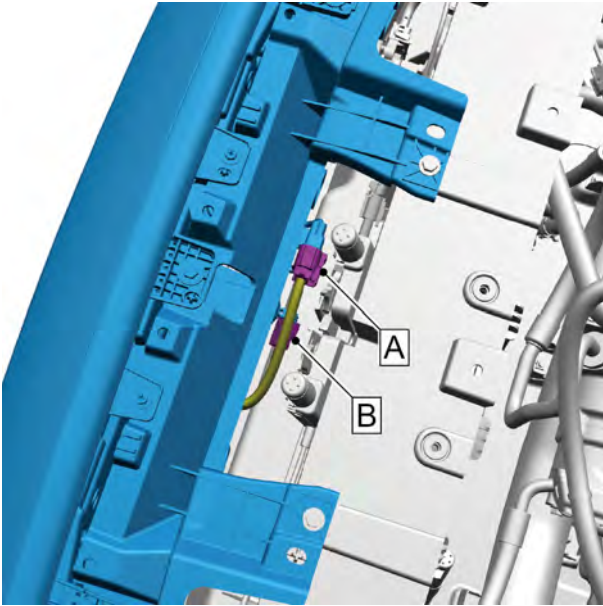
- 12 Install the 1 clip B connecting the front bumper harness with the front compartment harness bracket
- 13 Connect the harness connector A connecting the front bumper harness assembly and the front compartment harness assembly..

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



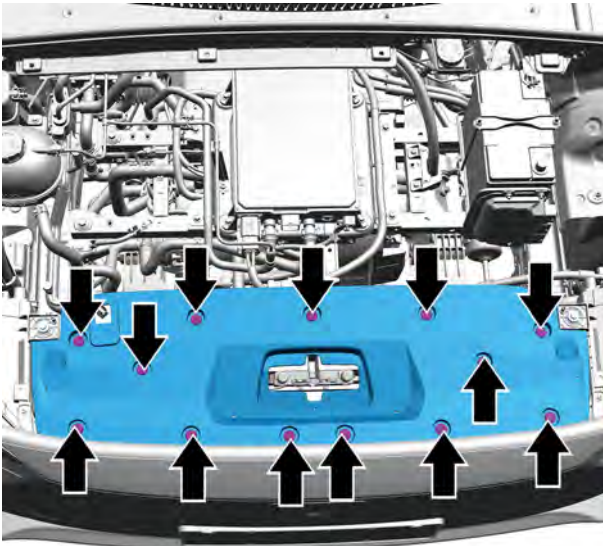
- 14 Install the 1 fixing clip of the front compartment harness and front bumper harness assembly.



- 15 Connect the 1 harness connector B connecting the front compartment harness with the 360 panoramic parking assist front camera assembly.
- 16 Connect the 1 harness connector A connecting the front compartment harness with front middle position lamp.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 17 Move the front bumper trim panel to the installation position. Install the 13 fixing clips of the upper trim plate of the front bumper.

- 18 Install the front engine compartment bottom shield.
- 19 Install the left and right rear wheel brow assembly.
- 20 Lower the vehicle.
- 21 Connect the negative cable of battery.
- 22 Perform the calibration procedure of the automatic parking module. Refer to [360 AVM calibration](#)

12.4.3.2 Replacement of the leg protection bracket for pedestrians

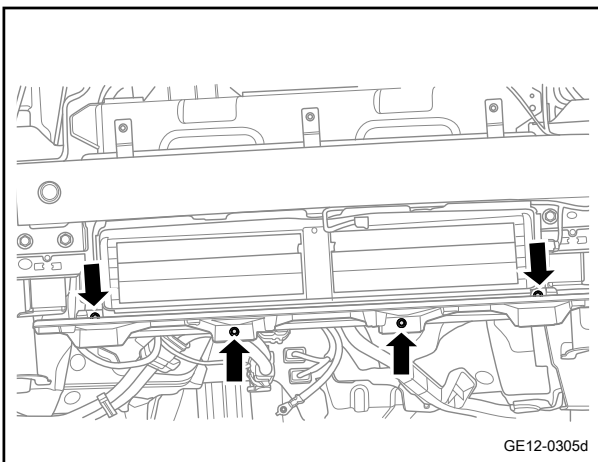
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

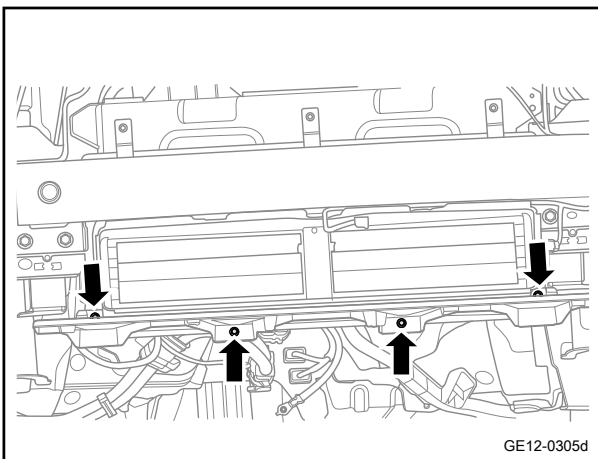
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 4 Remove the front engine compartment bottom shield. Refer to [Replacement of Front engine Compartment Bottom Shield](#)
- 5 Remove 4 fixing bolts from leg protection bracket for pedestrian.
- 6 Remove the pedestrian leg protection bracket.



Installation procedure

- 1 Move leg protection bracket for pedestrian to installation location
- 2 Install 4 fixing bolts of the leg protection bracket for pedestrians.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)



- 3 Install the front engine compartment bottom shield assembly.
- 4 Install the front bumper assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

12.4.3.3 Replacement of Front Bumper Buffer Block

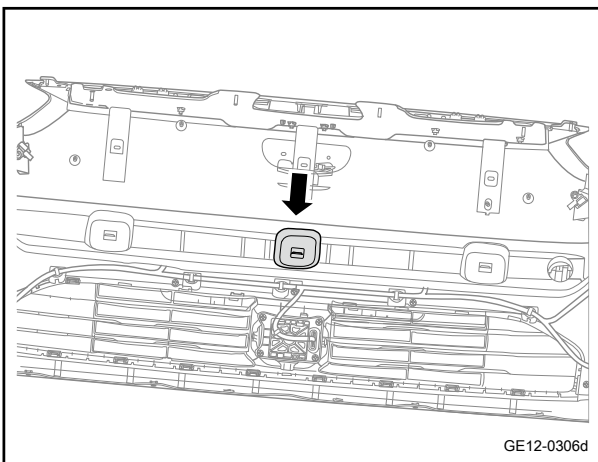
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

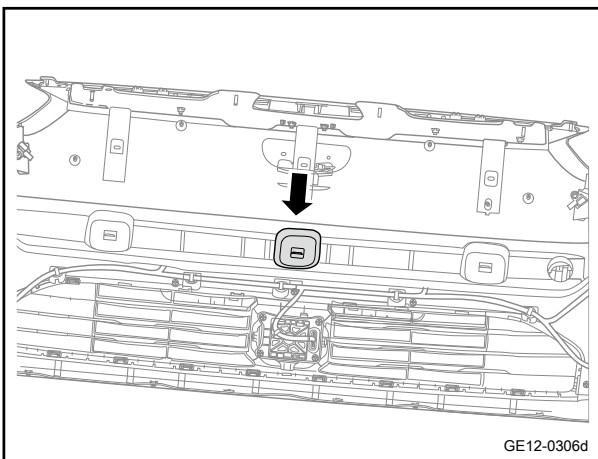
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 4 Take off the front bumper buffer block.



Installation procedure

- 1 Move the front bumper buffer block to the installation position.
- 2 Install front bumper buffer block.



- 3 Install the front bumper assembly.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

12.4.3.4 Replacement of Left Mounting Bracket of Front Bumper

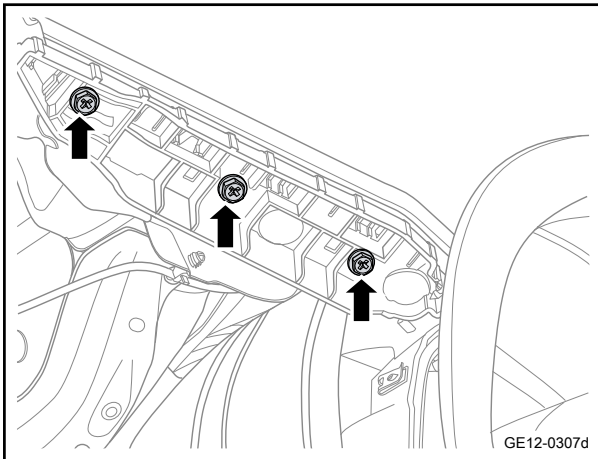
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

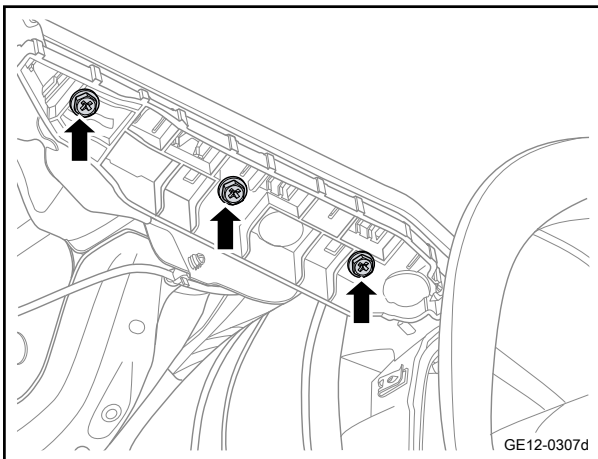
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 4 Remove 3 fixing bolts connecting the left mounting bracket of the front bumper.
- 5 Take off the left mounting bracket of the front bumper.



Installation procedure

- 1 Move the left mounting bracket of the front bumper to the installation position.
- 2 Install 3 fixing bolts for the front bumper left mounting bracket.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)



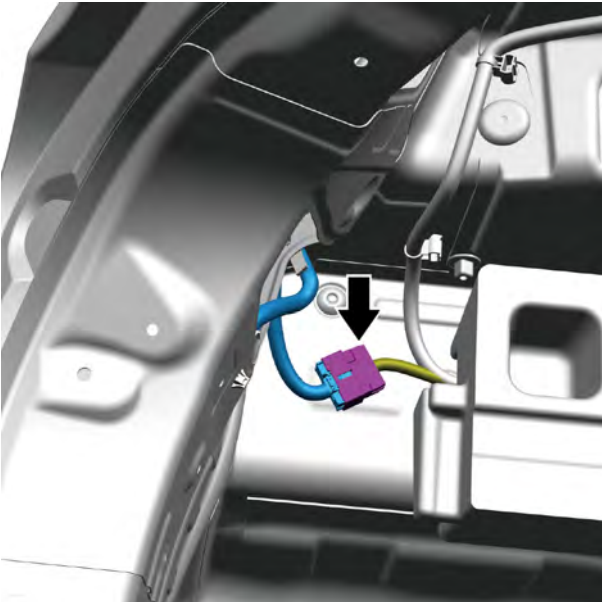
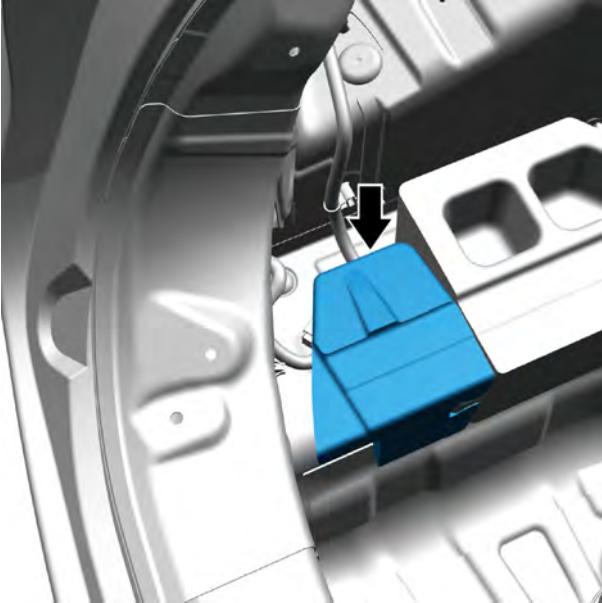
- 3 Install the front bumper assembly.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

12.4.3.5 Replacement of Rear Bumper

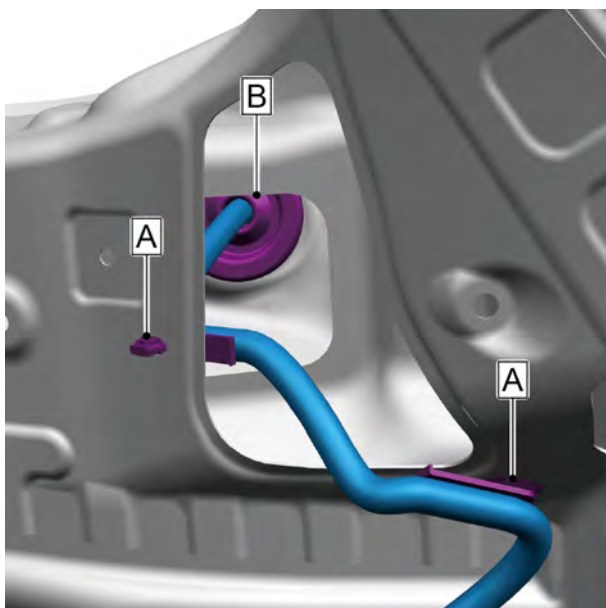
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)

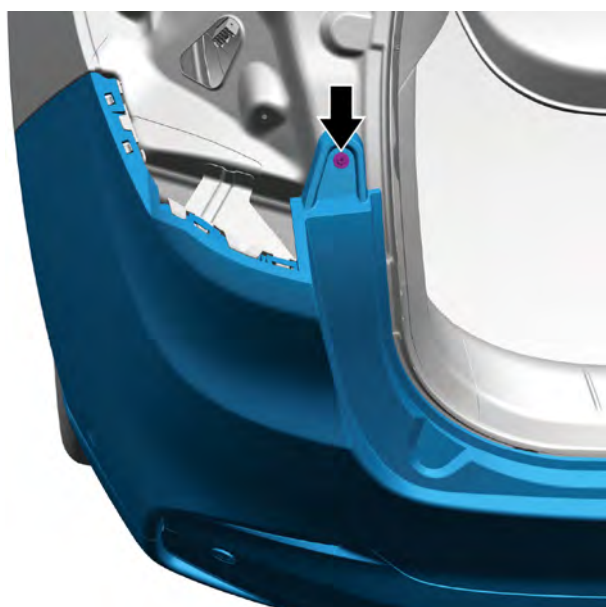
- 3 Remove the left and right wheel brow assembly. Refer to [Replacement of left rear wheel brow assembly](#).
- 4 Remove the access cover of the rear left side wall combination lights. Refer to [Replacement of Left Rear Side Wall Combination Lights](#)
- 5 Remove the trunk left trim panel assembly. Refer to [Replacement of left trim panel assembly of trunk](#)
- 6 Take out the left mounting liner of the trunk carpet from the trunk.



- 7 Disconnect the 1 harness connector of the floor harness assembly and rear bumper harness.



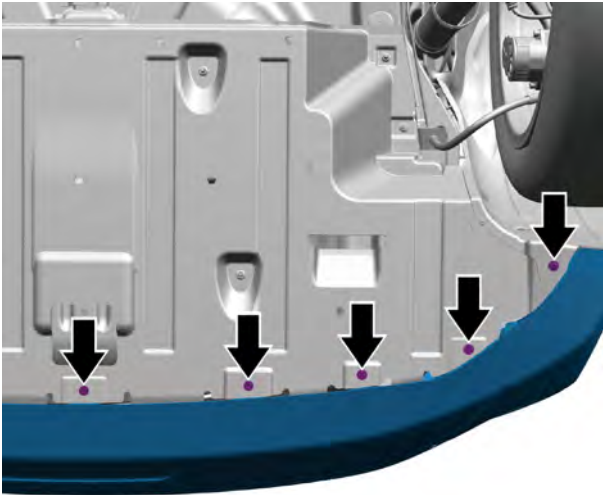
- 8 Disconnect the 2 fixing clips A connecting the rear bumper harness and the vehicle body.
- 9 Disconnect the 1 waterproof plug B connecting the rear bumper harness and the vehicle body.



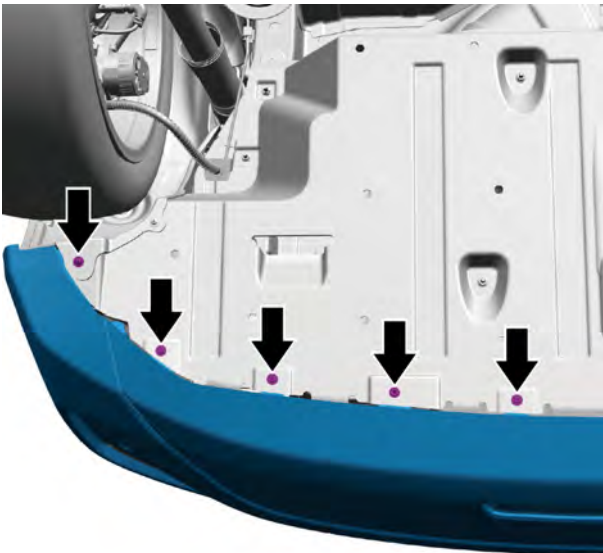
- 10 Remove the 1 fixing screw connecting the rear bumper and the left side of the vehicle body.



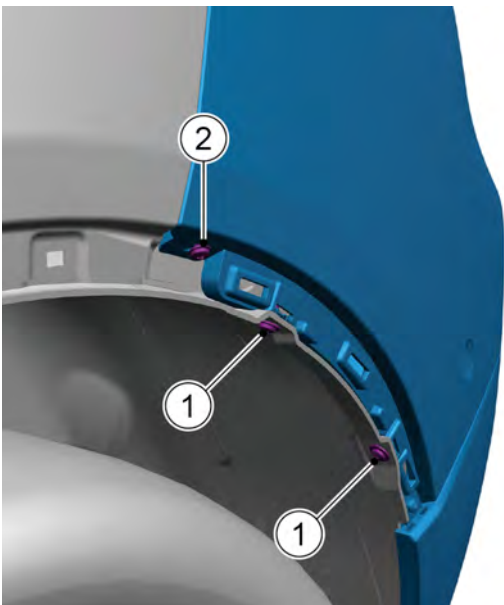
- 11 Remove the 1 fixing screw connecting the rear bumper and the right side of the vehicle body.



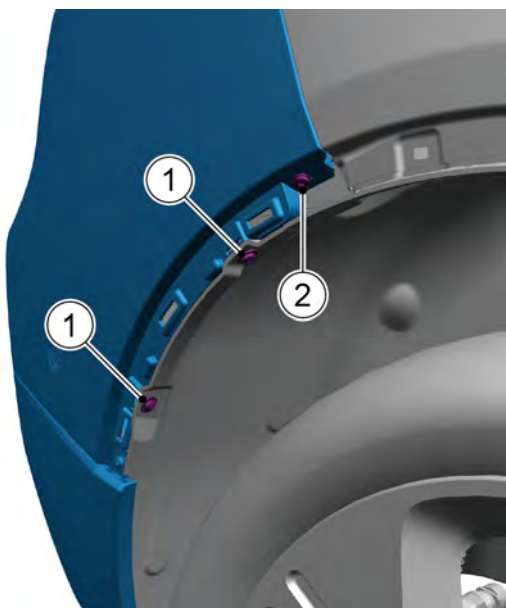
- 12 Remove the 5 fixing screws connecting the rear bumper and the left side of the rear bottom shield cover plate.



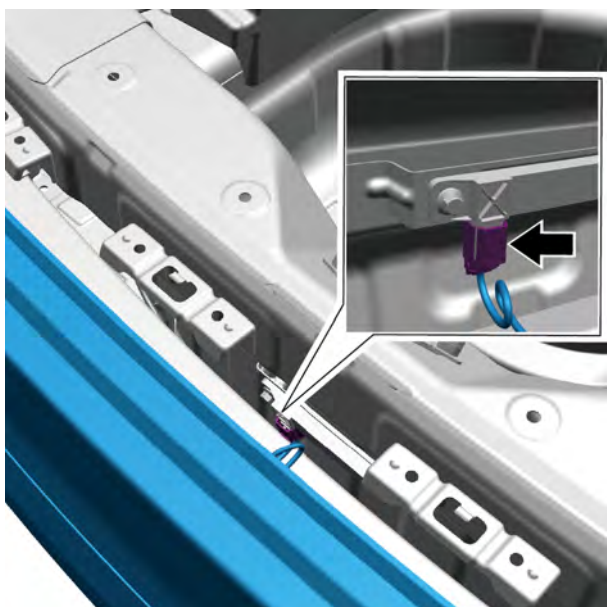
- 13 Remove the 5 fixing screws connecting the rear bumper and the right side of the rear bottom shield cover plate.



- 14 Remove 2 fixing bolts 1 of left rear fender liner and rear bumper.
- 15 Remove the 1 fixing screw connecting the rear bumper and the left mounting bracket (2) of the rear bumper.

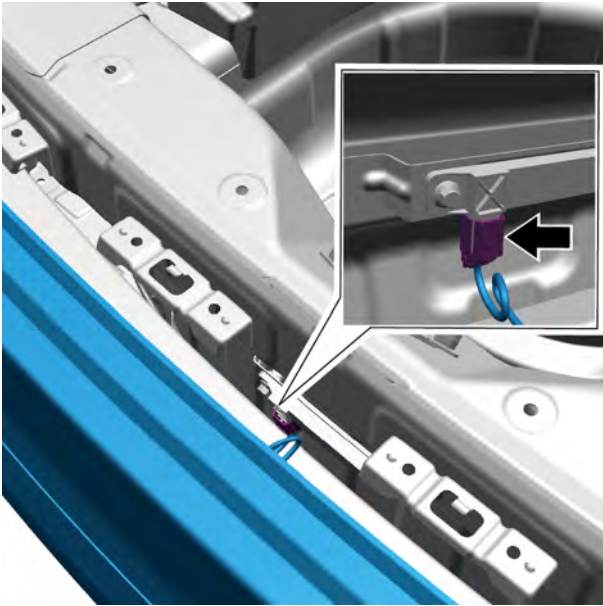


- 16 Remove the 2 fixing screws 1 of the rear bumper and right rear fender liner.
- 17 Remove the 1 fixing screw 2 connecting the rear bumper and the right mounting bracket of the rear bumper.



- 18 Move out the rear bumper, and disconnect the 1 harness connector between the rear bumper harness and the internal antenna.
- 19 Remove the rear bumper.

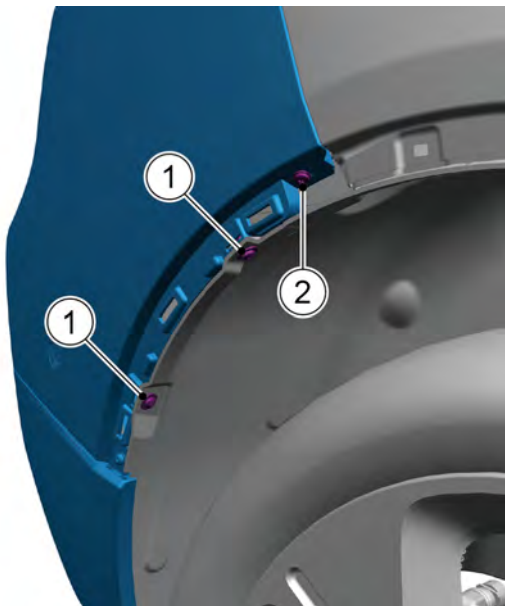
Installation procedure



- 1 Move the rear bumper to the installation position.
- 2 Connect the rear bumper harness with 1 harness connector connected to the internal antenna.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

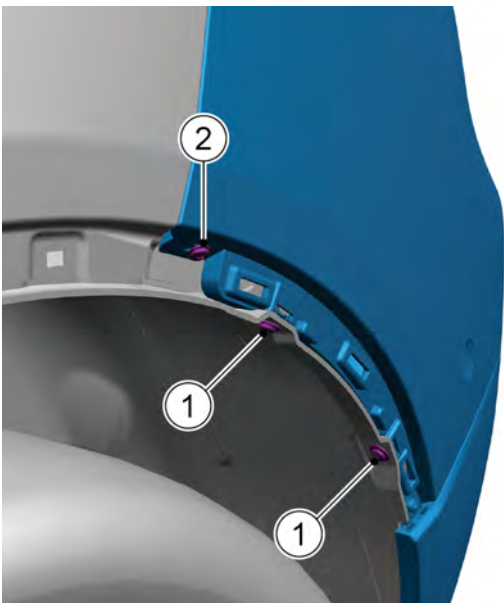


- 3 Install and tighten the 1 fixing screw 2 connecting the rear bumper and the right mounting bracket of the rear bumper.

Torque: 1.5N·m

- 4 Install and tighten the 2 fixing screws 1 connecting the rear bumper and the right mounting bracket of the right rear fender liner.

Torque: 1.5N·m

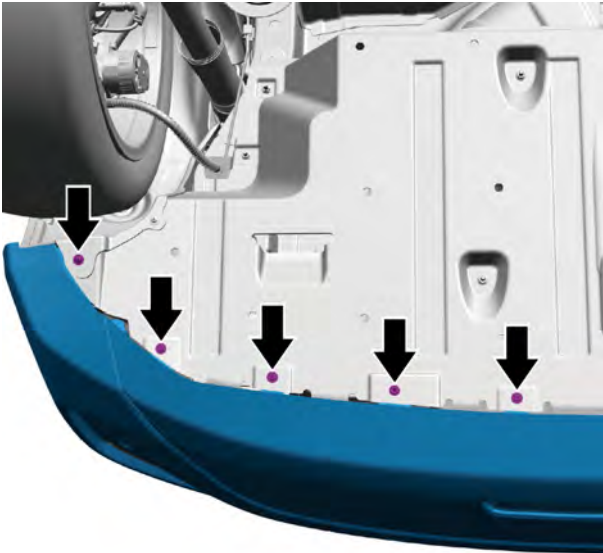


- 5 Install and tighten the 1 fixing screw 2 connecting the rear bumper and the left mounting bracket of the rear bumper.

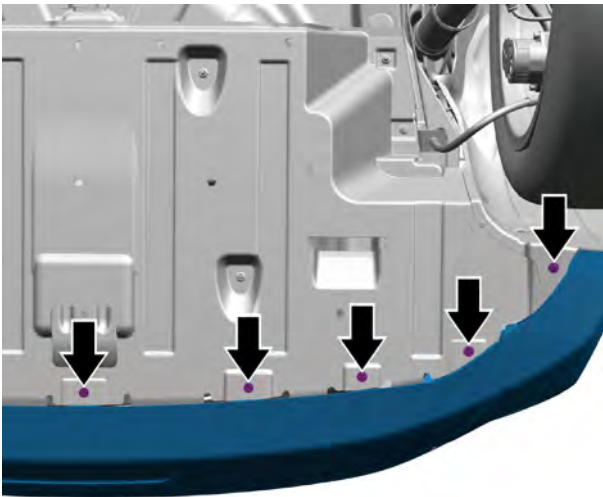
Torque: 1.5N·m

- 6 Install and tighten the 2 fixing screw connecting the rear bumper and the left rear fender liner.

Torque: 1.5N·m



- 7 Install the 5 fixing screws connecting the rear bumper and the right side of the rear bottom shield cover plate.
Torque: 1.5N·m



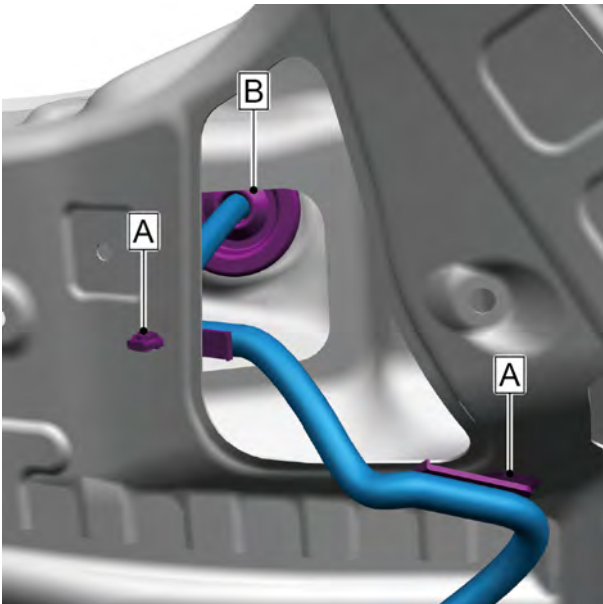
- 8 Install the 5 fixing screws connecting the rear bumper and the left side of the rear bottom shield cover plate.
Torque: 1.5N·m



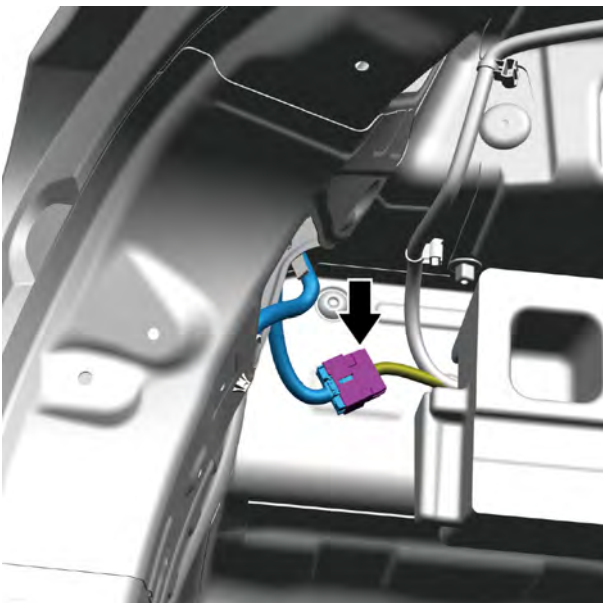
- 9 Install the 1 fixing screw connecting the rear bumper and the right side of the vehicle body.
Torque: 1.5N·m



- 10 Install the 1 fixing screw connecting the rear bumper and the left side of the vehicle body.
Torque: 1.5N·m



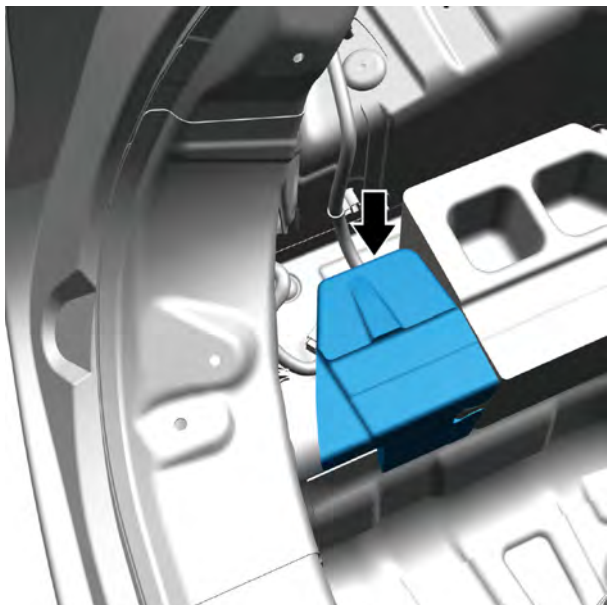
- 11 Install the 1 waterproof plug B connecting the rear bumper harness and the vehicle body.
12 Install the 2 fixing clips A connecting the rear bumper harness and the vehicle body.



- 13 Connect the 1 harness connector of the floor harness assembly and rear bumper harness.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



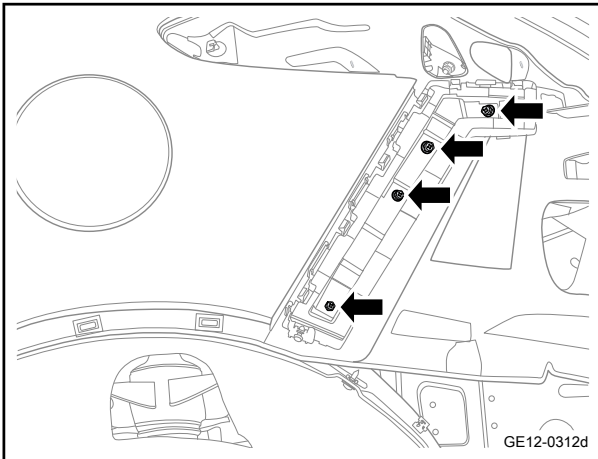
- 14 Install the left mounting liner of the trunk carpet into the trunk.

- 15 Install the trunk left trim panel assembly.
- 16 Install the left and right rear side wall combination lights.
- 17 Install the left and right wheel brow assembly.
- 18 Lower the vehicle.
- 19 Connect the negative cable of battery.

12.4.3.6 Replacement of Rear Bumper Mounting Bracket

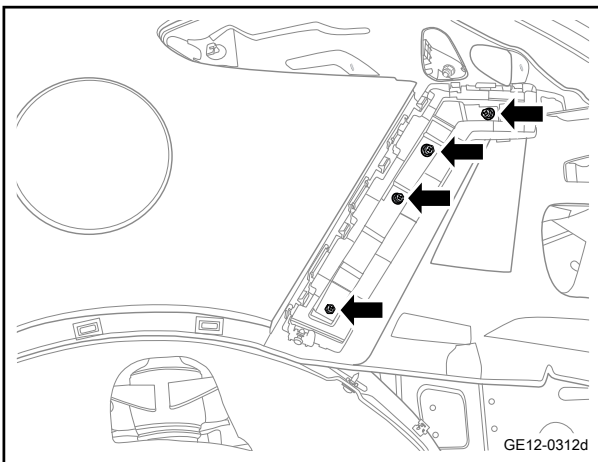
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)



- 4 Remove the 4 fixing screws of the rear bumper mounting bracket.
- 5 Take off the mounting bracket of the rear bumper.

Installation procedure



- 1 Move the mounting bracket of the rear bumper to the installation position.
- 2 Install the 4 fixing screws connecting the mounting bracket of the rear bumper.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)

- 3 Install the rear bumper.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

12.4.3.7 Replacement of front anti-intrusion beam assembly

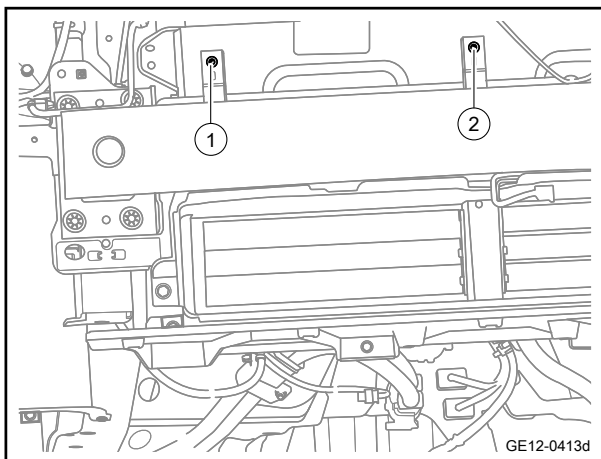
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

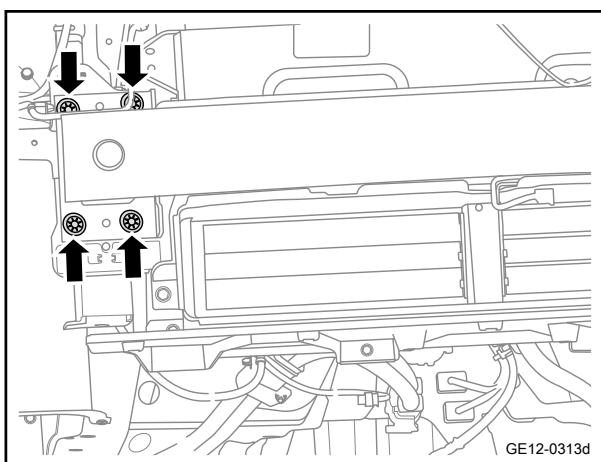
Warning

Refer to ["Warnings Regarding Battery Disconnection"](#) in ["Warnings and Precautions"](#)

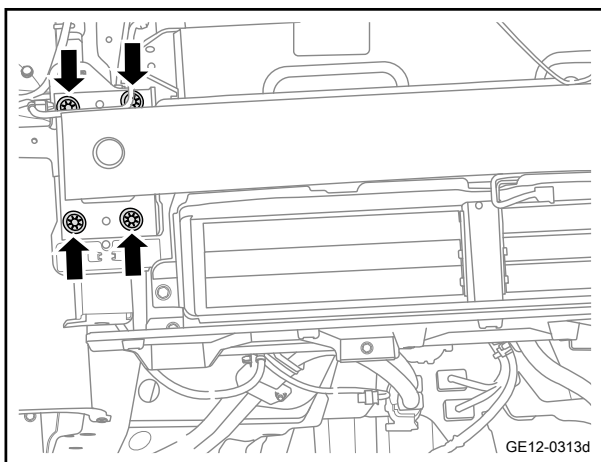
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)



- 4 Remove each fixing bolt 1 of supporting bracket on each side of left and right front bumper and remove 1 fixing bolt 2 of supporting bracket in the middle of front bumper, then take down 3 supporting brackets.

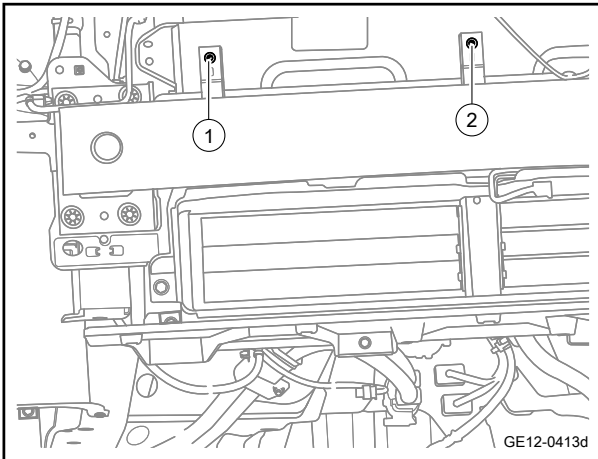


- 5 Remove the 4 fixing bolts on the left and right sides of the front anti-intrusion beam assembly.
- 6 Remove the front anti-intrusion beam assembly.



Installation procedure

- 1 Move the front anti-intrusion beam assembly to the mounting position.
- 2 Install 4 fixing bolts on the left and right sides of the front anti-intrusion beam assembly.
Torque: 65N·m (metric system) 48lb-ft (Imperial system)



- 3 Install 1 fixing bolt 1 of the left and right supporting brackets of the front bumper, and install 1 fixing bolt 2 of the middle supporting bracket of the front bumper.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

- 4 Install the front bumper assembly.
- 5 Lower the vehicle.
- 6 Connect the negative cable of battery.

12.4.3.8 Replacement of rear anti-intrusion beam assembly

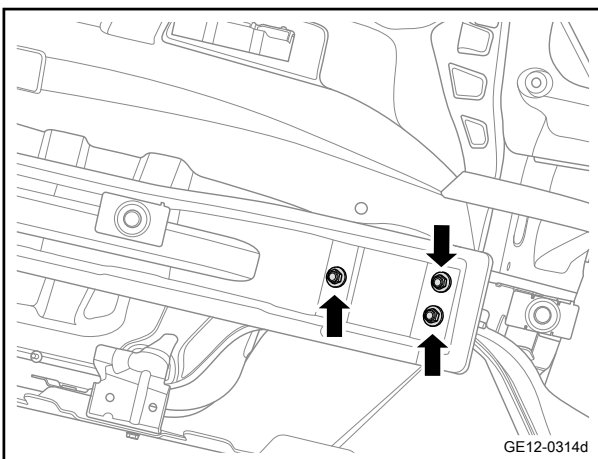
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

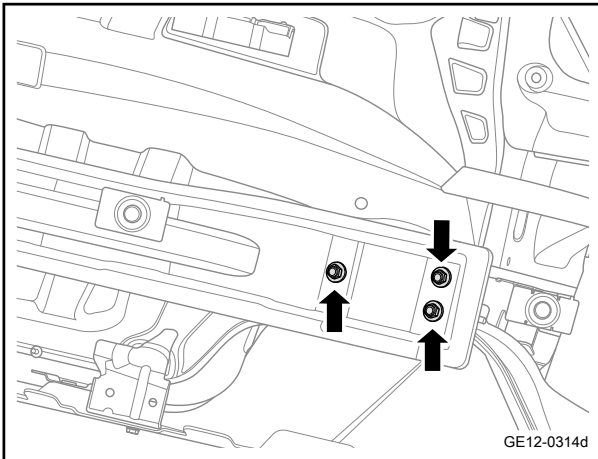
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Dismount the rear bumper. Refer to [Replacement of Rear Bumper](#)
- 4 Remove the 3 fixing nuts on the left and right sides of the rear anti-intrusion beam assembly.
- 5 Remove the rear anti-intrusion beam assembly.



Installation procedure



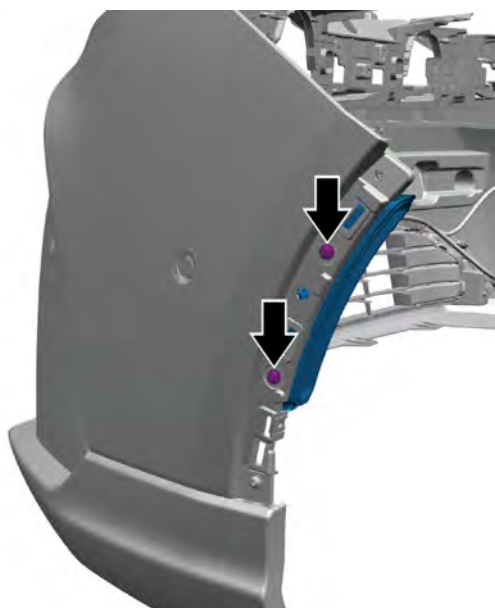
- 1 Move the rear anti-intrusion beam assembly to the installation position.
- 2 Install the 3 fixing nuts on the left and right sides of the rear anti-intrusion beam assembly.
Torque: 23N·m (metric system) 17.0lb-ft (Imperial system)

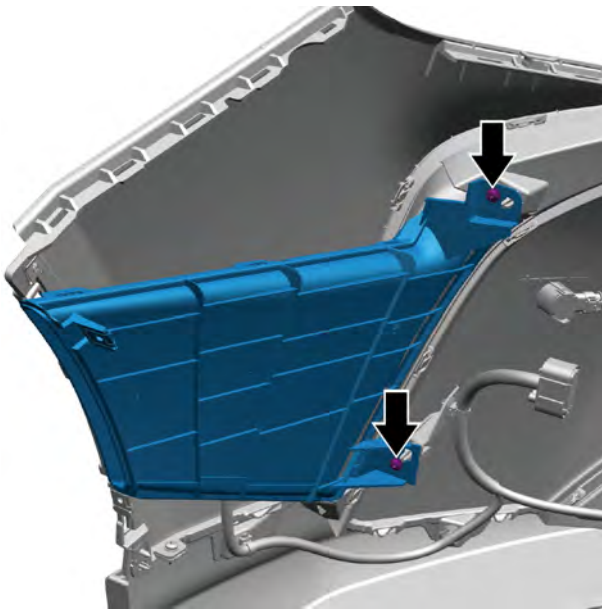
- 3 Install the rear bumper.
- 4 Lower the vehicle.
- 5 Connect the negative cable of battery.

12.4.3.9 Disassembly and assembly of front bumper assembly

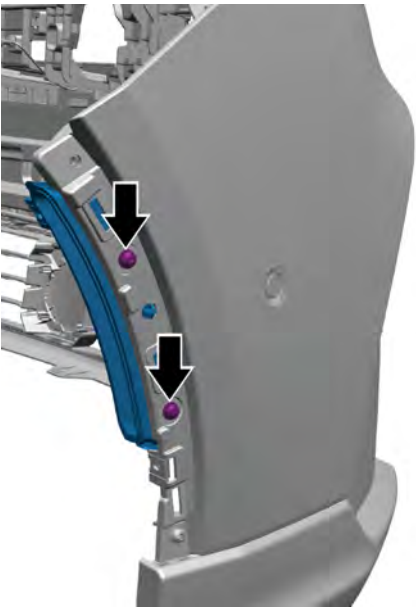
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Front middle position lamp Refer to [Replacement of Front Middle Position Lamp](#)
- 4 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 5 Remove 360panoramic parking assist front camera assembly Refer to [Replacement of 360° panoramic front parking assist front camera assembly](#)
- 6 Remove the 2 fixing screws connecting the left ventilation pipe of the front bumper with the front bumper assembly.

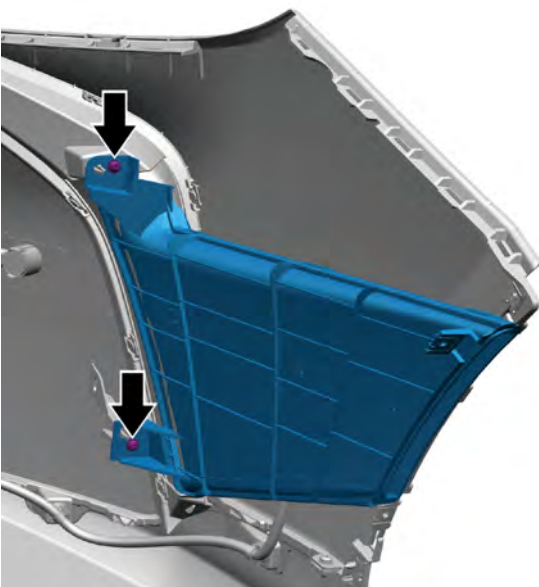




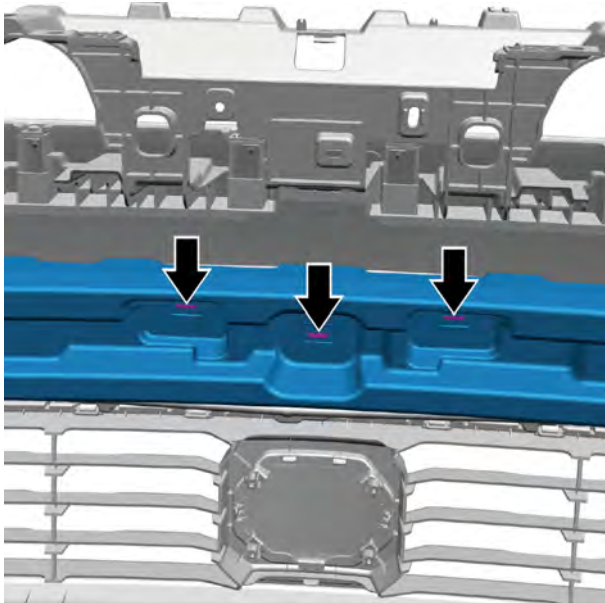
- 7 Remove the 2 fixing screws connecting the left ventilation pipe of the front bumper with the front bumper assembly.
- 8 Take off the front bumper left ventilation pipe.



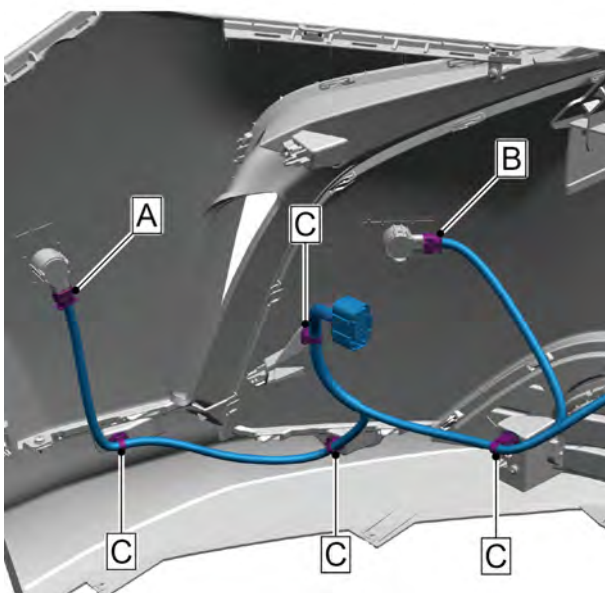
- 9 Remove the 2 fixing screws connecting the right ventilation pipe of the front bumper with the front bumper assembly.



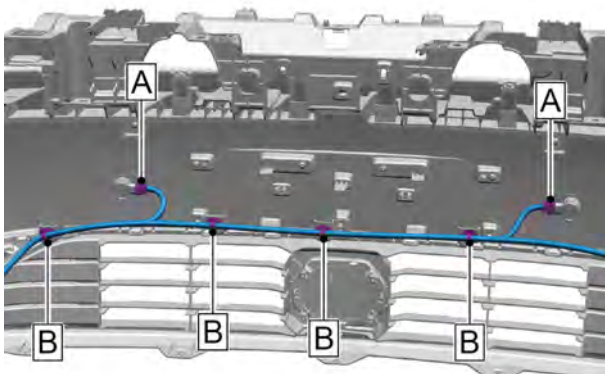
- 10 Remove the 2 fixing screws connecting the right ventilation pipe of the front bumper with the front bumper assembly.
- 11 Take off the front bumper right ventilation pipe.



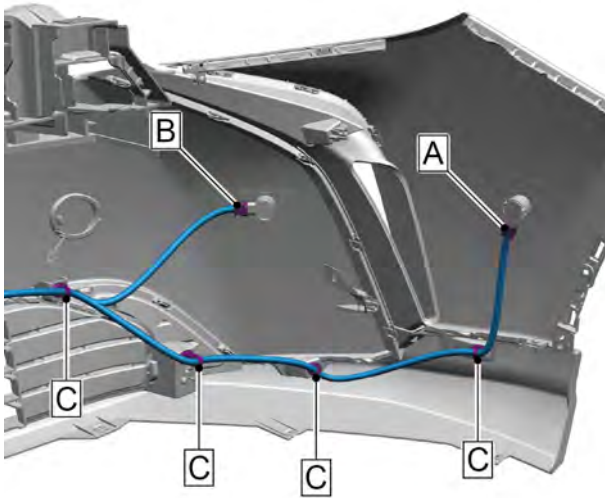
- 12 Disconnect the 3 fixing clips connecting front bumper buffer block from the rear bumper assembly.
- 13 Take off the front bumper buffer block.



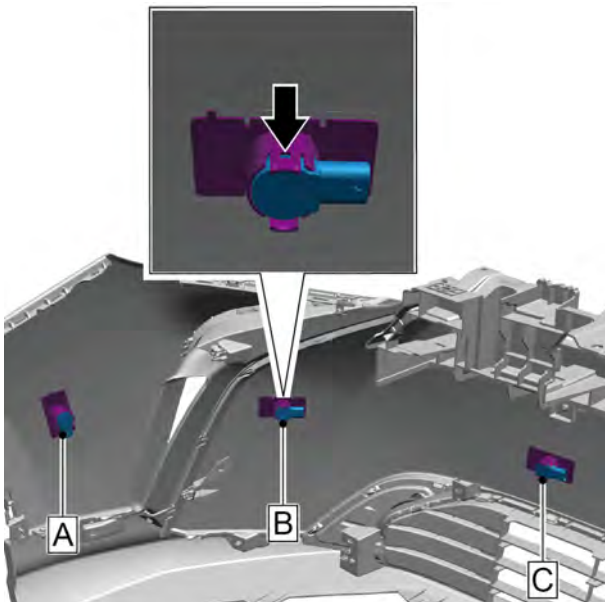
- 14 Disconnect the 1 harness connector A connecting the front bumper harness assembly and the left long-distance ultrasonic sensor.
- 15 Disconnect the 1 harness connector B connecting the front bumper harness assembly with the left short-range ultrasonic sensor.
- 16 Disconnect the 4 fixing clips C connecting front bumper harness from the left side of front bumper assembly.



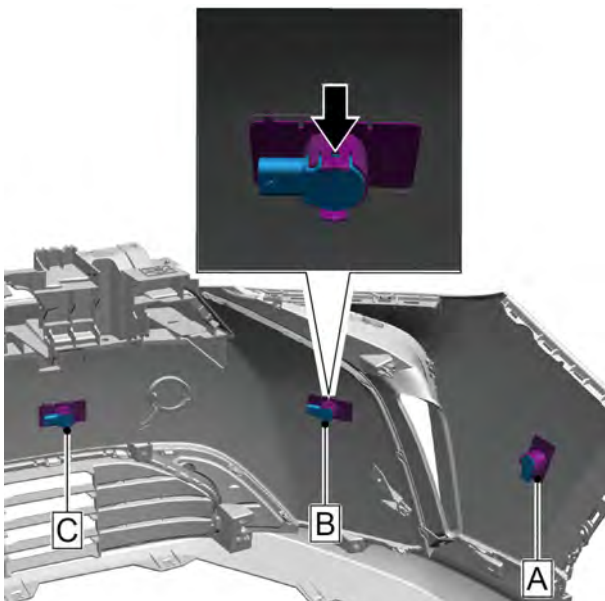
- 17 Disconnect the 2 harness connectors A connecting the front bumper harness assembly and the middle short-range ultrasonic sensor.
- 18 Disconnect the 4 fixing clips B connecting front bumper harness assembly from the middle of front bumper assembly.



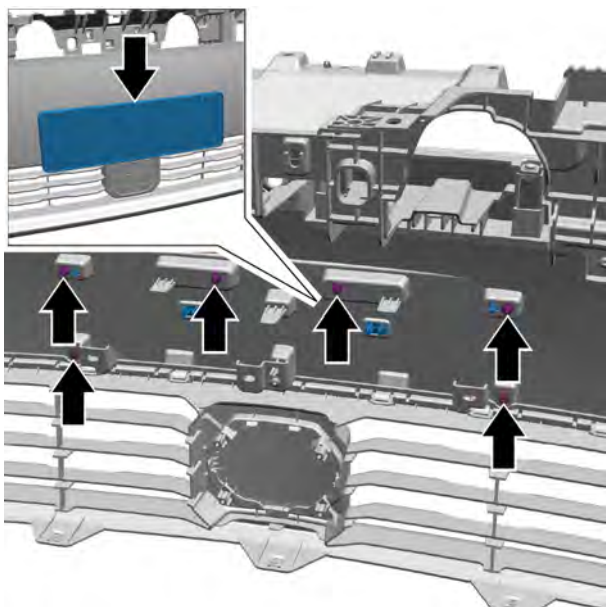
- 19 Disconnect the 1 harness connector A connecting the front bumper harness assembly and the right long-distance ultrasonic sensor.
- 20 Disconnect the 1 harness connector B connecting the front bumper harness assembly with the right short-range ultrasonic sensor.
- 21 Disconnect the 4 fixing clips C connecting front bumper harness assembly from the right side of front bumper assembly.
- 22 Remove the front bumper harness assembly.



- 23 Disconnect the long-distance ultrasonic sensor from the left outer radar bracket of the front bumper, and take off the long-distance ultrasonic sensor A.
- 24 Disconnect the short-range ultrasonic sensor from the left middle radar bracket of the front bumper, and take off the short-range ultrasonic sensor B.
- 25 Disconnect the short-range ultrasonic sensor from the left inner radar bracket of the front bumper, and take off the short-range ultrasonic sensor C.



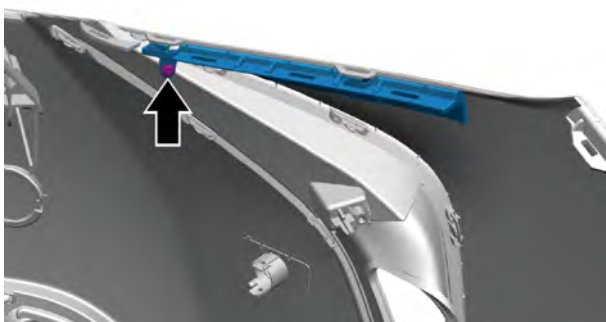
- 26 Disconnect the long-distance ultrasonic sensor from the right outer radar bracket of the front bumper, and take off the long-distance ultrasonic sensor A.
- 27 Disconnect the short-range ultrasonic sensor from the right middle radar bracket of the front bumper, and take off the short-range ultrasonic sensor B.
- 28 Disconnect the short-range ultrasonic sensor from the right inner radar bracket of the front bumper, and take off the short-range ultrasonic sensor C.



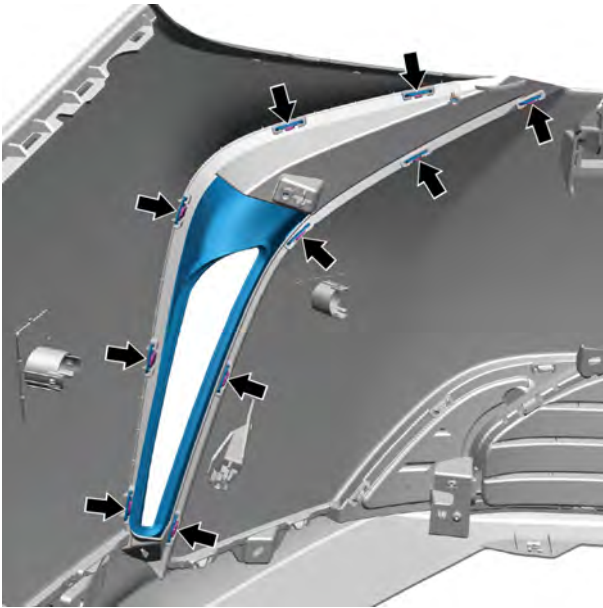
- 29 Remove the 6 fixing screws connecting the front number plate mounting plate with the upper body assembly of the front bumper and take out the front number plate mounting plate.
- 30 Take down front number plate mounting plate.



- 31 Remove 1 fixing screw connecting the left front headlamp support bracket with the front bumper upper body assembly.
- 32 Take off the left headlamp supporting bracket.

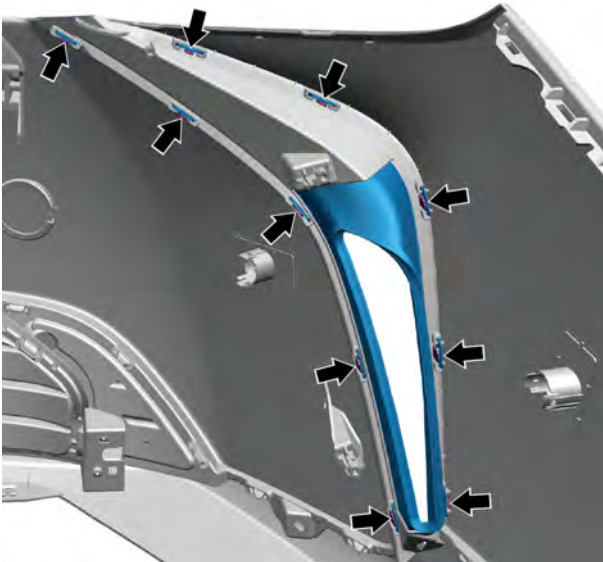


- 33 Remove the 1 fixing screw connecting the right front headlamp support bracket and the front bumper upper body assembly.
- 34 Take off the right headlamp supporting bracket.



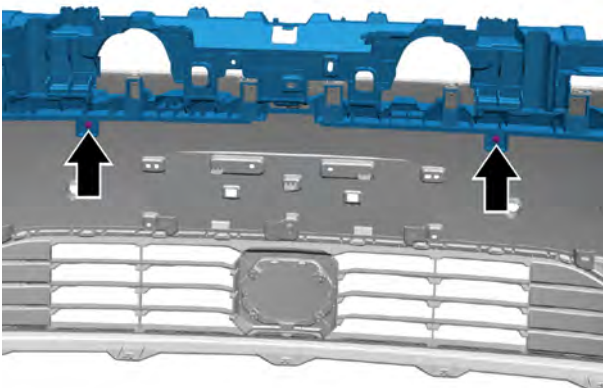
35 Disconnect the 10 fixing clips connecting left trim panel assembly of front bumper from the front bumper upper body assembly.

36 Take off the left trim panel of the front bumper.



37 Disconnect the 10 fixing clips connecting right trim panel of front bumper from the front bumper upper body assembly.

38 Take off the right trim panel of the front bumper.

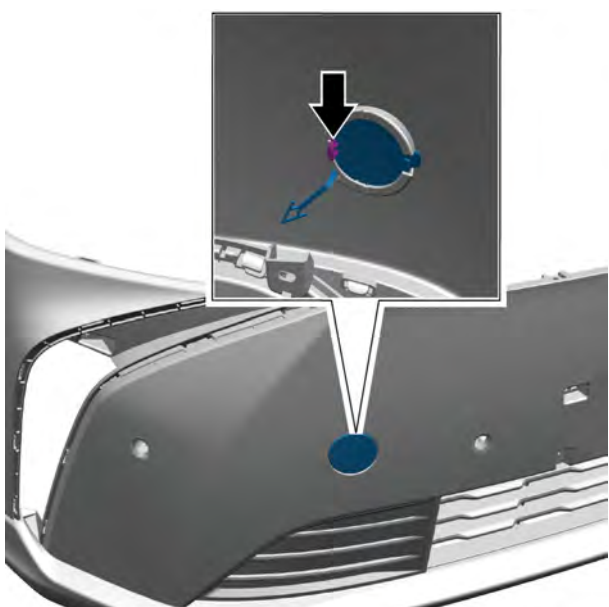


39 Remove the 2 fixing screws connecting the middle bracket of the front bumper with the front bumper upper body assembly.

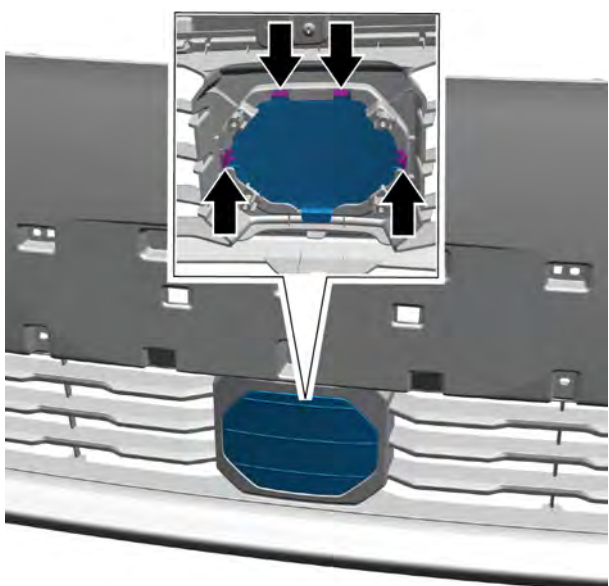
- 40 Remove the 6 fixing screws connecting the middle bracket of the front bumper with the front bumper upper body assembly.
- 41 Remove the front bumper middle bracket.



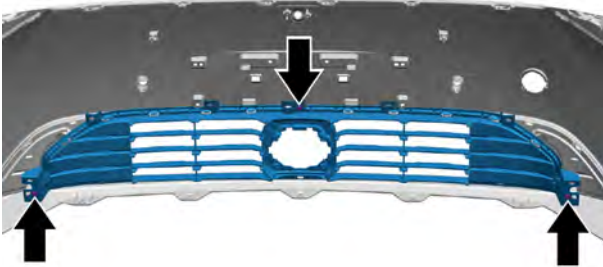
- 42 Disconnect the 1 fixing clip connecting the front towing hook cover plate with the upper body assembly of the front bumper.
- 43 Remove front towing hook cover plate



- 44 Disconnect the 4 retaining clips connecting the ACC cover and the lower grille of the front bumper.
- 45 Take off the ACC cover.

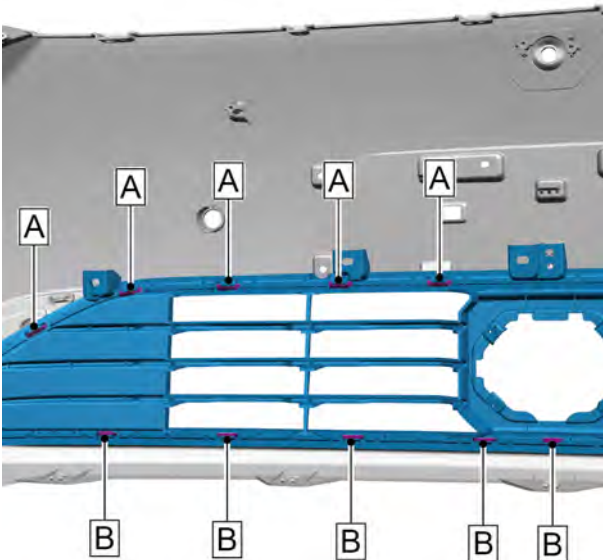


- 46 Remove the 3 fixing screws connecting the front bumper lower grill and the front bumper upper body assembly.



- 47 Disconnect the 5 fixing clips A connecting left side of front bumper lower grill from the front bumper upper body assembly.

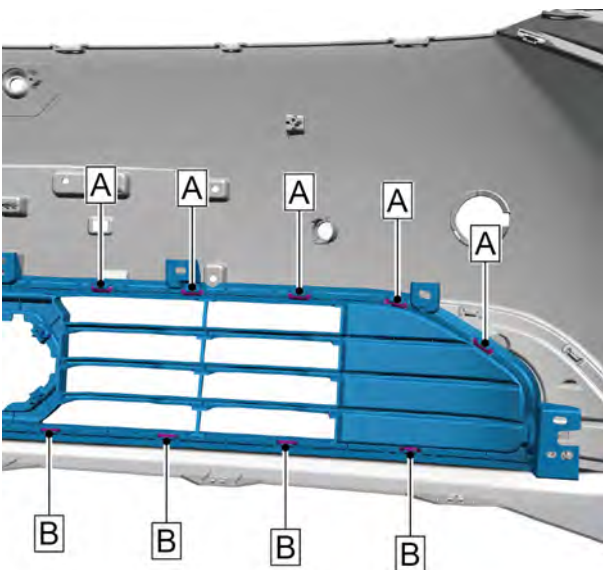
- 48 Disconnect the 5 fixing clips B connecting left side of front bumper lower grill from the front bumper lower body assembly.



- 49 Disconnect the 5 fixing clips A connecting right side of front bumper lower grill from the front bumper upper body assembly.

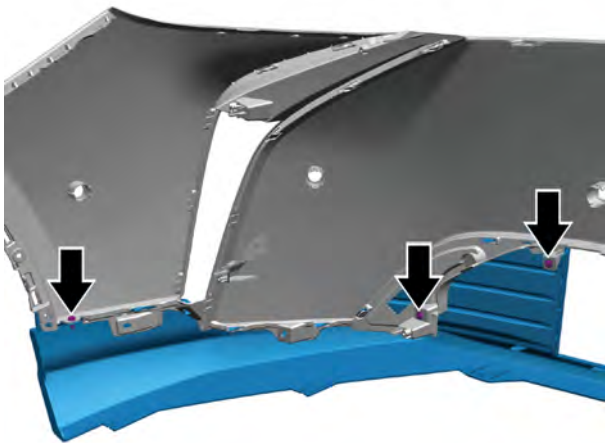
- 50 Disconnect the 5 fixing clips B connecting right side of front bumper lower grill from the front bumper lower body assembly.

- 51 Take off the front bumper lower grill.

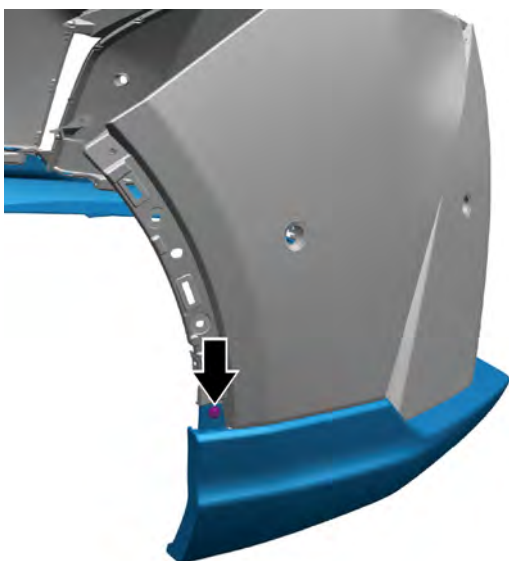




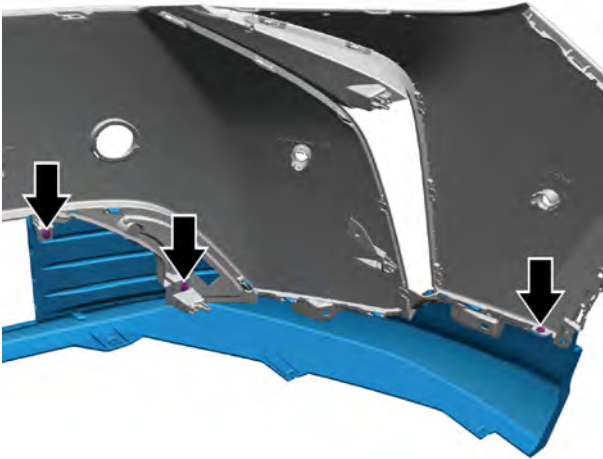
- 52 Remove the 1 fixing screw connecting the left side of the front bumper lower body assembly connected with the front bumper upper body assembly.



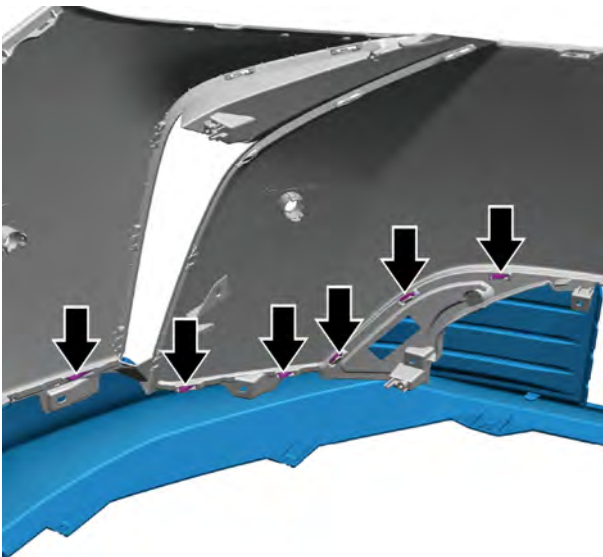
- 53 Remove the 3 fixing screw connecting the left side of the front bumper lower body assembly connected with the front bumper upper body assembly.



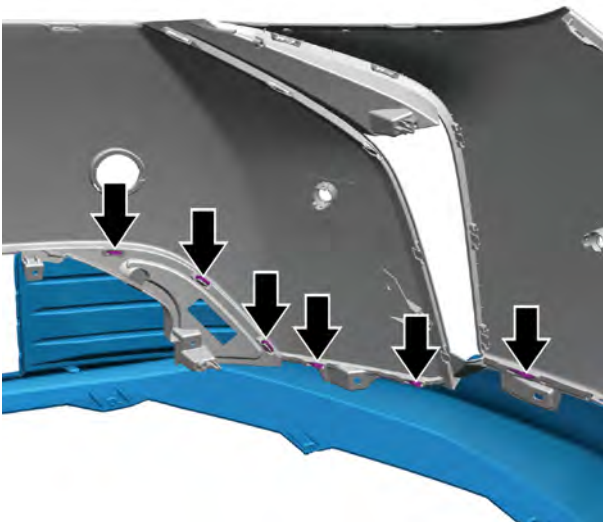
- 54 Remove the 1 fixing screws connecting the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.



- 55 Remove the 3 fixing screws connecting the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.



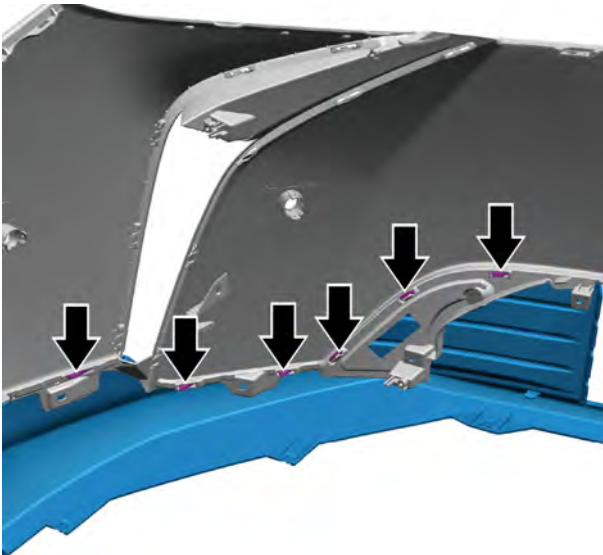
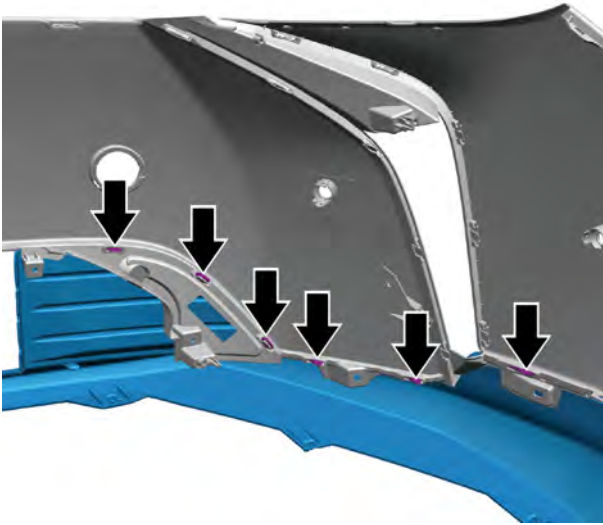
- 56 Disengage the six fixing buckles on the left side of the front bumper lower body assembly connected with the front bumper upper body assembly.



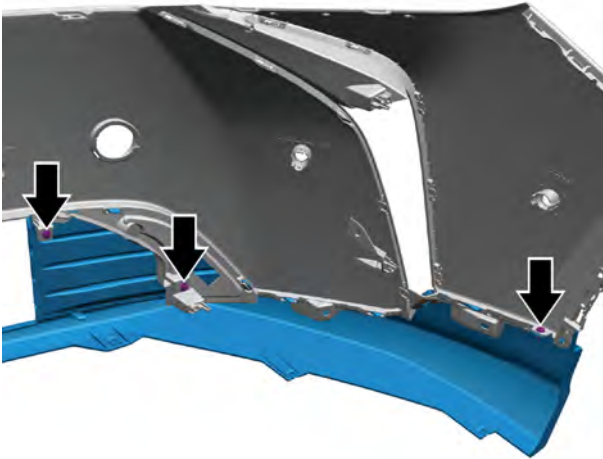
- 57 Disengage the six fixing buckles on the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.
- 58 Take off the front bumper lower body assembly.

Installation procedure

- 1 Move the front bumper lower body assembly to the installation position.
- 2 Install the right front bumper lower body assembly to the front bumper upper body assembly, and press the 6 retaining clips to ensure that the clips are fastened.

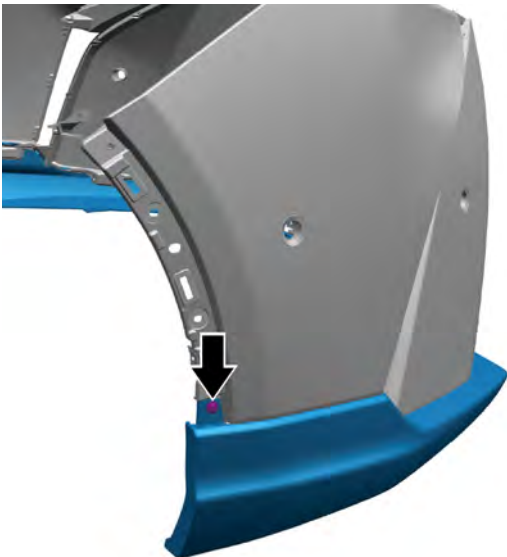


- 3 Install the left front bumper lower body assembly to the front bumper upper body assembly, and press the 6 retaining clips to ensure that the clips are fastened.



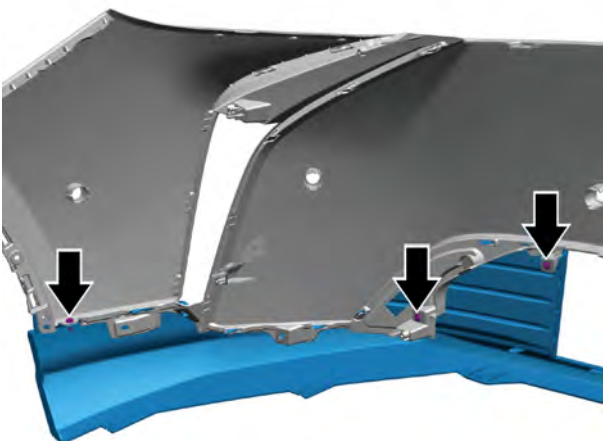
- 4 Install and tighten the three fixing screws on the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.

Torque: 1.5N·m



- 5 Install and tighten the three fixing screws on the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.

Torque: 1.5N·m

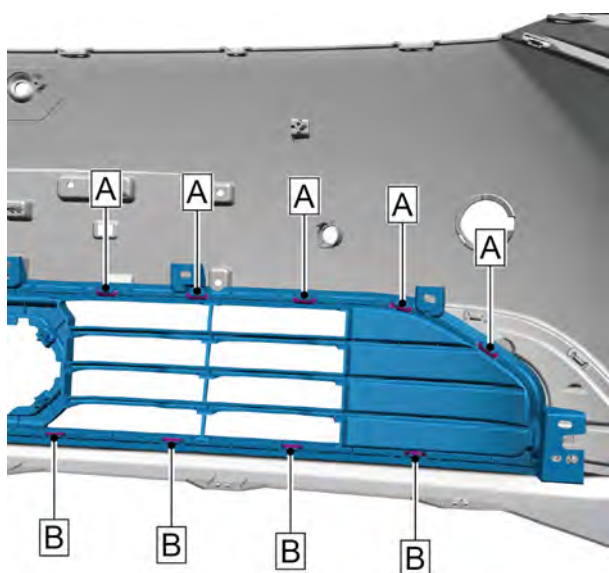


- 6 Install and tighten the three fixing screws on the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.

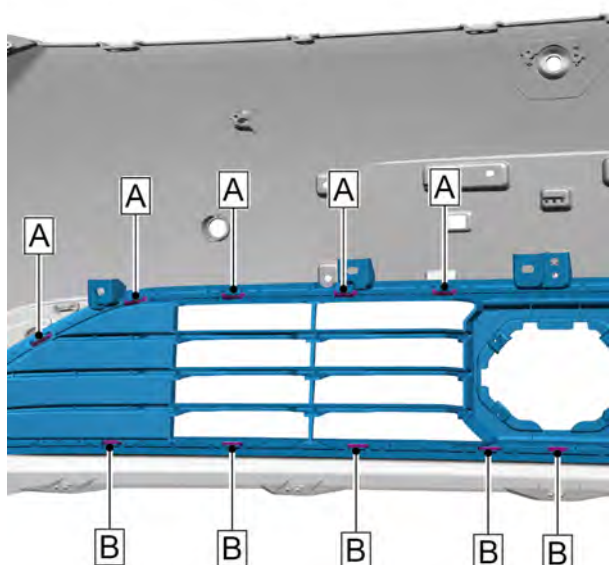
Torque: 1.5N·m



- 7 Install and tighten the three fixing screws on the right side of the front bumper lower body assembly connected with the front bumper upper body assembly.
Torque: 1.5N·m

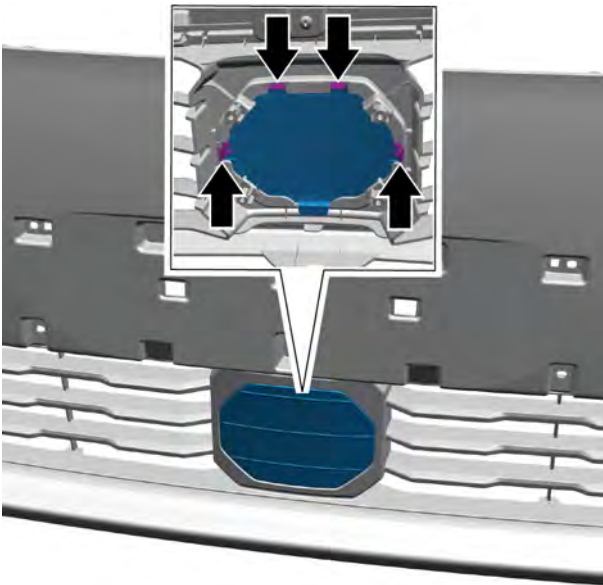
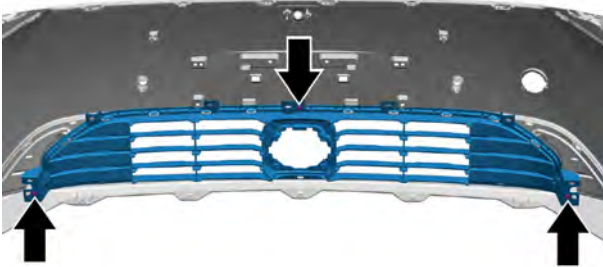


- 8 Move the front bumper lower grille to the installation position.
- 9 Install the lower grille of the front right bumper to the lower body assembly of the front bumper, and press the 4 retaining clips B to ensure that the clamps are fastened.
- 10 Install the lower grille of the front right bumper to the upper body assembly of the front bumper, and press the 5 retaining clips A to ensure that the clamps are fastened.

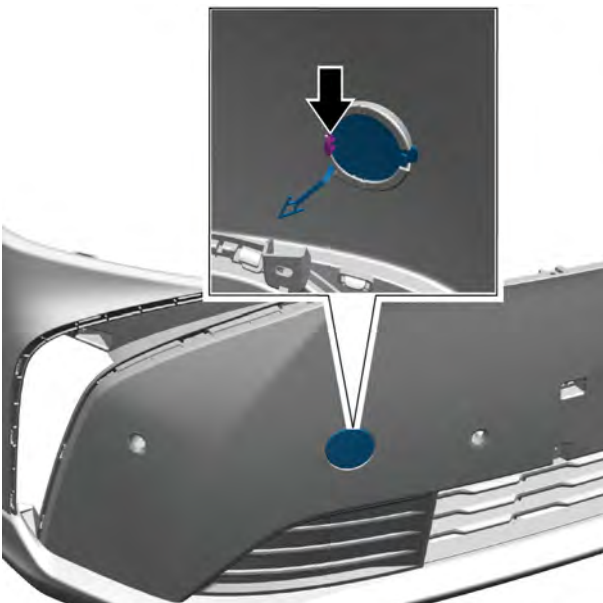


- 11 Install the front left bumper lower grille to the front bumper lower body assembly, and press the 5 retaining clips B to ensure that the clips are fastened.
- 12 Install the lower grille of the front left bumper to the upper body assembly of the front bumper, and press the 5 retaining clips A to ensure that the clamps are fastened.

- 13 Install the 3 fixing screws connecting the front bumper lower grill and the front bumper upper body assembly.
Torque: 1.5N·m

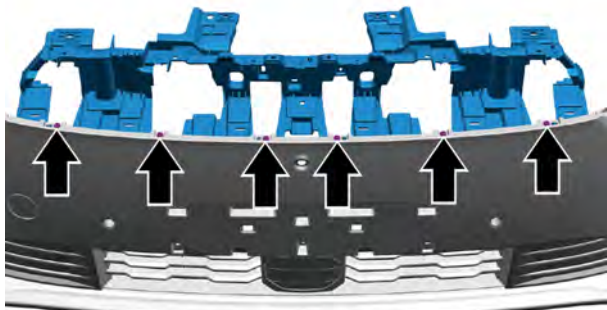


- 14 Move the ACC cover to the installation position.
15 Install the ACC cover onto the lower grille of the front bumper, and press the 4 retaining clips to ensure that the clamps are fastened.

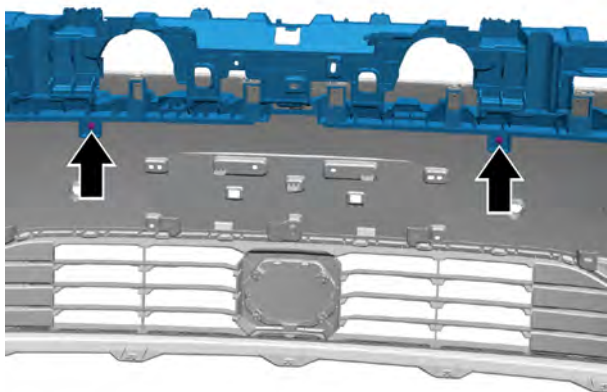


- 16 Move the front towing hook cover plate to the installation position.
17 Install the front towing hook cover plate onto the upper body assembly of the front bumper.

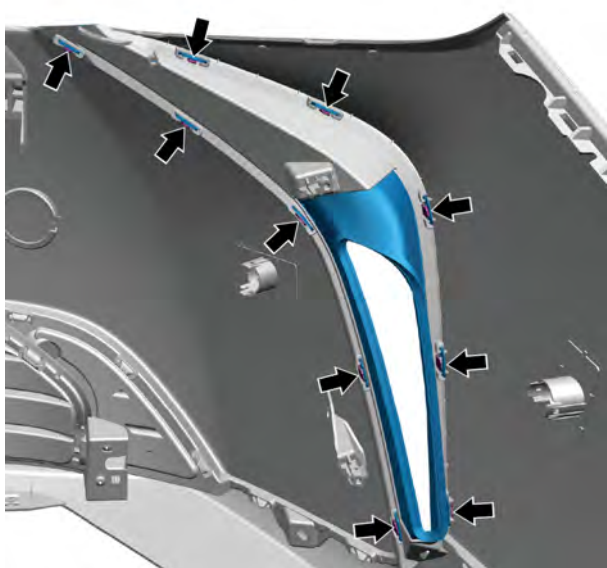
- 18 Move the front bumper middle bracket to the installation position.
- 19 Install the 6 fixing screws connecting the middle bracket of the front bumper with the front bumper upper body assembly.
Torque: 1.5N·m

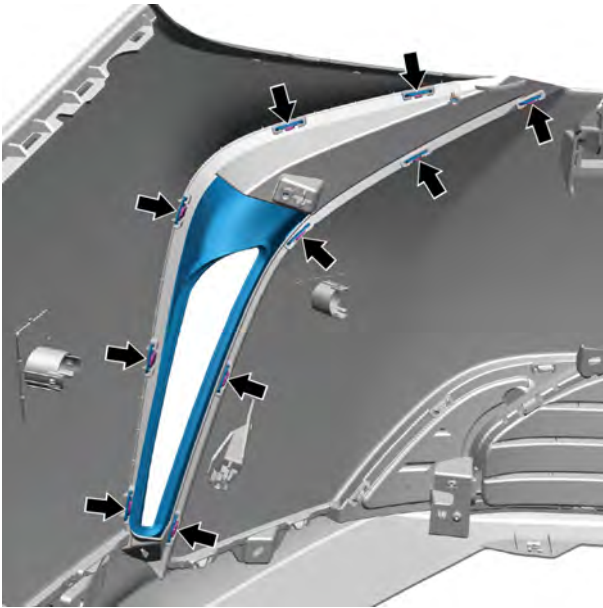


- 20 Install the 2 fixing screws connecting the middle bracket of the front bumper with the front bumper upper body assembly.
Torque: 1.5N·m

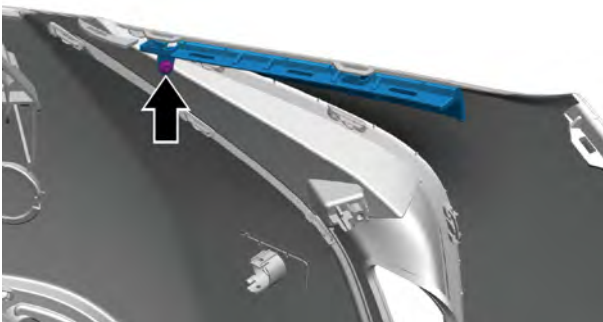


- 21 Move the right trim panel of the front bumper to the installation position.
- 22 Install the right trim panel assembly of the front bumper to the upper body assembly of the front bumper, and press the 10 retaining clips to ensure that the clips are fastened.





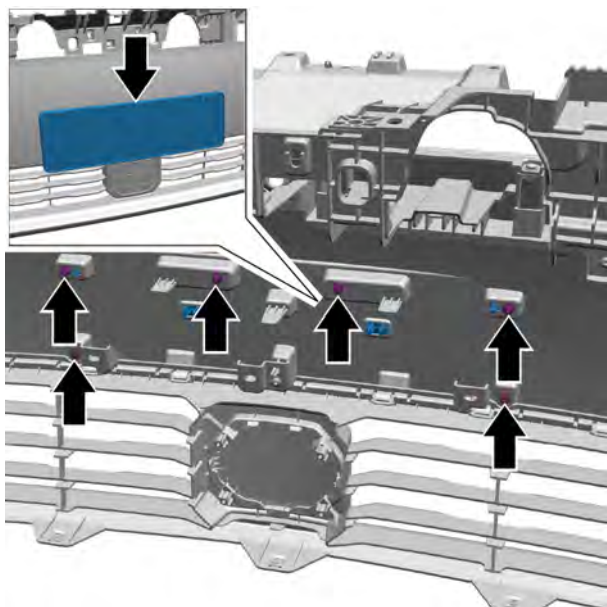
- 23 Move the left trim panel of the front bumper to the installation position.
- 24 Install the left trim panel assembly of the front bumper onto the upper body assembly of the front bumper, and press the 10 retaining clips to ensure that the clips are fastened.



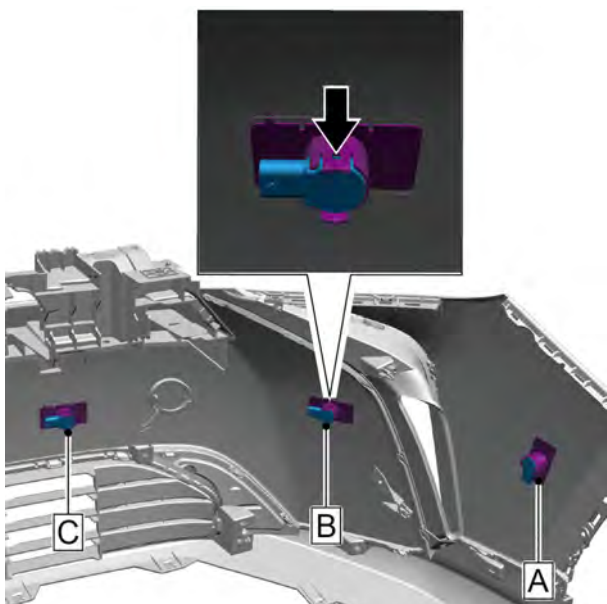
- 25 Move the right headlamp bracket to the installation position.
- 26 Install the 1 fixing screw connecting the front right headlamp with the front bumper upper body assembly.
Torque: 1.5N·m



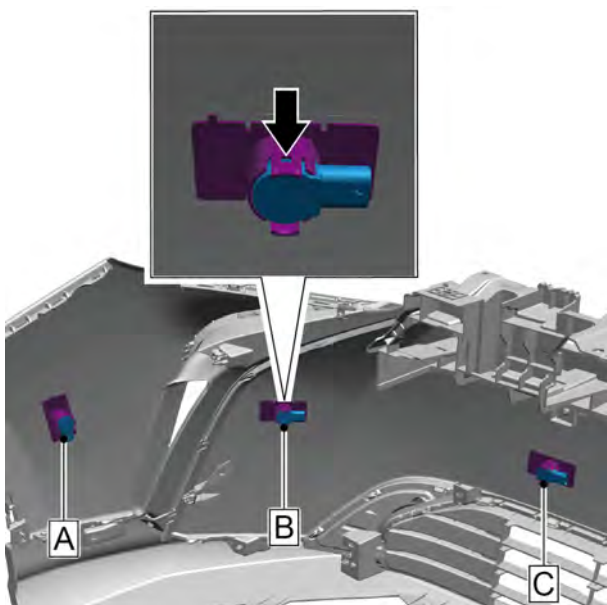
- 27 Move the left front headlamp bracket to the installation position.
- 28 Install and tighten one fixing screw connecting the left headlamp support bracket with the front bumper upper body assembly.
Torque: 1.5N·m



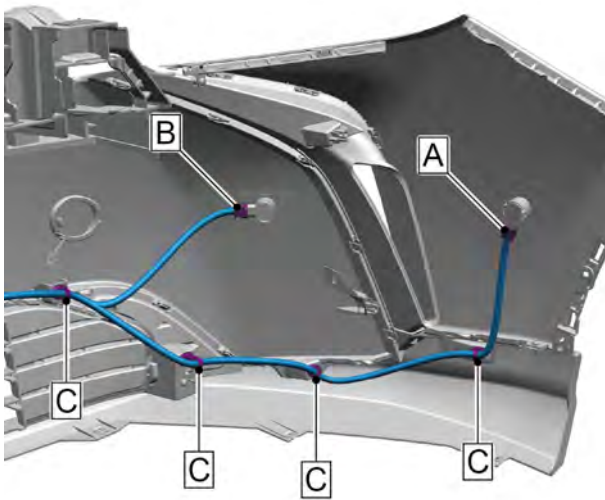
- 29 Install and tighten front number plate mounting plate
- 30 Install and tighten the 6 fixing screws connecting the front number plate mounting plate with the upper body assembly of the front bumper and take out the front number plate mounting plate.
Torque: 1.5N·m



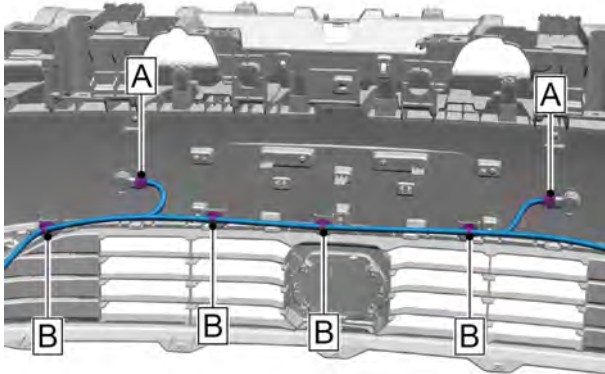
- 31 Move the short-range ultrasonic sensor C to the installation position, and install the short-range ultrasonic sensor from the right inner radar bracket of the front bumper.
- 32 Move the short-range ultrasonic sensor B to the installation position, and install the short-range ultrasonic sensor from the right middle radar bracket of the front bumper.
- 33 Move the long-distance ultrasonic sensor A to the installation position, and install the short-range ultrasonic sensor from the right outer radar bracket of the front bumper.



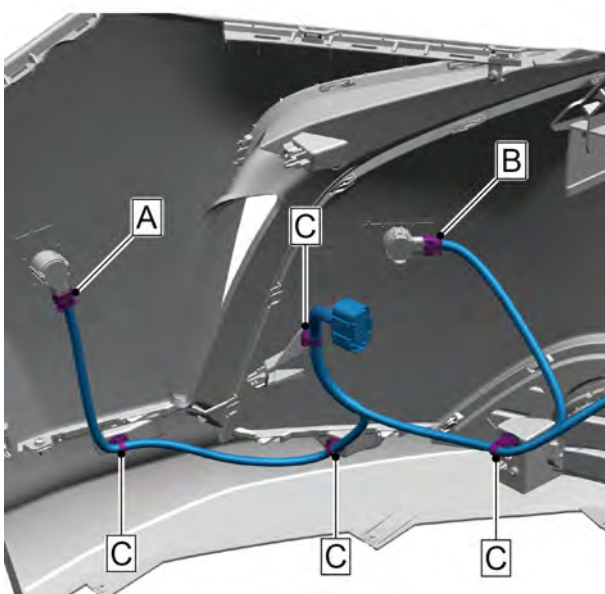
- 34 Move the short-range ultrasonic sensor C to the installation position, and install the short-range ultrasonic sensor from the left inner radar bracket of the front bumper.
- 35 Move the short-range ultrasonic sensor B to the installation position, and install the short-range ultrasonic sensor from the left middle radar bracket of the front bumper.
- 36 Move the long-distance ultrasonic sensor A to the installation position, and install the short-range ultrasonic sensor from the left outer radar bracket of the front bumper.



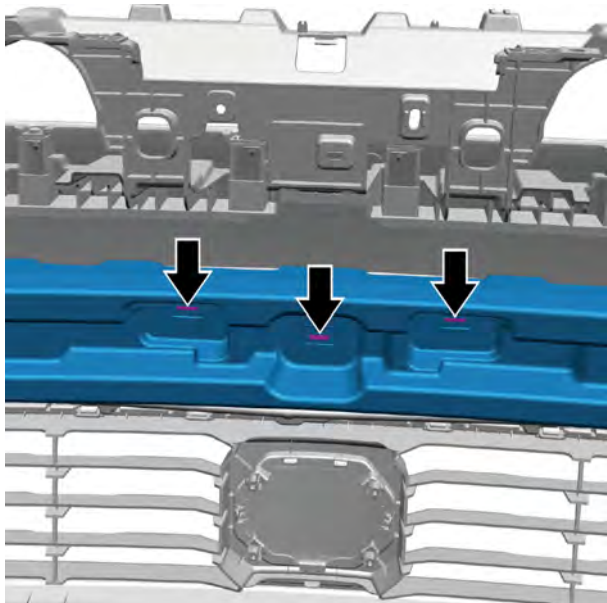
- 37 Move the front bumper harness assembly to the installation position.
- 38 Install the 4 fixing clips C connecting the front bumper harness with the right side of front bumper assembly.
- 39 Connect the 1 harness connector B connecting the front bumper harness assembly and the right short-range ultrasonic sensor.
- 40 Connect the 1 harness connector A connecting the front bumper harness assembly and the right long-distance ultrasonic sensor.



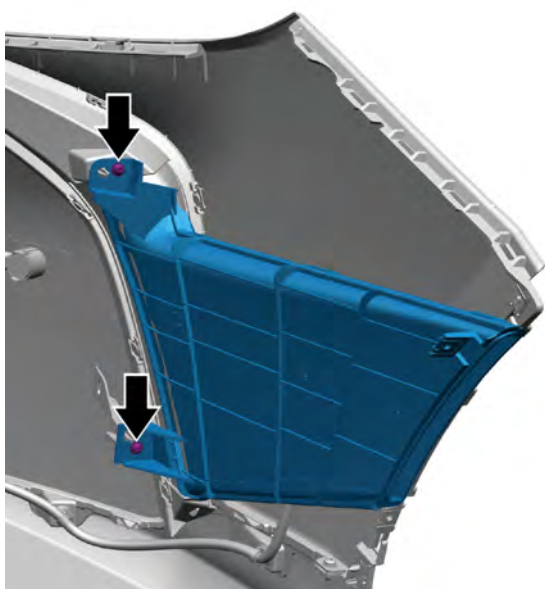
- 41 Install the four fixing clips B connecting the front bumper harness assembly with the middle of the front bumper assembly.
- 42 Connect the 2 harness connectors A connecting the front bumper harness assembly and the middle short-range ultrasonic sensor.



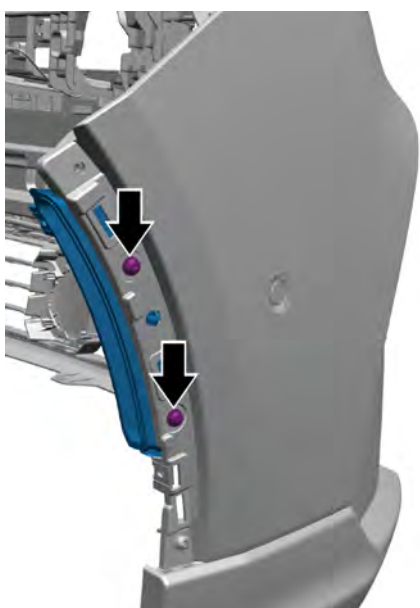
- 43 Install the four fixing clips C connecting the front bumper harness assembly with the left side of the front bumper assembly.
- 44 Connect the 1 harness connector B connecting the front bumper harness assembly and the left short-range ultrasonic sensor.
- 45 Connect the 1 harness connector A connecting the front bumper harness assembly and the left long-distance ultrasonic sensor.



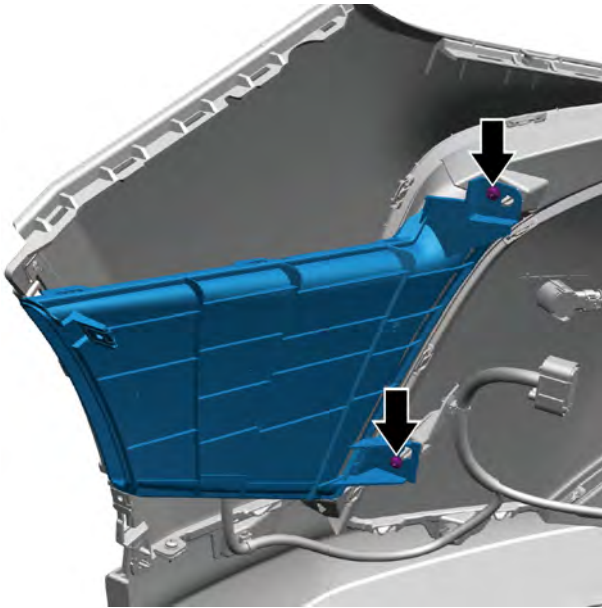
- 46 Move the front bumper buffer block to the installation position.
- 47 Install the front bumper buffer block on the front bumper assembly and ensure that the 3 retaining clips are installed and fastened.



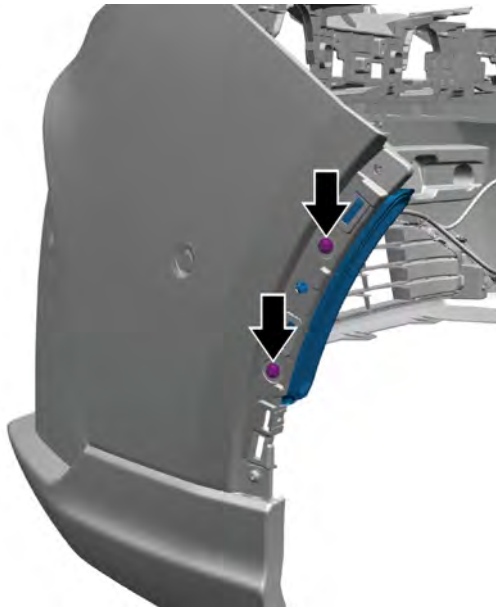
- 48 Move the front bumper right ventilation pipe to the installation position.
- 49 Install the 2 fixing screws connecting the right ventilation pipe of the front bumper with the front bumper assembly. Torque: 1.5N·m



- 50 Install the 2 fixing screws connecting the right ventilation pipe of the front bumper with the front bumper assembly. Torque: 1.5N·m



- 51 Move the front bumper left ventilation pipe to the installation position.
- 52 Install the 2 fixing screws connecting the left ventilation pipe of the front bumper with the front bumper assembly.
Torque: 1.5N·m



- 53 Install the 2 fixing screws connecting the left ventilation pipe of the front bumper with the front bumper assembly.
Torque: 1.5N·m

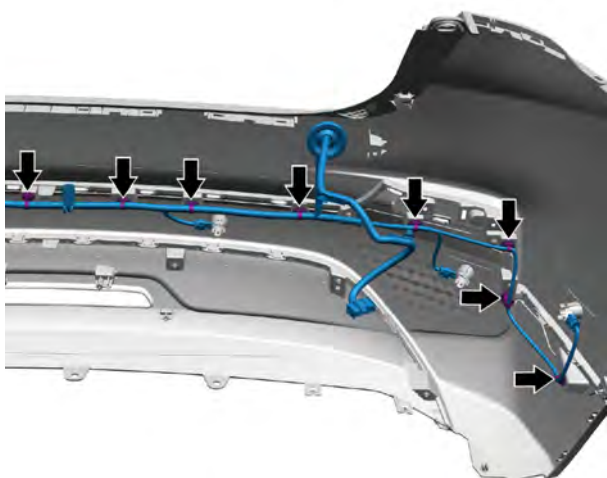
- 54 Install the 360 panoramic front parking assist camera assembly.
- 55 Install the front bumper assembly.
- 56 Install the front middle position lamp.
- 57 Lower the vehicle.
- 58 Connect the negative cable of battery.

12.4.3.10 Disassembly and assembly of rear bumper

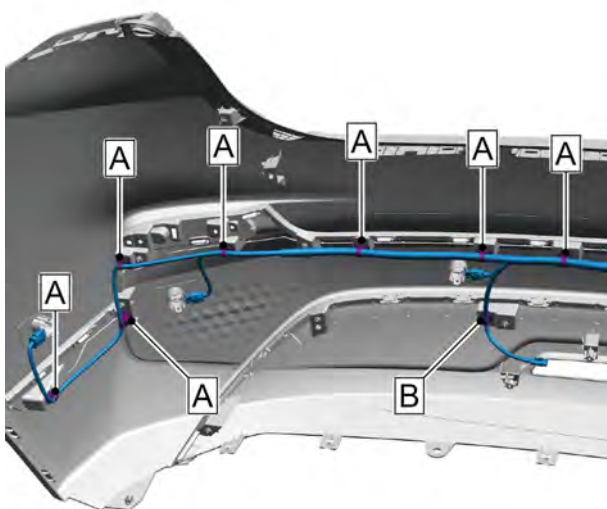
Removal procedure

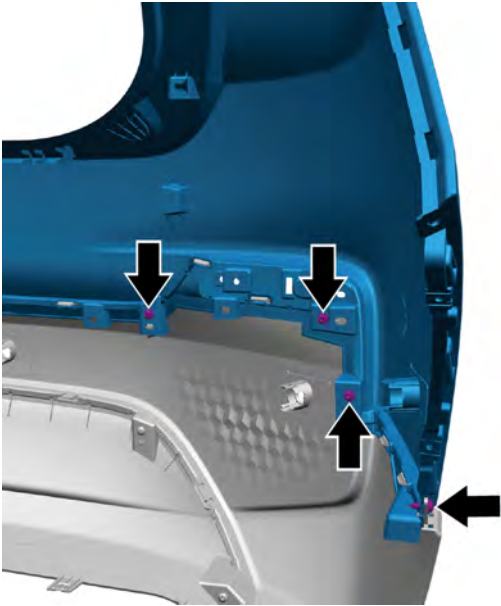
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)

- 3 Dismount the retro-reflector. Refer to [Replacement of retro-reflector](#)
- 4 Remove reversing radar probe. Refer to [Replacement of Reversing Radar Probe](#)
- 5 Remove the ultrasonic wave sensor of automatic parking. Refer to [Replacement of ultrasonic wave sensor of automatic parking](#)
- 6 Remove the middle rear fog lamp assembly. Refer to [Replacement of middle rear fog lamp assembly](#)
- 7 Disconnect the 8 fixing clips connecting the rear bumper harness with the left side of the upper body of the rear bumper.

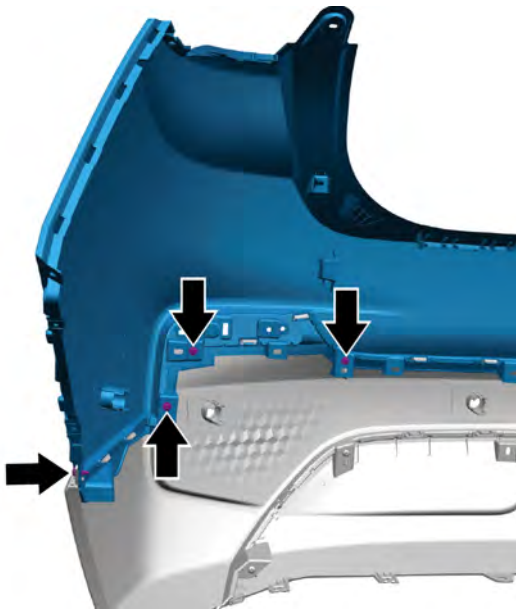


- 8 Disconnect the 7 fixing clips A connecting the rear bumper harness with the right side of the upper body of the rear bumper.
- 9 Disconnect the 1 fixing clip B connecting the rear bumper harness with the lower body of the rear bumper.
- 10 Take off the rear bumper harness.

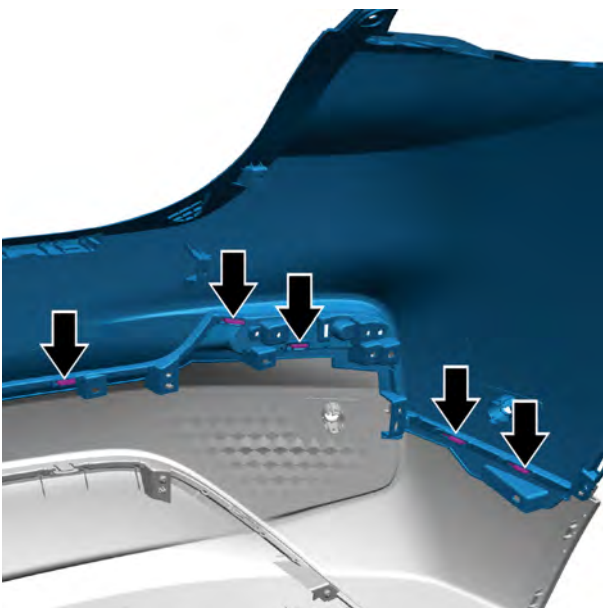




- 11 Remove the 4 fixing screws connecting the rear bumper upper body and the left side of the lower body.

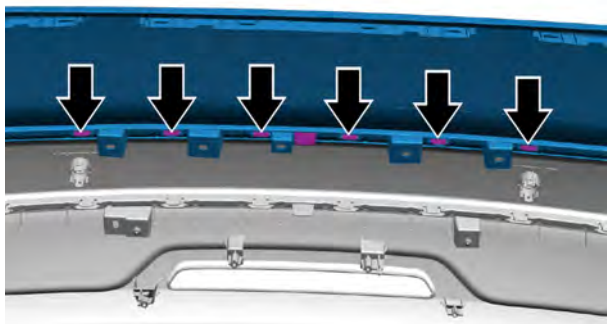


- 12 Remove the 4 fixing screws connecting the rear bumper upper body and the right side of the lower body.

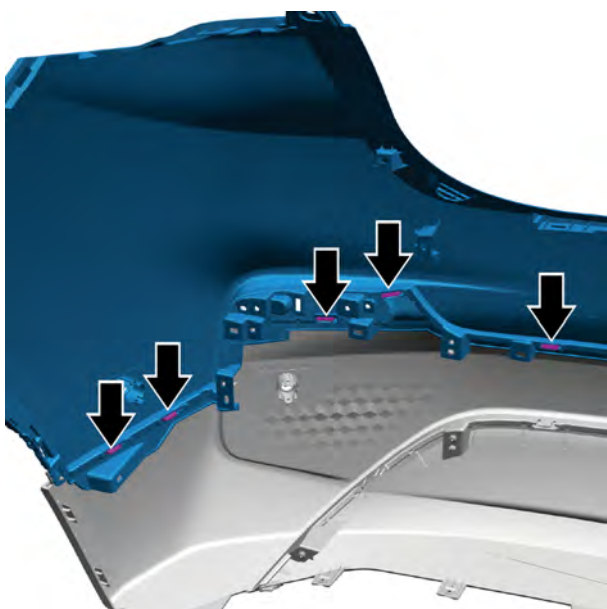


- 13 Disconnect the 5 fixing clips connecting the upper body of the rear bumper and the left side of the lower body of the rear bumper.

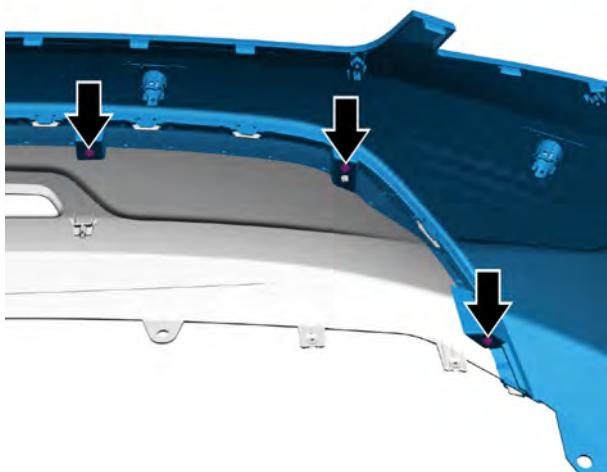
- 14 Release the 6 retaining clips connecting the upper part of the rear bumper and the middle of rear bumper lower body.



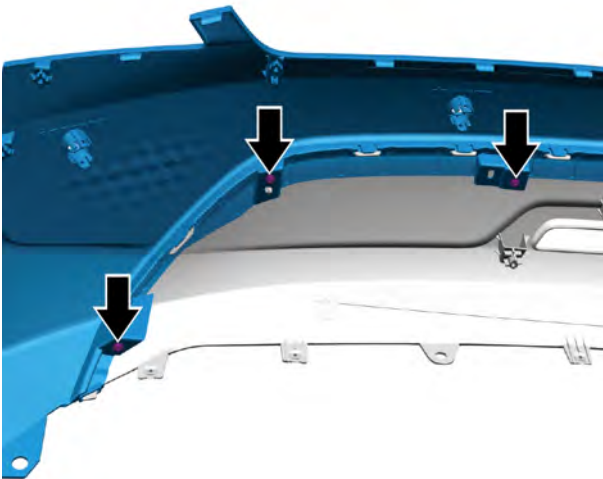
- 15 Disconnect the 5 fixing clips connecting the upper body of the rear bumper and the right side of the lower body of the rear bumper.
- 16 Take off the upper body of the rear bumper.



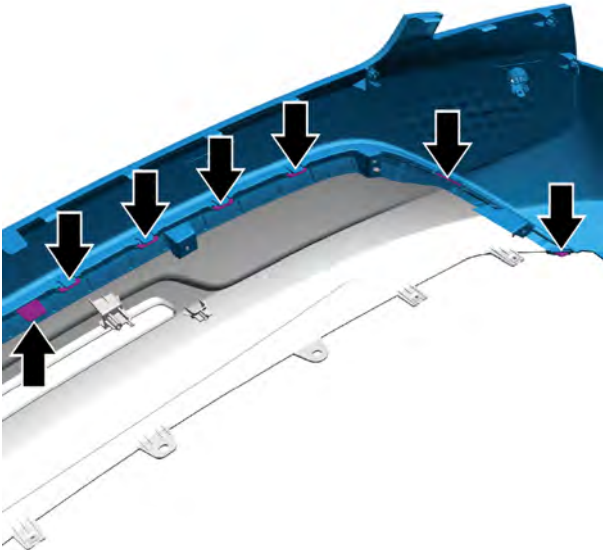
- 17 Remove the 3 fixing screws connecting the rear bumper lower body and the left side of the rear bumper lower body trim panel.



- 18 Remove the 3 fixing screws connecting the rear bumper lower body and the right side of the rear bumper lower body trim panel.

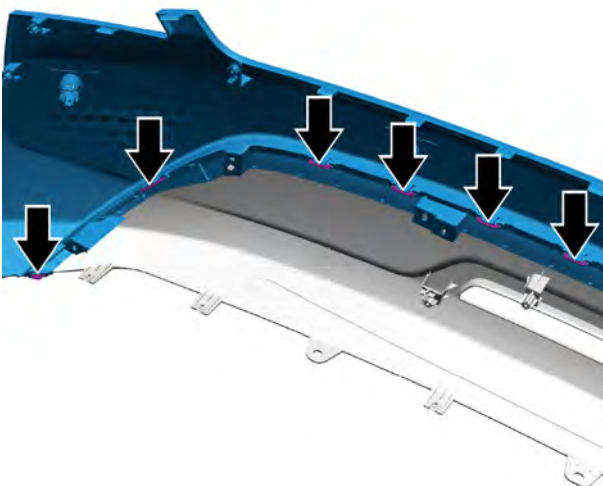


- 19 Disconnect the 7 retaining clips connecting the lower body of the rear bumper and the left side of the trim panel of the lower body of the rear bumper.



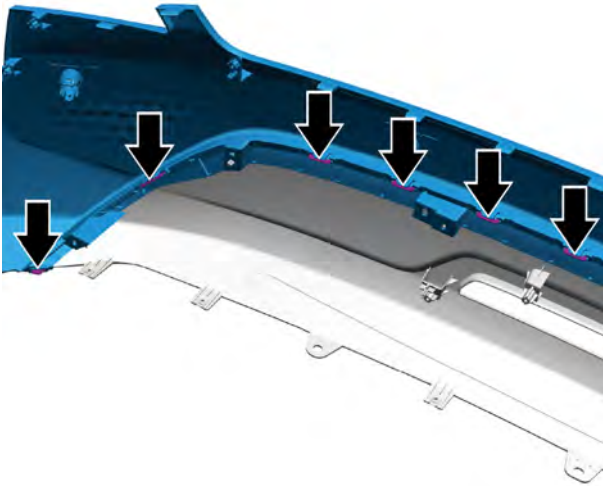
- 20 Disconnect the 6 retaining clips connecting the lower body of the rear bumper and the right side of the trim panel of the lower body of the rear bumper.

- 21 Remove rear bumper lower body.

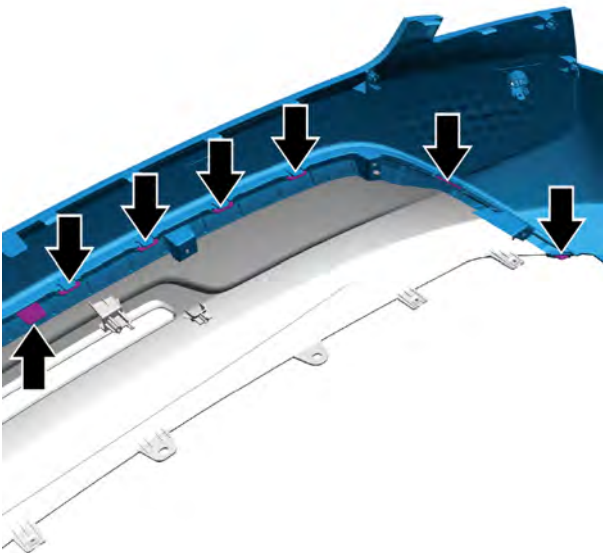


Installation procedure

- 1 Move the rear bumper lower body to the installation position.
- 2 Install the right rear bumper lower body to the rear bumper lower body trim panel, and press the 6 retaining clips to ensure installation and tightening.

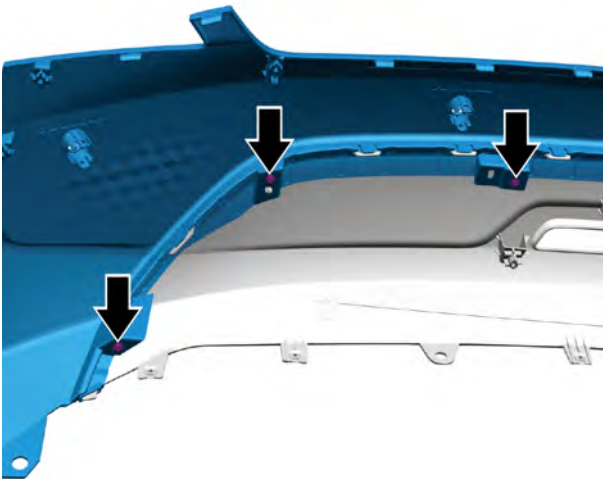


- 3 Install the left rear bumper lower body to the rear bumper lower body trim panel, and press the 7 retaining clips to ensure installation and tightening.



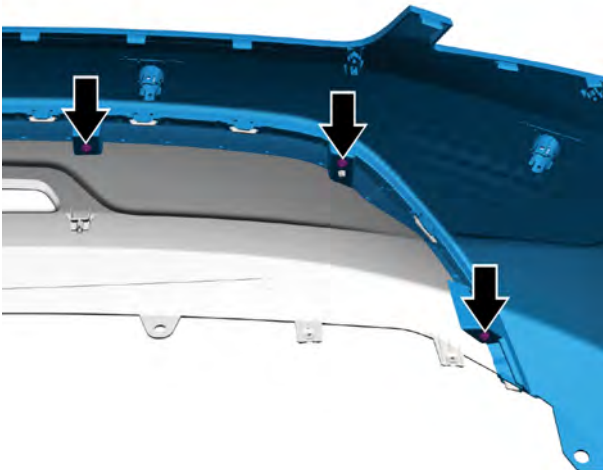
- 4 Install and tighten the 3 fixing screws connecting the rear bumper lower body and the right side of trim panel of lower body of the rear bumper.

Torque: 1.5N·m

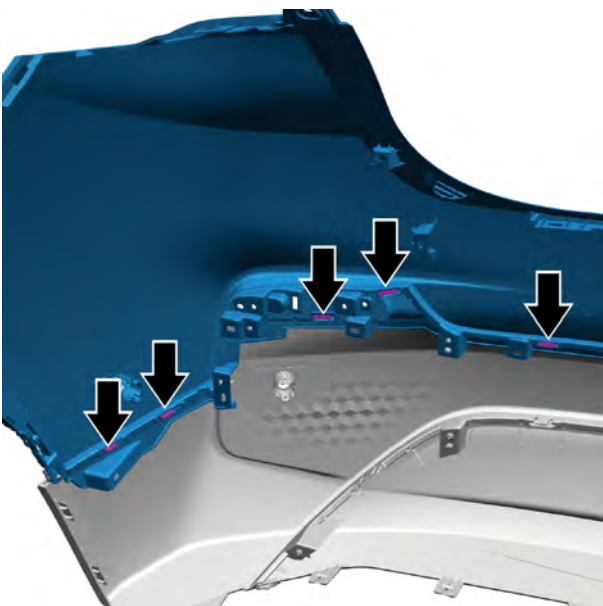


- 5 Install and tighten the 3 fixing screw connecting the rear bumper lower body and the left side of trim panel of lower body of the rear bumper.

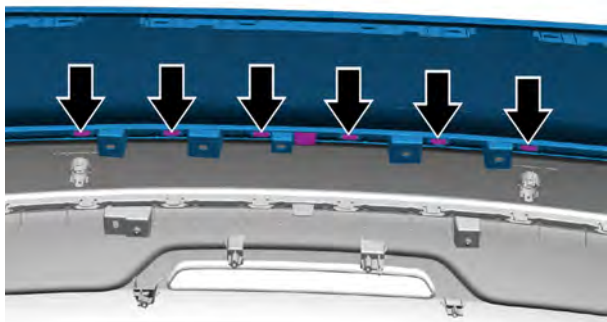
Torque: 1.5N·m



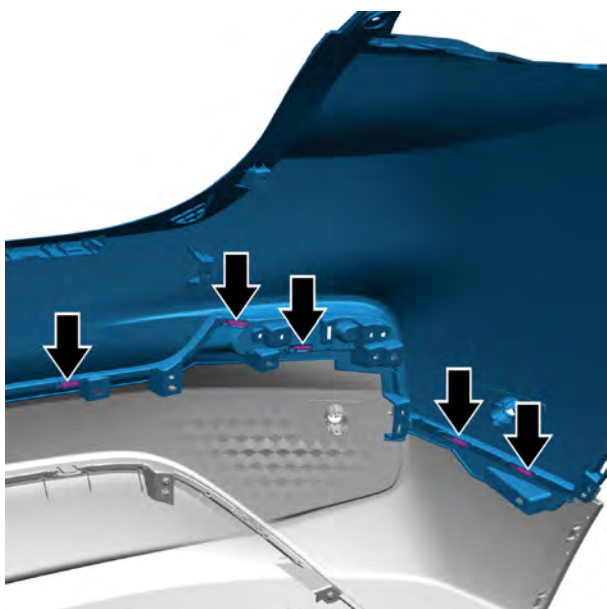
- 6 Move the rear bumper upper body to the installation position.
- 7 Install the upper body of the right rear bumper to the lower body of the rear bumper, and press the 5 retaining clips to ensure installation and tightening.



- 8 Install the upper body of the middle rear bumper to the lower body of the rear bumper, and press the 6 retaining clips to ensure installation and tightening.

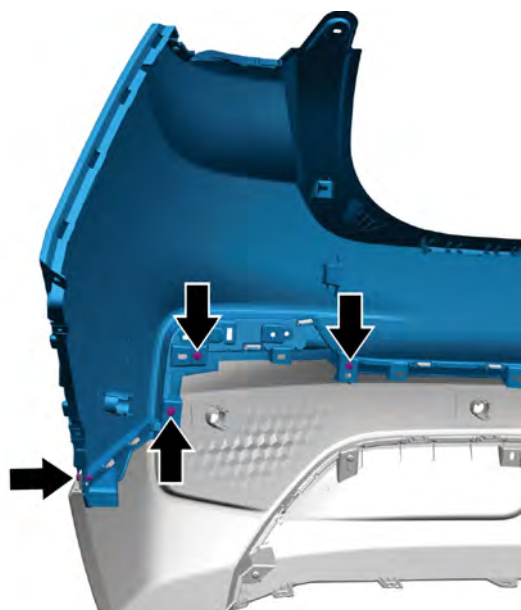


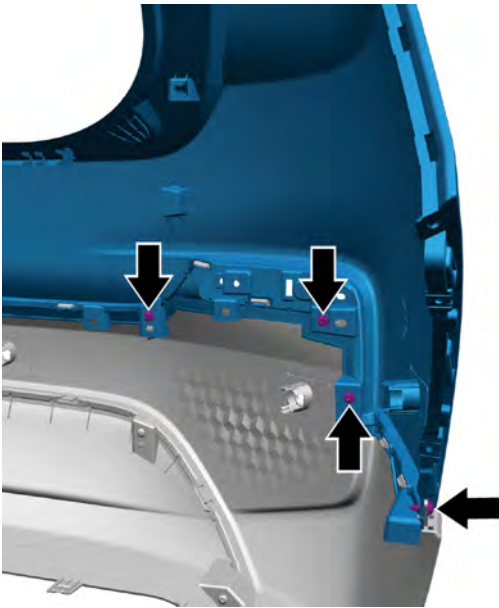
- 9 Install the upper body of the left rear bumper to the lower body of the rear bumper, and press the 5 retaining clips to ensure installation and tightening.



- 10 Install the 4 fixing screws connecting the rear bumper upper body and the right side of the rear bumper lower body.

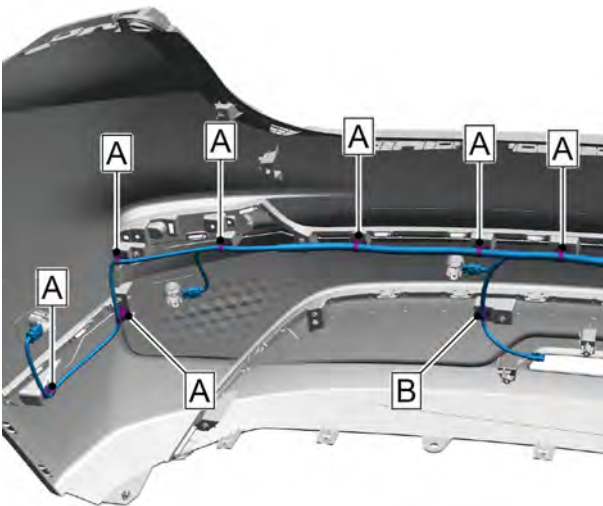
Torque: 1.5N·m



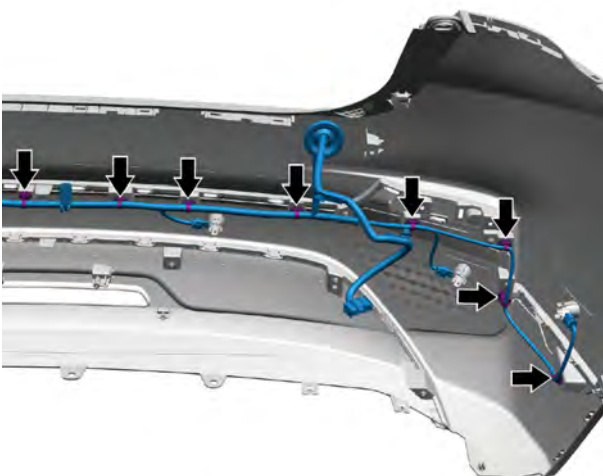


- 11 Install the 4 fixing screws connecting the rear bumper upper body and the left side of the rear bumper lower body.

Torque: 1.5N·m



- 12 Move the rear bumper harness to the installation position.
- 13 Install the 1 fastening clip B connecting the rear bumper harness with the lower body of the rear bumper.
- 14 Install the 7 fastening clips A connecting the rear protection harness with the right side of upper body of the rear bumper.



- 15 Install the 8 fastening clips connecting the rear bumper harness with the left side of upper body of the rear bumper.

- 16 Install the middle rear fog lamp assembly.
- 17 Install the automatic parking ultrasonic sensor.
- 18 Install the reversing radar probe.
- 19 Install the retro-reflector.
- 20 Lower the vehicle.
- 21 Connect the negative cable of battery.

12.5 Doors

12.5.1 Specification

12.5.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing bolt and nut connecting the left front concealed door handle with the left front door assembly	M4×40	3.2-4.8
	M6	4-6
Fixing bolt and nut connecting the left rear concealed door handle and the left rear door assembly	M4×40	3.2-4.8
	M6	4-6
Door upper and lower hinges and body fixing bolt	M8×20	29-35
Door upper and lower hinges and door fixing bolt	M8×30	40
Fixing bolt connecting the front door check strap and the vehicle body	M6×12	8 -10
Left front door outer trim panel bracket fixing bolt	—	8 -10

12.5.2 Removing and installing

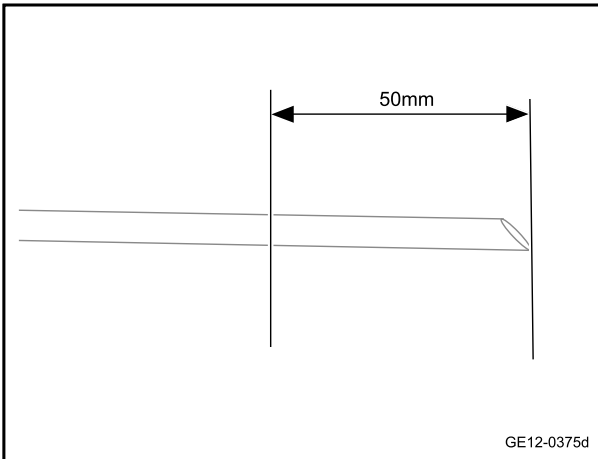
12.5.2.1 Door handle maintenance

Procedures of maintenance

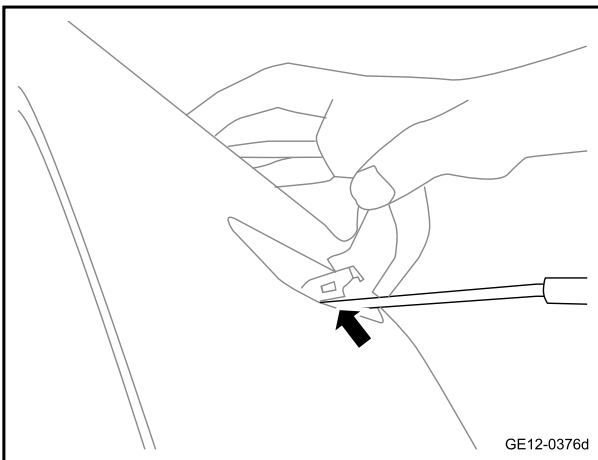
Warning

Tools will be used for this operation: injector, plastic tube (pipe)

Door handle maintenance grease model: lithium base grease NPCDK-619



- 1 Insert lubricating grease into the injector, insert the plastic tube onto the injector, and mark the place where the other end of the plastic tube is 50 mm away from the end.



- 2 The vehicle key is locked and the door handle is folded.
- 3 Pull the door handle manually to the maximum position, put the hard tube through the hole at the lower part of the handle (as shown in the figure). After the hard tube mark is flush with the handle, push the injector to inject 2-3 ml;
- 4 Pull out the injector and repeat the electrically operated opening and closing handle 10 times.

12.5.2.2 Replacement of left front door and upper and lower hinges

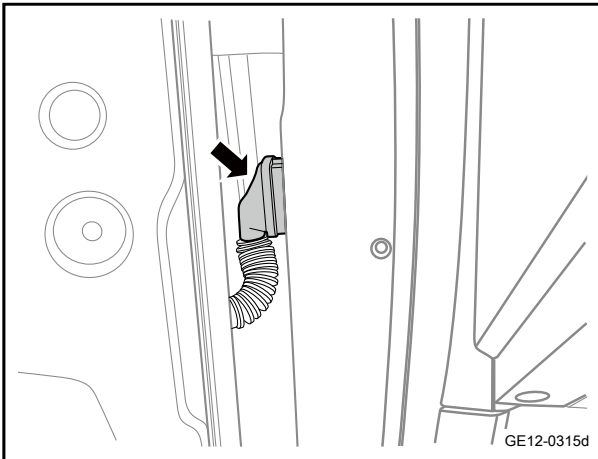
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

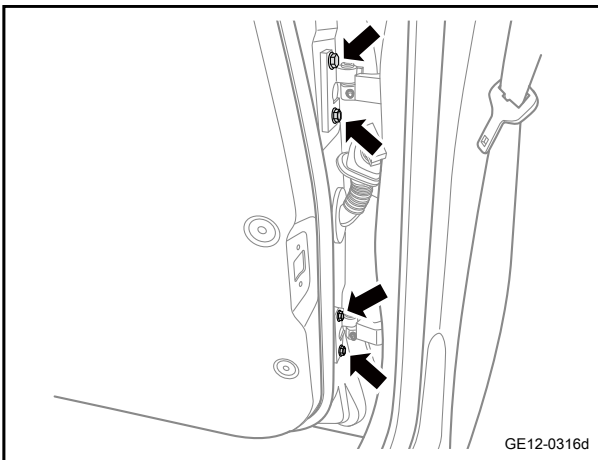
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

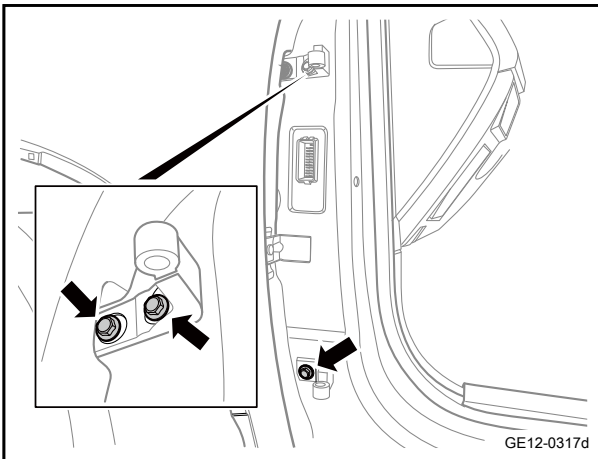
- 2 Remove the door check strap. Refer to [Replacement of the Door Check Strap](#)



- 3 Disconnect the door harness dust cover and disconnect the front door harness connector.

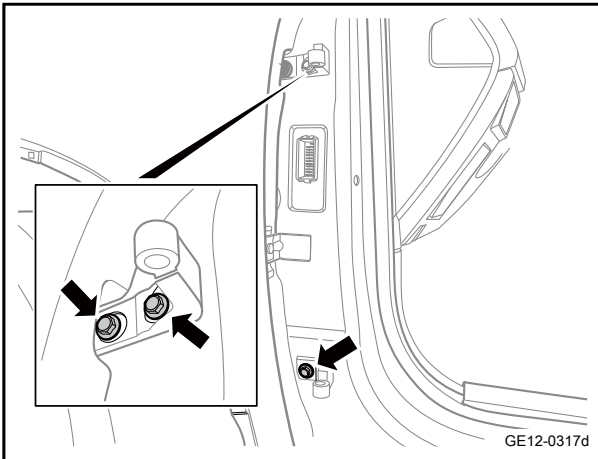


- 4 Remove the 4 fixing bolts between door upper and lower hinges and vehicle body.

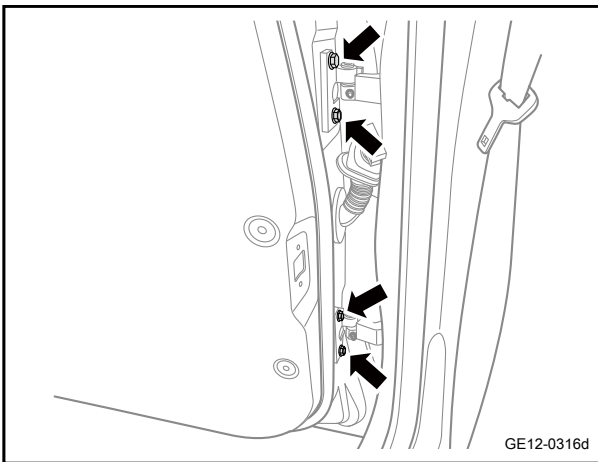


- 5 Remove the 3 fixing bolts between door upper and lower hinges and vehicle body.
- 6 Remove front left door and upper and lower hinges.

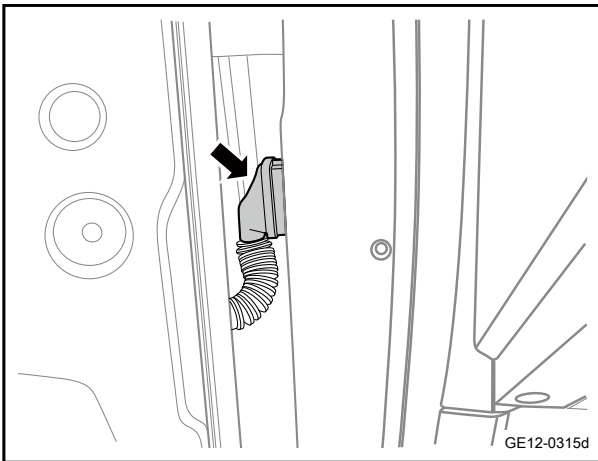
Installation procedure



- 1 Move the left front door and the upper and lower hinges of the front left door to the installation position.
- 2 Install the 3 fixing bolts connecting the upper and lower hinges of the front left door and the vehicle body.
Torque: 32N·m (metric system) 23.6lb-ft (Imperial system)



- 3 Install the 4 fixing bolts connecting the and the upper and lower hinges of the front left door and the vehicle door.
Torque: 40N·m (metric system) 29.5lb-ft (Imperial system)



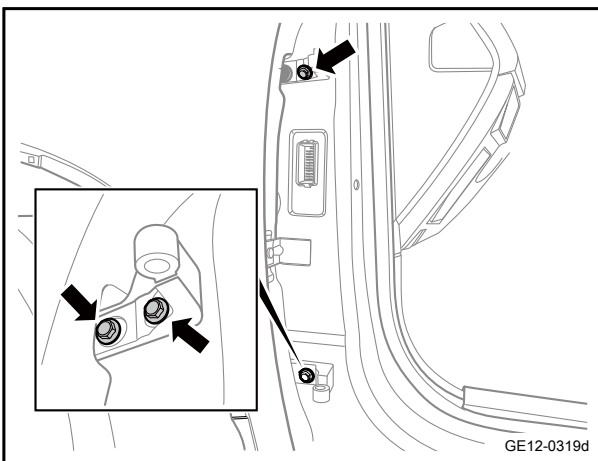
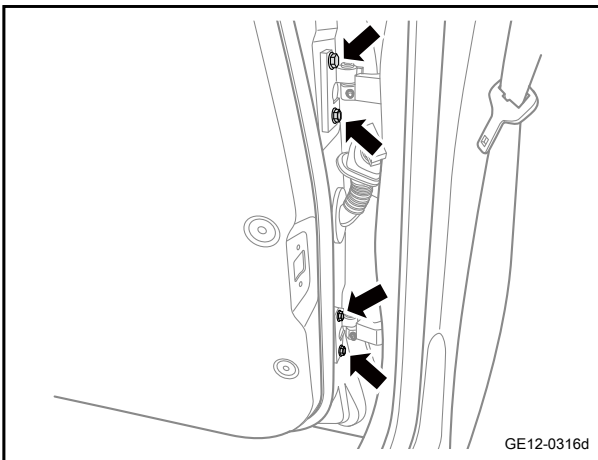
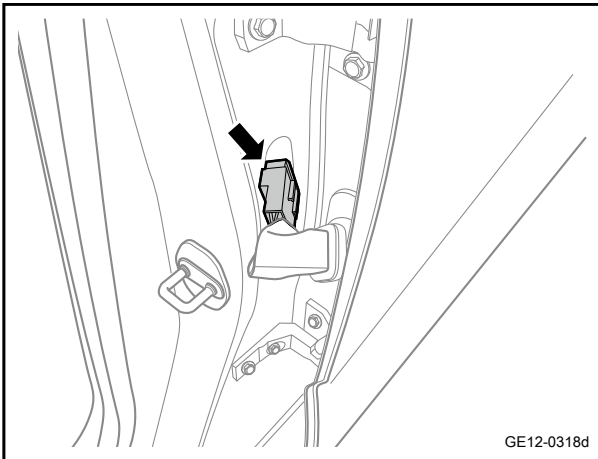
- 4 Connect the front door harness connector, and install the door harness dust cover.

- 5 Install the rear door check strap.
- 6 Connect the negative cable of battery.

12.5.2.3 Replacement of left rear door and upper and lower hinges

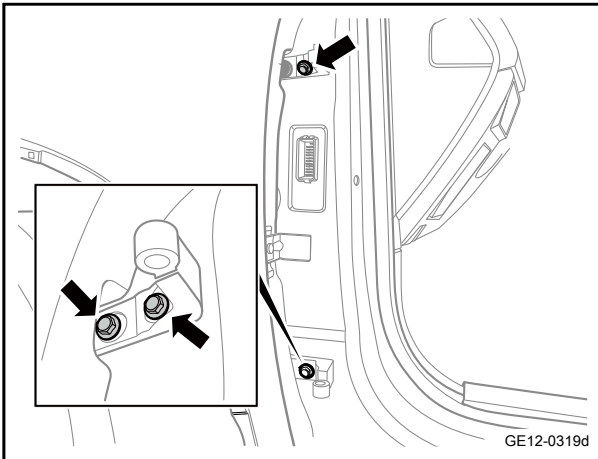
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the door check strap. Refer to [Replacement of the Door Check Strap](#)
- 3 Disconnect the door harness dust cover and disconnect the rear door harness connector.

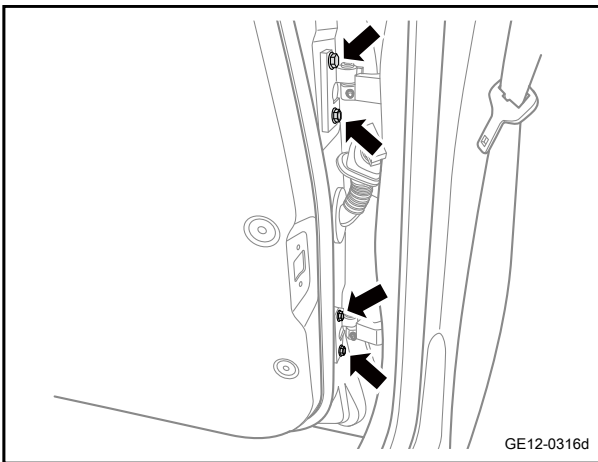


- 4 Remove the 4 fixing bolts between door upper and lower hinges and vehicle body.
- 5 Remove the 3 fixing bolts between door upper and lower hinges and vehicle body.
- 6 Remove front left door and left front door upper and lower hinges.

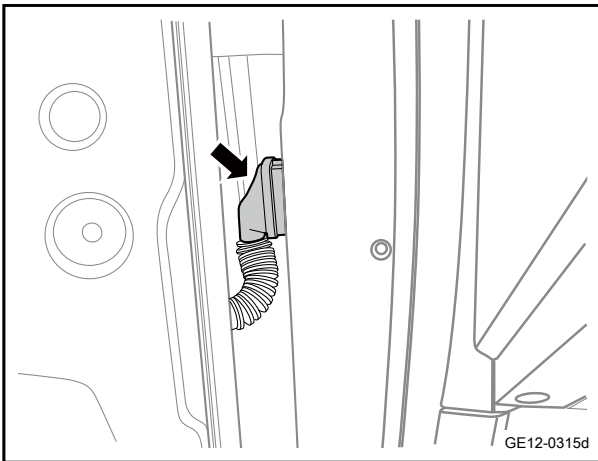
Installation procedure



- 1 Move the left front door and left front door upper and lower hinges to the installation position.
- 2 Install the 3 fixing bolts connecting the door upper and lower hinges and the vehicle body.
Torque: Nm (metric system) lb-ft (imperial system)



- 3 Install the 4 fixing nut connecting the door upper and lower hinges and the vehicle body.



- 4 Connect the rear door harness connector, install it into the vehicle body, and install the dust cover.

- 5 Install the rear door check strap.
- 6 Connect the negative cable of battery.

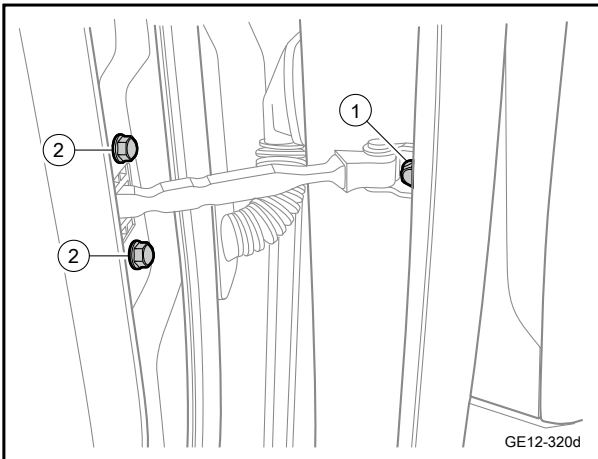
12.5.2.4 Replacement of the front door check strap assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

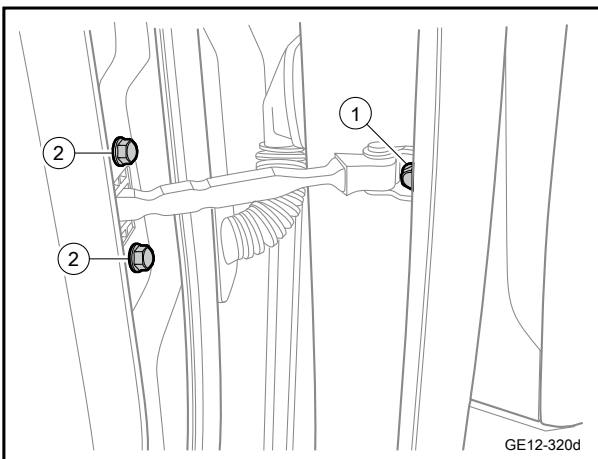
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



- 2 Remove the 1 fixing bolt 1 connecting the front left door check strap and the vehicle body.
- 3 Remove the 2 fixing bolts 2 connecting the front left door check strap and the vehicle body.
- 4 Remove front door check strap assembly.

Installation procedure



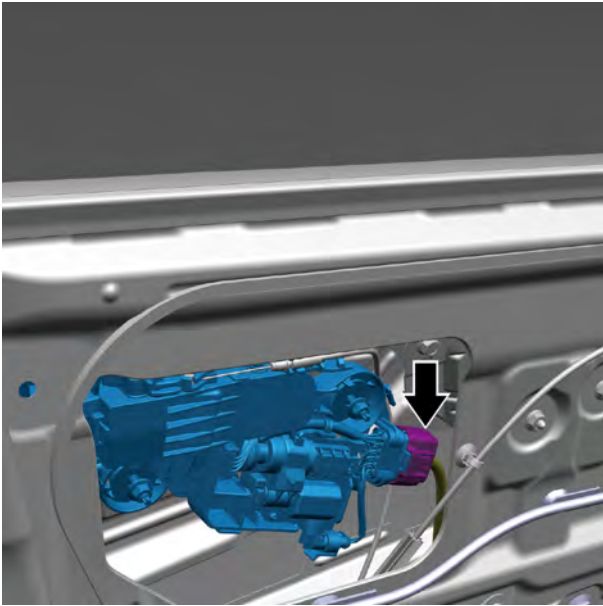
- 1 Move the door check strap assembly to the installation positions.
- 2 Install the 2 fixing bolts 2 connecting the front left door check strap and the vehicle body.
Torque: 9N·m (metric system) 6.6lb-ft (Imperial system)
- 3 Install the 1 fixing bolt 1 connecting the front door check strap and the vehicle body.
Torque: 23N·m (metric system) 17.0lb-ft (Imperial system)

- 4 Connect the negative cable of battery.

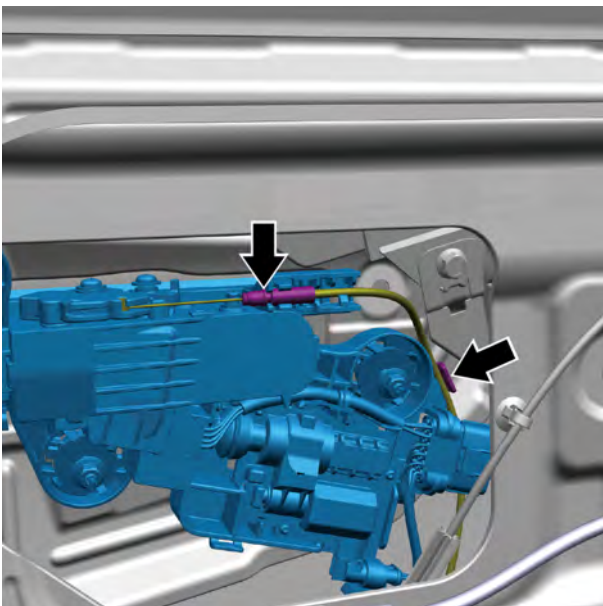
12.5.2.5 Replacement of concealed door handle of left front door

Removal procedure

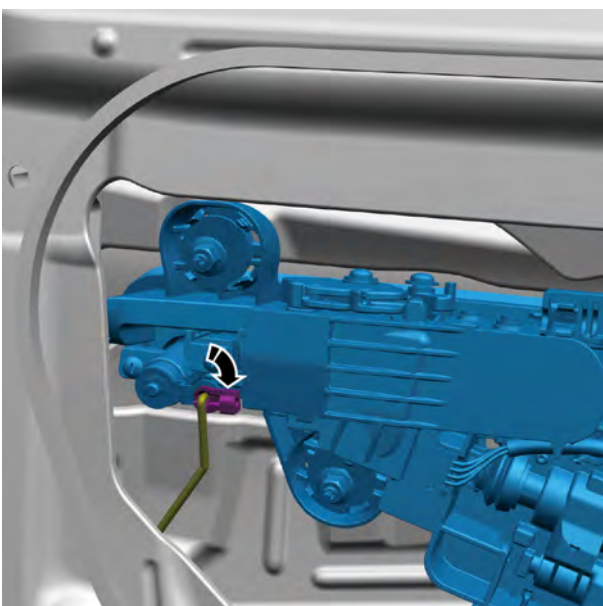
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door interior trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)



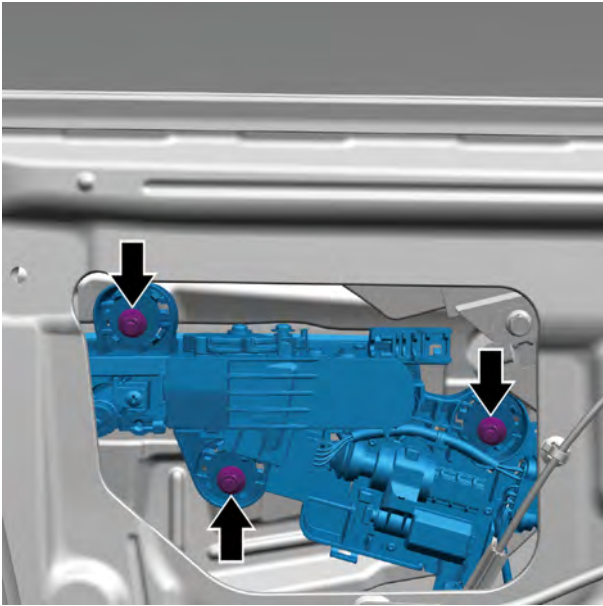
- 3 Disconnect the 1 harness connector connecting the left front door harness assembly and the left front door concealed door handle.



- 4 Disconnect the 2 fixing clips connecting the front door outer release cable with the left front door concealed door handle.



- 5 Disconnect the 1 fixing clip connecting the left front door lock element pull rod and the left front door hidden door handle.



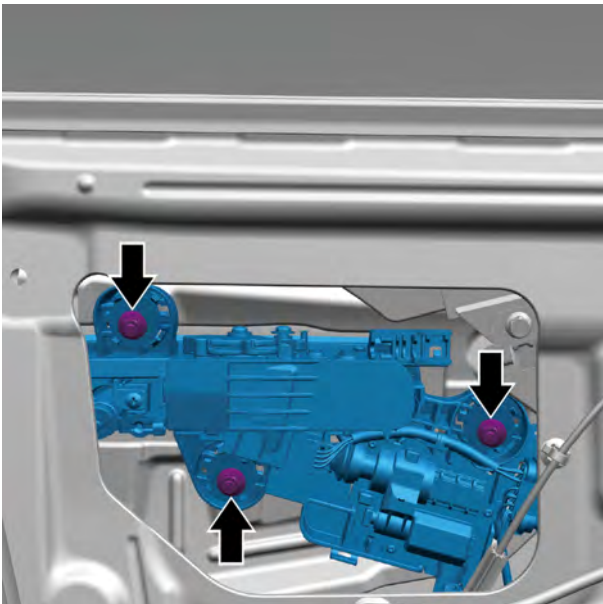
- 6 Remove the 3 fixing stud nuts connecting the left front door concealed door handle with the left front door assembly.
- 7 Remove left front door concealed door handle

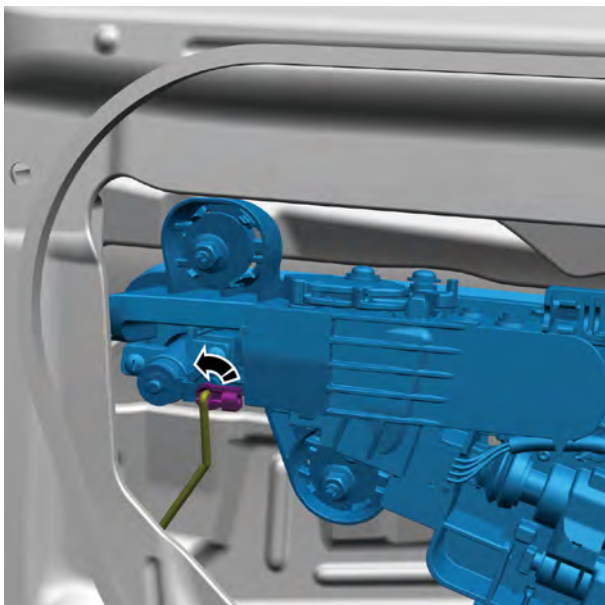
Installation procedure

- 1 Move the left front door hidden door handle to the installation position.
- 2 Install and tighten the 3 fixing stud nuts connecting the left front door hidden door handle and the left front door assembly.

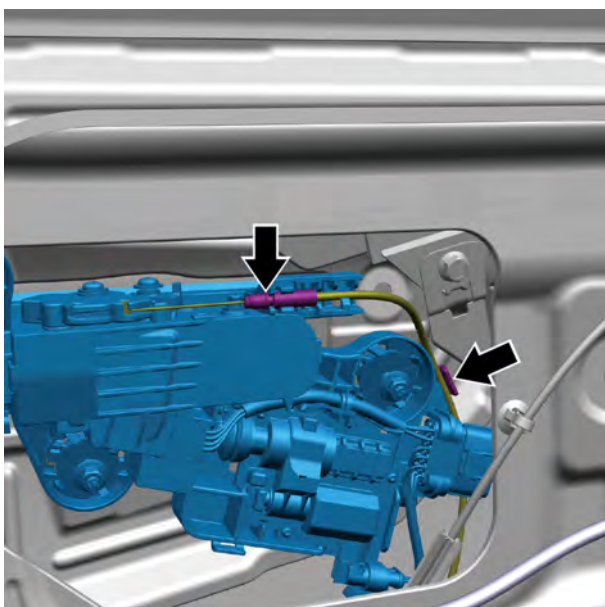
Stud Torque: 4N·m

Nut Torque: 5N·m

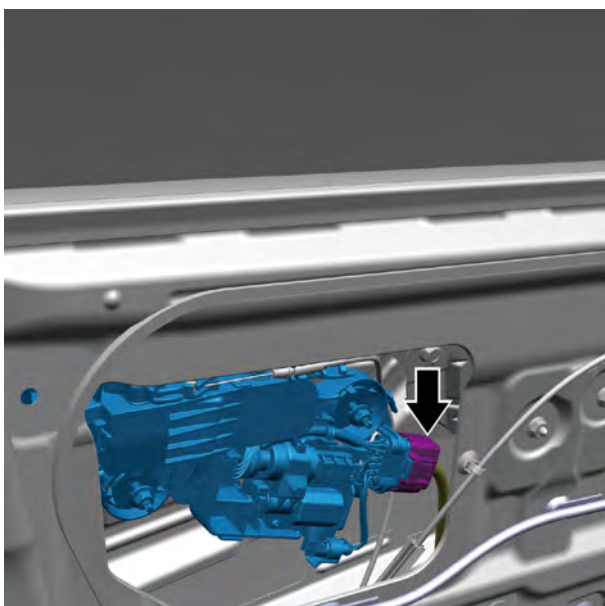




- 3 Install the front door lock cylinder pull rod to the left front door hidden door handle and ensure that the 1 retaining clip is fastened.



- 4 Install the front door exterior release cable to the left front door hidden door handle and ensure that the 2 retaining clips are fastened.



- 5 Connect the 1 harness connector between the left front door harness assembly and the left front door concealed door handle.

Caution

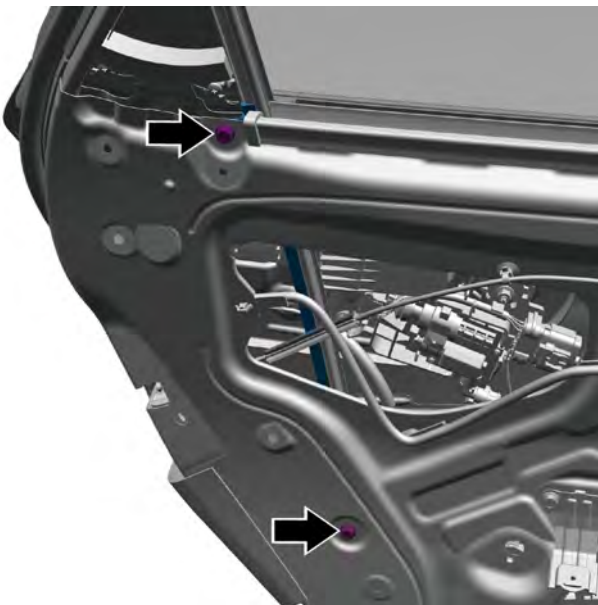
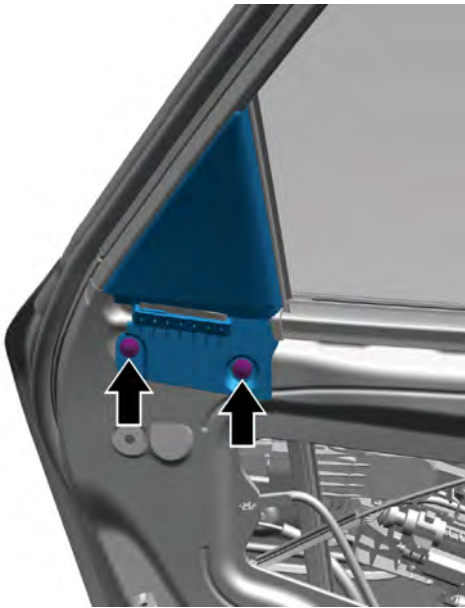
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

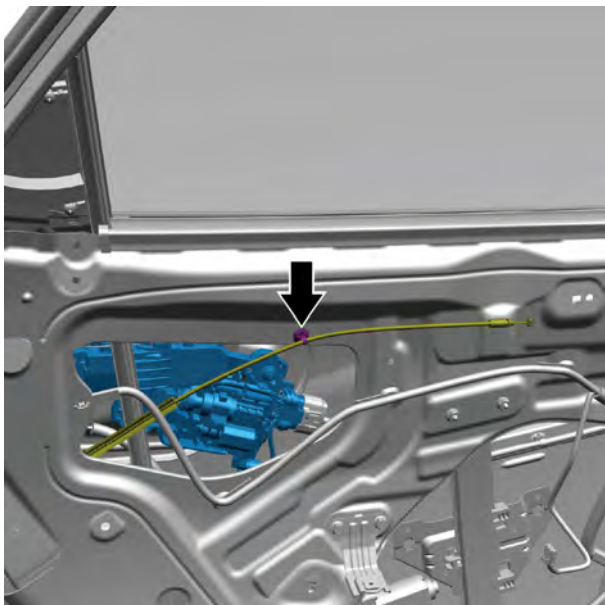
- 6 Install the -left front door interior trim panel assembly.
- 7 Connect the negative cable of battery.

12.5.2.6 Replacement of left rear door concealed door handle

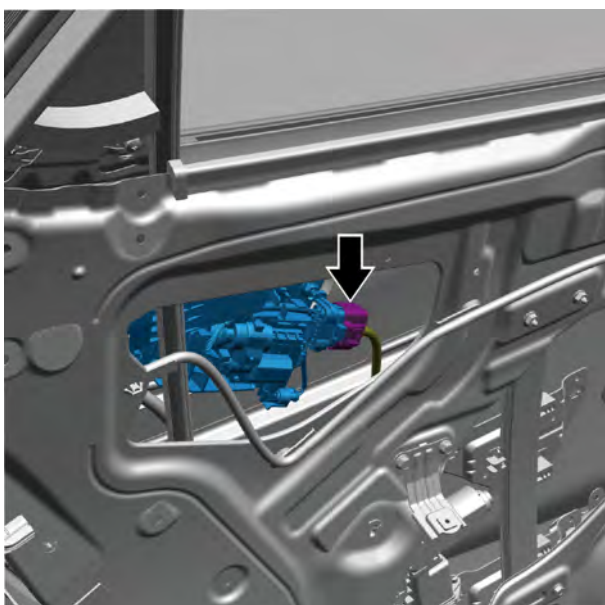
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left rear door interior trim panel assembly. Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)
- 3 Use a plastic pry board to pry off the two fixing clips connecting the left rear door corner trim assembly and the left rear door assembly.
- 4 Remove RL door interior corner trim panel assembly.
- 5 Remove the 2 fixing bolts connecting the left rear door glass rear run channel assembly with the left rear door assembly.
- 6 Take off the left rear door glass rear rear run channel assembly.

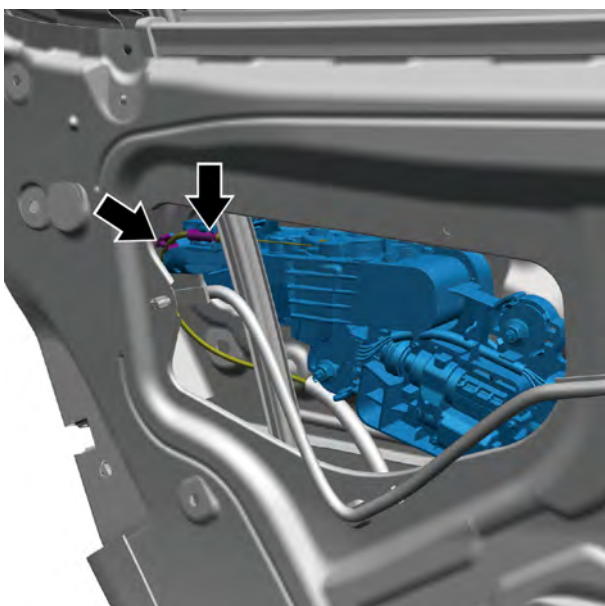




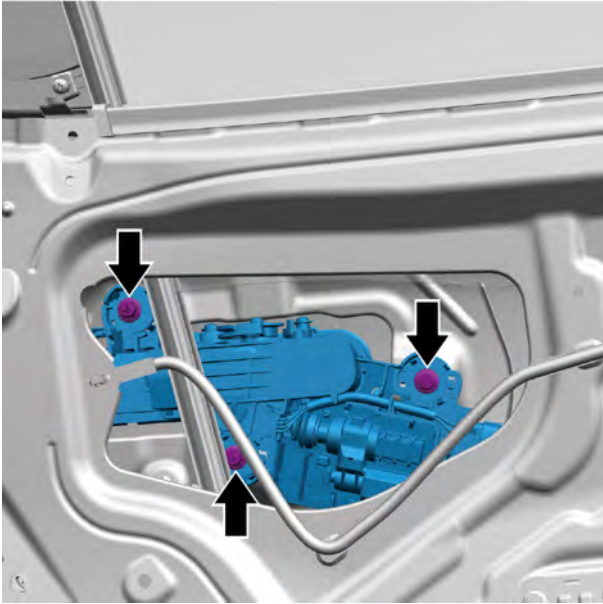
- 7 Disconnect the 1 fixing clip 1 of the rear door interior release cable assembly with the left rear door assembly.
- 8 Disconnect the left rear door interior release cable assembly.



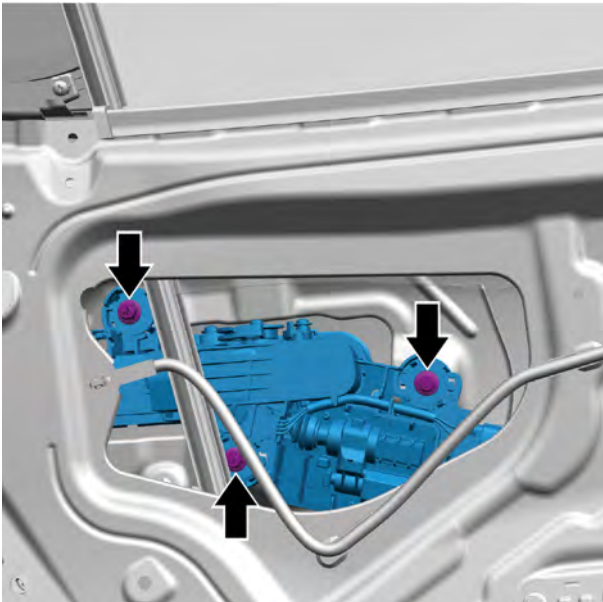
- 9 Disconnect the 1 harness connector between the left rear door harness assembly and the left rear door concealed door handle.



- 10 Disengage the two fixing clips connecting the rear door outer opening cable with the hidden door handle of the left rear door.



- 11 Remove the 3 fixing stud nuts connecting the left rear door concealed door handle with the left rear door assembly.
- 12 Take down left rear door concealed door handle.

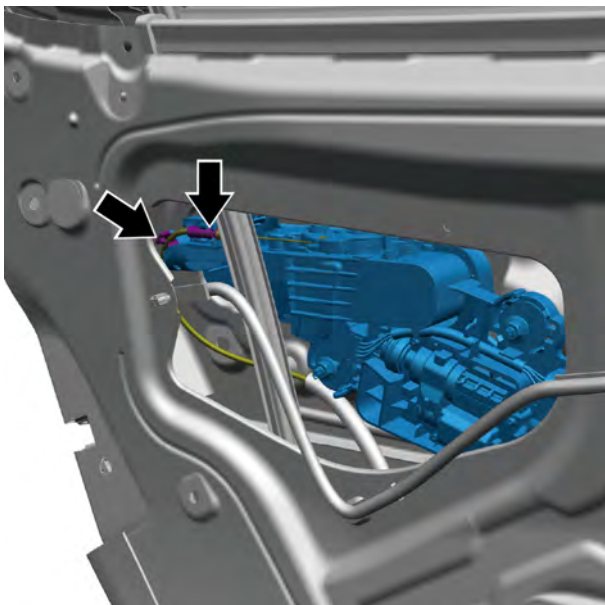


Installation procedure

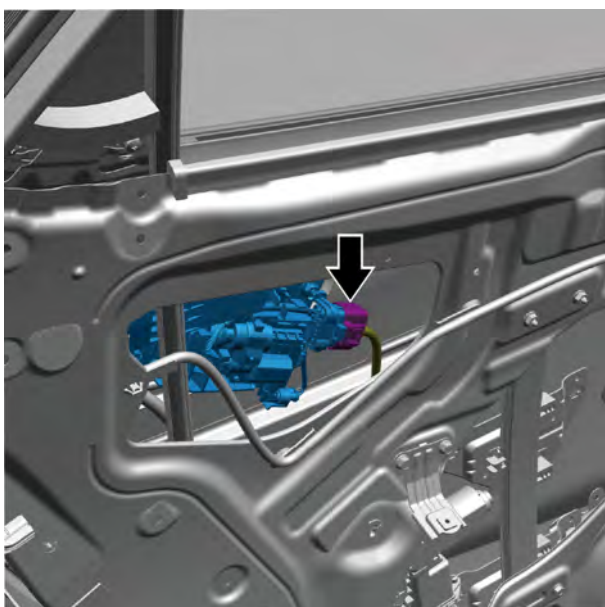
- 1 Move the left rear door hidden door handle to the installation position.
- 2 Install and tighten the three fixing stud nuts connecting the left rear door concealed door handle with the left rear door assembly.

Stud Torque: 4N·m

Nut Torque: 5N·m



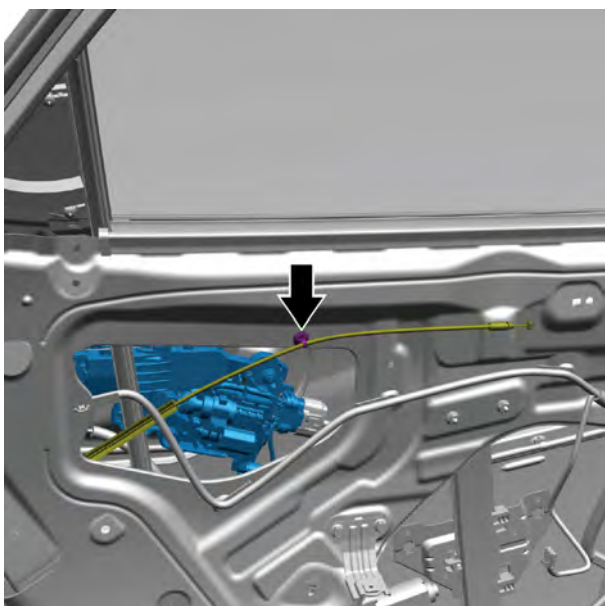
- 3 Install the rear door exterior release cable to the left rear door hidden door handle and ensure that the 2 retaining clips are fastened.



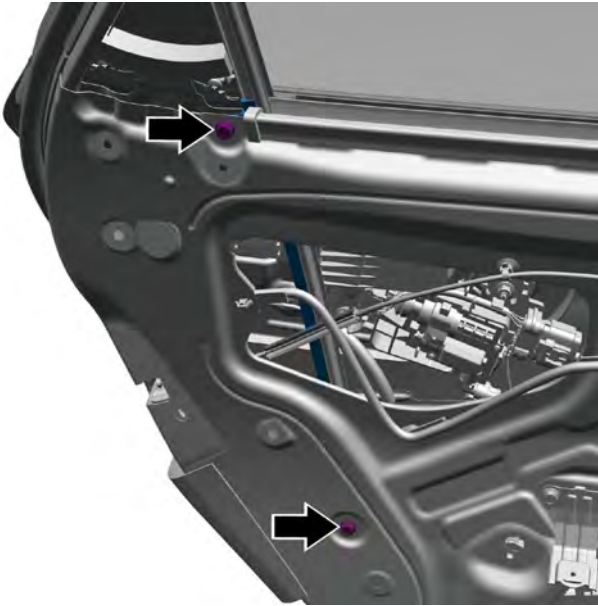
- 4 Connect 1 harness connector between the left rear door harness assembly and the left rear door concealed door handle.

Caution

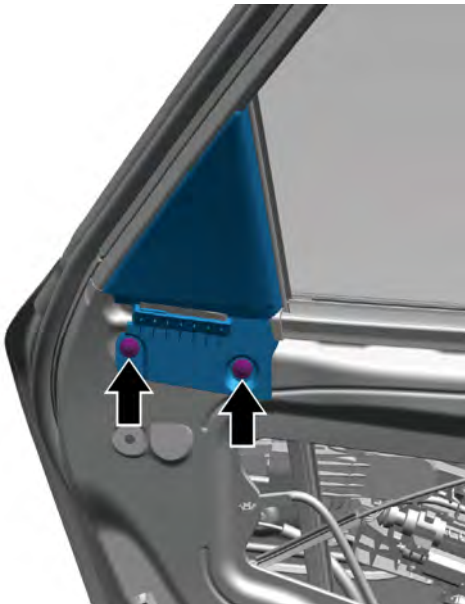
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 5 Move the rear door interior release cable assembly to the installation position.
- 6 Install the 1 fixing clip of the rear door interior release cable assembly and left rear door assembly.



- 7 Move the rear left door glass rear run channel to the installation position.
- 8 Install the 2 fixing bolts connecting the left rear door glass rear run channel assembly with the left rear door assembly.
Torque: 10N·m



- 9 Move the left rear door interior trim assembly to the mounting position.
- 10 Install 2 fixing screws connecting the left rear door interior panel assembly with the left rear door assembly

Caution

The clip is a disposable part, and should be replaced with a new one for installation.

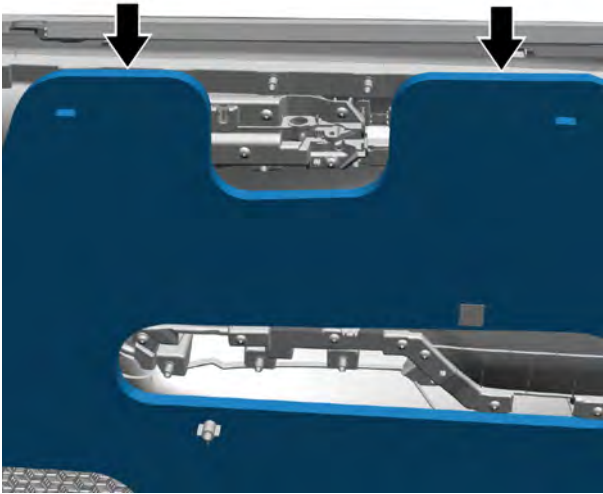
- 11 Install the RL door interior trim panel assembly
- 12 Connect the negative cable of battery.

12.5.2.7 Replacement of interior release handle of front left door

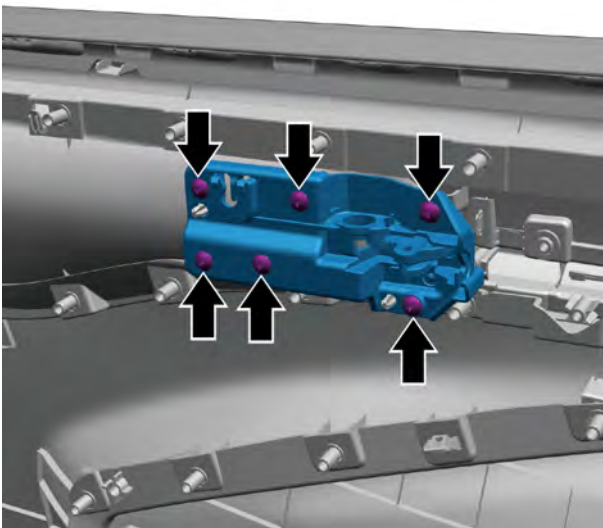
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door interior trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)

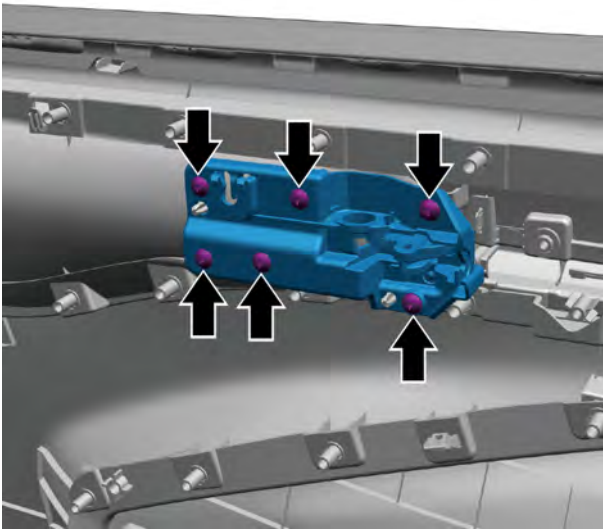
- 3 Remove the sound insulating pad of the FL door trim panel from the FL door trim panel assembly.



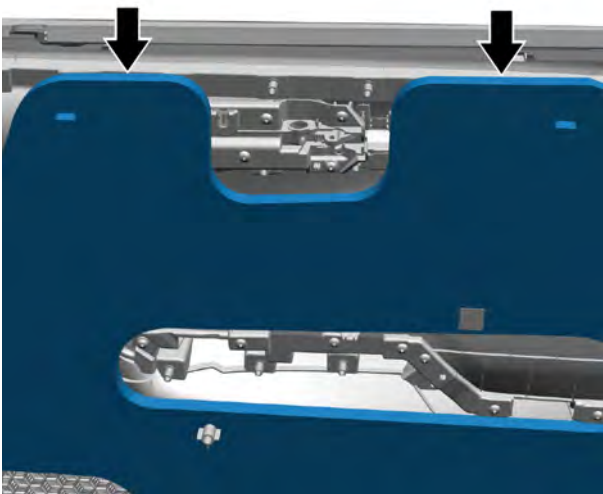
- 4 Remove the 6 fixing screws connecting the left front door interior release handle with the left front door interior trim panel assembly.
- 5 Take off the left front door interior release handle.



Installation procedure



- 1 Move the left front door interior release handle to the installation position.
- 2 Install the 6 fixing screws connecting the left front door interior release handle with the left front door interior trim panel assembly.



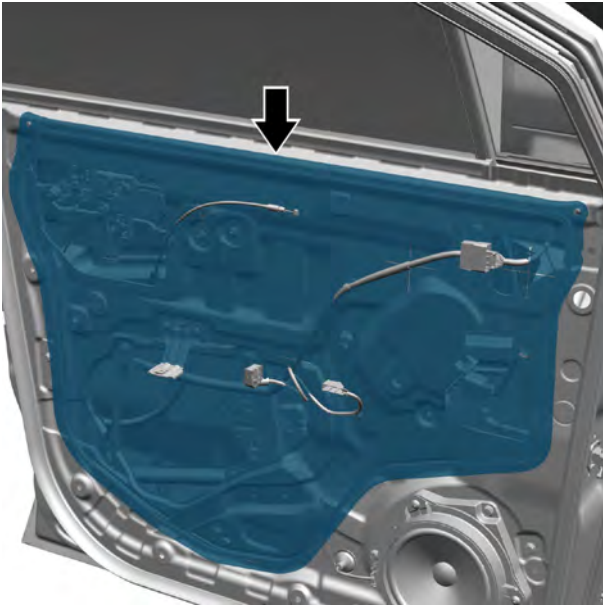
- 3 Install the left front door trim soundproof pad to the left front door trim panel assembly.

- 4 Install the left front door-interior trim panel assembly.
- 5 Connect the negative cable of battery.

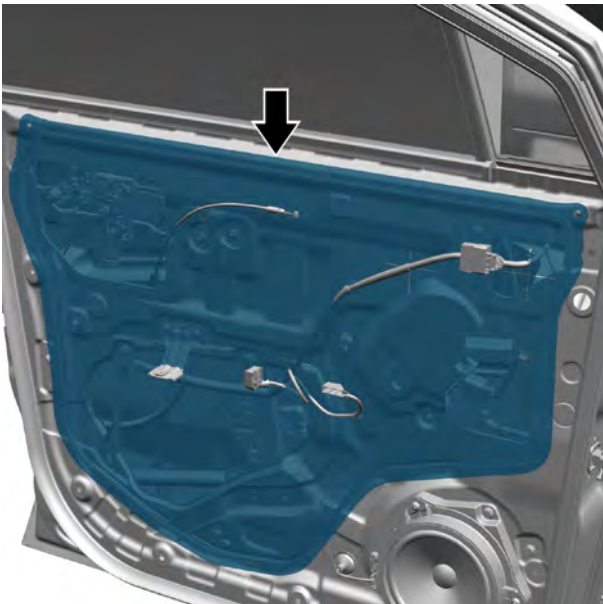
12.5.2.8 Replacement of front left door watertight membrane

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door interior trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)



- 3 Uncover the left front door waterproof membrane from the vehicle body.
- 4 Remove the front left door watertight membrane.



Installation procedure

- 1 Move the left front door waterproof membrane to the installation position.

Caution

It is necessary to dispose of old waterproof sealant and re-paste new waterproof sealant.

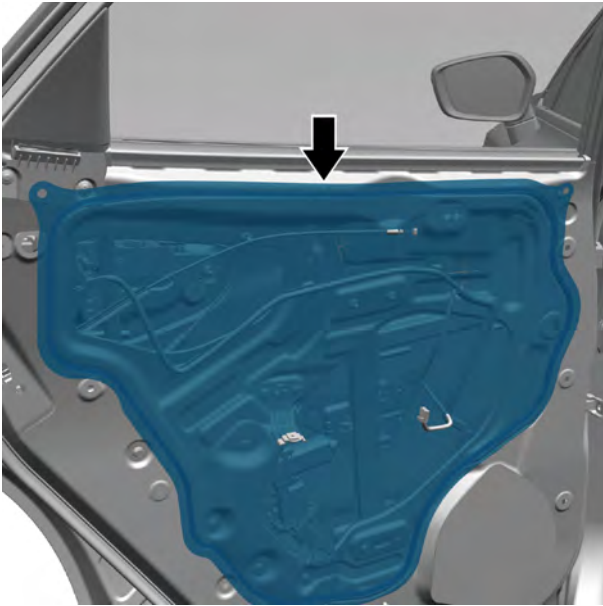
- 2 Paste the left front door waterproof film to the body.

- 3 Install the assembly-interior trim panel left front door.
- 4 Connect the negative cable of battery.

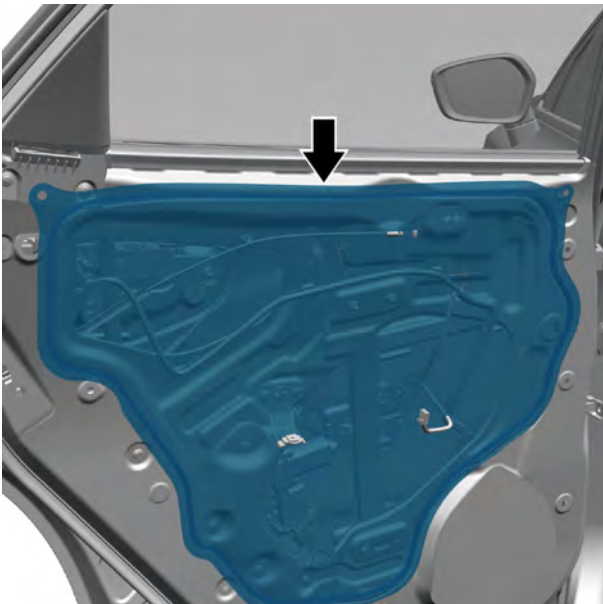
12.5.2.9 Replacement of front left door watertight membrane

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left front door interior trim shield assembly. Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)



- 3 Lift the connection between the left rear door waterproof film and the vehicle body.
- 4 Remove the front rear door watertight membrane.



Installation procedure

- 1 Move the rear left door watertight membrane to the installation position.

Caution

It is necessary to dispose of old waterproof sealant and re-paste new waterproof sealant.

- 2 Paste the left rear door waterproof film to the body.

- 3 Install the RL door interior trim panel assembly
- 4 Connect the negative cable of battery.

12.6 Frame and Underbody

12.6.1 Instructions and operations

12.6.1.1 Frame and underbody descriptions

The frame is a sub-frame located at the front of the vehicle and separated from the body by rubber bushing, which provides location for the drive train, the lower control arm of front suspension, and the power steering tie rod assembly. Any misplace of the frame will result in the misplacing of the front wheels. The frame is bolted to the body through rubber bushing. The underbody must be correctly positioned to ensure the correct suspension and the correct wheel alignment. All underbody parts directly affect the overall strength of the entire body, and appropriate welding techniques should be used in repair operations.

Parts must be protected against corrosion as long as the body repair operations damage or break the original surface. Refer to the [corrosion treatment in "Collision Repair" description and operation](#).

12.6.2 Part position

12.6.2.1 Part Position



1. Front sub-frame assembly

12.6.3 Removing and installing

12.6.3.1 Replacement of Front Subframe Assembly

Refer to [Replacement of Electric Drive System](#)

12.7 Seat

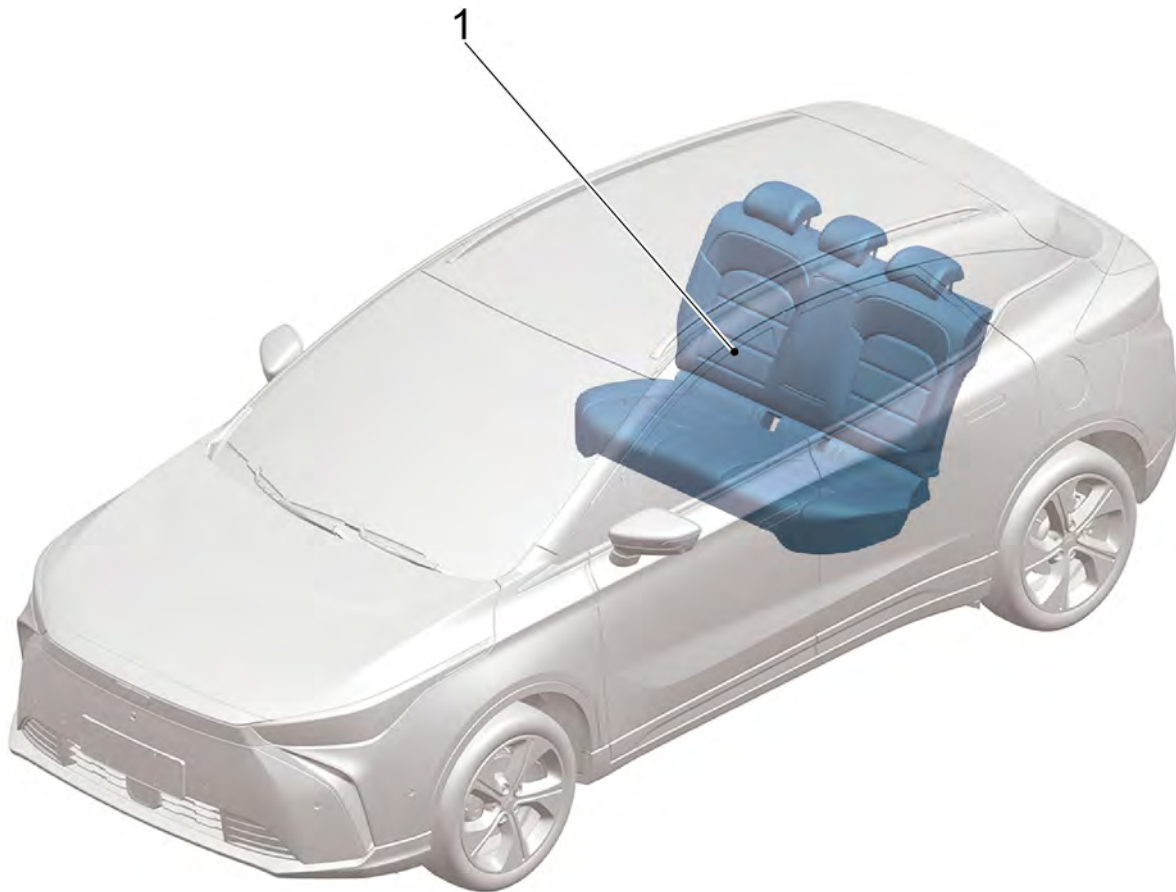
12.7.1 Specification

12.7.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Front seat and front floor fixing bolts	M10×25	40-50
Central armrest fixing bolt	M6×16	8-12
Driver seat outer shield (manual) fixing screw	ST4.8×9.5	5 ~ 9
Fixing bolt for adjusting rocker handle cover of driver seat backrest forward/backward	M6×10	8-12
Driver seat inner shield fixing screw	ST4.8×9.5	5-9
Front seat sliding rail fixing nut	M8	20-26
Rear hinge and rear backrest fixing bolt	-	40-50
Central seatbelt lock catch fixing bolt	-	40-50

12.7.2 Part position

12.7.2.1 Part Position

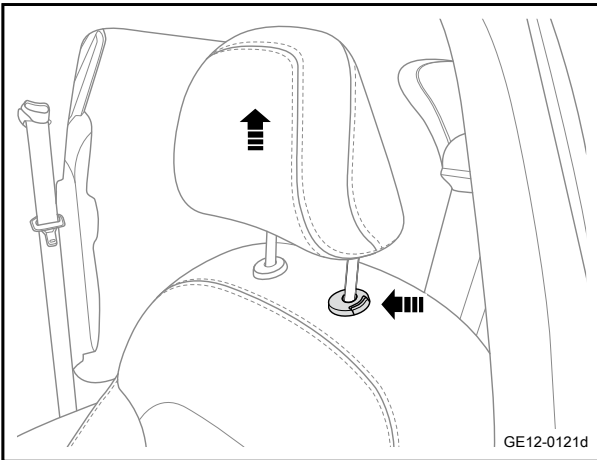


1. Rear seat assembly

12.7.3 Removing and installing

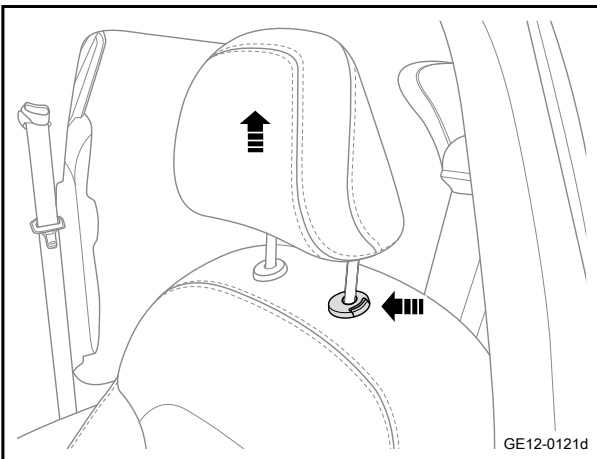
12.7.3.1 Replacement of Seat Headrest

Removal procedure



- 1 Press the seat headrest assembly adjustment button to lift the headrest up.

Installation procedure



- 1 Press the seat headrest assembly adjustment button to insert the headrest into the guide sleeve.

12.7.3.2 Replacement of Left Front Seat Assembly

Removal procedure

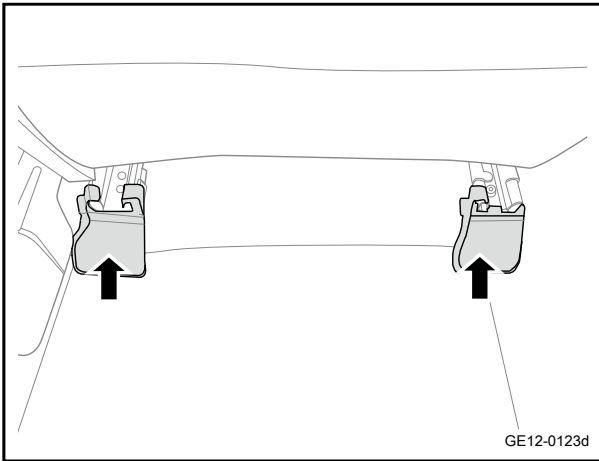
Caution

The left and right sides are removed and installed in the same way.

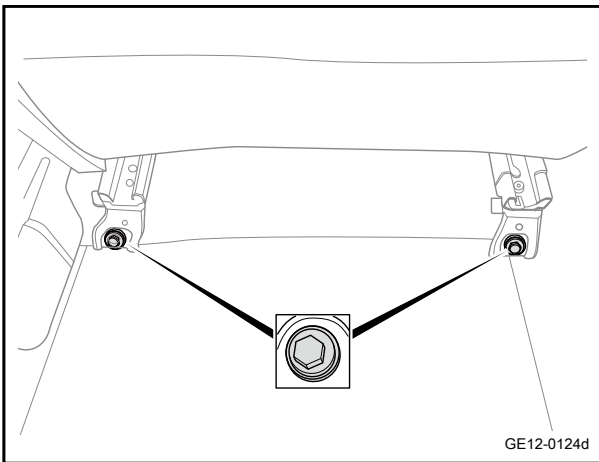
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

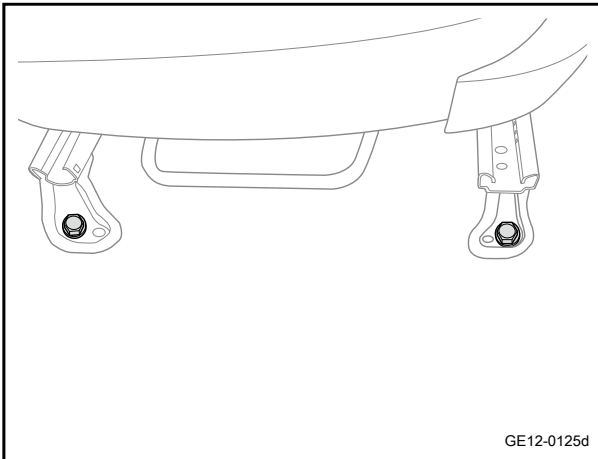
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



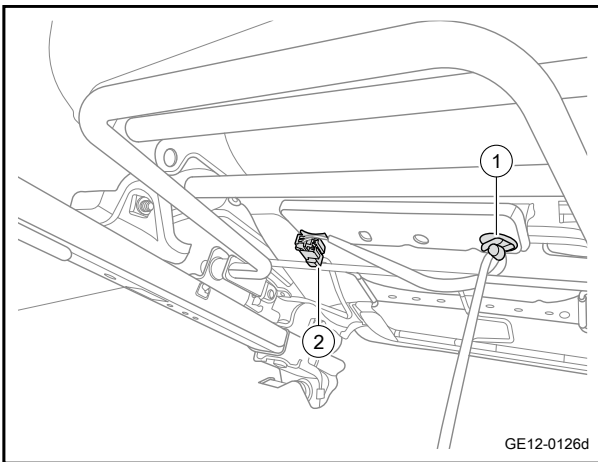
- 2 Take off the left front seat rear end outer sliding rail trim cover and the left front seat rear end inner sliding rail trim cover.



- 3 Adjust the left front seat assembly forward, and remove the 2 fixing bolts at the rear of the left front seat assembly.

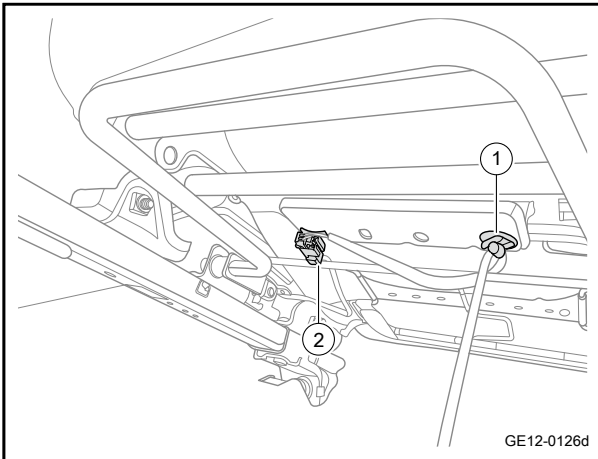


- 4 Adjust the left front seat assembly backward, and remove the 2 fixing bolts at the front of the left front seat assembly.

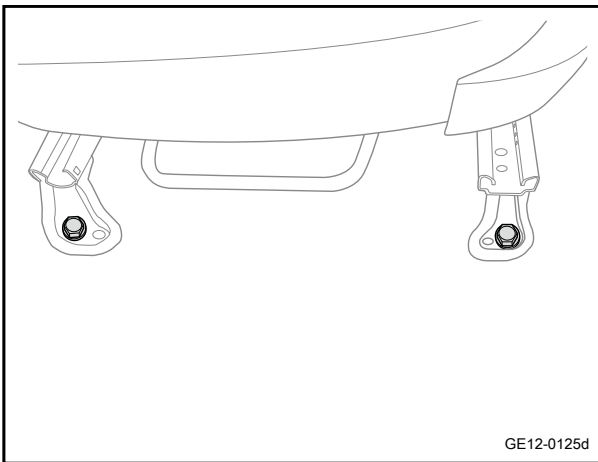


- 5 Flip the left front seat assembly backwards, disconnect the harness clip 1, disconnect the harness connector 2, and take out the left front seat assembly.

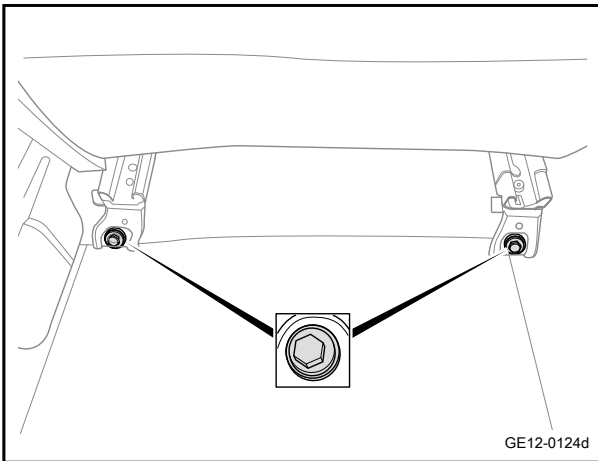
Installation procedure



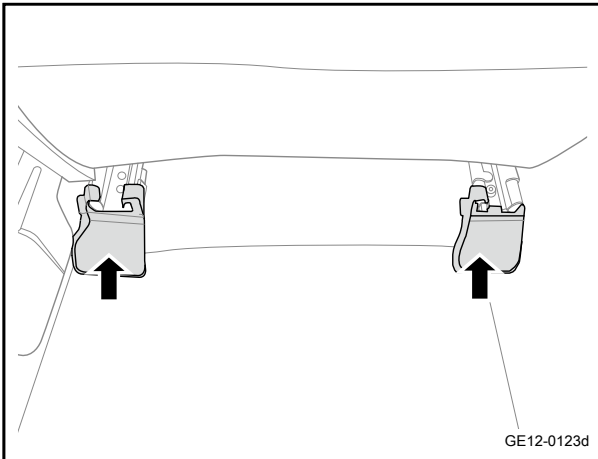
- 1 Put in the front left seat assembly, lift the seat backward, and connect the harness connector under the seat.



- 2 Move the left front seat assembly to the rear end, and install and tighten the 2 fixing bolts at the front of the left front seat assembly.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



- 3 Move the left front seat assembly to the front end, and install and tighten the 2 fixing bolts at the rear of the left front seat assembly.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)



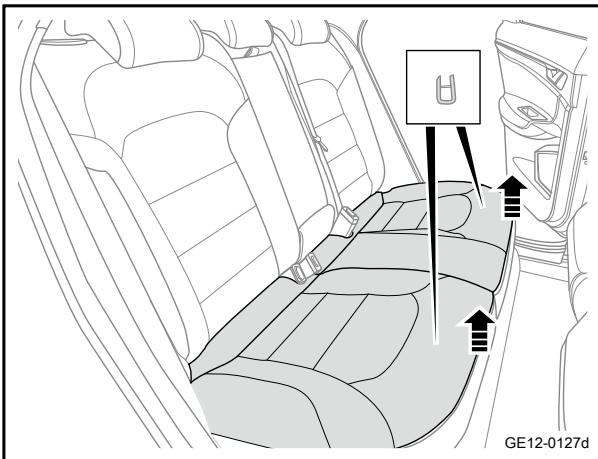
- 4 Install the left front seat rear outer sliding rail trim cover and the left front seat rear inner sliding rail trim cover.

- 5 Connect the negative cable of battery.

12.7.3.3 Replacement of Rear Seat Cushion

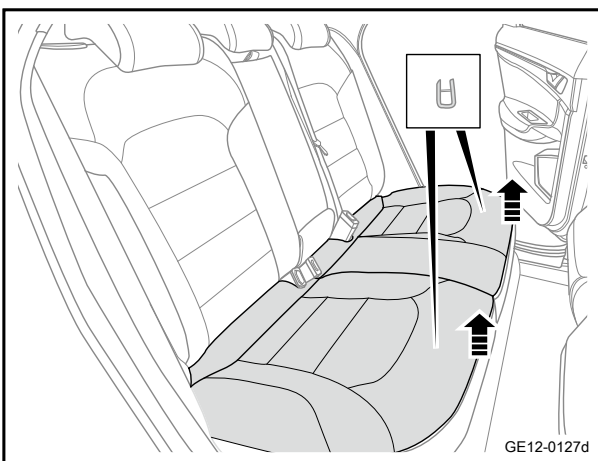
Removal procedure

- 1 Lift up the rear seat cushion according to the clip position shown in the figure and take it out of the vehicle.



Installation procedure

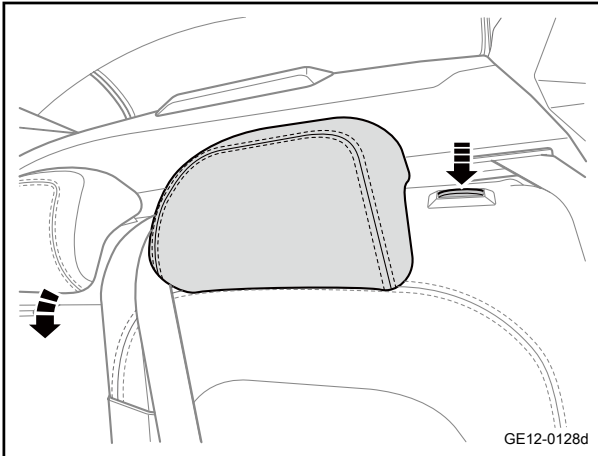
- 1 Install the rear seat cushion, press the clip position shown in the figure, and cover the rear seat cushion.



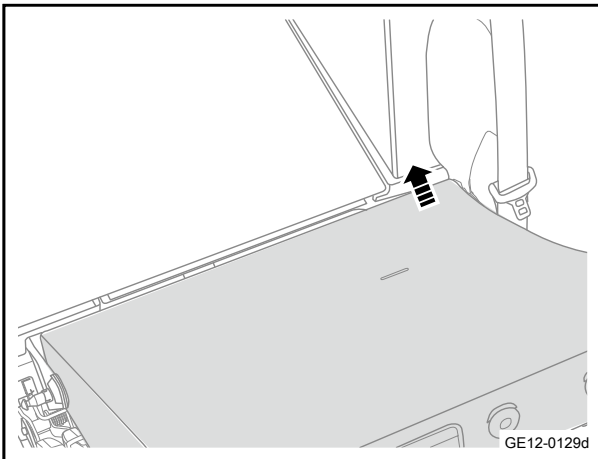
12.7.3.4 Replacement of Rear Seat Backrest

Removal procedure

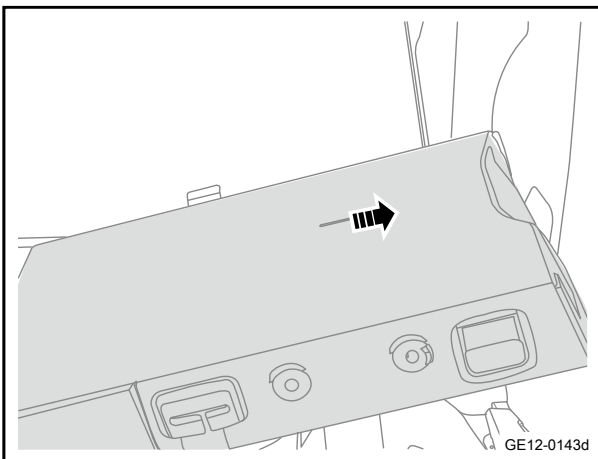
- 1 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 2 Pull up the rear seat unlocking handle and flip the left rear backrest.

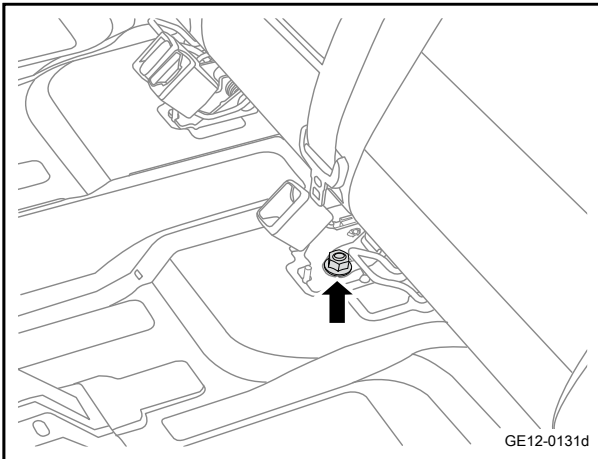


- 3 Lift the seat up against the left side and the body sheet metal fixing point.

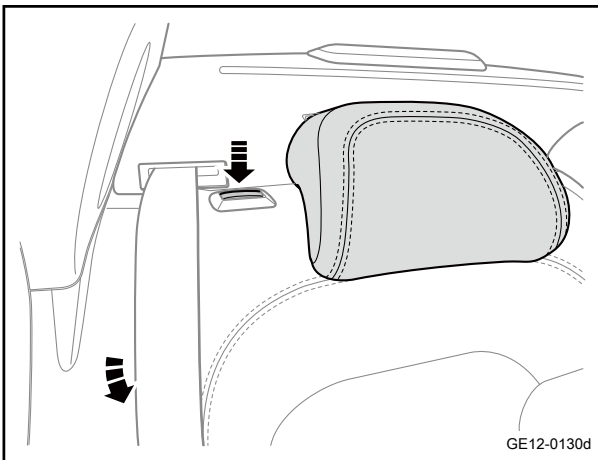


- 4 Pull out the rear left backrest in the direction of the left rear door.

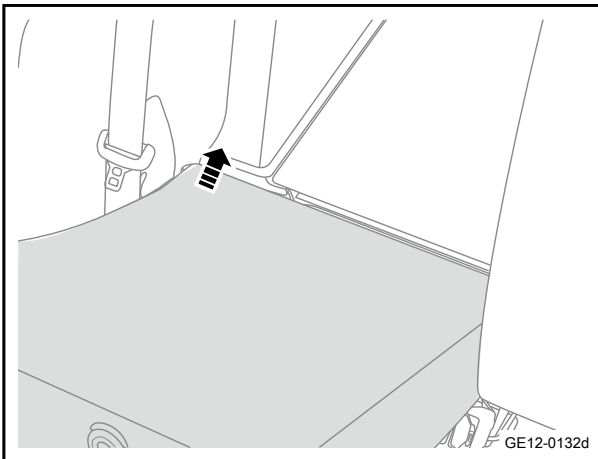




- 5 Remove the fixing bolt of the rear central seatbelt lock catch and take out left rear backrest.

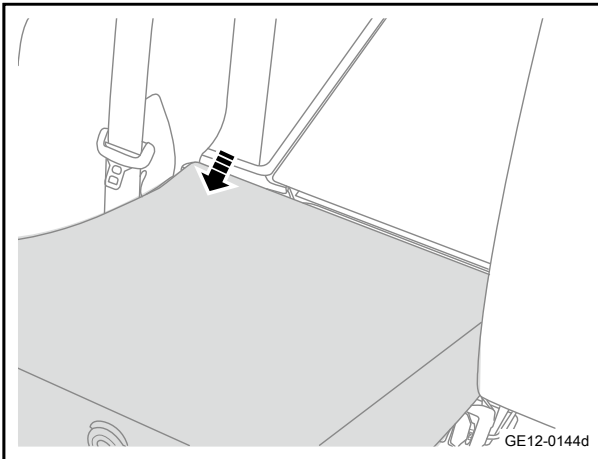


- 6 Pull up the rear seat unlocking handle and flip the right rear backrest.

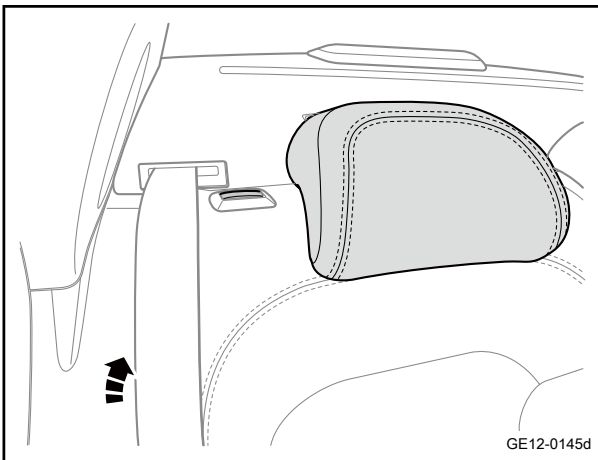


- 7 Lift up the fixing points between the rear right backrest and the vehicle body to take off the rear right backrest.

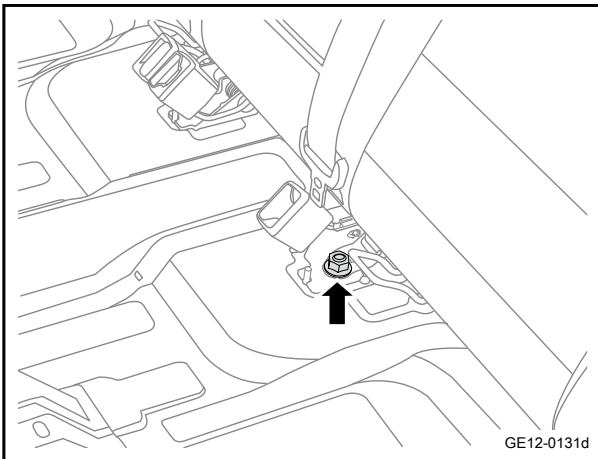
Installation procedure



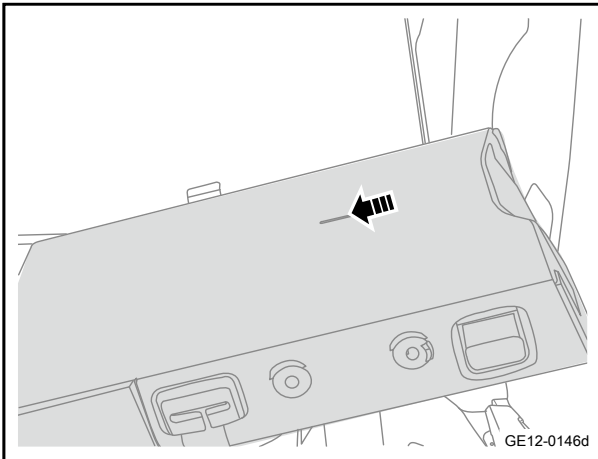
- 1 Move the rear right backrest to the installation position and snap it into place with the body fixing point..



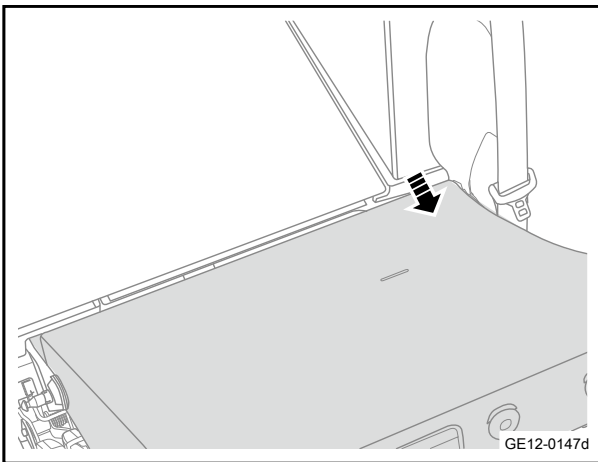
- 2 Flip the rear backrest



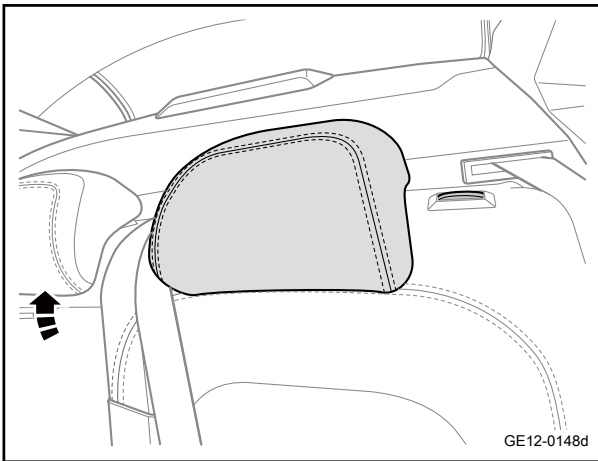
- 3 Move the rear left backrest to the installation position, and install 1 fixing bolt of the rear left backrest middle seat belt.
Torque: 45 N·m (metric system) 33.2lb-ft (Imperial system)



- 4 Insert the latch in the middle of the rear seat into the mounting bracket in the middle of the rear seat and the right backrest.



- 5 Clamp the rear left backrest and body fixing points in place.



- 6 Turn over rear left backrest.

- 7 Install the rear seat cushion.

12.7.3.5 Replacement of Left Front Seat Outer Shield

Removal procedure

Caution

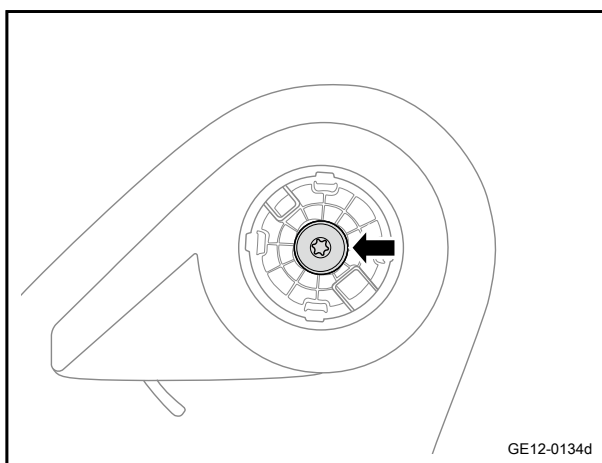
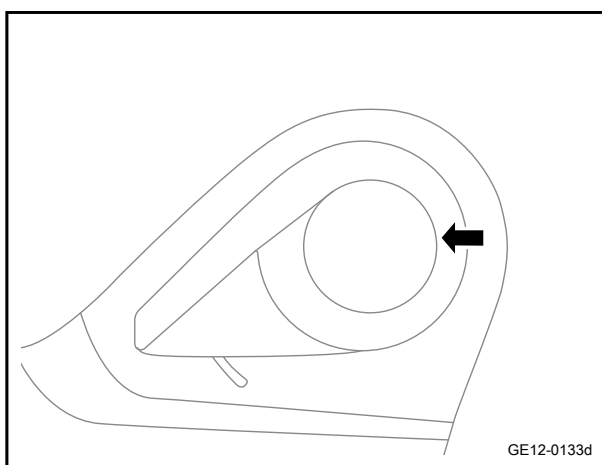
The driver seat and the right front seat are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

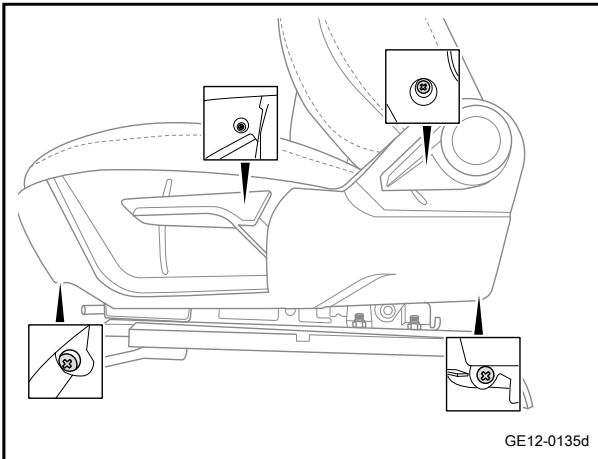
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

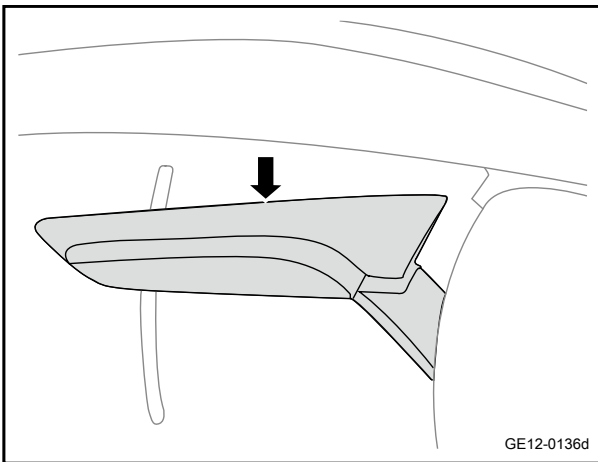
- 2 Remove the front manual seat. Refer to [Replacement of Left Front Seat Assembly](#)
- 3 Remove the left front seat angle regulator handle cover.



- 4 Remove the 1 fixing screw of the left front seat angle regulator handle and take off the left front seat angle regulator handle cover.

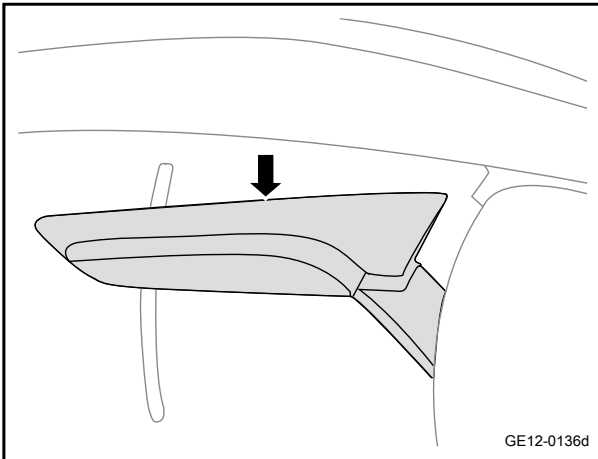


- 5 Remove the 4 fixing screws on the left front seat outer shield.

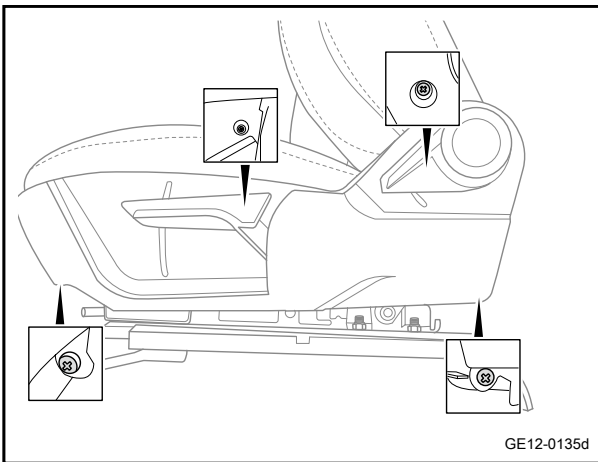


- 6 Take off the left front seat height regulator handle and take off the left front seat outer shield.

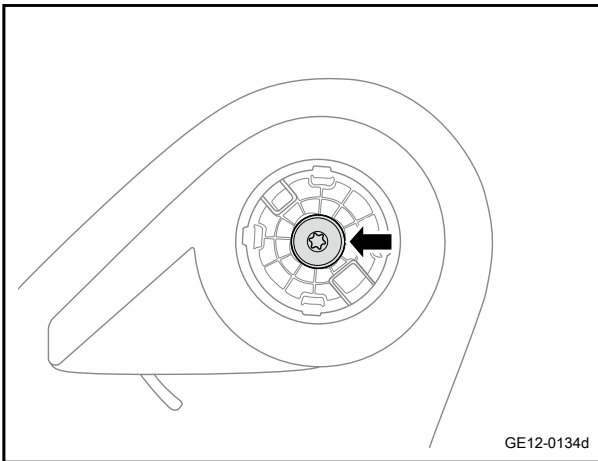
Installation procedure



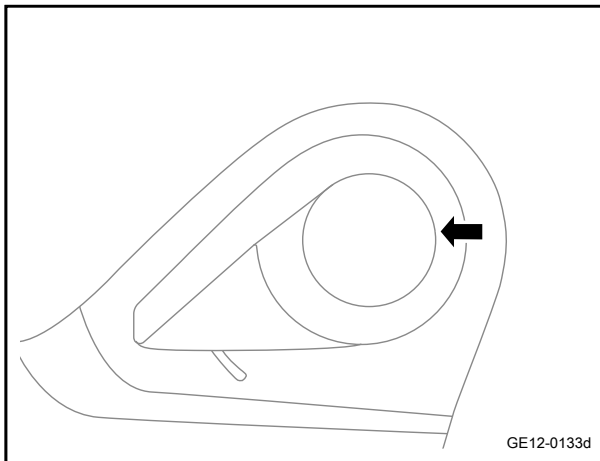
- 1 Align the left front seat outer shield with the mounting hole, and install and tighten the 4 fixing bolts of the left front seat outer shield.
Torque: 7N·m (metric system) 5.2lb-ft (Imperial system)



- 2 Install the left front seat height regulator handle.



- 3 Move the left front seat angle regulator handle to the installation position, and install the 1 fixing screw of the left front seat angle regulator handle.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)



- 4 Install the left front seat angle regulator handle cover.

- 5 Install manual seats of the front row.

- 6 Connect the negative cable of battery.

12.7.3.6 Replacement of Left Front Seat Inner Shield

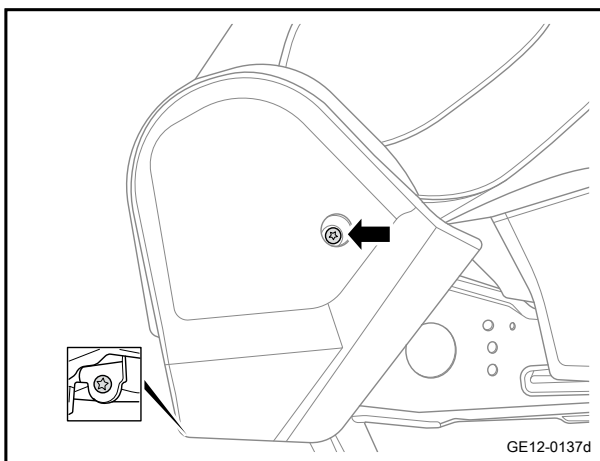
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

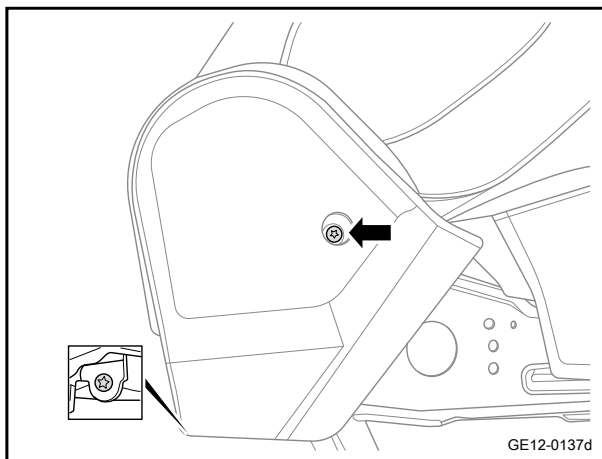
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front row manual seats. Refer to [Replacement of Left Front Seat Assembly](#)
- 3 Remove 2 fixing screws of the inner shield of the left front seat and remove the inner shield of the left front seat.



Installation procedure



- 1 Align the left front seat inner shield with the mounting hole, and install and tighten the 2 fixing bolts of the left front seat inner shield.
Torque: 7N·m (metric system) 5.3lb-ft (Imperial system)

- 2 Install manual seats of the front row.
- 3 Connect the negative cable of battery.

12.7.3.7 Replacement of Left Front Seat Sliding Rail

Removal procedure

Caution

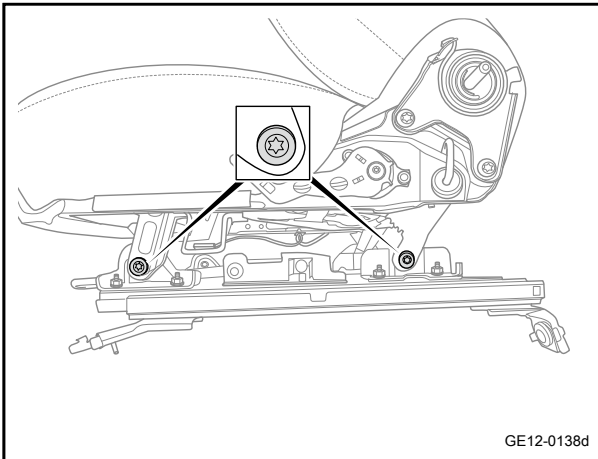
The left and right sides are removed and installed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

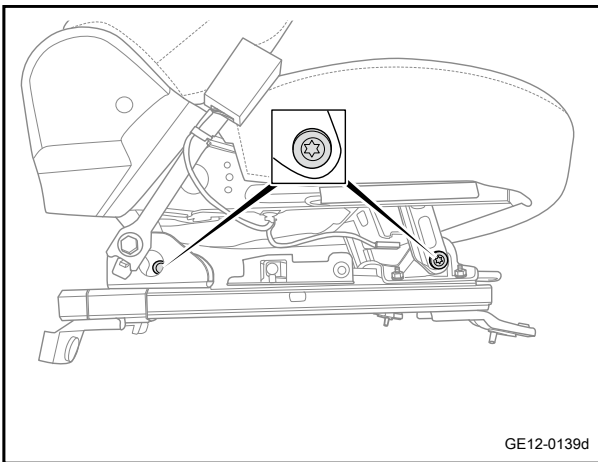
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front manual seat. Refer to [Replacement of Left Front Seat Assembly](#)

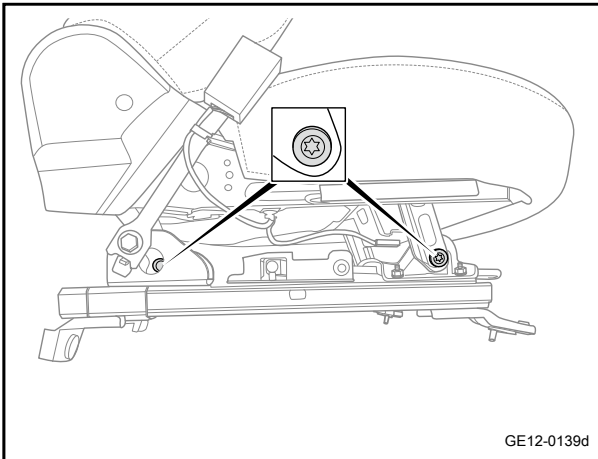


- 3 Remove 2 fixing bolts on the outer side of the front left seat slide rail.

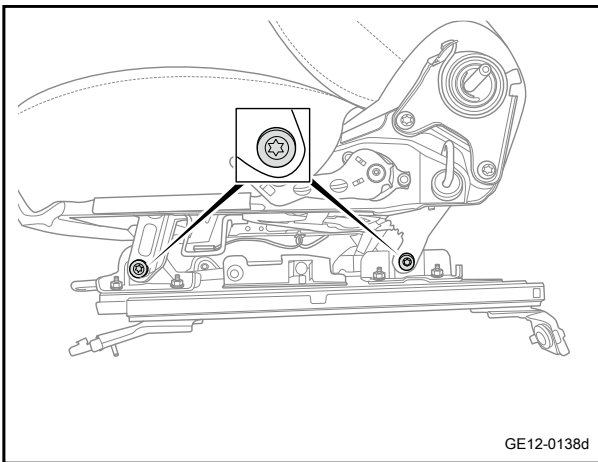


- 4 Remove 2 fixing bolts inside the sliding rail of front left seat, and take down the sliding rail of front left seat.

Installation procedure



- 1 Align the left front seat slide rail with the mounting hole, install and tighten the 2 fixing bolts inside the left front seat slide rail.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)

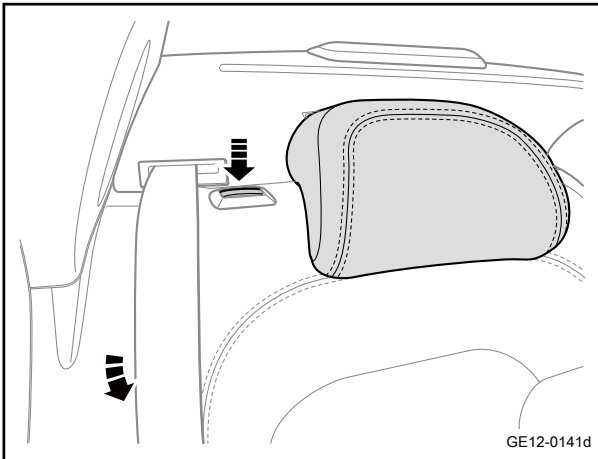


- 2 Install the 2 fixing screws on the outer side of the left front seat slide rail.
Torque: 23N·m (metric system) 17lb-ft (Imperial system)

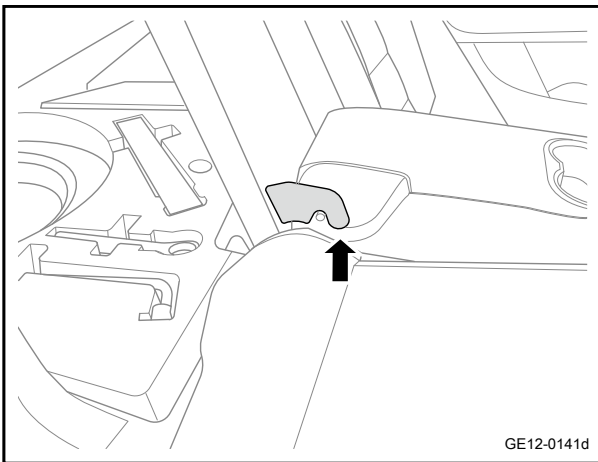
- 3 Install manual seats of the front row.
- 4 Connect the negative cable of battery.

12.7.3.8 Replacement of rear seat central armrest assembly

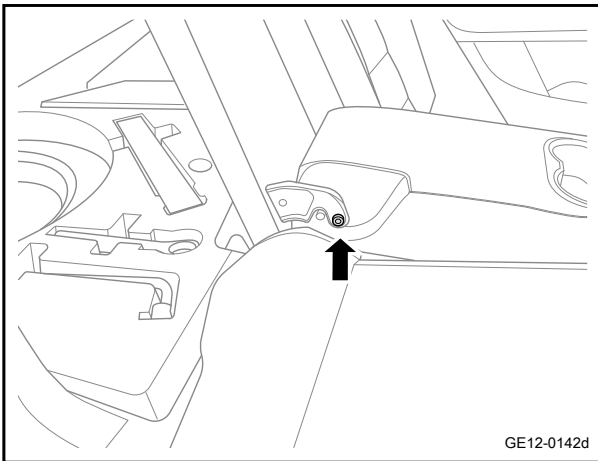
Removal procedure



- 1 Pull up the rear seat unlocking handle and flip the right rear backrest.



- 2 Take out the right cover of the rear seat armrest.

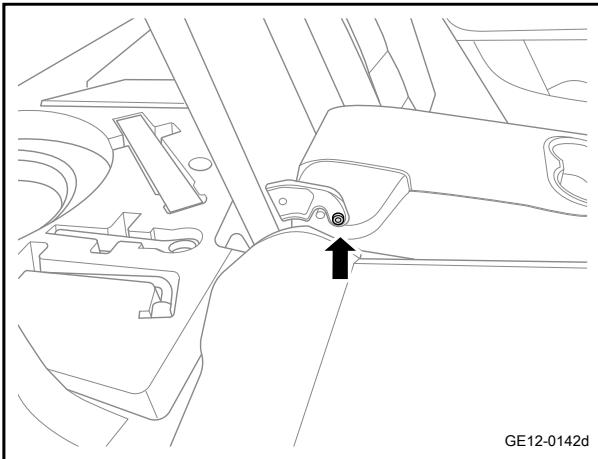


- 3 Remove the rear seat central armrest fixing bolt and take off the central armrest.

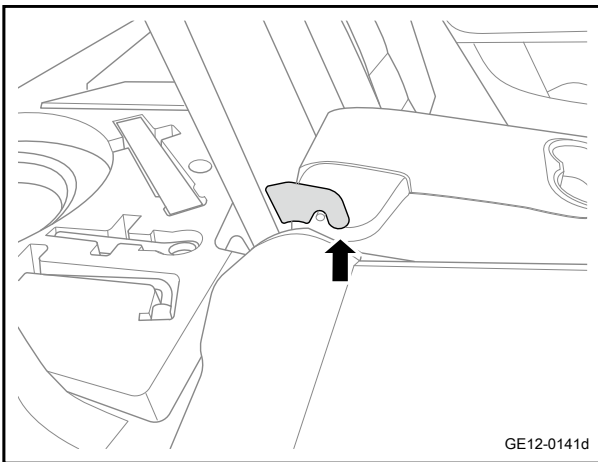
Caution

There are clamping points on the opposite side of the central armrest fixing bolt. Do not take out too hard

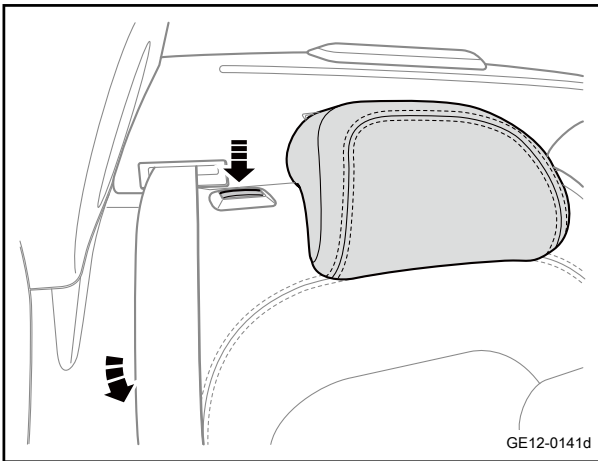
Installation procedure



- 1 Install the rear seat central armrest assembly, and install the rear seat central armrest assembly fixing bolt.
Torque: 10 N·m (metric system) 7.4lb-ft (Imperial system)



- 2 Install the right cover of the rear seat armrest.



- 3 Flip the rear right backrest and install the rear right backrest.

12.8 Instrument Panel, Instrument and Console

12.8.1 Specification

12.8.1.1 Fastener specifications

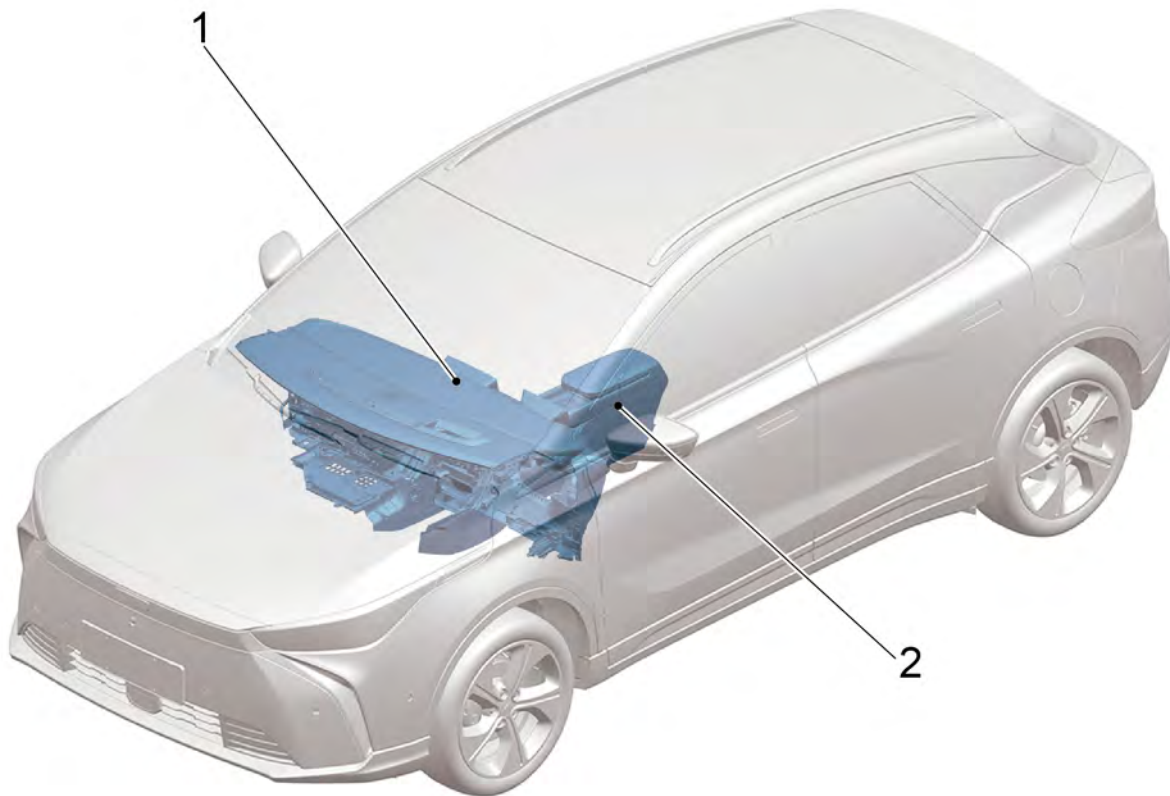
Fastener name	Specification	Torque range
		Metric system (N.m)
fixing screw for connecting the left lower shield assembly of instrument panel with the left lower connecting bracket.	ST4.2×16	1.3-1.7
fixing bolts connecting the instrument panel lower body assembly with the cross member of the instrument panel.	M6×16	5-7
fixing bolt connecting the instrument panel cross beam and the vehicle body	M8×20	20-28
fixing bolt connecting the the instrument panel cross member and right side wall front inner panel assembly.	M8×20	20-28
fixing bolt connecting the the instrument panel cross member and right side wall front inner panel assembly.	M8×20	20-28
fixing bolts for connecting the instrument panel cross member with right lower column assembly of the instrument panel cross beam	M8×20	20-28
fixing bolts for connecting the instrument harness with the cross member of the instrument panel	M6×16	8.5-11.5
Install fixing nut between the body control module mounting bracket and the cross member of the instrument panel	M6	5-7
fixing nut connecting the fuse box and cross beam of instrument panel.	M6	5-7
Instrument panel cross member and fuse box fixing bolt	M6	5-7
fixing bolts for connecting the auxiliary instrument panel with the cross member assembly of the instrument panel	M6×20	5-7
fixing bolts for connecting the auxiliary instrument panel with the cross member of the instrument panel	M6×20	5-7

Fastener name	Specification	Torque range
		Metric system (N.m)
fixing screws for connecting the auxiliary instrument panel with the instrument panel lower body	M6×20	5-7
fixing bolts for connecting the instrument panel middle mounting bracket with the middle passage assembly of the front floor	M6×20	5-7
fixing bolt connecting variable intake grille assembly and upper front end module assembly	M6	8.5 ~ 11.5
fixing bolt connecting the instrument panel body assembly with the cross member of the instrument panel.	M6×16	5-7
fixing screws connecting the instrument panel lower body assembly and instrument panel body assembly.	ST4.2×16	1.3-1.7
fixing bolt connecting the passenger's frontal airbag and cross beam of instrument panel.	-	8.5-11.5
fixing screws for connecting the console mounting bracket with the instrument panel body assembly	ST4.2×16	1.3-1.7
fixing screws connecting the instrument cluster lower cowl with instrument panel body assembly.	ST4.2×16	1.3-1.7
fixing screws for connecting the left trim plate assembly of the instrument panel with the body assembly of instrument panel	ST4.2×16	1.3-1.7
fixing screws for connecting the right trim plate assembly of the instrument panel with the body assembly of instrument panel	ST4.2×16	1.3-1.7
fixing screw connecting the cup holder assembly and the auxiliary instrument panel skeleton	ST4.2×16	1.3-1.7
fixing bolt connecting the auxiliary instrument panel body assembly and the middle mounting bracket of the auxiliary instrument panel assembly	ST4.2×13	1.3-1.7

Fastener name	Specification	Torque range
		Metric system (N.m)
fixing bolts for connecting the instrument panel blowing air duct front section assembly and the front floor middle channel	ST4.2×13	1.3-1.7
fixing screws for connecting the auxiliary instrument panel mounting bracket with the front section assembly of the blowing air duct of of auxiliary instrument panel	ST4.2×13	1.3-1.7
fixing screws of the middle air duct and the instrument panel body assembly.	ST4.2×16	1.3-1.7
fixing bolt for connecting air condition cover plate and instrument panel lower body	ST4.2×16	1.3-1.7

12.8.2 Part position

12.8.2.1 Part Position



1. Instrument panel body assembly

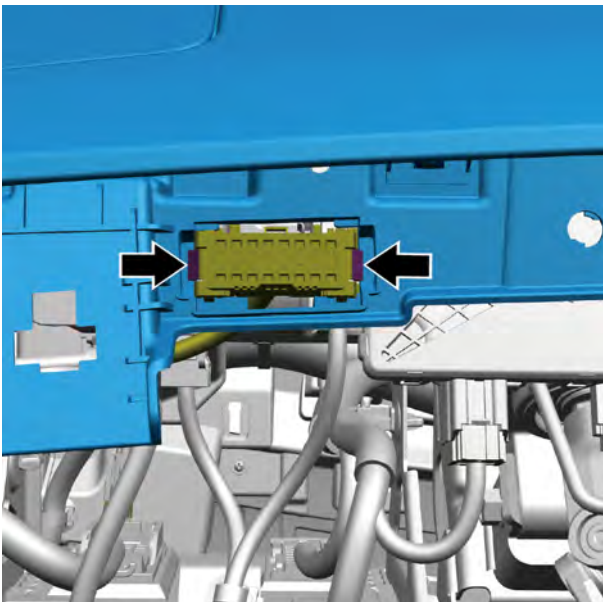
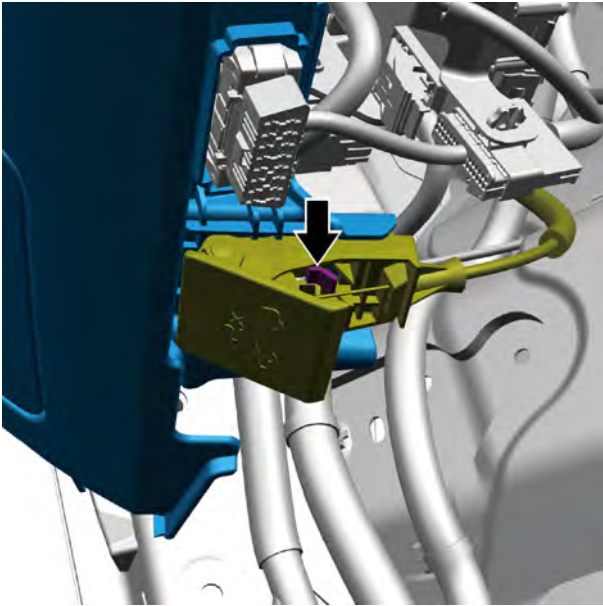
2. Auxiliary fascia console body assembly

12.8.3 Removing and installing

12.8.3.1 Replacement of Left Lower Shield of Instrument Panel(Type I)

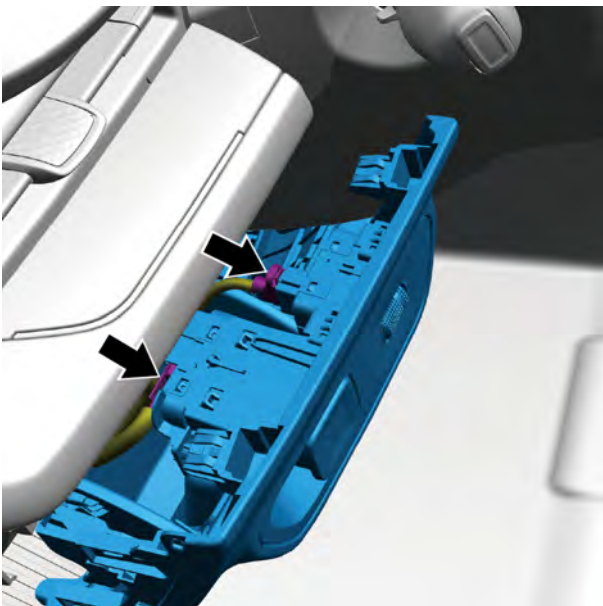
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left pillar A middle trim panel. Refer to [Replacement of Left Pillar A Lower Trim Panel Assembly](#)
- 3 Disconnect the fixing clip connecting the engine hood lock unlocking handle assembly with the left lower shield assembly of the instrument panel.
- 4 Move engine hood lock unlocking handle assembly
- 5 Disconnect the 2 fixing clips connecting the diagnostic interface harness with the lower left shield assembly of instrument panel.
- 6 Disengage the diagnostic interface harness





- 7 Remove the 3 fixing screws connecting the left lower shield assembly of instrument panel with the left lower connecting bracket.



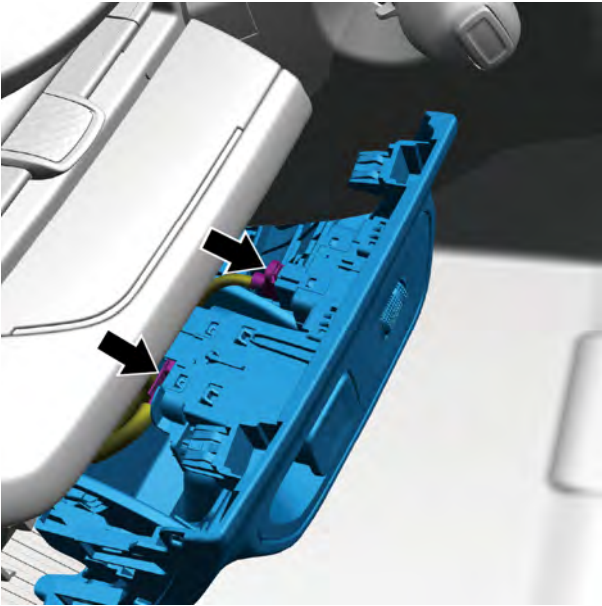
- 8 Use the plastic prying plate to pry off the left lower shield assembly of the instrument panel, and disconnect the 2 harness connectors connecting the instrument harness with the left pack switch of the instrument panel.

Caution

There is still harness connection on the left lower fender apron assembly of the dashboard. Avoid pulling or damaging the harness when prying it off.

- 9 Take off the left lower shield assembly of the instrument panel.

Installation procedure



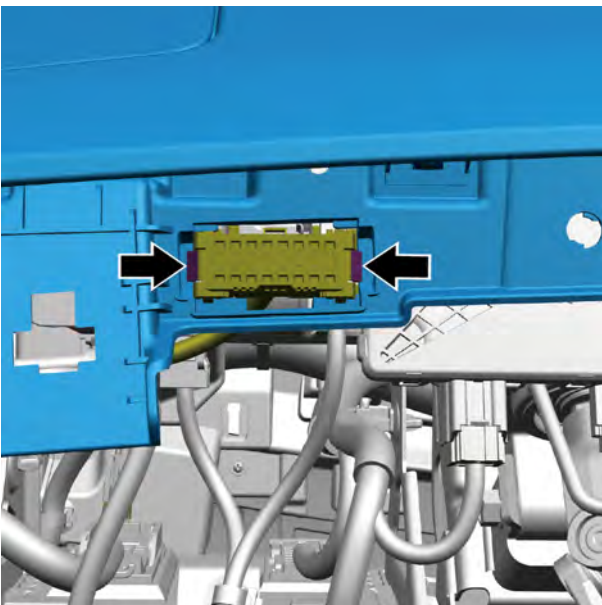
- 1 Move the left lower shield assembly of the instrument panel to the installation position.
- 2 Connect the 2 harness connectors connecting the instrument harness with the left pack switch of the instrument panel.

Caution

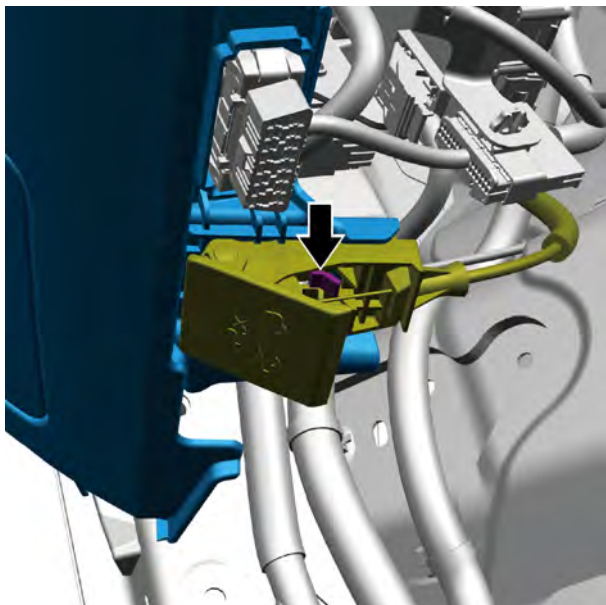
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 3 Install and tighten the 3 fixing bolts connecting the left lower shield assembly of the instrument panel and left lower connecting bracket.
Torque: 1.5N·m



- 4 Move the DLC harness to the installation position.
- 5 Install the DLC harness onto the left lower shield assembly of the instrument panel and ensure that the 2 fixing clips are fastened.



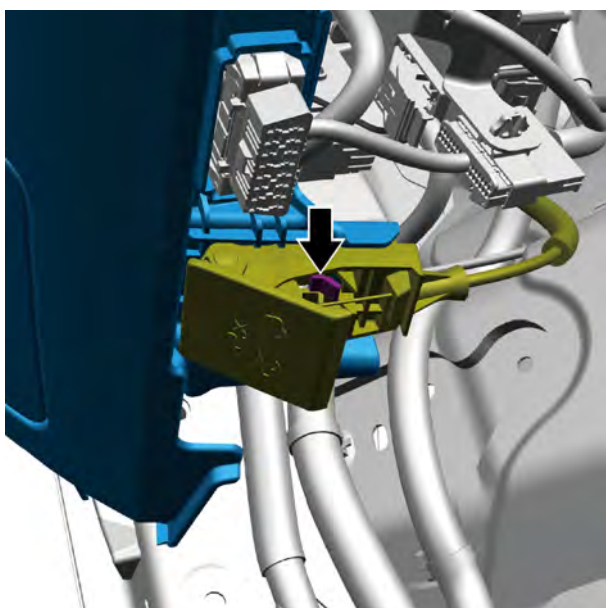
- 6 Move the engine hood lock release handle assembly to the installation position.
- 7 Install the engine hood lock release handle to the left lower shield assembly of the instrument panel and ensure that the 1 fixing clip is fastened.

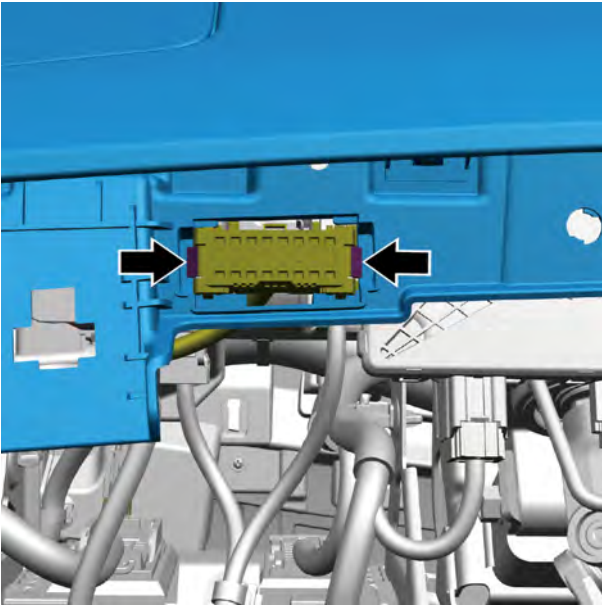
- 8 Install the left A-pillar trim panel.
- 9 Connect the negative cable of battery.

12.8.3.2 Replacement of Left Lower Shield of Instrument Panel(Type II)

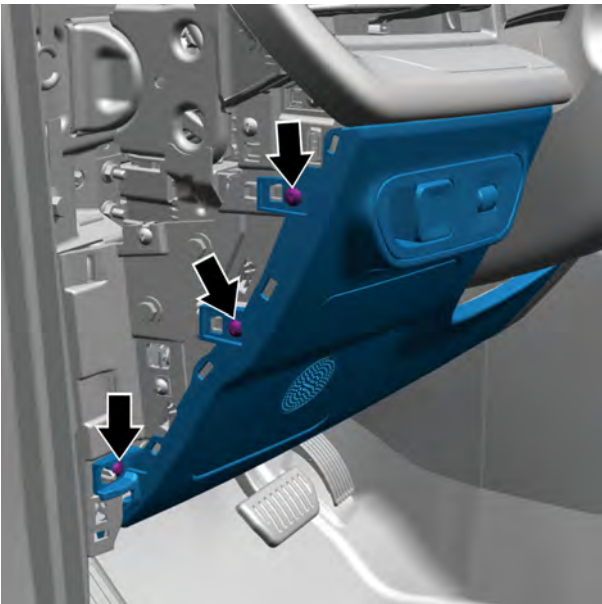
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the pillar A middle trim panel. Refer to [Replacement of Left Pillar A Middle Trim Panel Assembly](#)
- 3 Disconnect the 1 fixing clip connecting the engine hood lock release handle assembly with the left lower shield assembly of the instrument panel, and move away the engine hood lock release handle assembly.

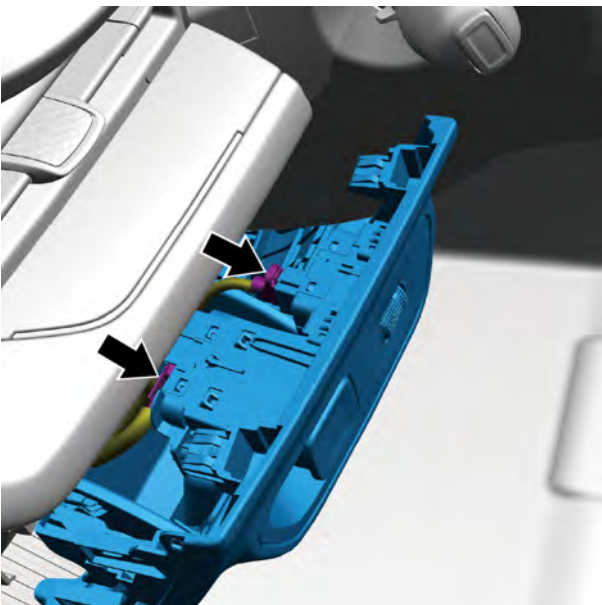




- 4 Disconnect the 2 fixing clips B of the instrument panel harness assembly and instrument panel left lower shield assembly.



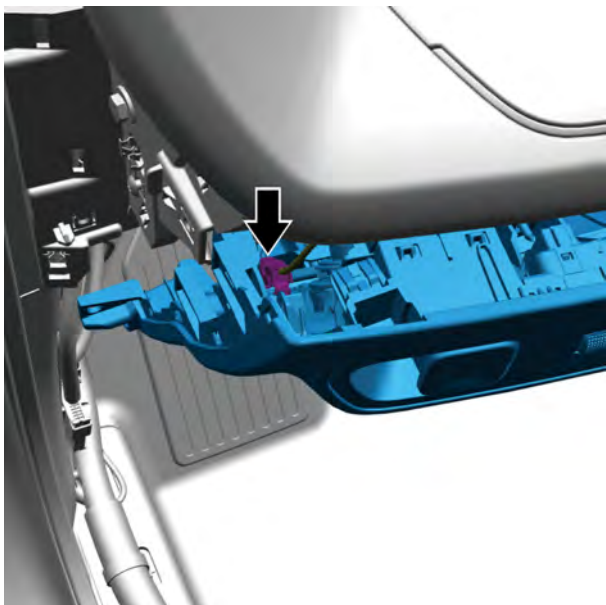
- 5 Remove the 3 fixing screws 1 of the lower middle shield assembly and left lower connecting bracket.



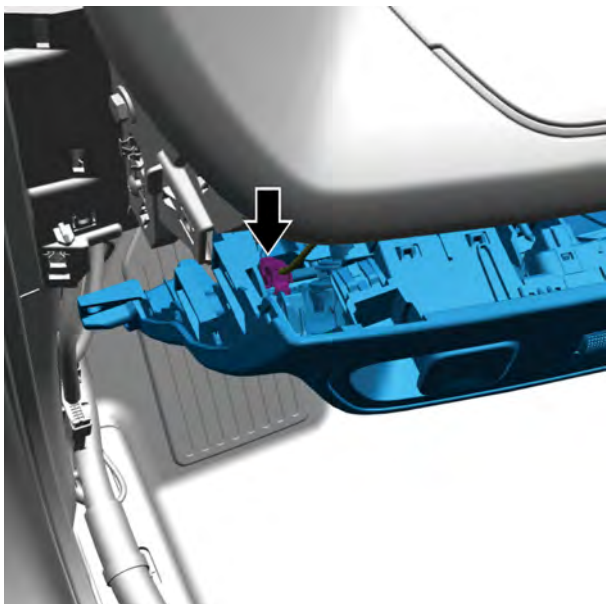
- 6 Use the plastic prying plate to pry off the left lower shield assembly of the instrument panel, and disconnect the 2 harness connectors connecting the instrument harness with the left pack switch of the instrument panel.

Caution

There is still harness connection on the left lower fender apron assembly of the dashboard. Avoid pulling or damaging the harness when prying it off.



- 7 Disconnect the instrument harness and vehicle-mounted mobile terminal harness connector.
- 8 Take off the left lower shield assembly of the dashboard.

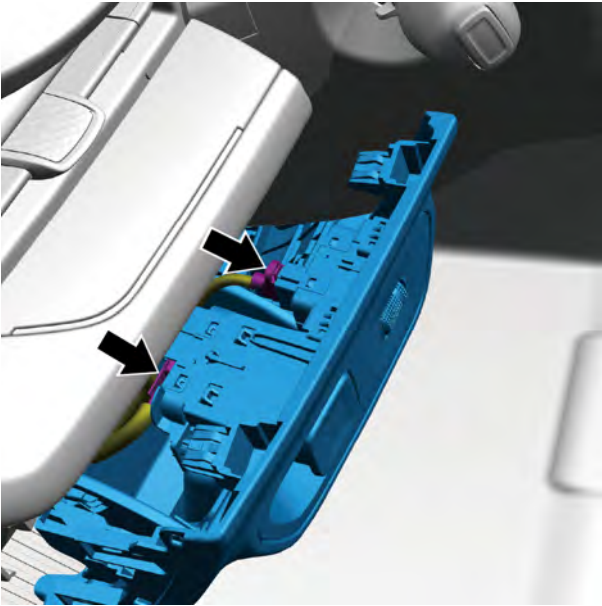


Installation procedure

- 1 Move the left lower shield assembly of the dashboard to the installation position.
- 2 Connect the instrument harness and vehicle-mounted mobile terminal harness connector.

Caution

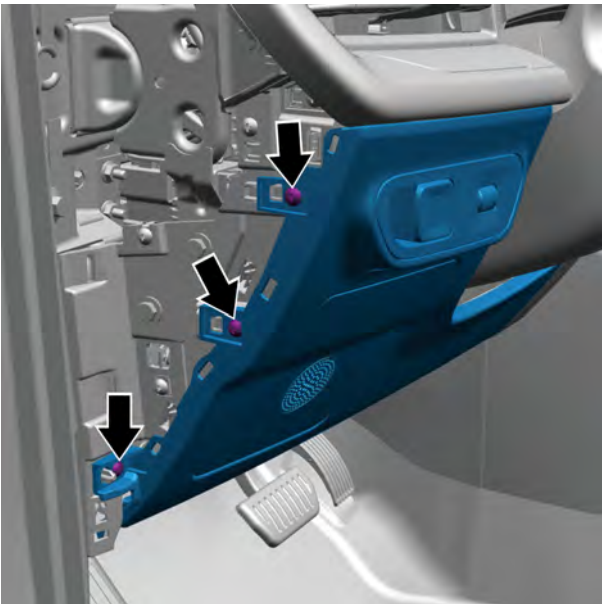
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



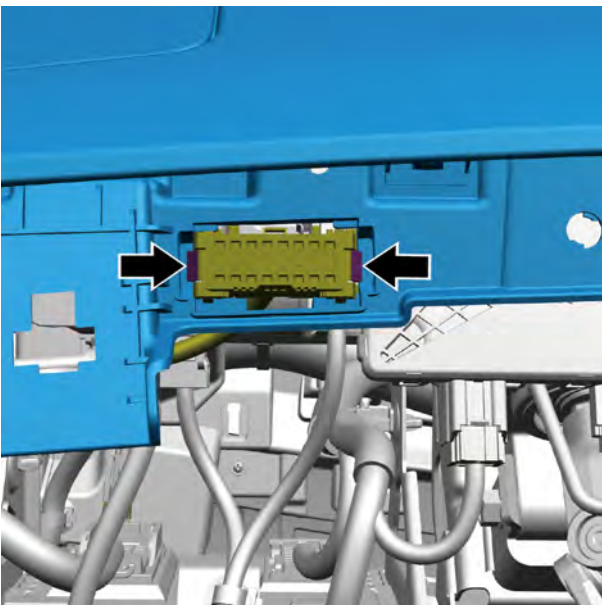
- 3 Connect the 2 harness connector 2 of the instrument harness and instrument panel left pack switch.

Caution

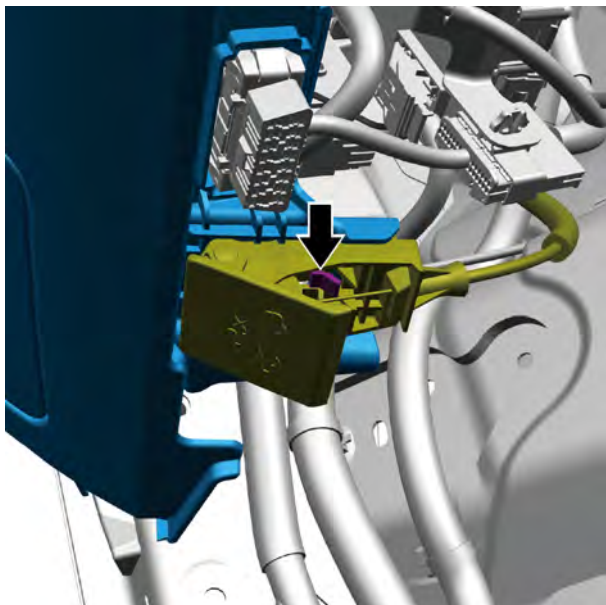
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 4 Install and tighten the 3 fixing bolts connecting the left lower shield assembly and left lower connecting bracket.



- 5 Install the DLC harness onto the left lower shield assembly of the instrument panel and ensure that the 2 fixing clips are installed and fastened.



- 6 Install the engine hood lock release handle assembly to the left lower shield assembly of the instrument panel, and ensure that the 1 retaining clip is installed and fastened.

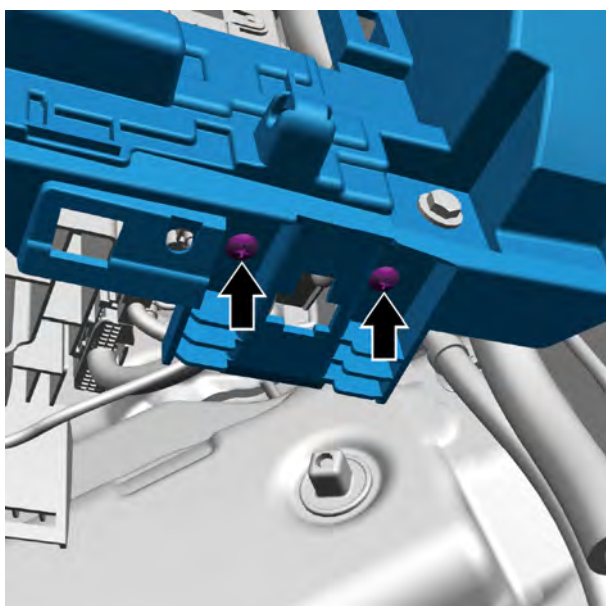
- 7 Install the left A-pillar middle trim panel.

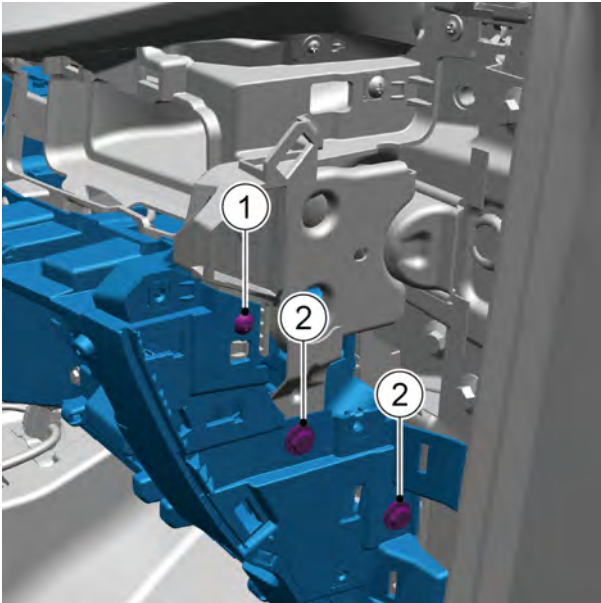
- 8 Connect the negative cable of battery.

12.8.3.3 Replacement of Instrument Panel Lower Body Assembly

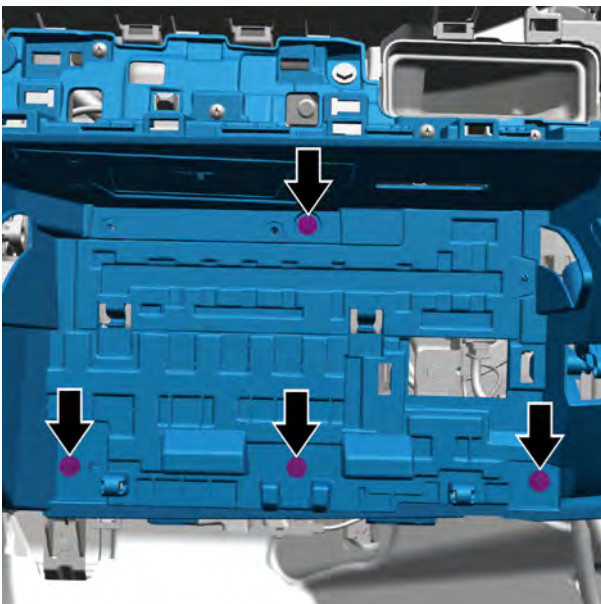
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console body assembly. Refer to [Replacement of Auxiliary Fascia Console Body Assembly](#)
- 3 Remove the right trim plate assembly of the dashboard. Refer to [Replacement of Right Trim Plate of Dashboard](#)
- 4 Remove the 2 fixing screws 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.

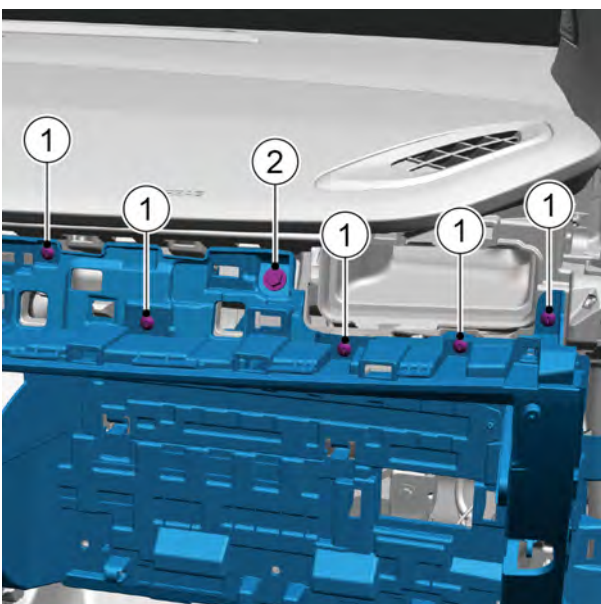




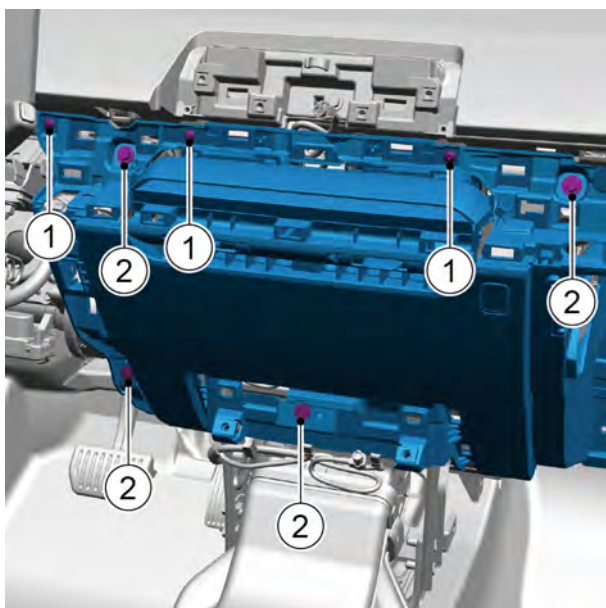
- 5 Remove the 1 fixing screw 1 connecting the instrument panel lower body assembly and instrument panel body assembly.
- 6 Remove the 2 fixing bolts 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.



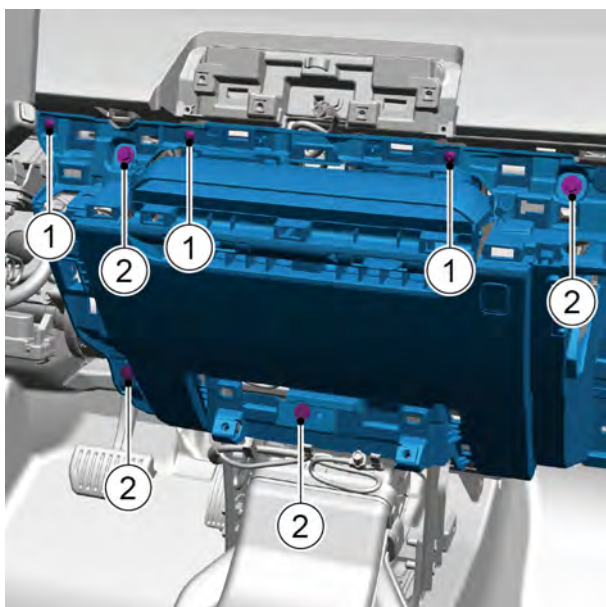
- 7 Remove the 4 fixing bolts 1 connecting the instrument panel lower body assembly with the cross member of the instrument panel.



- 8 Remove the 5 fixing screws 1 connecting the instrument panel lower body assembly and instrument panel body assembly.
- 9 Remove the 1 fixing bolt 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.

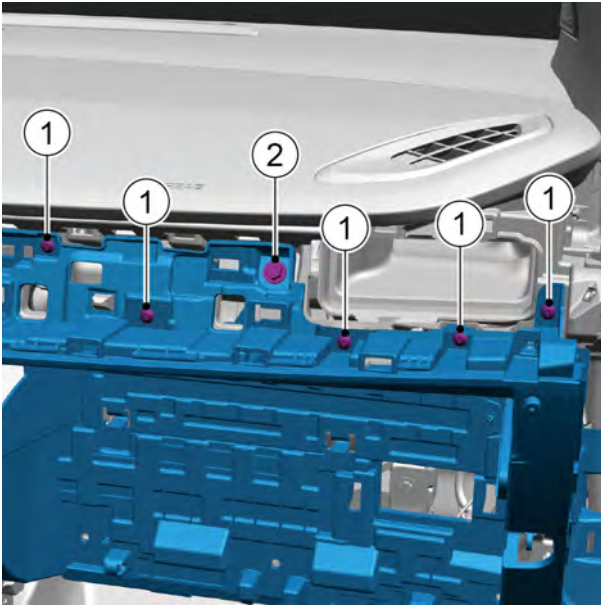


- 10 Remove the 3 fixing screws 1 connecting the instrument panel lower body assembly and instrument panel body assembly.
- 11 Remove the 4 fixing bolts 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.
- 12 Take off the instrument panel lower body assembly.



Installation procedure

- 1 Move the lower body of the instrument panel assembly to the installation position.
- 2 Install the 4 fixing bolts 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.
Torque: 6N·m
- 3 Install the 3 fixing screws 1 connecting the instrument panel lower body assembly with the instrument panel body assembly.
Torque: 1.5N·m

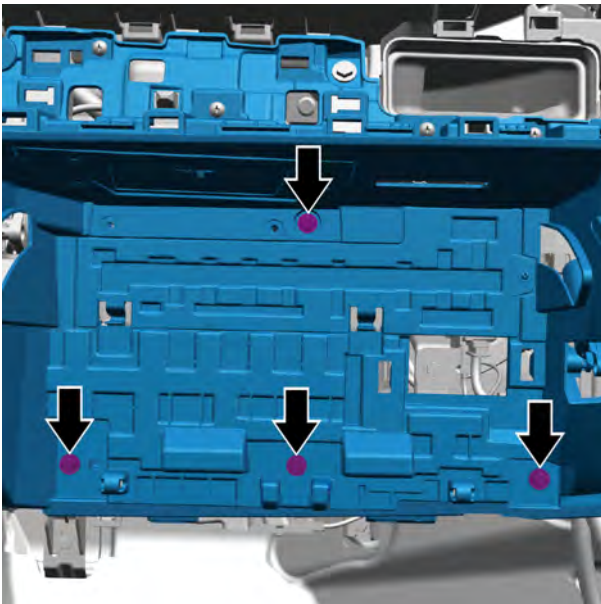


- 4 Install the 1 fixing bolts 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.

Torque: 6N·m

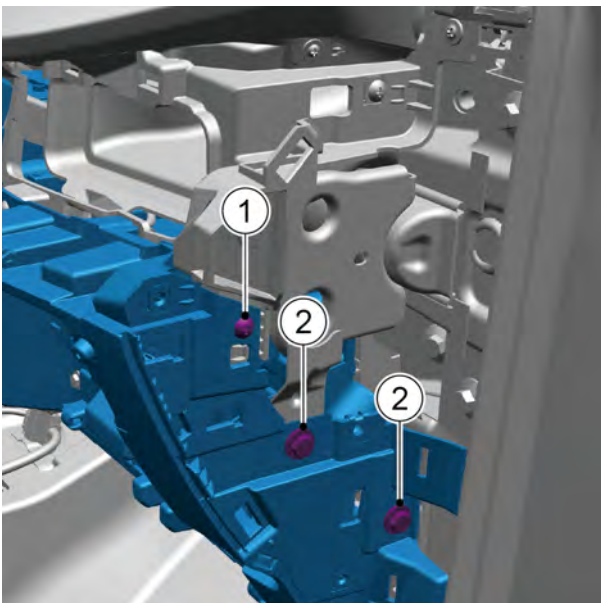
- 5 Install the 5 fixing screws 1 connecting the instrument panel lower body assembly with the instrument panel body assembly.

Torque: 1.5N·m



- 6 Install the 4 fixing bolts 1 connecting the instrument panel lower body assembly with the cross member of the instrument panel.

Torque: 6N·m

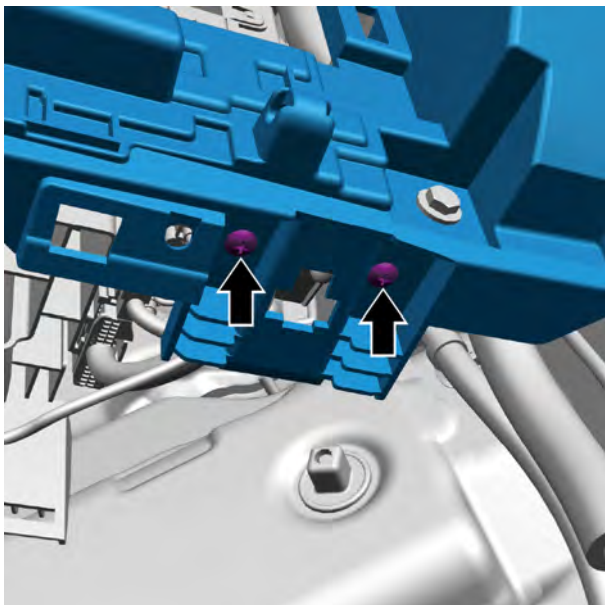


- 7 Install the 2 fixing bolts 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.

Torque: 6N·m

- 8 Install the 1 fixing screw 1 connecting the instrument panel lower body assembly with the instrument panel body assembly.

Torque: 1.5N·m



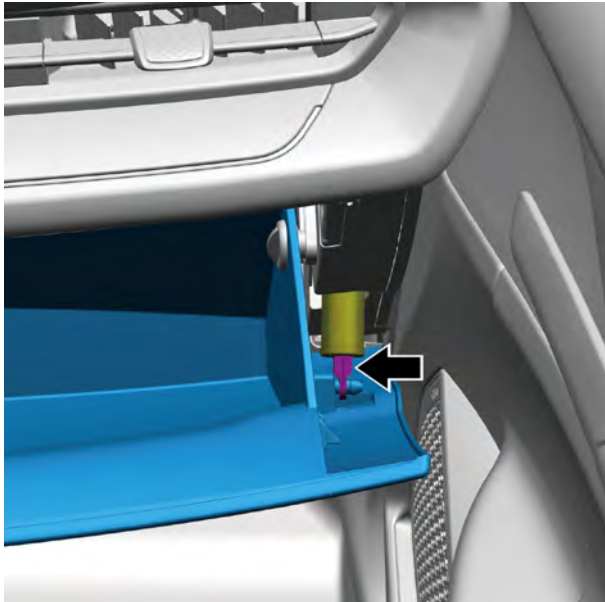
- 9 Remove the 2 fixing screws 2 connecting the instrument panel lower body assembly with the cross member of the instrument panel.
Torque: 1.5N·m

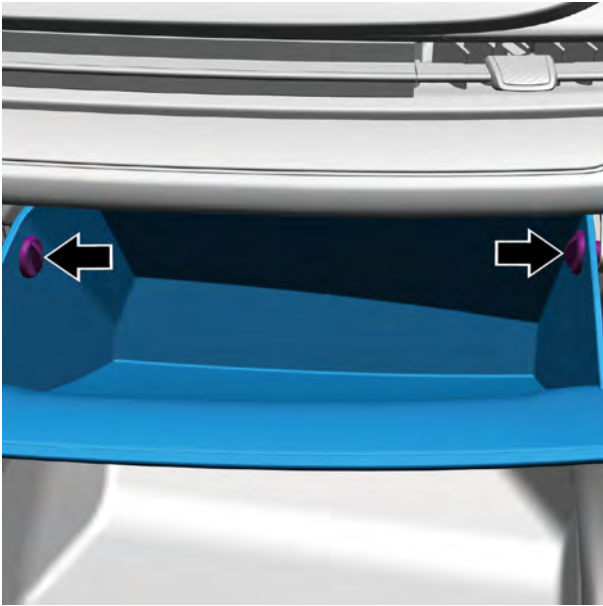
- 10 Install the right trim panel assembly of the dashboard.
- 11 Install the auxiliary fascia console body assembly.
- 12 Connect the negative cable of battery.

12.8.3.4 Replacement of glove box

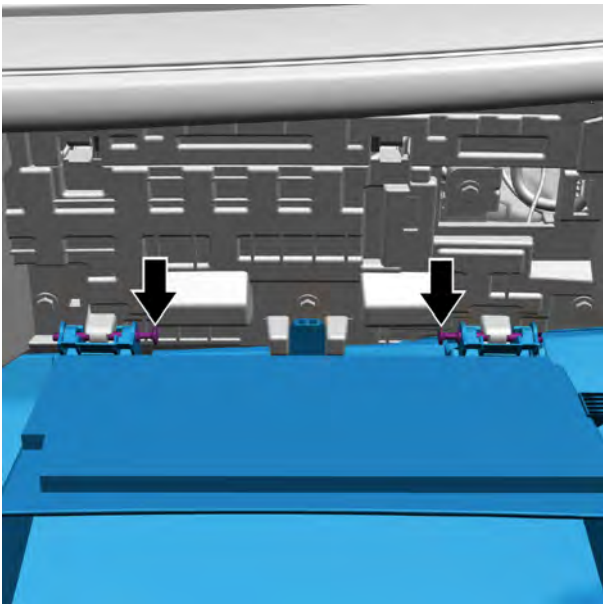
Removal procedure

- 1 Open the glove box.
- 2 Disconnect the glove box from the glove box damper.



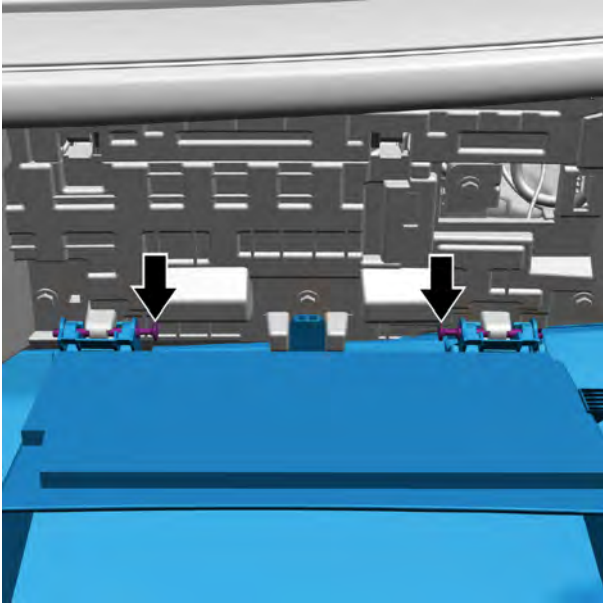


- 3 Remove the glove box opening stoppers on both sides of the glove box.

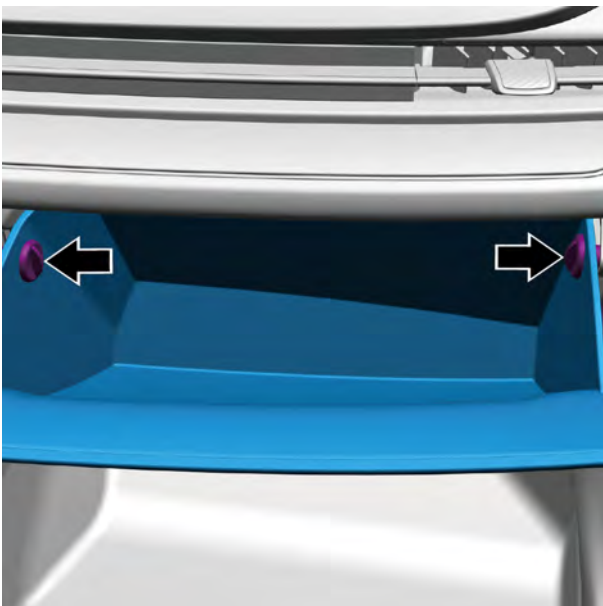


- 4 Disconnect the 2 glove box pin shafts connecting the glove box with the lower body of the instrument panel.
- 5 Take off the glove box.

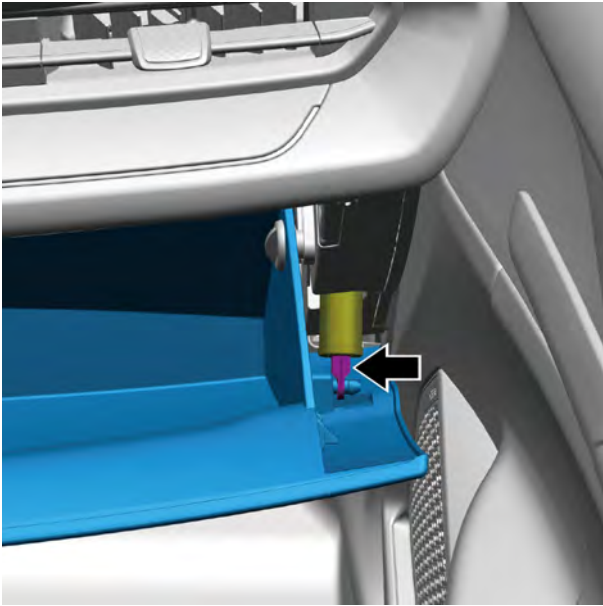
Installation procedure



- 1 Move the glove box to the installation position.
- 2 Install the 2 glove box pin shafts connecting the glove box with the lower body of the instrument panel.



- 3 Install the glove box opening stoppers on both sides of the glove box.



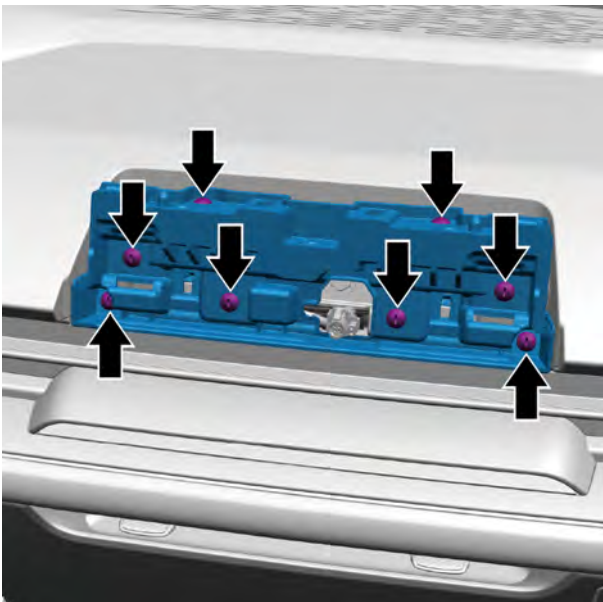
- 4 Install the glove box from the glove box damper.

- 5 Close the glove box.

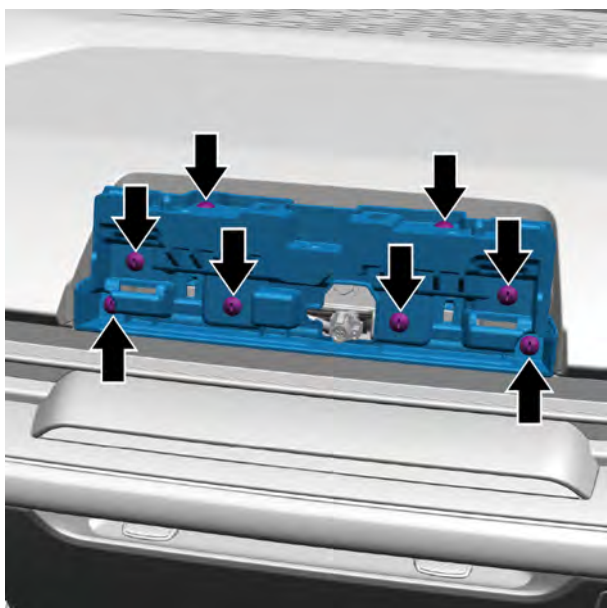
12.8.3.5 Replacement of center console screen bracket (Type I)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove multimedia screen. Refer to [Replacement of Multi Media Screen](#)
- 3 Remove the 8 fixing screws 1 connecting the center console screen bracket with the instrument panel body assembly.
- 4 Remove bracket of the screen of the center console screen



Installation procedure



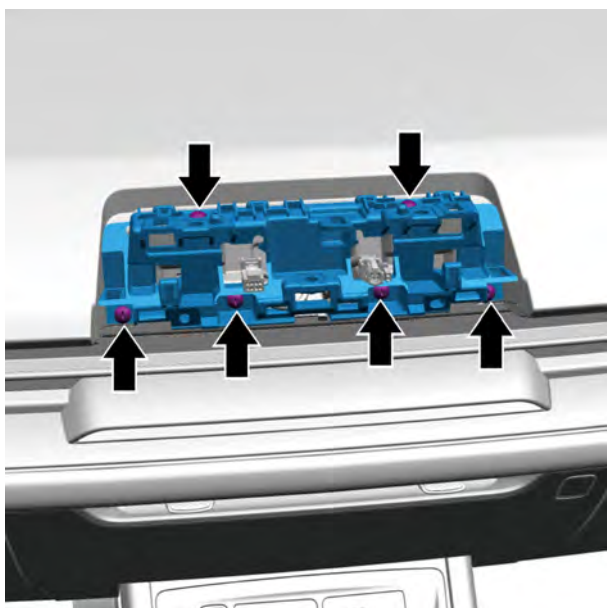
- 1 Move the center console screen bracket to the installation position.
- 2 Install the 8 fixing bolts connecting the center console screen bracket and the instrument panel body assembly.
Torque: 1.5N·m

- 3 Install multimedia screen.
- 4 Connect the negative cable of battery.

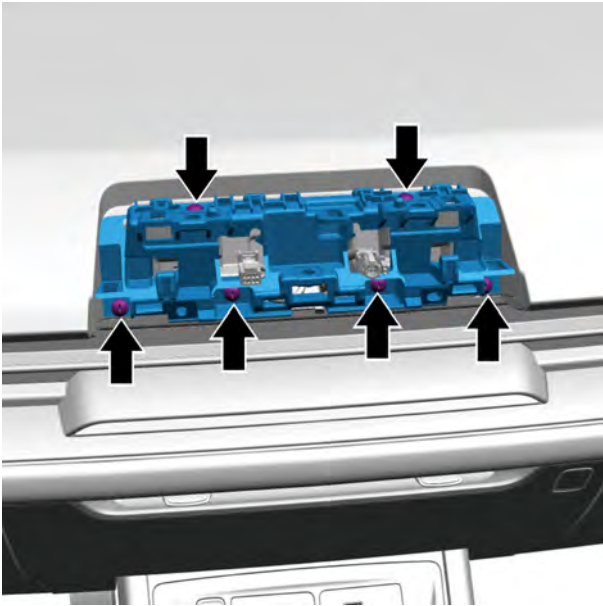
12.8.3.6 Replacement of center console screen bracket(type II)

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove multimedia screen Refer to [Replacement of Multi Media Screen](#).
- 3 Remove the 6 fixing screws connecting the center console screen bracket with the instrument panel body assembly.
- 4 Remove bracket of the screen of the center console screen.



Installation procedure



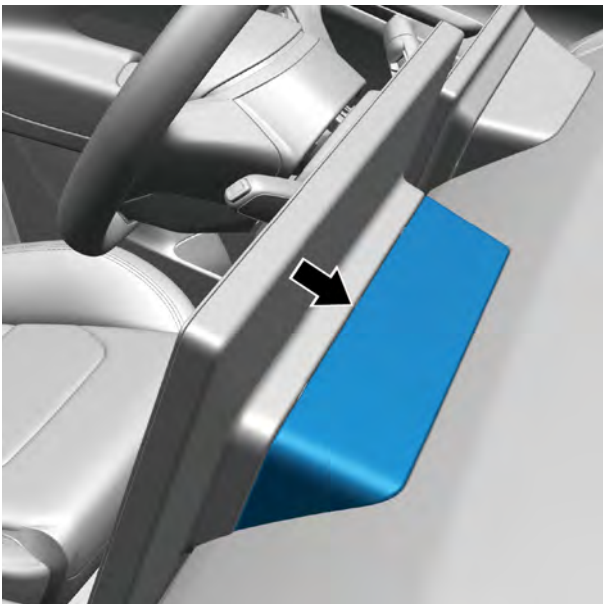
- 1 Move the center console screen bracket to the installation position.
- 2 Install the 6 fixing bolts connecting the center console screen bracket and the instrument panel body assembly.

- 3 Install multimedia screen.
- 4 Connect the negative cable of battery.

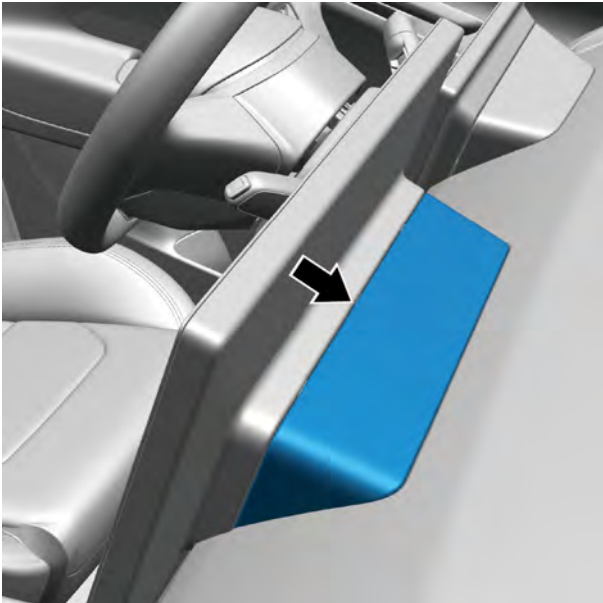
12.8.3.7 Replacement of bracket cover plate of the center console screen

Removal procedure

- 1 Use plastic plate to pry off bracket cover plate of the screen of the center console screen
- 2 Remove bracket cover plate of the screen of the center console screen



Installation procedure

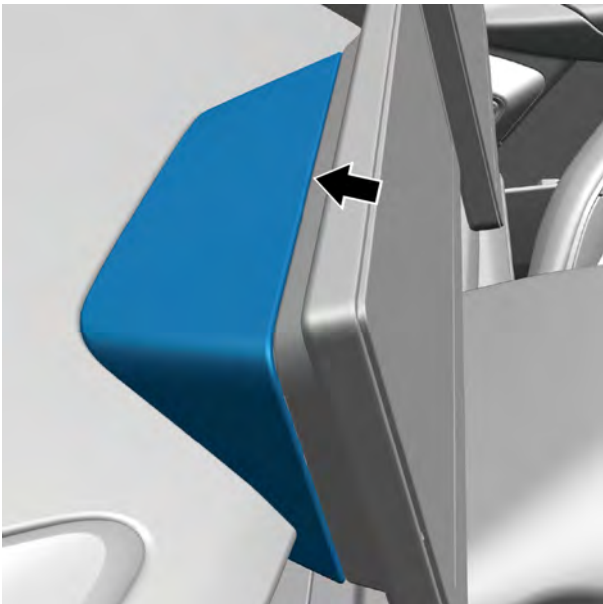


- 1 Move bracket cover plate of the screen of the center console screen to installation position.
- 2 Press bracket cover plate of the screen of the center console screen to make it secure.

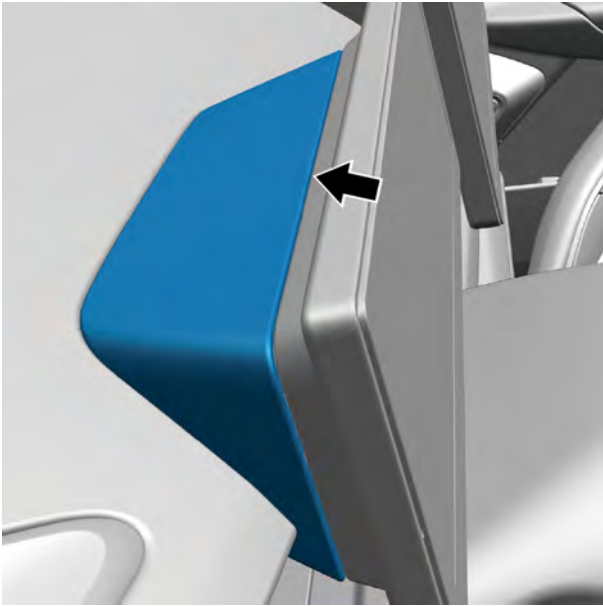
12.8.3.8 Replacement of instrument cluster brim

Removal procedure

- 1 Use the plastic prying plate to pry off the instrument cluster brim.
- 2 Take off the instrument cluster brim.



Installation procedure

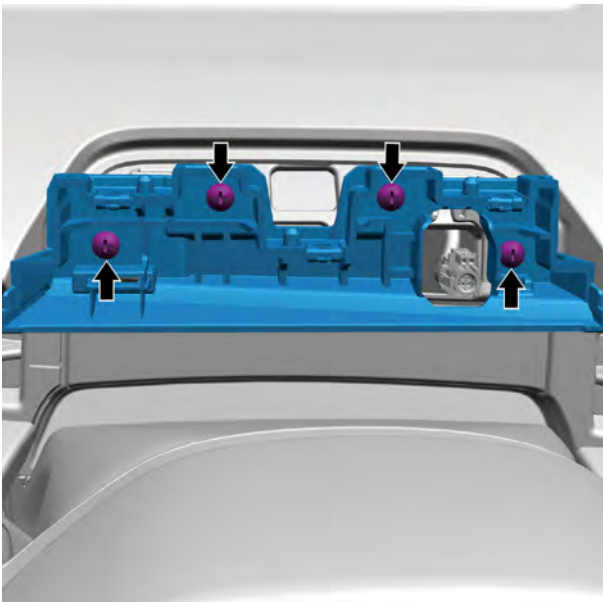


- 1 Move the instrument cluster brim to the installation position.
- 2 Press the instrument cluster brim to ensure installation and tightening.

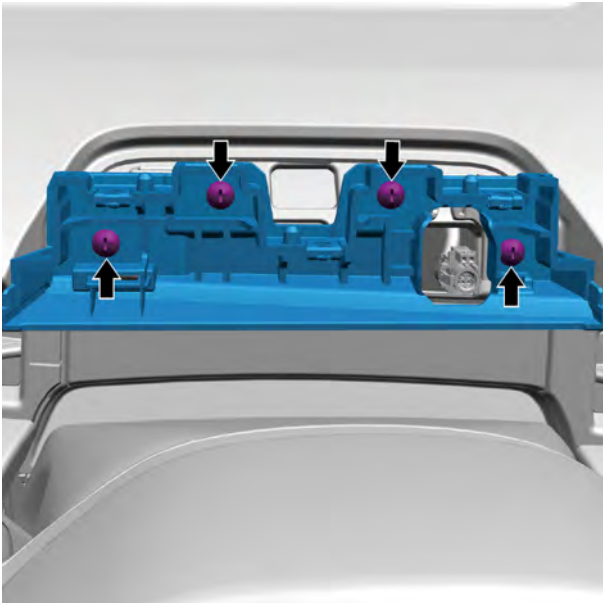
12.8.3.9 Replacement of instrument cluster lower cover

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the instrument cluster display screen. Refer to [Replacement of the Instrument Cluster Display](#)
- 3 Remove the 4 fixing screws connecting the instrument cluster lower cover and the body assembly of the instrument panel.
- 4 Take off instrument cluster lower cover.



Installation procedure



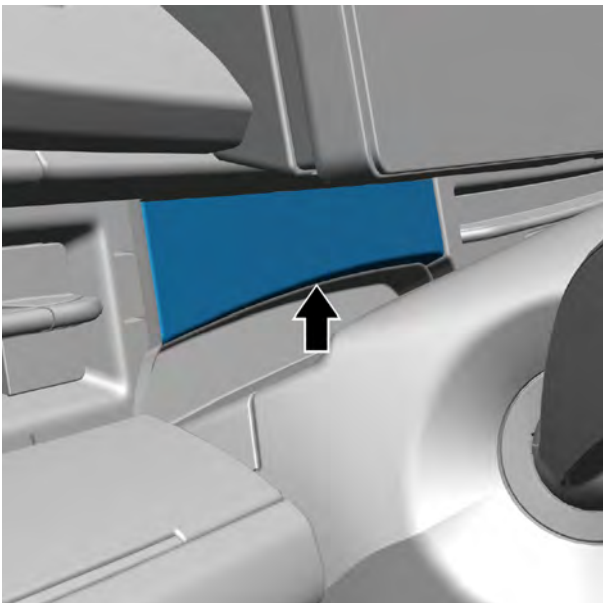
- 1 Move the instrument cluster lower cover to the installation position.
- 2 Install the 4 fixing bolts connecting the instrument cluster lower cover and the body of the instrument panel.
Torque: 1.5N·m

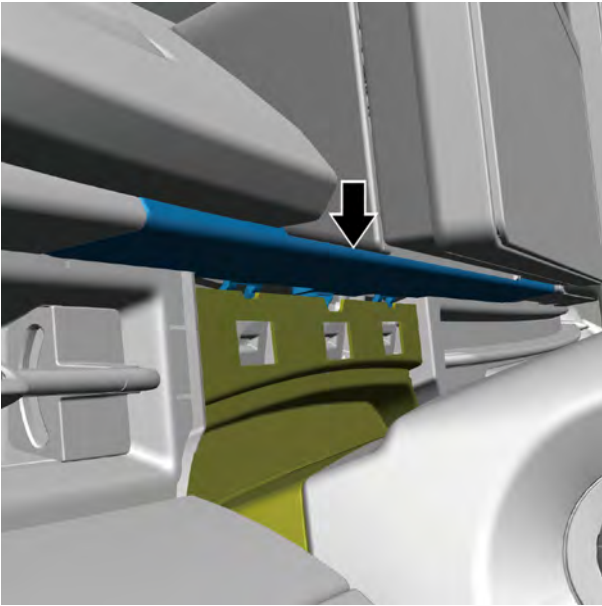
- 3 Install the instrument cluster display screen.
- 4 Connect the negative cable of battery.

12.8.3.10 Replacement of Left Upper Trim Strip of Dashboard

Removal procedure

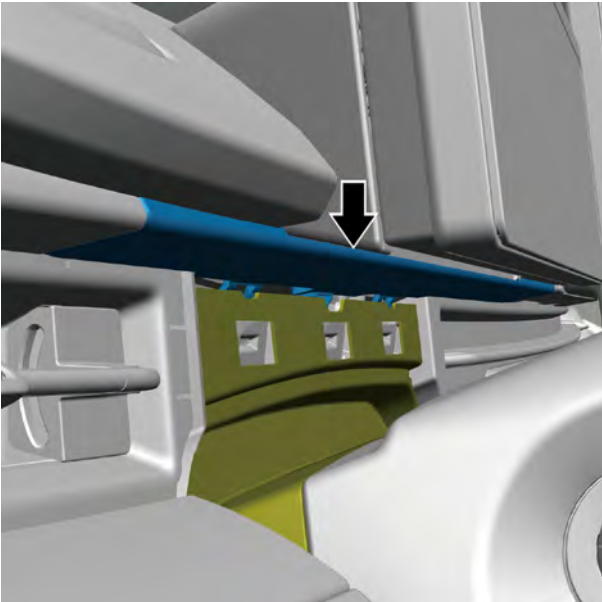
- 1 Use the plastic prying plate to pry off the upper trim strip of the steering column.
- 2 Take down the upper strip of the steering column.



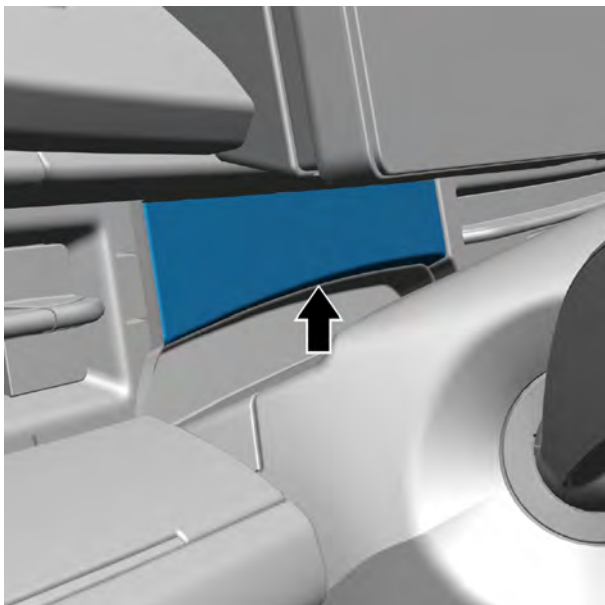


- 3 Remove the dust pad on the upper cowl of the steering column and use the plastic prying plate to pry off the upper trim strip on the left side of the instrument panel.
- 4 Take off the left trim strip of the dashboard.

Installation procedure



- 1 Move the left trim strip of the dashboard to the installation position.
- 2 Press the left upper trim strip of the instrument panel to ensure installation and tightening.

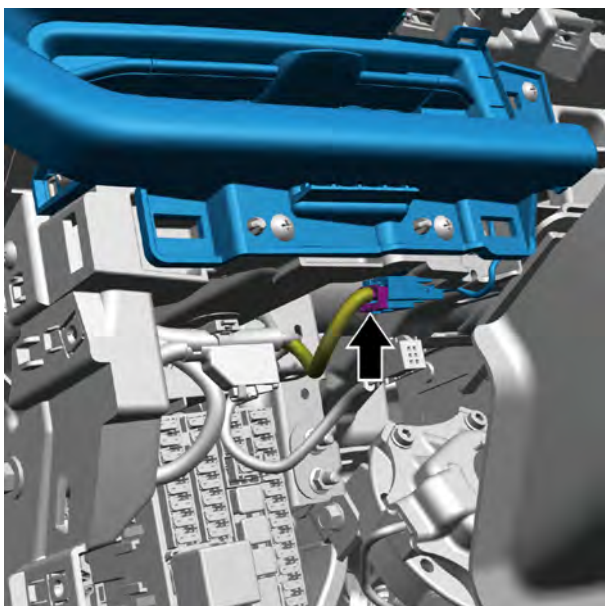


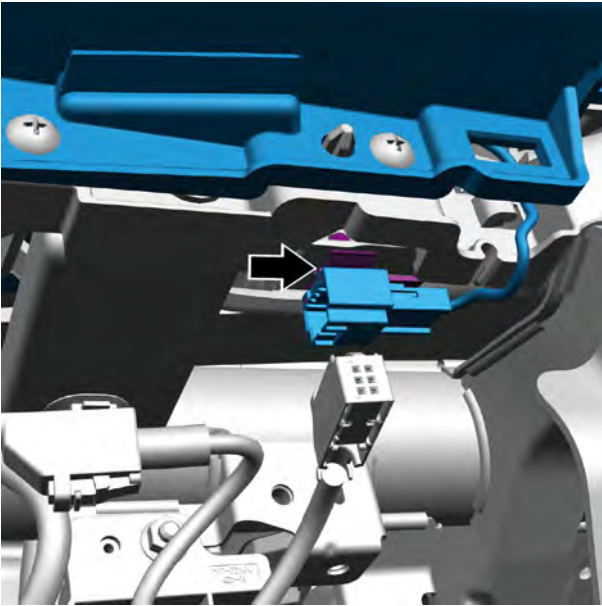
- 3 Move the upper trim strip of the steering column to the installation position.
- 4 Press the upper trim strip of the steering column to ensure installation and tightening.

12.8.3.11 Replacement of Left Trim Panel Assembly of Dashboard

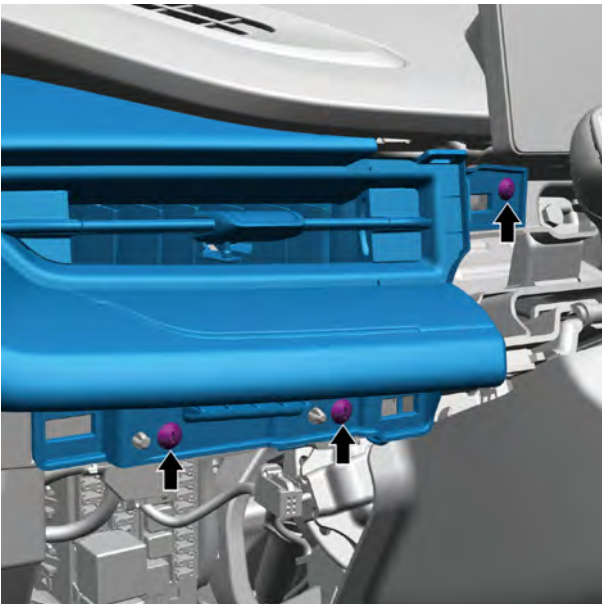
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Remove the upper cowl of the steering column. Refer to [Replacement of Steering Column Upper Cowl Assembly](#)
- 4 Remove the left upper trim strip of the dashboard. Refer to [Replacement of Left Upper Trim Strip of Dashboard](#)
- 5 Disconnect the 1 harness connector of the instrument harness and instrument panel left trim panel assembly.

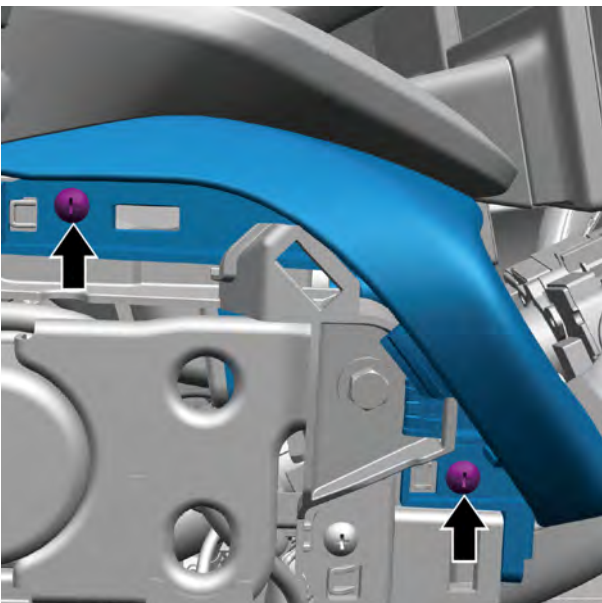




- 6 Install the 1 fixing clip connecting the instrument panel left trim panel assembly and the instrument panel upper body assembly.

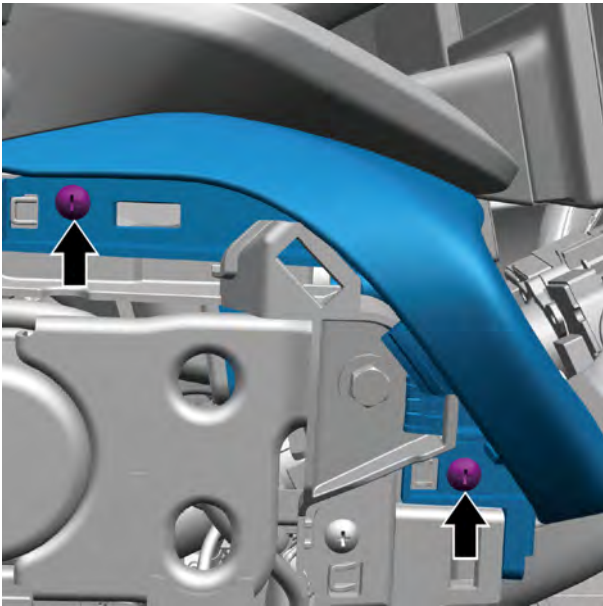


- 7 Remove the 3 fixing screws connecting the left trim plate assembly of the instrument panel with the body assembly of instrument panel.

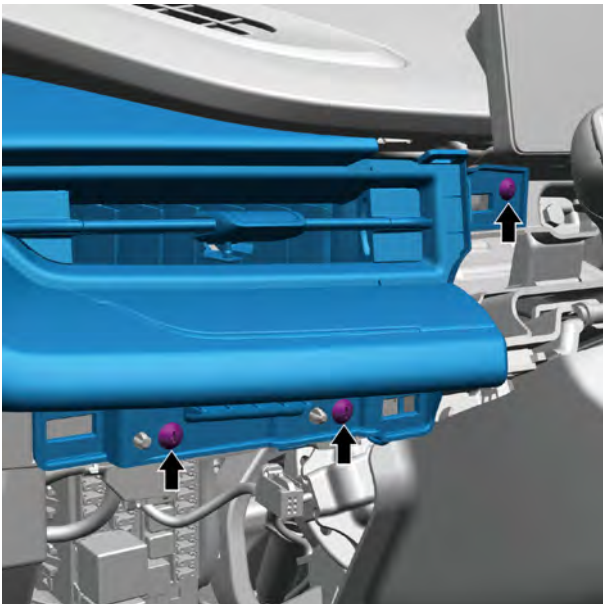


- 8 Remove the 2 fixing screws connecting the left trim plate assembly of the instrument panel with the body assembly of instrument panel.
- 9 Pry off the left trim panel assembly of the instrument panel with a plastic prying plate.

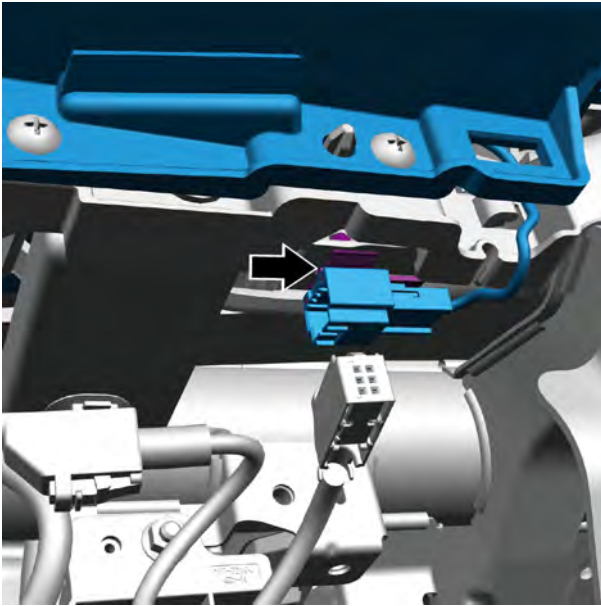
Installation procedure



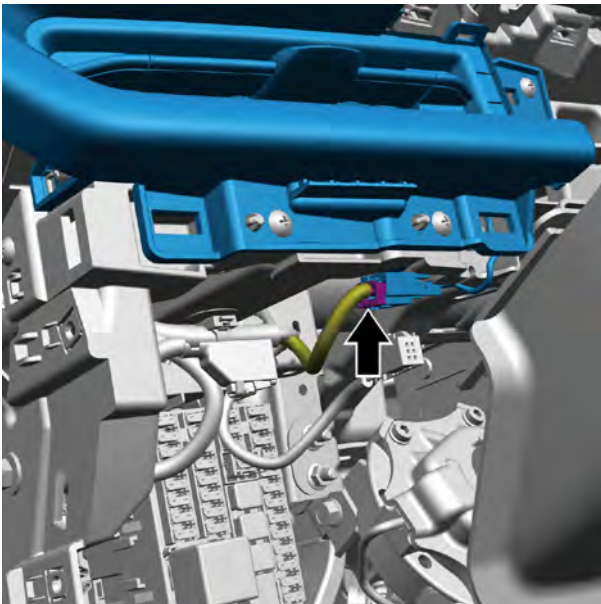
- 1 Move the left trim panel assembly of the dashboard to the installation position.
- 2 Install the 2 fixing screws connecting the left trim plate assembly of the instrument panel with the body assembly of instrument panel.
Torque: 1.5N·m



- 3 Install the 3 fixing screws connecting the left trim plate assembly of the instrument panel with the body assembly of instrument panel.
Torque: 1.5N·m



- 4 Install the 1 fixing clips connecting the instrument panel left trim panel assembly and the instrument panel upper body assembly.



- 5 Connect the harness connector connecting the instrument harness and the dashboard left trim panel assembly.

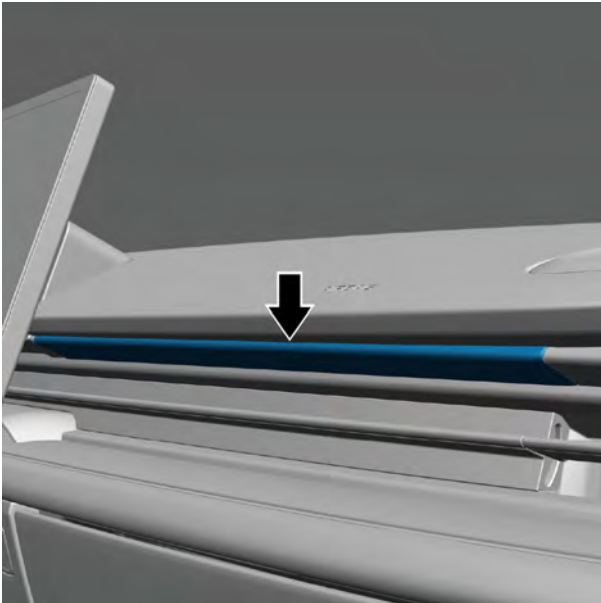
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 6 Install the left upper trim strip of the dashboard.
- 7 Install the upper cowl of the steering column.
- 8 Install the left lower shield assembly of the dashboard.
- 9 Connect the negative cable of battery.

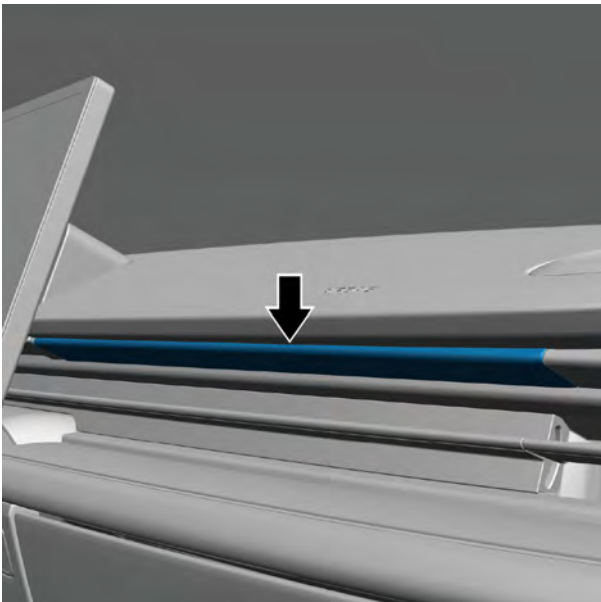
12.8.3.12 Replacement of Right Upper Trim Strip of Dashboard

Removal procedure



- 1 Use the plastic prying plate to pry out the right upper trim strip on the instrument panel.
- 2 Take down dashboard right upper trim strip.

Installation procedure



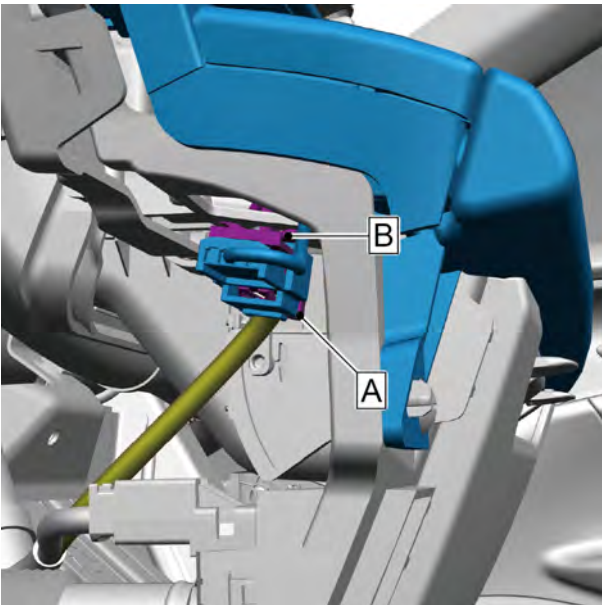
- 1 Move the right upper trim strip of the dashboard to the installation position.
- 2 Press the upper trim strip on the right side of the instrument panel to ensure installation and tightening.

12.8.3.13 Replacement of Right Trim Panel Assembly of Dashboard

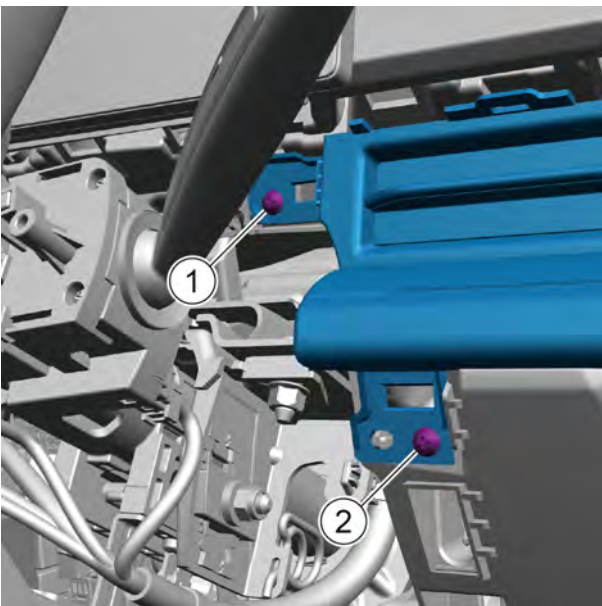
Removal procedure

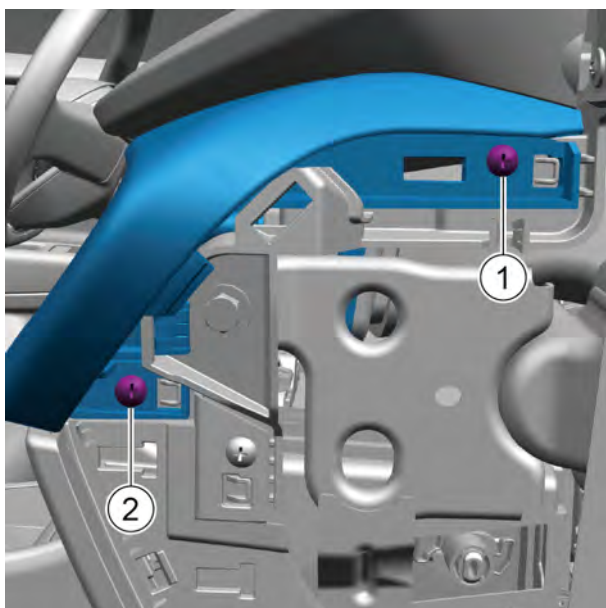
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left lower shield assembly of the dashboard. Refer to [Replacement of Left Lower Shield Assembly of Dashboard](#)
- 3 Remove the lower cowl of the steering column. Refer to [Replacement of Steering Column Lower Cowl Assembly](#)

- 4 Remove the left upper trim strip of the dashboard. Refer to [Replacement of Left Upper Trim Strip Assembly of Dashboard](#)
- 5 Remove mounting bracket of the screen of the center console screen Refer to [Replacement of screen bracket of the center console](#)
- 6 Remove the right upper trim strip of the dashboard. Refer to [Replacement of Right Upper Trim Strip of Dashboard](#)
- 7 Remove the right pillar A upper trim panel body. Refer to [Replacement of Left Pillar A Middle Trim Panel Assembly](#)
- 8 Disconnect the 1 harness connector A of the instrument harness and instrument panel right trim panel assembly.
- 9 Install the 1 fixing clip B connecting the instrument panel right trim panel assembly and the instrument panel lower body assembly.

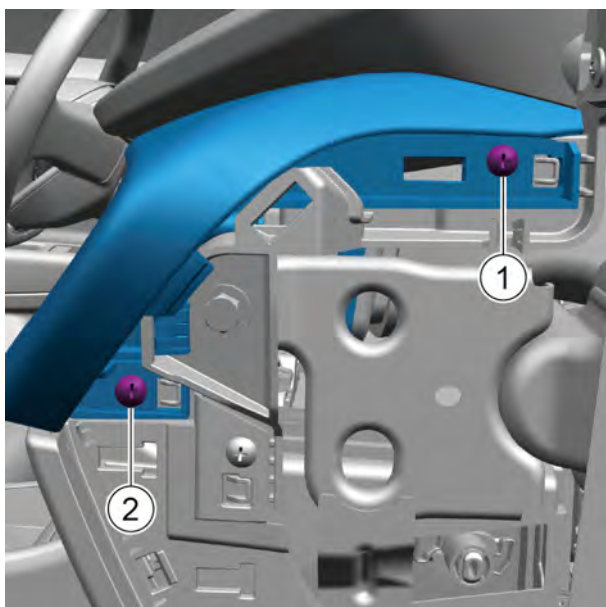


- 10 Remove the 1 fixing screw 1 connecting the right trim plate assembly of the instrument panel with the left body assembly of instrument panel.
- 11 Remove the 1 fixing screw 2 connecting the right trim plate assembly of the instrument panel with the lower body assembly of instrument panel.



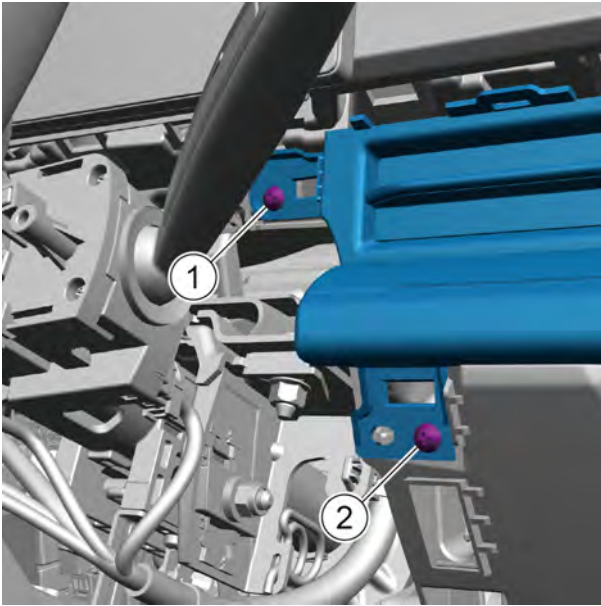


- 12 Remove the 1 fixing screw 1 connecting the right trim plate assembly of the instrument panel with the right body assembly of instrument panel.
- 13 Remove the 1 fixing screw 2 connecting the right trim plate assembly of the instrument panel with the lower body assembly of instrument panel.
- 14 Take off the right trim panel assembly of the dashboard.

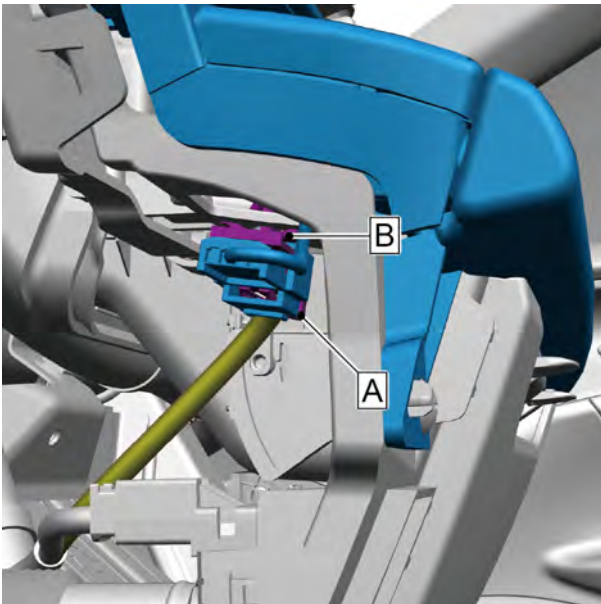


Installation procedure

- 1 Move the right trim panel assembly of the dashboard to the installation position.
- 2 Install the 1 fixing screw 2 connecting the right trim plate assembly of the instrument panel with the lower body assembly of instrument panel.
Torque: 1.5N·m
- 3 Install the 1 screw 1 connecting the right trim plate assembly of the instrument panel with the body assembly of instrument panel.
Torque: 1.5N·m



- 4 Install the 1 fixing screw 2 connecting the right trim plate assembly of the instrument panel with the lower body assembly of instrument panel.
Torque: 1.5N·m
- 5 Install the 1 screw 1 connecting the right trim plate assembly of the instrument panel with the body assembly of instrument panel.
Torque: 1.5N·m



- 6 Install the 1 fixing clip B connecting the instrument panel right trim panel assembly and the instrument panel lower body assembly.
- 7 Connect the harness connector A connecting the instrument harness and the right trim plate assembly of the instrument panel.

Caution

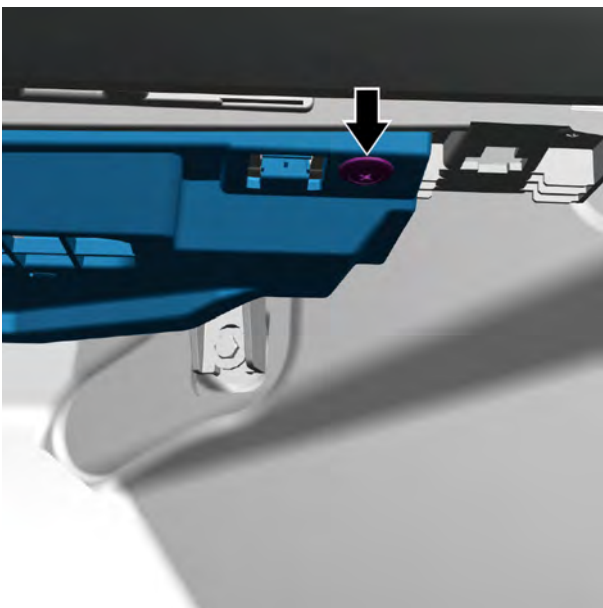
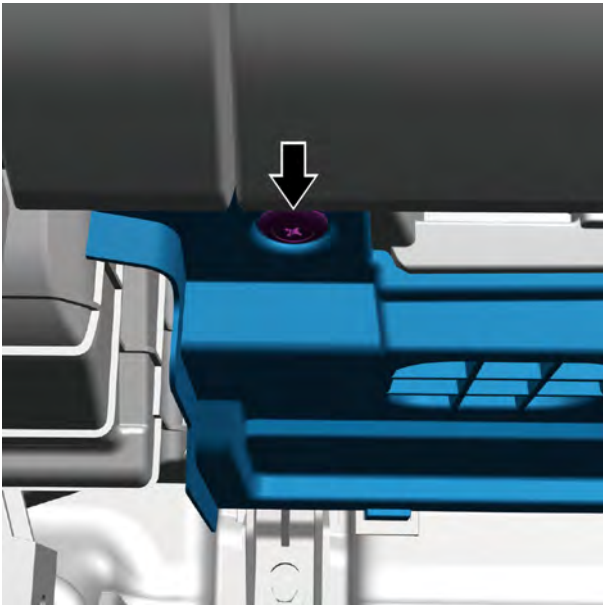
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

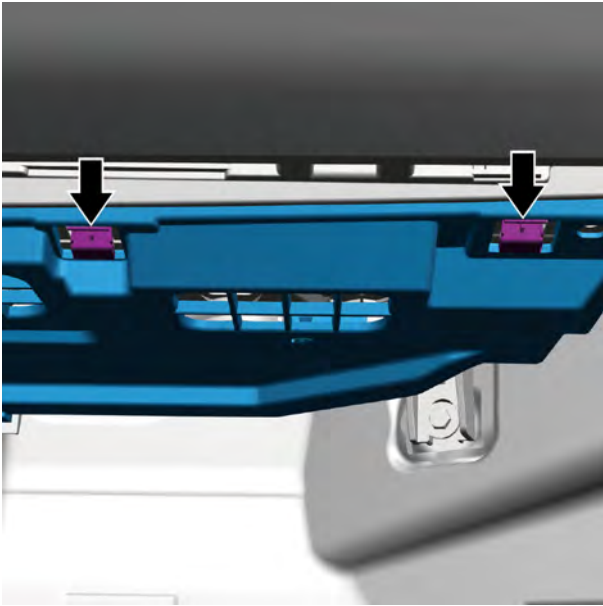
- 8 Install the right A-pillar trim panel body.
- 9 Install the right trim strip of the dashboard.
- 10 Install mounting bracket of the screen of the center console screen
- 11 Install the left trim strip of the dashboard.
- 12 Install the lower cowl of the steering column.
- 13 Install the left lower shield assembly of the dashboard.
- 14 Connect the negative cable of battery.

12.8.3.14 Replacement of right lower baffle of dashboard

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console right front baffle plate assembly. Refer to [Replacement of Auxiliary Fascia Console Left Front Baffle Plate Assembly](#)
- 3 Use a plastic pry board to pry off one fixing clip connecting the right lower baffle of the instrument panel with the left side of the lower body assembly of the instrument panel.
- 4 Use a plastic pry board to pry off one fixing clip connecting the right lower baffle of the instrument panel with the right side of the lower body assembly of the instrument panel.

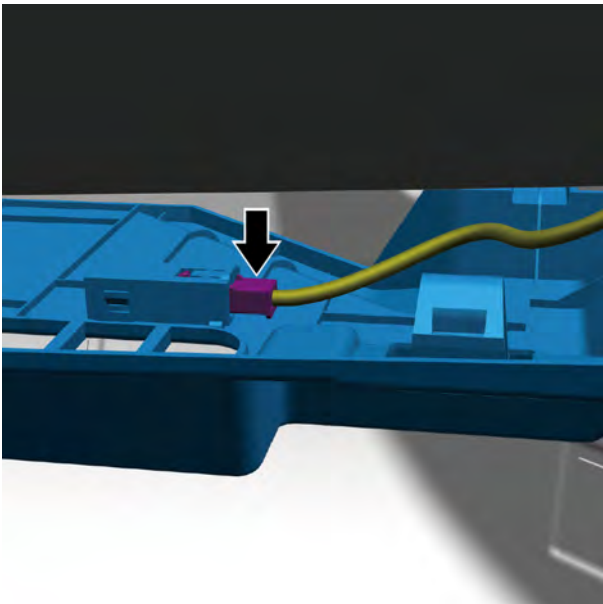




- 5 Press both sides as shown in the figure, and disconnect the two fixing clips connecting the right lower baffle of the instrument panel with the lower body assembly of the instrument panel.

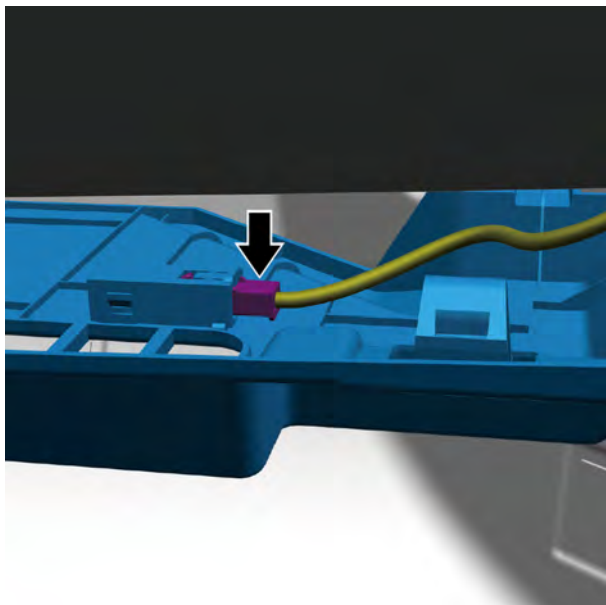
Caution

There is still harness connection on the right lower baffle plate of the dashboard. Avoid pulling the harness during removal.



- 6 Disconnect the 1 harness connector connecting the instrument harness with the lower right baffle of the instrument panel.
- 7 Remove the right lower baffle of dashboard.

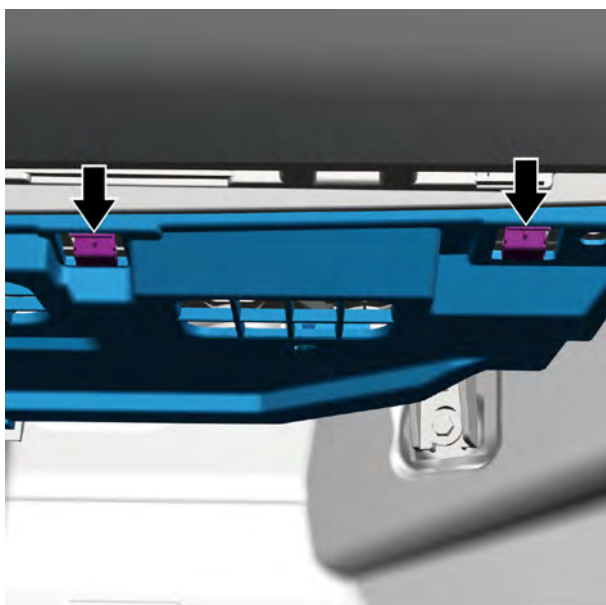
Installation procedure



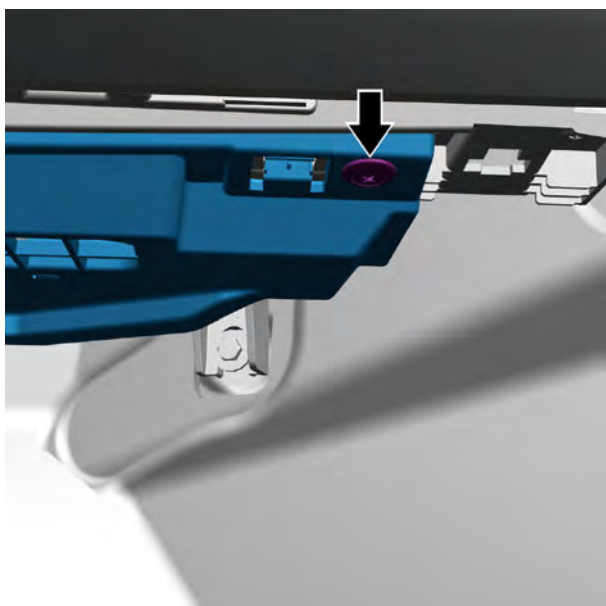
- 1 Move the lower right baffle of the dashboard to the installation position.
- 2 Connect the harness connector connecting the instrument harness and the dashboard lower right baffle.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



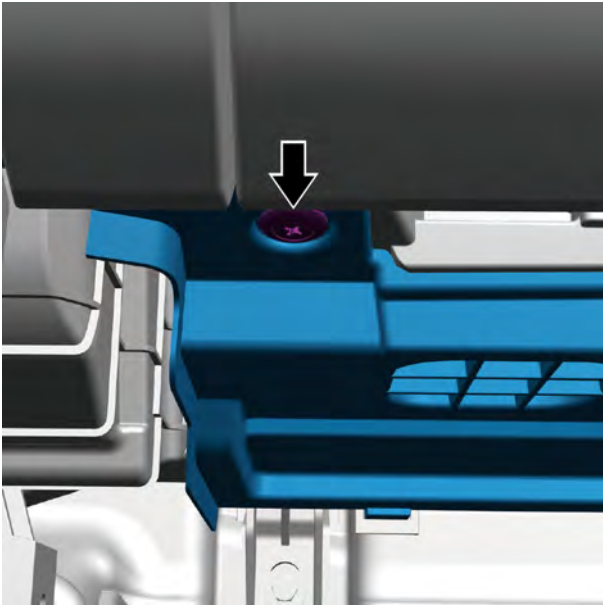
- 3 Clamp the right lower baffle of the instrument panel on the lower body assembly of the instrument panel.



- 4 Install the 1 fixing clip connecting the right lower baffle with the lower body assembly of the instrument panel.

Caution

The clip is a disposable part, and should be replaced with a new one for installation.



- 5 Install the 1 fixing clip connecting the right lower baffle with the lower body assembly of the instrument panel.

Caution

The clip is a disposable part, and should be replaced with a new one for installation.

- 6 Install the auxiliary fascia console right front baffle plate assembly.
- 7 Connect the negative cable of battery.

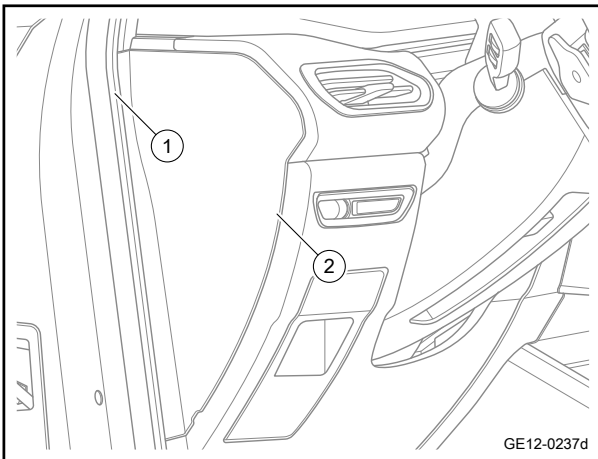
12.8.3.15 Replacement of dashboard end cover at driver side

Removal procedure

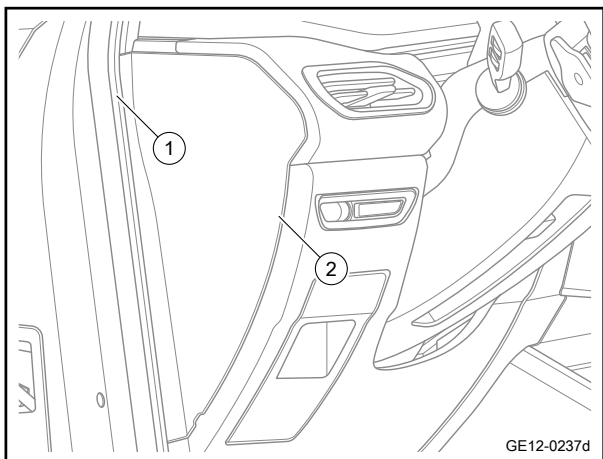
Caution

The instrument panel driver side end cover assembly are removed and installed in the same way with instrument panel front passenger's seat side end cover assembly.

- 1 Remove the front left door sealing strip 1.
- 2 Pry off dashboard end cover 2 at driver side



Installation procedure

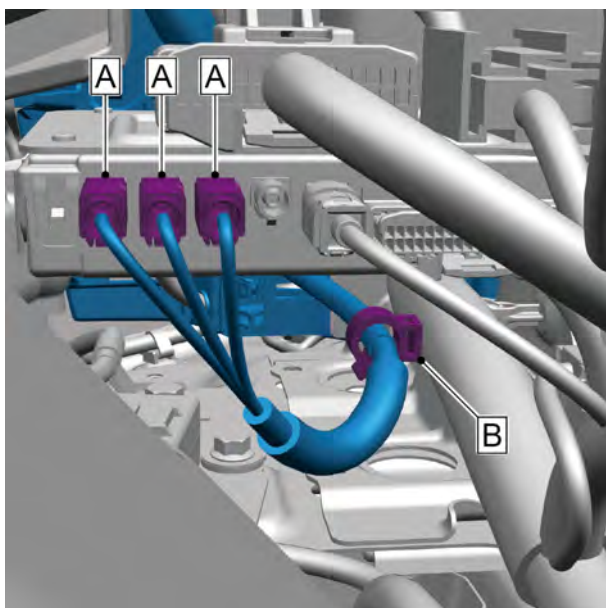


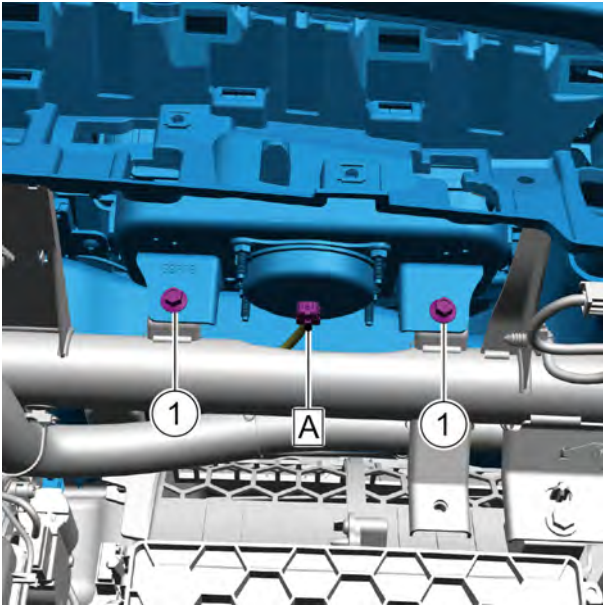
- 1 Install dashboard end cover 2at driver side
- 2 Install the rear door frame sealing strip 1.

12.8.3.16 Replacement of Dashboard Body Assembly

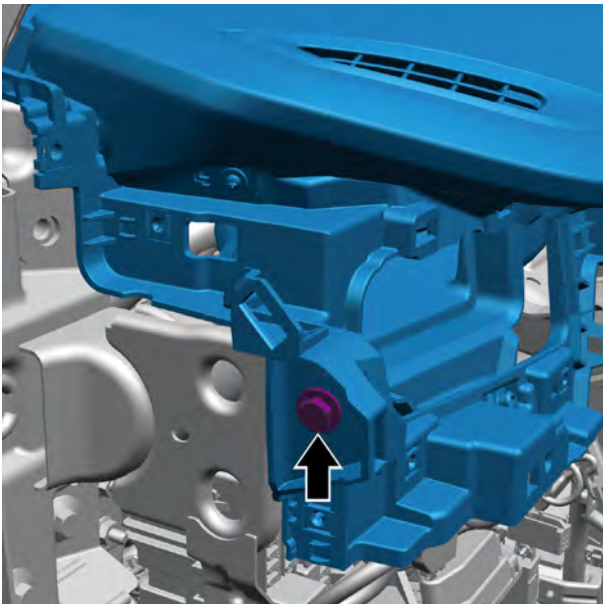
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the combination switch. Refer to [Replacement of Combination Switch](#)
- 3 Remove the driver information display screen. Refer to [replacement of the display screen](#)
- 4 Remove the dashboard body assembly. Refer to [Replacement of Dashboard Lower Body Assembly](#)
- 5 Remove the left and right rear pillar upper trim panel assembly. Refer to [Replacement of Left Pillar A Upper Trim Panel Assembly](#)
- 6 Disconnect the 3 harness connectors A connecting GPS4G antenna and vehicle-mounted mobile terminal .
- 7 Disconnect the GPS4G antenna from the clip B on the instrument wire harness.

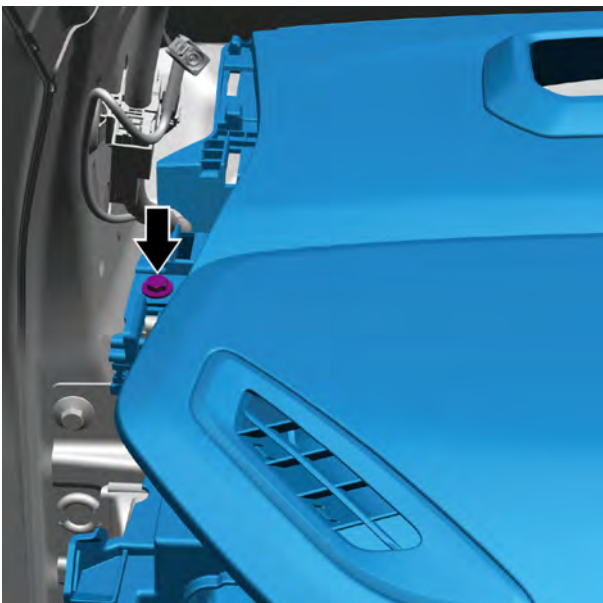




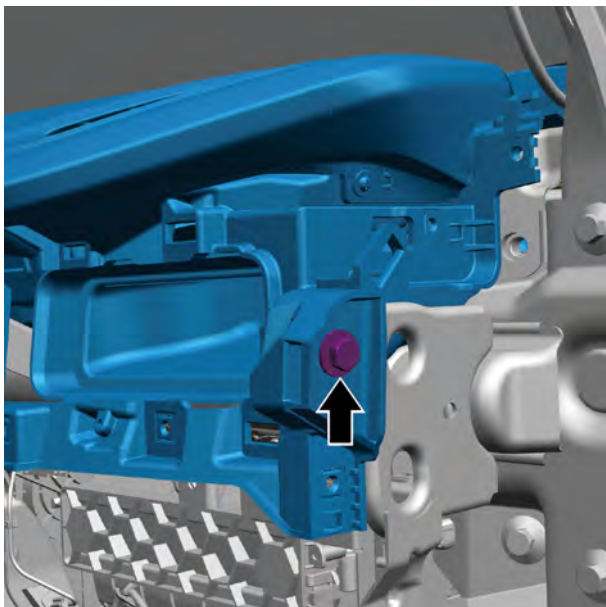
- 8 Disconnect the harness connector A connecting instrument harness and passenger frontal airbag.
- 9 Remove the 2 fixing bolts connecting the passenger frontal airbag and instrument panel cross beam.



- 10 Remove the 1 fixing bolt connecting the instrument panel body assembly with the left side of cross member of the instrument panel.



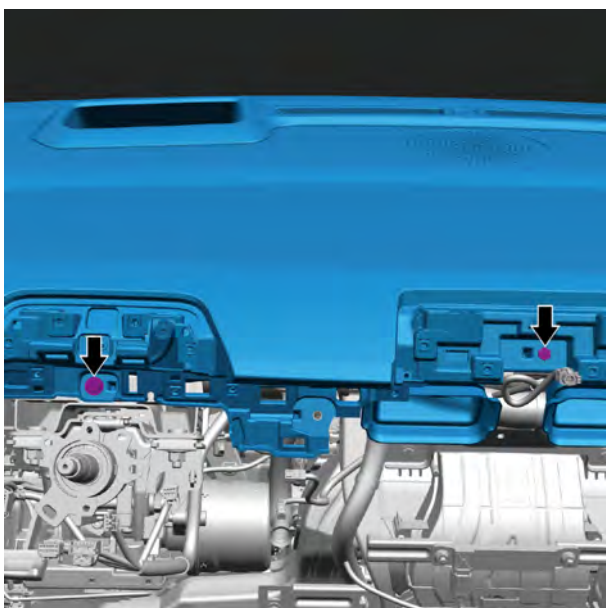
- 11 Remove the 1 fixing bolt connecting the instrument panel body assembly with the left side of cross member of the instrument panel.



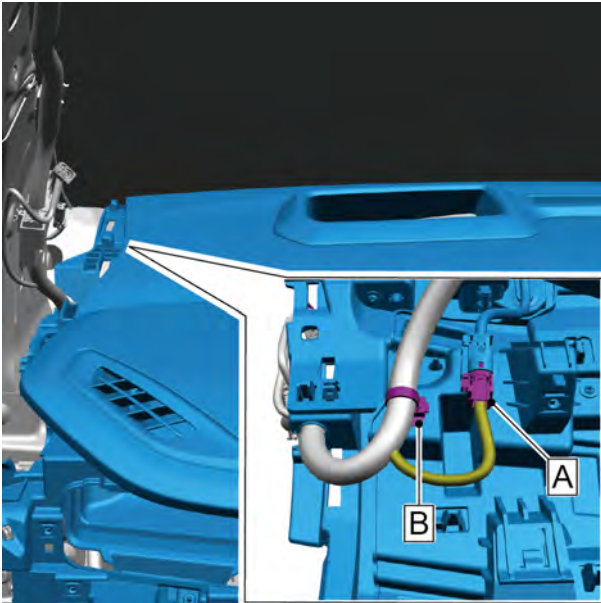
- 12 Remove the 1 fixing bolt connecting the instrument panel body assembly with the right side of cross member of the instrument panel.



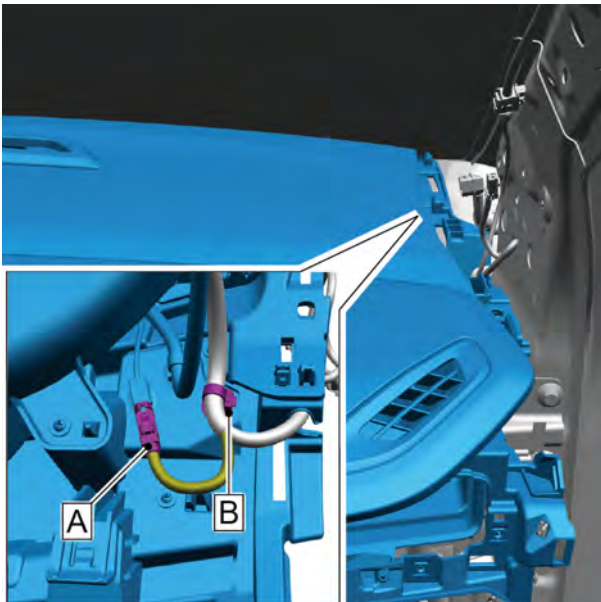
- 13 Remove the 1 fixing bolt connecting the instrument panel body assembly with the right side of cross member of the instrument panel.



- 14 Remove the 2 fixing bolts connecting the instrument panel body assembly with the middle of cross member of the instrument panel.



- 15 Lift the instrument body assembly and disconnect the 1 harness connector A connecting the instrument harness with the instrument harness adapter wire.
- 16 Install the 1 fixing clip B connecting the instrument panel harness assembly and the instrument panel body assembly.

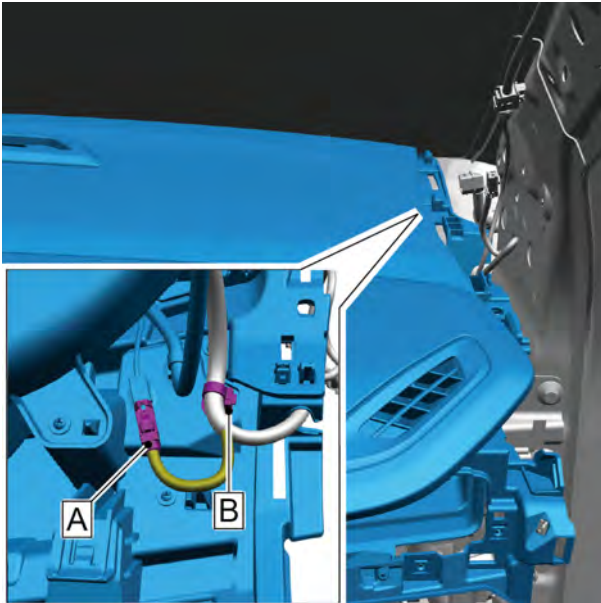


- 17 Disconnect the 1 harness connector A connecting the instrument panel harness and the GPS4G antenna.
- 18 Install the 1 fixing clip B connecting the instrument panel harness assembly and the instrument panel body assembly.
- 19 Take off the instrument panel body assembly.

Caution

This step requires cooperation of two persons.

Installation procedure



- 1 Move the body of the instrument panel assembly to the installation position.

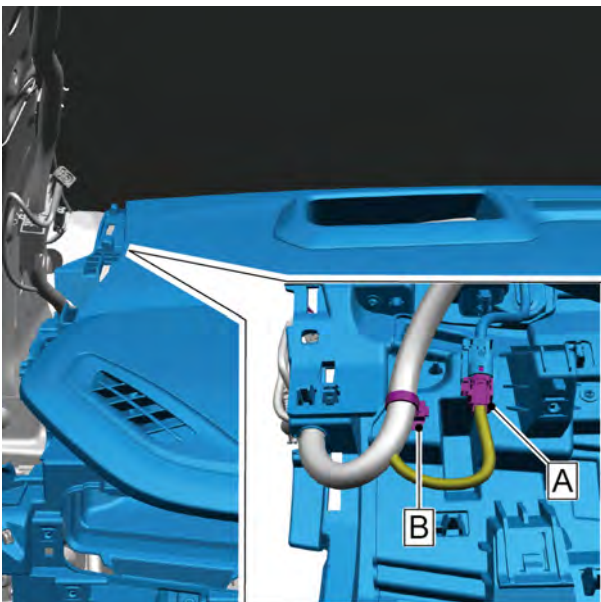
Caution

This step requires cooperation of two persons.

- 2 Install the 1 fixing clip B connecting the instrument panel harness assembly and the instrument panel body assembly.
- 3 Connect the 1 harness connector A connecting the instrument panel harness and the GPS4G antenna.

Caution

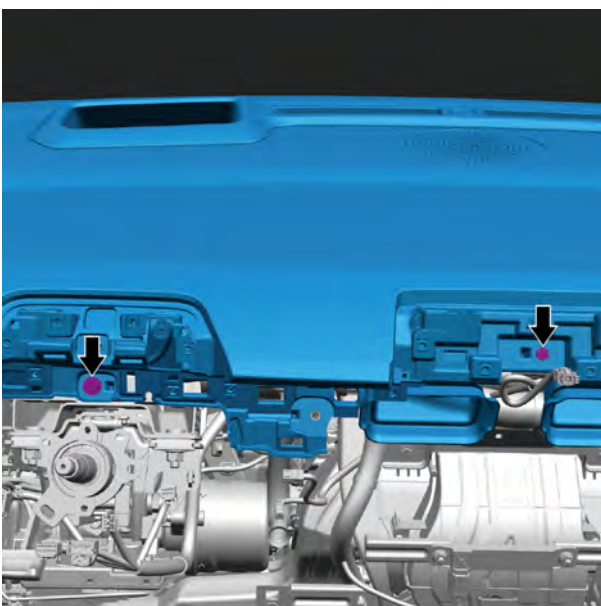
Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 4 Install the 1 fixing clip B connecting the instrument panel harness assembly and the instrument panel body assembly.
- 5 Connect the harness connector A connecting the instrument harness patch cord and the dashboard harness assembly to fix instrument panel body.

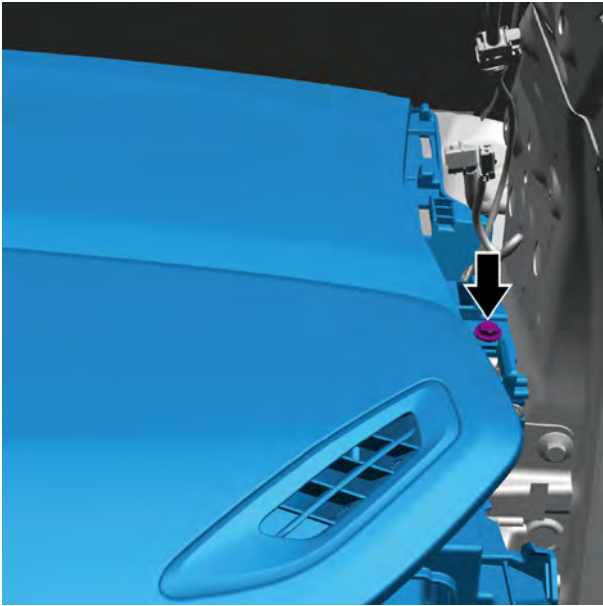
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

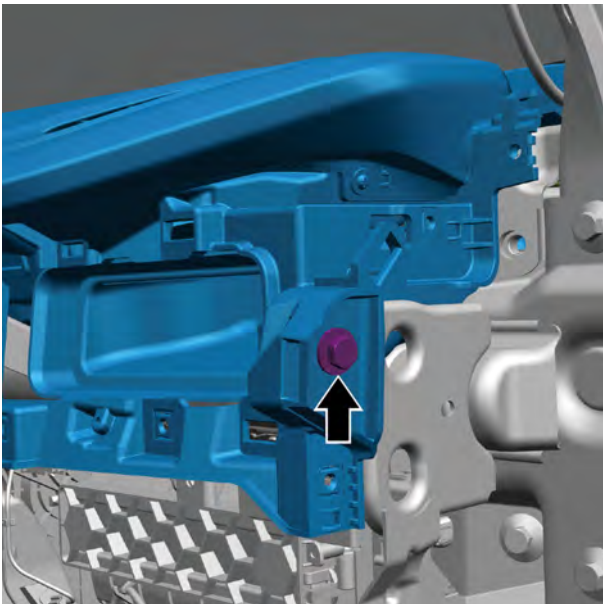


- 6 Install the 2 fixing bolts connecting the instrument panel body assembly with the cross member of the instrument panel.

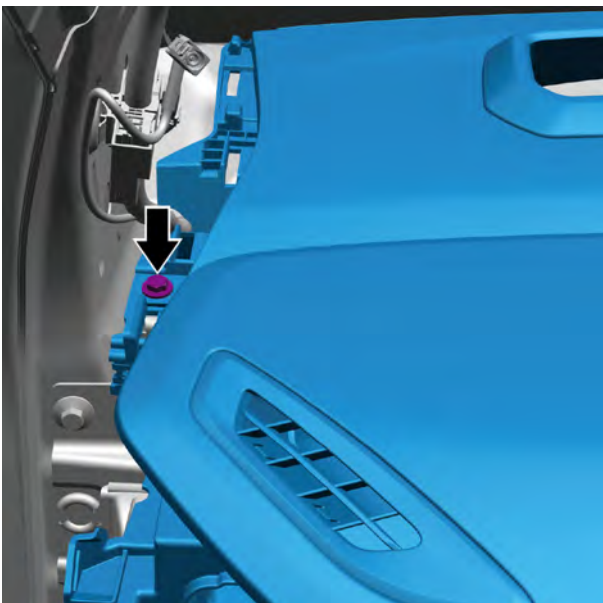
Torque: 6N·m



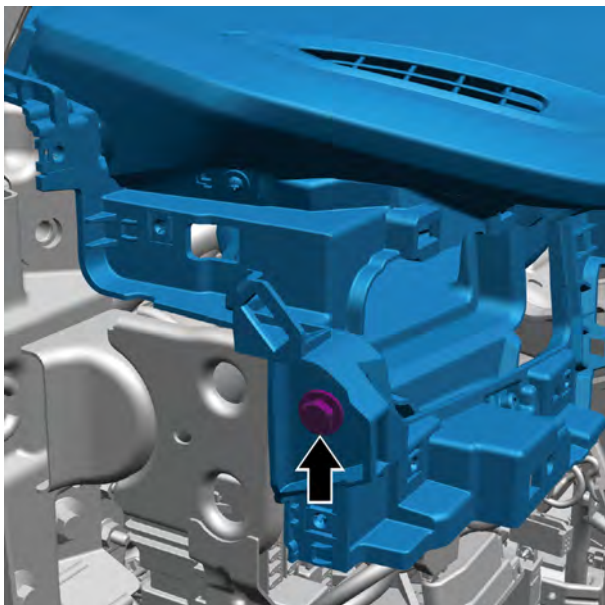
- 7 Installing the fixing bolt connecting dashboard body assembly with the right side of the cross member of the dashboard.
Torque: 6N·m



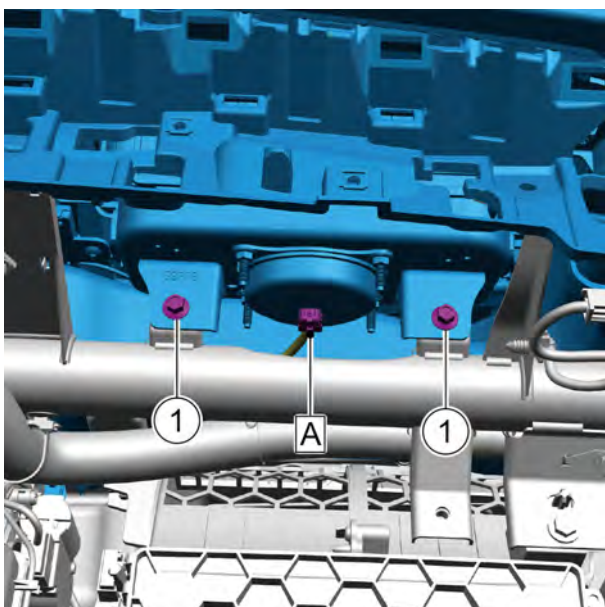
- 8 Installing the fixing bolt connecting dashboard body assembly with the right side of the cross member of the dashboard.
Torque: 6N·m



- 9 Install the fixing bolt connecting dashboard body assembly with the left side of the cross member of the dashboard.
Torque: 6N·m



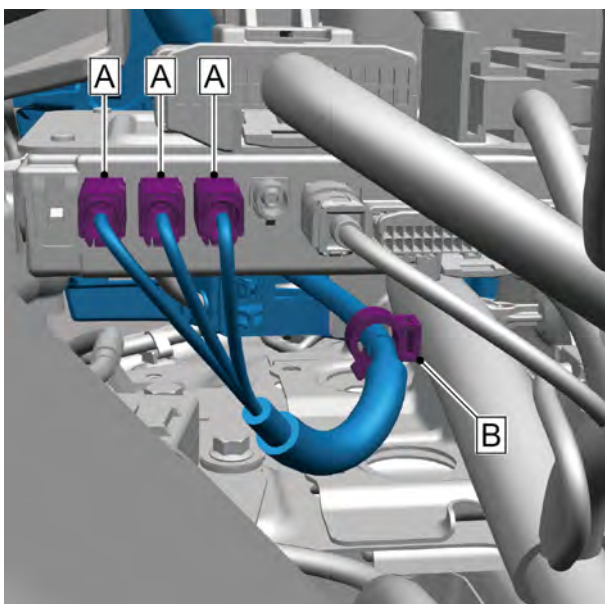
- 10 Install the fixing bolt connecting dashboard body assembly with the left side of the cross member of the dashboard.
Torque: 6N·m



- 11 Install the 2 fixing bolts connecting the passenger's frontal airbag and cross beam of instrument panel.
Torque: 10N·m
- 12 Connect the harness connector A of instrument panel harness and the passenger's frontal airbag.

Caution

Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".



- 13 Install the GPS4G antenna onto the instrument harness clip B.
- 14 Connect the 3 harness connectors A connecting GPS4G antenna and vehicle-mounted mobile terminal harness connector.

Caution

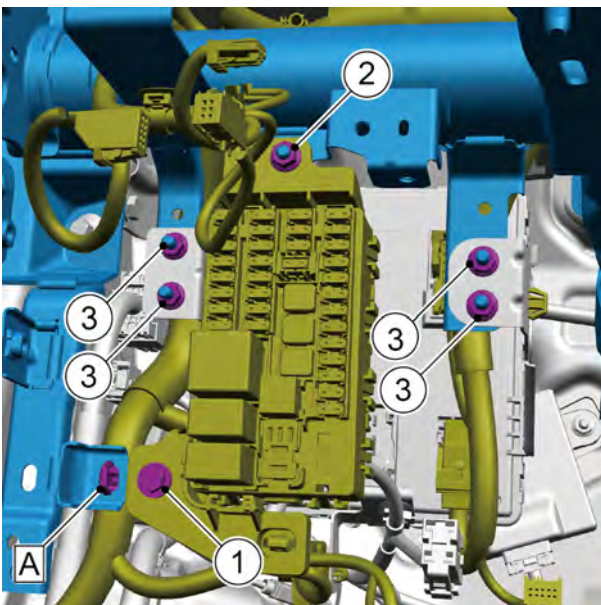
Firmly plug in harness in the principle of "first plug, second sounds and third confirmations".

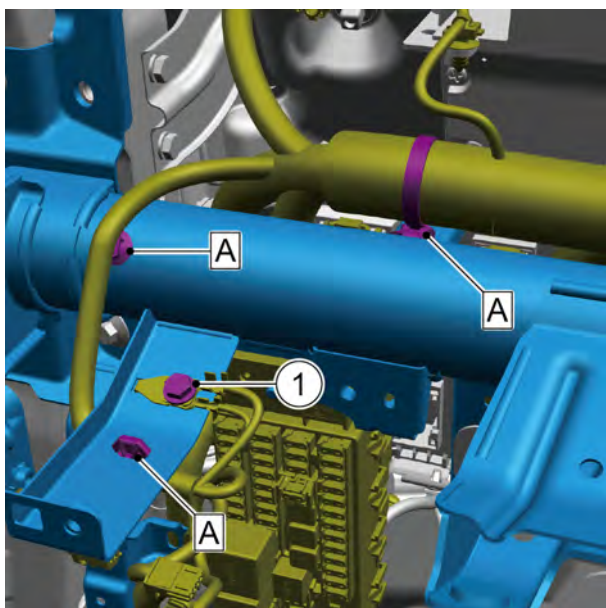
- 15 Install the left and right A-pillar upper trim panel assembly.
- 16 Install the dashboard lower body assembly.
- 17 Install the driver information display screen.
- 18 Install the combination switch body.
- 19 Connect the negative cable of battery.

12.8.3.17 Replacement of Instrument Panel Cross Member

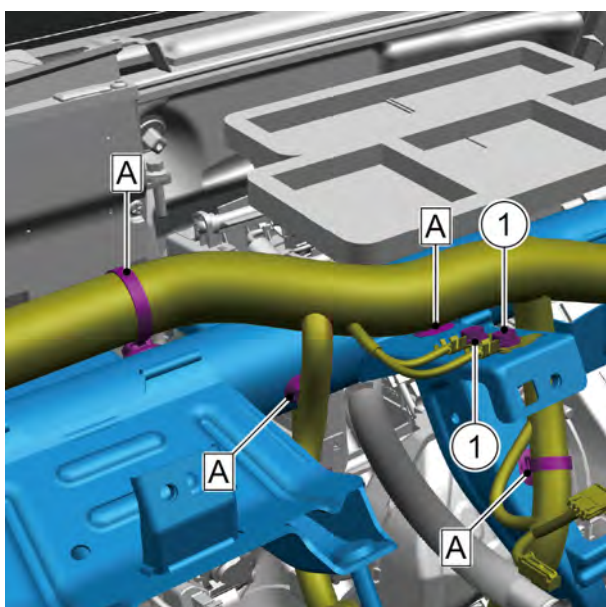
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the ventilation cover plate assembly. Refer to [Replacement of Ventilation Cover Plate Assembly](#)
- 3 Remove the dashboard body assembly. Refer to [Replacement of Dashboard Body Assembly](#)
- 4 Remove the vehicle wireless control module. Refer to [Replacement of the vehicle wireless control module](#)
- 5 Remove front left antenna. Refer to [Replacement of Left Front Antenna](#)
- 6 Remove door handle control module. Refer to [Replacement of Handle Control Module](#)
- 7 Remove the electric-assisted steering column assembly. Refer to [Replacement of electric-assisted steering column assembly](#)
- 8 Remove the 1 fixing clip A connecting the instrument harness assembly and the instrument panel cross member.
- 9 Remove the 1 fixing bolt 1 connecting the instrument harness fuse box and the instrument panel cross member.
- 10 Remove the 1 fixing nut 2 connecting the fuse box and cross beam of instrument panel.
- 11 Remove the 4 fixing nuts 3 connecting the body control module and the cross beam of instrument panel.

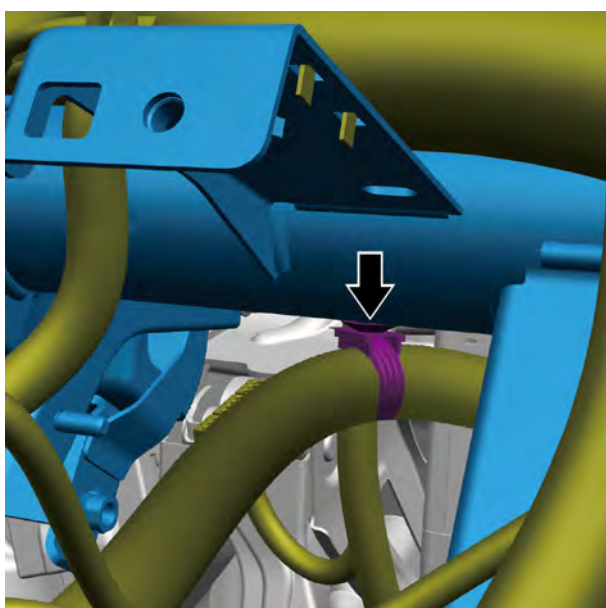




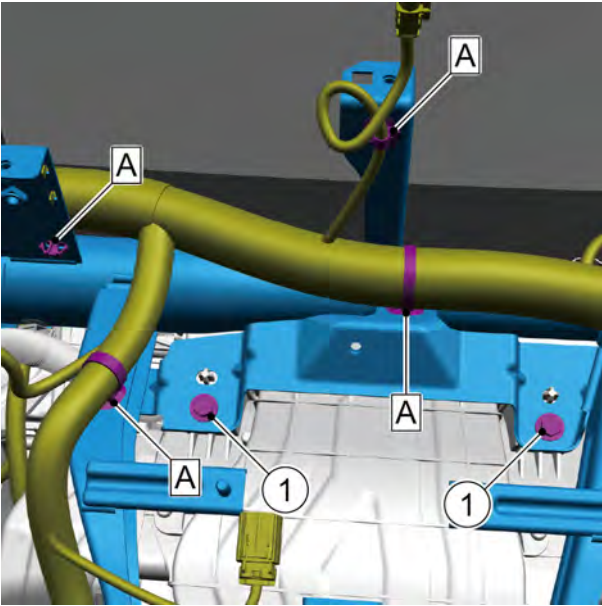
- 12 Remove the 3 fixing clip A connecting the instrument harness assembly and the instrument panel cross member.
- 13 Remove the 1 ground bolt 1 connecting the instrument harness and the instrument panel cross member.



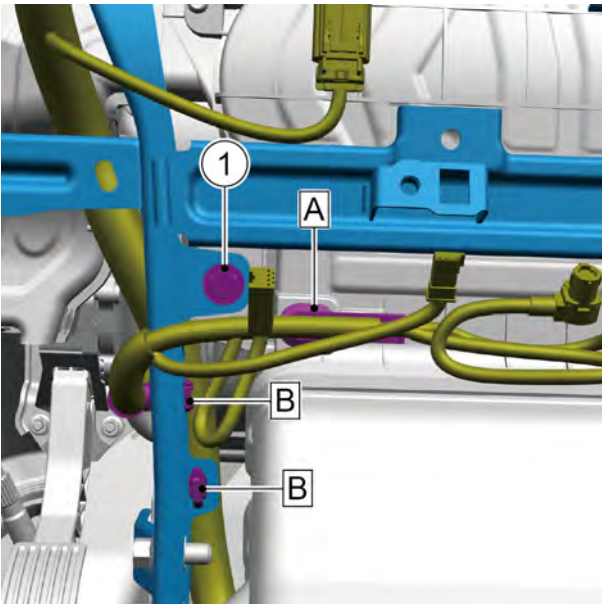
- 14 Remove the 4 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.
- 15 Remove the 2 fixing bolts 1 connecting the instrument harness and the instrument panel cross member.



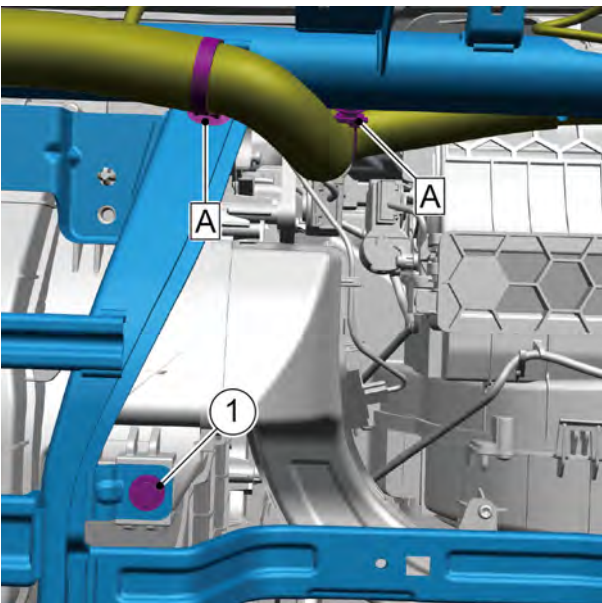
- 16 Disconnect the 1 fixing clip connecting the indoor temperature sensor pipe and the cross member of instrument panel.



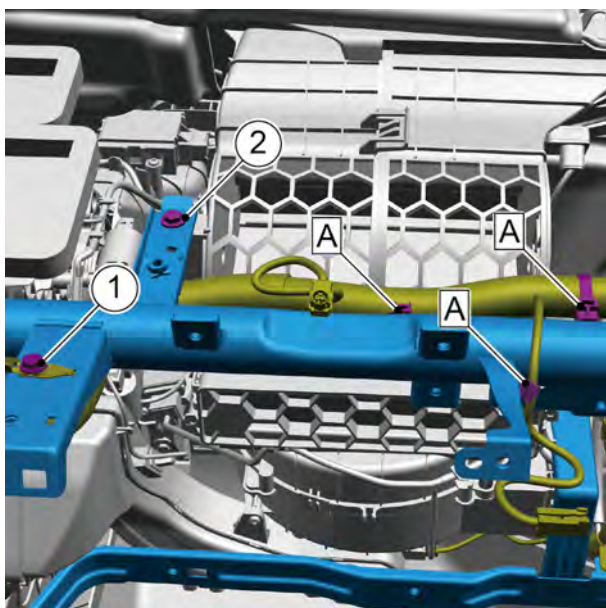
- 17 Remove the 4 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.
- 18 Remove the 2 fixing bolts 1 connecting the instrument panel cross member and the A/C master unit assembly.



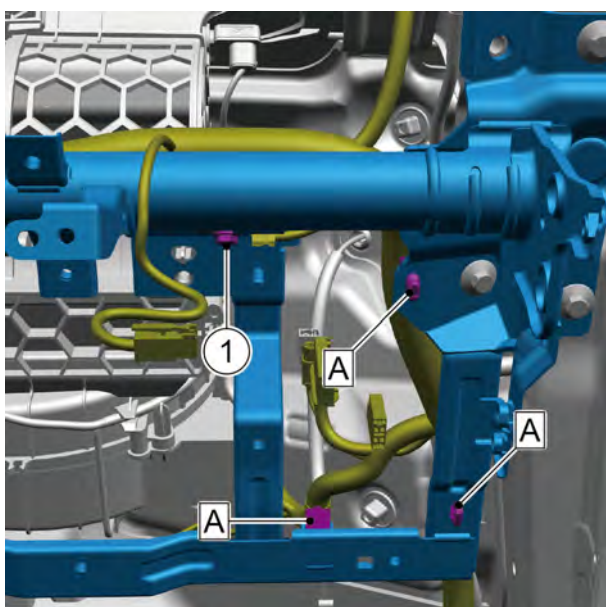
- 19 Disconnect the 1 fixing clip A of the instrument panel harness assembly and the A/C master unit assembly.
- 20 Install the 2 fixing clips B connecting the instrument harness assembly and the instrument panel cross member.
- 21 Remove the 1 fixing bolt 1 connecting the instrument panel cross member and the A/C master unit assembly.



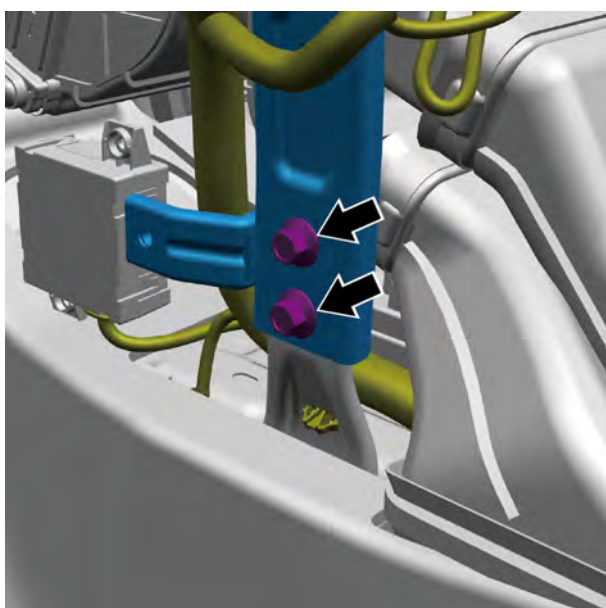
- 22 Remove the 2 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.
- 23 Remove the 1 fixing bolt 1 connecting the instrument panel cross member and the A/C master unit assembly.



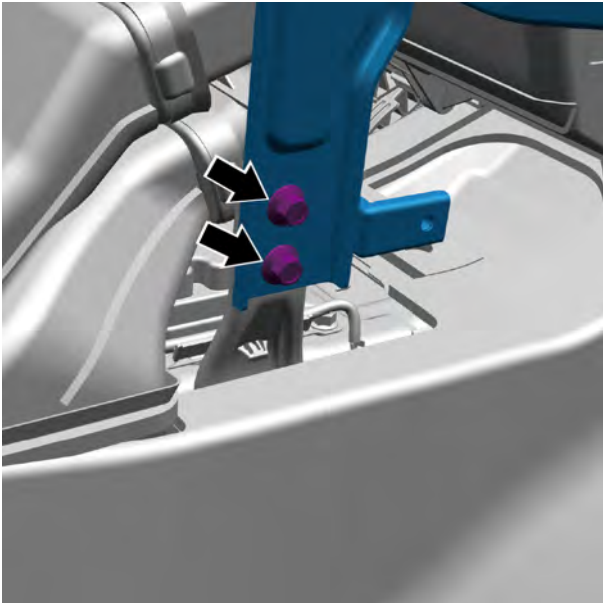
- 24 Remove the 3 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.
- 25 Remove the 1 ground bolt 1 connecting the instrument harness and the instrument panel cross member.
- 26 Remove the 1 fixing bolt 2 connecting the instrument panel cross member and the A/C master unit assembly.



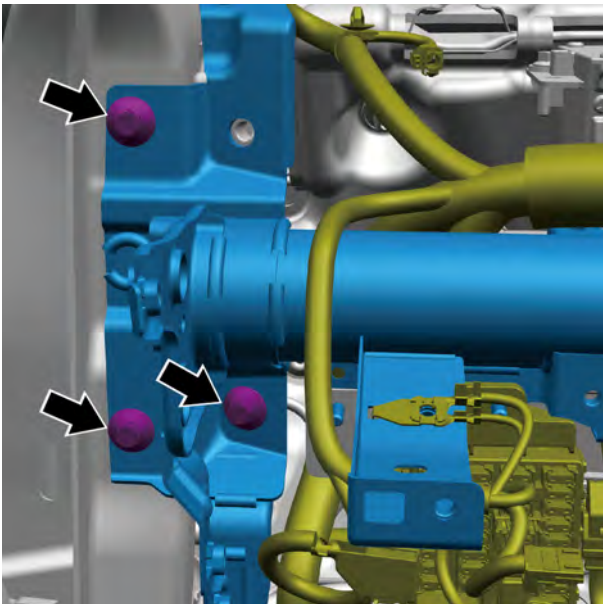
- 27 Remove the 3 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.
- 28 Remove the 1 ground bolt 1 connecting the instrument harness and the instrument panel cross member.



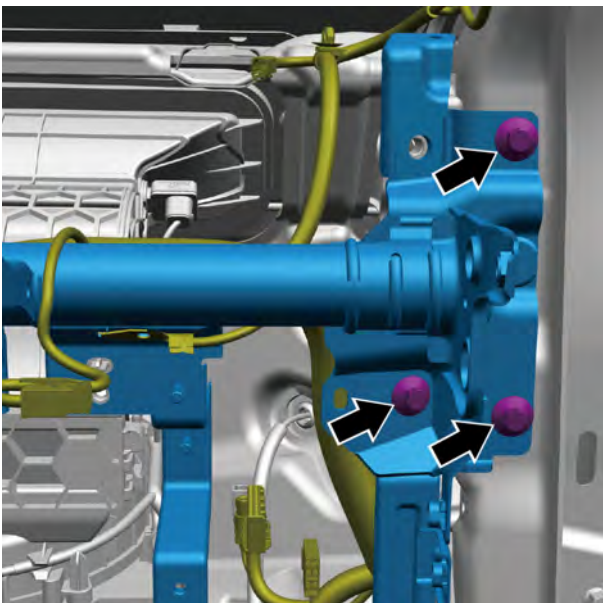
- 29 Remove the 2 fixing bolts connecting the instrument panel cross member assembly and the left lower column assembly of the instrument panel cross member.



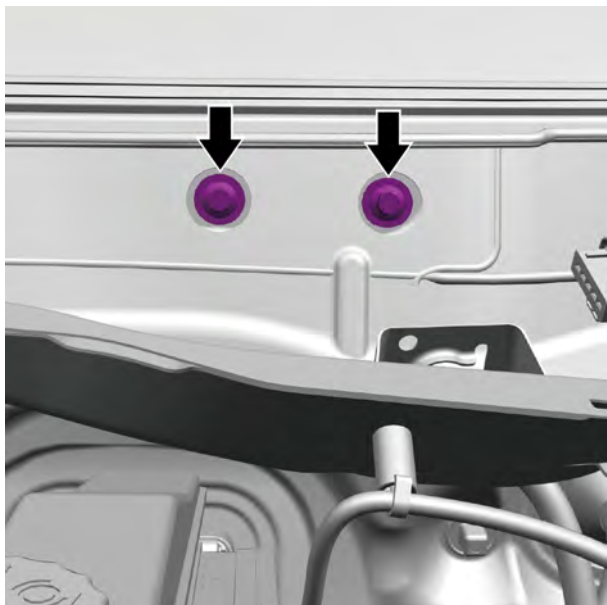
- 30 Remove the 2 fixing bolts 1 connecting the instrument panel cross member assembly and the right lower column assembly of the instrument panel cross member.



- 31 Remove 3 fixing bolts connecting the instrument panel cross member and the left side wall inner panel assembly.



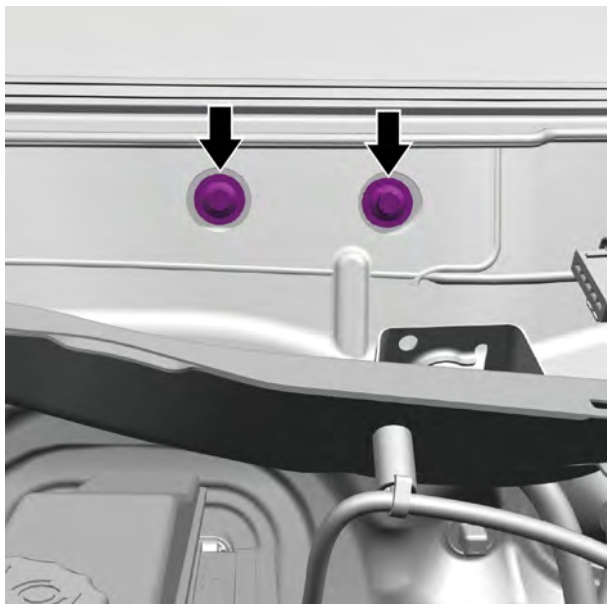
- 32 Remove 3 fixing bolts connecting the instrument panel cross member and the right side wall inner panel assembly.



- 33 Remove 2 fixing bolts connecting the left side of the instrument panel cross member and the vehicle body.
- 34 Take off the instrument panel cross member.

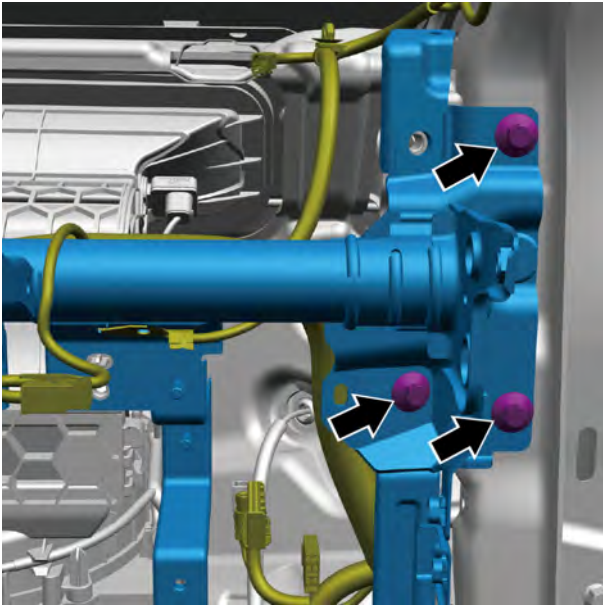
Caution

This step requires cooperation of two persons.

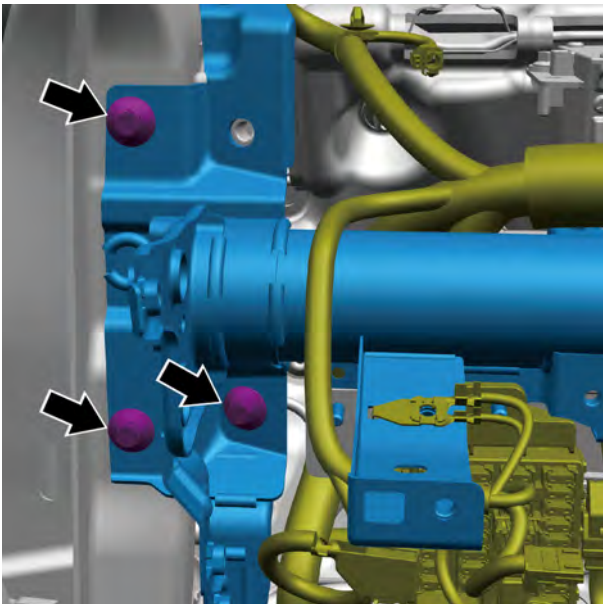


Installation procedure

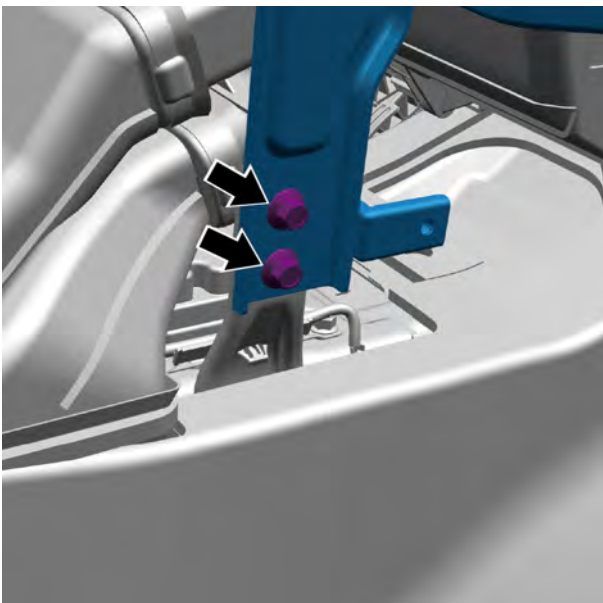
- 1 Move the instrument panel cross member to the installation position.
Caution
This step requires cooperation of two persons.
- 2 Install 2 fixing bolts connecting the instrument panel cross member and the vehicle body.
Torque: 24N·m



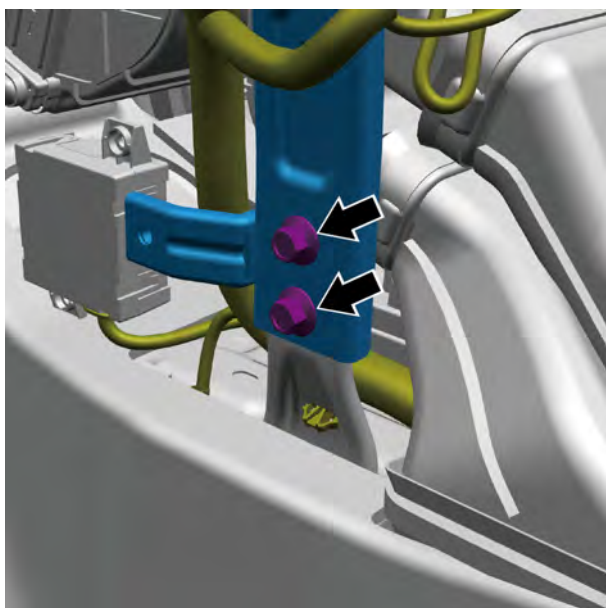
- 3 Install 3 fixing bolts connecting the instrument panel cross member and the right side wall front inner panel assembly.
Torque: 24N·m



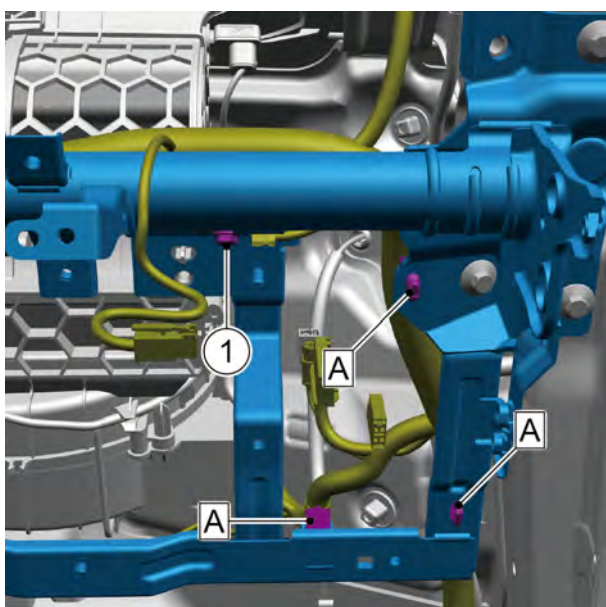
- 4 Install 3 fixing bolts connecting the instrument panel cross member and the left side wall front inner panel assembly.
Torque: 24N·m



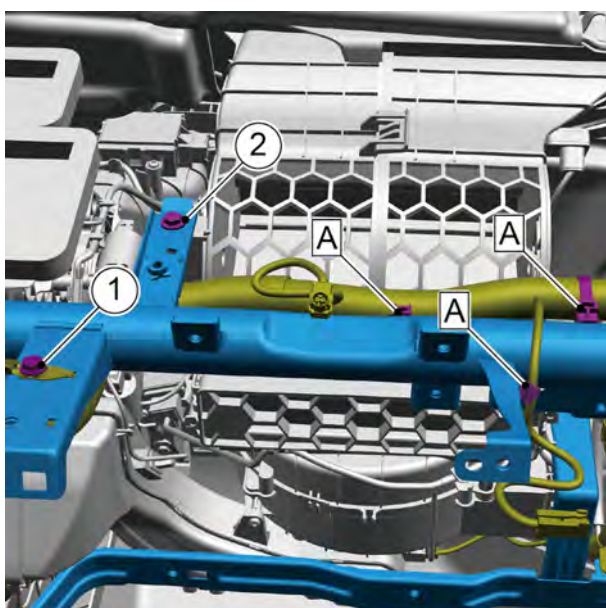
- 5 Install the 2 fixing bolts 1 connecting the instrument panel cross member assembly and the right lower column assembly of the instrument panel cross member.
Torque: 24N·m



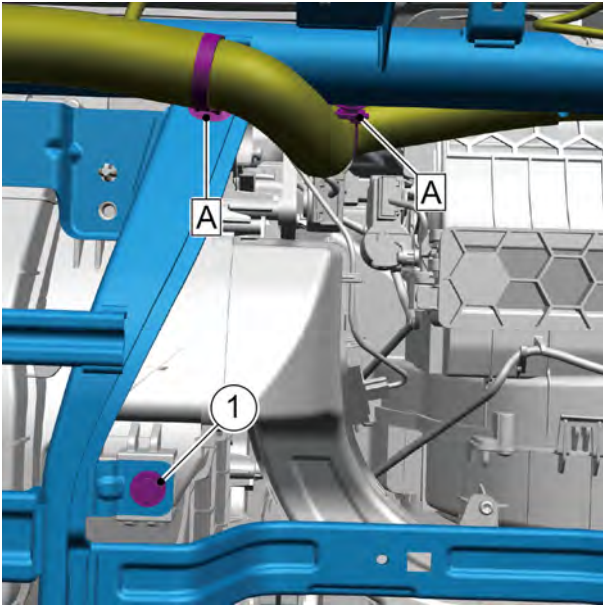
- 6 Install the 2 fixing bolts connecting the instrument panel cross member assembly and the left lower column assembly of the instrument panel cross member.
Torque: 24N·m



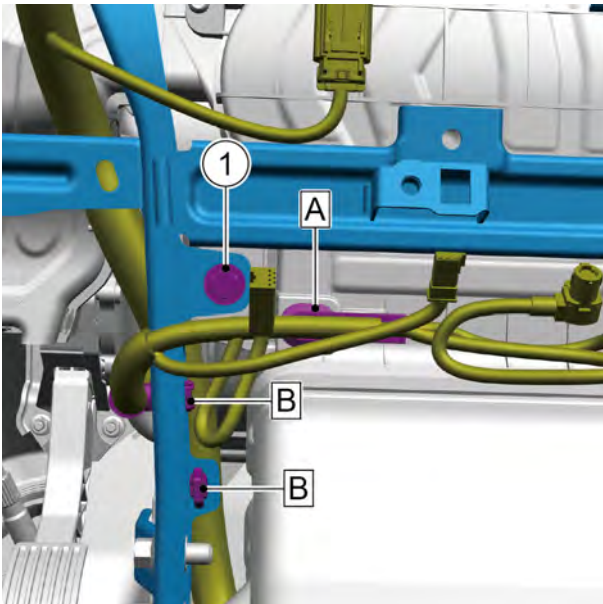
- 7 Install 1 fixing bolts 1 connecting the instrument harness and the instrument panel cross member.
Torque: 24N·m
- 8 Install the 3 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.



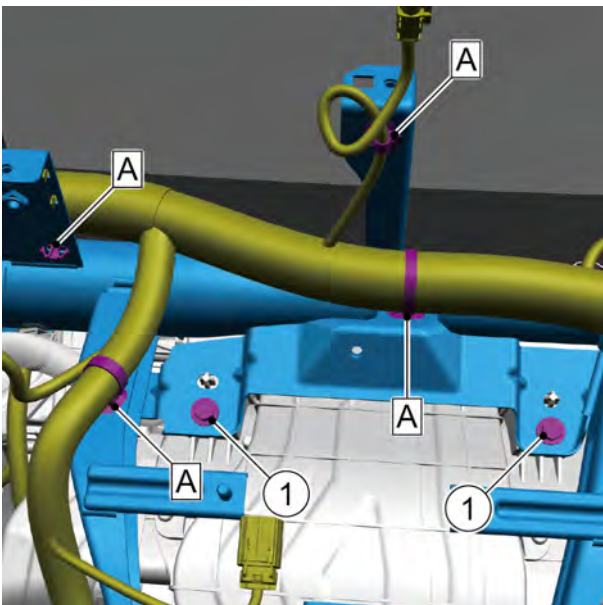
- 9 Install 1 ground bolt 1 connecting the instrument harness and the instrument panel cross member.
Torque: 24N·m
- 10 Install the fixing bolt 2 connecting the the instrument panel cross member and A/C master unit assembly.
Torque: 24N·m
- 11 Install the 3 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.



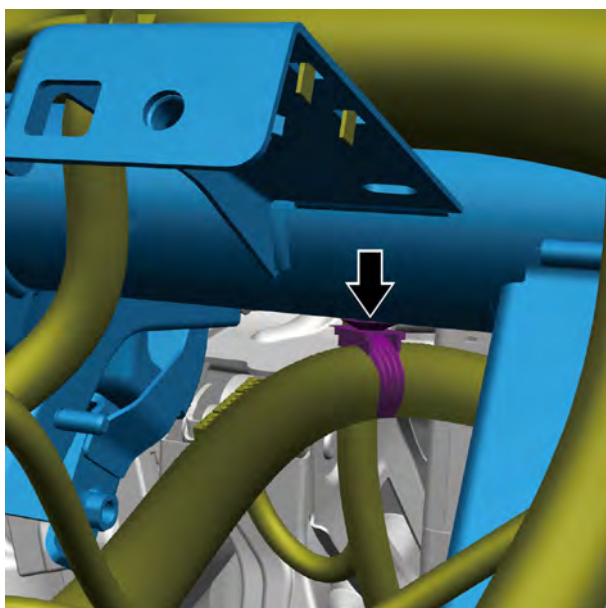
- 12 Install the fixing bolt 1 connecting the the instrument panel cross member and A/C master unit assembly.
Torque: 24N·m
- 13 Install the 2 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.



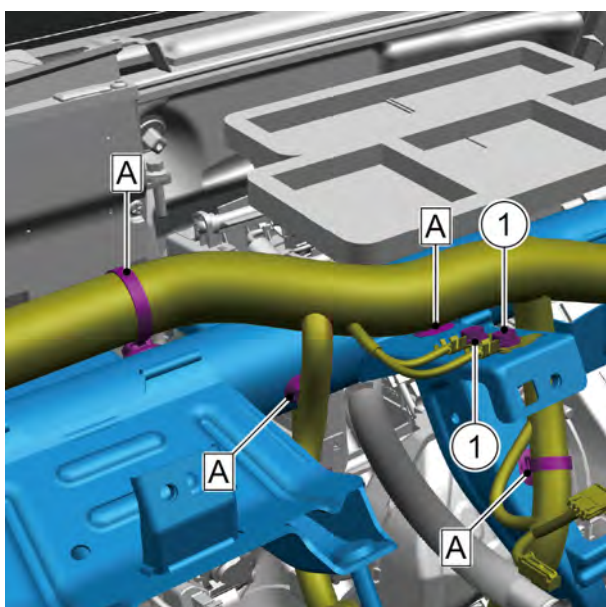
- 14 Install the fixing bolt 1 connecting the the instrument panel cross member and A/C master unit assembly.
Torque: 24N·m
- 15 Install the 2 fixing clips B connecting the instrument harness assembly and the instrument panel cross member.
- 16 Install the 1 fixing clip A of the instrument wire harness and A/C master unit assembly.



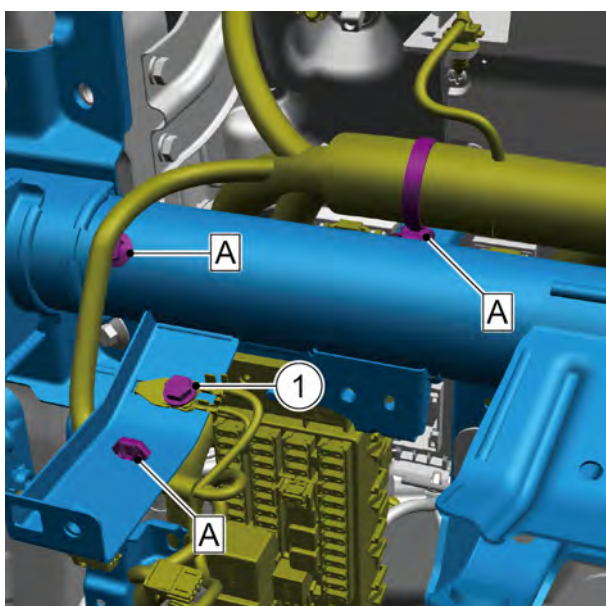
- 17 Install the 2 fixing bolts 1 connecting the the instrument panel cross member and A/C master unit assembly.
Torque: 24N·m
- 18 Install the 4 fixing clips A connecting the instrument harness and the instrument panel cross member.



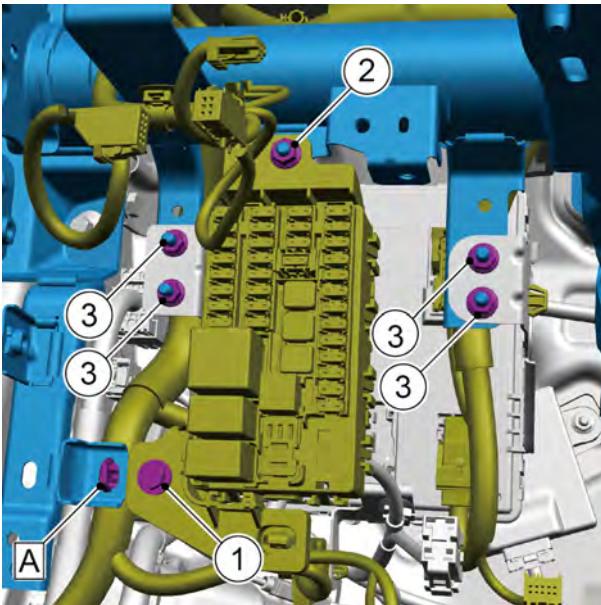
- 19 Install the 1 fixing clip B connecting the indoor temperature sensor pipe and the instrument panel cross member.



- 20 Install 2 ground bolts 1 connecting the instrument harness and the instrument panel cross member.
Torque: 24N·m
- 21 Install the 4 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.



- 22 Install 1 ground bolt 1 connecting the instrument harness and the instrument panel cross member.
Torque: 24N·m
- 23 Install the 3 fixing clips A connecting the instrument harness assembly and the instrument panel cross member.



- 24 Install the 4 fixing nuts 3 connecting the body control module bracket and cross beam of instrument panel.
Torque: 6N·m
- 25 Install 1 fixing nut 2 connecting the instrument harness fuse box and the instrument panel cross member.
Torque: 6N·m
- 26 Install 1 fixing bolt 1 connecting the instrument harness fuse box and the instrument panel cross member.
Torque: 6N·m
- 27 Install the 1 fixing clip A connecting the instrument harness assembly and the instrument panel cross member.
- 28 Install the electric-assisted steering column assembly.
- 29 Install door handle control module.
- 30 Install front left antenna.
- 31 Install the vehicle wireless control module.
- 32 Install the dashboard body assembly.
- 33 Install the ventilation cover plate assembly.
- 34 Connect the negative cable of battery.

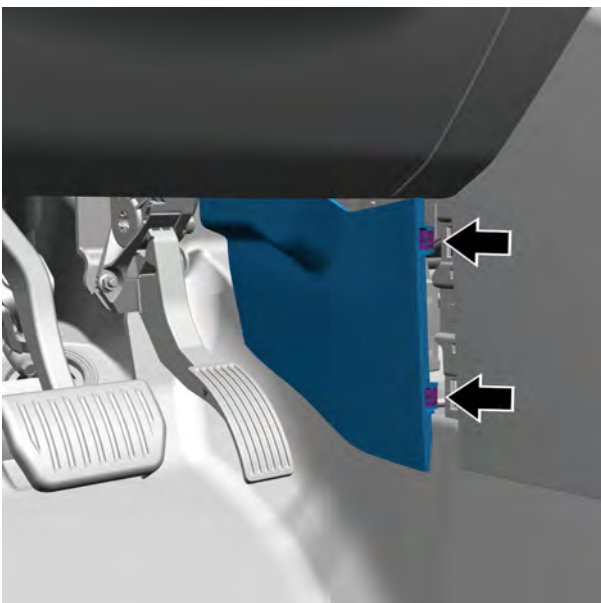
12.8.3.18 Replacement of Auxiliary Fascia Console Front Left Baffle

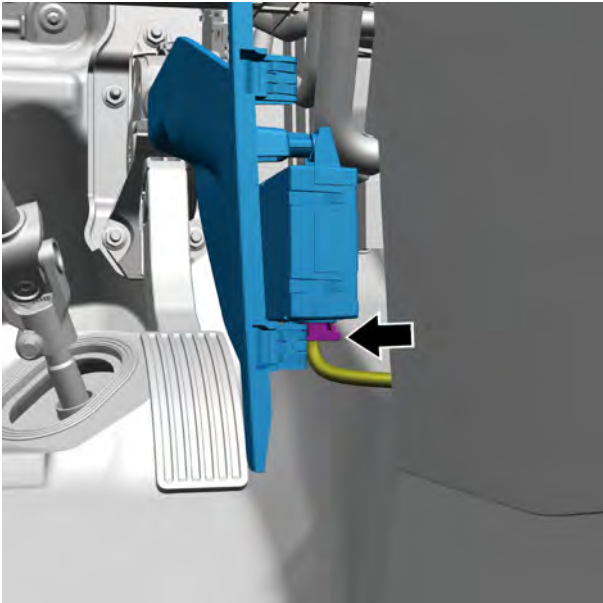
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Pry off front left baffle of auxiliary fascia console.

Caution

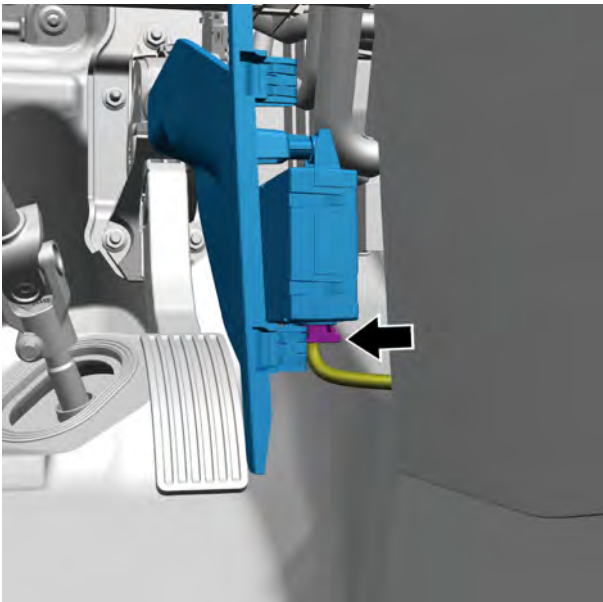
There are still harness connections at the back of the left front baffle of the auxiliary fascia console. Avoid pulling or damaging the harness during removal.



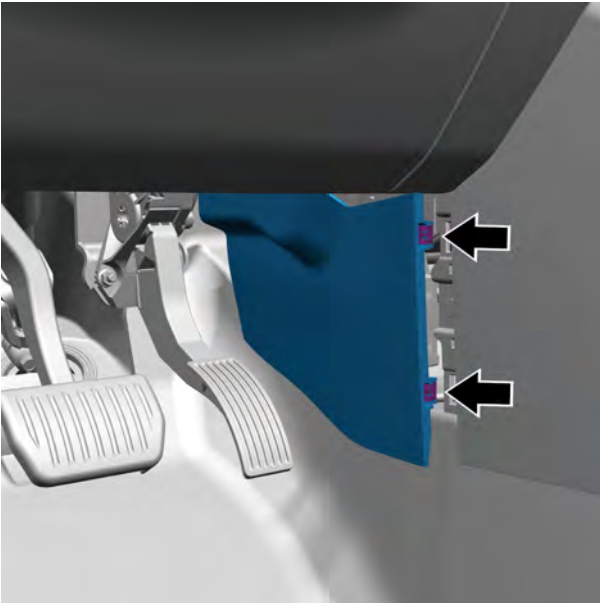


- 3 Disconnect the 1 harness connector of the ambient light controller and front compartment.
- 4 Replace the auxiliary fascia console front left baffle plate.

Installation procedure



- 1 Move the auxiliary fascia console front left baffle to the installation position.
- 2 Connect the 1 harness connector connecting the ambient light controller and the front compartment harness.



- 3 Install the auxiliary fascia console left front baffle plate.

Caution

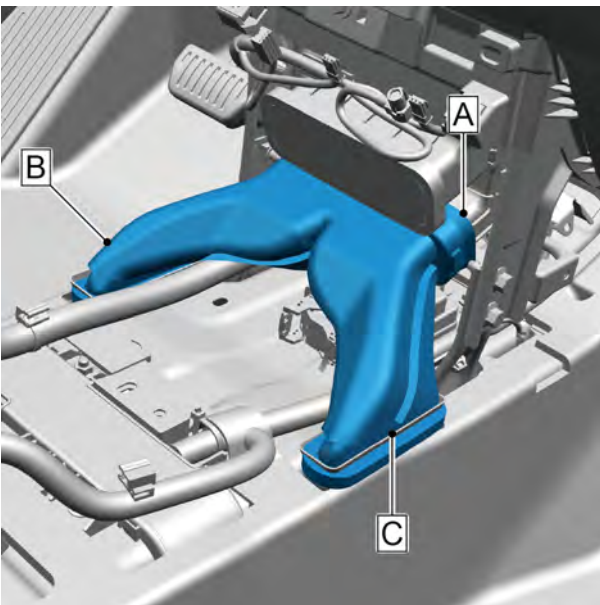
The springs of the front left front baffle plate of the auxiliary fascia console are installed without obvious deformation. After installation, check the flatness of the matching between the front left baffle plate of the auxiliary fascia console and the left trim plate of the auxiliary fascia console.

- 4 Connect the negative cable of battery.

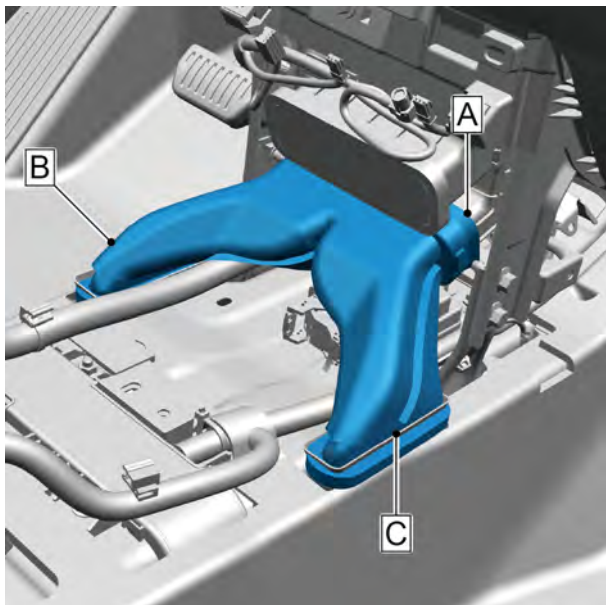
12.8.3.19 Replacement of auxiliary fascia console front vent duct assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove front section of face-blowing air channel of auxiliary fascia console Refer to [Front section of face-blowing air channel of auxiliary fascia console](#)
- 3 Disconnect the A auxiliary fascia console front vent duct assembly from the A/C master device assembly.
- 4 Disconnect the B auxiliary fascia console front vent duct assembly from the second row seat left front vent duct assembly.
- 5 Disconnect the C auxiliary fascia console front vent duct assembly from the second row seat right front vent duct assembly.
- 6 Take off the auxiliary fascia console front vent duct assembly.



Installation procedure



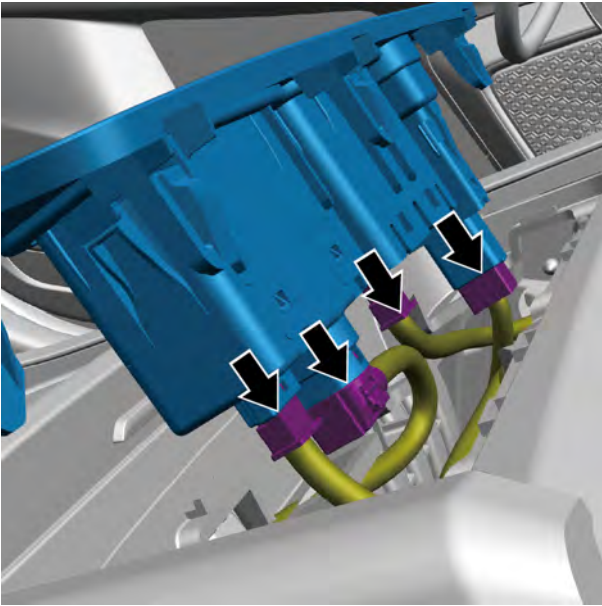
- 1 Move the auxiliary fascia console front vent duct assembly to the installation position.
- 2 Install the C auxiliary fascia console front vent duct assembly to the second-row seat right front vent duct assembly, and ensure the installation and fastening.
- 3 Install the B auxiliary fascia console front vent duct assembly to the second-row seat left front vent duct assembly, and ensure the installation and fastening.
- 4 Install the A auxiliary fascia console front vent duct assembly to the A/C master device assembly.
- 5 Install front section of face-blowing air channel of auxiliary fascia console.
- 6 Connect the negative cable of battery.

12.8.3.20 Replacement of USB cover plate

Removal procedure

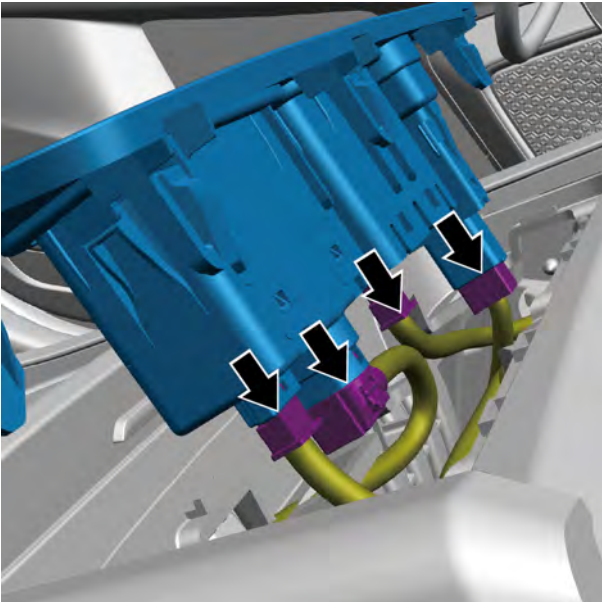
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Use the plastic prying plate to pry off the USB cover.





- 3 Move out the USB cover plate and disconnect the 4 harness connectors connecting the instrument harness and the USB cover.
- 4 Take off the USB cover plate.

Installation procedure



- 1 Move the USB cover plate to the installation position.
- 2 Connect the 4 harness connector of the instrument harness and USB cover plate.



- 3 Press the USB cover plate to ensure that it is installed and tightened.

- 4 Connect the negative cable of battery.

12.8.3.21 Replacement of Auxiliary Fascia Console cup holder

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console body assembly. Refer to [Replacement of Auxiliary Fascia Console Body Assembly](#)
- 3 Remove the 2 screws connecting the console cup holder to the auxiliary fascia console skeleton.

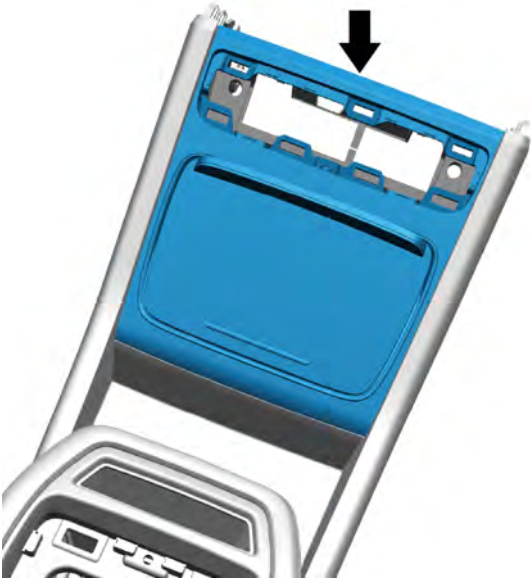


- 4 Use the plastic prying plate to pry off the auxiliary fascia console cup holder.
- 5 Take off the auxiliary fascia console cup holder.



Installation procedure

- 1 Move the auxiliary fascia console cup holder to the installation position.
- 2 Press the cup holder of the auxiliary fascia console cup holder to ensure that it is installed and fastened.





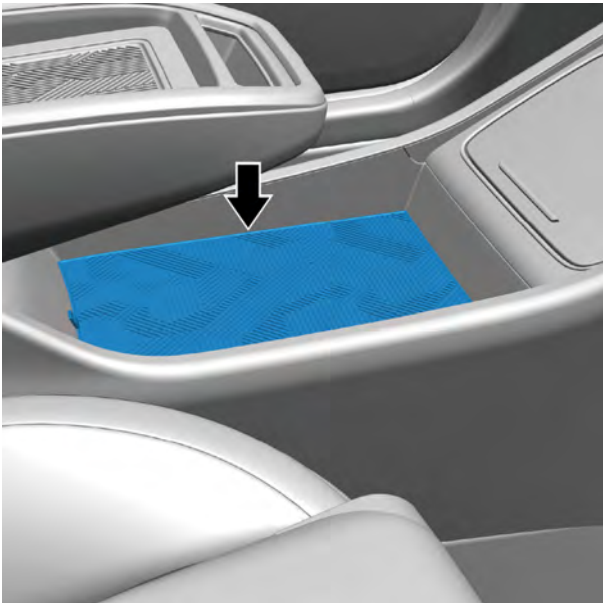
- 3 Install the 2 screws connecting the console cup holder to the auxiliary fascia console skeleton.
Torque: 1.5N·m

- 4 Install the auxiliary fascia console body assembly.
- 5 Connect the negative cable of battery.

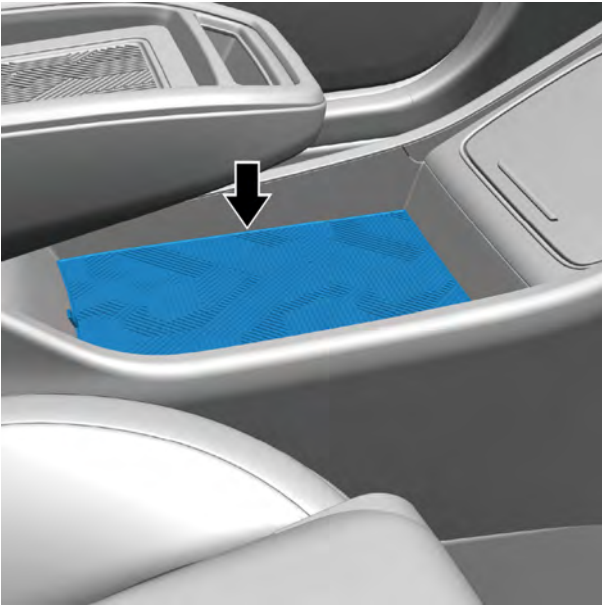
12.8.3.22 Replacement of Auxiliary Fascia Console Storage Box Cushion

Removal procedure

- 1 Take off the auxiliary fascia console storage box cushion.



Installation procedure



- 1 Move the auxiliary fascia console storage box to the installation position.

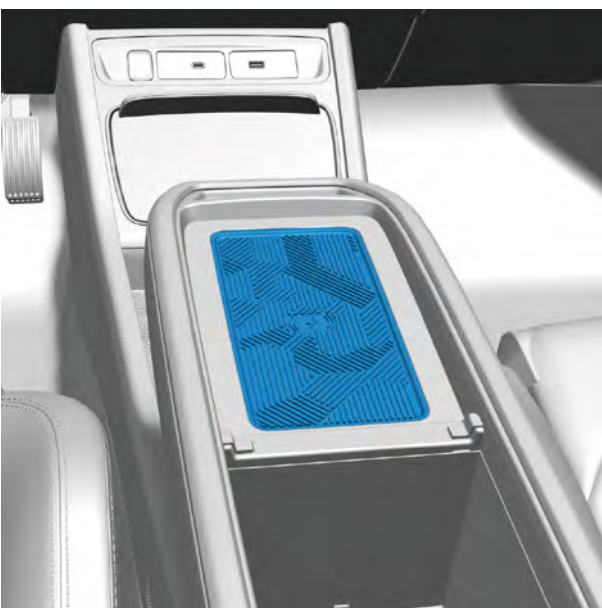
12.8.3.23 Replacement of wireless charging cover plate

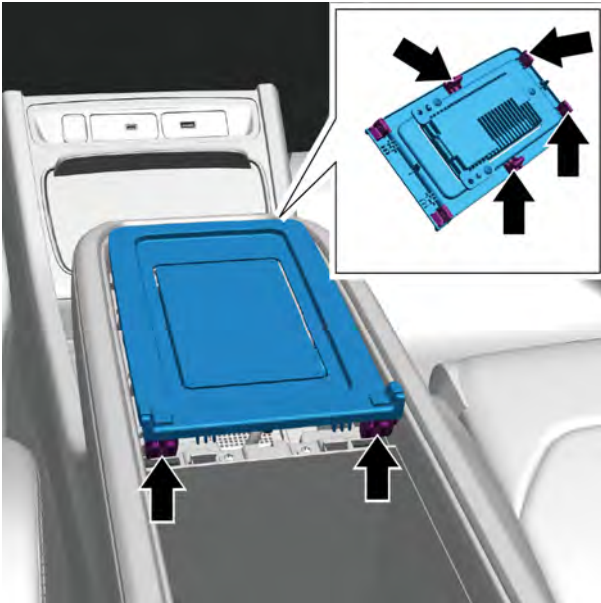
Removal procedure

Caution

Please use the special tools for vehicle body repair to remove the trim panel, otherwise it is easy to scratch the edge of the trim panel.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Armrest box cover assembly of auxiliary dashboard is opened.
- 3 Take off the wireless charging anti-skid pad.

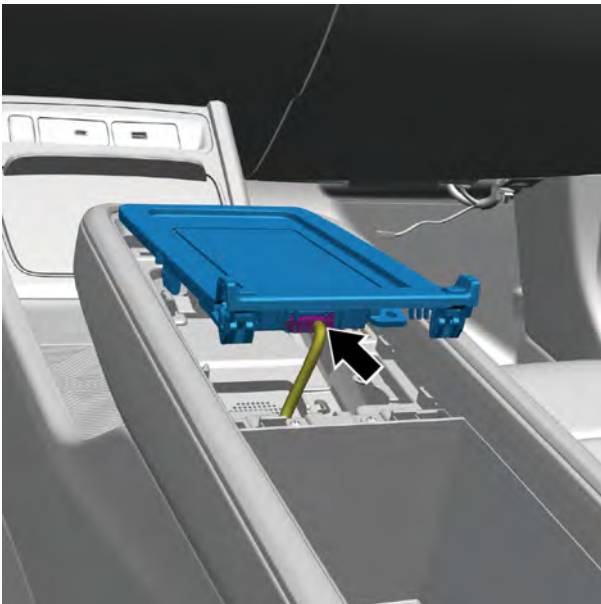




- 4 Use the plastic prying plate to pry off the 6 fixing clips connecting the wireless charging cover plate with the auxiliary fascia console body assembly.

Caution

Slowly pry open the wireless charging cover plate along the sides to prevent scratches.



- 5 Disconnect the 1 harness connector connecting the instrument harness and the wireless charging module.
- 6 Wireless charging cover plate is taken down.

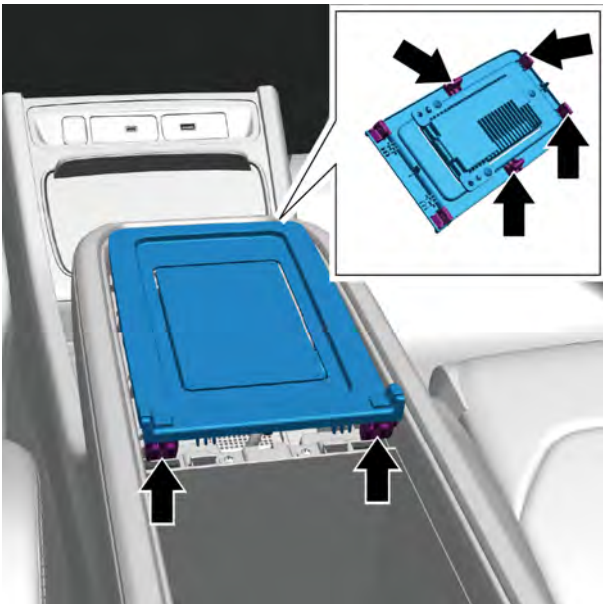
Installation procedure



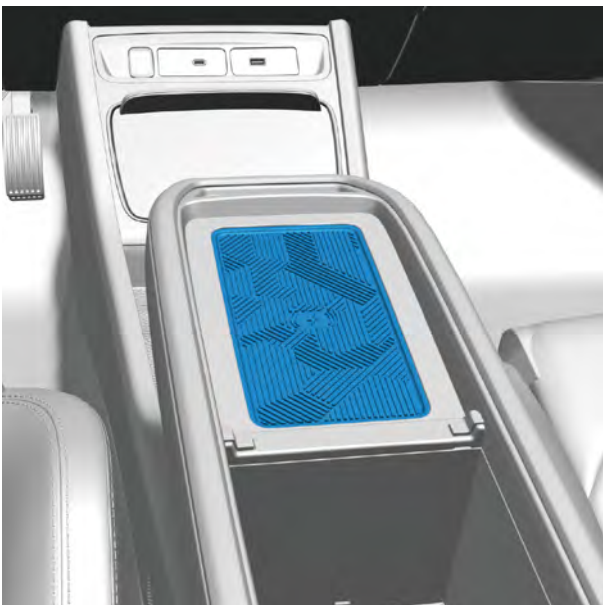
- 1 Move the wireless charging cover plate to the installation position.
- 2 Connect the 1 harness connector A connecting the instrument harness and the wireless charging module.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 3 Install the wireless charging cover plate on the auxiliary fascia console body assembly and ensure that the 6 retaining clips are installed in place.



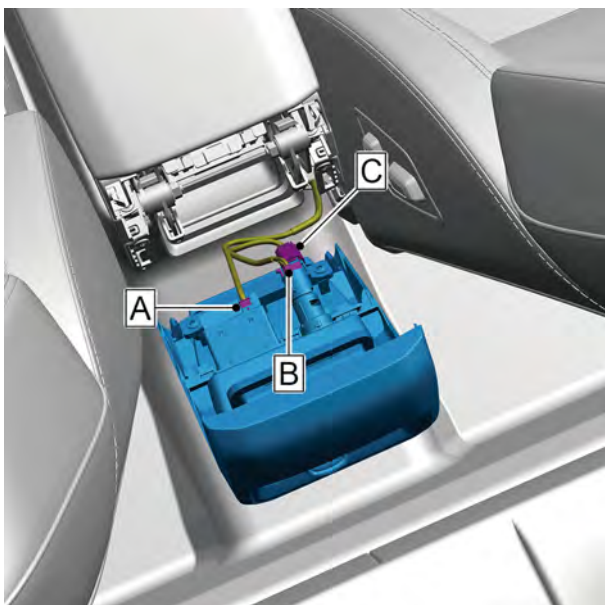
- 4 Install the wireless charging anti-skid pad.

- 5 Armrest box cover assembly of auxiliary dashboard is closed.
- 6 Connect the negative cable of battery.

12.8.3.24 Replacement of Auxiliary Fascia Console Rear Panel Assembly

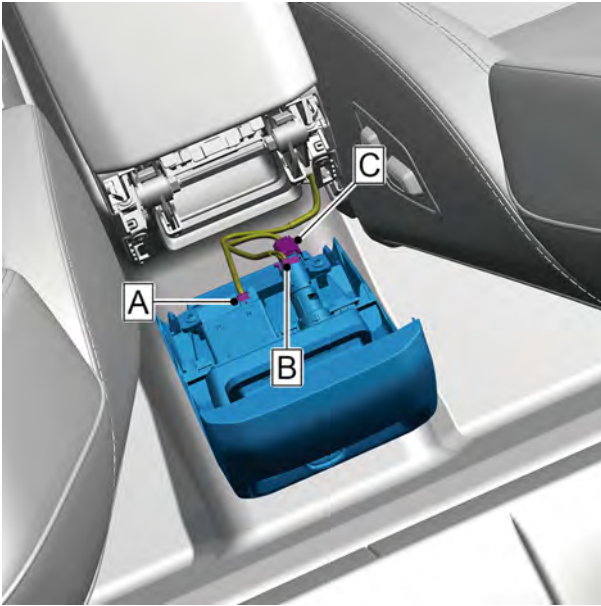
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Pry off auxiliary fascia console rear panel assembly.



- 3 Disconnect the 1 harness connector A connecting the floor harness assembly with the USB box.
- 4 Disconnect the 1 harness connector B of the floor harness assembly and standby power supply.
- 5 Disconnect the 1 harness connector C of the floor harness assembly and internal antenna.

Installation procedure



- 1 Connect the 1 harness connector C of the floor harness assembly and internal antenna.
- 2 Connect the 1 harness connector B of the floor harness and standby power supply.
- 3 Connect the 1 harness connector A of the floor harness assembly and USB box.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 4 Install the auxiliary fascia console rear panel assembly.

Caution

Check whether it is fitted smoothly with the auxiliary fascia console body assembly without protrusion after installation.

- 5 Connect the negative cable of battery.

12.8.3.25 Replacement of Auxiliary Fascia Console Assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console right front baffle plate assembly. Refer to [Replacement of Auxiliary Fascia Console Left Front Baffle Plate Assembly](#)
- 3 Replace USB Cover Plate cover. Refer to [Replacement of USB Cover Plate](#)
- 4 Remove wireless charging cover plate. Refer to [Replacement of Wireless Charging Cover Plate](#)

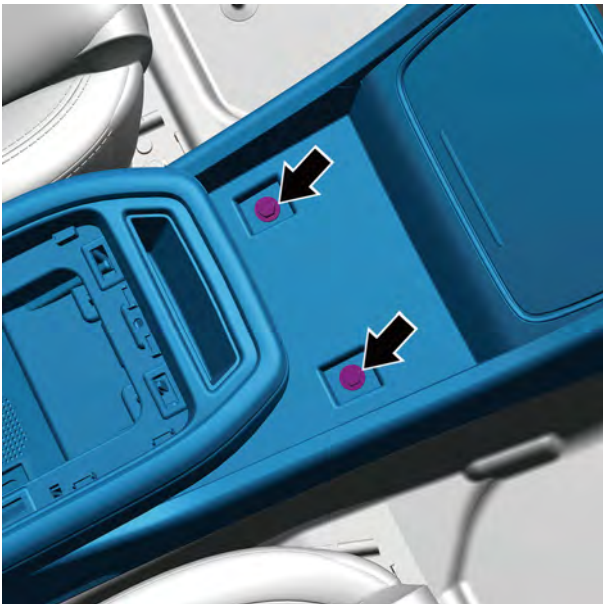
- 5 Remove the auxiliary fascia console rear panel assembly.
Refer to [Replacement of Rear Panel of Auxiliary Fascia Console](#)
- 6 Remove the auxiliary fascia console storage box cushion.
Refer to [Replacement of Auxiliary Fascia Console Storage Box Cushion](#)
- 7 Remove the 2 fixing bolts connecting the auxiliary dashboard body assembly with the middle bracket assembly of the auxiliary dashboard.



- 8 Remove the 4 fixing bolts connecting the auxiliary dashboard upper body assembly with the middle bracket assembly of the auxiliary dashboard.



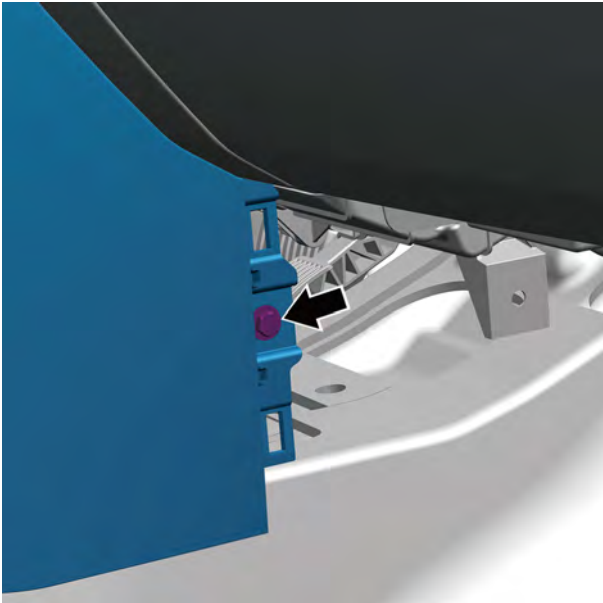
- 9 Remove the armrest box pad of auxiliary dashboard.



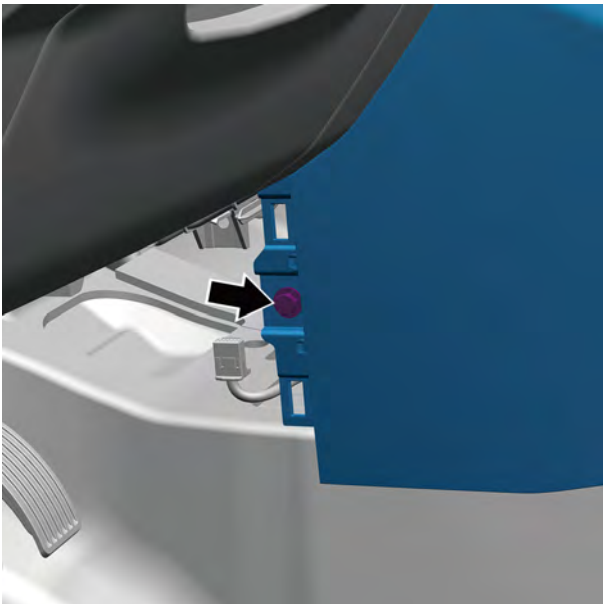
- 10 Remove the 2 fixing bolts connecting the auxiliary dashboard body skeleton with the middle bracket assembly of the auxiliary dashboard.



- 11 Remove the 2 fixing screws connecting the auxiliary dashboard skeleton with the auxiliary dashboard lower body assembly.

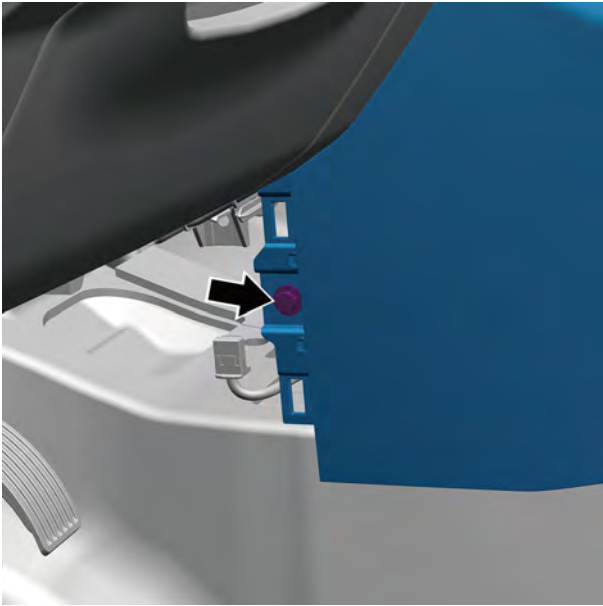


- 12 Remove the 1 fixing bolt connecting the instrument panel right trim panel and cross beam of instrument panel.

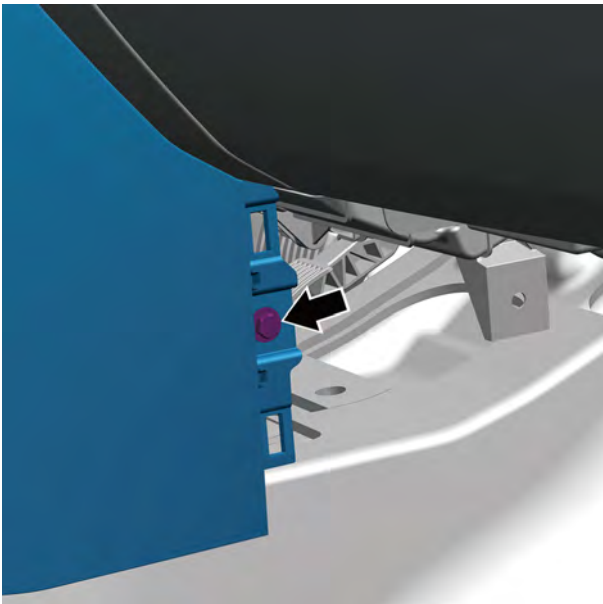


- 13 Remove the 1 fixing bolt B connecting the instrument panel left trim panel and cross beam of instrument panel.
- 14 Take off the auxiliary dashboard body assembly.

Installation procedure



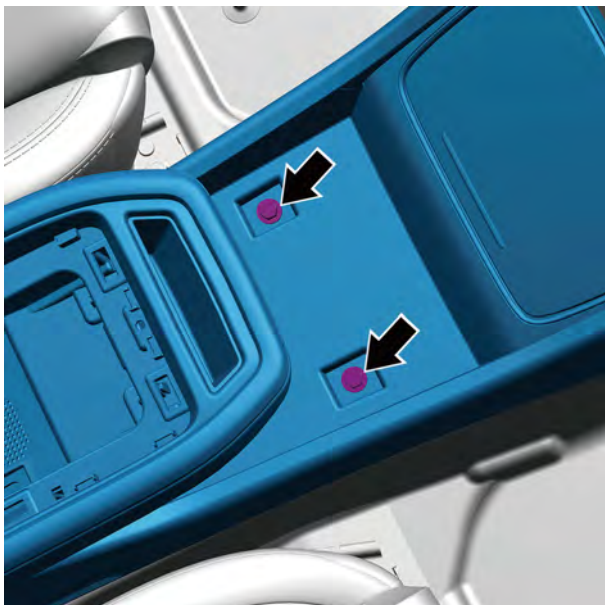
- 1 Move the instrument panel body to the installation position.
- 2 Install the 1 fixing bolt connecting the instrument panel left trim panel and cross beam of instrument panel.
Torque: 6N·m



- 3 Install the 1 fixing bolt B connecting the instrument panel right trim panel and cross beam of instrument panel.
Torque: 6N·m



- 4 Install the 2 fixing screws connecting the auxiliary dashboard skeleton with the auxiliary dashboard lower body assembly.
Torque: 6N·m



- 5 Install the 2 fixing bolts connecting the auxiliary dashboard skeleton with the middle bracket assembly of the auxiliary dashboard.
Torque: 6N·m



- 6 Put the auxiliary fascia console armrest box pad into the auxiliary fascia console armrest box.



- 7 Install the 4 fixing bolts connecting the auxiliary dashboard upper body assembly with the middle bracket assembly of the auxiliary dashboard.
Torque: 6N·m



- 8 Install the 2 fixing bolts connecting the auxiliary dashboard body assembly with the middle bracket assembly of the auxiliary dashboard.

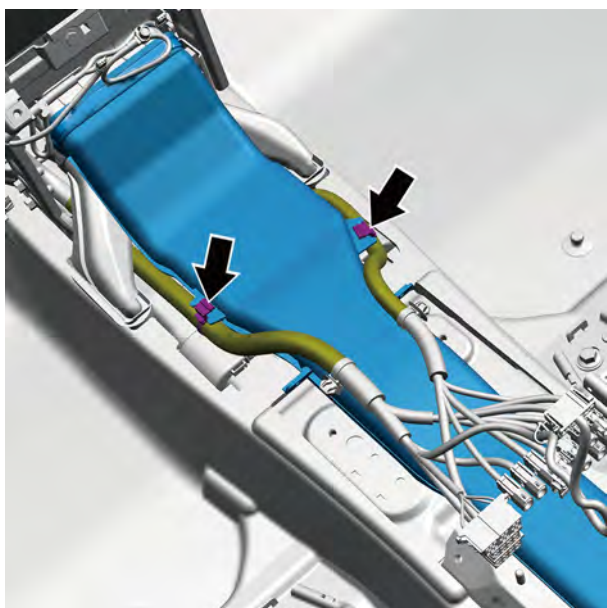
Torque: 1.5N·m

- 9 Install the auxiliary fascia console storage box cushion.
- 10 Install the auxiliary fascia console rear panel assembly.
- 11 Wireless charging cover plate is installed
- 12 Install USB cover plate.
- 13 Install the auxiliary dashboard left and right front baffle plate assembly.
- 14 Connect the negative cable of battery.

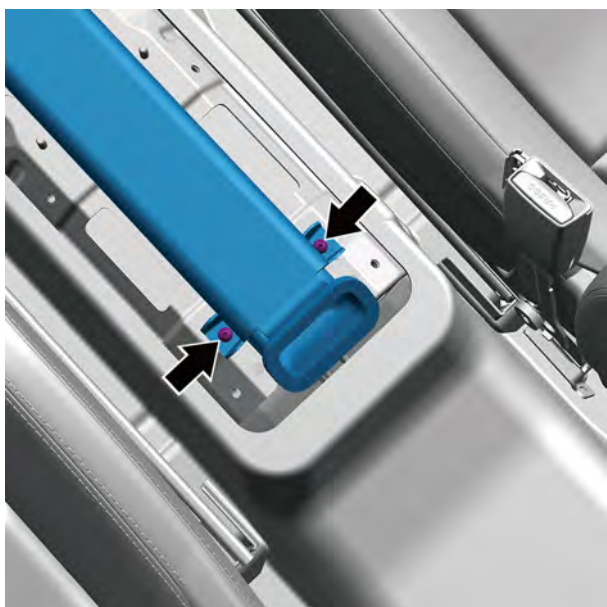
12.8.3.26 Replacement of front section of face-blowing air channel of auxiliary dashboard

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the head unit. Refer to [Replacement of head unit](#)



- 3 Disconnect the 2 harness fixing clips connecting the instrument harness with the front section of the auxiliary fascia console face-blowing air duct, and move the instrument harness to one side.

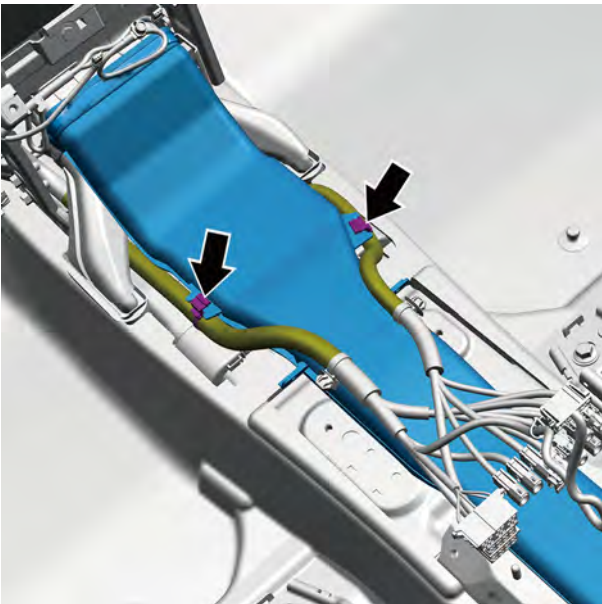


- 4 Remove the 2 fixing screws connecting the the front section of the auxiliary fascia console face-blowing air duct and the front floor middle channel assembly.
- 5 Front section of face-blowing air channel of auxiliary dashboard is removed

Installation procedure



- 1 Move the auxiliary fascia console panel face-blowing air duct to the installation position.
- 2 Install the 2 fixing screws connecting the the front section of the auxiliary fascia console face-blowing air duct and the middle floor channel.
Torque: 1.5N·m



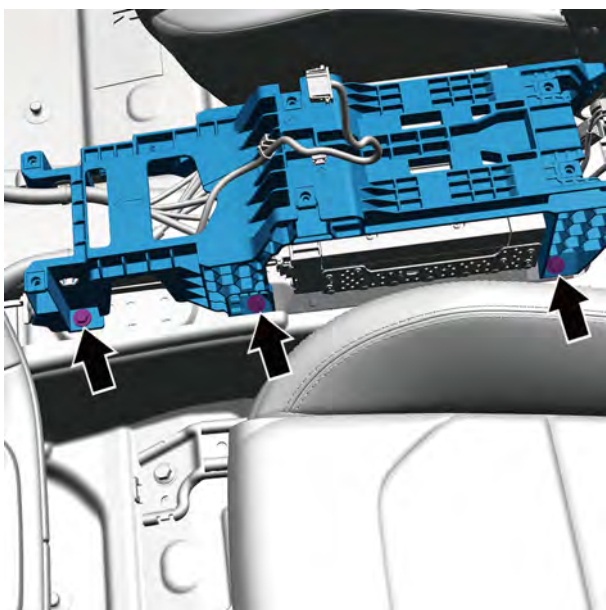
- 3 Install the 2 fixing clips connecting the instrument harness and the front section of the auxiliary fascia console face-blowing air duct.

- 4 Install the head unit.
- 5 Connect the negative cable of battery.

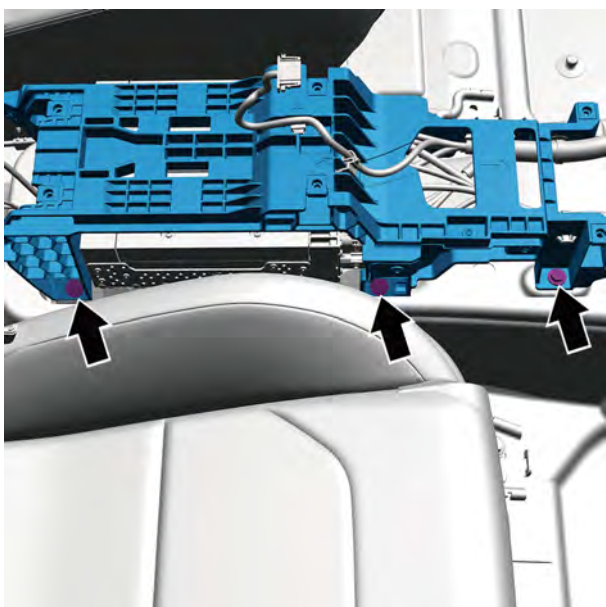
12.8.3.27 Replacement of middle mounting bracket of the auxiliary fascia console

Removal procedure

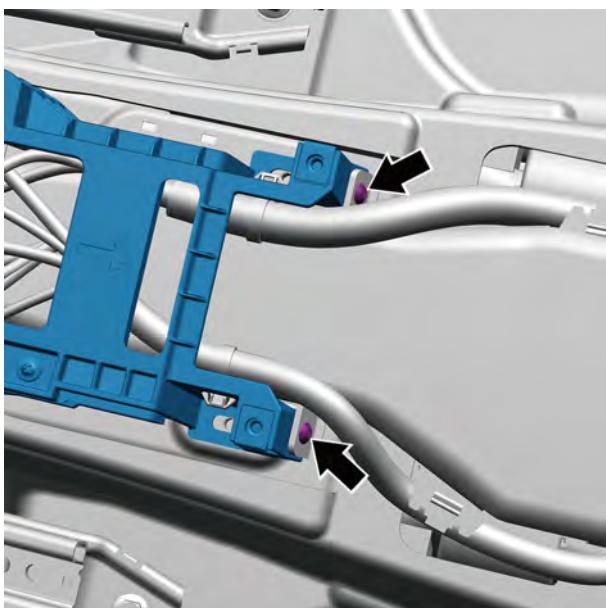
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console body assembly. Refer to [Replacement of Auxiliary Fascia Console Body Assembly](#)



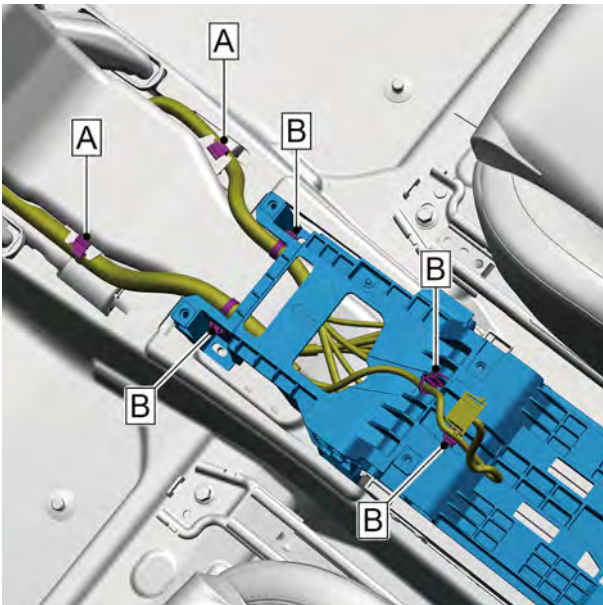
- 3 Remove the 3 fixing bolts on the left side of the mounting bracket in the middle of the auxiliary instrument panel, which are connected with the tunnel assembly in the front floor.



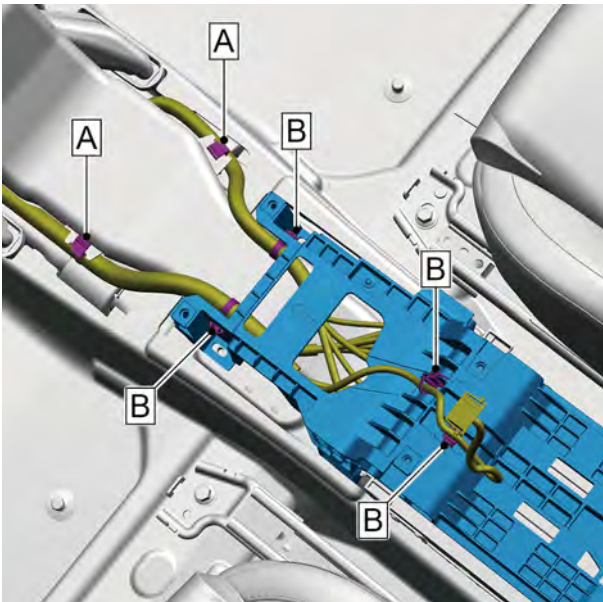
- 4 Remove the 3 fixing bolts on the right side of the mounting bracket in the middle of the auxiliary instrument panel connected with the tunnel assembly in the front floor.



- 5 Remove the two fixing screws connecting the mounting bracket in the middle of the auxiliary instrument panel with the front section of the blowing air duct of the auxiliary instrument panel.



- 6 Disconnect the 2 harness fixing clips A connecting the instrument harness and the front section of the auxiliary fascia console face-blowing air duct.
- 7 Disengage the four harness fixing clips B connecting the instrument harness with the mounting bracket in the middle of the auxiliary instrument panel.
- 8 Take off the middle mounting bracket of the auxiliary fascia console.



Installation procedure

- 1 Move the middle mounting bracket of the auxiliary fascia console to the installation position.
- 2 Remove the 4 fixing clips B connecting the instrument harness and the middle mounting bracket of the auxiliary fascia console.

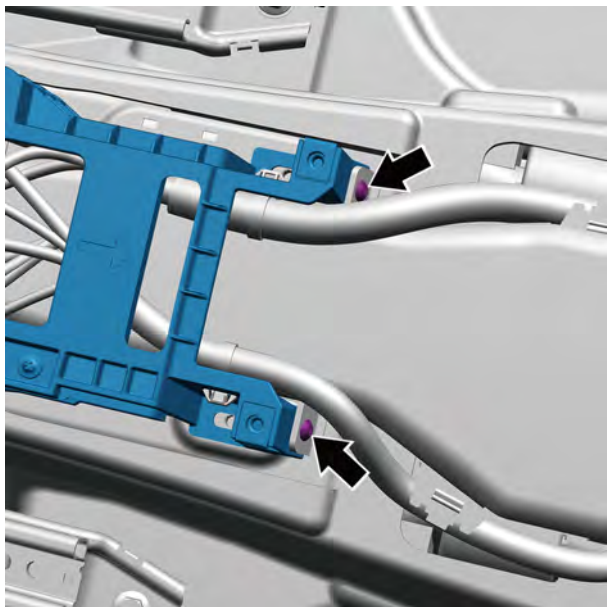
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 3 Connect the 2 harness fixing clips A connecting the instrument harness and the front section of the auxiliary fascia console face-blowing air duct.

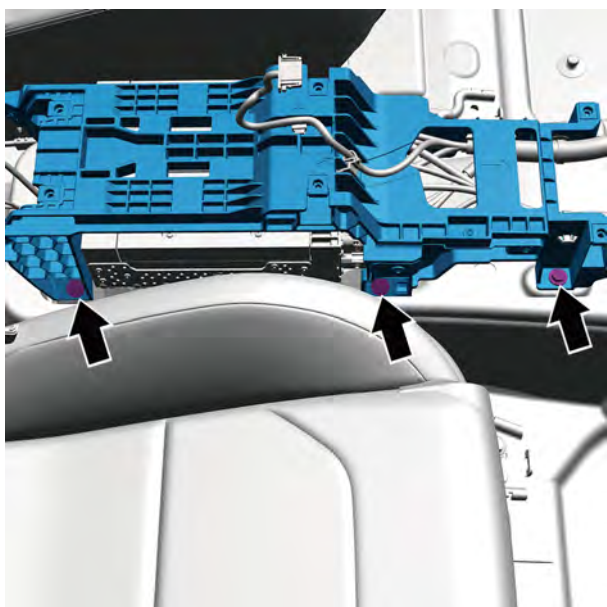
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



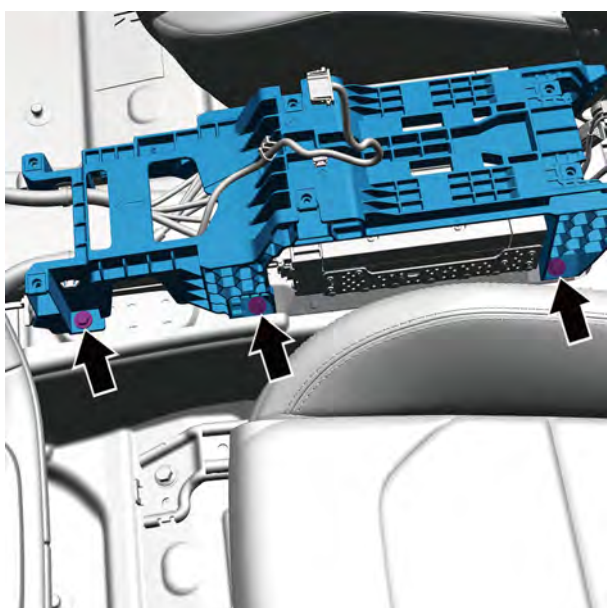
- 4 Install the 2 fixing screws connecting the auxiliary fascia console middle mounting bracket with the face-blowing duct front section of auxiliary fascia console face-blowing channel front section.

Torque: 1.5N·m



- 5 Install the 3 fixing bolts connecting the auxiliary fascia console middle mounting bracket with the front floor middle channel assembly.

Torque: 6N·m



- 6 Install the 3 fixing bolts connecting the auxiliary fascia console middle mounting bracket with the front floor middle channel assembly.

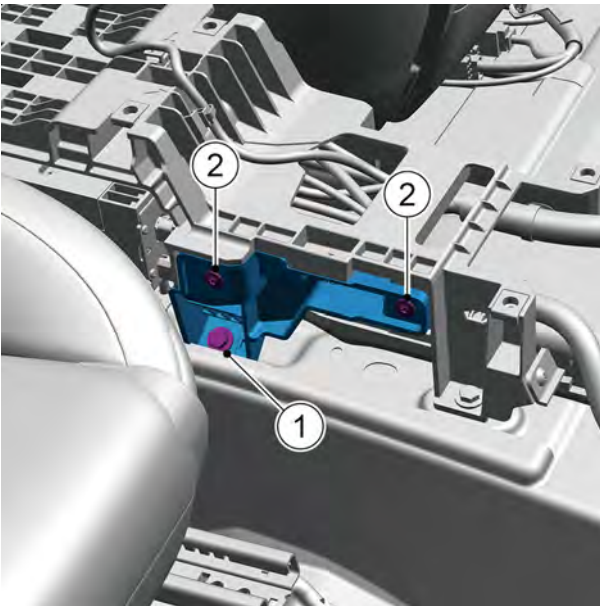
Torque: 6N·m

- 7 Install the auxiliary fascia console body assembly.
- 8 Connect the negative cable of battery.

12.8.3.28 Replacement of Auxiliary Fascia Console Middle Bracket Assembly

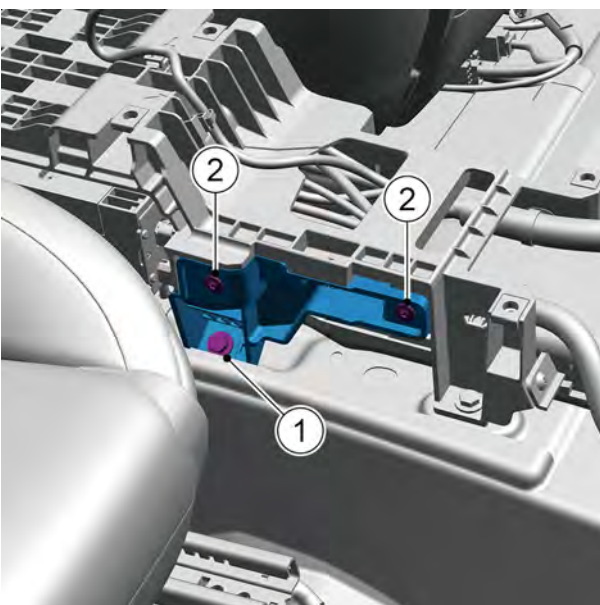
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the auxiliary fascia console body assembly. Refer to [Replacement of Auxiliary Fascia Console Body Assembly \(Type II\)](#)
- 3 Remove the 1 fixing bolt 1 connecting the middle bracket of the rear auxiliary fascia console with the middle tunnel assembly of the front floor.
- 4 Remove the 2 fixing screws 2 connecting the rear auxiliary fascia console middle bracket with the auxiliary fascia console middle mounting bracket.
- 5 Take off the middle mounting bracket of the auxiliary fascia console.



Installation procedure

- 1 Move the middle mounting bracket of the auxiliary fascia console to the installation position.
- 2 Install the 2 fixing bolts 2 connecting the auxiliary fascia console middle bracket and the middle mounting bracket of the auxiliary fascia console.
Torque: 1.5N·m
- 3 Install and tighten one fixing bolt 1 connecting the middle bracket of the rear auxiliary fascia console with the middle tunnel assembly of the front floor.
Torque: 6N·m

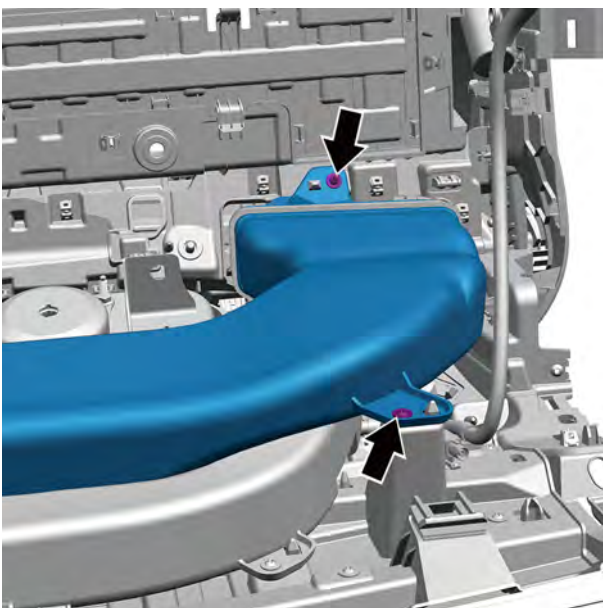
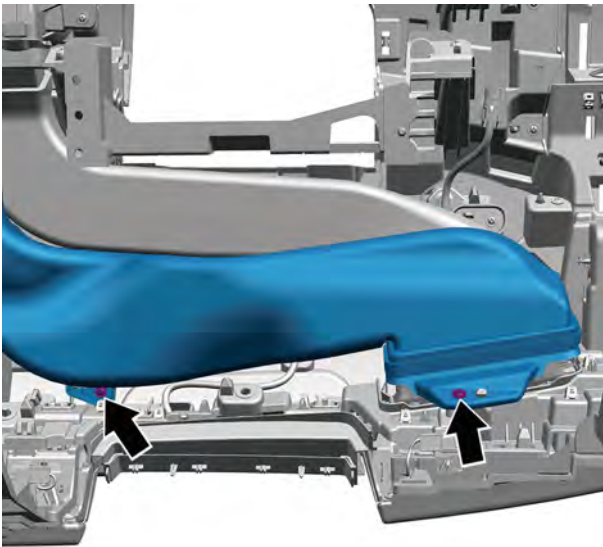


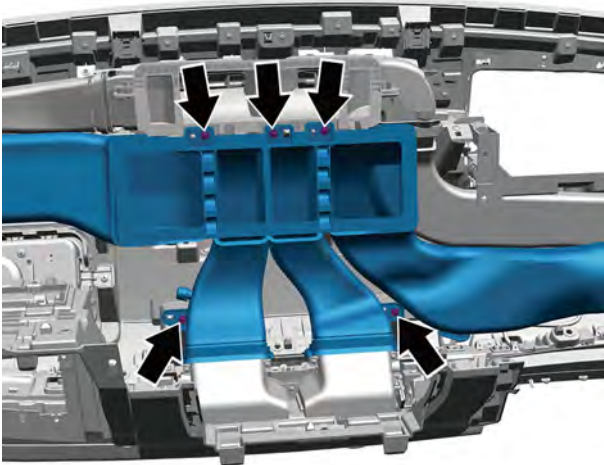
- 4 Install the auxiliary fascia console body assembly.
- 5 Connect the negative cable of battery.

12.8.3.29 Replacement of middle vent hose connecting pipe

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the dashboard body assembly. Refer to [Replacement of Dashboard Body Assembly](#)
- 3 Remove the 2 fixing screws of the the left side of the vent hose connecting pipe and the instrument panel body assembly.
- 4 Remove the 2 fixing screws of the the right side of the vent hose connecting pipe and the instrument panel body assembly.

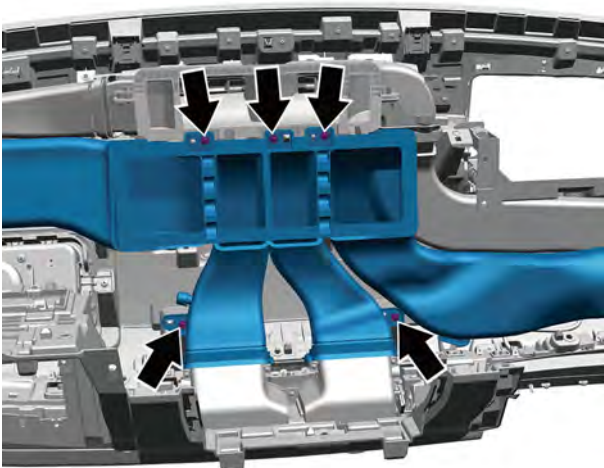


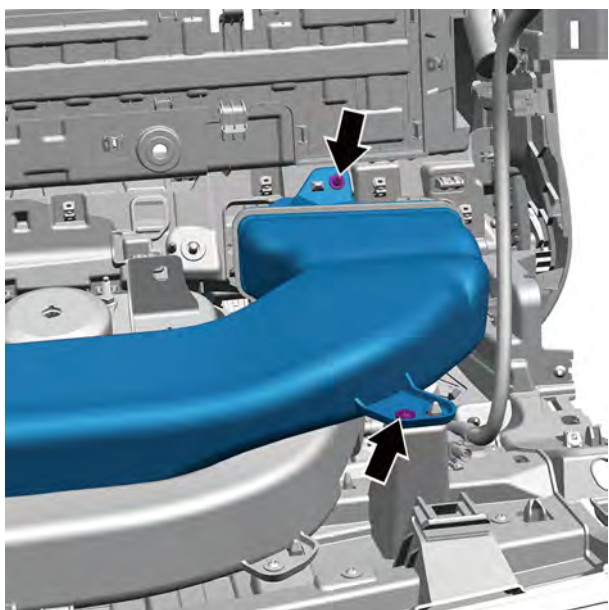


- 5 Remove the 5 fixing screws of the the middle of the vent hose connecting pipe and the instrument panel body assembly.
- 6 Middle vent hose connecting pipe is taken down.

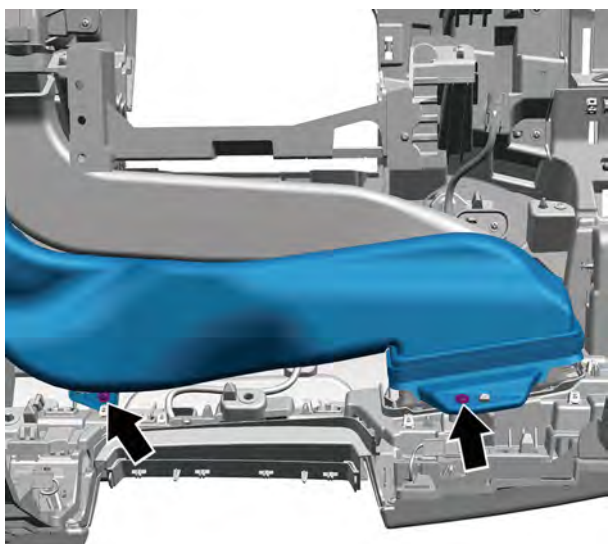
Installation procedure

- 1 Move the vent hose connecting pipe to the installation position.
- 2 Remove the 5 fixing screws of the vent hose connecting pipe and the instrument panel body assembly.
Torque: 1.5N·m





- 3 Remove the 2 fixing screws of the vent hose connecting pipe and the instrument panel body assembly.
Torque: 1.5N·m



- 4 Remove the 2 fixing screws of the vent hose connecting pipe and the instrument panel body assembly.
Torque: 1.5N·m

- 5 Install the dashboard body assembly.
- 6 Connect the negative cable of battery.

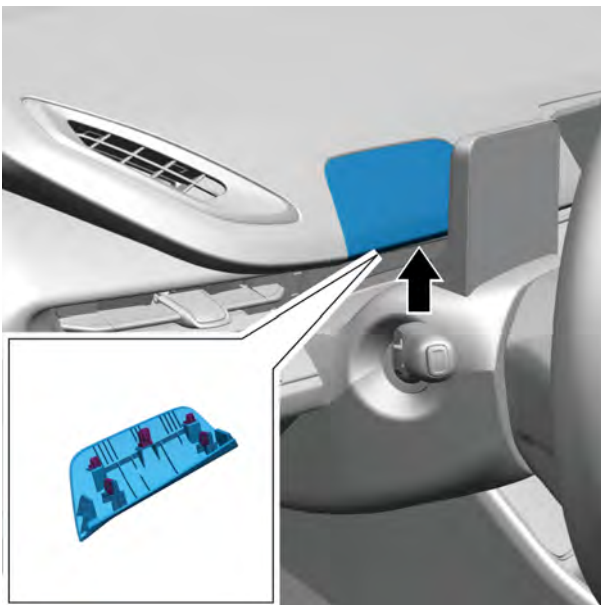
12.8.3.30 Replacement of instrument cluster upper cover assembly

Removal procedure



- 1 Open doors.
- 2 Use a plastic prying plate to pry up the 5 clips connecting the instrument cluster upper cover assembly with the instrument panel upper subassembly.
- 3 Take off the instrument cluster upper cover assembly.

Installation procedure



- 1 Move the instrument cluster upper cover to the installation position.
- 2 Install the 5 fixing clips connecting the instrument cluster upper cover assembly and the instrument panel upper body assembly.

- 3 Close doors.

12.9 Interior trim

12.9.1 Specification

12.9.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Rear left rocker panel trim panel assembly fixing screw	ST4.8×16	1-2
Left pillar B upper trim panel assembly lower fixing screw	ST4.8×16	1-2
Left pillar B upper trim panel assembly upper fixing screw	M6×16	3-5
Left front door glass exterior sealing strip front fixing screw	ST4.2×0.95	0.5-1.5
Left front door glass exterior sealing strip rear fixing screw	ST4.2×0.95	0.5-1.5
Left C-pillar upper trim panel assembly lower fixing screw	ST4.8×16	1-2
Left C-pillar upper trim panel assembly upper fixing screw	M6×16	3.5-4.5
Fixing screw of upper left interior trim panel assembly of tailgate.	ST4.2×0.95	0.5-1.5
Fixing screws of two sides of lower interior trim panel assembly of tailgate.	ST4.2×0.95	0.5-1.5
Rear reading lamp bracket fixing screw of the headliner	M6×16	3-5
Left rear safety handle fixing screw	M5×30	3.2-4.8
Left sunshade assembly fixing screw	M6×25	3.2-4.8
Driver left footrest fixing nut	M6	8.5-11.5
Fixing screws connecting the tailgate trim strips with the rear number plate lamp mounting plate.	ST4.8×16	1-2
Fixing nut of the rear number plate lamp mounting plate.	M6	3~5
Backdoor outer trim panel fixing screw	ST4.8×16	1.3-1.7
Fixing screws connecting the rear number plate lamp mounting plate with the tailgate through lamp	ST4.8×16	1-2
Fixing screws connecting the rear number plate lamp mounting plate with the tailgate trim panel	ST4.8×16	1-2
Vent cover plate fixing screw	ST4.8×16	1-2

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing screw of handle box on tailgate.	M6×16	3.2-4.8
Fixing screw of the left front door interior release handle.	ST4.8×19	1.3-1.7
Fixing screw of the left rear door interior release handle.	ST4.8×19	1.3-1.7
Fixing screws for connecting the upper trim plate assembly of the left A pillar with the upper body assembly of instrument panel	ST4.2×13	1.3-1.7
Fixing screws connecting the left A-pillar middle trim panel assembly with the left lower connecting bracket	ST4.2×13	1.3-1.7

12.9.2 Removing and installing

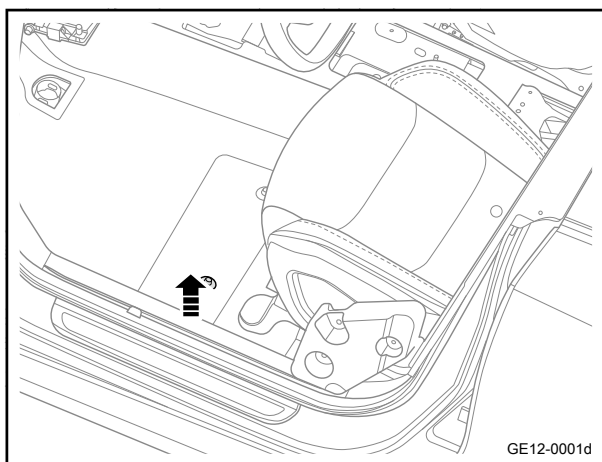
12.9.2.1 Replacement of left front rocker interior trim panel assembly

Removal procedure

Caution

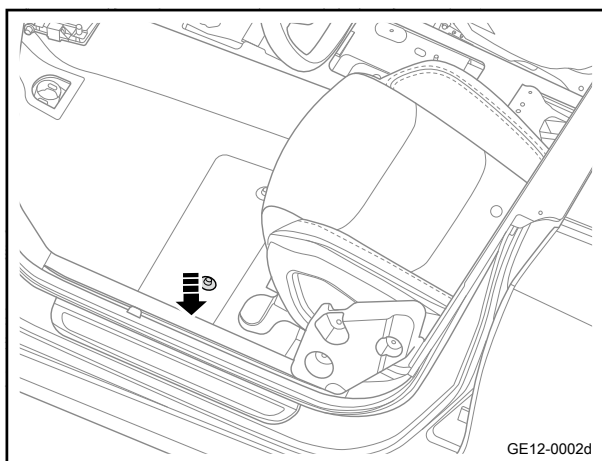
Replacement at left and right sides are performed in the same way.

- 1 Remove the door sealing strip assembly. Refer to [Replacement of door sealing strip assembly](#)
- 2 Take off the left front rocker panel trim plate assembly.



Installation procedure

- 1 Move the left front rocker panel trim plate assembly to the mounting position.
- 2 Install the trim panel assembly of the left front rocker panel.



- 3 Install the door sealing strip assembly

12.9.2.2 Replacement of Left Rear Rocker Panel Trim Plate Assembly

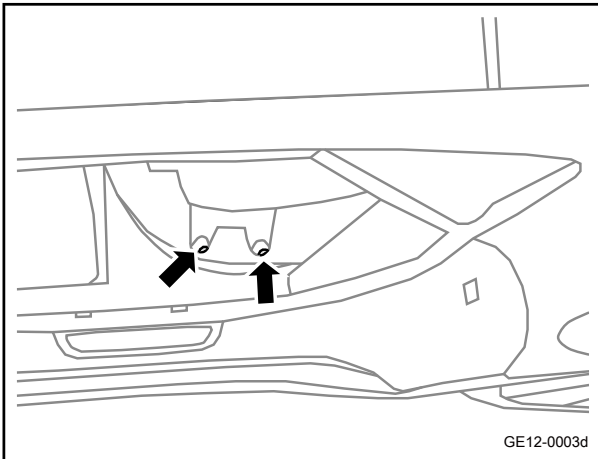
Removal procedure

Caution

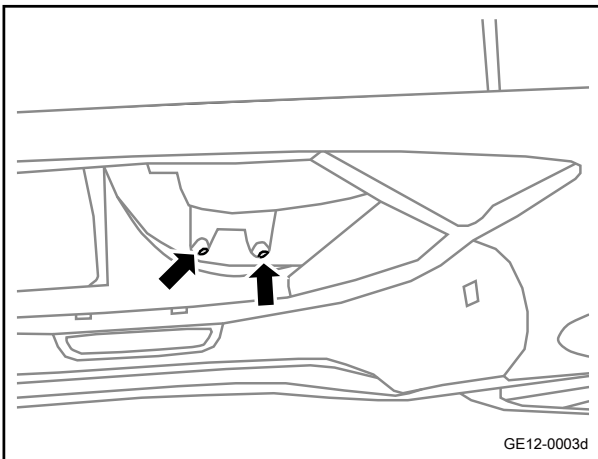
Replacement at left and right sides are performed in the same way.

Please use special tools for left rear rocker panel trim plate assembly when removing the trim panel; otherwise, the edges of the rocker trim panel will be scratched.

- 1 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 2 Pull up the lower section of the left rear door frame sealing strip.
- 3 Remove the 2 fixing screws of the left rear rocker panel trim panel assembly.
- 4 Pull up the lower section of the left rear door frame sealing strip. Take off the left rear rocker panel trim plate assembly.

**Installation procedure**

- 1 Move the left rear rocker panel trim plate assembly to the mounting position.
- 2 Install the door frame sealing strip.
- 3 Install the 2 fixing screws of the left rear rocker panel trim panel assembly.
Torque: 1.5 N·m (metric system) 1.1 lb-ft (British system)



- 4 Install the rear seat cushion.

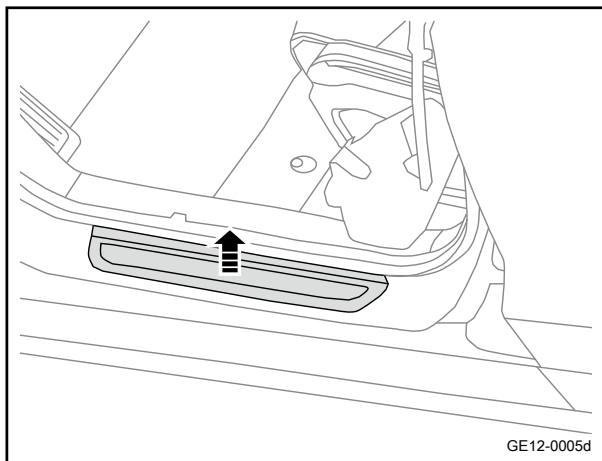
12.9.2.3 Replacement of front left welcome pedal assembly

Removal procedure

Caution

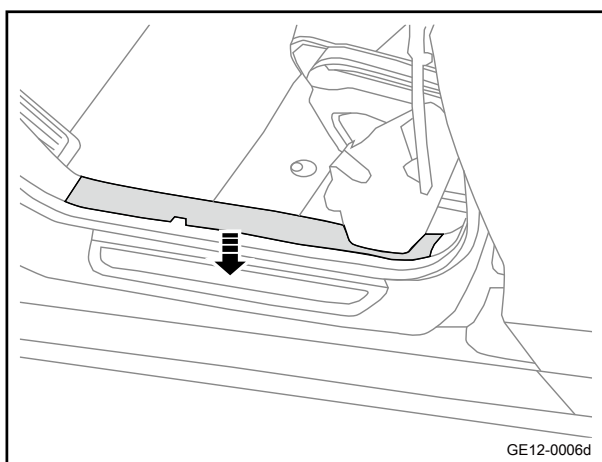
Replacement at left and right sides are performed in the same way.

- 1 Open the left front door.
- 2 Pry off the left front welcome pedal assembly.



Installation procedure

- 1 Move the left front welcome pedal assembly to the installation position.
- 2 Install the left front welcome pedal assembly.

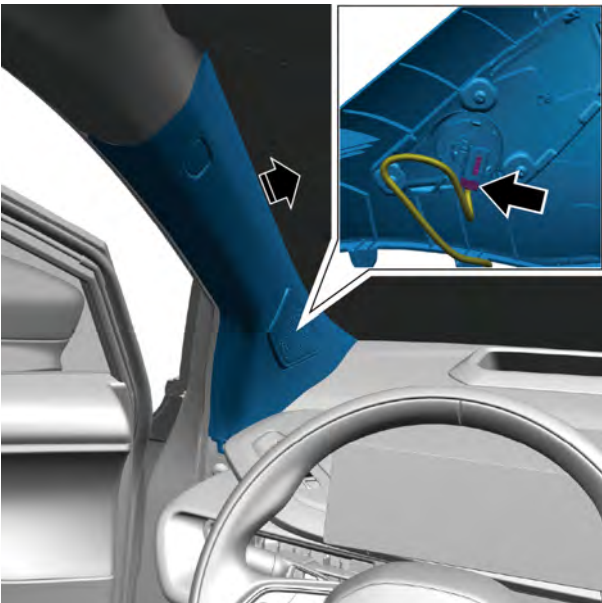
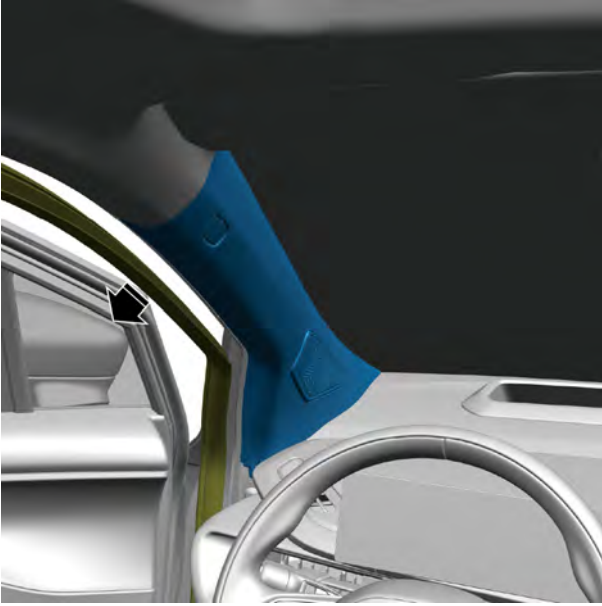


- 3 Close the front left door.

12.9.2.4 Replacement of left A-pillar upper trim panel assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove the left pillar A middle trim panel. Refer to [Replacement of Left Pillar A Middle Trim Panel Assembly](#)



3 Disconnect the left front door frame sealing strip from the left A-pillar upper trim panel assembly.

4 Remove the 1 fixing screw connecting the left A-pillar upper trim panel assembly with the body assembly of instrument panel.

5 Use the plastic prying plate to pry out the upper trim panel assembly of the left A-pillar. Disconnect the 1 harness connector connecting the instrument harness and the tweeter.

Caution

There are still harnesses on the back side of the left A-pillar upper trim panel assembly. Avoid pulling damaged harnesses when prying them out.

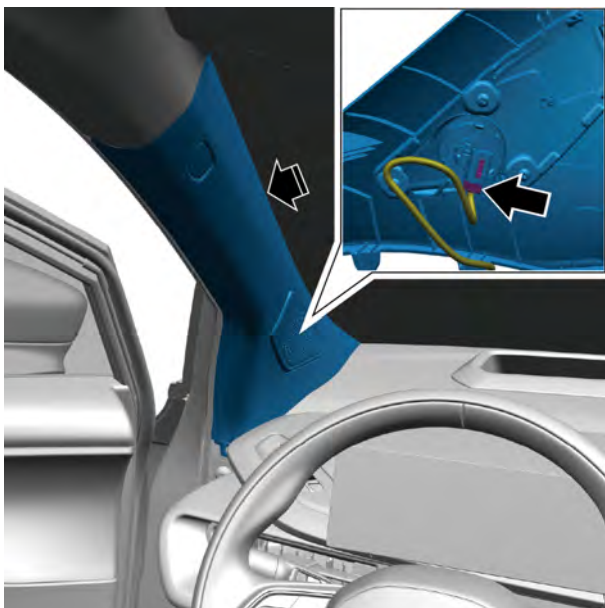
6 Take down the left A-pillar trim panel assembly.

Installation procedure

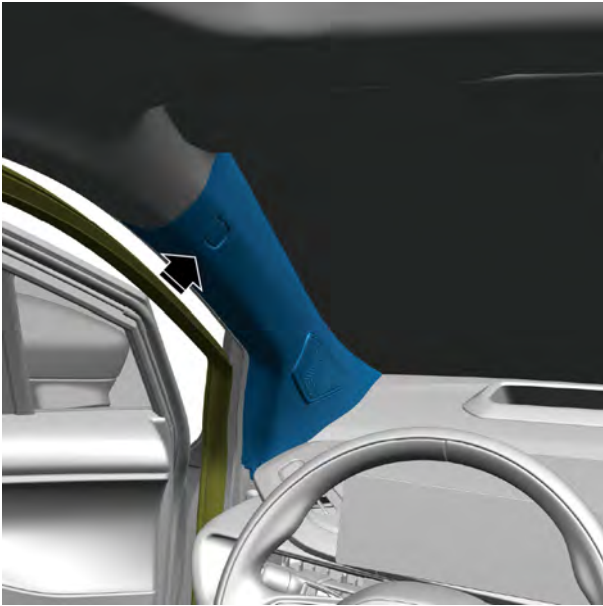
- 1 Move the left A-pillar upper trim panel assembly to the mounting position.
- 2 Connect the 1 harness connector connecting instrument harness with tweeter.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.



- 3 Install and tighten the 1 fixing screw connecting the left A-pillar upper trim panel assembly with the instrument panel body.
Torque: 1.5N·m



- 4 Install the left front door sealing strip on left A-pillar upper trim panel assembly.

Caution

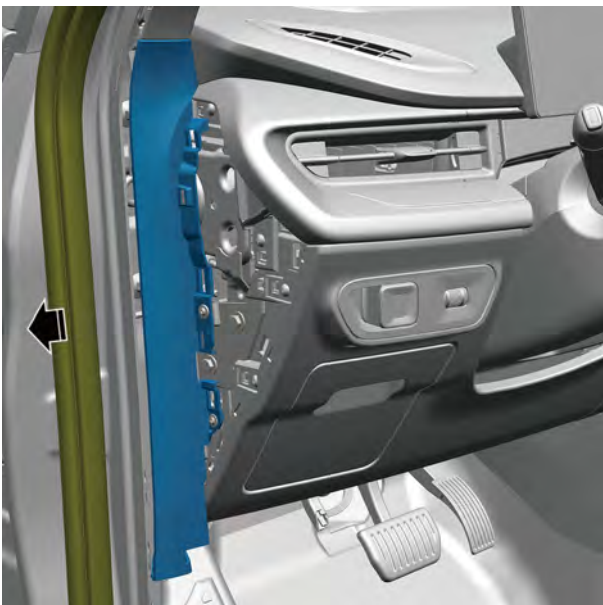
Check whether the sealing strip and the body are installed smoothly without bumps. If necessary, use a rubber hammer to restore its flatness.

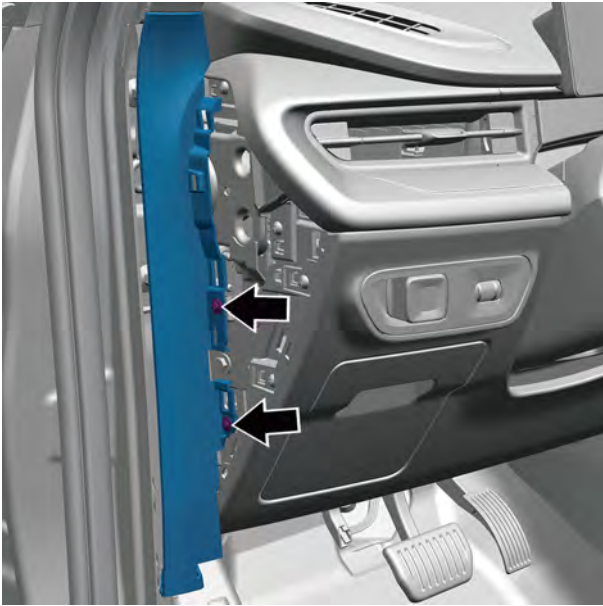
- 5 Install the left A-pillar trim panel.
- 6 Connect the negative cable of battery.

12.9.2.5 Replacement of left A-pillar middle trim panel assembly

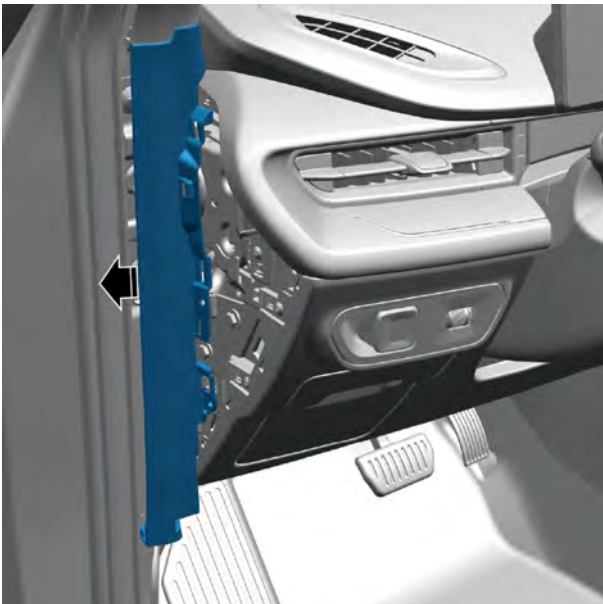
Removal procedure

- 1 Remove dashboard end cover at driver side. Refer to [Replacement of Dashboard Driver Side End Cover Assembly](#)
- 2 Remove left A-pillar lower trim panel. Refer to [Replacement of Left Pillar A Lower Trim Panel Assembly](#)
- 3 Lift the FL door frame sealing strip pressed on the left A-pillar middle trim panel.



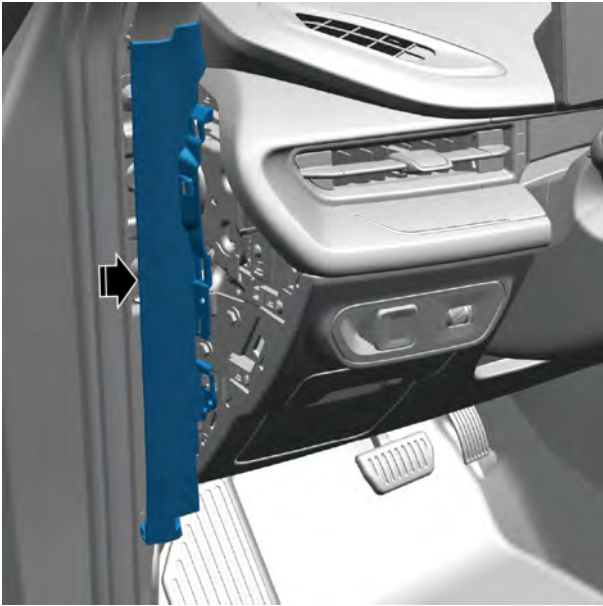


- 4 Remove the 2 fixing screws 2 on the left A-pillar middle trim panel assembly and left lower connecting bracket.

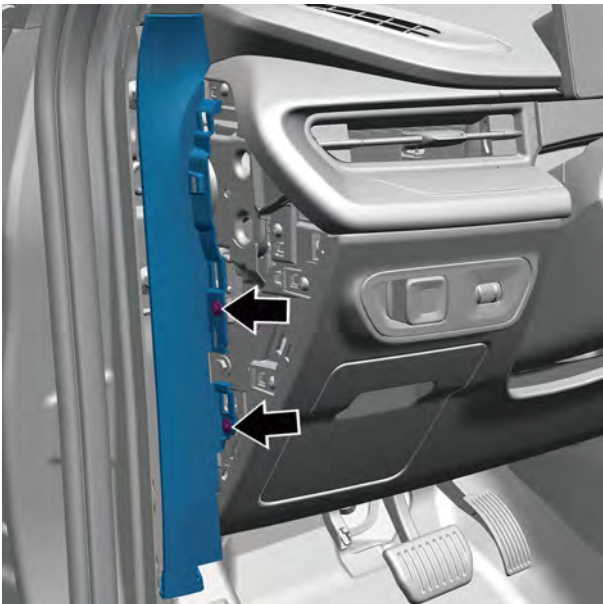


- 5 Use the plastic prying plate to pry off the left A-pillar middle trim panel.

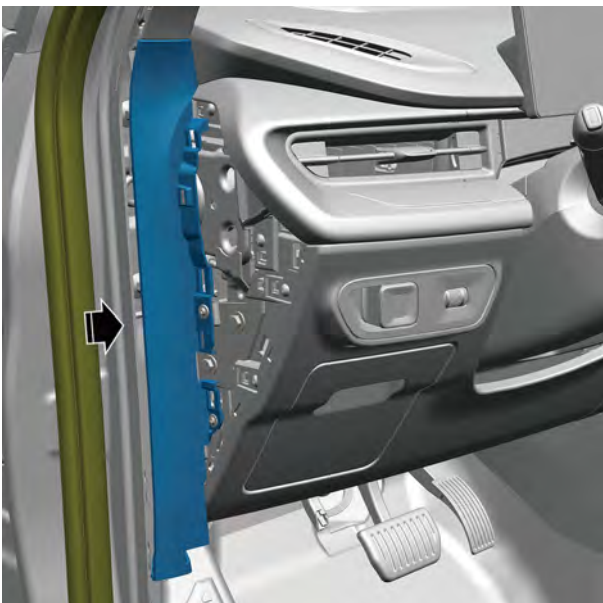
Installation procedure



- 1 Move the left A-pillar middle trim panel to the installation position.



- 2 Install and tighten the 2 fixing screws connecting the left A pillar middle trim panel assembly with left lower connecting bracket.
Torque: 1.5N·m



- 3 Install the left front door frame sealing strip on the body.

Caution

Check whether the sealing strip and the body are installed smoothly without bumps. If necessary, use a rubber hammer to restore its flatness.

- 4 Install the lower trim panel of left A-pillar.
- 5 Install instrument panel end cover at driver side

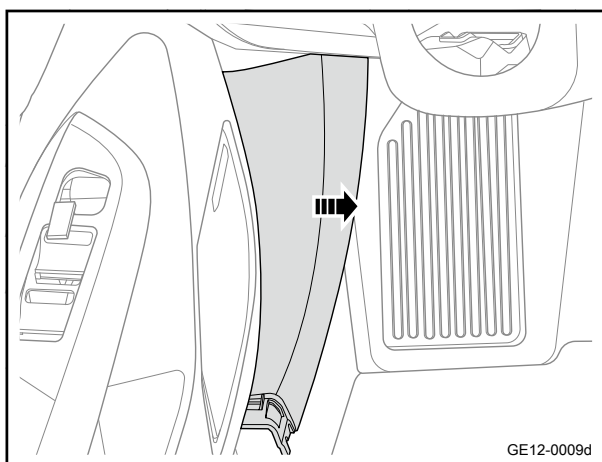
12.9.2.6 Replacement of lower trim panel assembly of left A pillar

Removal procedure

Caution

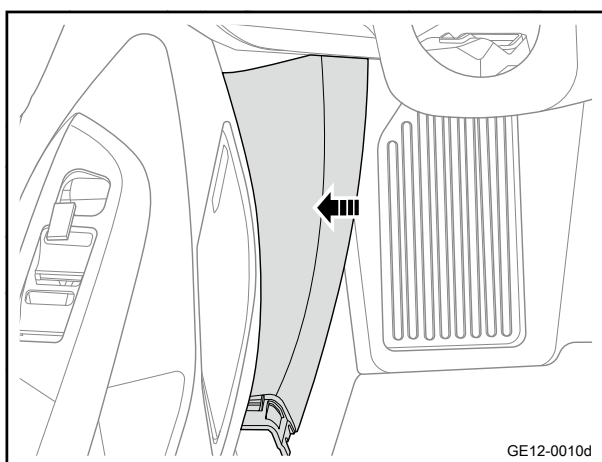
Replacement at left and right sides are performed in the same way.

- 1 Remove the left front rocker panel trim plate assembly. Refer to [Replacement of Left Front Rocker Panel Trim Plate Assembly](#)
- 2 Remove the left A-pillar lower trim panel assembly.



Installation procedure

- 1 Move the left A-pillar lower trim panel assembly to the mounting position.
- 2 Install the left pillar A lower trim panel assembly.



- 3 Install the left front rocker panel trim plate assembly.

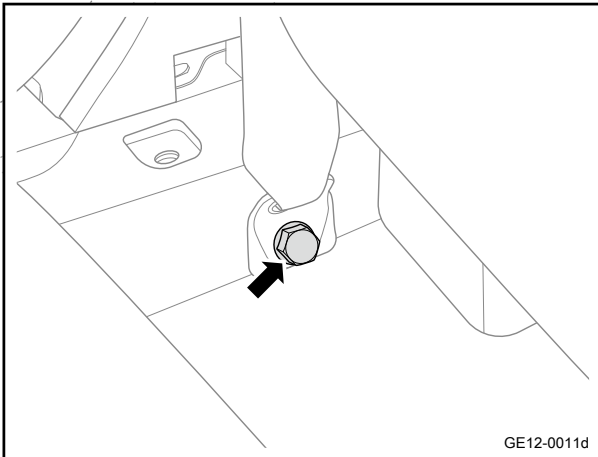
12.9.2.7 Replacement of left B-pillar upper trim panel assembly

Removal procedure

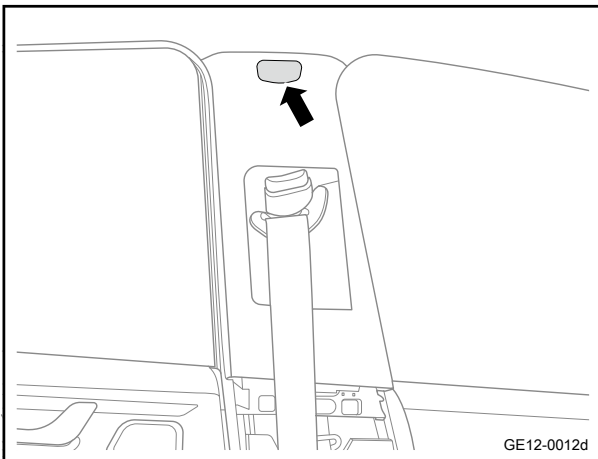
Caution

Replacement at left and right sides are performed in the same way.

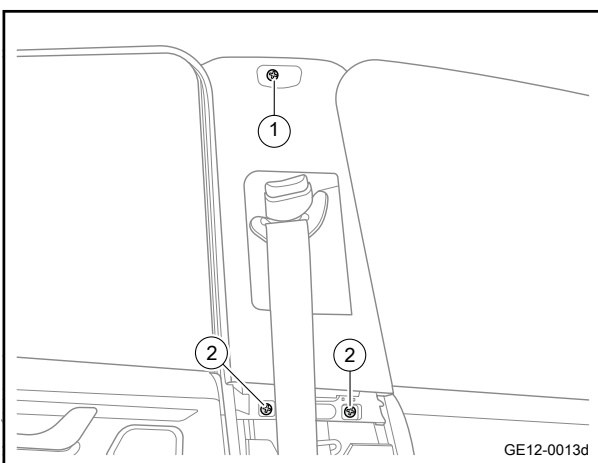
- 1 Remove the left pillar B lower trim panel assembly. Refer to [Replacement of Left Pillar B Lower Trim Panel Assembly](#)
- 2 Remove the 1 fixing bolt of the left front seat belt assembly floor end.



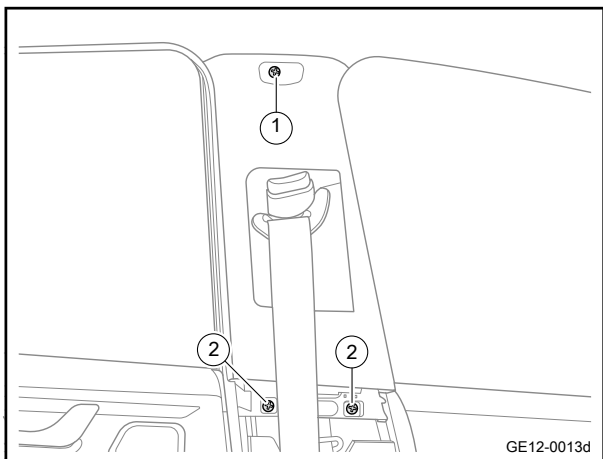
- 3 Remove the left B-pillar upper trim panel upper air curtain airbag identification cover.



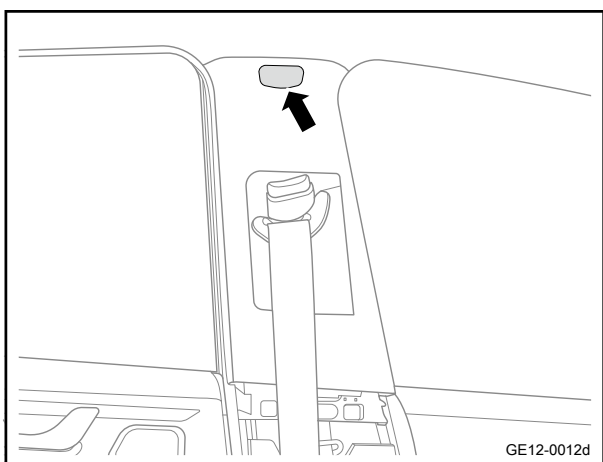
- 4 Remove the 1 fixing screw 1 of the left pillar B's upper trim panel assembly.
- 5 Remove the 2 fixing screws 2 on the lower of upper trim panel assembly on the left B-pillar
- 6 Take off left pillar B's upper trim panel assembly.



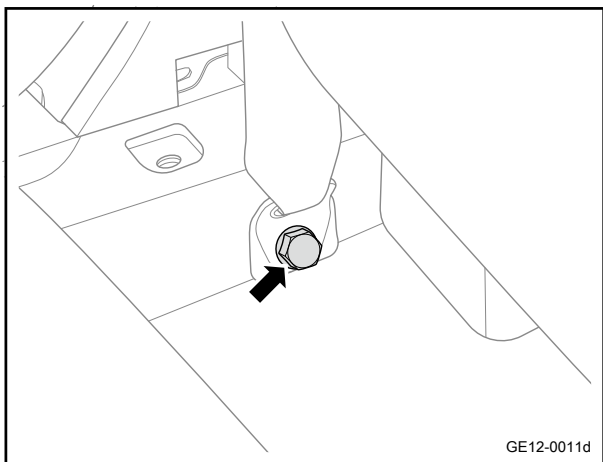
Installation procedure



- 1 Move the left B pillar upper trim panel assembly to the mounting position.
- 2 Install the left B-pillar upper trim panel assembly.
- 3 Install the 2 fixing screws 2 on the lower of upper trim panel assembly on the left B-pillar.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 4 Install the 1 fixing screws 1 of left pillar B's upper trim panel assembly.
Torque: 4N·m (metric system) 3lb-ft (Imperial system)



- 5 Install the safety curtain airbag identification cover of upper trim panel of B pillar.



- 6 Install the 1 fixing bolt of the left front seat belt assembly floor end.
Torque: 45N·m (metric system) 33.2lb-ft (Imperial system)

- 7 Install the left B-pillar lower trim panel assembly.

12.9.2.8 Replacement of lower trim panel assembly of left B-pillar.

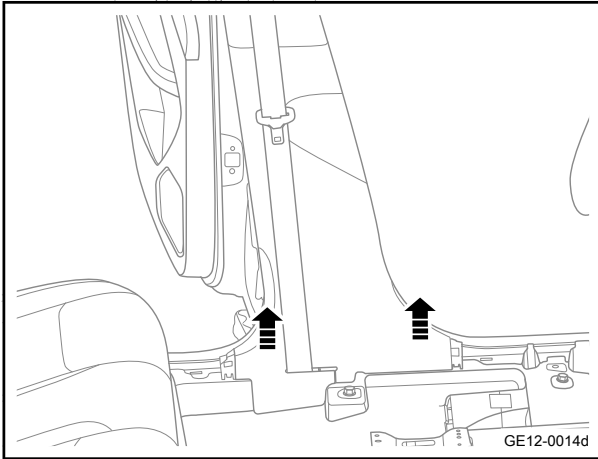
Removal procedure

Caution

Replacement at left and right sides are performed in the same way.

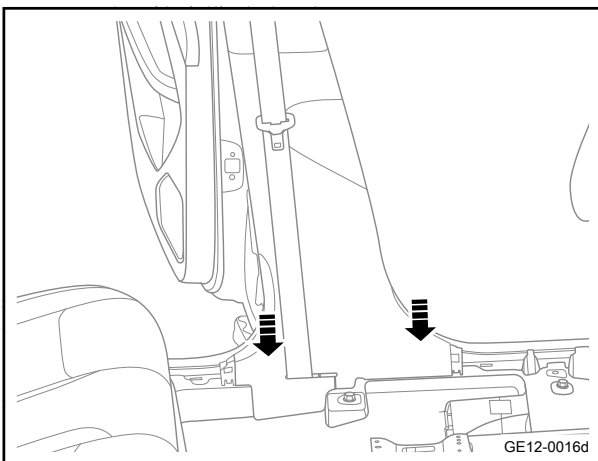
- 1 Open the left door.

- 2 Remove the left front rocker panel trim plate assembly.
Refer to [Replacement of Left Front Rocker Panel Trim Plate Assembly](#)
- 3 Remove the left rear rocker panel trim plate assembly.
Refer to [Replacement of Left Rear Rocker Panel Trim Plate Assembly](#)
- 4 Remove the left B-pillar lower trim panel assembly.



Installation procedure

- 1 Move the left B-pillar lower trim panel assembly to the mounting position.
- 2 Install the left B-pillar lower trim panel assembly.



- 3 Install the left front rocker panel trim plate assembly.
- 4 Install the left rear rocker panel trim plate assembly.
- 5 Close the left door.

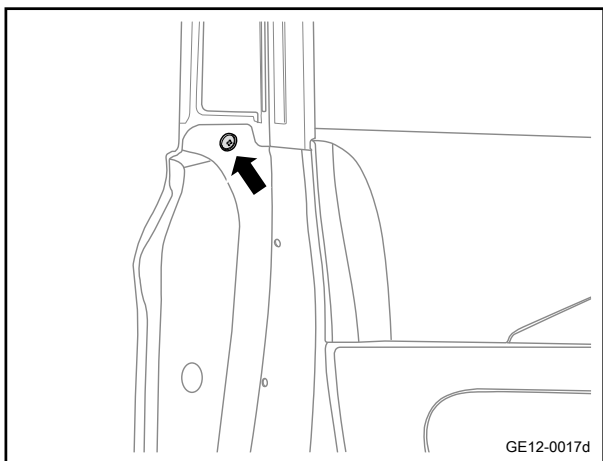
12.9.2.9 Replacement of front left door glass exterior sealing strip

Removal procedure

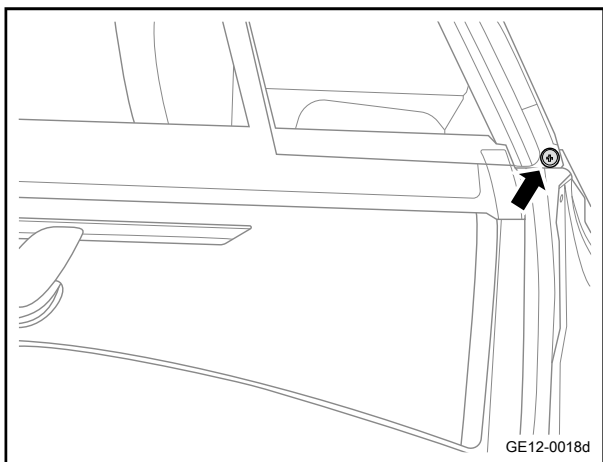
Caution

Replacement at left and right sides are performed in the same way.

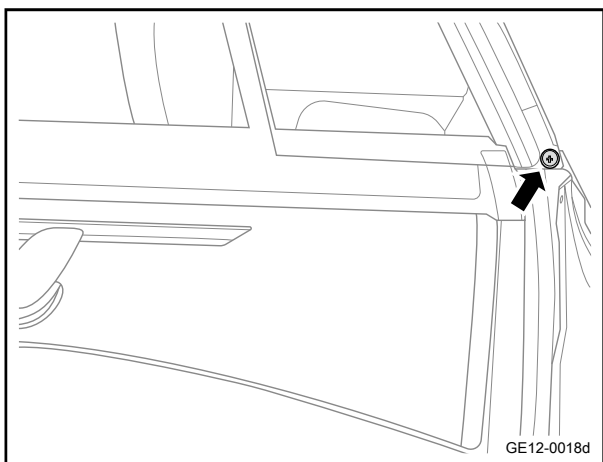
- 1 Open the left front door.



- 2 Remove the 1 fixing screw at rear end of the door glass exterior sealing strip.

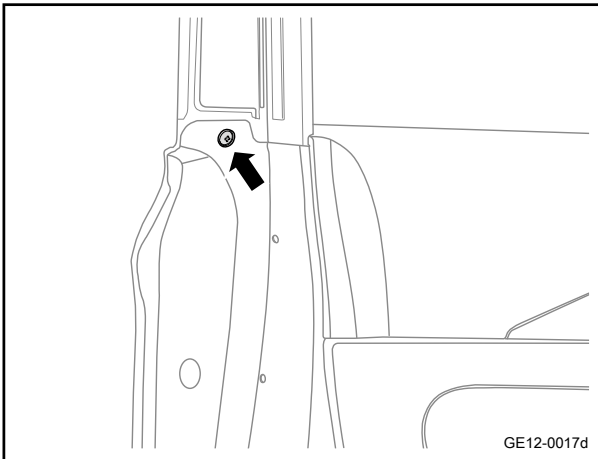


- 3 Remove the 1 fixing screw at front end of the door glass exterior sealing strip.
- 4 Remove the front left door glass exterior sealing strip.



Installation procedure

- 1 Move the front left door glass sealing strip to the correct installation position.
- 2 Install the 1 fixing screw at front end of the left front door glass exterior sealing strip.
Torque: 1 N·m (metric system) 0.7 lb-ft (British system)



- 3 Install the 1 fixing screw at rear end of the left front door glass exterior sealing strip.
Torque: 1N·m (metric system) 0.7lb-ft (Imperial system)

- 4 Close the left door.

12.9.2.10 Replacement of FL door glass interior sealing strip

Removal procedure

Caution

Replacement at left and right sides are performed in the same way.

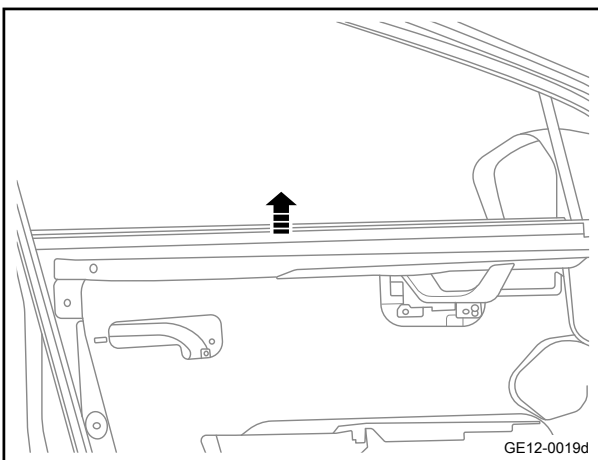
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

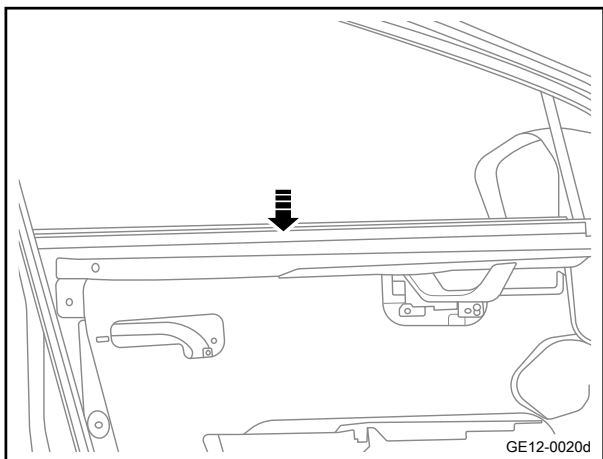
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left front door trim panel assembly. Refer to [Replacement of Left Front Door Interior Trim Panel Assembly](#)

Take down the front left door glass interior sealing strip.



Installation procedure



- 1 Move the front left door glass sealing strip to the correct installation position.
- 2 Install FL door glass interior sealing strip.

- 3 Install the left front door interior trim panel assembly.
- 4 Connect the negative cable of battery.

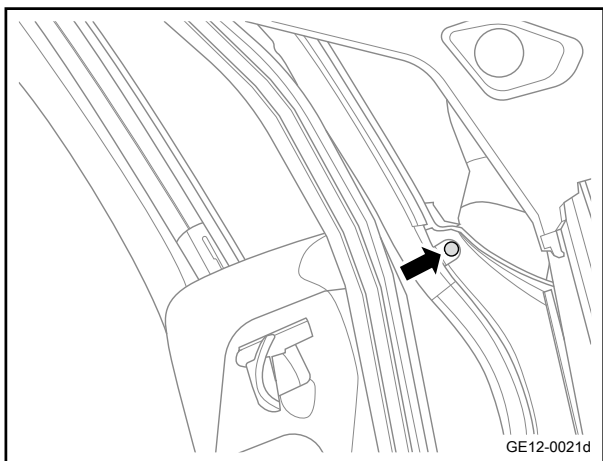
12.9.2.11 Replacement of door sealing strip assembly

Removal procedure

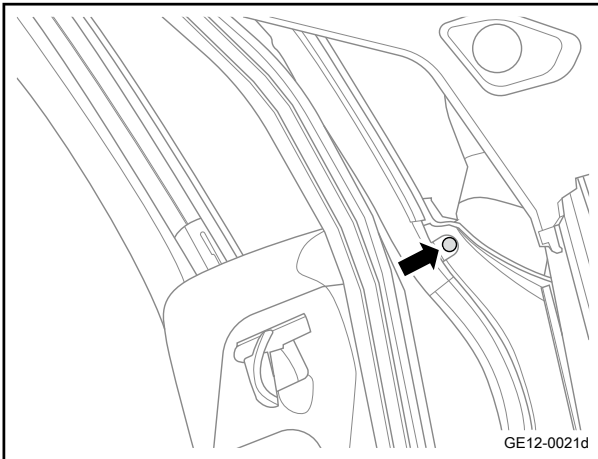
Caution

Replacement at left and right sides are performed in the same way.

- 1 Open the left front door.
- 2 Remove the fixing clip at the front of the left front door sealing strip assembly.
- 3 Remove the front left door sealing strip assembly.



Installation procedure



- 1 Move the left front door sealing strip assembly to the installation positions.
- 2 FL door sealing strip assembly is installed.
- 3 Install the 1 fixing clip of the front of left front door sealing strip assembly.

- 4 Close the front left door.

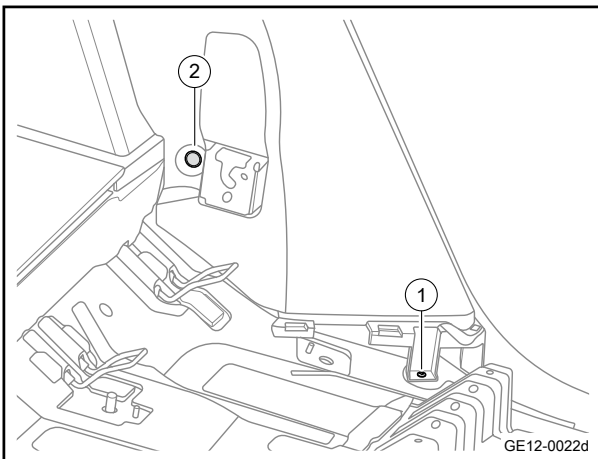
12.9.2.12 Replacement of the left C-pillar lower trim panel assembly

Removal procedure

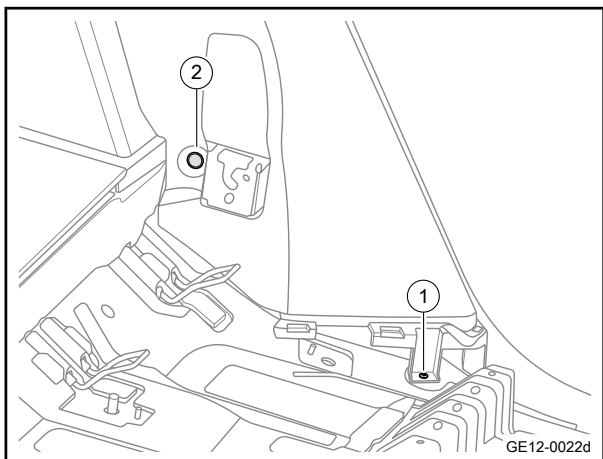
Caution

Replacement at left and right sides are performed in the same way.

- 1 Remove the left rear rocker panel trim plate assembly. Refer to [Replacement of Left Rear Rocker Panel Trim Plate Assembly](#)
- 2 Remove the rear left backrest. Refer to [Replacement of Rear Left Backrest](#)
- 3 Remove 1 fixing bolt 1 of the bottom of the left C-pillar lower trim panel assembly.
- 4 Remove fixing clip 2 of the left C-pillar lower trim panel assembly.
- 5 Remove the left C-pillar lower trim panel assembly.



Installation procedure



- 1 Move the left C-pillar lower trim panel assembly to the mounting position.
- 2 Install 1 fixing bolt 1 of the left C-pillar lower trim panel assembly.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 3 Install fixing clip 2 of the left C-pillar lower trim panel assembly.

- 4 Install the rear left backrest.
- 5 Install the left rear rocker panel trim plate assembly.

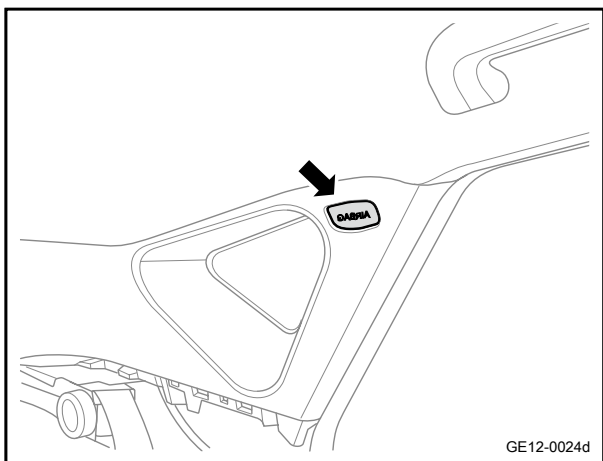
12.9.2.13 Replacement of left C-pillar upper trim panel assembly

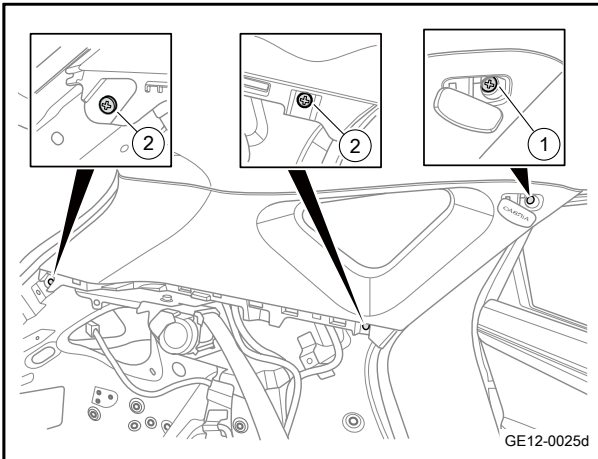
Removal procedure

Caution

Replacement at left and right sides are performed in the same way.

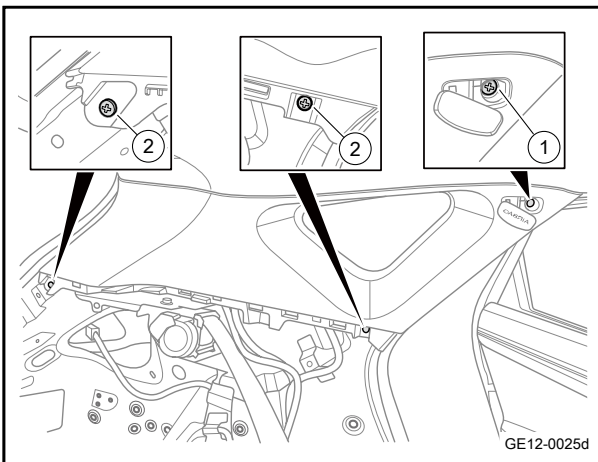
- 1 Remove the left rear pillar middle trim panel assembly
Refer to [Replacement of Left Rear Pillar Upper Trim Panel Assembly](#)
- 2 Remove the left C-pillar upper trim panel assembly upper curtain airbag identification cover.



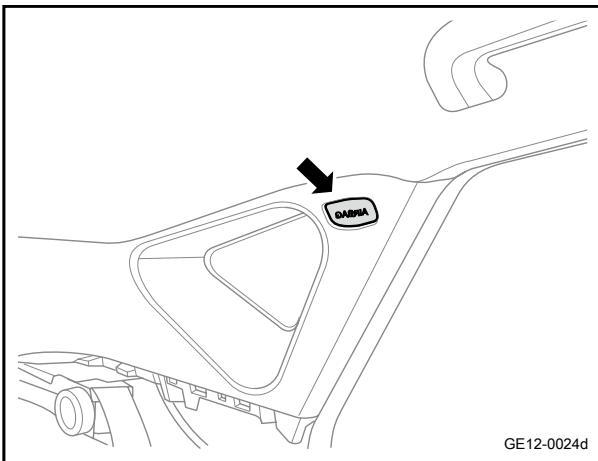


- 3 Remove the 1 fixing screw 1 on the upper of upper trim panel assembly on the left C-pillar
- 4 Remove the 2 fixing screws 2 on the lower of upper trim panel assembly on the left C-pillar
- 5 Remove the left C-pillar upper trim panel assembly.

Installation procedure



- 1 Move the left C-pillar upper trim panel assembly to the mounting position.
- 2 Install the 2 fixing screws 2 on the lower of upper trim panel assembly on the left C-pillar.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 3 Install the 1 fixing screw 1 on the upper of upper trim panel assembly on the left C-pillar.
Torque: 4N·m (metric system) 3lb-ft (Imperial system)



- 4 Install the curtain airbag identification cover on left C-pillar upper trim panel assembly.

- 5 Install the left rear pillar middle trim panel assembly.

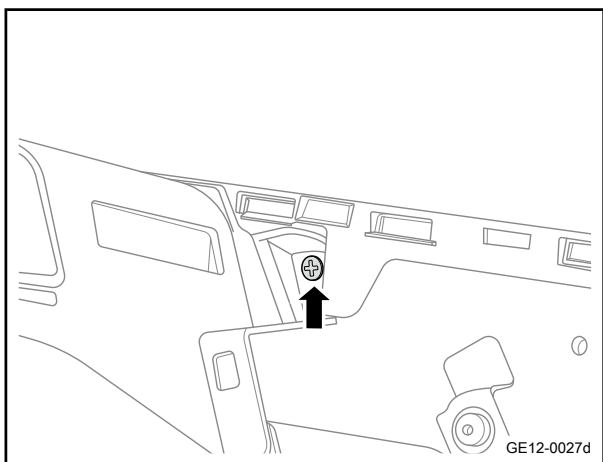
12.9.2.14 Replacement of Left Rear Pillar Middle Trim Panel Assembly

Removal procedure

Caution

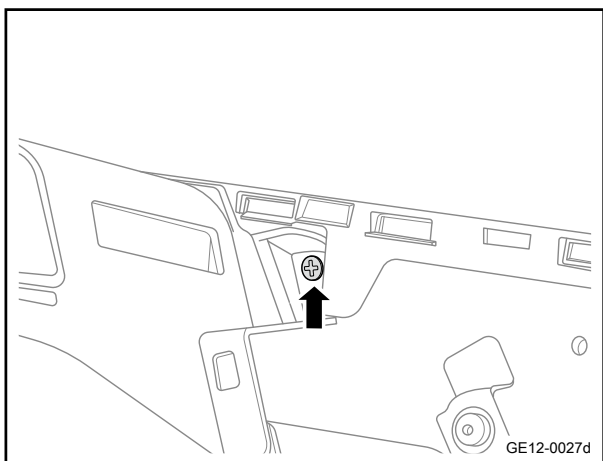
The right side is replaced in the same way as the left side except that there is no trunk lamp.

- 1 Remove the left C-pillar lower trim panel assembly. Refer to [Replacement of Left C-Pillar Lower Trim Panel Assembly](#)
- 2 Remove the rear left seatbelt. Refer to [Replacement of rear seat belt assembly on both sides](#)
- 3 Remove left trunk lamp. Refer to [Replacement of trunk lamp](#)
- 4 Remove the 1 fixing screw of the left rear pillar middle trim panel assembly.
- 5 Remove the left rear pillar middle trim panel assembly.



Installation procedure

- 1 Move the left rear pillar trim panel assembly to the mounting position.
- 2 Install the 1 fixing screw of the left rear pillar upper trim panel assembly.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

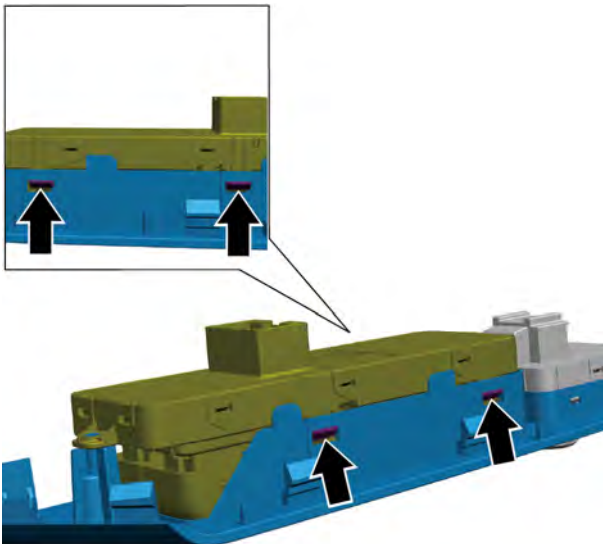


- 3 Install the left trunk lamp.
- 4 Install the rear left seatbelt.
- 5 Install the left C-pillar lower trim panel assembly.

12.9.2.15 Replacement of front left door switch panel assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Install the left front door electrically operated door glass lift switch assembly. Refer to [Replacement of Left Front Door Electrically Operated Door Glass Lift Switch Assembly](#)

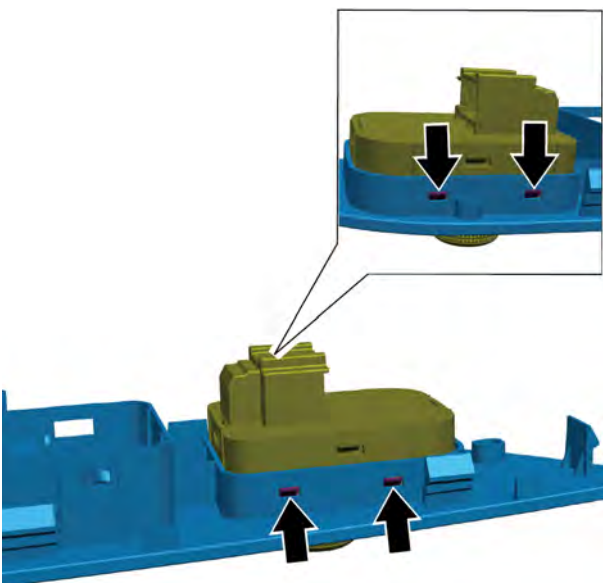


- 3 Use a straight screwdriver to pry off the 4 fixing clips connecting the left front door window regulator switch with the left front door switch panel assembly.

Caution

Use a straight screwdriver to pry it up, otherwise it is easy to scratch or damage the parts.

- 4 Take off FL door window regulator switch.



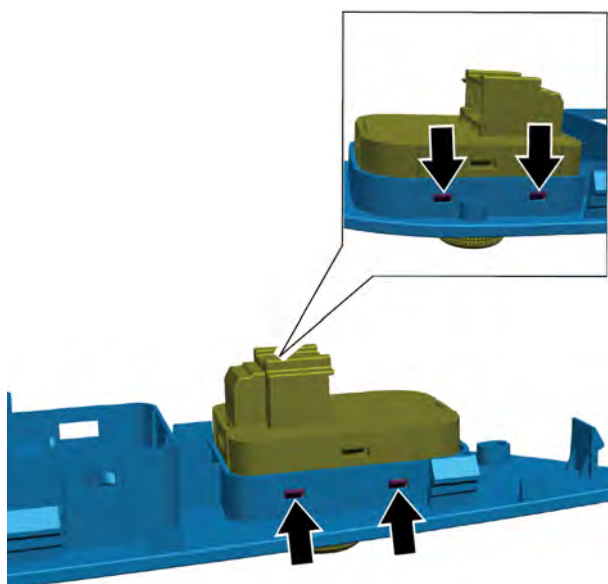
- 5 Use a straight screwdriver to pry off the 4 fixing clips connecting the exterior rearview mirror adjustment switch with the left front door switch panel assembly.

Caution

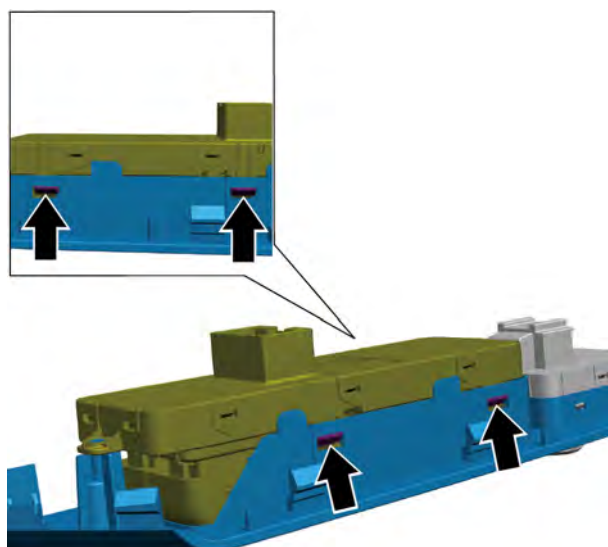
Use a straight screwdriver to pry it up, otherwise it is easy to scratch or damage the parts.

- 6 Take off the left front door switch panel assembly.

Installation procedure



- 1 Move the left front door trim switch panel assembly to the mounting position.
- 2 Install the exterior rearview mirror adjustment switch onto the left front door switch panel assembly, and press the 4 fixing clips to ensure that the clamps are fastened.



- 3 Move the front left door window regulator to the correct installation position.
- 4 Install the left front door window regulator switch onto the left front door switch panel assembly, and press the 4 fixing clips to ensure that the clamps are fastened.

- 5 Install the left front door electrically operated door glass lift switch assembly.
- 6 Connect the negative cable of battery.

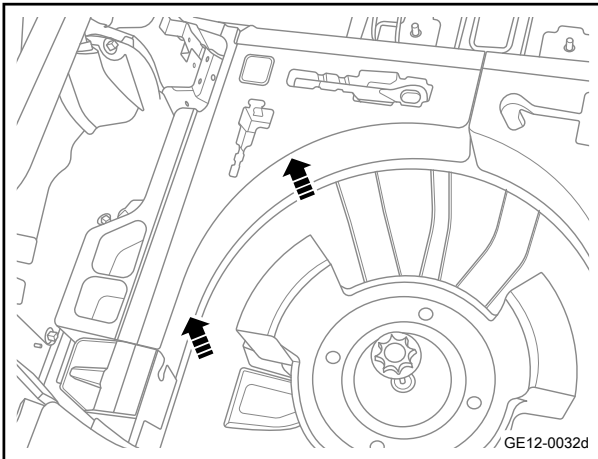
12.9.2.16 Replacement of Left Mounting Liner of the Trunk Carpet

Removal procedure

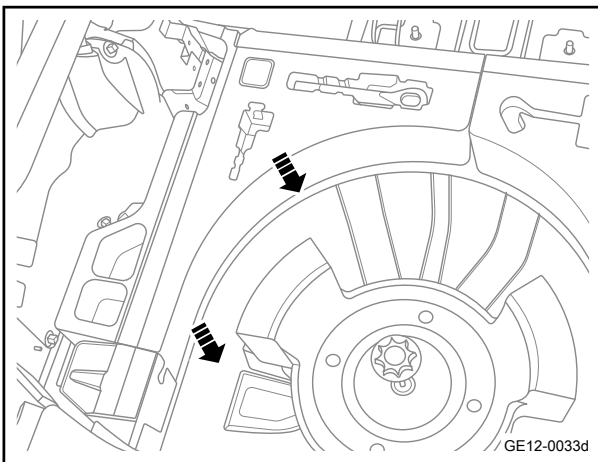
Caution

Replacement at left and right sides are performed in the same way.

- 1 Install the trunk carpet assembly. Refer to [Replacement of trunk carpet assembly](#)
- 2 Remove the trunk left trim panel assembly. Refer to [Replacement of left trim panel assembly of trunk](#)



- 3 Take out the tool kit.
- 4 Take off the left mounting liner of the trunk carpet.



Installation procedure

- 1 Move the trunk carpet left mounting liner to the installation position.
- 2 Install the trunk carpet left mounting liner.
- 3 Install the tool kit.

- 4 Install the trunk left trim panel assembly.
- 5 Install the trunk carpet assembly.

12.9.2.17 Replacement of left trim panel assembly of trunk

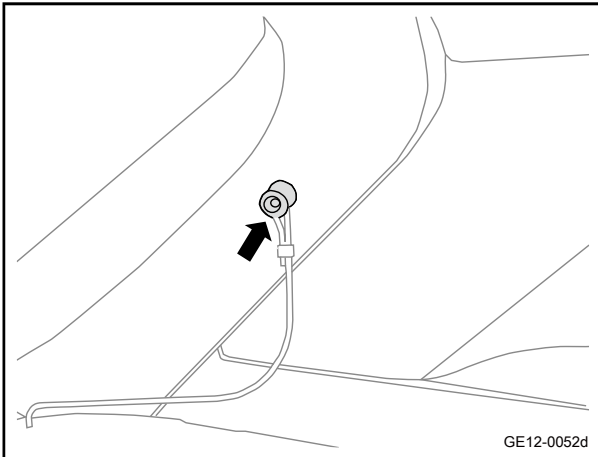
Removal procedure

Note

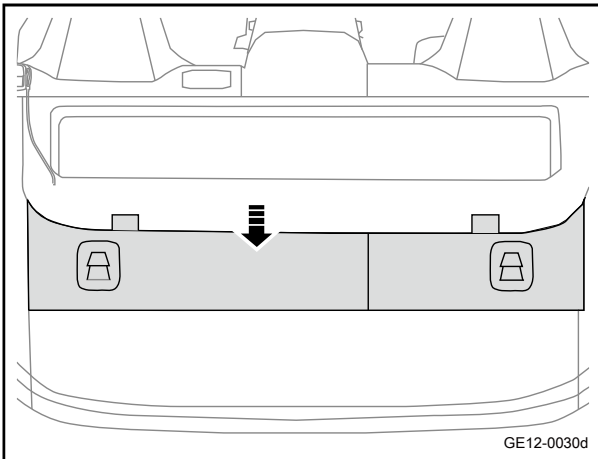
Replacement at left and right sides are performed in the same way.

- 1 Remove the left rear pillar middle trim panel assembly
Refer to [Replacement of Left Rear Pillar Middle Trim Panel Assembly](#)
- 2 Remove the interior trim panel assembly of the rear wall.
Refer to [Replacement of Interior Trim Plate Assembly of Rear Wall](#)
- 3 Remove the left C-pillar lower trim panel assembly. Refer to [Replacement of Left C-Pillar Lower Trim Panel Assembly](#)

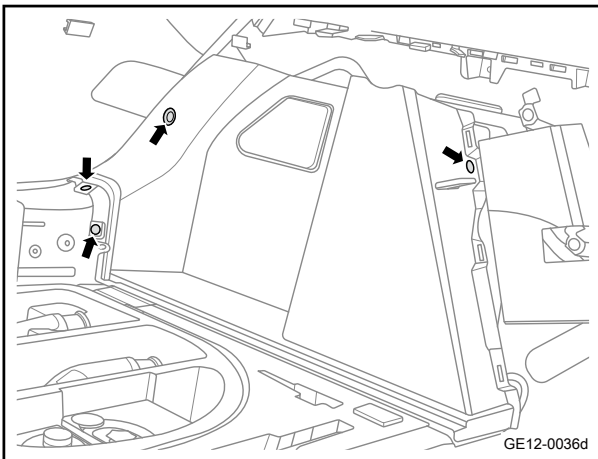
- 4 Remove the trunk carpet assembly. Refer to [Replacement of trunk carpet assembly](#)
- 5 Disengage the left and right cables of trunk baffle plate.



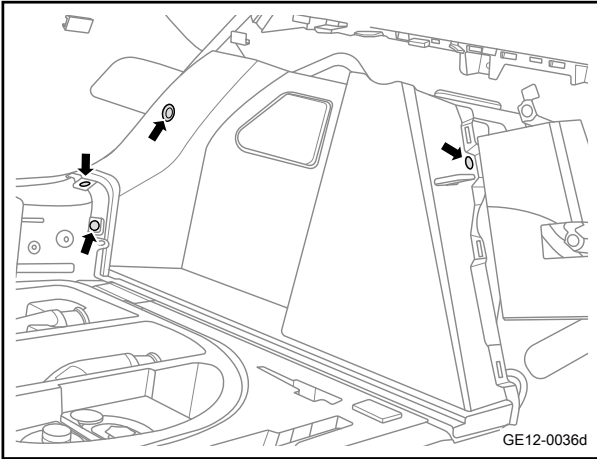
- 6 Install the trim panel of trunk partition plate.



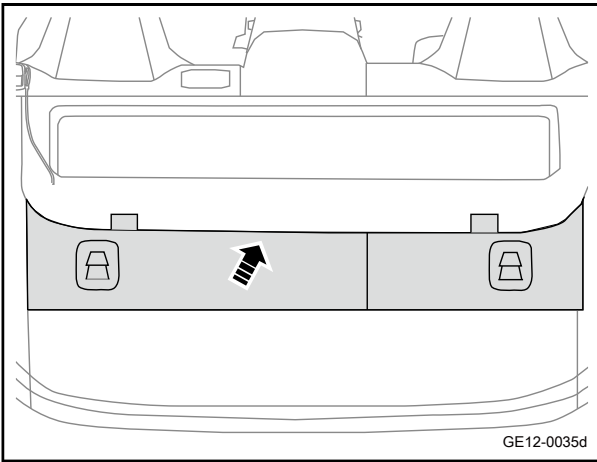
- 7 Remove 4 fixing clips of the left trim panel assembly of trunk.
- 8 Remove the trunk left trim panel assembly.



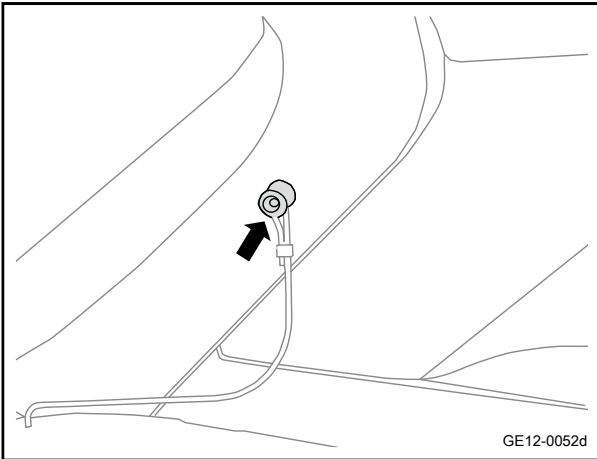
Installation procedure



- 1 Move the left trim panel assembly of the trunk to the installation position.
- 2 Remove the 4 fixing clips of the trunk left trim panel.



- 3 Install the trim panel of trunk baffle plate.

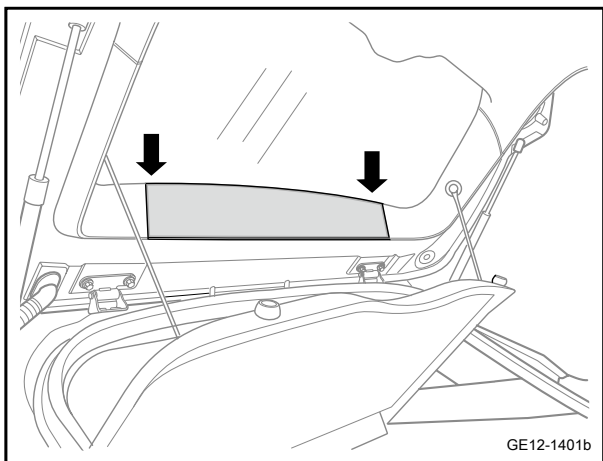


- 4 Install the left and right cables of trim panel of trunk baffle plate.

- 5 Install the trunk carpet assembly.
- 6 Install the left C-pillar lower trim panel assembly.
- 7 Install the assembly-interior trim panel rear wall.
- 8 Install the left rear pillar middle trim panel assembly.

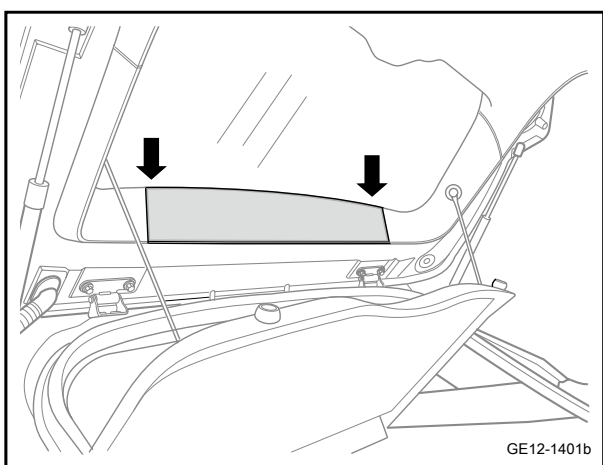
12.9.2.18 Replacement of interior trim panel assembly at the upper middle side of the tailgate

Removal procedure



- 1 Remove the interior trim panel assembly of middle and upper side of tailgate.

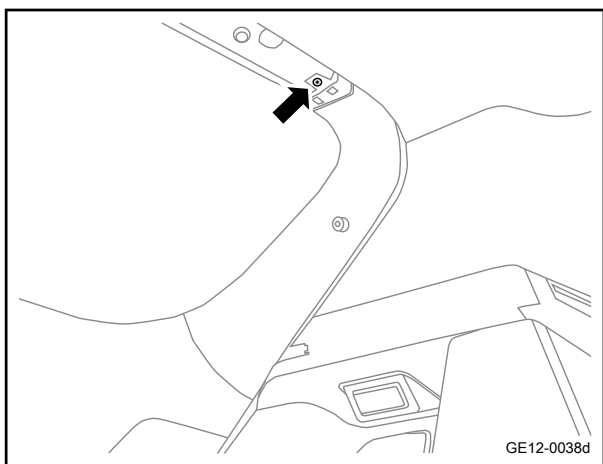
Installation procedure



- 1 Move the middle and upper interior trim panel assembly of tailgate to the mounting position.
- 2 Install the upper middle interior trim panel assembly of tailgate.

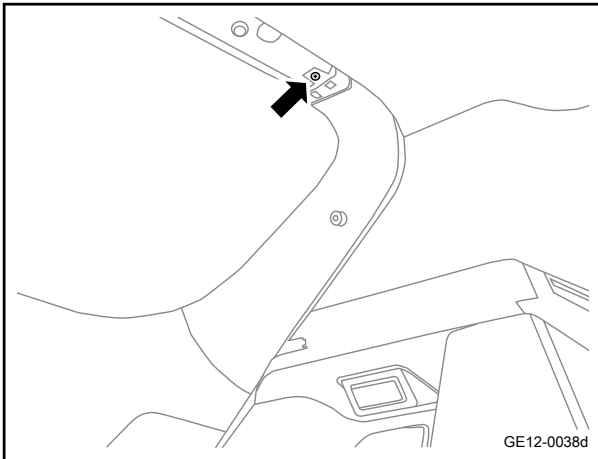
12.9.2.19 Replacement of interior trim panel assembly at the upper left side of the tailgate

Removal procedure



- 1 Remove the middle upper interior trim panel of the tailgate. Refer to [Replacement of interior trim panel assembly at the upper middle side of the tailgate](#)
- 2 Remove the fixing screw of upper left interior trim panel assembly of tailgate.
- 3 Pry off the interior trim panel assembly of middle and upper side of tailgate.

Installation procedure



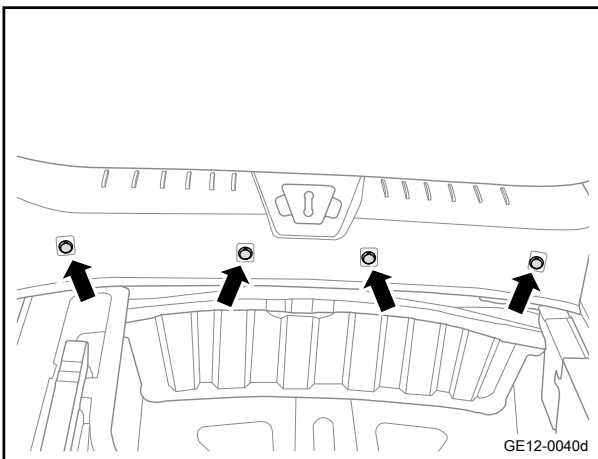
- 1 Move the interior trim panel assembly of middle and upper side of tailgate to the installation position.
- 2 Install the fixing screw of upper left interior trim panel assembly of tailgate.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

- 3 Install the upper middle interior trim panel assembly of trunk.

12.9.2.20 Replacement of rear wall interior trim panel assembly

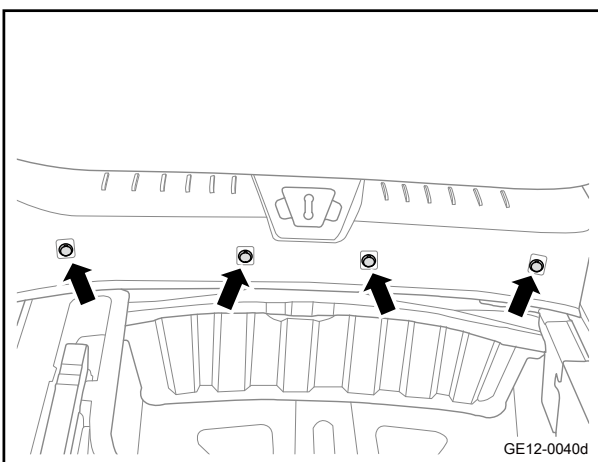
Removal procedure

- 1 Remove the 4 fixing clips of interior trim panel assembly of the rear wall.
- 2 Pry off the rear wall interior trim panel assembly.



Installation procedure

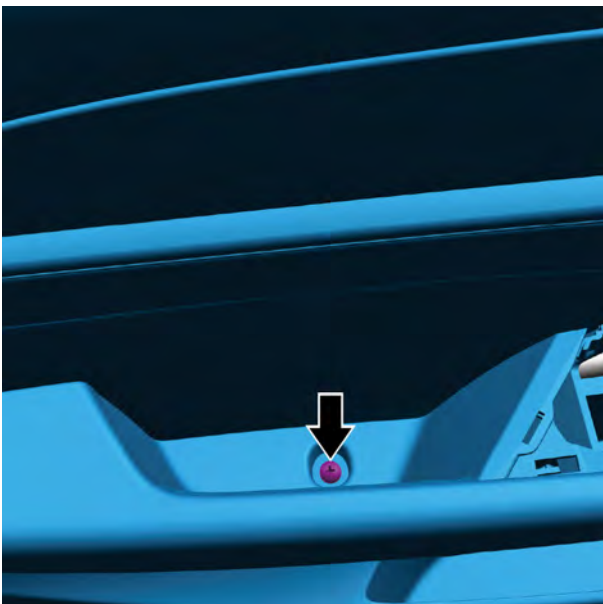
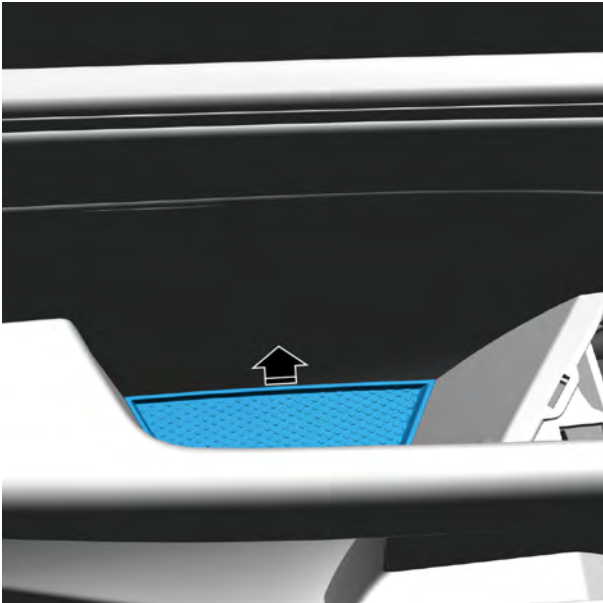
- 1 Move the rear wall interior panel trim plate assembly to the mounting position.
- 2 Install the 4 fixing clips at the rear wall interior panel trim plate.



12.9.2.21 Replacement of front left door interior trim panel assembly

Removal procedure

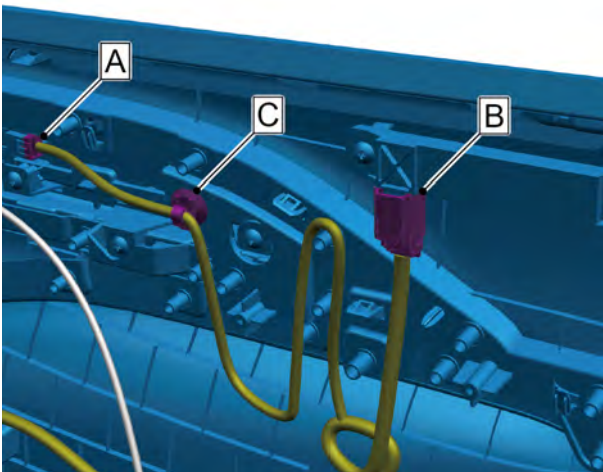
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Install the left front door electrically operated door glass lift switch assembly. Refer to [Replacement of Left Front Door Electrically Operated Door Glass Lift Switch Assembly](#)
- 3 Take off handle cover plate interior trim of left front door.



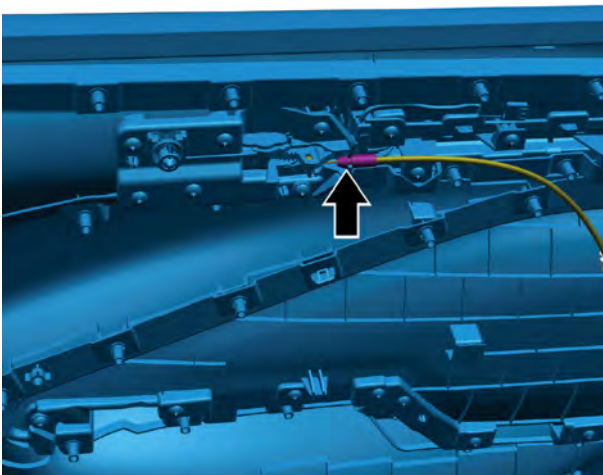
- 4 Remove fixing screw connecting the left front door interior panel assembly with the front door interior trim panel mounting bracket.



- 5 Use a plastic pry board to pry off the left front door trim panel assembly.



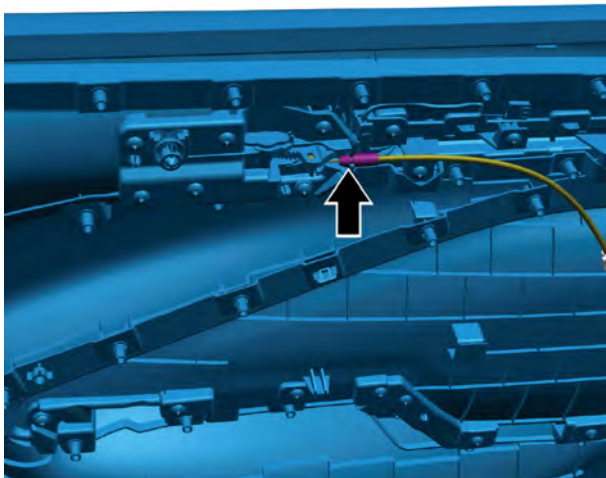
- 6 Disconnect the 1 harness connectors A connecting the left front door harness assembly with the left front door atmosphere lamp.
- 7 Disconnect the 1 harness connector between the left front door harness assembly and the internal antenna.
- 8 Disengage one fixing clip C connecting the left front door harness assembly with the left front door trim panel assembly.



- 9 Disconnect the front door interior release cable from the left front door interior trim panel assembly.

Installation procedure

- 1 Install the front door interior release cable to the left front door interior trim panel assembly and ensure that the clamps are fastened.



- 2 Install the 1 fixing clip C connecting the left front door harness with the left front door interior trim panel assembly.
- 3 Install the 1 harness connector B connecting the left front door harness assembly with the internal antenna.

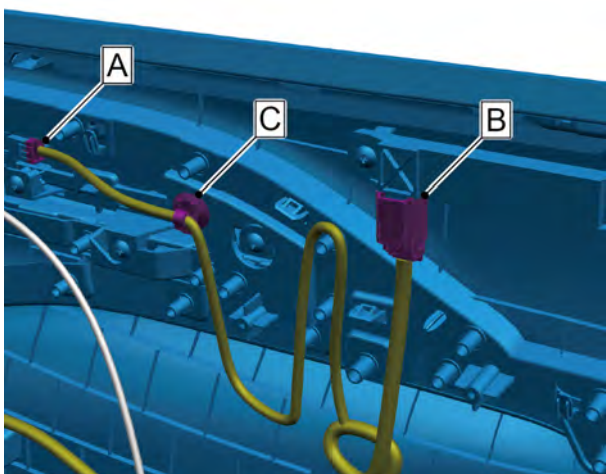
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

- 4 Install the 1 harness connector A connecting the left front door harness with the left front door ambient lamp.

Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

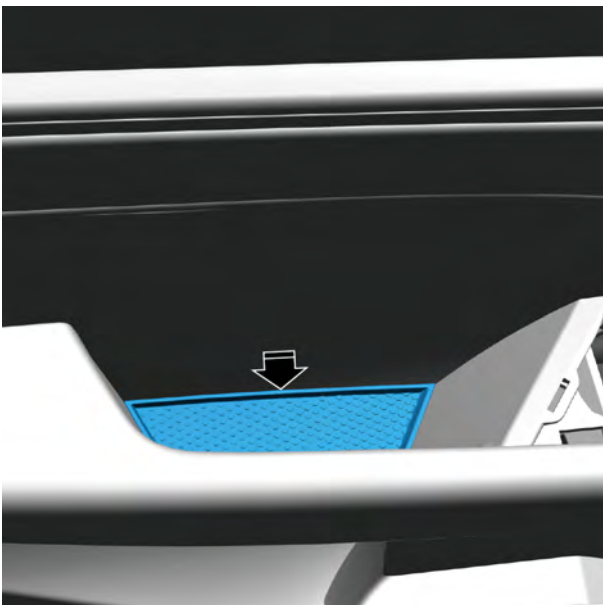




- 5 Install the front left door interior trim panel assembly to the front left door body assembly.



- 6 Install 1 fixing screw connecting the left front door interior panel assembly with the front door interior trim panel mounting bracket



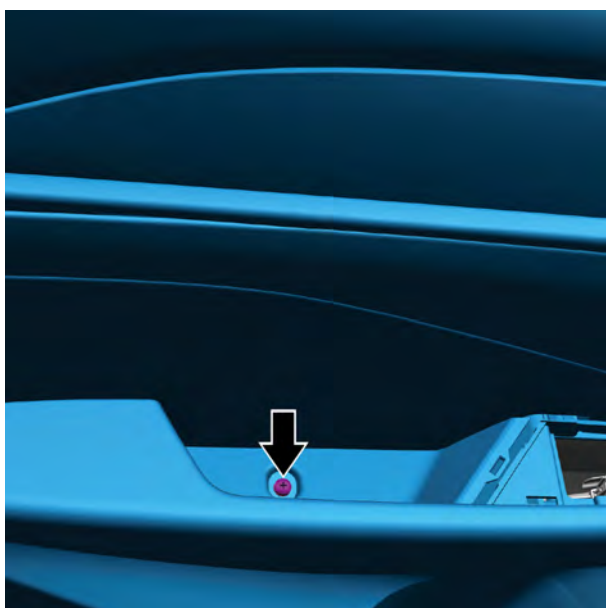
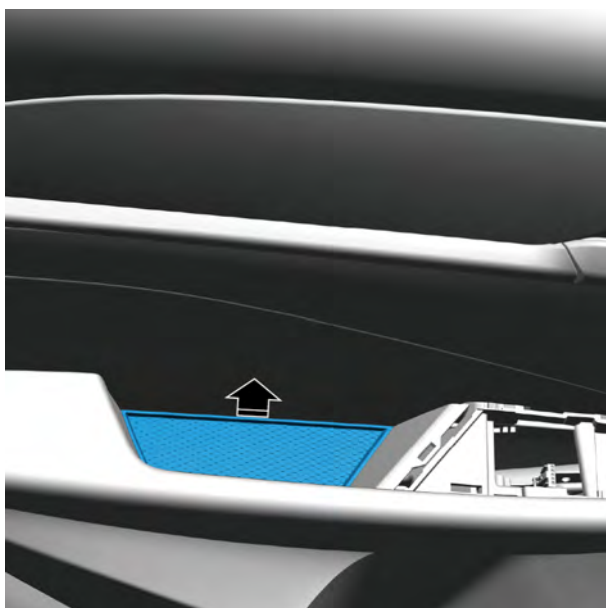
- 7 Install the left front door trim handle cover to the left front door trim panel assembly.

- 8 Install the left front door electrically operated door glass lift switch assembly.
- 9 Connect the negative cable of battery.

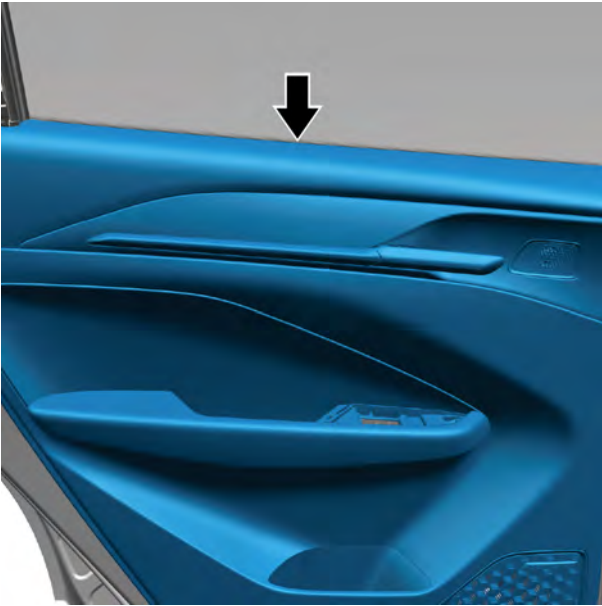
12.9.2.22 Replacement of rear left door interior trim panel assembly

Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Remove rear left door power window regulator assembly
Refer to [Replacement of left rear power window regulator assembly](#)
- 3 Pull up handle cover plate interior trim of left rear door.



- 4 Remove 1 fixing screw connecting the left rear door interior panel assembly with the rear door interior trim panel mounting bracket



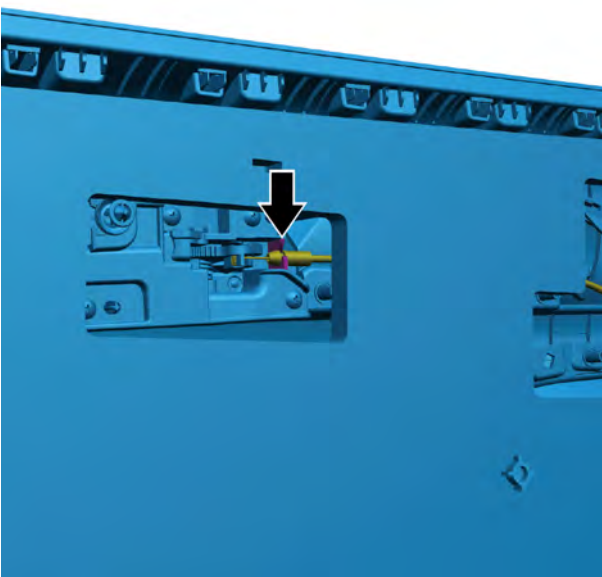
- 5 Use a plastic pry board to pry off the left rear door trim panel assembly.

Caution

Carefully pull the harness when prying it out.



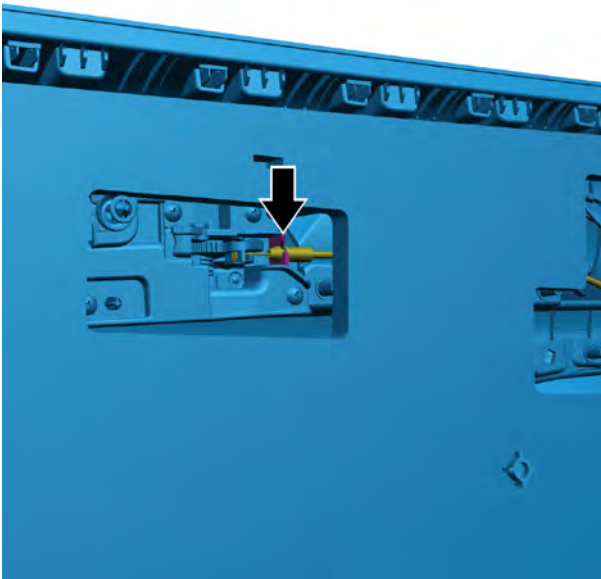
- 6 Disconnect 1 harness connector between the left rear door harness assembly and the left rear door tweeter.



- 7 Disconnect the rear door interior release cable from the left rear door interior trim panel assembly.

Installation procedure

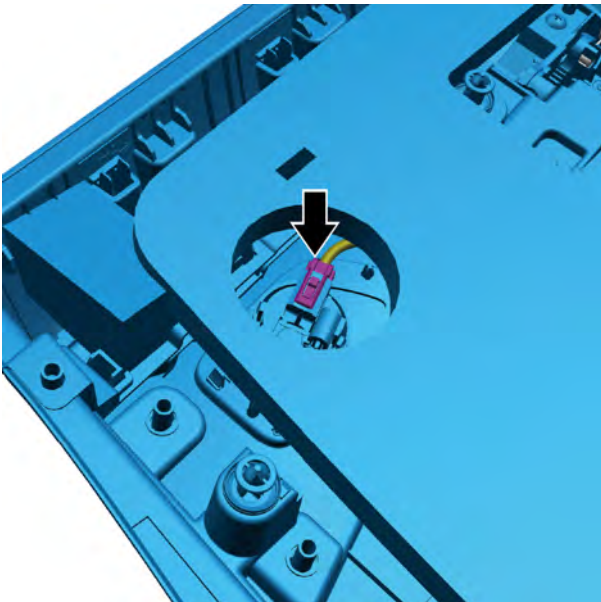
- 1 Install the rear door interior release cable to the left rear door interior trim panel assembly and ensure that the clamps are fastened.

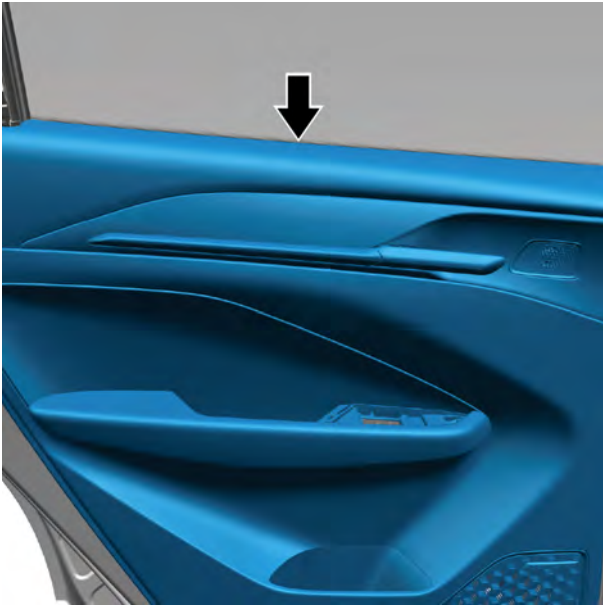


- 2 Connect 1 harness connector between the left rear door harness assembly and the left rear door tweeter.

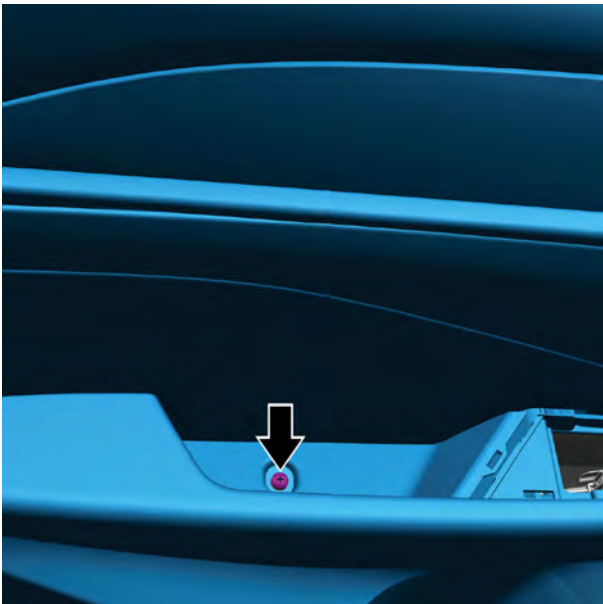
Caution

Firmly plug in harness in the principle of “first plug, second sounds and third confirmations”.

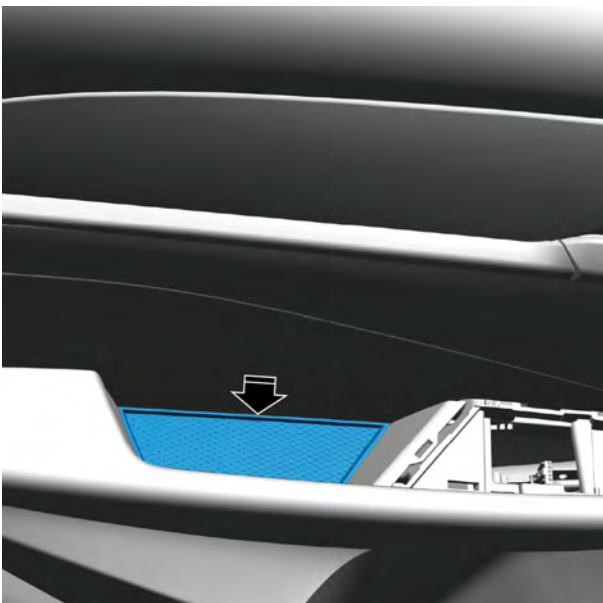




- 3 Install the left rear door trim panel assembly to the left rear door body assembly.



- 4 Install 1 fixing screw connecting the left rear door interior panel assembly with the rear door interior trim panel mounting bracket



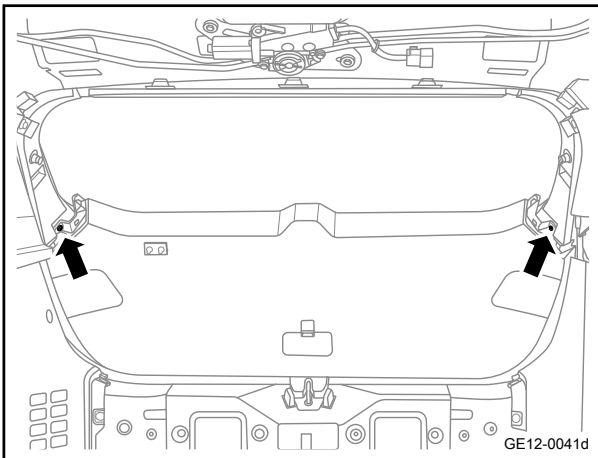
- 5 Install the left rear door trim handle cover plate to the left rear door trim panel assembly.

- 6 Install rear left door power window regulator assembly
- 7 Connect the negative cable of battery.

12.9.2.23 Replacement of tailgate lower interior trim panel assembly

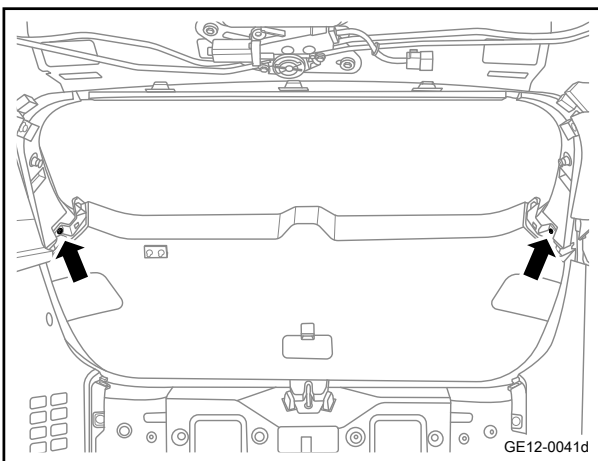
Removal procedure

- 1 Remove the left and right upper interior trim panel of the tailgate. Refer to [Replacement of interior trim panel assembly at the upper left side of the tailgate](#)
- 2 Remove the tailgate handle box.
- 3 Remove the left and right fixing screws each of lower interior trim panel assembly of tailgate.
- 4 Pry off tailgate lower interior trim panel assembly



Installation procedure

- 1 Move the tailgate lower trim panel assembly to the mounting position.
- 2 Install the left and right fixing screws each of lower interior trim panel assembly of tailgate.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

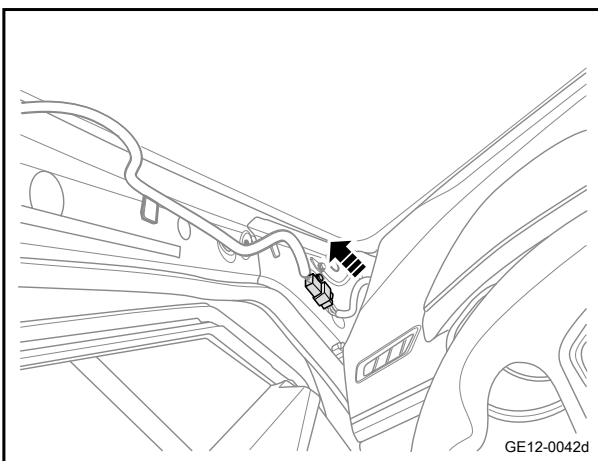


- 3 Install the tailgate handle box.
- 4 Install the upper interior trim panel assembly of left and right side of tailgate.

12.9.2.24 Replacement of Roof Interior Trim Panel Assembly

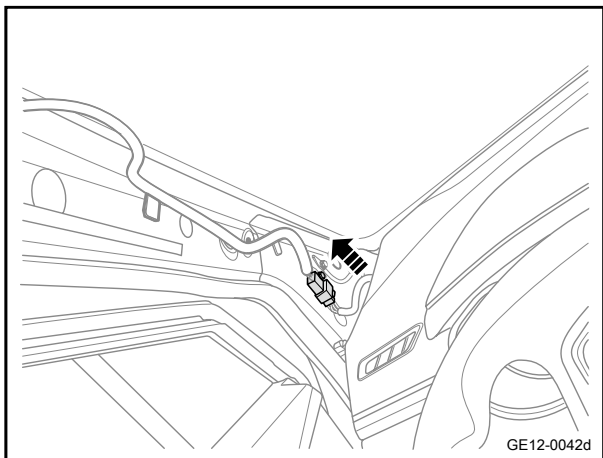
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left and right rear pillar upper trim panel assembly. Refer to [Replacement of Left Pillar A Upper Trim Panel Assembly](#)
- 3 Remove the left and right pillar B upper trim panel assembly. Refer to [Replacement of Left Pillar B Upper Trim Panel Assembly](#)
- 4 Remove the left and right pillar C upper trim panel assembly. Refer to [Replacement of Left Pillar C Upper Trim Panel Assembly](#)
- 5 Remove the sunshade and bracket Refer to [Replacement of Sunshade and Bracket \(Type I\)](#) Refer to [Replacement of Sunshade and Bracket \(Type II\)](#)
- 6 Remove the front reading lamp. Replace front reading lamp, refer to [Replacement of Front Reading Lamp](#)
- 7 Remove the rear reading lamp assembly. Refer to [Replacement of Rear Reading Lamp Assembly](#)
- 8 Remove the right front safety handle. Refer to [Replacement of Left Rear Safety Handle](#)
- 9 Remove the left and right rear safety handle. Refer to [Replacement of Left Rear Safety Handle](#)
- 10 Disconnect the roof harness connector and disconnect the harness from the FL pillar.



- 11 Remove the headliner inner trim panel assembly.
Caution
Two persons are required to work together.

Installation procedure



- 1 Move the headliner trim panel assembly to the mounting position.
- 2 Arrange the roof harness to the FL pillar and connect the harness connector.

- 3 Install the left and right rear safety handle.
- 4 Install the rear front safety handle.
- 5 Install the rear reading lamp assembly.
- 6 Install the front reading lamp.
- 7 Install the left and right sunshade assembly.
- 8 Install the left and right C-pillar upper trim panel assembly.
- 9 Install the left and right B pillar upper trim panel assembly.
- 10 Install the left and right A-pillar upper trim panel assembly.
- 11 Connect the negative cable of battery.

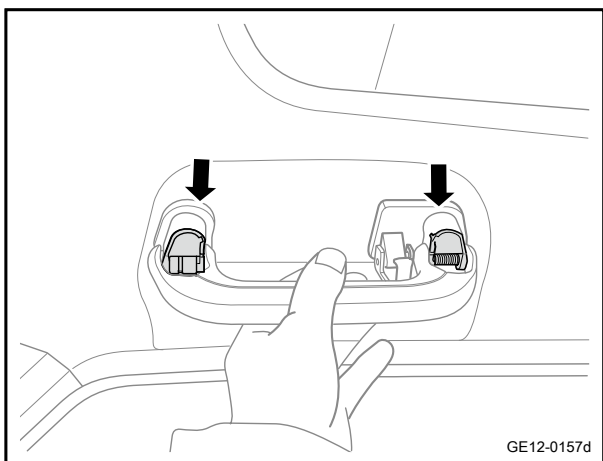
12.9.2.25 Replacement of left rear safety handle

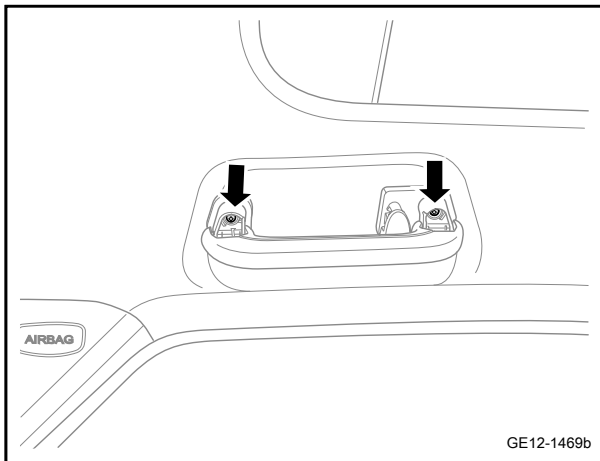
Removal procedure

Caution

Replacement at left and right sides are performed in the same way.

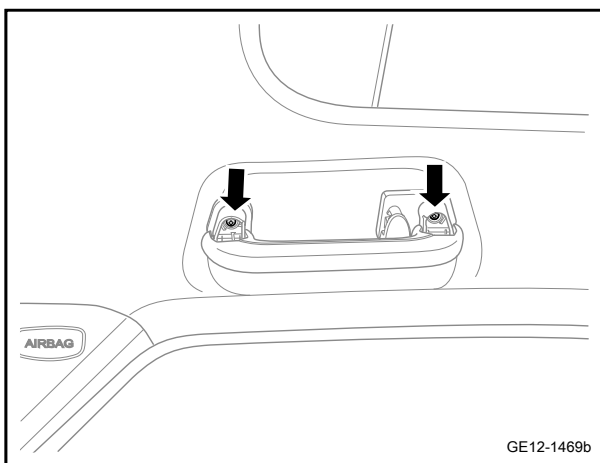
- 1 Open the screw cover of the rear left safety handle.



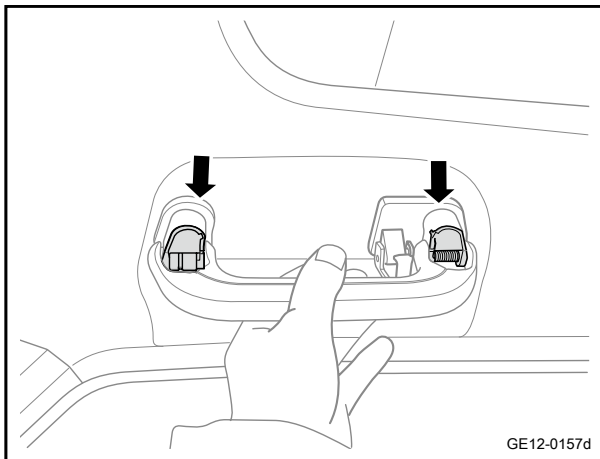


- 2 Remove 2 fixing screw in the left rear door safety handle.
- 3 Take off the left rear safety handle.

Installation procedure



- 1 Move the left rear safety handle to the installation position.
- 2 Install the 2 fixing screws of the left rear safety handle.
Torque: 4N·m (metric system) 3lb-ft (Imperial system)



- 3 Install the screw trim cover at the left rear safety handle.

12.9.2.26 Replacement of Sunshade and Bracket(Type I)

Removal procedure

Caution

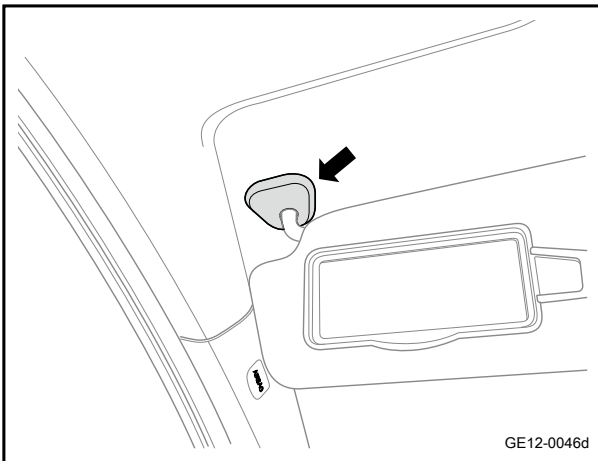
Replacement at left and right sides are performed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

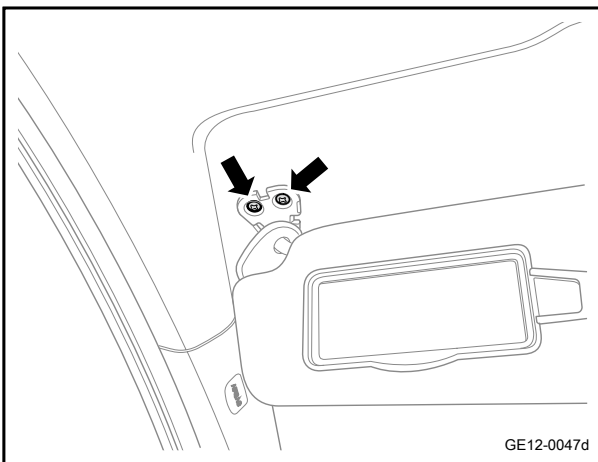
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

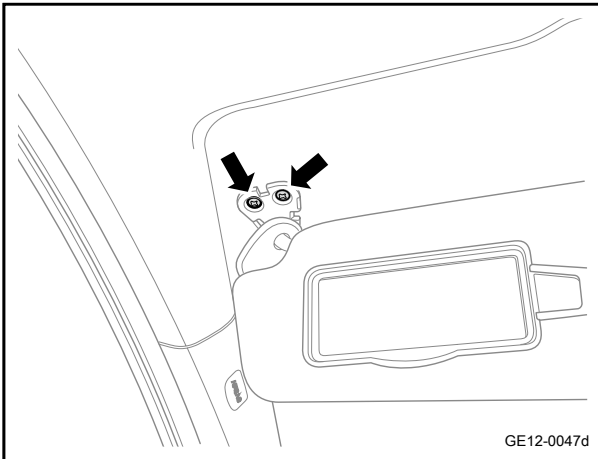
- 2 Pry off the left sunshade screw trim cover.



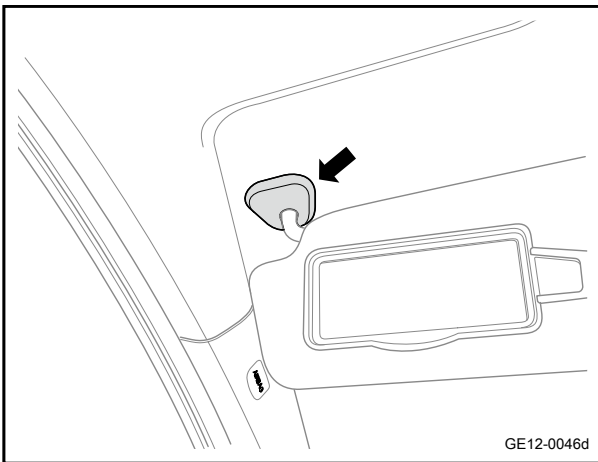
- 3 Remove the 2 set screws from the left sunshade.
- 4 Take off the left sunshade assembly.



Installation procedure



- 1 Move the left sunshade assembly to the installation position.
- 3 Install the 2 set screws on the left sunshade.
Torque: 4N·m (metric system) 2.9 lb-ft (British system)



- 4 Install the left sunshade screw trim cover.

- 5 Connect the negative cable of battery.

12.9.2.27 Replacement of Sunshade and Bracket(Type II)

Removal procedure

Caution

Replacement at left and right sides are performed in the same way.

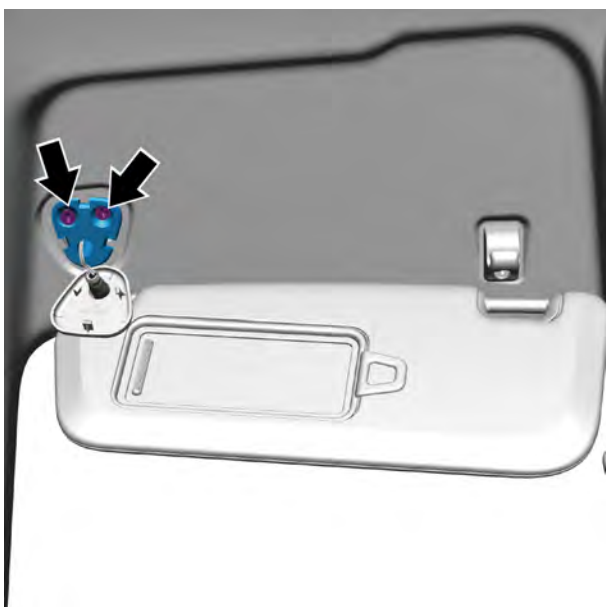
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"



2 Pry off the left sunshade screw cover.



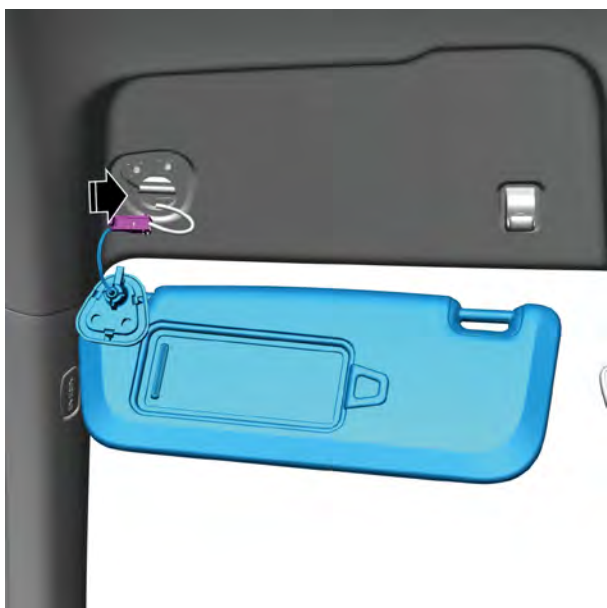
3 Remove the 2 fixing screws from the left sunshade.



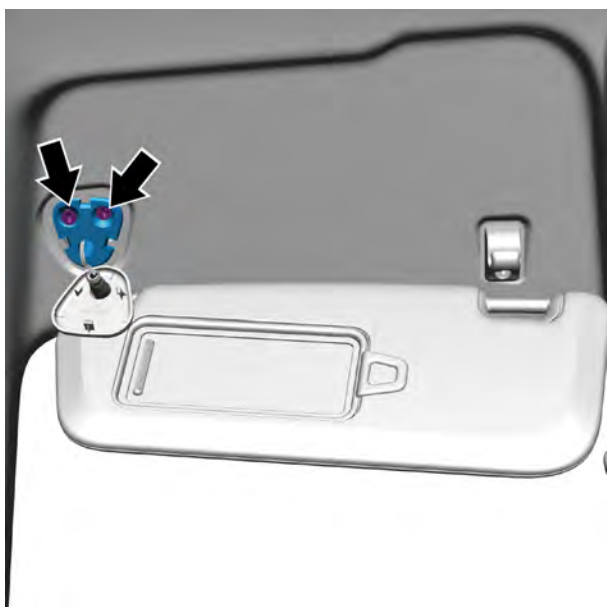
- 4 Pull out the sunshade harness. Disconnect the harness connector 1.

- 5 Take off the left sunshade assembly.

Installation procedure



- 1 Connect the sunshade harness connector and plug the excess harness into the headliner.



- 2 Install the 2 set screws on the left sunshade.
Torque: 4 N·m (metric system) 2.9 lb-ft (British system)



- 3 Install the sunshade screw cover.

- 4 Connect the negative cable of battery.

12.9.2.28 Replacement of Driver's Left Footrest

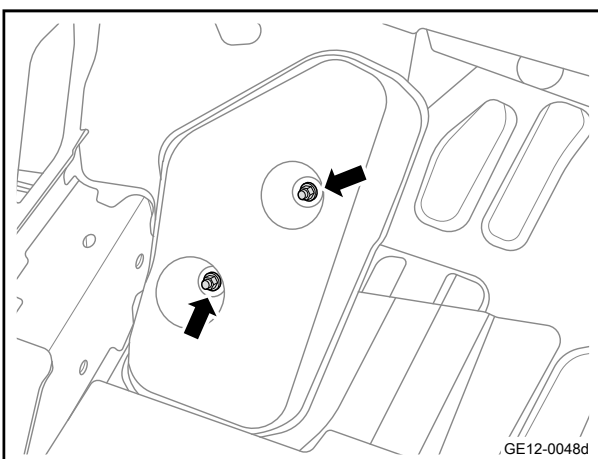
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable Negative](#)

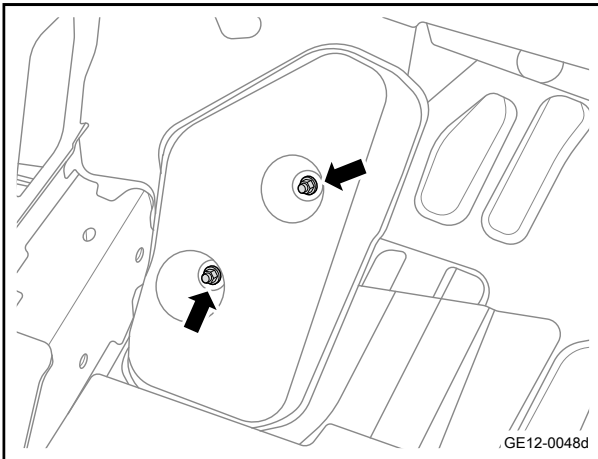
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the carpet assembly. Refer to [Replacement of Carpet Assembly](#)
- 3 Remove the 2 fixing nuts of the driver's left footrest.
- 4 Take off the driver's left footrest.



Installation procedure



- 1 Move the driver's left footrest to the installation position.
- 2 Install the 2 fixing nuts of the driver left footrest.
Torque: 10N·m (metric system) 7.4lb-ft (Imperial system)

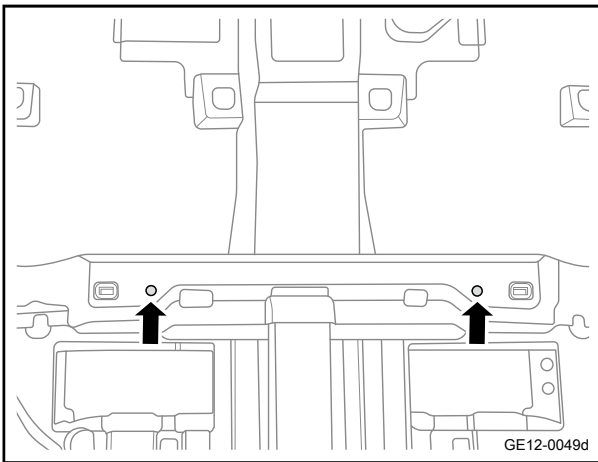
- 3 Install the carpet assembly.
- 4 Connect the negative cable of battery.

12.9.2.29 Replacement of Carpet Assembly

Removal procedure

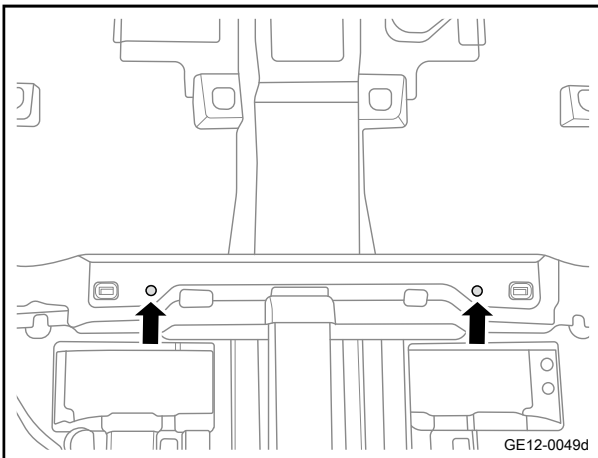
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable Negative](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left front seat assembly. Refer to [Replacement of Left Front Seat Assembly](#)
- 3 Remove the right front seat assembly. Refer to [Replacement of Right Front Seat Assembly](#)
- 4 Remove the rear seat cushion. Refer to [Replacement of Rear Seat Cushion](#)
- 5 Remove Wireless charging module. Refer to [Replacement of Wireless Charging Module](#)
- 6 Remove the auxiliary fascia console left front baffle plate. Refer to [Replacement of Auxiliary Fascia Console Left Front Baffle Plate Assembly](#)
- 7 Remove the auxiliary fascia console front vent hose assembly. Refer to [Replacement of Auxiliary Fascia Console Front Vent Hose Assembly](#)
- 8 Remove the middle trim plate assembly of the auxiliary fascia console. Refer to [Replacement of Auxiliary Fascia Console Body Assembly](#)
- 9 Remove the left and right front rocker panel trim plate assembly. Refer to [Replacement of Left Front Rocker Panel Trim Plate Assembly](#)

- 10 Remove the left and right rear rocker panel trim plate assembly. Refer to [Replacement of Left Rear Rocker Panel Trim Plate Assembly](#)
- 11 Remove the left and right pillar A lower trim panel assembly. Refer to [Replacement of Left Pillar A Lower Trim Panel Assembly](#)
- 12 Remove the left and right pillar B lower trim panel assembly. Refer to [Replacement of Left Pillar B Lower Trim Panel Assembly](#)
- 13 Remove the front left seatbelt assembly. Refer to [Replacement of Front Left Seatbelt Assembly](#)
- 14 Remove the 2 fixing clips at the rear of the carpet.
- 15 Take off the carpet.



Installation procedure

- 1 Move the carpet assembly to the installation position.
- 2 Install the 2 fixing clips at the rear of the carpet.



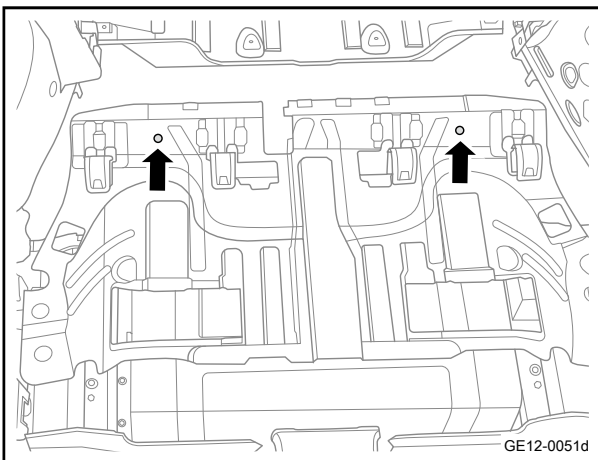
- 3 Install the front left seatbelt assembly.
- 4 Install the left and right pillar B lower trim panel assembly.
- 5 Install the left and right pillar A lower trim panel assembly.
- 6 Install the left and right rear rocker panel trim plate assembly.
- 7 Install the left and right front rocker panel trim plate assembly.

- 8 Install the middle trim panel assembly of the auxiliary fascia console.
- 9 Install the auxiliary fascia console front vent duct assembly.
- 10 Install the auxiliary fascia console left front baffle plate.
- 11 Install wireless charging module.
- 12 Install the rear seat cushion.
- 13 Install the right front seat assembly.
- 14 Install the left front seat assembly.
- 15 Connect the negative cable of battery.

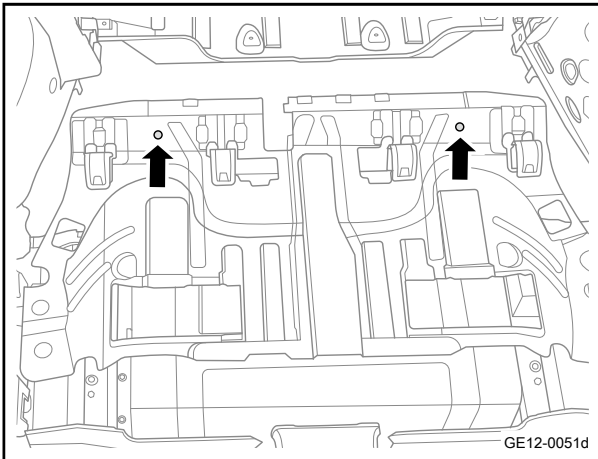
12.9.2.30 Replacement of Rear Floor Carpet

Removal procedure

- 1 Remove the trunk carpet left and right mounting liner. Refer to [Replacement of Left Mounting Liner of Trunk Carpet](#)
- 2 Remove the pillar C lower trim panel. Refer to [Replacement of Pillar C Lower Trim Panel Assembly](#)
- 3 Take off the rear middle and right buckle assembly. Refer to [Replacement of rear middle and right buckle assembly](#)
- 4 Remove the 2 fixing clips at the rear floor carpet.
- 5 Remove the rear floor carpet.



Installation procedure



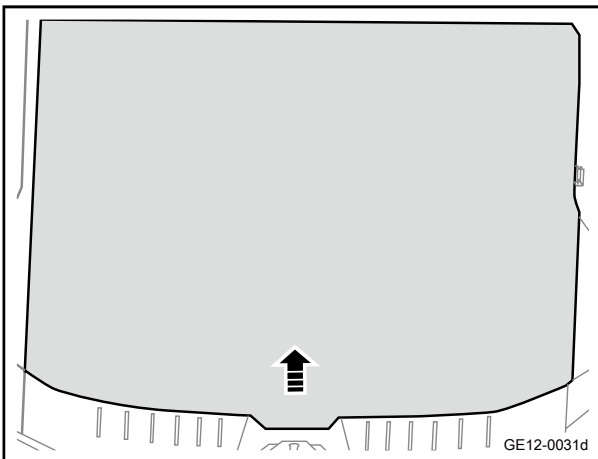
- 1 Move the rear floor carpet to the installation position.
- 2 Install the 2 fixing clips at the rear floor carpet.

- 3 Install the C-pillar lower trim panel.
- 4 Take off the rear middle and right lock buckle assembly.
- 5 Install the trunk carpet left and right mounting liner.

12.9.2.31 Replacement of trunk carpet assembly

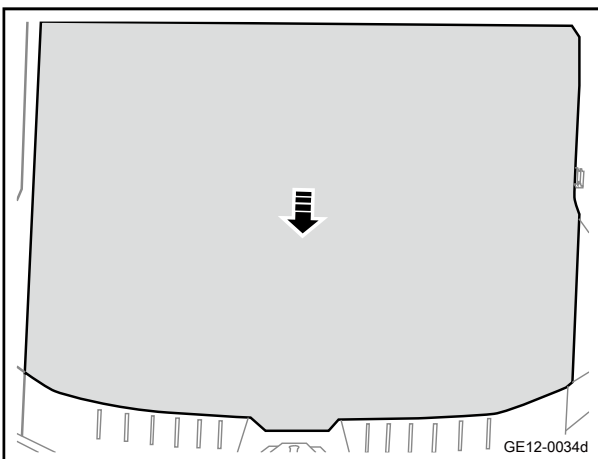
Removal procedure

- 1 Open the tailgate.
- 2 Take off the trunk carpet assembly.



Installation procedure

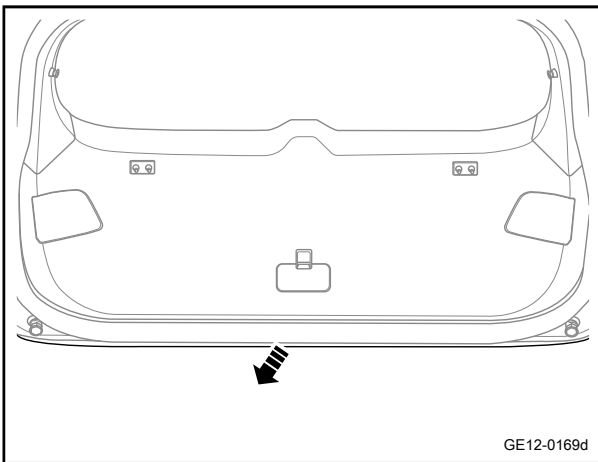
- 1 Move the trunk carpet assembly to the installation position.
- 2 Install the trunk carpet assembly.



12.9.2.32 Replacement of tailgate sealing strip

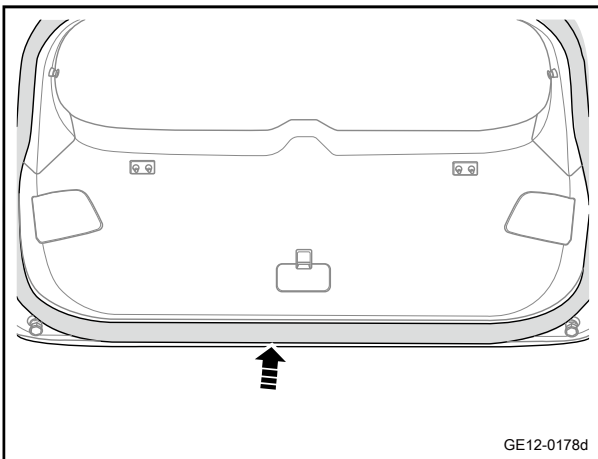
Removal procedure

- 1 Open the tailgate.
- 2 Remove the tailgate sealing strip.



Installation procedure

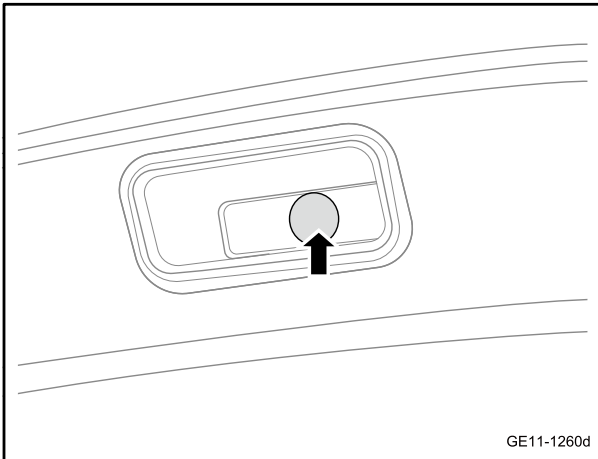
- 1 Move the tailgate sealing strip to the installation position.
- 2 Install the tailgate sealing strip



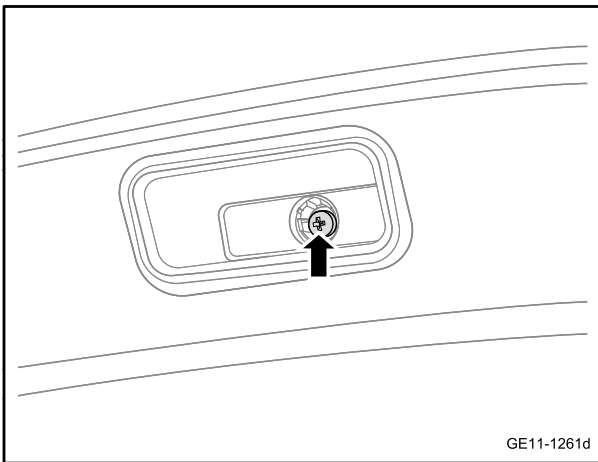
- 3 Close the tailgate.

12.9.2.33 Replacement of tailgate handle box

Removal procedure



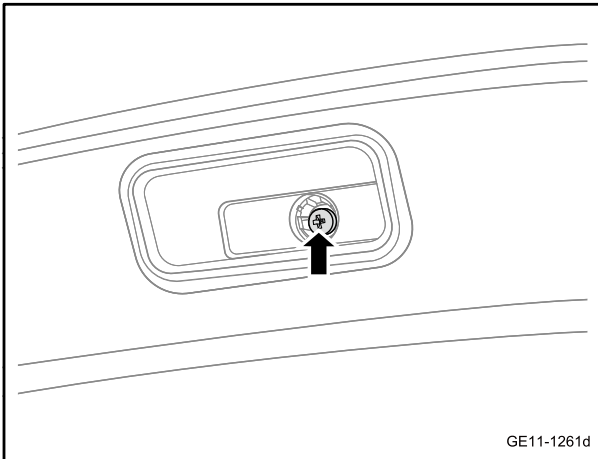
1 Pry off tailgate handle box.



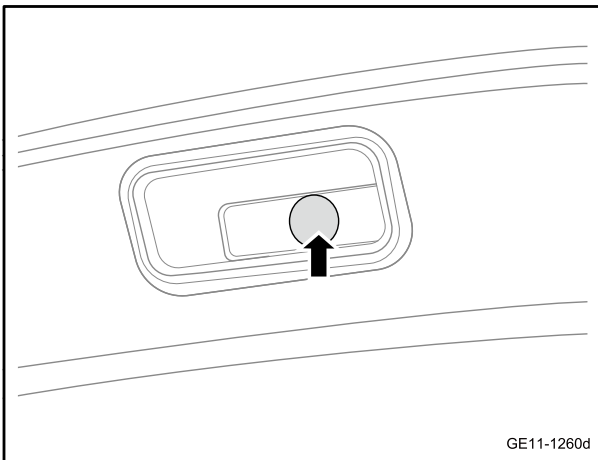
2 Remove one fixing screw of tailgate handle box.

3 Release tailgate handle box.

Installation procedure



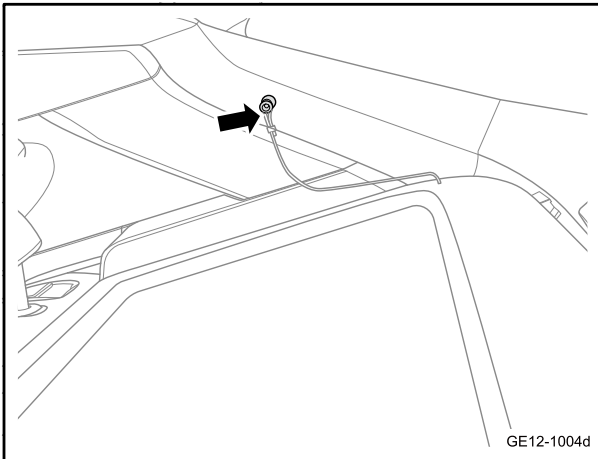
- 1 Move the tailgate handle box to the installation position.
- 2 Install one fixing bolt of handle box on tailgate.
Torque: 4 N·m (metric system) 3 lb-ft (British system)



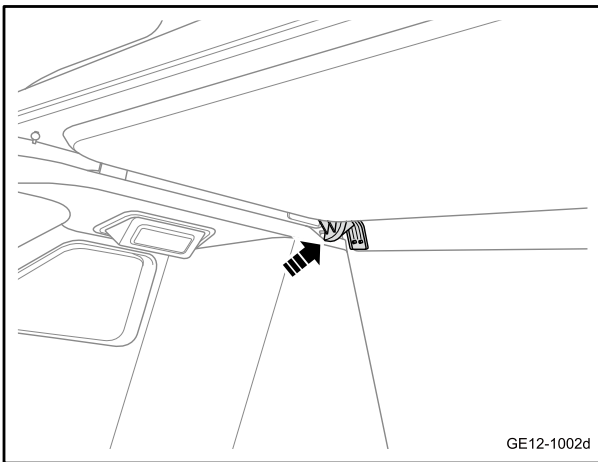
- 3 Install blanking cover of handle box on tailgate.

12.9.2.34 Replacement of trim panel assembly of trunk baffle plate

Removal procedure

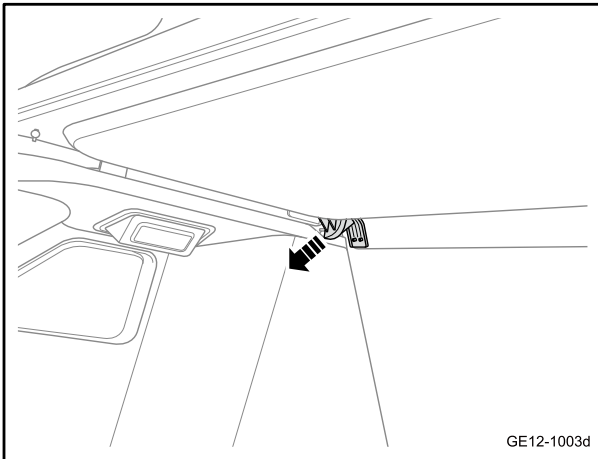


- 1 Remove the left and right trunk baffle plate trim panel assembly pull ropes.

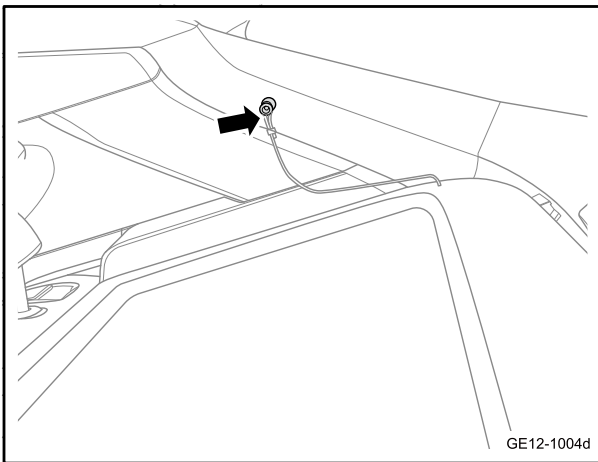


- 2 Remove the trunk baffle plate trim panel assembly

Installation procedure



- 1 Move the trunk baffle plate trim panel assembly to the installation position.



- 2 Install the left and right trunk baffle plate trim panel assembly pull ropes.

12.10 Exterior trim

12.10.1 Specification

12.10.1.1 Fastener specifications

Fastener name	Specification	Torque range
		Metric system (N.m)
Fixing screws for connecting the front engine compartment and the front fender liner	ST4.8×16	1-2
Front engine compartment bottom shield fixing bolt	ST4.8×16	1-2
Battery bottom shield fixing bolts at both sides	M6×16	5-7
Radiator up-part air deflector retaining bolt	M6×25	5-7
Left front fender liner fixing bolt	ST4.8×16	1-2
Left rear fender liner fixing bolt	ST4.8×16	1-2
Left outer door sill lower trim panel assembly fixing screw	ST4.8×16	1-2
Power wire harness cover plate fixing bolts	M6×20	5-7
Trunk bottom shield fixing bolt	M6×16	5-7
Fixing screws for fixing the trunk bottom shield and the rear bumper	ST4.8×16	1-2
Fixing screws for fixing the trunk bottom shield with the rear fender liner	ST4.8×16	1-2
Trunk bottom shield fixing nut	M6	5-7
Fixing screws connecting the front bumper upper body and the front number plate.	ST4.8×16	1-2
Fixing screw for connecting the spoiler and tailgate assembly	M6×12	5-7
Spoiler fixing screws at left and right sides	ST4.8×16	1-2
Fixing nut for the spoiler assembly	M6	5-7
Retaining screw of the retro-reflector	ST4.8×16	1.3-1.7

12.10.2 Removing and installing

12.10.2.1 Replacement of front logo

Refer to [Replacement of Front Middle Position Lamp](#)

12.10.2.2 Replacement of Front Number Plate Mounting Plate

Removal procedure

Caution

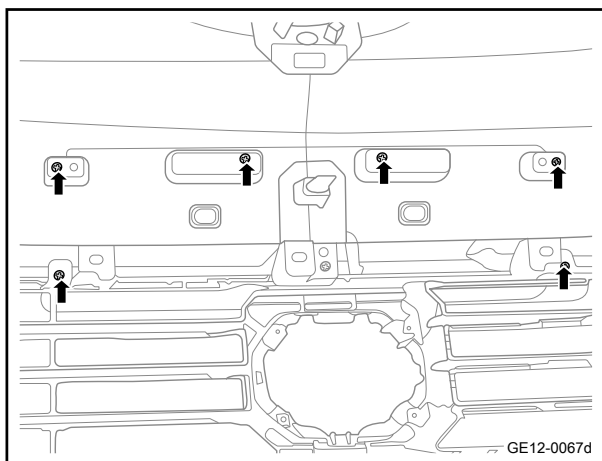
Wrap the screwdriver blade with adhesive tape to protect the parts.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

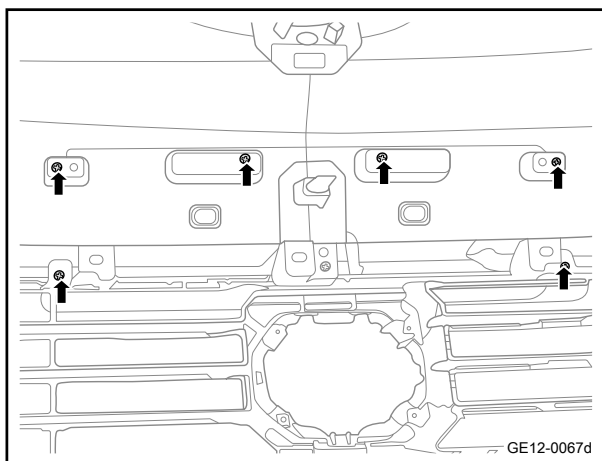
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the front bumper assembly. Refer to [Replacement of Front Bumper Assembly](#)
- 3 Remove the 6 fixing screws connecting the front number plate mounting plate with the front bumper upper body.
- 4 Use a flat-blade screwdriver to pry off the front number plate mounting plate.



Installation procedure

- 1 Move the front number plate mounting plate to the installation position.
- 2 Install the 6 fixing screws connecting the front number plate mounting plate with the front bumper upper body.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

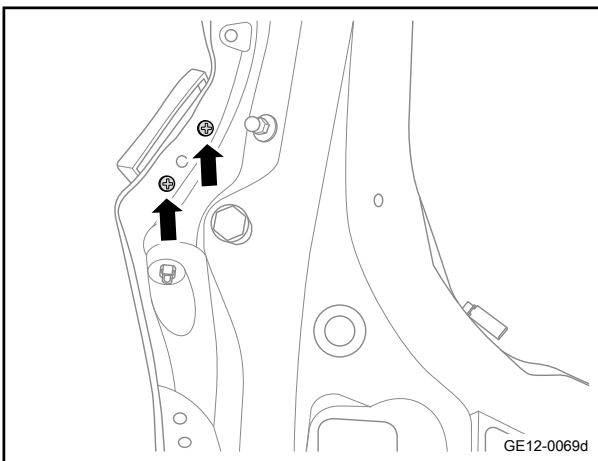
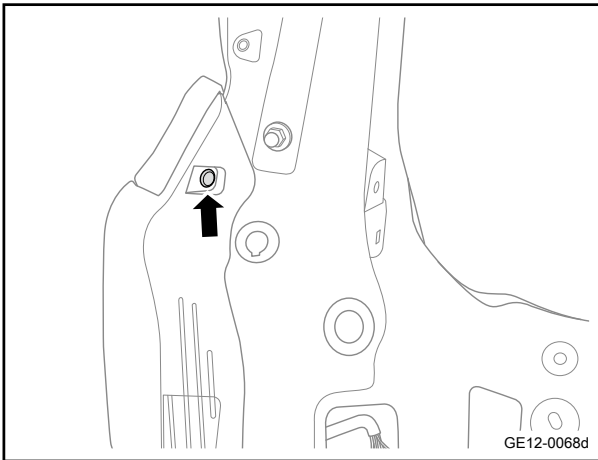


- 3 Install the front bumper assembly.
- 4 Connect the negative cable of battery.

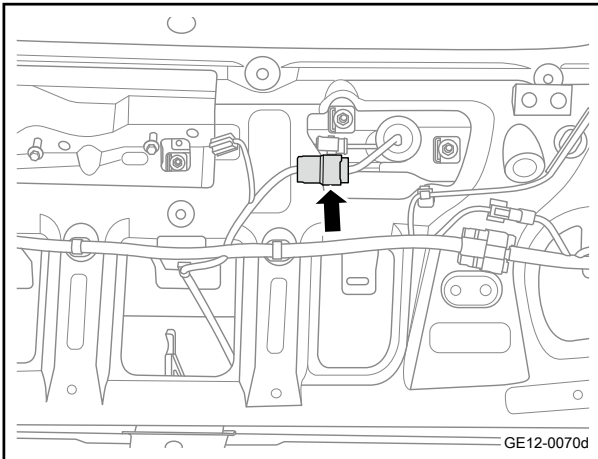
12.10.2.3 Replacement of exterior trim panel of tailgate

Removal procedure

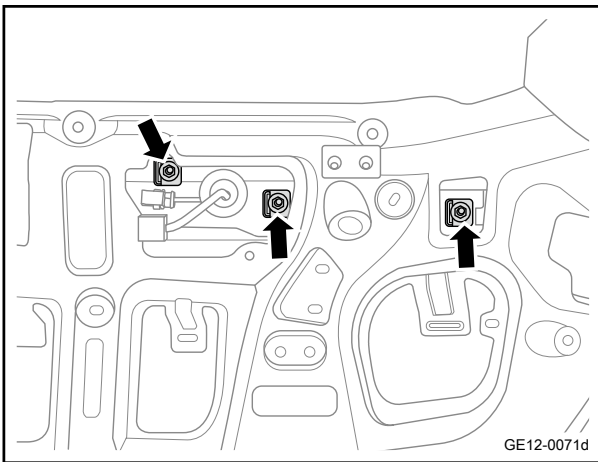
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
Warning
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"
- 2 Remove the left and right tailgate combination lights. Refer to [Replacement of tailgate left combination lights](#)
- 3 Remove 360 panoramic rear parking assist camera. Refer to [Replacement of 360 panoramic rear parking assist camera](#)
- 4 Remove the middle upper interior trim panel of the tailgate. Refer to [Replacement of interior trim panel assembly at the upper middle side of the tailgate](#)
- 5 Remove the 1 fixing clip on each side of the tailgate outer trim panel.



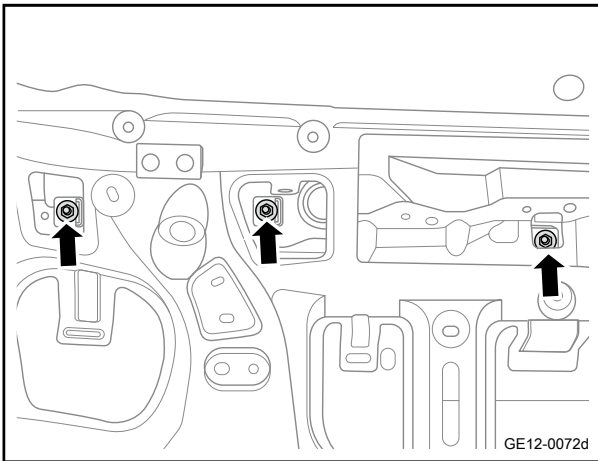
- 6 Remove the 2 fixing screws of the each side of tailgate outer trim panel.



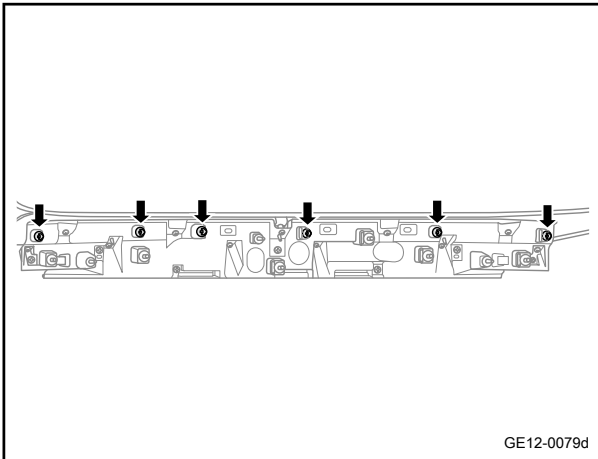
- 7 Disconnect the rear number plate lamp harness connector.



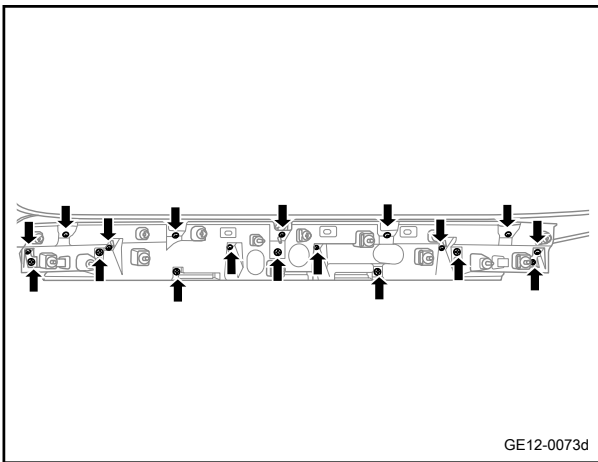
- 8 Remove the 3 fixing nuts at left side of the rear number plate lamp mounting plate.



- 9 Remove the 3 fixing nuts at right side of the rear number plate lamp mounting plate.



- 10 Use the appropriate tools to pry 6 fixing clips of assembly of trim panel of tailgate, and take down rear number plate lamp c/w outer trim panel and through lamp of tailgate.



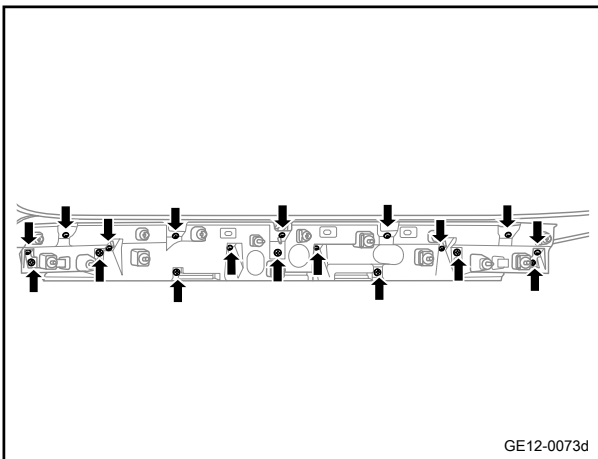
- 11 Remove the 18 fixing screws of rear number plate lamp mounting plate.

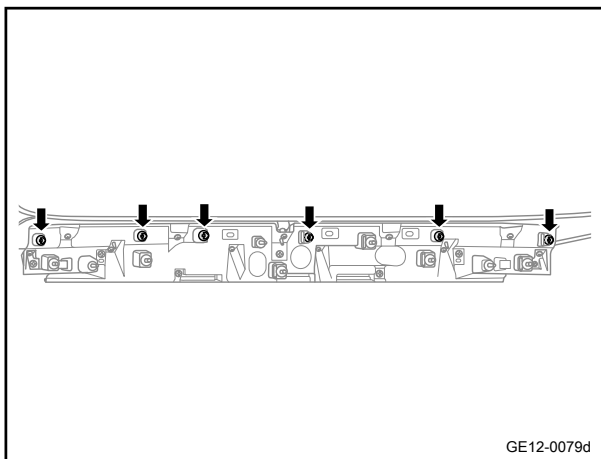
- 12 Separate the rear number plate lamp mounting plate, tailgate exterior trim panel and tailgate through lamp.

Installation procedure

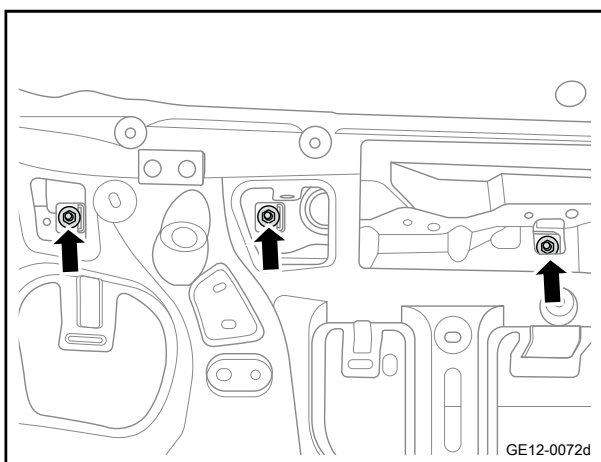
- 1 Move the tailgate exterior trim panel and tailgate through lamp to the mounting position.
- 2 Install the 18 fixing screws of the tailgate rear number plate lamp mounting plate.

Torque: 1.5N.m (metric system) 1.1lb-ft (Imperial system)

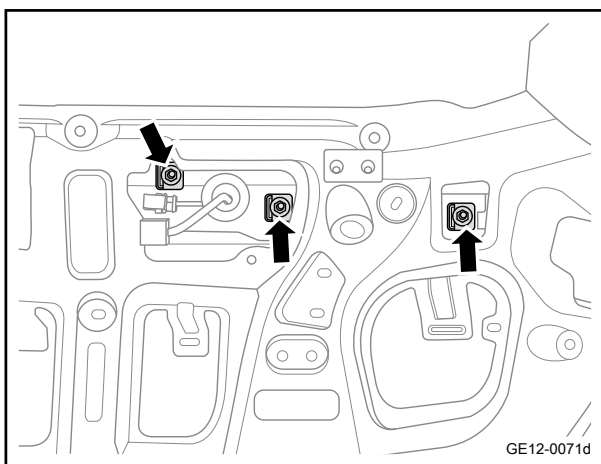




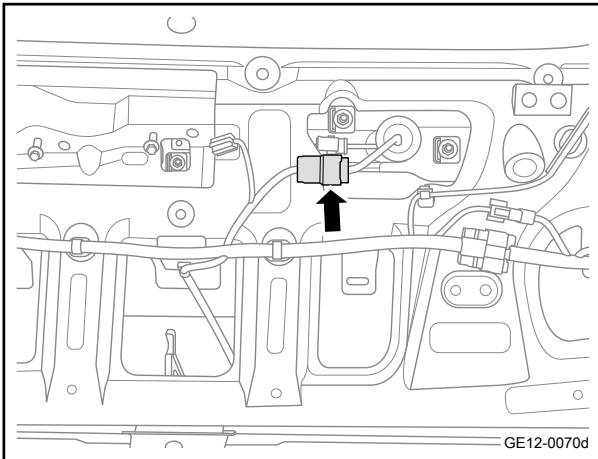
- 3 Move the rear number plate lamp c/w tailgate outer trim panel and tailgate through lamp assembly to the installation position, and install the 6 fixing clips in place.



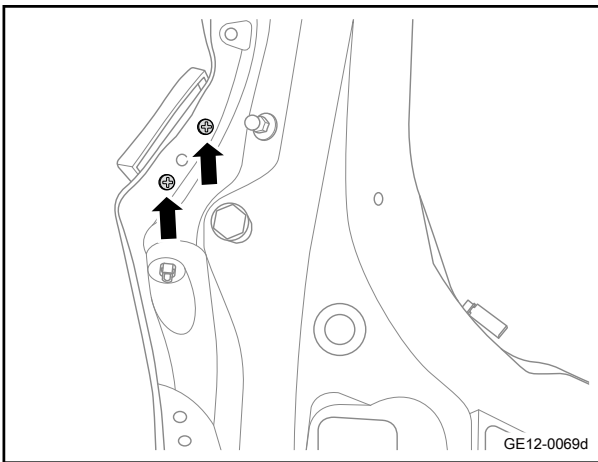
- 4 Install the 3 fixing nuts connecting the tailgate rear number plate lamp mounting plate.
Torque: 4N.m (metric system) 3lb-ft (Imperial system)



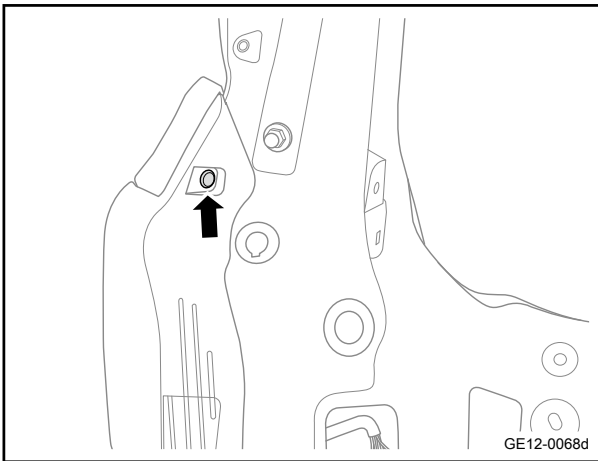
- 5 Install the 3 fixing nuts connecting the rear number plate lamp mounting plate.
Torque: 4N.m (metric system) 3lb-ft (Imperial system)



- 6 Connect harness connector of rear number plate lamp.



- 7 Install 2 fixing screws of the outer trim panel of tailgate.
Torque: 1.5N.m (metric system) 1.1lb-ft (Imperial system)



- 8 Install the 1 fixing clip on each side of the tailgate outer trim panel.

- 9 Install the upper middle interior trim panel assembly of tailgate.
10 Install 360 panoramic rear parking assist camera.
11 Install the left and right tailgate combination lights.
12 Close the tailgate.
13 Connect the negative cable of battery.

12.10.2.4 Replacement of Rear Number Lamp Mounting Plate

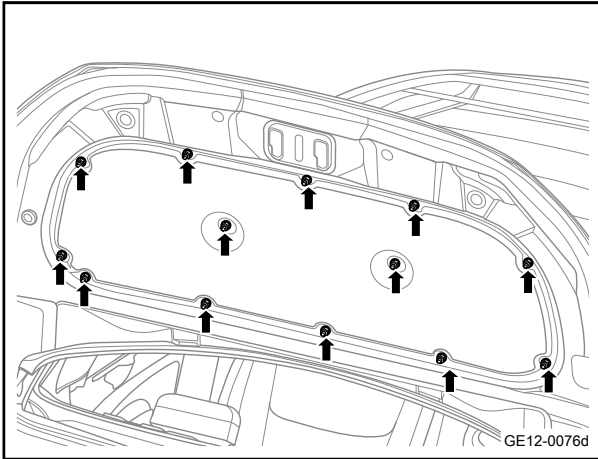
Removal procedure

Refer to [Replacement of Backdoor Outer Trim Panel](#)

12.10.2.5 Replacement of sound insulating pad of front engine compartment

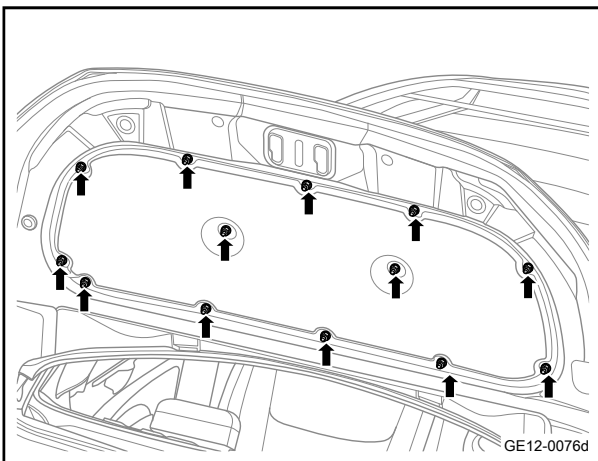
Removal procedure

- 1 Open the front engine compartment cover.
- 2 Remove the 13 fixing clips of the front engine compartment cover sound insulating pad.
- 3 Take off the front engine compartment sound insulating pad.



Installation procedure

- 1 Move the front engine compartment sound insulating pad to the mounting position.
- 2 Install 13 retaining clips of front engine compartment sound insulating pad.



- 3 Close the front engine compartment cover.

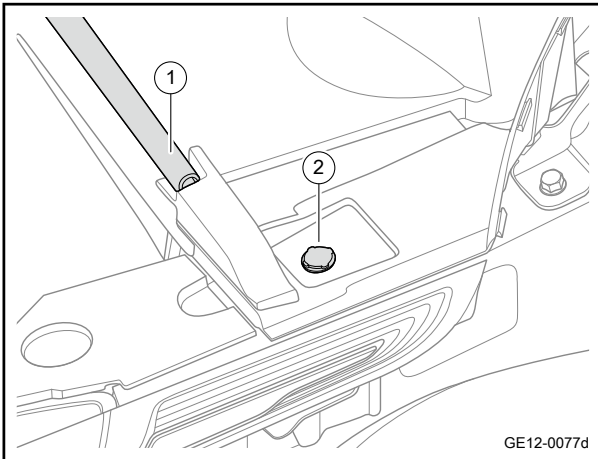
12.10.2.6 Replacement of Upper Trim Panel of the Left Fender

Removal procedure

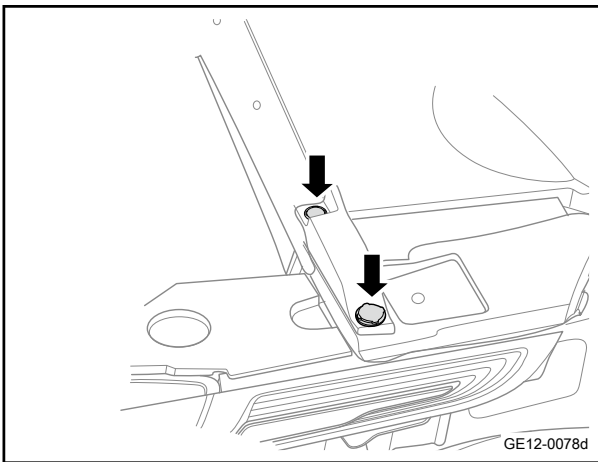
Caution

Replacement at left and right sides are performed in the same way.

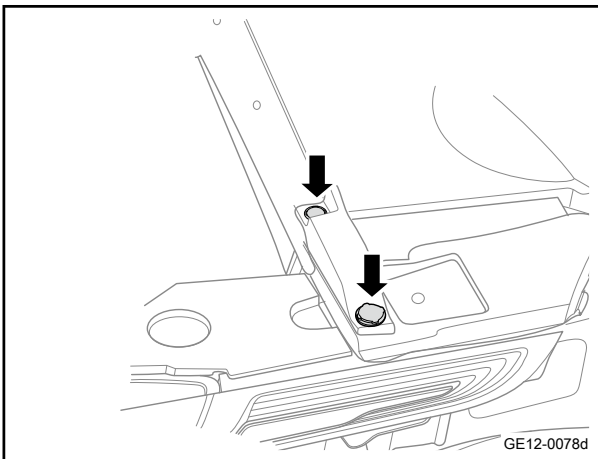
- 1 Open the front engine compartment cover.



- 2 Remove 1 fixing clip 2 of the left fender trim panel.
- 3 Remove sealing strip 1 of front engine compartment cover.

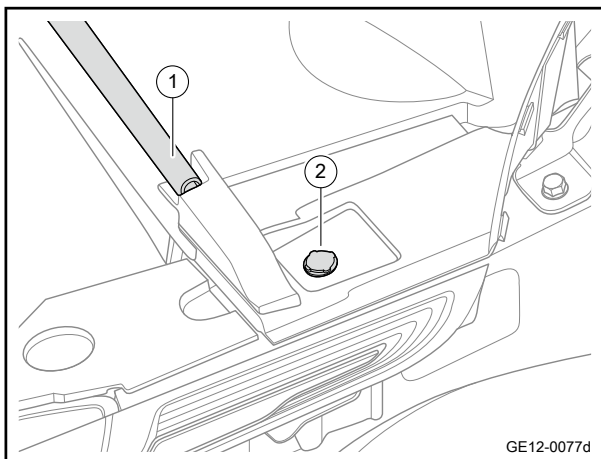


- 4 Remove the 2 fixing clips of the vent cover plate.
- 5 Left stop block of vent cover plate is removed.
- 6 Left fender upper trim panel is removed.



Installation procedure

- 1 Move the left fender upper trim panel to the installation position.
- 2 Install the 2 fixing clips of the left stopper of the ventilation cover plate.



- 3 Install sealing strip 1 of front engine compartment cover.
- 4 Install 1 fixing clip 2 of the left fender upper trim panel.

- 5 Close the front engine compartment cover.

12.10.2.7 Replacement of ventilation cover assembly

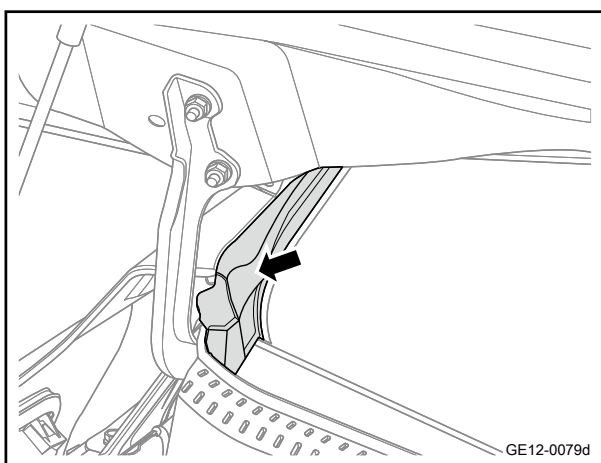
Removal procedure

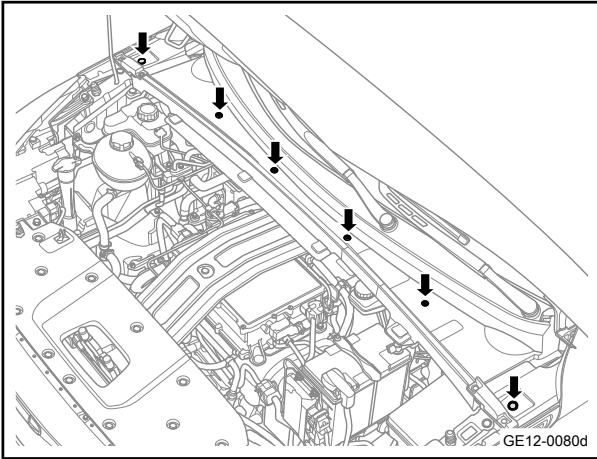
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

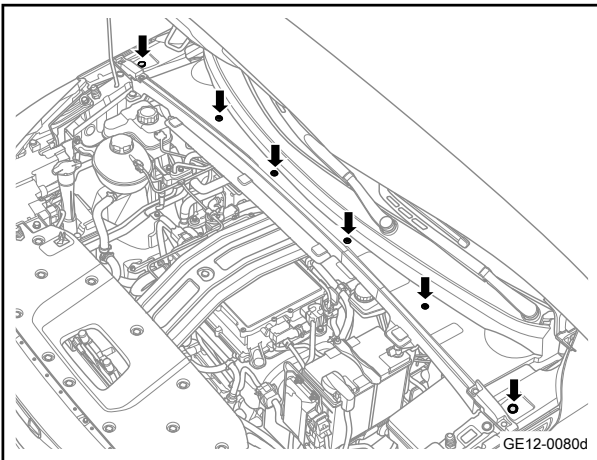
- 2 Remove the front wiper arms. Refer to [Replacement of Wiper Motor and Connecting Rod Assembly](#)
- 3 Remove the upper trim panel of the left and right fender. Refer to [Replacement of Upper Trim Panel of the Left Fender](#)
- 4 Remove the left and right corner trims of vent cover plate.



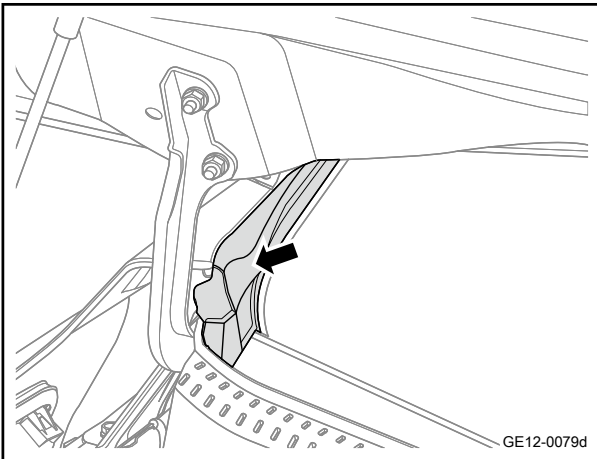


- 5 Remove the 6 fixing bolts of the ventilation cover plate.
- 6 Remove the vent cover plate assembly.

Installation procedure



- 1 Move the ventilation cover plate to the installation position.
- 2 Install the 6 fixing screws of the ventilation cover plate.
Torque: 1.5N·m (metric system) 1.1lb·ft (Imperial system)



- 3 Install the left and right corner trims of the ventilation cover plate.

- 4 Install the upper trim panel of the left and right fenders.
- 5 Install the front wiper arm.
- 6 Connect the negative cable of battery.

12.10.2.8 Replace the spoiler assembly

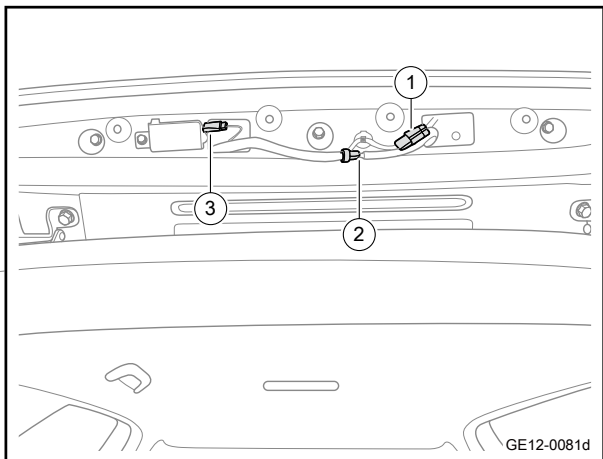
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

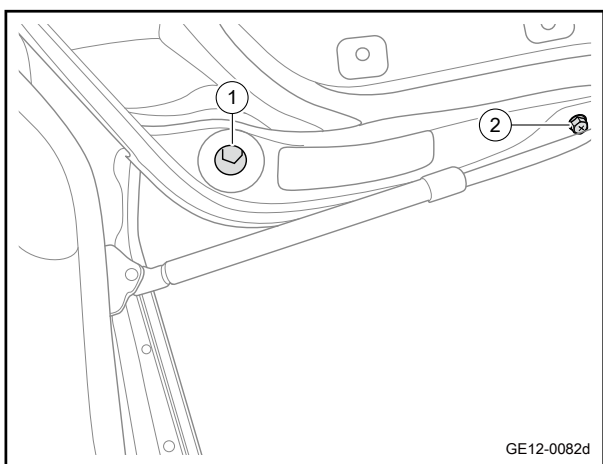
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

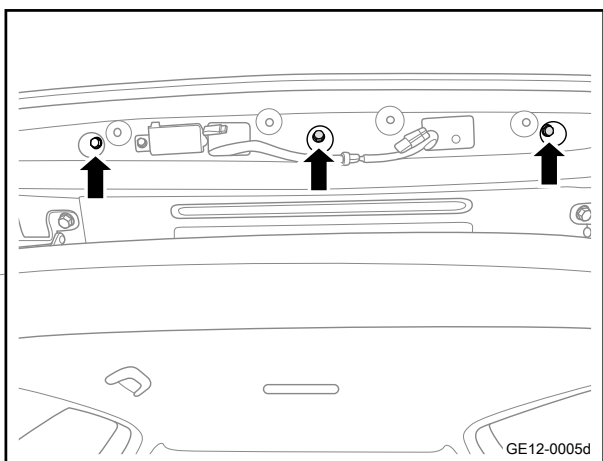
- 2 Remove the middle upper interior trim panel of the tailgate. Refer to [Replacement of interior trim panel assembly at the upper middle side of the tailgate](#)
- 3 Disconnect the rear wiper water spray pipe 2.
- 4 Disconnect the antenna amplifier harness connector 3.
- 5 Disconnect the high-mounted stop light harness connector 1.



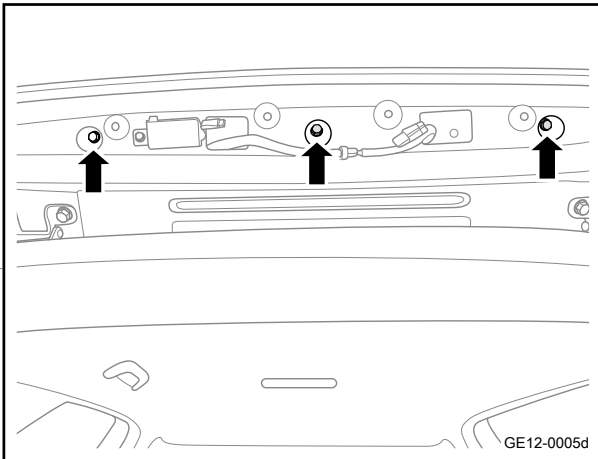
- 6 Remove the 1 fixing bolt 1 on each side of the spoiler.
- 7 Remove 1 fixing screw on each side of the spoiler.



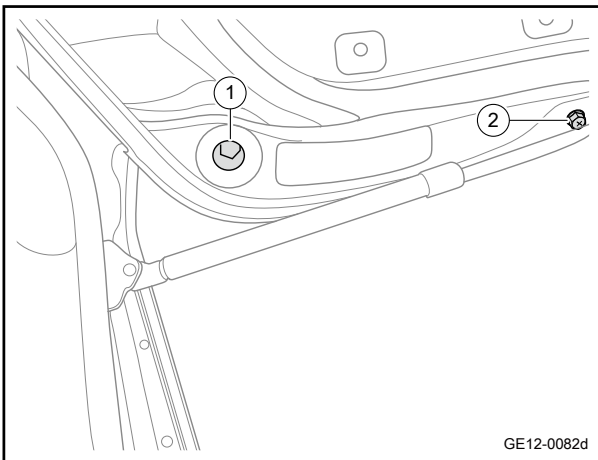
- 8 Remove 3 fixing nuts of the spoiler.
- 9 Take off the spoiler assembly.



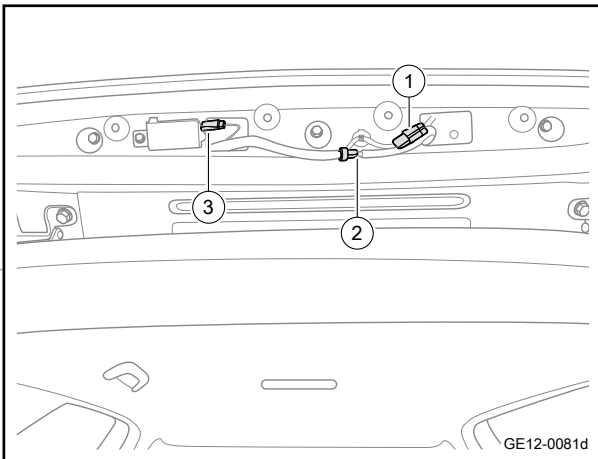
Installation procedure



- 1 Move the spoiler assembly to the installation position.
- 2 Install 3 fixing nuts of the spoiler.
Torque: 6N.m (metric system) 4.4lb-ft (Imperial system)



- 3 Install 1 fixing screw 2 on each side of the spoiler.
Torque: 1.5N.m (metric system) 1.1lb-ft (Imperial system)
- 4 Install the 1 fixing bolt 1 on each side of the spoiler.
Torque: 6N.m (metric system) 4.4lb-ft (Imperial system)



- 5 Connect high-mounted stop light harness connector 1.
- 6 Connect harness connector 3 of antenna amplifier.
- 7 Install the rear wiper spray pipe 2.

- 8 Install the upper middle interior trim panel assembly of tailgate.
- 9 Connect the negative cable of battery.

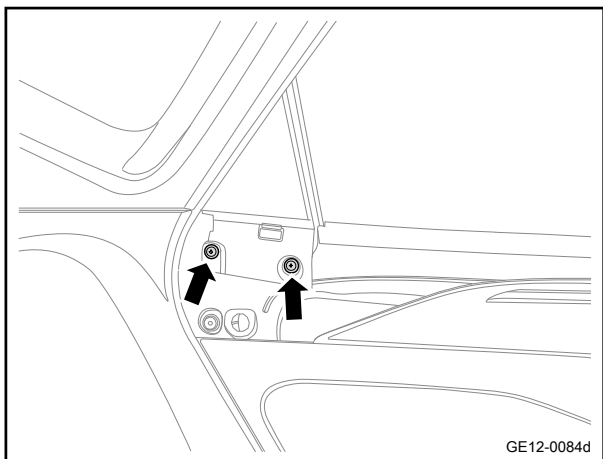
12.10.2.9 Replacement of Rear Door Triangle Exterior Trim Panel

Removal procedure

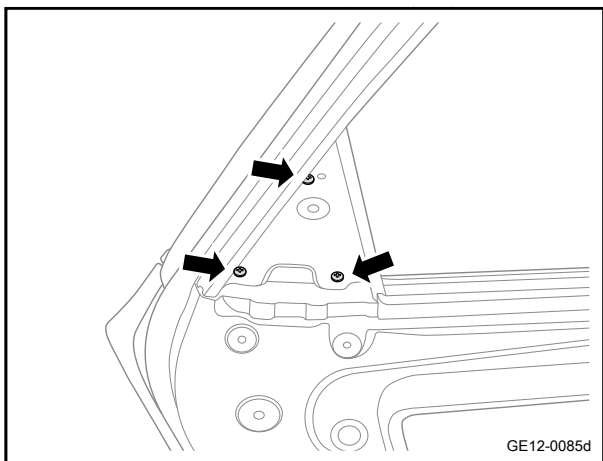
Caution

Replacement at left and right sides are performed in the same way.

- 1 Remove upper trim panel interior trim of rear door LH
Refer to [Replacement of Left Rear Door Interior Trim Panel Assembly](#)
- 2 Remove the 2 fixing clips on the left rear door interior trim panel.
- 3 Take off the left rear door interior trim panel.

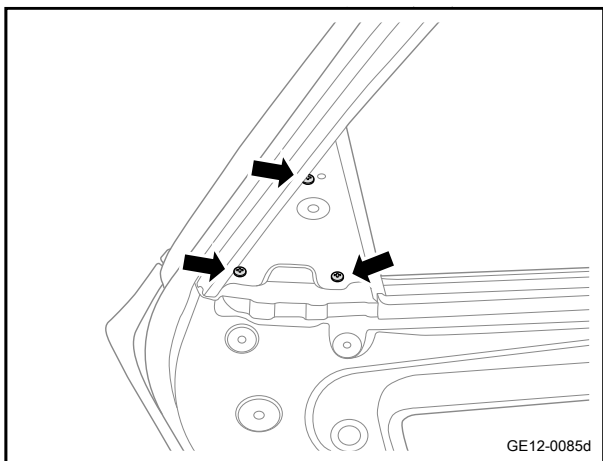


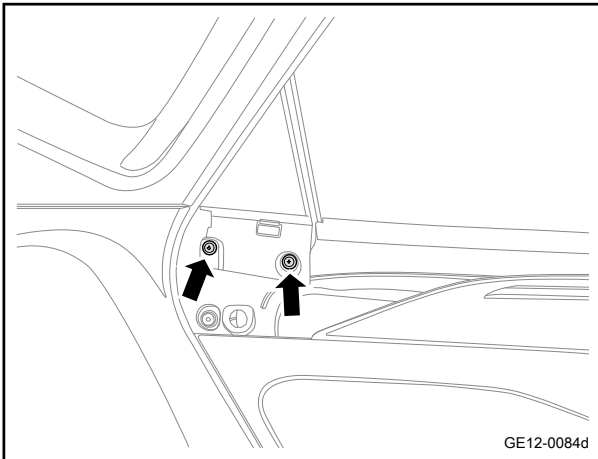
- 4 Install the 3 fixing screws of the left rear door triangle exterior trim panel.
- 5 Install the left rear door triangle exterior trim panel.



Installation procedure

- 1 Move the left rear triangle exterior trim panel to the mounting position.
- 2 Install the 3 fixing screws of the left rear door triangle exterior trim panel.
Torque: 2N·m (metric system) 1.5lb-ft (Imperial system)





- 3 Install 2 fixing clips of assembly of interior trim panel of left rear door.

- 4 Install upper interior trim panel of left rear door.

12.10.2.10 Replacement of Roof Left Trim Strip

Removal procedure

Caution

Replacement at left and right sides are performed in the same way.

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

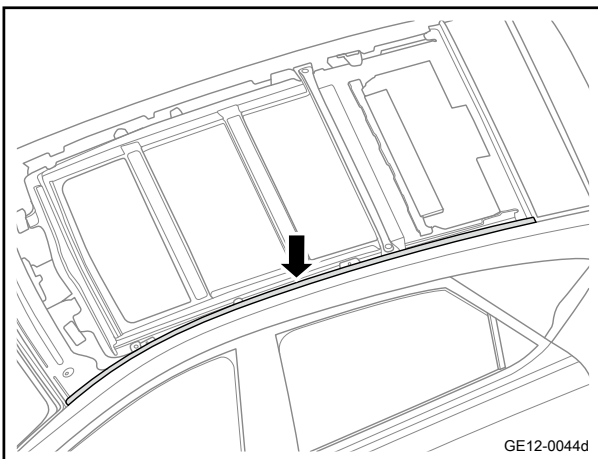
Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

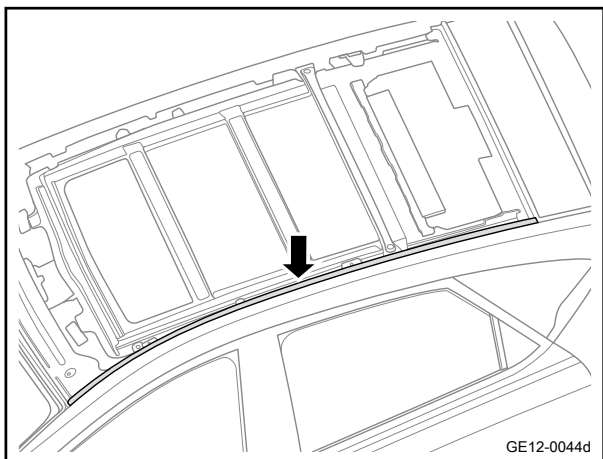
- 2 Remove the panoramic glass. Refer to [Replacement of sunroof rear glass assembly](#)
- 3 Pry off the roof trim strip.

Caution

Wrap the screwdriver blade with adhesive tape to protect the parts.



Installation procedure



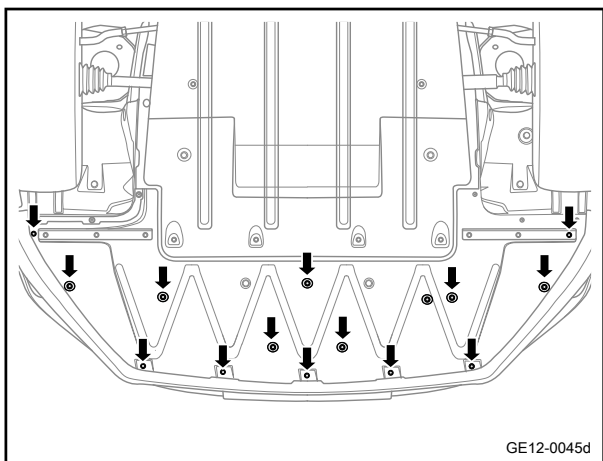
- 1 Move the roof left trim strip to the installation position.
- 2 Install the roof left trim strip.

- 3 Install the sunroof rear glass.
- 4 Connect the negative cable of battery.

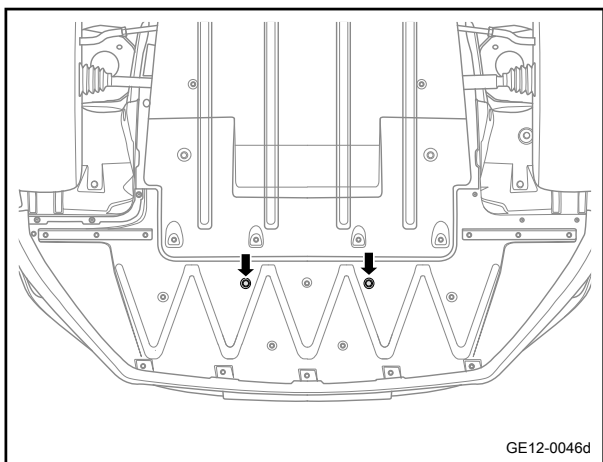
12.10.2.11 Replacement of Front Engine Compartment Bottom Shield(Front)

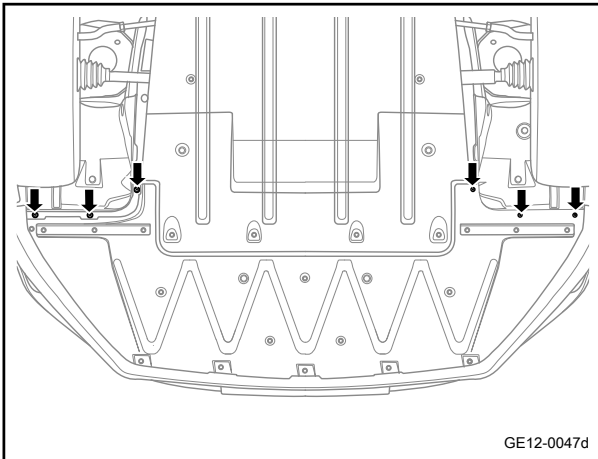
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the 14 fixing bolts of the front engine compartment bottom shield.



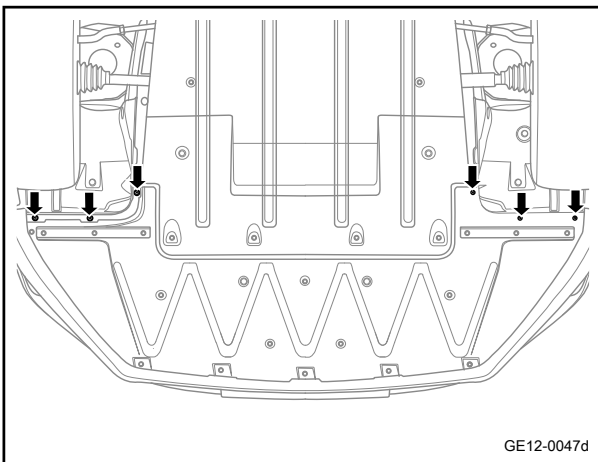
- 3 Remove the 2 fastening clips of the front engine compartment bottom shield.



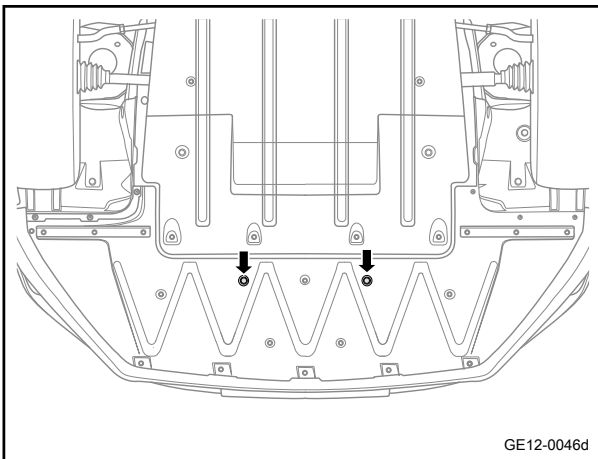


- 4 Remove the 6 fixing bolts of the front engine compartment bottom shield and front fender liner.
- 5 Take off the front engine compartment bottom shield.

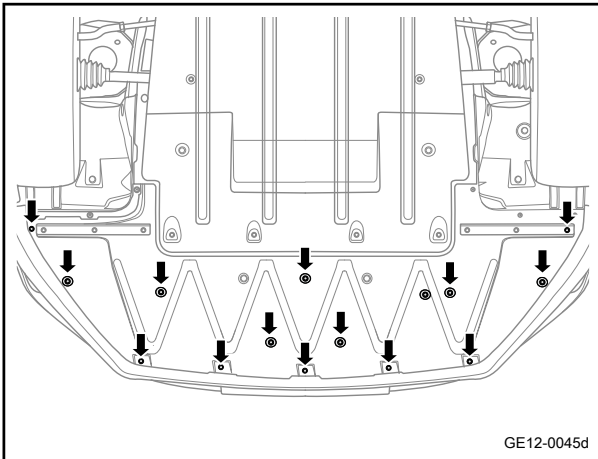
Installation procedure



- 1 Move the front engine compartment bottom shield to the installation position.
- 2 Install the 6 fixing bolts of the front engine compartment bottom shield and front fender liner.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)



- 3 Install the 2 fastening clips of the front engine compartment bottom shield.



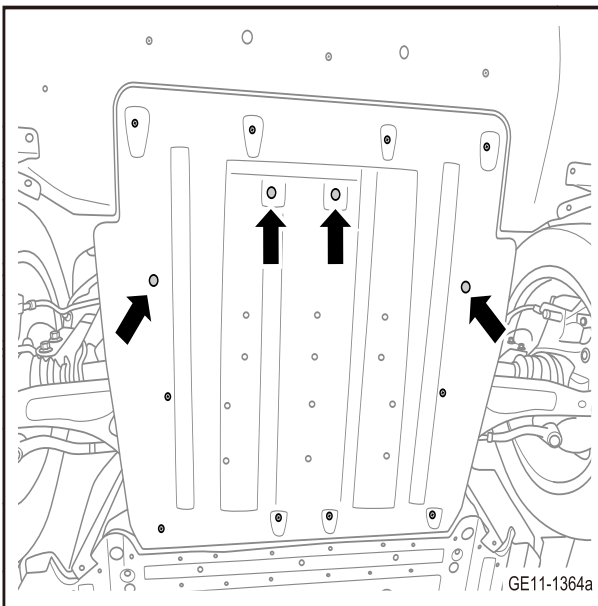
- 4 Install the 14 fixing bolts of the front engine compartment bottom shield.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

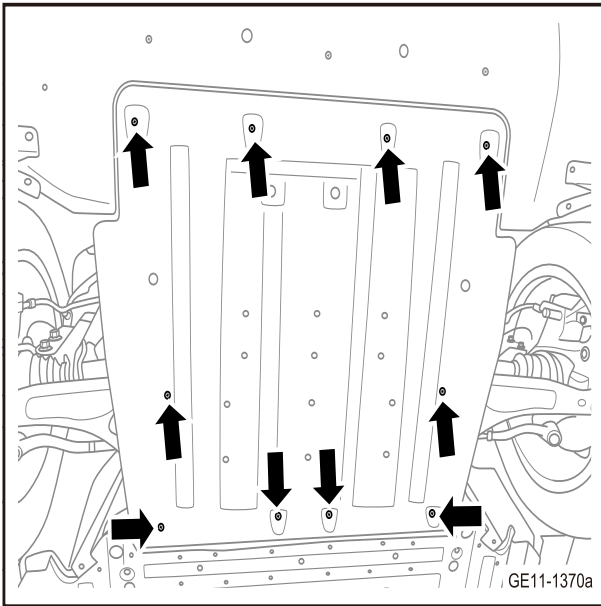
- 6 Lower the vehicle.

12.10.2.12 Replacement of Front Engine Compartment Bottom Shield (rear)

Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the 4 fastening clips of the front engine compartment bottom shield.

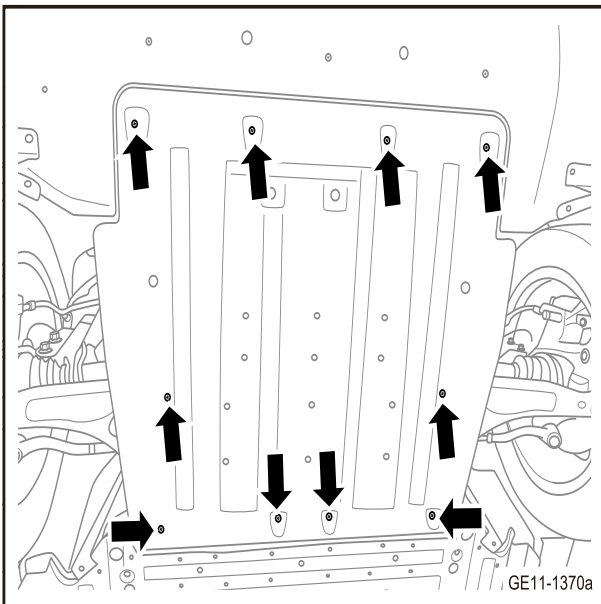


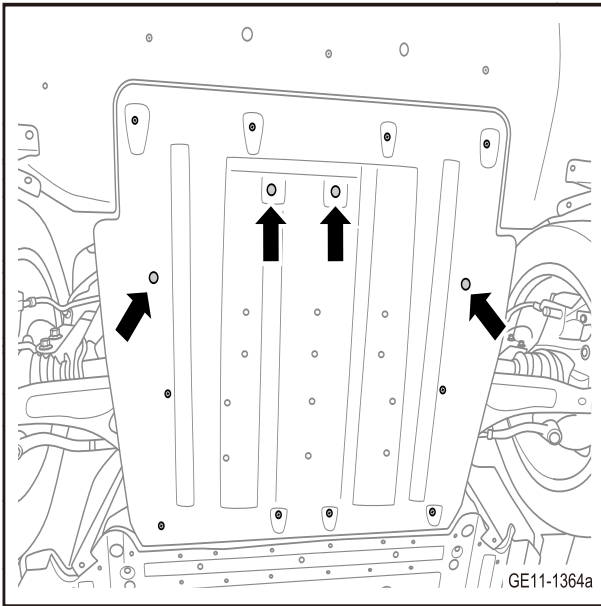


- 3 Remove the 10 fixing bolts of the front engine compartment bottom shield.
- 4 Take off the front engine compartment bottom shield.

Installation procedure

- 1 Move the front engine compartment bottom shield to the installation position.
- 2 Install the 10 fixing bolts of the front engine compartment bottom shield.
Torque: 6 N·m (metric system) 4.4 lb-ft (British system)





- 3 Install the 4 fastening clips of the front engine compartment bottom shield.

Caution

After each disassembly and assembly, the buckle needs to be replaced if it is loose.

- 4 Lower the vehicle.

12.10.2.13 Replacement of Battery Bottom Shield

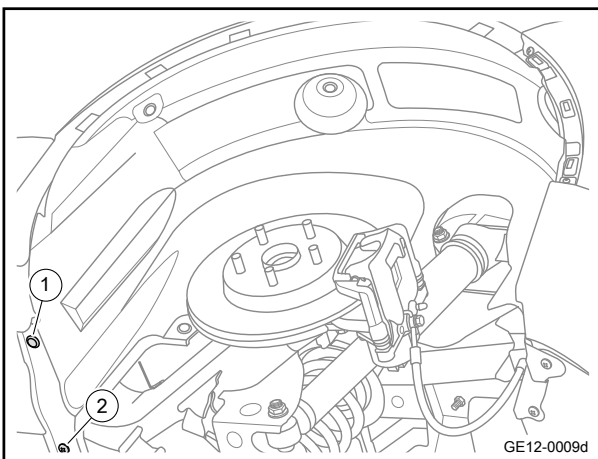
Removal procedure

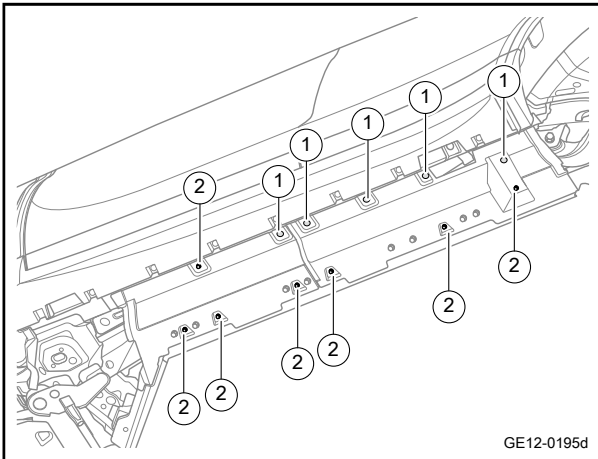
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

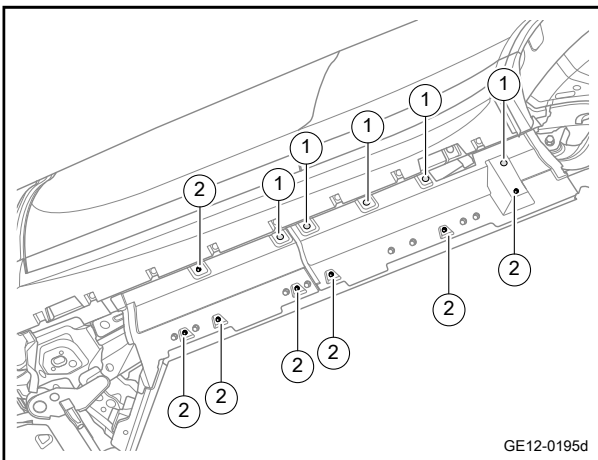
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the power wire harness cover plate assembly. Refer to [Replacement of Power Wire Harness Cover Plate Assembly](#)
- 4 Remove 1 fixing clip 1 for fixing the battery bottom guard plate with the left and right rear fender liners respectively.
- 5 Remove 1 fixing screw 2 for fixing the battery bottom guard plate with the left and right rear fender liners respectively.



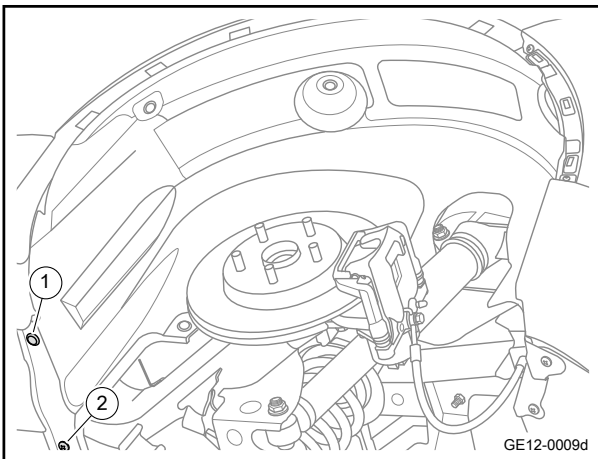


- 6 Remove the 5 fastening clips 1 on each side of the battery bottom shield.
- 7 Remove the 7 fixing bolts 2 on each side of the battery bottom shield.
- 8 Take off the battery bottom shield.

Installation procedure



- 1 Move the battery bottom shield to the installation position.
- 2 Install the 5 fastening clips 1 on each side of the battery bottom shield.
- 3 Install the 7 fixing bolts 2 on each side of the battery bottom shield.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)



- 4 Install 1 fixing screw 2 for fixing the battery bottom guard plate with the left and right rear fender liners respectively.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 5 Install 1 fixing clip 1 for fixing the battery bottom guard plate with the left and right rear fender liners respectively.

- 6 Install the power wire harness cover plate assembly.
- 7 Lower the vehicle.
- 8 Connect the negative cable of battery.

12.10.2.14 Replacement of radiator upper air deflector

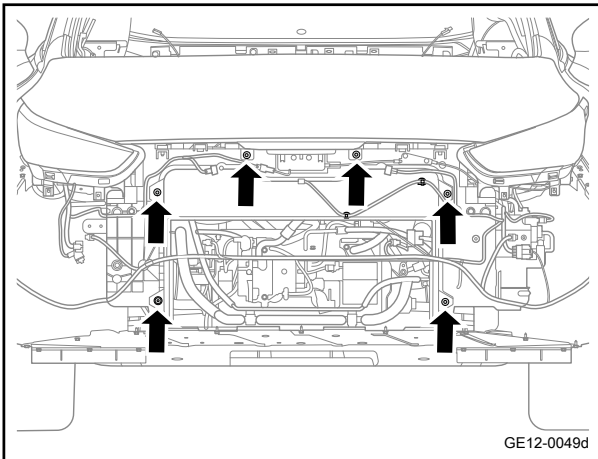
Removal procedure

- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

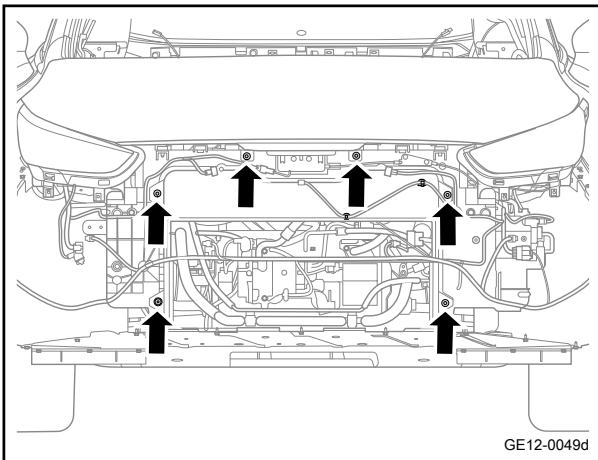
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 2 Remove the left horn. Refer to [Replacement of Left Horn](#)
- 3 Remove the 6 fixing bolts of the radiator upper air deflector.
- 4 Take out the radiator upper air deflector.



Installation procedure

- 1 Move the radiator upper deflector to the installation position.
- 2 Install the 6 fixing bolts of the radiator upper air deflector.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)

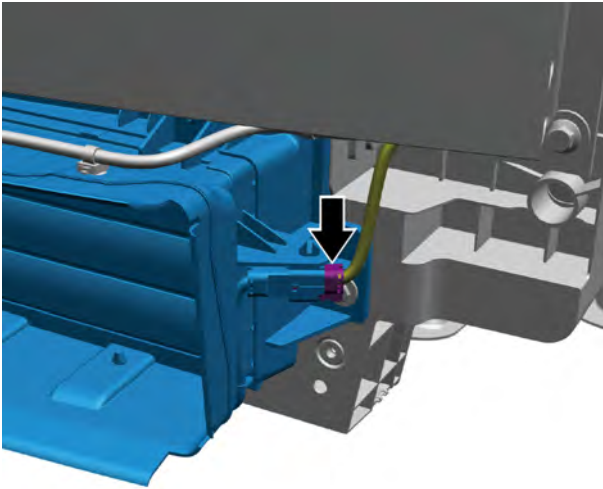


- 3 Mount the left horn.
- 4 Connect the negative cable of battery.

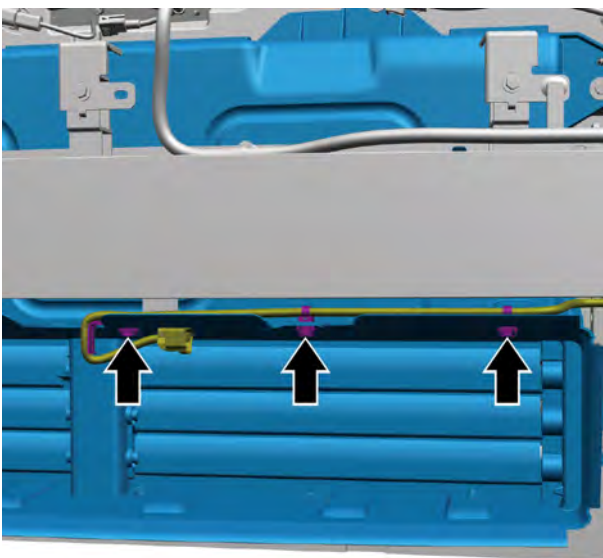
12.10.2.15 Replacement of variable intake grille assembly

Removal procedure

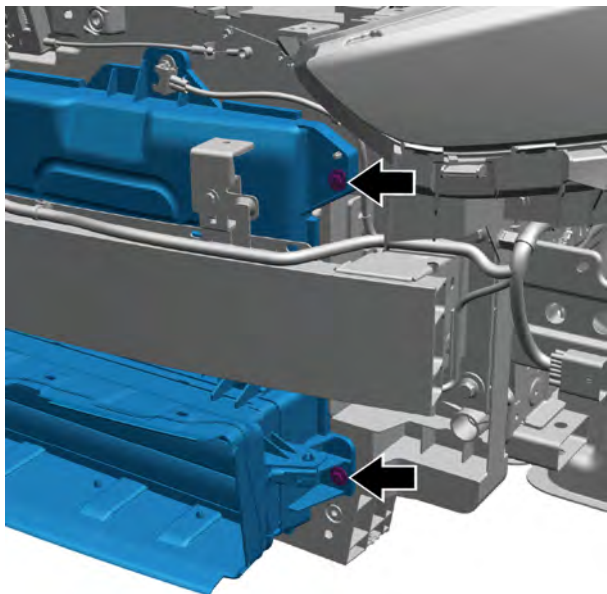
- 1 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)
- 2 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 3 Remove the pedestrian leg protection bracket. Refer to [Replacement of the leg protection bracket for pedestrians](#)



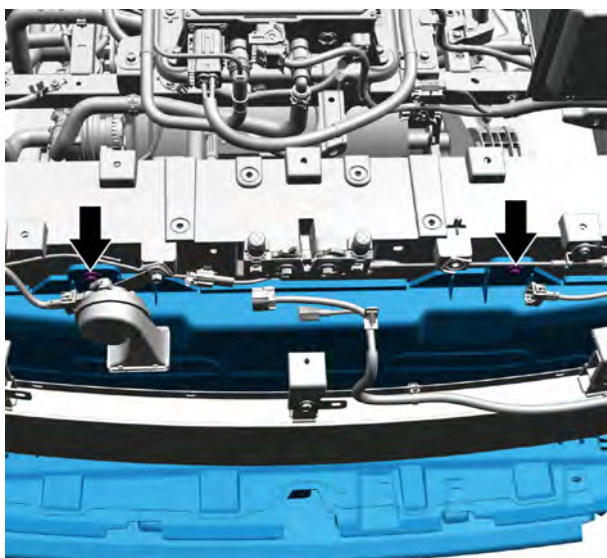
- 4 Remove the outdoor temperature sensor. Refer to [Replacement of Outdoor Temperature Sensor](#)
- 5 Disconnect the 1 harness connector connecting the front compartment harness with the variable intake grille assembly.



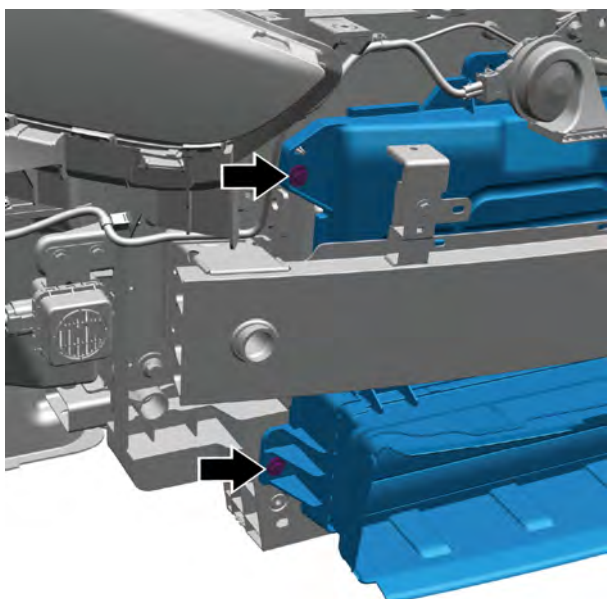
- 6 Disconnect the 3 clips connecting the front compartment harness with the variable intake grille assembly.



- 7 Remove the 2 fixing bolts connecting the variable intake grille assembly and the left side of the front end module assembly.

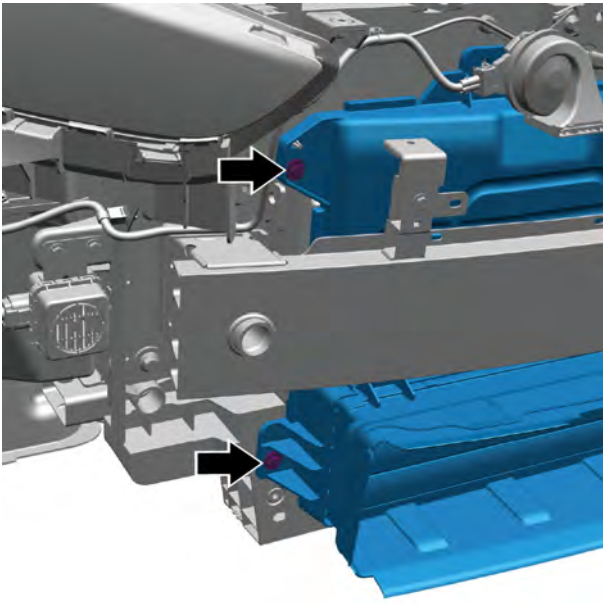


- 8 Remove the 2 fixing bolts connecting the variable intake grille assembly with the upper part of the front end module assembly.



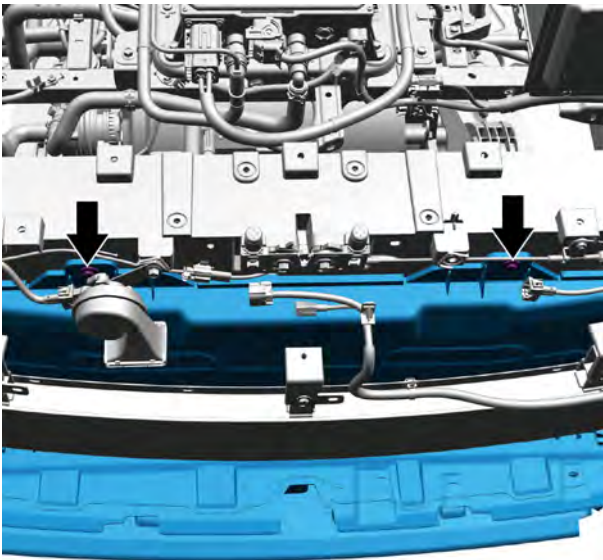
- 9 Remove the 2 fixing bolts connecting the variable intake grille assembly and the right side of the front end module assembly.
- 10 Take out the variable intake grill assembly from below.

Installation procedure



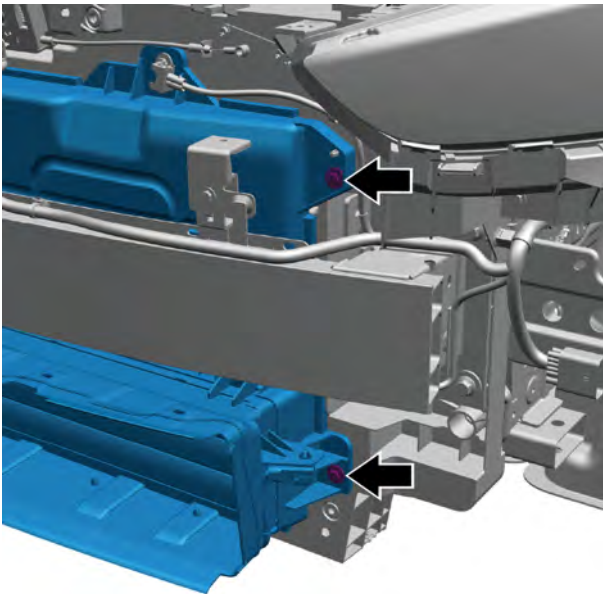
- 1 Move the variable intake grille assembly to the installation position.
- 2 Install and tighten the 2 fixing bolts connecting the variable intake grille assembly and the right side of the front end module assembly.

Torque: 10N·m

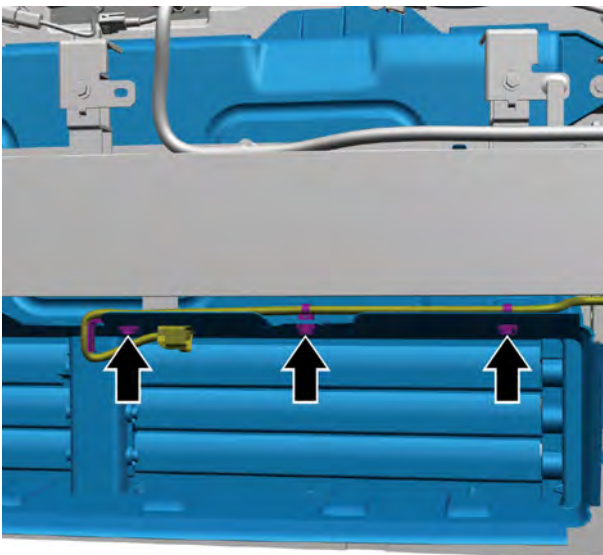


- 3 Install and tighten the 2 fixing bolts connecting the variable intake grille assembly and the upper part of the front end module assembly.

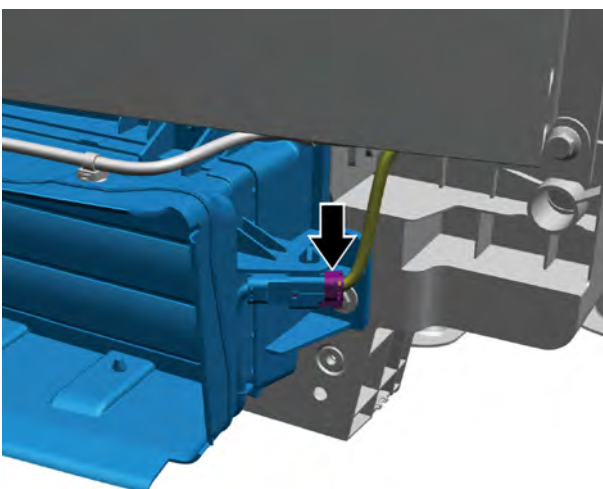
Torque: 10N·m



- 4 Install and tighten the 2 fixing bolts connecting the variable intake grille assembly and the left side of the front end module assembly.
Torque: 10N·m



- 5 Install the 3 clips connecting the front compartment harness with the variable intake grille assembly



- 6 Connect the 1 harness connector between the front compartment harness and the variable intake grille assembly.

- 7 Remove the outdoor temperature sensor.
- 8 Install the pedestrian leg protection bracket.
- 9 Lower the vehicle.
- 10 Connect the negative cable of battery.

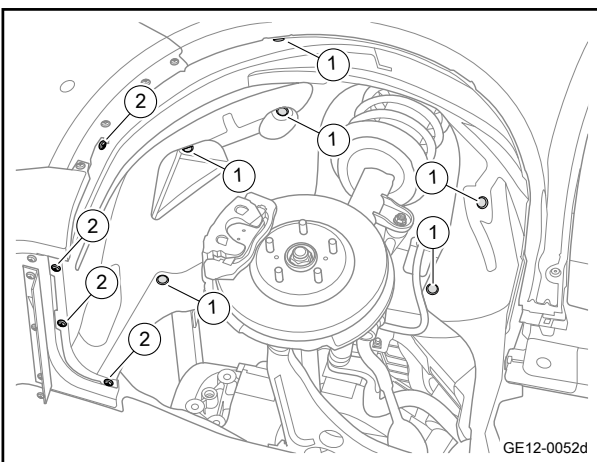
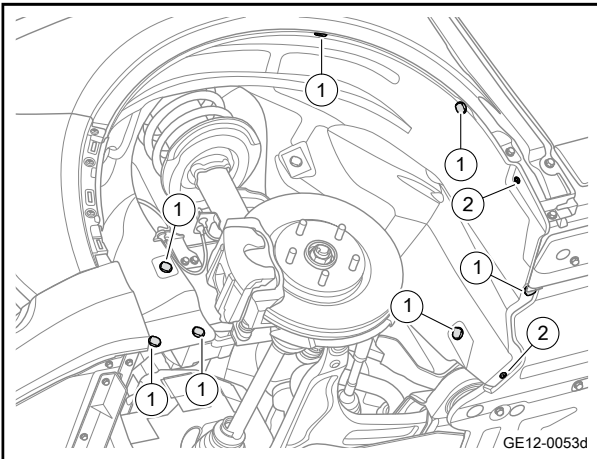
12.10.2.16 Replacement of left front fender liner

Removal procedure

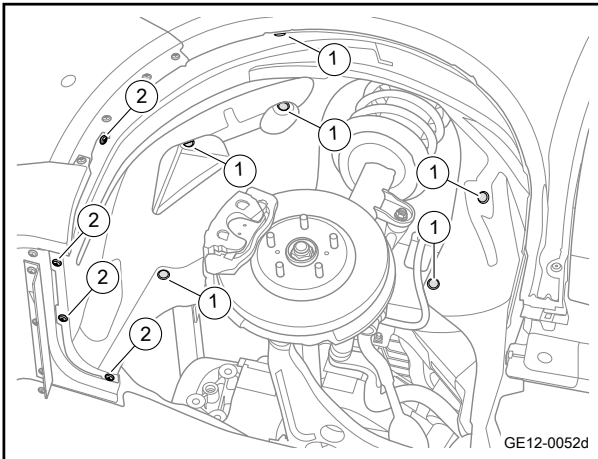
Caution

Replacement at left and right sides are performed in the same way.

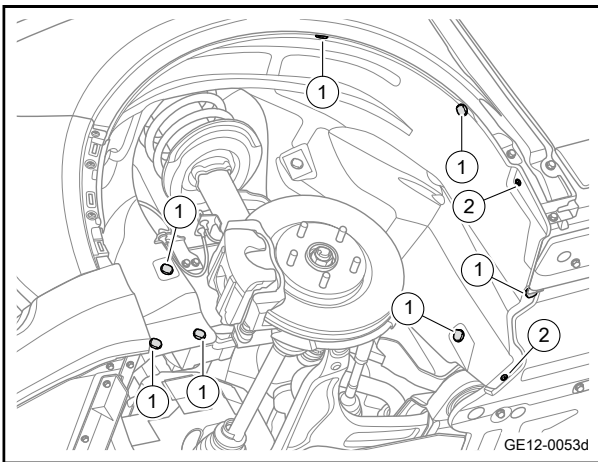
- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the left front wheel. Refer to [Wheel Replacement](#)
- 3 Remove the left front wheel brow. Refer to [Replacement of left front wheel brow assembly](#)
- 4 Remove 7 fixing clips 1 of the left front fender liner rear part.
- 5 Remove 2 fixing bolts 2 of rear part of left front fender liner.
- 6 Remove 7 fixing clips 1 of the left front fender liner front part.
- 7 Remove 5 fixing bolts 2 of front part of left front fender liner.
- 8 Take off the front left fender liner.



Installation procedure



- 1 Move the left front fender liner to the installation position.
- 2 Install 5 fixing screws 2 of the front fender liner front part.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 3 Install 7 fixing clips 1 of the left front fender liner front part.



- 4 Install 2 fixing screws 2 of the front fender liner rear part.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 5 Install 7 fixing clips 1 of the left front fender liner rear part.

- 6 Install the front left wheel brow assembly.
- 7 Install the left front wheel.
- 8 Lower the vehicle.

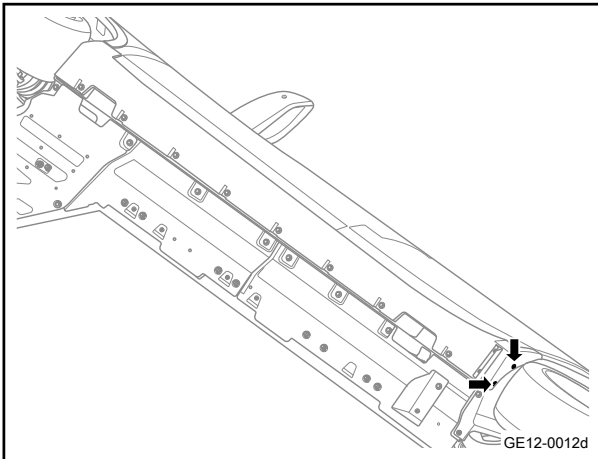
12.10.2.17 Replacement of left rear fender liner

Removal procedure

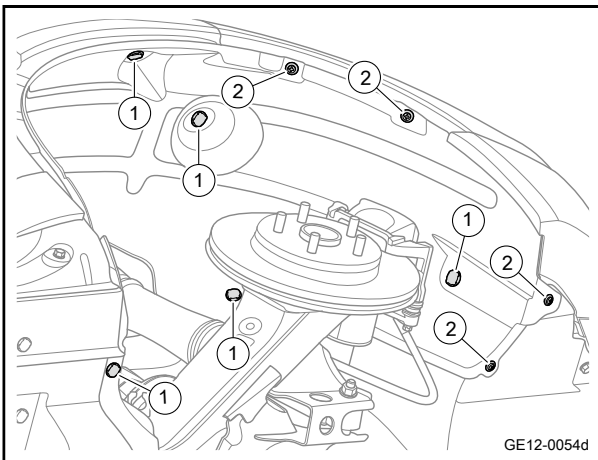
Caution

Replacement at left and right sides are performed in the same way.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the left rear wheel. Refer to [Wheel Replacement](#)
- 3 Remove the left rear wheel brow. Refer to [Replacement of left rear wheel brow assembly](#).

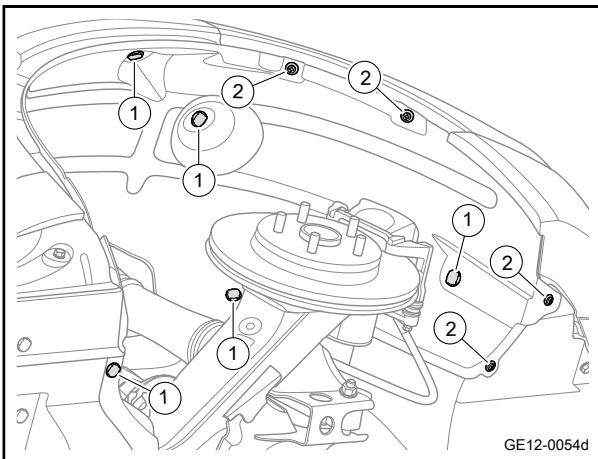


- 4 Remove 2 fixing bolts 3 of left rear fender liner and left outer door sill lower trim panel.
- 5 Remove 6 fixing clips 1 at the left rear fender liner.
- 6 Remove 1 fixing screws 2 of left rear fender liner.

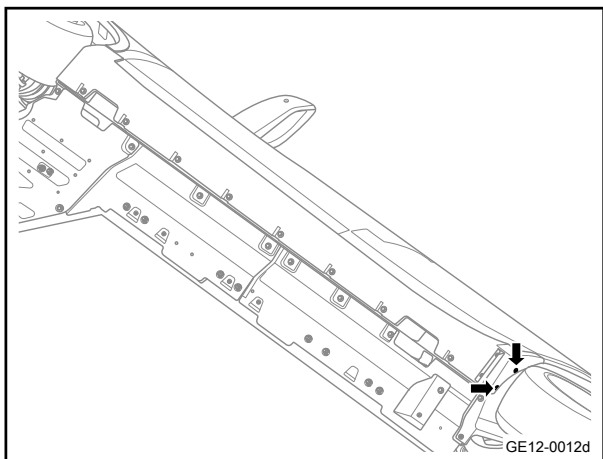


- 7 Remove 5 fixing clips 1 at the left rear fender liner.
- 8 Remove 4 fixing screws 2 of left rear fender liner.
- 9 Take off the rear left fender liner.

Installation procedure



- 1 Move the left rear fender liner to the installation position.
- 2 Install 4 fixing screws 2 of the left rear fender liner.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 3 Install 5 fixing clips 1 of the left rear fender liner.



- 4 Install 1 fixing screw 2 of the left rear fender liner.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 5 Install 6 fixing clips 1 of the left rear fender liner.
- 6 Install 2 fixing screws 3 of the left rear fender liner and left outer door sill lower trim panel.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)

- 7 Install the left rear wheel.
- 8 Install the left rear wheel brow assembly.
- 9 Lower the vehicle.

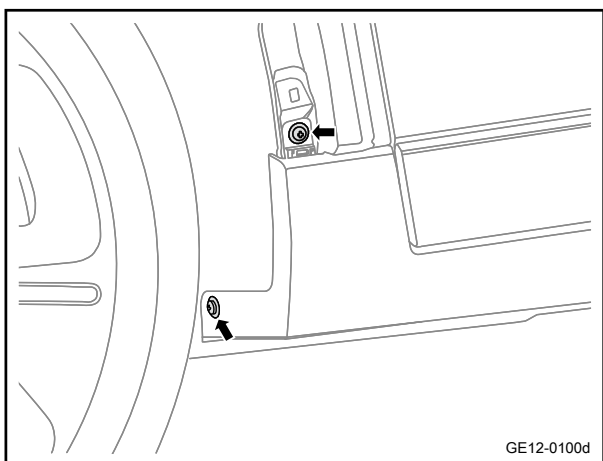
12.10.2.18 Replacement of lower trim panel assembly of left exterior rocker panel

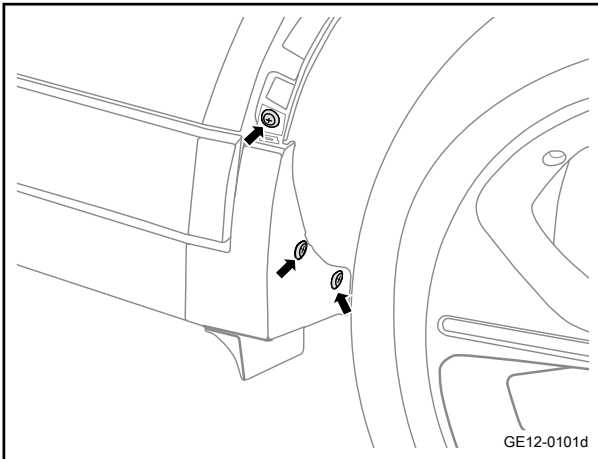
Removal procedure

Caution

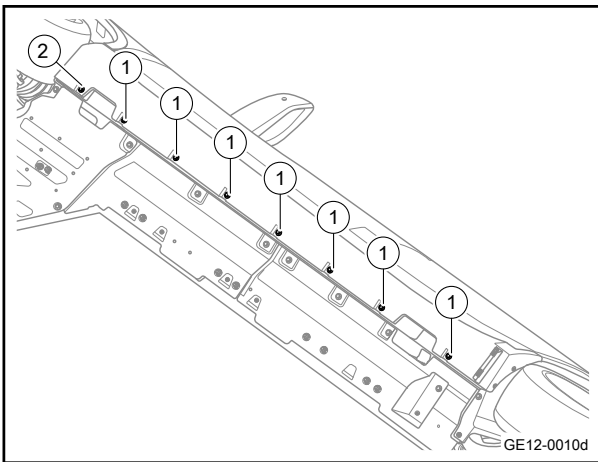
Replacement at left and right sides are performed in the same way.

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the left front wheel brow assembly. Refer to [Replacement of left front wheel brow assembly](#)
- 3 Remove the left rear wheel brow assembly. Refer to [Replacement of left rear wheel brow assembly](#).
- 4 Remove the 2 fixing screws of the left outer rocker lower panel trim panel assembly front part.

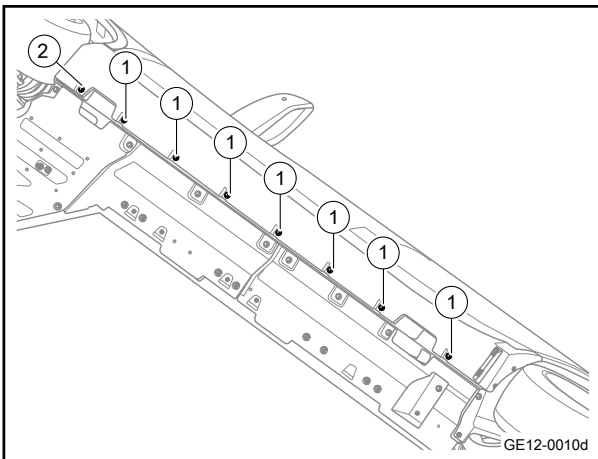




- 5 Remove the 3 fixing screws of the left outer rocker lower panel trim panel assembly rear part.

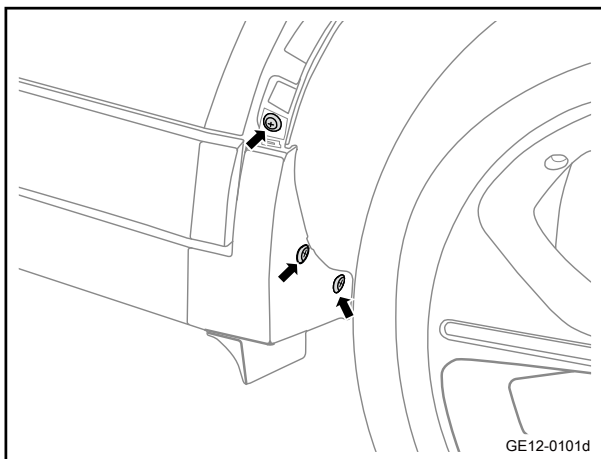


- 6 Remove the 1 fixing screw 2 of the left outer rocker panel lower trim panel assembly.
- 7 Remove 7 fixing clips of the left outer rocker lower trim panel assembly.
- 8 Pry off left exterior rocker panel lower trim panel assembly.

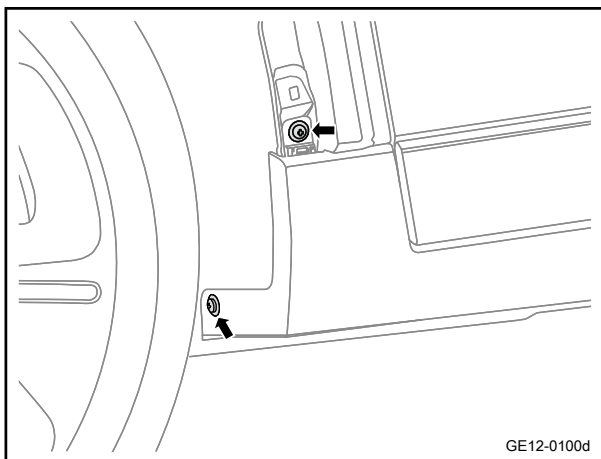


Installation procedure

- 1 Move the left outer rocker lower panel trim plate assembly to the mounting position.
- 2 Install 7 fixing clips 1 at the left exterior rocker panel lower trim panel assembly.
- 3 Install the 1 fixing screws 2 of the left outer rocker panel lower trim panel assembly.
Torque: 1.5 N·m (metric system) 1.1 lb·ft (British system)



- 4 Install the 3 fixing screws of the rear of left outer rocker panel lower trim panel assembly.
Torque: 1.5 N·m (metric system) 1.1 lb-ft (British system)



- 5 Install the 2 fixing screws of the front of left outer rocker panel lower trim panel assembly.
Torque: 1.5 N·m (metric system) 1.1 lb-ft (British system)

- 6 Install the left rear wheel brow assembly.
- 7 Install the front left wheel brow assembly.
- 8 Lower the vehicle.

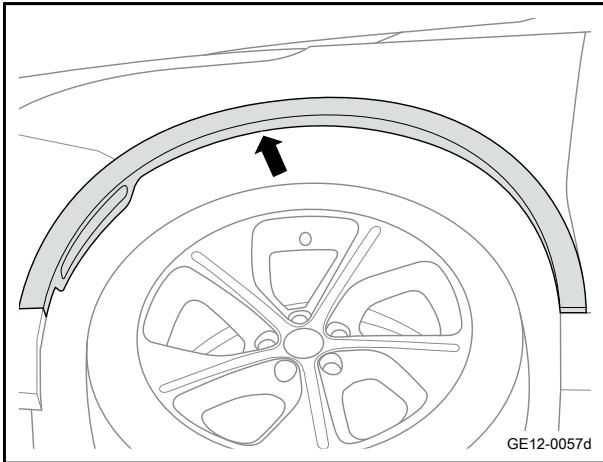
12.10.2.19 Replacement of left front wheel brow assembly

Removal procedure

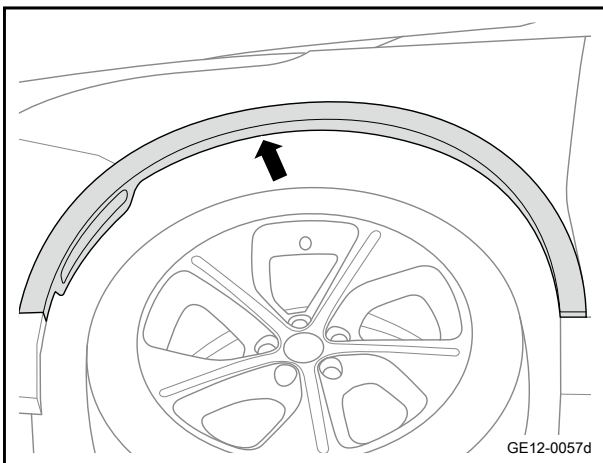
Caution

Replacement at left and right sides are performed in the same way.

- 1 Pry off the front left wheel brow assembly.

**Installation procedure**

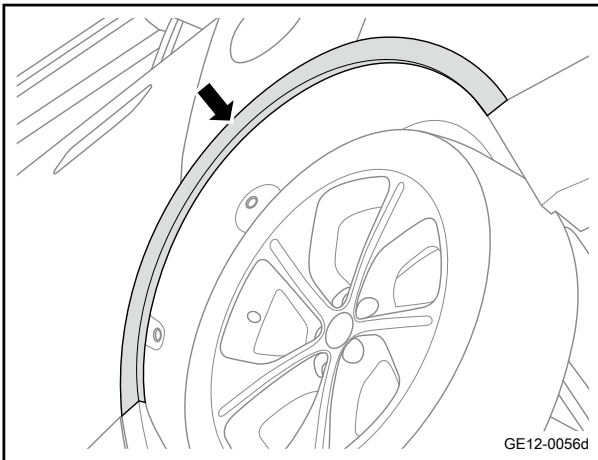
- 1 Move the left front wheel brow assembly to the mounting position.
- 2 Install the front left wheel brow assembly.

**12.10.2.20 Replacement of left rear wheel brow assembly****Removal procedure**

Caution

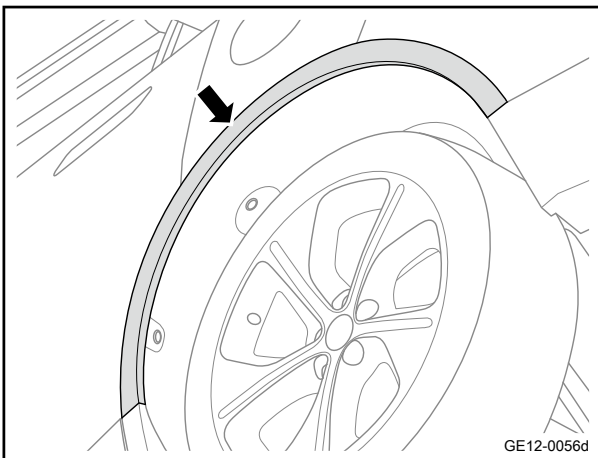
Replacement at left and right sides are performed in the same way.

- 1 Left rear wheel brow assembly is pried off.



Installation procedure

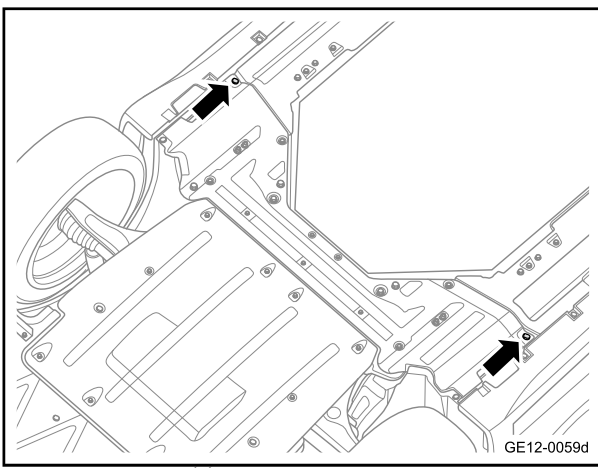
- 1 Move the left rear wheel brow assembly to the installation position.
- 2 Install the left rear wheel brow assembly.

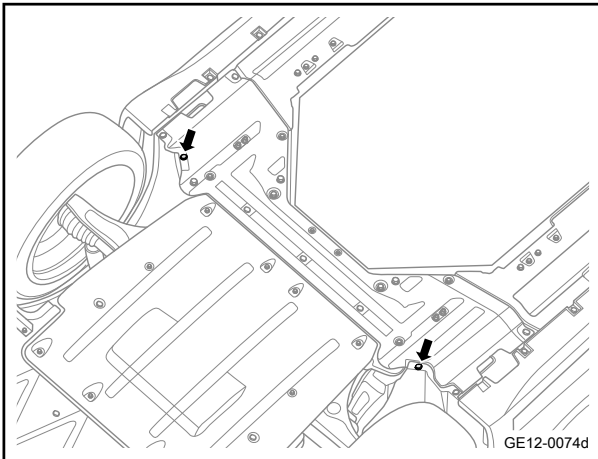


12.10.2.21 Replacement of Power Wire Harness Cover Plate Assembly

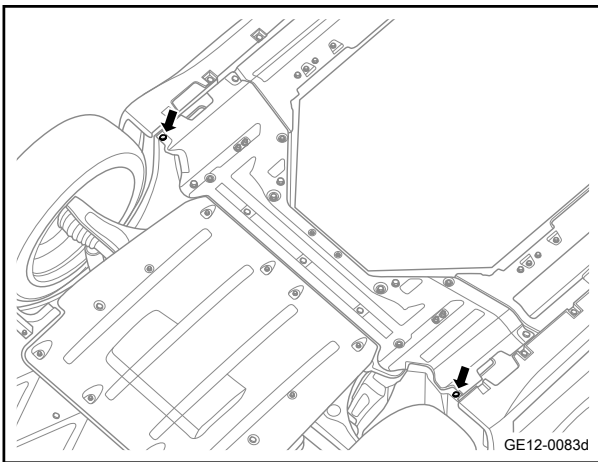
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove the 2 fixing clips of power wire harness cover plate assembly.

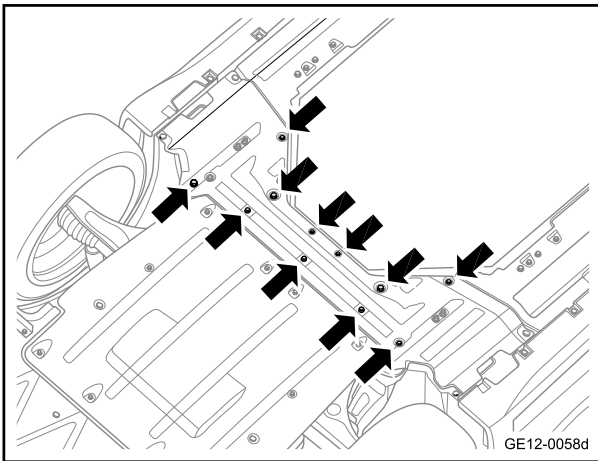




- 3 Remove 2 fixing screws for fixing the power wire harness cover plate with the left and right front fender liners respectively.

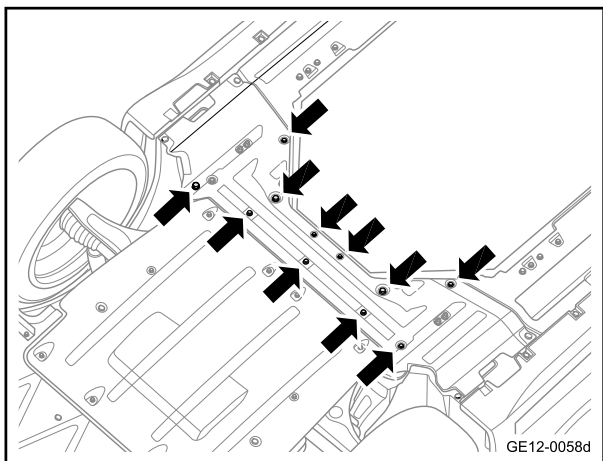


- 4 Remove 2 fixing clips of the power wire harness cover plate with the left and right fender liner.

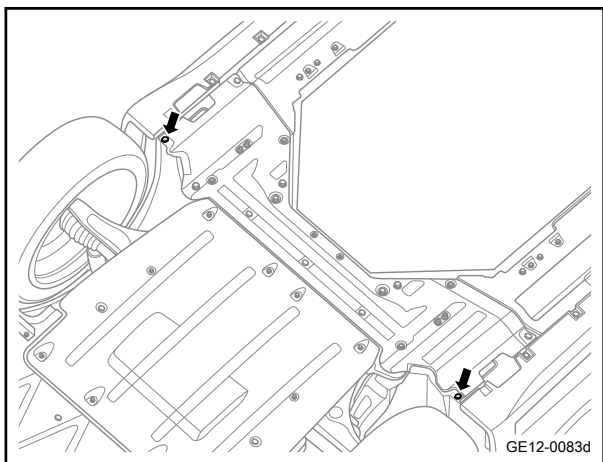


- 5 Remove the 11 fixing bolts of the power wire harness cover plate.
- 6 Take off the power wire harness cover plate.

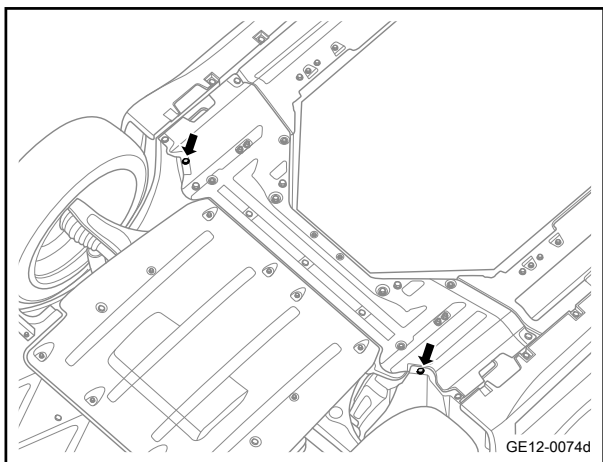
Installation procedure



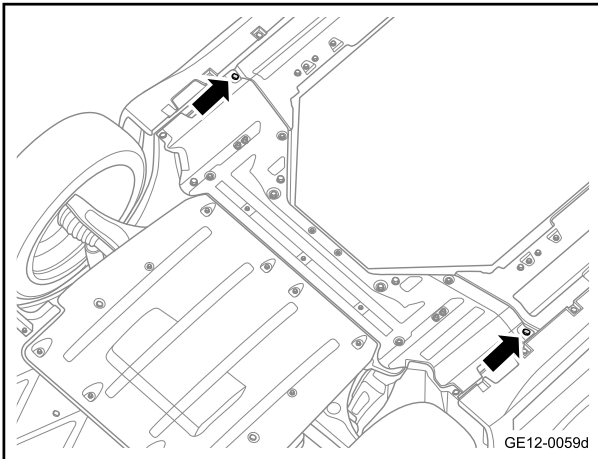
- 1 Move the power wire harness cover plate to the installation position.
- 2 Install the 11 fixing bolts of the power wire harness cover plate.
Torque: 6 N·m (metric system) 4.4 lb-ft (British system)



- 3 Install 2 fixing clips of the power wire harness cover plate with the left and right fender liner.



- 4 Install 2 fixing screw 2 for fixing the power wire harness cover plate with the left and right rear fender liners respectively.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)



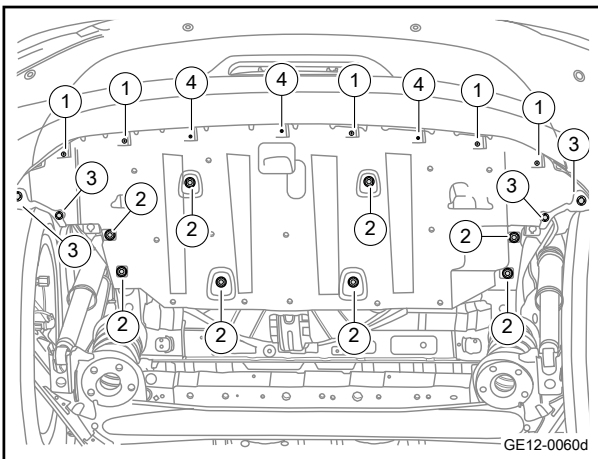
- 5 Install the 2 fixing clips of power wire harness cover plate assembly.

- 6 Lower the vehicle.

12.10.2.22 Replacement of trunk bottom shield assembly

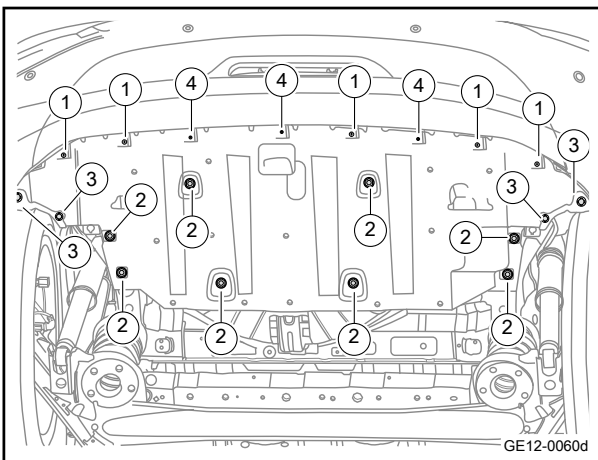
Removal procedure

- 1 Lift the vehicle. Refer to [Lifting and Jacking of Vehicle](#)
- 2 Remove 4 fixing screw 3 for fixing the trunk bottom shield with the rear fender liner.
- 3 Remove the 8 fixing nuts 2 of the trunk bottom shield.
- 4 Remove the 5 fixing screws 1 of the trunk bottom shield and rear bumper.
- 5 Install the 3 fixing bolts 4 of the trunk bottom shield.
- 6 Take off the trunk bottom shield assembly.



Installation procedure

- 1 Move the trunk bottom shield assembly to the installation position.
- 2 Install the 8 fixing nuts 2 of the trunk bottom shield.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 3 Install the 5 set screws securing the trunk bottom shield and the rear bumper.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 4 Install the 13 fixing bolts 4 of the trunk bottom shield.
Torque: 6N·m (metric system) 4.4lb-ft (Imperial system)
- 5 Install 4 fixing screw 3 for fixing the trunk bottom shield with the rear fender liner.
Torque: 1.5N·m (metric system) 1.1lb-ft (Imperial system)
- 6 Lower the vehicle.



12.10.2.23 Replacement of Retro-reflector

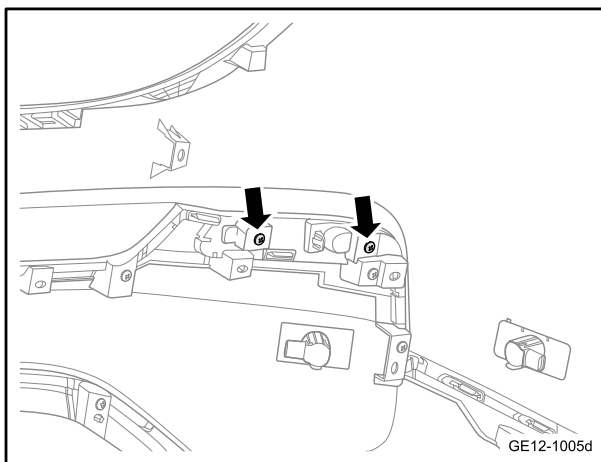
Removal procedure

- 1 Open the engine compartment cover.
- 2 Disconnect the negative cable of battery. Refer to [Procedures for Disconnecting and Connecting Battery Cable](#)

Warning

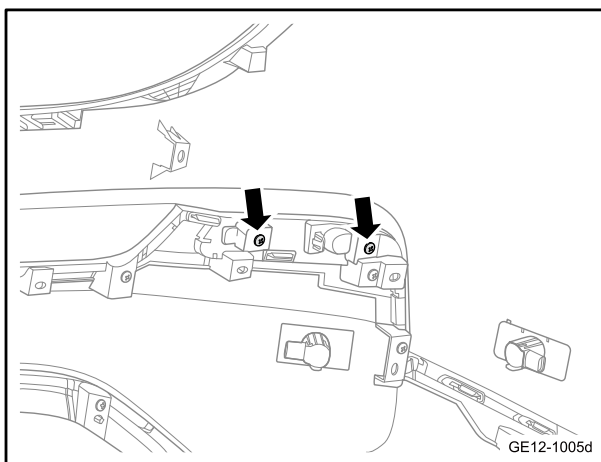
Refer to "[Warnings Regarding Battery Disconnection](#)" in "[Warnings and Precautions](#)"

- 3 To remove the rear bumper, please refer to [Replacement of rear bumper](#)
- 4 Remove retro-reflector assembly.
 - a. Remove the 2 fixing screws of the retro-reflector and take off the retro-reflector.



Installation procedure

- 1 Install the retro-reflector assembly.
 - a. Install 2 fixing screws of the retro-reflector.
Torque: 1.5 N·m (metric system) 1.1 lb-ft (British system)



- 2 Install the rear bumper.
- 3 Connect the negative cable of battery.
- 4 Close engine compartment cover.

12.11 Plastic Panel Information and Repair

12.11.1 Instructions and operations

12.11.1.1 Description and Operations

At present, the surface materials of interior and exterior trim panels are mainly modified PP, ABS, PC + ABS and PVC (artificial leather materials), all of which are thermoplastic and modified materials. POM, PA and HDPE materials are also used for non-surface covering parts of interior and exterior trims. Thermosetting plastics are rarely used for interior and exterior trims, and only phenolic plastics are used for ashtrays.

Thermosetting plastics are mainly used as structural parts in electronic appliances and safety components. Thermoplastic parts should best be repaired by using hot soldering iron plastic material filling welder, but are usually repaired by replacement. To repair parts made of thermosetting plastics, epoxy resin or other harder two-component repair materials can be used. This chapter only briefly introduces their repair methods, and repairs are not recommended.

Classification of plastics: thermosetting plastics refer to plastics that can be cured or have insoluble (melting) properties under heating or other conditions, such as phenolic plastics, epoxy plastics, etc. Thermoplastics refer to plastics that can be repeatedly heated, softened and cooled to harden within a specific temperature range, such as polyethylene, teflon, etc. Thermoplastics and thermosetting plastics can be hard plastics or soft plastics.

12.11.2 Removing and installing

12.11.2.1 Plastic Part Repair Notices

- 1 Apply protective cream to exposed skin to prevent irritation.
- 2 Wear rubber gloves.
- 3 Wear safety glasses when using compressed air and sanding.
- 4 Immediately remove any mixture that comes in contact with the skin, because the mixture cures quickly.
- 5 Wear a dust mask and safety glasses when grinding or sanding.
- 6 Clean the skin with cold water to reduce the slight irritation of resin dust on the skin.
- 7 Do not stick maintenance materials to clothes.
- 8 Use maintenance materials in a well-ventilated environment, as the dust particulate from maintenance materials is toxic.
- 9 Close all service material containers after use. Dust or moisture will pollute the repair materials and reduce the repair effect.

12.11.2.2 Repair of Thermosetting Plastic Dent

- 1 Clean and dry parts to be repaired.
- 2 Heat the pit area with a hot air blower until the pit is flattened with suitable tools.
- 3 Sand the pit area with sandpaper/emery paper.
- 4 Then wash the repaired area with detergent and let it dry for 5 minutes.
- 5 Apply a thin layer of adhesive and let dry for 10 min.
- 6 Fill the uneven surface with adhesive and smooth it with a spatula.
- 7 Accelerate the curing process with an infrared lamp, and adjust the temperature to 60 - 70 °C (140 - 158 ° f), and heat for 15 min.
- 8 Sand the pit area with sandpaper.
- 9 Remove dust and debris.
- 10 Apply a thin layer of adhesive and let dry for 10min.
- 11 Restore the paint surface according to the paint repair procedure on the surface of plastic parts.

12.11.2.3 Repair of Thermosetting Plastic Scratch

- 1 Clean and dry parts to be repaired.
- 2 Use sandpaper to remove protruding material.
- 3 Then wash the repaired area with detergent and let it dry for 5 minutes.
- 4 Apply a layer of adhesive and let dry for 10min.
- 5 Fill the uneven surface with adhesive and smooth it with a spatula.
- 6 Accelerate the curing process with an infrared lamp, and adjust the temperature to 60 - 70 °C (140 - 158 ° f), and heat for 15 min.
- 7 Sand the pit area with sandpaper.
- 8 Remove dust/debris.
- 9 Apply a thin layer of adhesive and let dry for 10min.
- 10 Restore the paint surface according to the paint repair procedure on the surface of plastic parts.

12.11.2.4 Maintenance of thermosetting plastic cracks (less than 100mm in length)

- 1 Clean and dry parts to be repaired.
- 2 Chisel the crack end 5mm(0.19in) long, and grind the crack into a V-shape to eliminate the internal stress and bulge.
- 3 Wash the repaired area with detergent and let it dry for 5 minutes.
- 4 Apply a layer of adhesive and let dry for 10min.
- 5 First, use adhesive to stick the reinforcing tape to the back of the repair part, overlapping at least 20mm (0.79in) with the damaged part.
- 6 Accelerate the curing process with an infrared lamp, and adjust the temperature to 60 - 70°C (140 - 158 °F), and heat for 15min.
- 7 Fill the front end of the sanded crack with adhesive and smooth it with a spatula.
- 8 Accelerate the curing process at the front end of the crack with an infrared lamp.
- 9 Sand the pit area with sandpaper.
- 10 Apply a thin layer of adhesive and let dry for 10min.
- 11 Remove dust and debris.

- 12 Apply a layer of adhesive and let dry for 10min.
- 13 Restore the paint surface according to the paint repair procedure on the surface of plastic parts.

12.12 Collision repair

12.12.1 Specification

12.12.1.1 Collision repair materials

In a vehicle body collision accident, the structure deformation, steel plate cracking, welding failure, and other phenomena will be generally caused. Sometimes it also causes local damage of the power synthesis box, chassis, and other assembly parts.

During the body collision repair, bonders, sealants, anti-loosing agents, surface protection materials, anti-corrosion materials, chemical materials may be used. Please operate strictly in accordance with the purpose, scope of use, and application in the product instructions. In the process of body repair, repair materials of the same functions should be selected and used according to the functional requirements of parts and materials. The following table gives the possible repair materials to be used in the process of body repair, for reference only in the process of body repair.

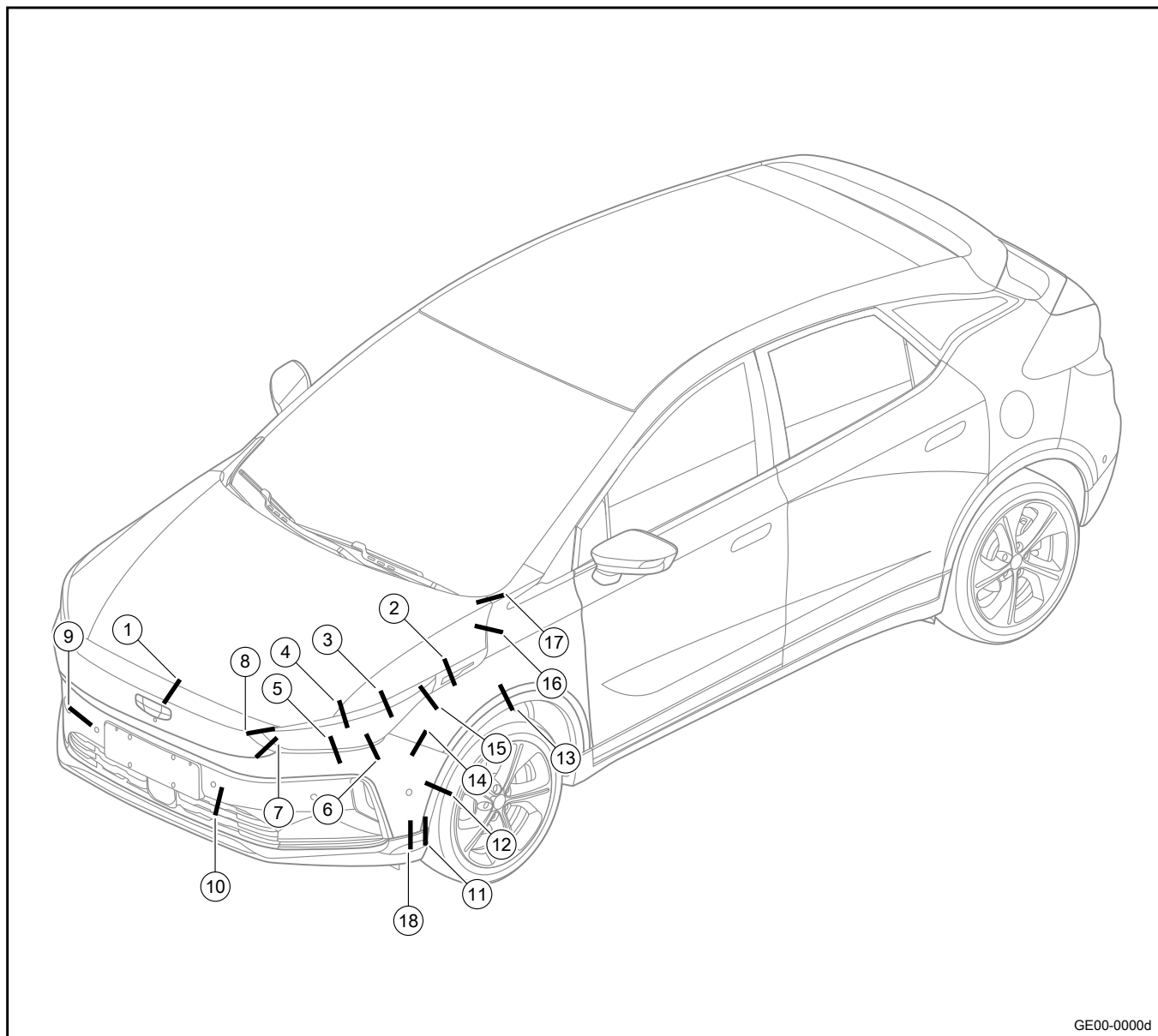
Products	Base materials	Application	Recommended model
Body sealant	Single unit polyurethane	Bond of body skin, interior/ exterior trims, body structure, etc. The sealant should have a strong adhesive force and cohesion force and have good adhesion with metal, various paints, etc.	TONSAN: 1922, 1923
Seam sealant	Single unit polyurethane	Room temperature solidified adhesive for sealing body welding seams. Room temperature solidified adhesive is used for fine sealing of door, front engine compartment cover and trunk hem.	China Auto Parts Industry Corporation: C8802
Stone-impact resistant primer layer	Rubber and resin	Room temperature solidified anti-collision adhesive for chassis protection, forming a permanent anti-aging, elastic, corrosion resistant, protective coating at the bottom of the car and the wheel cover, no crack at low temperature. This kind of product can substitute PVC coating, with excellent functions such as rust-proof, sound insulation, anti-stone, anti-oxidation, coating protective.	China Auto Parts Industry Corporation: C312DW

Products	Base materials	Application	Recommended model
Windshield sealant	Single unit polyurethane	<p>Room temperature solidified polyurethane adhesive, used for direct bonding and sealing of automobile window glasses.</p> <p>The sealant has a good adhesive performance. It can react with the moisture in the air, solidify and form excellent properties such as high strength, aging resistance, vibration and fatigue resistance, low-temperature resistance, and non-corrosion.</p>	<p>China Auto Parts Industry Corporation: C8802 day Tianshan Kesaixin: 1956, 1924</p>
Pressure-sensitive adhesive tape	Acrylic acid tape	<p>Used for the bond of anti-scratch panel, nameplate, fender apron, mud apron, door protection, various trim strips, etc.</p> <p>This adhesive tape should have excellent weather resistance and endurance.</p>	<p>3M4229P, 4215, 4221L</p>
Primer	-	<p>Before applying windshield sealant, a kind of primer should be applied to the body and glasses to make the windshield and body bond more firmly.</p>	-
Cleaner	-	<p>Used for the cleaning of all surfaces contacted with primer paint and adhesives.</p>	-

Products	Base materials	Application	Recommended model
Heat-sensitive adhesive tape	Acrylic acid tape	It is mainly used in the rubber sealing strip system of automobiles. This type of tape should have a strong bonding force and strong sealing performance, to avoid gap and corrosion problems caused by a weak bond.	3M4237P
Tape glue	-	Choose different primers according to the bond surface material. The bonding surface should be clean. After being thoroughly dried, apply the primer evenly on the bonding surface with a brush. After being dried, paste the adhesive tape. Make the tape have strong adhesion.	3MC-100, K-500/520, N-200

12.12.1.2 Body surface clearance

- To adjust or check the clearance dimensions, a plastic clearance adjustment gauge should be used.
- Gap dimensions are always in millimeters/inches.

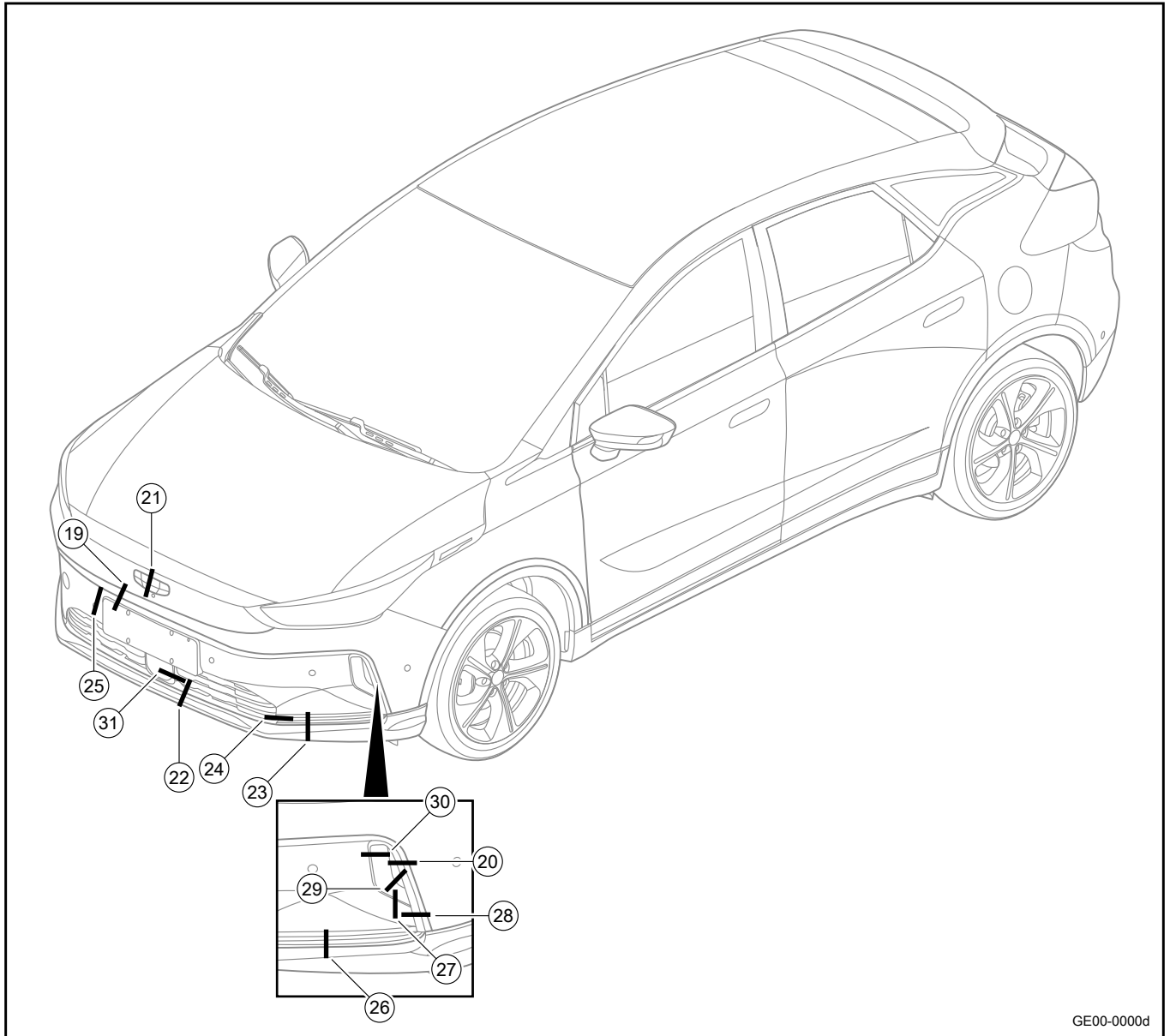


GE00-0000d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
1	Front engine compartment cover	Front bumper	3.5±1.5	1.5	-1.0 +1.0/-1.4	1.2	/	/
2	Front engine compartment cover	Head-lamps	3.5±1.0	1.0	0±1.0	1.0	/	/

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
3	Front engine compartment cover	Head-lamps	3.5±1.0	1.0	/	/	/	/
4	Front engine compartment cover	Head-lamps	(3.5-4.2) ± 1.0	/	/	/	/	/
5	Headlamps	Front bumper	2.0+/-1.0	1.0	/	/	/	/
6	Headlamps	Front bumper	(2.0-1.5) ± 1.0	/	/	/	/	/
7	Headlamps	Front bumper	2.0±1.2	1.0	/	/	/	/
8	Headlamps	Front bumper	2.0-3.5+1.2	/	/	/	/	/
9	Front towing vehicle hook	Front bumper	0.5±0.5	/	-0.5±0.5	/	/	/
10	Lower grill	Front bumper upper body	0.7±0.7	/	/	/	/	/
11	Front wheel brow	Front bumper lower body	0.5±0.5	/	-0.5 +0/-1.0	/	/	/
12	Front wheel brow	Front bumper	/	/	/	/	/	/
13	Front wheel brow	Fender	0(0.5,0)	/	/	/	/	/
14	Front bumper	Fender	0.5 +0.5/-0.3	/	-0.5±0.7	/	/	/
15	Fender	Head-lamps	1.5±1.0	1.0	/	/	/	/

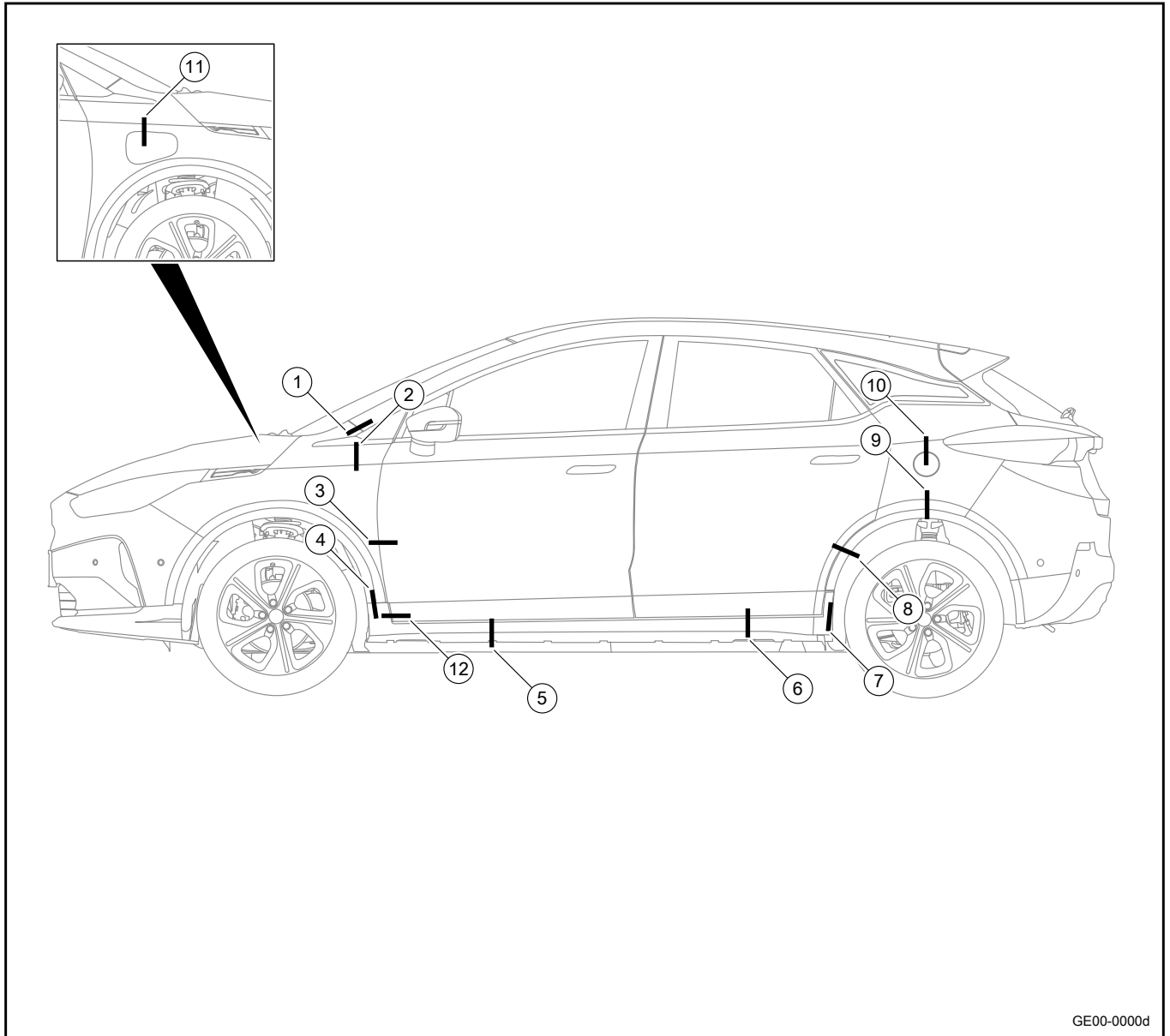
Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
16	Fender	Front engine compartment cover	$(3.5-3.4) \pm 0.8$	/	-0.5 ± 0.8	/	1.0	/
17	Fender	Front engine compartment cover	4.5 ± 0.8	1.0	0 ± 0.8	/	1.0	/
18	Front bumper moulding lower body	Front bumper	0.5 ± 0.5	0.5	/	/	/	/



GE00-0000d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
19	Number plate mounting plate	Front bumper	0 +0.5/0	/	/	/	/	/
20	Front bumper	Curtain Airbag	0.5±0.5	/	/	/	/	/
21	Front logo	Front bumper	0.5±0.3	/	/	/	/	/

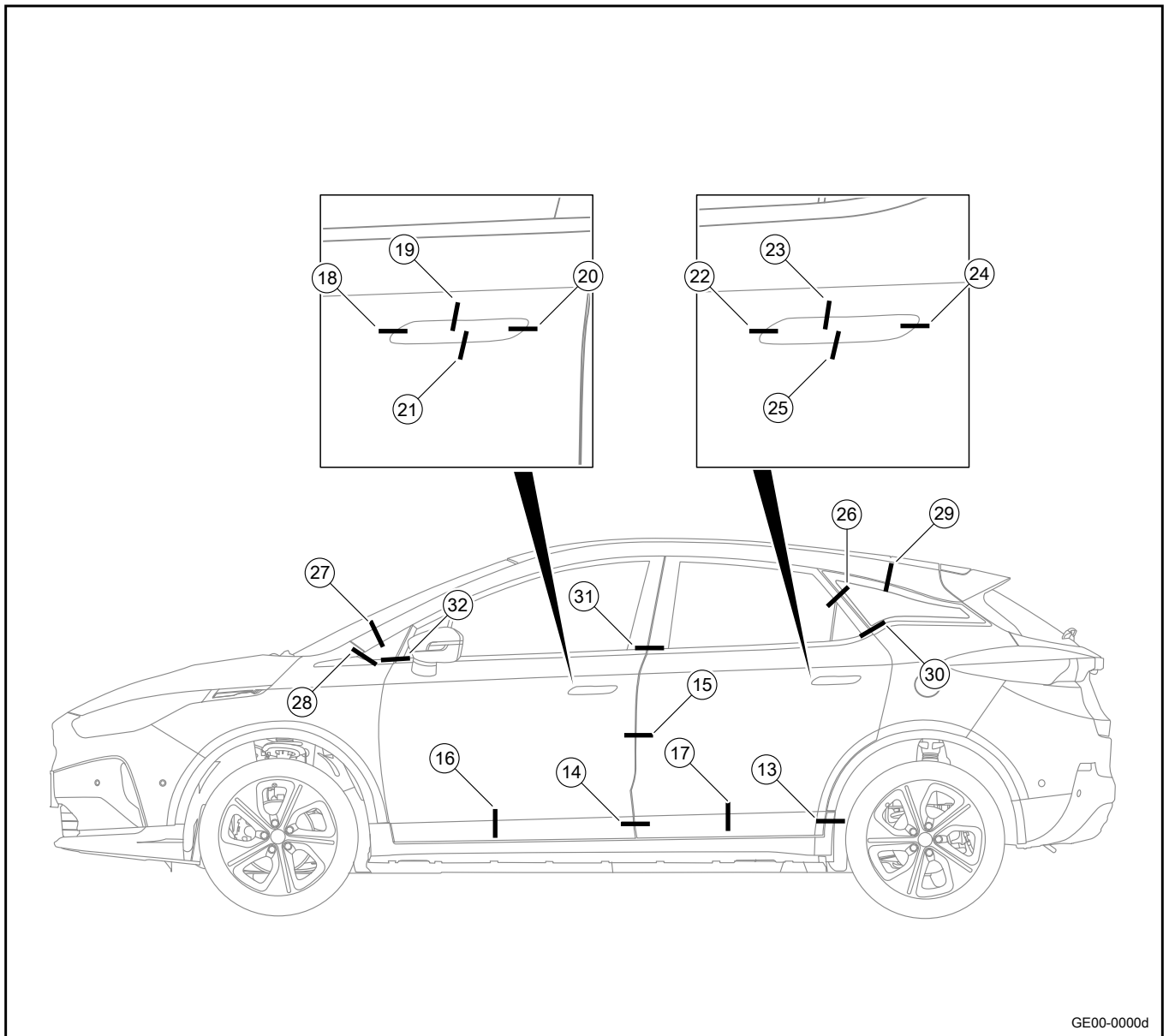
22	Lower grill	Front bumper lower body	0.7±0.7	/	/	/	/	/
23	trim panel of front bumper	Front bumper lower body	0.7±0.7	/	/	/	/	/
24	trim panel of front bumper	Lower grill	0.5±0.5	/	0±0.5	/	/	/
25	Bracket of radar	Front bumper	0.2±0.2	/	-0.3±0.3	/	/	/
26	trim panel of front bumper	Front bumper upper body	0.7±0.7	/	/	/	/	/
27	trim panel of front bumper	Curtain Airbag	0.7±0.7	/	/	/	/	/
28	Front bumper	Curtain Airbag	0.5±0.5	/	/	/	/	/
29	Front bumper	Curtain Airbag	0.5±0.5	/	/	/	/	/
30	Front bumper	Curtain Airbag	0.5±0.5	/	/	/	/	/
31	Lower grill of the front bumper	Radar cover plate	0.5±0.5	/	-0.5±0.5	/	/	/



GE00-0000d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
1	Body side	Fender	2.0±1.0	/	0±1.0	/	/	/
2	Fender	Front trim panel	0	/	/	/	/	/
3	Front door outer panel	Fender	3.5±0.8	1.0	0+1.0/-0.5	/	1.0	/
4	Front wheel brow	trim panel of rocker panel	0.5±0.5	/	-0.5 +0/-1.0	/	/	/

5	Front door outer panel	trim panel of rocker panel	5.0+/-1.2	1.2	/	/	/	/
6	Rear door outer panel	trim panel of rocker panel	5.0+/-1.2	1.2	/	/	/	/
7	Rear wheel brow	trim panel of rocker panel	0.5±0.5	/	-1.0 +0/-1.0	/	/	/
8	Rear wheel brow	Rear door outer panel	4.0±1.0	/	/	/	/	/
9	Rear wheel brow	Body side	0(0.5, 0)	/	/	/	/	/
10	Body side outer panel	Charging port cover	2.0±0.5	0.7	-0.5±0.7	/	/	/
11	Fender	Charging port cover	2.0±0.5	0.7	-0.5±0.7	/	/	/
12	Front door trim panel lower	trim panel of rocker panel	4.0±1.0	1.0	/	/	/	/

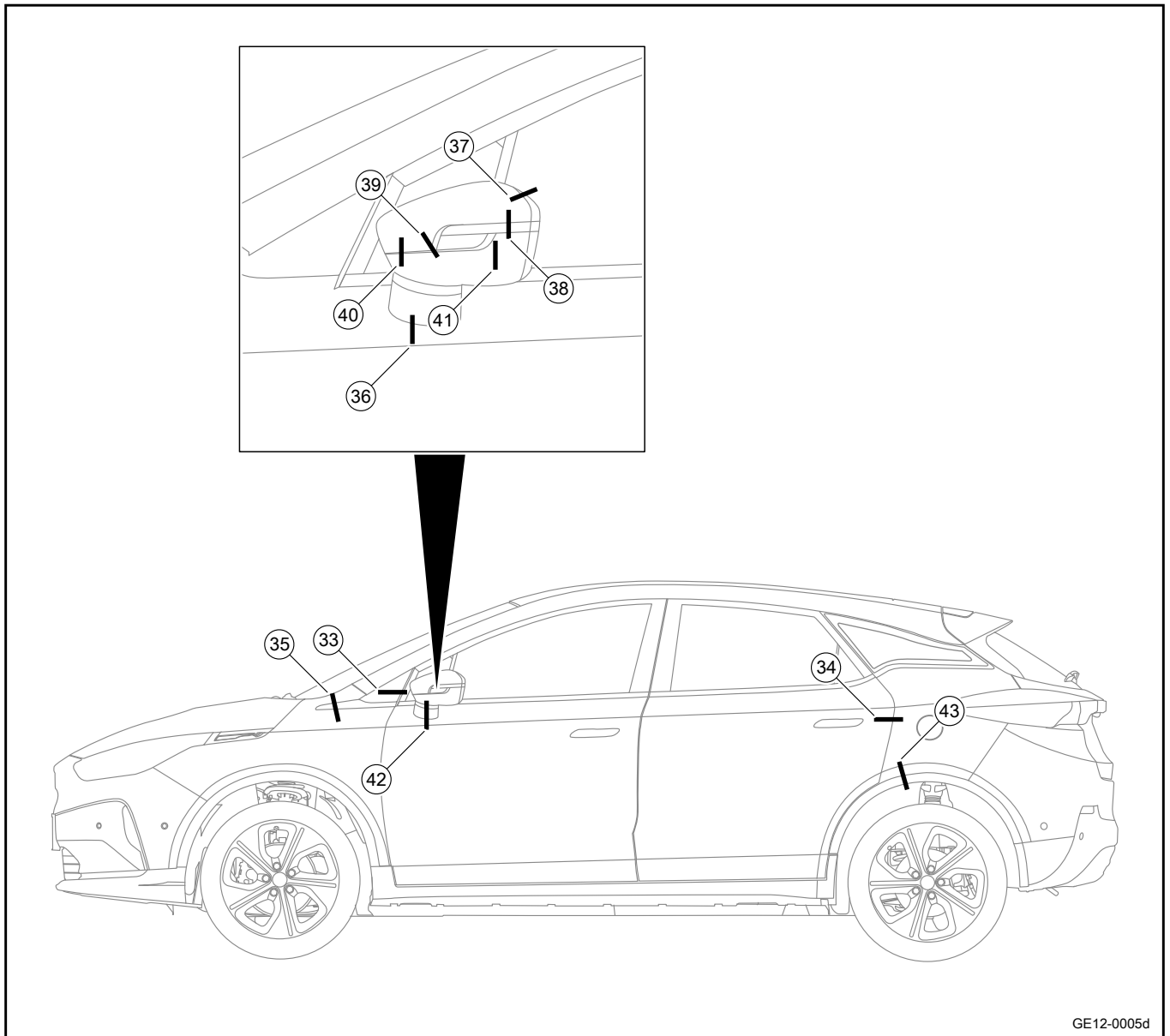


GE00-0000d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
13	Rear door lower trim panel	Rear wheel brow	4.0±1.0	1.0	/	/	/	/
14	Front door lower trim panel	Rear door lower trim panel	5.0±1.0	1.0	0+1.0/-0.5	/	/	/
15	Front door outer panel	Rear door outer panel	3.8±0.8	0.8	0+1.0/-0.5	/	/	/

16	Front door	Front door lower trim panel	0(0.5/0)	/	/	/	/	/
17	Left rear door	Rear door lower trim panel	0(0.5/0)	/	/	/	/	/
18	Front door outer panel	Front door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
19	Front door outer panel	Front door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
20	Front door outer panel	Front door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
21	Front door outer panel	Front door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
22	Rear door outer panel	Rear door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
23	Rear door outer panel	Rear door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
24	Rear door outer panel	Rear door handle	2.1±0.6	0.5	-0.5±0.5	/	/	/
25	Rear door outer panel	Rear door handle	1.8±0.6	0.5	-0.5±0.5	/	/	/
26	Rear triangular window	Rear window frame	4.0±1.0	1.0	0.5 +1.0/-0.5	/	/	/
27	Front triangular window	Body side	0	/	/	/	/	/
28	Front triangular window	Fender	0	/	/	/	/	/
29	Rear triangular window	Body side	0	/	/	/	/	/

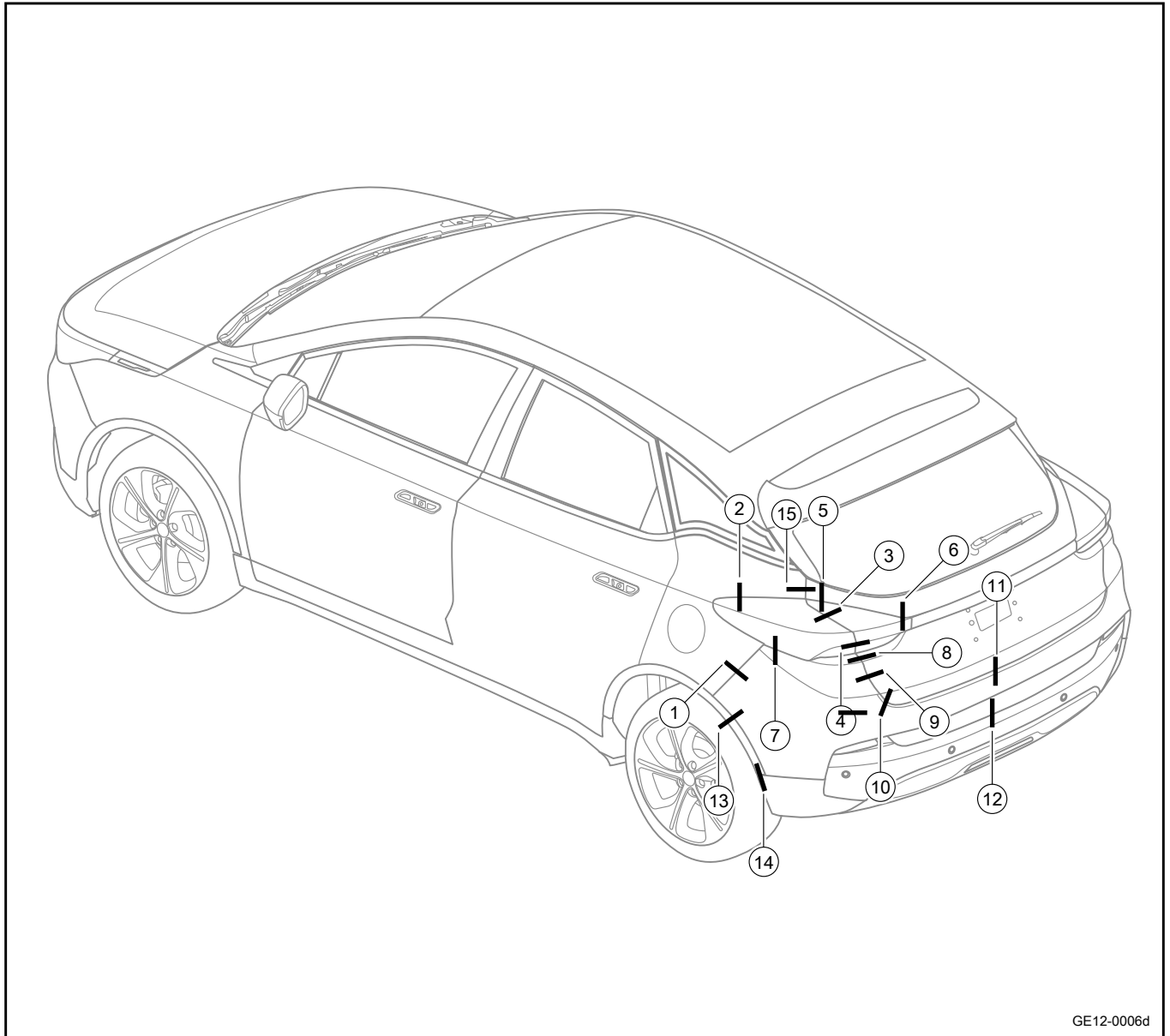
30	Rear triangular window trim strip	Rear door belt line moulding	4.5±1.0	/	0±1.0	/	/	/
31	Rear door belt line moulding	Front door belt line moulding	3.5±1.0	/	0±1.0	/	/	/
32	Front door belt line moulding	Front trim panel	4.5±1.0	/	0±1.0	/	/	/



GE12-0005d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment

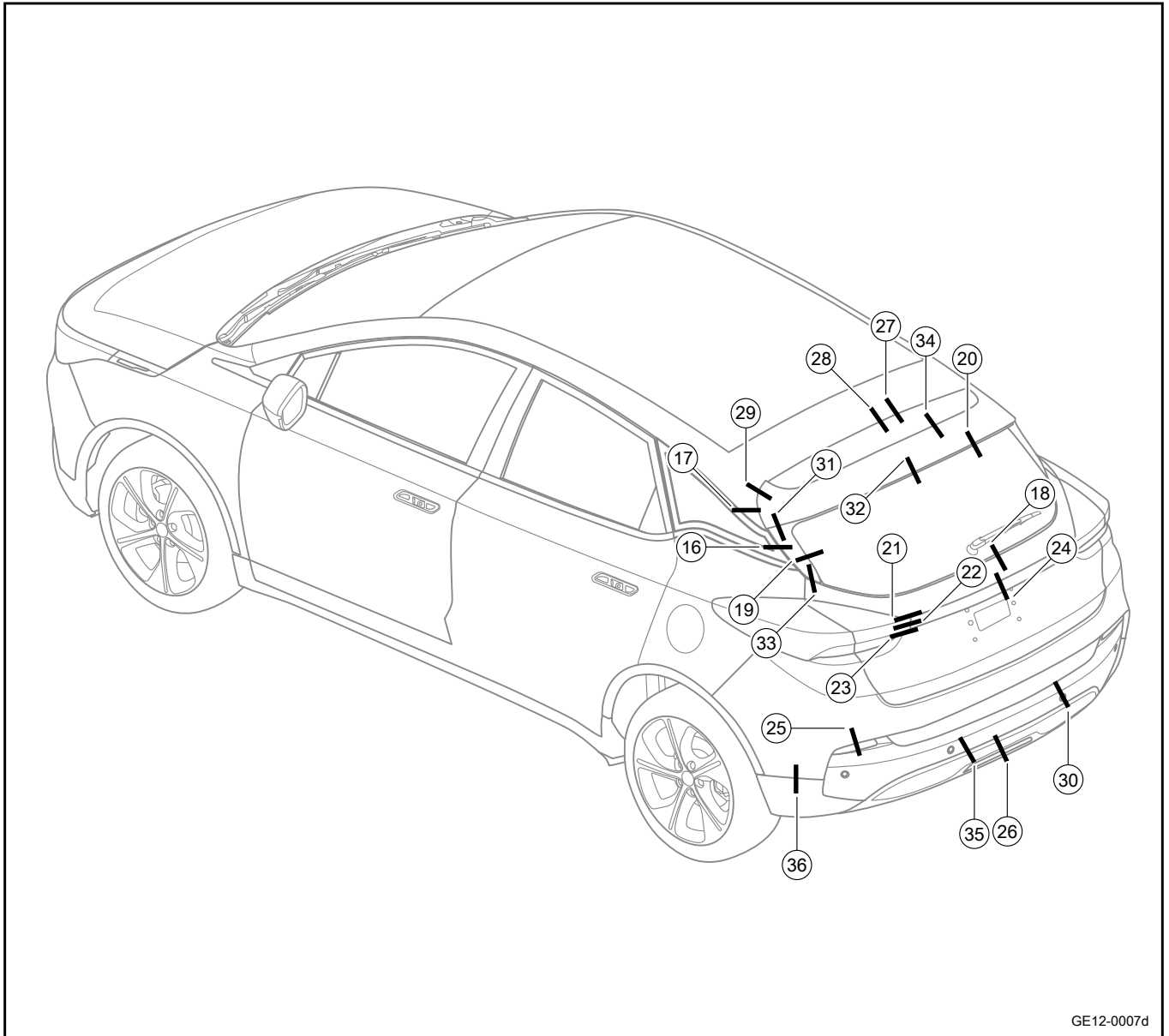
33	Front triangular window	Front window frame	4.0±1.0	/	/	/	/	/
34	Body side	Rear door outer panel	3.5±0.8	0.8	0+1.0/-0.5	/	/	/
35	Front trims	Fender	3.5	/	/	/	/	/
36	Rearview mirrors	Front door	1±1	/	/	/	/	/
37	Rearview mirrors covers	Rearview mirrors covers	3.5±0.5	/	/	/	/	/
38	Rearview mirrors front covers	Turn signal lamp	0.5±0.5	/	/	/	/	/
39	Rearview mirrors upper housing	Rearview mirrors lower housing	0.5±0.5	/	0±0.5	/	/	/
40	Rearview mirrors upper housing	Rearview mirrors lower housing	0.2±0.2	/	/	/	/	/
41	Rearview mirrors housing	Camera	0.3±0.2	/	/	/	/	/
42	Rearview mirrors housing	Rearview mirrors seat	1±0.5	/	0±0.5	/	/	/
43	Rear wheel brow	Body side outer panel	0 0/1.5	/	/	/	/	/



GE12-0006d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
1	Body side	Rear bumper	0.5 +0.5/-0.3	/	-0.5±0.7	/	/	/
2	Body side	Tail light A	1.2±0.8	0.8	/	/	/	/
3	Tail light A	Tail light B	(4-3.5) ± 1.5	/	-1.0±1.5	/	1.5	/
4	Tail light A	Tail light B	3.5±1.5	1.5	-1.0±1.5	/	1.5	/
5	Tail light B	Tailgate	1.2±0.8	1.0	/	/	/	/
6	Tail light B	Tailgate	1.0±0.8	1.0	/	/	/	/
7	Tail light A	Rear bumper	1.2±0.8	1.0	/	/	/	/

8	Tailgate	Rear bumper	4.0+/-1.5	1.5	0-1±1.5	/	1.5	/
9	Tailgate	Rear bumper	4.0+/-1.5	1.5	-1±1.5	/	1.5	/
10	Tailgate	Rear bumper	4.0-6.0/±1.5	/	/	/	/	/
11	Tailgate	Rear bumper	6.0±1.5	1.5	/	/	/	/
12	Rear bumper moulding lower	Rear bumper	0.5±0.5	/	/	/	/	/
13	Rear wheel brow	Rear bumper	/	/	/	/	/	/
14	Rear wheel brow	Rear bumper moulding lower	0.5±0.5	/	-0.5 +0/-1.0	/	/	/
15	Tailgate	Body side	4.0±1.0	1.0	-0.5±0.8	/	1.0	/

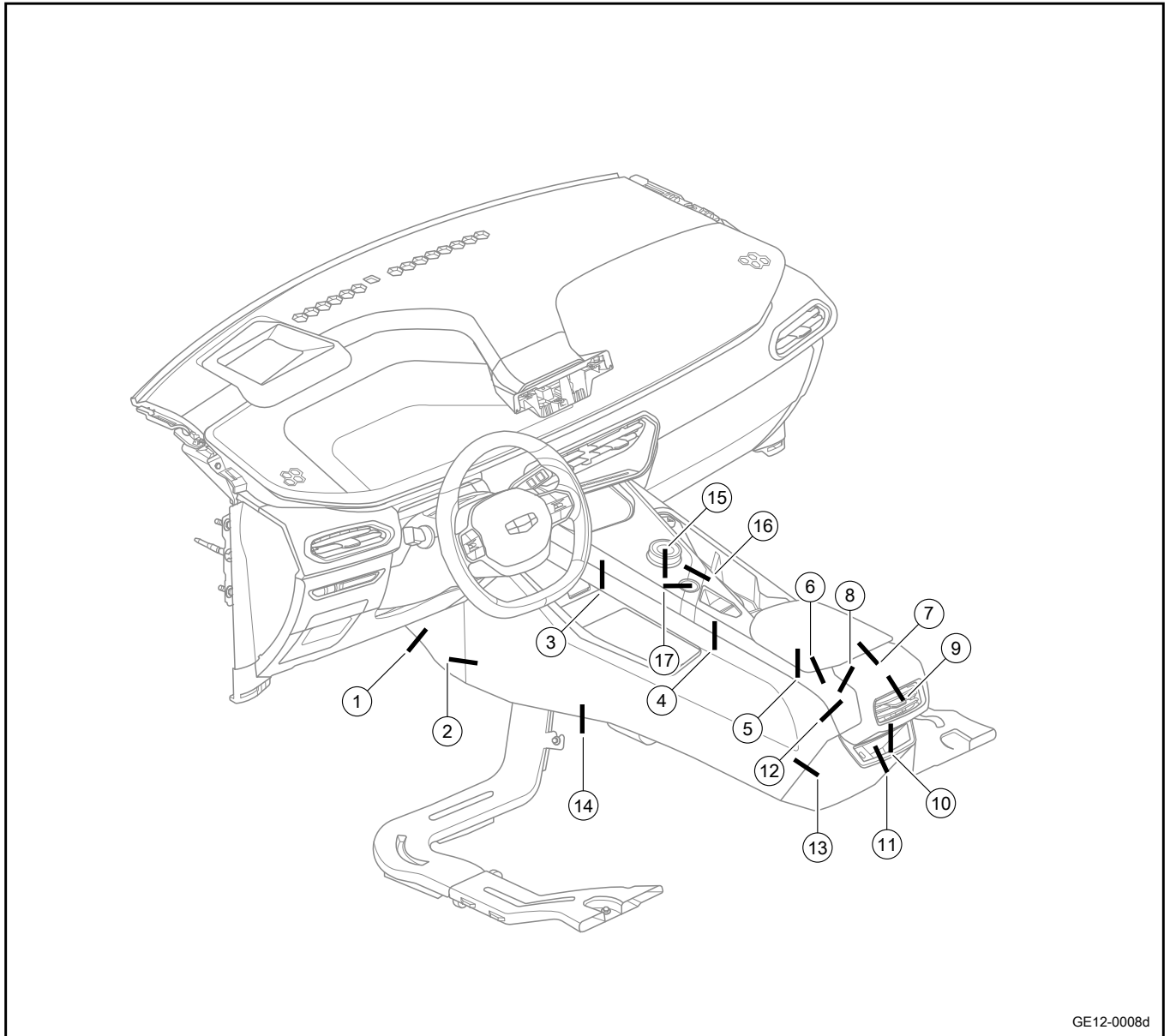


GE12-0007d

Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
16	Trim panel of tailgate	Body side	4.0±1.5	1.5	/	/	1.5	/
17	Spoiler	Rear triangular window	4.0±1.5	1.5	/	/	1.5	/
18	Rear windshield glass	Tailgate	2.5±1.5	1.5	/	/	/	/

19	Rear windshield glass	Trim panel of tailgate	2.0±1.5	/	/	/	/	/
20	Rear windshield glass	Spoiler	2.0±1.5	1.5	/	/	/	/
21	Tail light B	Tail light C	1.5±1.4	/	-0.3±0.5	/	/	/
22	Tail light B	Tail light C	1.5±1.4	/	-0.5±0.5	/	/	/
23	Tail light B	Tail light C	1.5±1.4	/	/	/	/	/
24	Outer trim panel of tailgate	Tailgate through lamp	1.0±1	1	/	/	/	/
25	Retro-reflector	Rear bumper	0.8±0.7	/	/	/	/	/
26	Rear fog lamp	Rear bumper	1.5±1.0	1.0	/	/	/	/
27	Sheet metal top cover	Tailgate	6.5±1.2	1.2	-1.0±1.2	/	/	/
28	Glass top cover	Tailgate	6.5±1.9	1.2	-1.0±1.2	/	/	/
29	Body side	Spoiler	4.0±1.5	1.5	-1.0±1.5	/	/	/
30	Bracket of radar	Rear bumper	0.2±0.2	/	-0.3±0.3	/	/	/
31	Rear spoiler upper body	Rear spoiler lower body	0.5±0.5	/	/	/	/	/
32	Rear spoiler	High-mounted stop light	1.0±0.7	/	/	/	/	/
33	Rear spoiler lower body	Tailgate trim	4.0-2.5±1.2	/	/	/	/	/
34	Rear spoiler upper body	Tailgate metal plate	1.0±0.7	/	-1.0±0.7	/	/	/

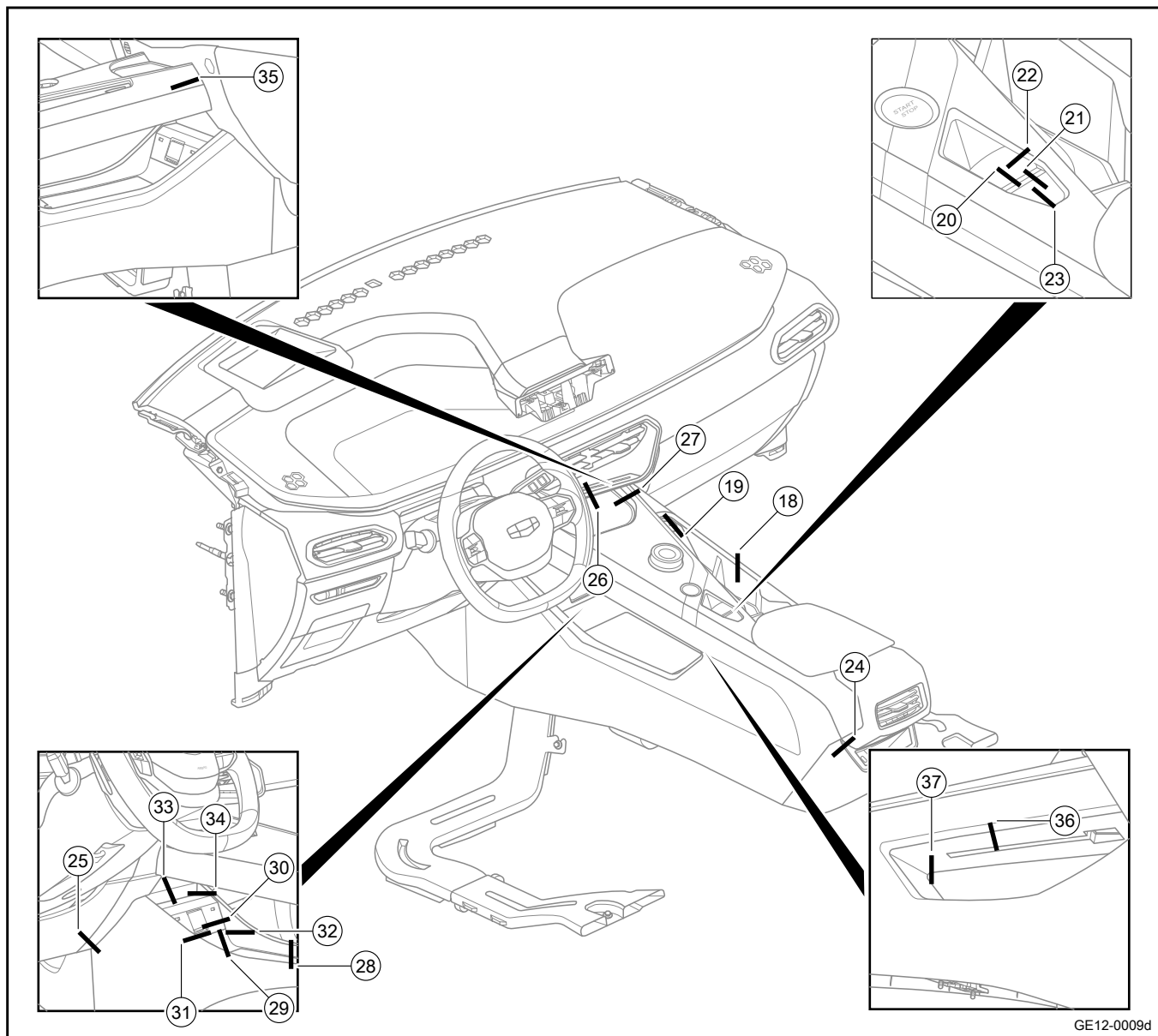
35	Rear bumper moulding lower	Lower trim panel of the rear bumper	0.5±0.5	0.5	/	/	/	/
36	Rear bumper moulding lower	Rear bumper	0.3±0.3	/	/	/	/	/



Code	Part Name benchmark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
1	Front baffle	Carpet	/	/	/	/	/	/

2	Side trim panel of auxiliary dashboard	Front baffle	0.5±0.3	/	-0.5±0.5	/	/	/
3	Panel of auxiliary dashboard	Side trim panel of auxiliary dashboard	0.5±0.3	/	-1.5±0.3	/	/	/
4	Auxiliary dashboard upper trim panel	Side trim panel of auxiliary dashboard	0.5±0.3	/	-1.5±0.3	/	/	/
5	Armrest	Upper trim panel of auxiliary dashboard	3.0±1.0	1.0	/	/	/	/
6	Armrest	Upper trim panel of auxiliary dashboard	3.0±1.0	1.0	/	/	/	/
7	Armrest	Rear panel of auxiliary dashboard	3.0±1.0	/	/	/	/	/
8	Upper trim panel of auxiliary dashboard	Rear air vent panel	0.5± 0.3	/	-1.0±0.3	/	/	/
9	Rear air vent panel	Rear air vent trim strip	0.3±0.3	/	/	/	/	/
10	Rear air vent panel	Rear glove box of auxiliary dashboard	1.5±0.3	/	/	/	/	/
11	Rear glove box cover plate of auxiliary dashboard	Rear glove box of auxiliary dashboard	0.3±0.3	/	-0.5±0.3	/	/	/

12	Upper trim panel of auxiliary dashboard	Side trim panel of auxiliary dashboard	0.5±0.3	/	-1.5±0.3	/	/	/
13	Rear glove box cover plate of auxiliary dashboard	Side panel of auxiliary dashboard	0.5 ± 0.3	/	-0.5 ± 0.5	/	/	/
14	Side trim panel of auxiliary dashboard	Carpet	/	/	/	/	/	/
15	Switch	Auxiliary dashboard panel	0.4±0.3	/	/	/	/	/
16	Auxiliary dashboard trim strip	Auxiliary dashboard upper trim panel	0+0.3/0	/	/	/	/	/
17	Switch	Auxiliary dashboard panel	0.5±0.25	/	/	/	/	/



GE12-0009d

Code	Part Name bench- mark	Relevant Part Name	Specifications					
			Clearance	Uniformity (clearance)	Tolerance	Uniformity (surface difference)	Degree of symmetry	Degree of alignment
18	Trim panel of auxiliary dashboard middle	Cup holder	0.3±0.3	/	-0.5±0.3	/	/	/
19	Cup holder	Hazard warning lamp switch	0.5±0.25	/	/	/	/	/
20	Switch	trim strip	1.0± 0.25	/	0±0.25	/	/	/
21	trim strip	Switch	0.5±0.25	/	0±0.25	/	/	/

22	Switch	Auxiliary dashboard upper trim panel	0.7±0.3	/	/	/	/	/
23	Switch	Auxiliary dashboard upper trim panel	0.7±0.3	/	/	/	/	/
24	Rear glove box panel of auxiliary dashboard	Rear air vent panel	1.0 ± 0.5	/	/	/	/	/
25	Side trim panel of auxiliary dashboard	Dashboard lower trim panel	1.0±0.5	/	/	/	/	/
26	Wireless charging panel	Left lower fender apron of dashboard	/	/	/	/	/	/
27	Wireless charging panel	Auxiliary dashboard panel	0.3±0.3	/	0.3 +0/-0.3	/	/	/
28	Auxiliary dashboard side panel	Auxiliary dashboard lower frame	0.3±0.3	/	-1.0±0.3	/	/	/
29	12V power supply panel	Auxiliary dashboard lower frame	0.5±0.3	/	0±0.5	/	/	/
30	Power socket cover plate	12V power supply panel	0.5±0.3	/	-0.5±0.5	/	/	/
31	Power socket cover plate	12V power supply panel	0.5±0.3	/	-0.5±0.5	/	/	/
32	12V power supply panel	Auxiliary dashboard frame	0.5±0.3	/	/	/	/	/

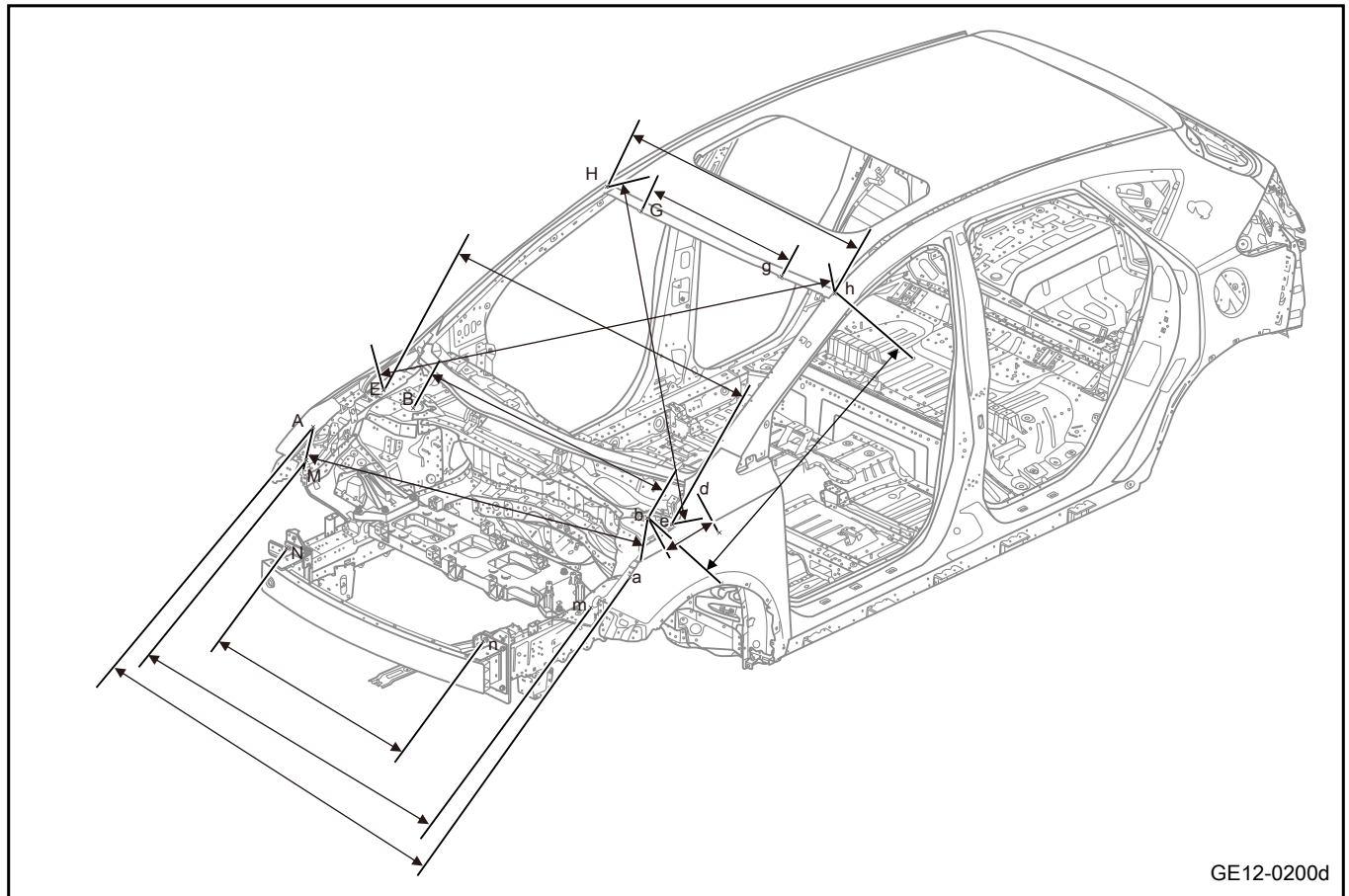
33	Front end plug cover of the auxiliary dash-board.	USB cover plate	0.5±0.3	/	0±0.5	/	/	/
34	Front end plug cover of the auxiliary dash-board.	Auxiliary dashboard frame	0.5±0.3	/	/	/	/	/
35	Auxiliary dashboard panle	Dashboard lower trim panel	/	/	/	/	/	/
36	Auxiliary dashboard side panel	Auxiliary dashboard suspension frame	0.5±0.3	/	-0.5±0.3	/	/	/
37	Auxiliary dashboard suspen-sion frame	Auxiliary dashboard lower frame	0.5±0.3	/	/	/	/	/

12.12.1.3 Body dimensions

Body dimensions are used for body check.

Please use a special extension ruler when measuring the body dimensions.

Dimensions of body front

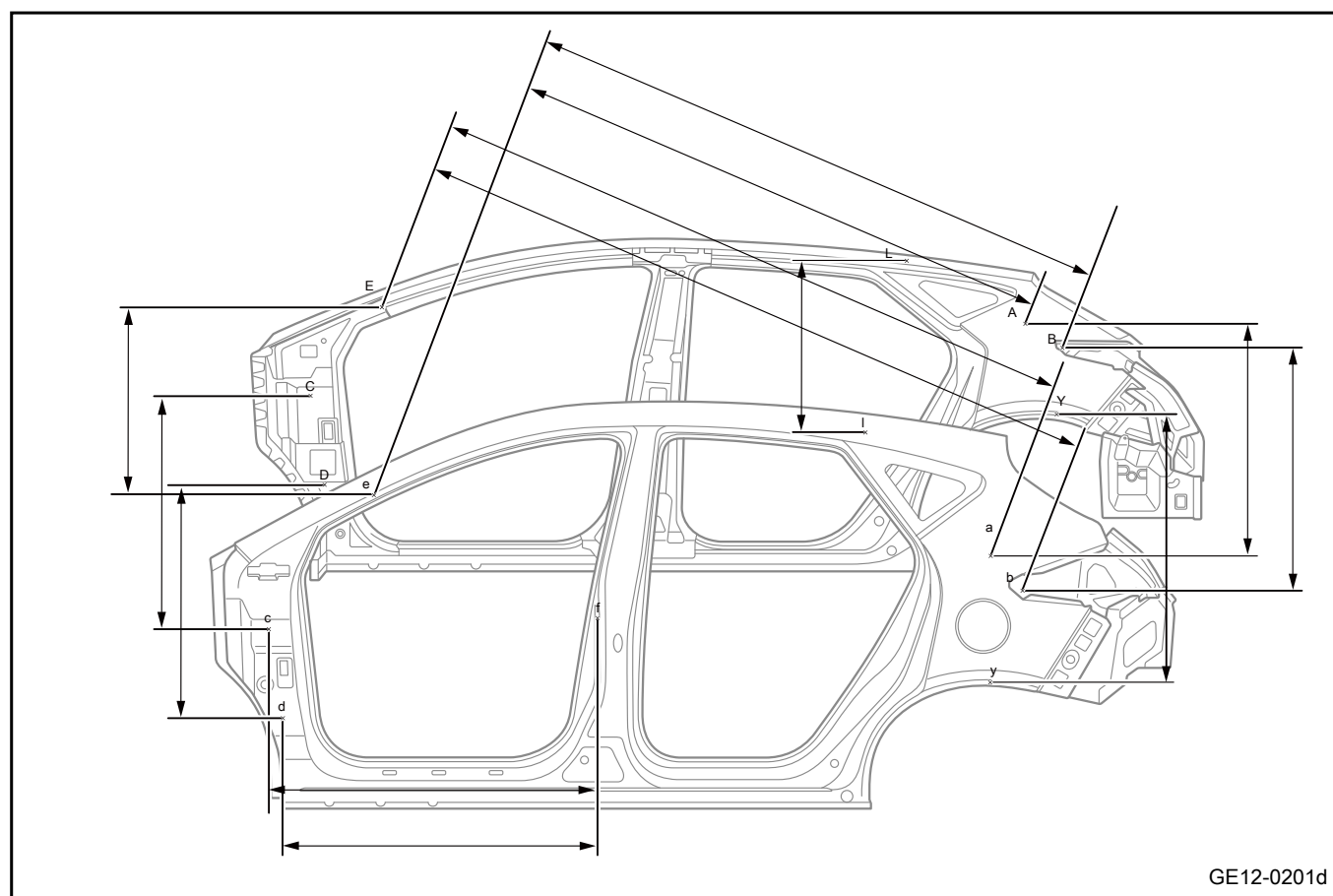


GE12-0200d

Position	Dimensions	Value (mm)	Difference
Fender mounting hole (front)	A-a	1448.6	±1.5
Fender mounting hole (front) - front shock absorber positioning hole (inner)	A-b	1367.9	±1.5
Front shock absorber positioning hole (inner)	B-b	1104.7	±1.5
Front shock absorber positioning hole (inner) - front engine compartment hinge hole (rear)	b-d	205.4	±0.5
Water deflector main board mounting hole 1	E-e	1510	±1.5
Water deflector main board mounting hole 1 - Body side outer panel/roof joint position	e-h	1196.1	±1.5
Joint between side wall outer panel/roof	H-h	1087.5	±1.5

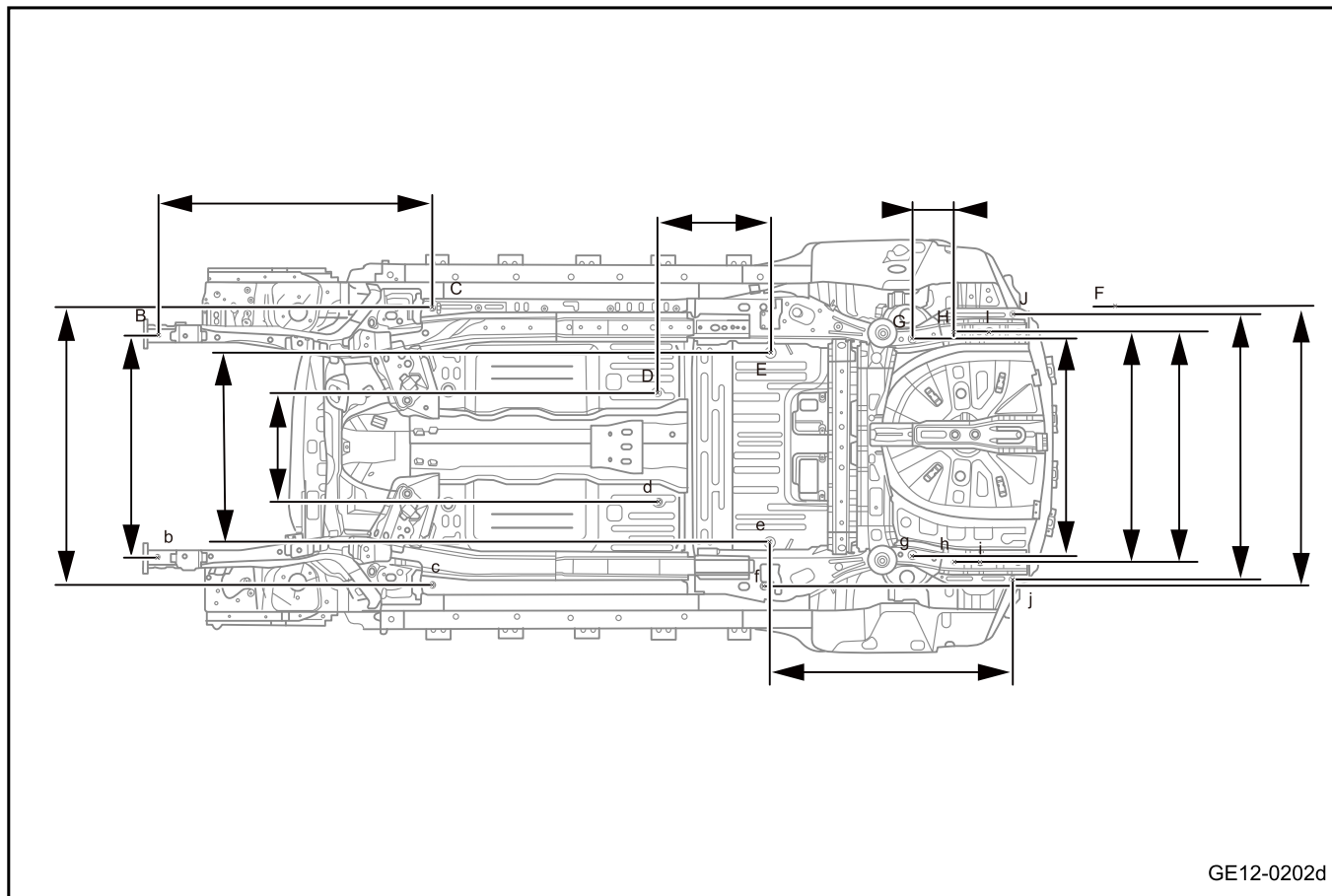
Position	Dimensions	Value (mm)	Difference
Water deflector main board mounting hole 1 - Body side outer panel/roof joint position	E-h	1752.9	±1.5
Water deflector main board mounting hole 1 - Body side outer panel/roof joint position	e-H	1752.9	±1.5
Front windshield non-slipping block mounting hole	G-g	700	±0.5
Front combination lights mounting holes (rear)	M-m	1472	±1.5
Front cross beam mounting hole (lower)	N-n	904	±1.5

Dimensions of body middle



Position	Dimensions	Nominal dimensions	Difference (\pm)
Body side outer panel/roof front joint position - Body side outer panel/rear combination lights joint position	e-A	2434.2	± 2.5
Body side outer panel/roof front joint position - Body side outer panel/rear combination lights joint position	E-a	2434.2	± 2.5
Joint between side wall outer panel/roof front section - rear combination lights mounting holes	e-B	2315	± 2.5
Joint between side wall outer panel/roof front section - rear combination lights mounting holes	E-b	2315	± 2.5
Body side outer panel/rear combination lights joint position	A-a	1300	± 1.5
Front door upper hinge mounting hole (rear)	C-c	1589.4	± 1.5
Front door lower hinge mounting hole (front)	D-d	1611.7	± 1.5
Body side outer panel/roof front joint position	E-e	1087.5	± 1.5
Rear shock absorber mounting hole	Y-y	1136.5	± 1.5
Body side outer panel/roof rear joint position	L-l	895.5	± 1.5
Front door upper hinge mounting hole (rear) - front door lock catch mounting hole (upper)	c-f	997.9	± 1.5
Front door lower hinge mounting hole (front) - front door lock catch mounting hole (upper)	d-f	992.5	± 1.5

Dimensions of body bottom

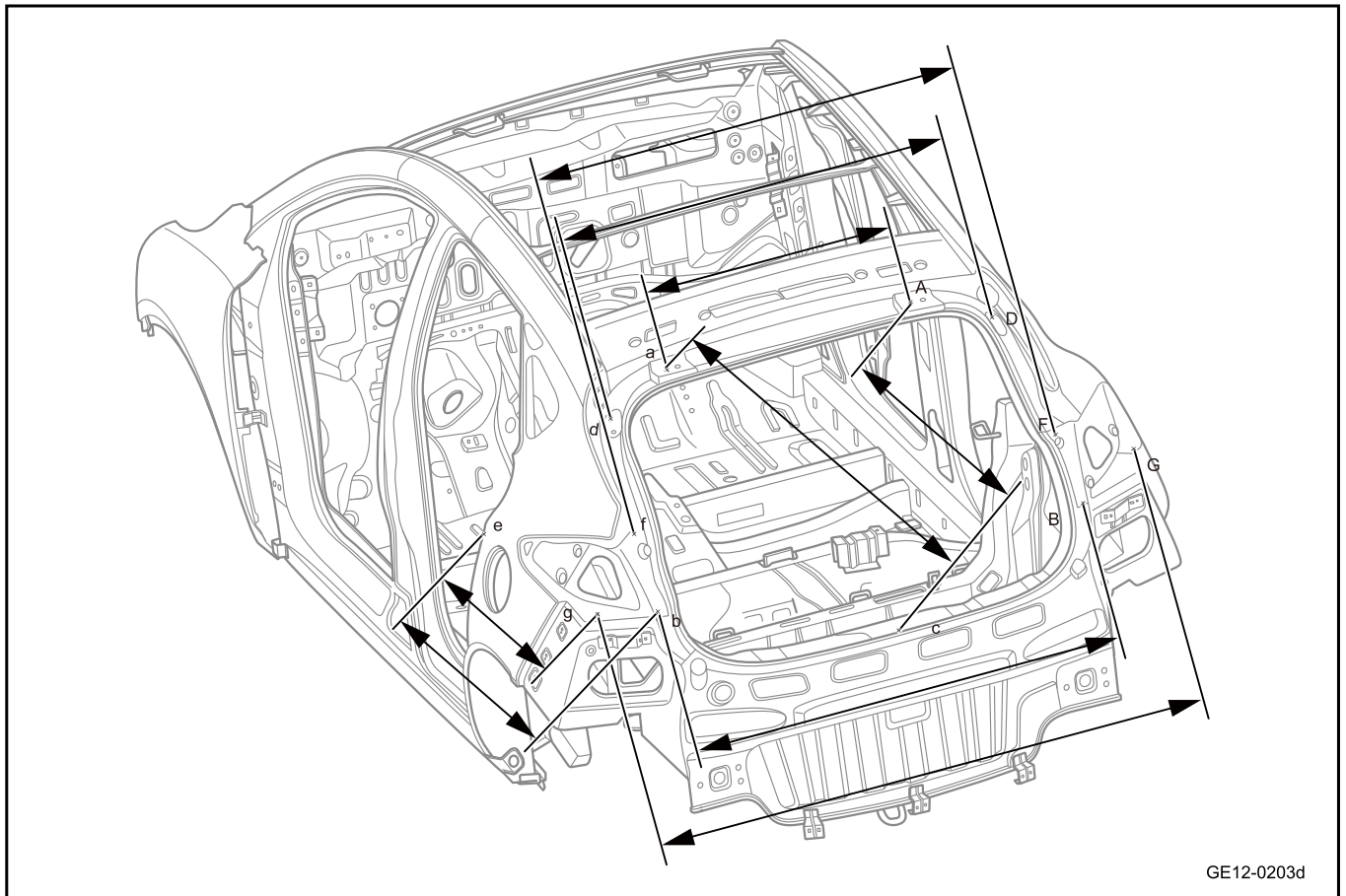


GE12-0202d

Position	Dimensions	Nominal dimensions	Difference (±)
Front side member locating hole	B-b	976	±0.5
Front side member locating hole - front floor mounting holes	B-C	1190	±1.5
Front floor locating holes (front)	C-c	1218	±1.5
Front floor locating holes (rear)	D-d	470	±0.5
Front floor positioning hole (rear) - middle floor positioning hole	D-E	492	±0.5
Middle floor positioning hole	E-e	830	±0.5
Middle floor positioning hole - rear floor positioning hole	e-j	1086	±0.5
Rear side member locating hole (front)	F-f	1225.92	±1.5
Rear side member locating hole (rear)	G-g	944	±1.5

Position	Dimensions	Nominal dimensions	Difference (±)
Rear side member rear section locating hole (front)	H-h	1010	±1.5
Rear side member rear section locating hole (front)	I-i	1010	±1.5
Rear side member locating hole (rear) - Rear side member rear section locating hole (front)	G-H	231.96	±1.5

Dimensions of body rear



Position	Dimensions	Nominal dimensions	Difference (±)
Tailgate hinge mounting hole (outer) - Rear combination lights mounting hole	a-b	626.6	±0.5
Backdoor hinge mounting hole (outer) - tailgate lock catch mounting hole (left)	a-c	875.5	±1.5
Backdoor hinge mounting hole (outer) - tailgate lock catch mounting hole (left)	a-c	891.4	±1.5

Position	Dimensions	Nominal dimensions	Difference (±)
Backdoor pneumatic rod mounting hole (upper)	D-d	1063.4	±1.5
Rear combination lights mounting hole	B-b	1261.8	±1.5
Rear combination lights mounting hole - rear door front lock catch mounting hole (upper)	b-e	691.8	±1.5
Rear combination lights mounting hole	F-f	1429.3	±1.5
Rear combination lights mounting hole	G-g	1528.2	±1.5
Rear combination lights mounting hole - rear door front lock catch mounting hole (upper)	g-e	518.9	±1.5

12.12.2 Instructions and operations

12.12.2.1 Safety precautions

The following safety precautions must be strictly observed when carrying out body sheet metal repair:

1. During the operation of welding, cutting and polishing body sheet metal, the protective suit, goggles, gloves and work shoes must be worn.
2. The welding area must be well ventilated.
3. Before welding, the battery must be disconnected and the wiring terminal must be covered.
4. If sparks may be generated when working near the battery, the battery must be removed.
5. Before removing the components of the complete vehicle, the vehicle must be fixed on the vehicle lifting frame to avoid the change of gravity of the complete vehicle center, thus affecting operational safety.
6. Directly connect the grounding wire of the welding set to the part to be welded. Make sure that there is no conductive part between the grounding point and the welding point during operation.
7. The grounding wire or welding electrode cannot be connected with the electronic control unit and the wire.
8. Unprotected vehicle cannot be parked in the body maintenance area, because shattering sparks may cause the fire and damage lacquer surface and glass.
9. Any component of the A/C system containing refrigerant cannot be welded, brazed or soldered. Any other components in the vehicle that may cause the A/C system component temperature to rise shall not be welded, because they may cause the A/C system to explode. If welding must be conducted near the refrigerant hosepipe, the refrigerant must be recycled, because the invisible ultraviolet ray generated during welding penetrating the refrigerant hosepipe may cause the refrigerant to decay.
10. When working on the airbag system or performing body alignment, the battery ground wire must be disconnected; the ambient temperature of the airbag components must not exceed 100 °C (212 °F).

12.12.2.2 Status of parts and components

Before repaired automobile or components are delivered to painting hall for painting, their surface must be smooth and seam-filled, and must be polished with sandpaper. The preparation procedure is completed by panel beater. Body and floor components are mainly formed by steel plate cold

stamping. Therefore, same method should be adopted for parts damaged in accident. If damaged components cannot be restored and neighbor parts are corrected, damaged part should be removed and replaced according to the integrity of parts. Do not carry out monomer cutting for parts. The rigidity of complete vehicle, driving safety and convenience of maintenance will be influenced after cutting and melting.

12.12.2.3 Description of welding types

Common welding types include spot welding, gas shielded welding and brazing. The number of welding spots shall not be reduced during spot welding. Usually, when the spot-welding device cannot be operated, the plug welding can be carried out through gas shielded welding after drilling. When spot welding is adopted, if it is a connection of three-layer plates and only the outer plate is replaced, the solder joint shall be placed on the original one. When spot welding is adopted, single-row weld, double-row weld and double-row offset weld can be generated. When gas shielded welding is used, lap welds, continuous welds and continuous welds (intermittent) can be generated. Brazing is commonly used to weld and repair areas with low tensile strength and relatively small component thickness.

12.12.2.4 Anti-corrosion treatment

1. Recognized materials must be used to restore the standard anti-corrosion later after repair.
2. Both sides of all welds must be coated with the primer before sealing.
3. Sheet metal coated with primer must be coated with sealant.
4. Lap plates, metal edges, butt welds and welds must be sealed with sealant.
5. The floor must be coated with long-term floor protection agent.
6. After surface coating spraying, empty cavity protection materials must be used to treat the empty cavities within repair area.
7. Clean the outlet after the empty cavity protection materials dry.

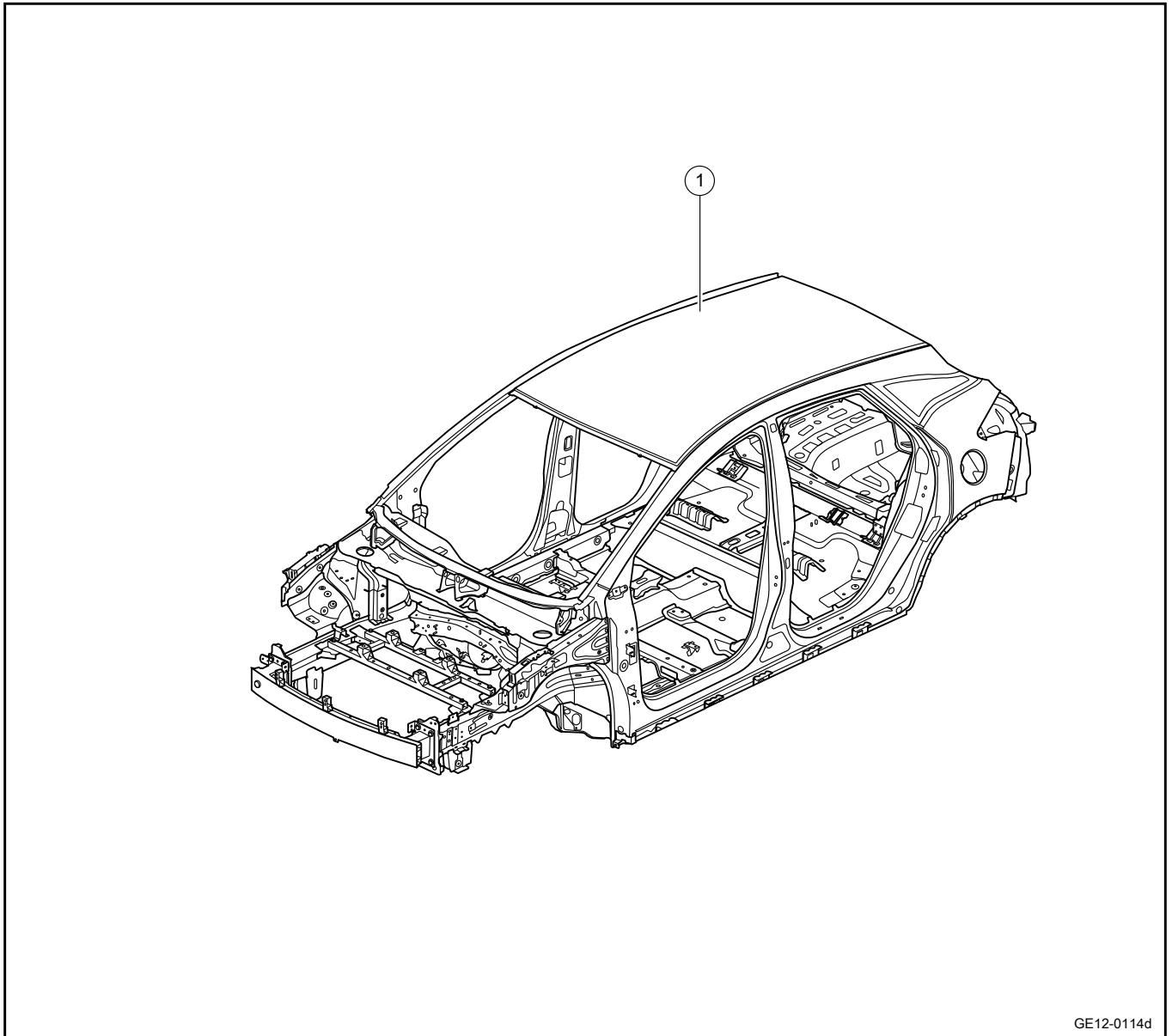
12.12.2.5 Scrapped Components Environmentally Friendly Disposal Approach

1. After the maintenance or repair of an automobile, the waste materials must be collected by type.

2. Sort waste materials and check for reusability.

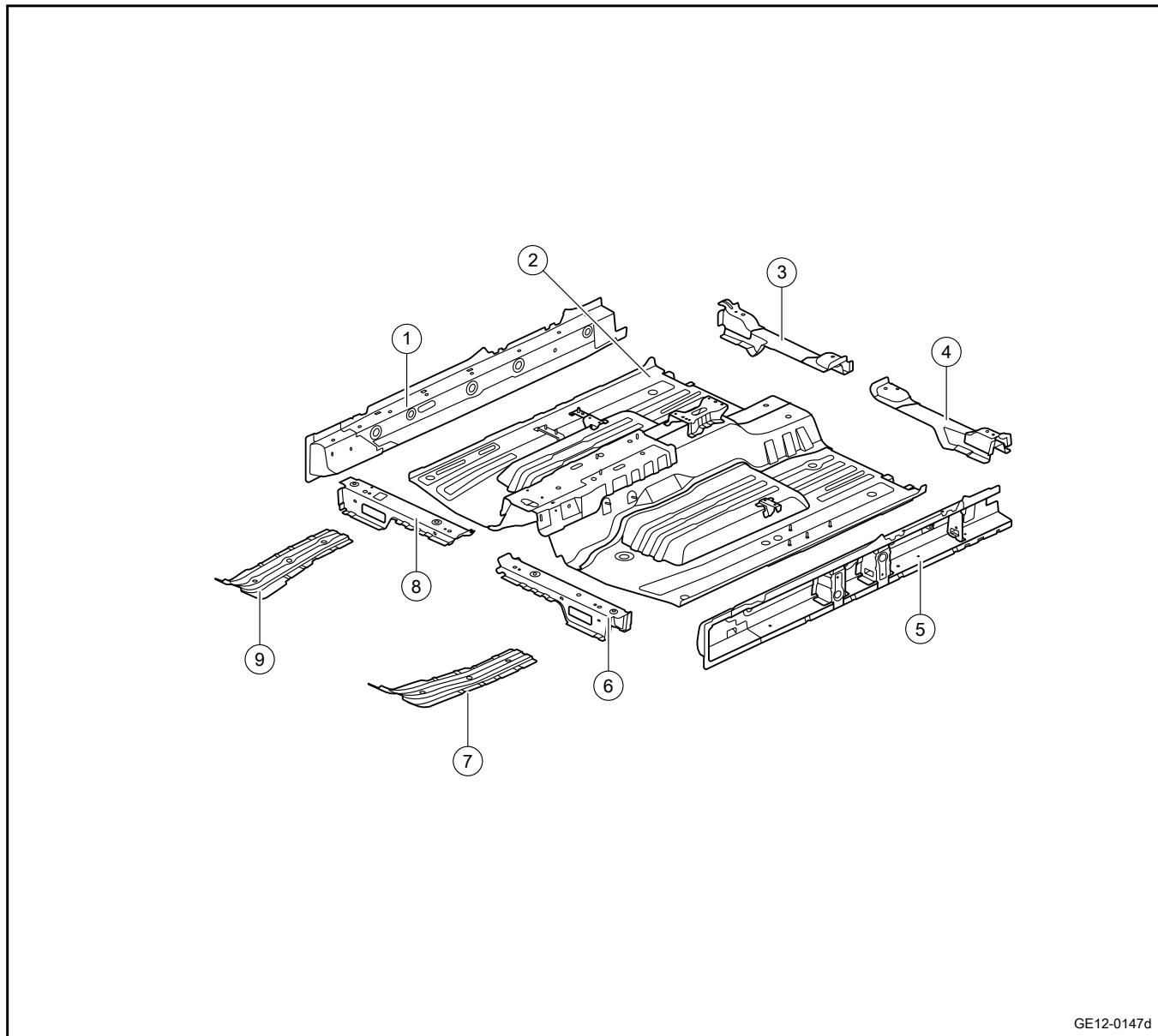
12.12.3 Breakdown drawing

12.12.3.1 Body assembly



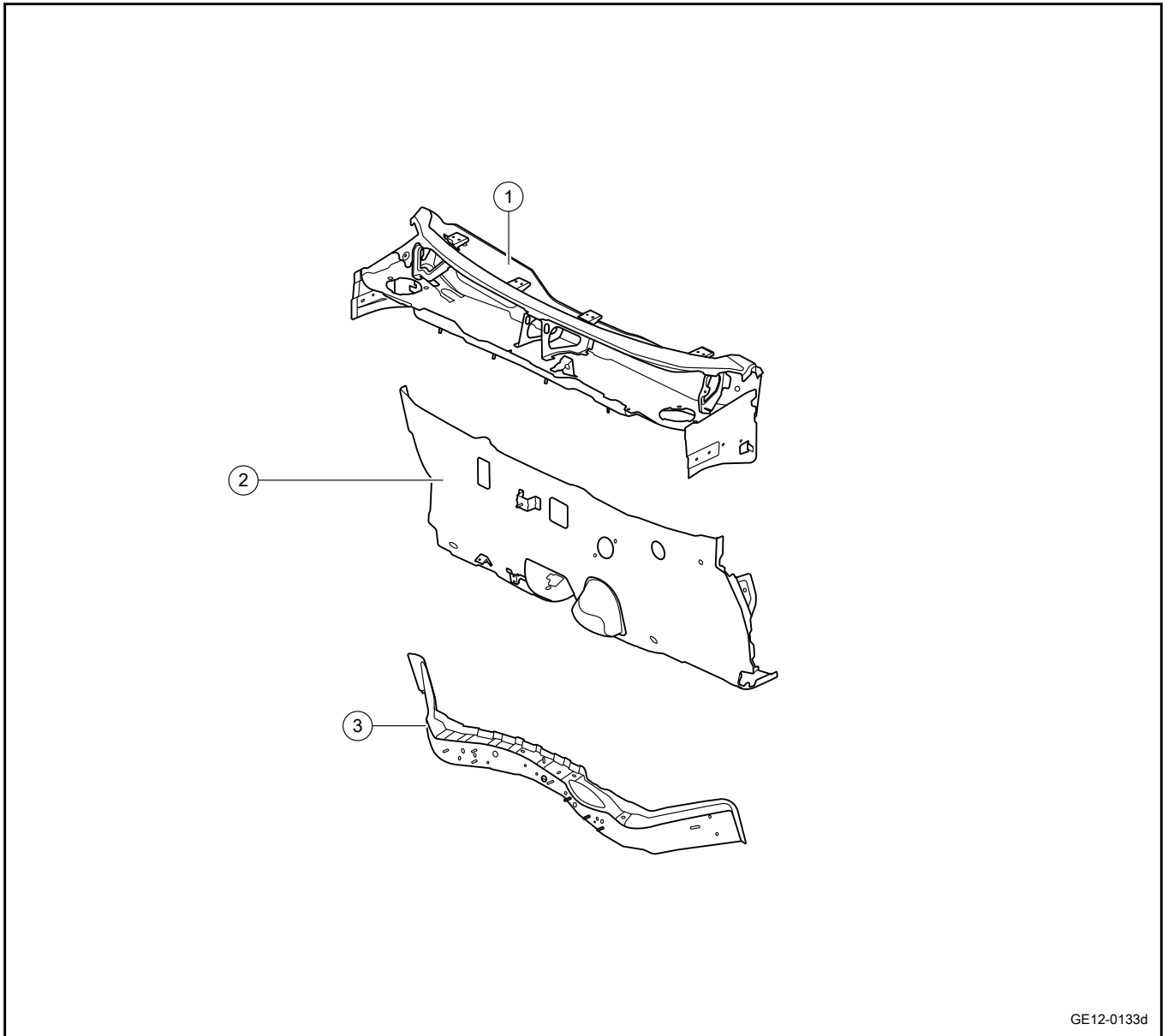
1. Body in white assembly

12.12.3.2 Body front floor



- | | |
|---|--|
| 1. Right rocker panel inner panel assembly | 6. Front mounting cross beam assembly for front left seat |
| 2. Front floor body assembly | 7. Front floor right upper side member |
| 3. Rear mounting cross beam assembly for front right seat | 8. Front mounting cross beam assembly for front right seat |
| 4. Rear mounting cross beam assembly for front left seat | 9. Front floor left upper side member |
| 5. Left rocker panel inner panel assembly | |

12.12.3.3 Front wall panel

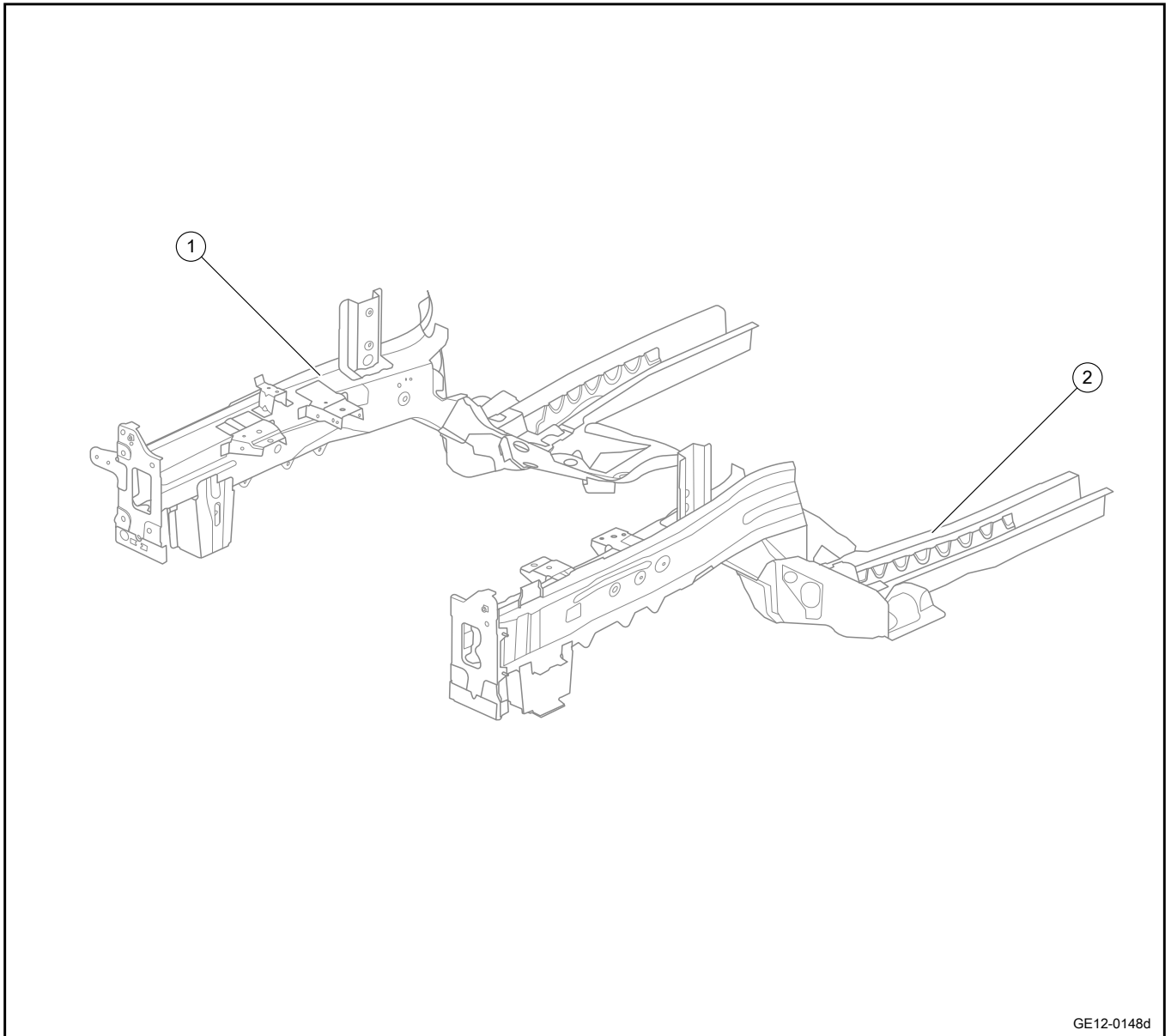


GE12-0133d

- 1. Front wall upper assembly
- 2. Front wall body assembly

- 3. Front wall cross member assembly

12.12.3.4 Front engine compartment

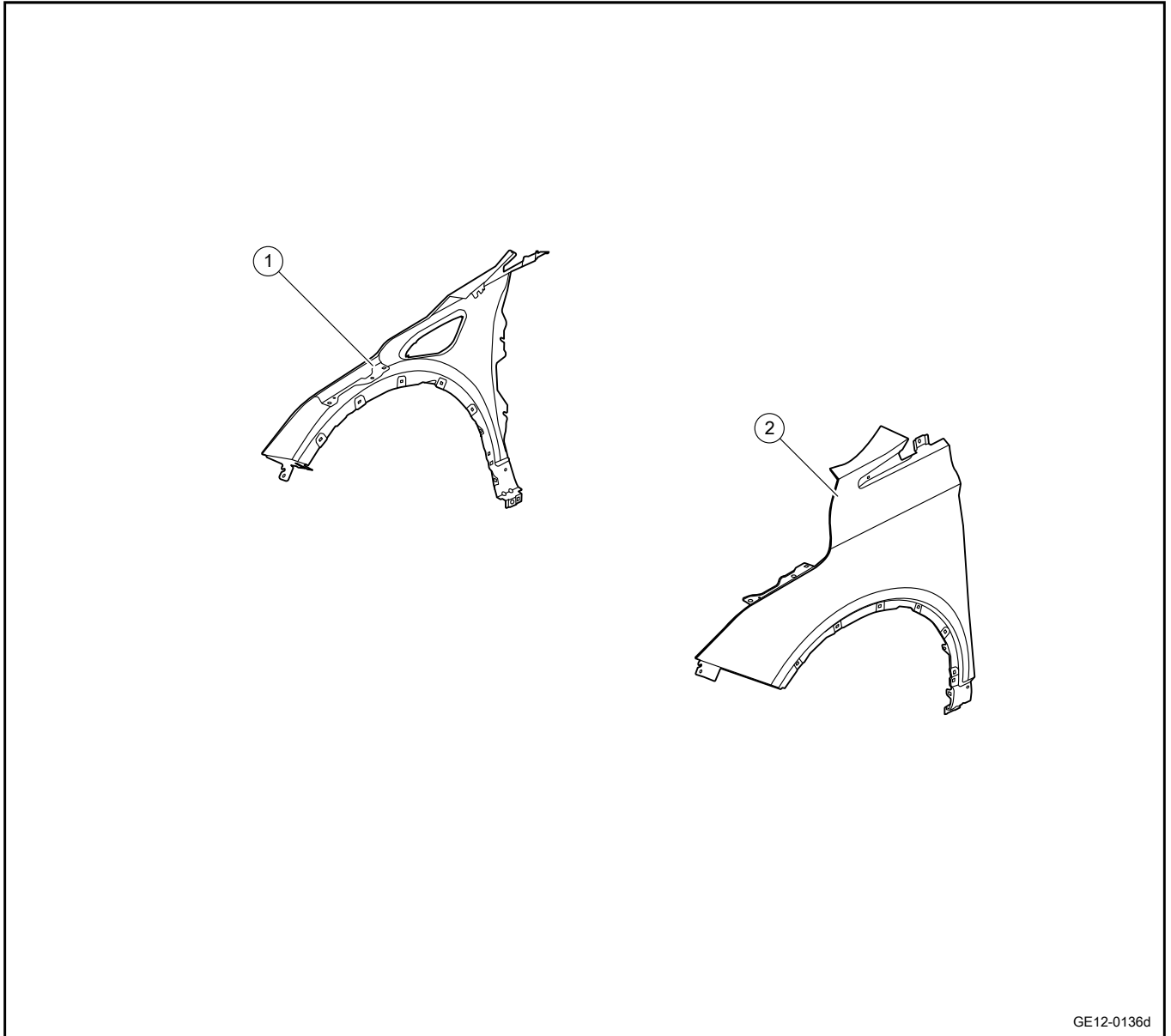


GE12-0148d

1. Right side member assembly

2. Left side member assembly

12.12.3.5 Front fender

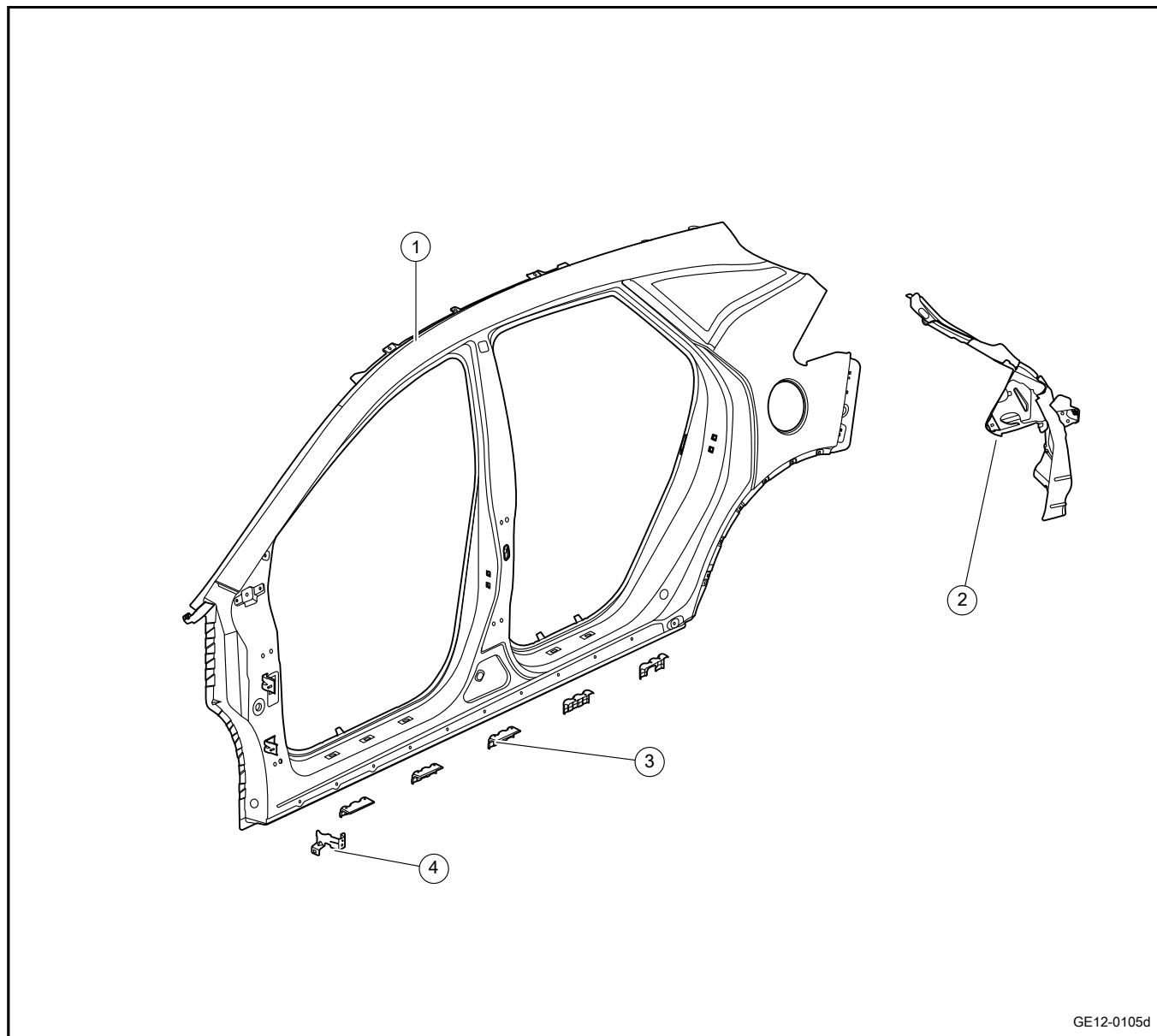


GE12-0136d

1. Front right fender

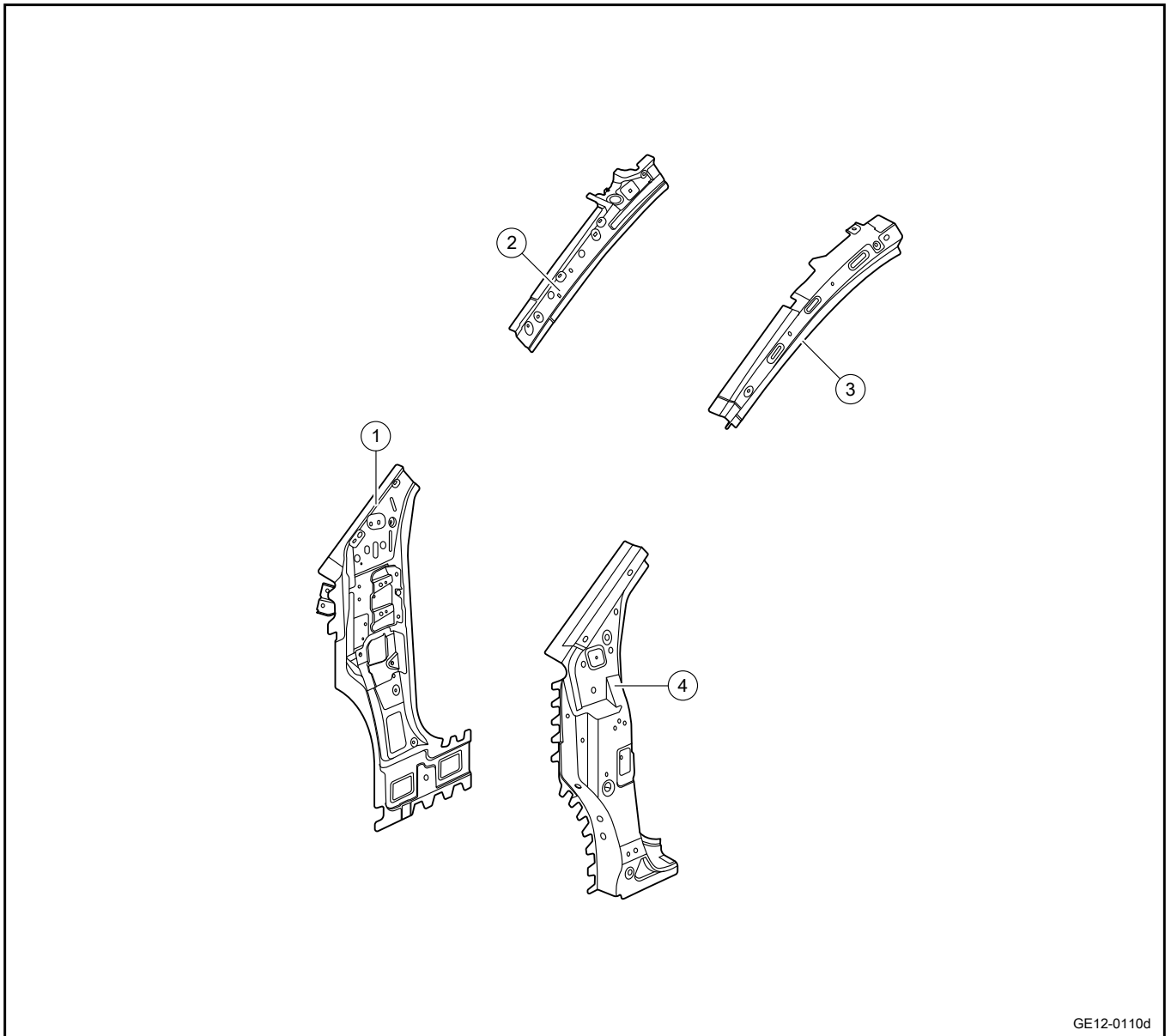
2. Front left fender

12.12.3.6 Vehicle body side



- | | |
|---|--|
| 1. Left body side outer panel | 3. Body side rocker panel exterior trim panel supporting bracket |
| 2. Left rear combination lights mounting plate assembly | 4. Lower mounting bracket of left front fender |

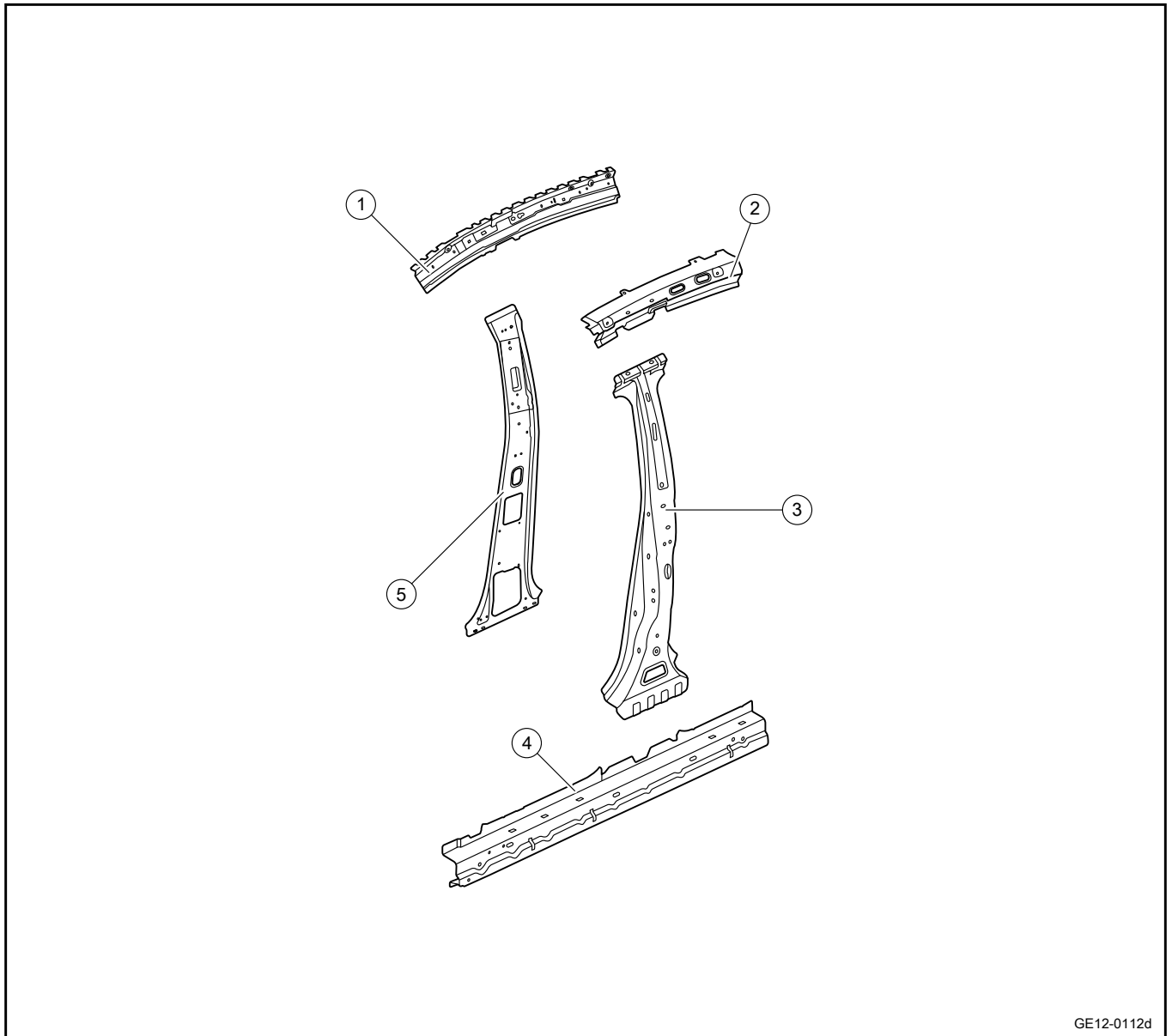
12.12.3.7 Front pillars of vehicle body



GE12-0110d

- | | |
|--|--|
| 1. Left pillar A inner panel | 3. Left A-pillar upper reinforcing plate |
| 2. Panel roof front cross member left connecting plate | 4. Left A-pillar lower reinforcing plate |

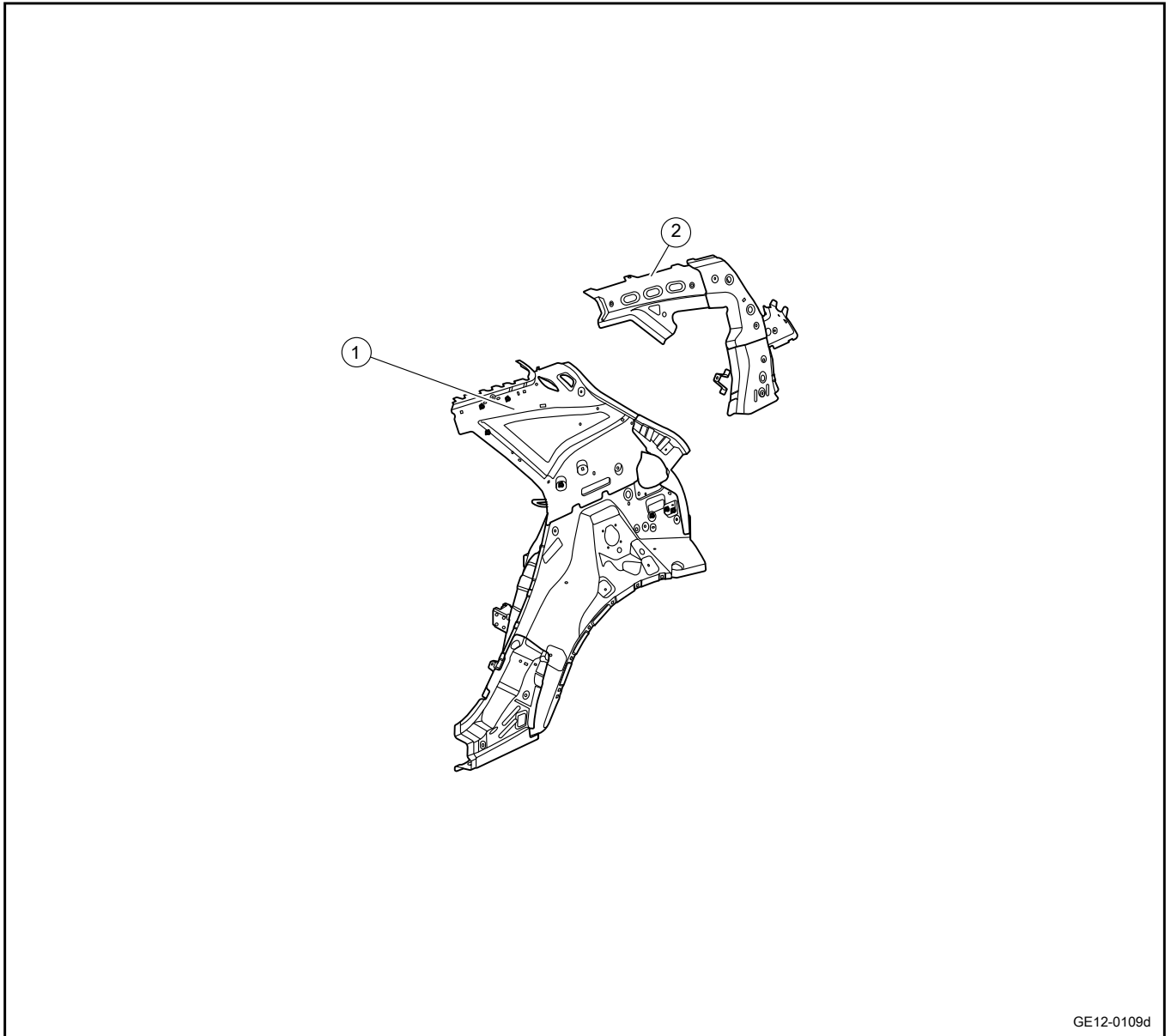
12.12.3.8 Middle pillars of vehicle body



GE12-0112d

- | | |
|---|--|
| 1. Reinforcing plate of left front side beam | 4. Left rocker panel reinforcing plate |
| 2. Reinforcing plate of left upper side beam | 5. Left middle pillar inner plate |
| 3. Left middle pillar outer panel reinforcing plate | |

12.12.3.9 Rear pillars of vehicle body

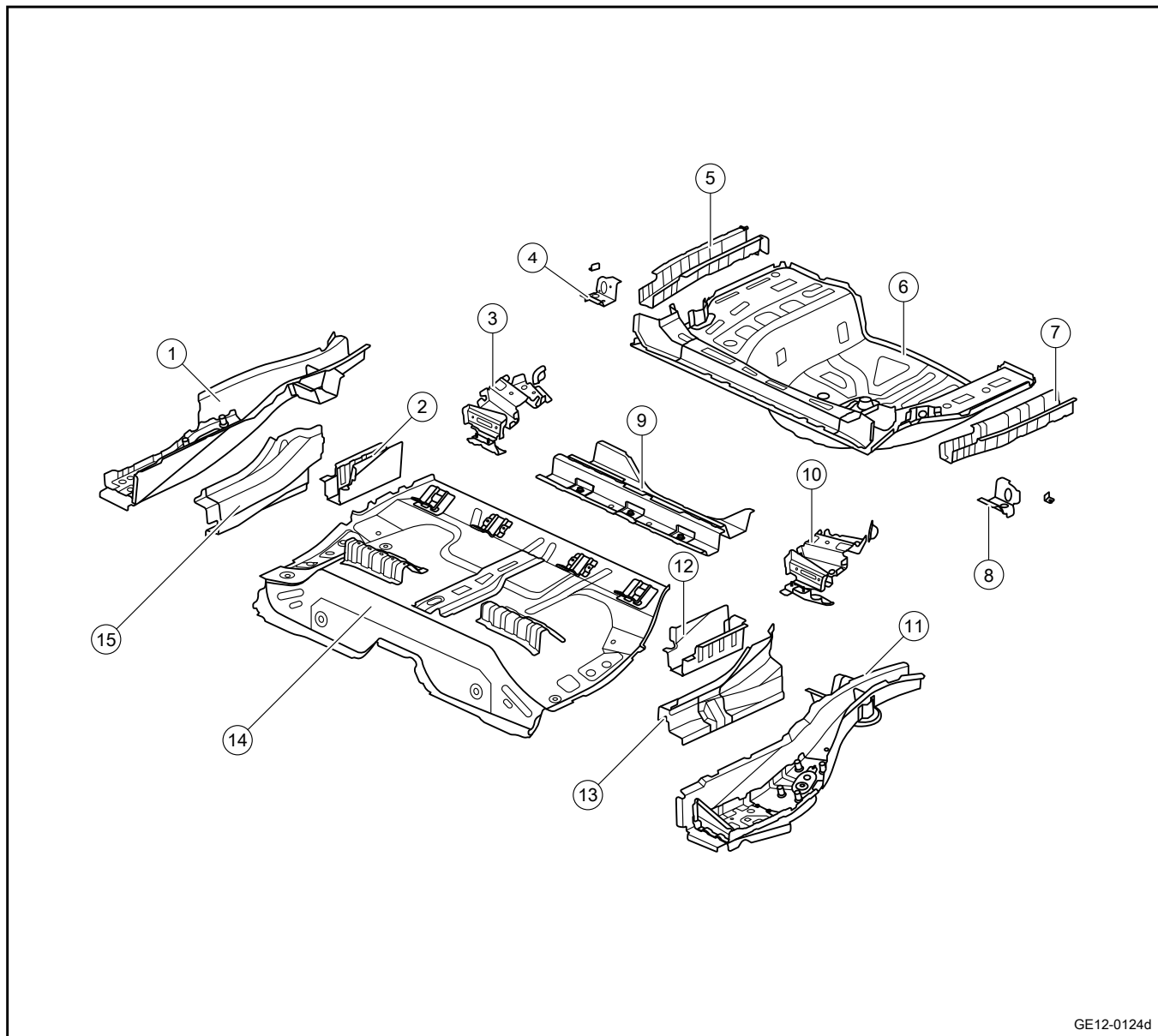


GE12-0109d

1. Left rear pillar front reinforcing plate

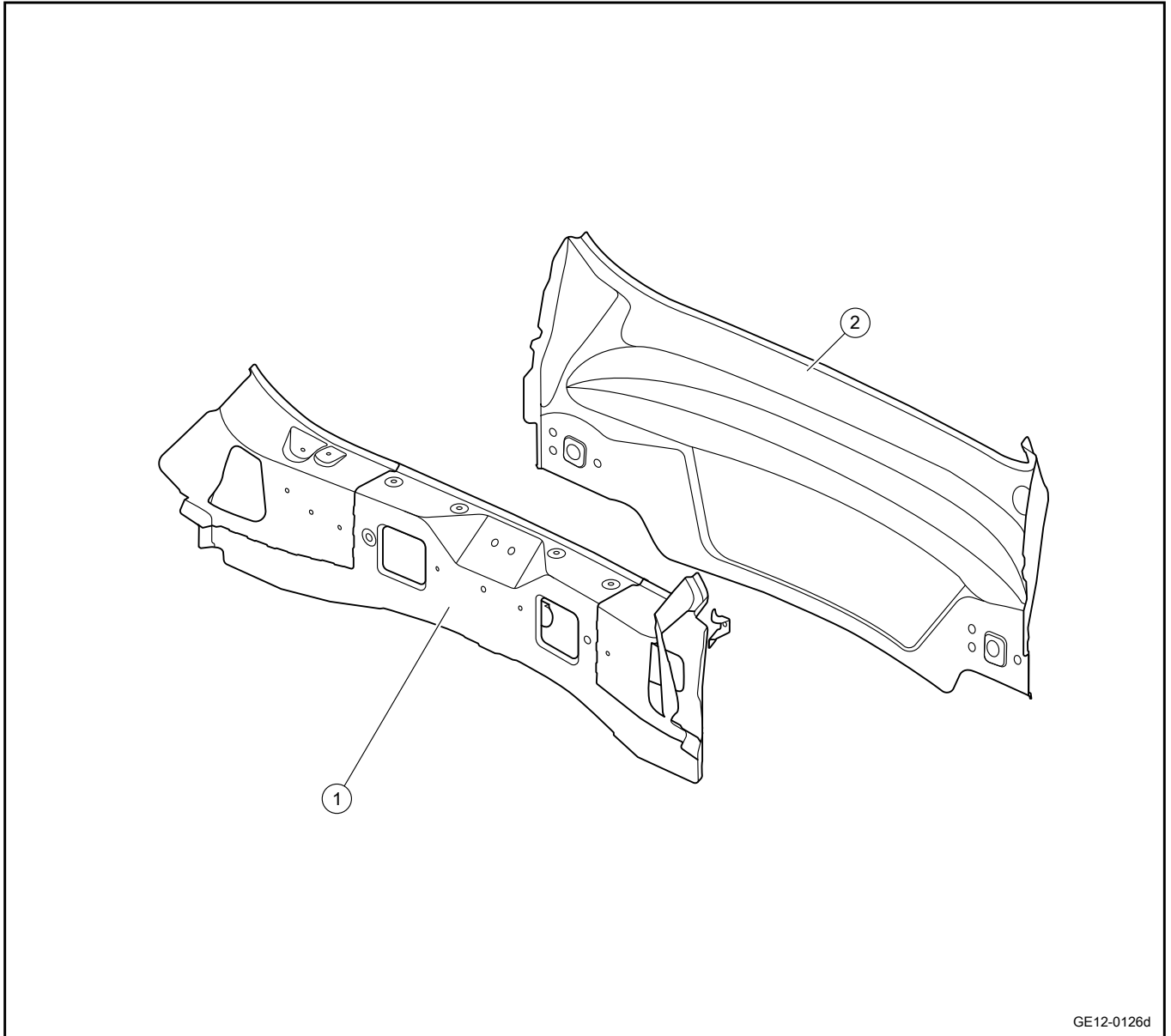
2. Left rear pillar reinforcement plate assembly

12.12.3.10 Rear Floor



- | | |
|---|---|
| 1. Rear floor right side member front section assembly | 9. Middle floor front lower cross beam |
| 2. RR side member assembly | 10. Left rear seat belt mounting plate assembly |
| 3. RR Seat belt mounting plate assembly | 11. Rear floor left side member front section assembly |
| 4. Power wire harness cover plate right mounting bracket assembly | 12. RL side member sub-assembly |
| 5. Right rear side member body assembly | 13. Left door sill rear section connecting plate assembly |
| 6. Rear floor body sub-assembly | 14. Middle floor assembly |
| 7. Left rear side member body assembly | 15. Right door sill rear section rear connecting plate assembly |
| 8. Power wire harness cover plate left mounting bracket assembly. | |

12.12.3.11 Rear wall

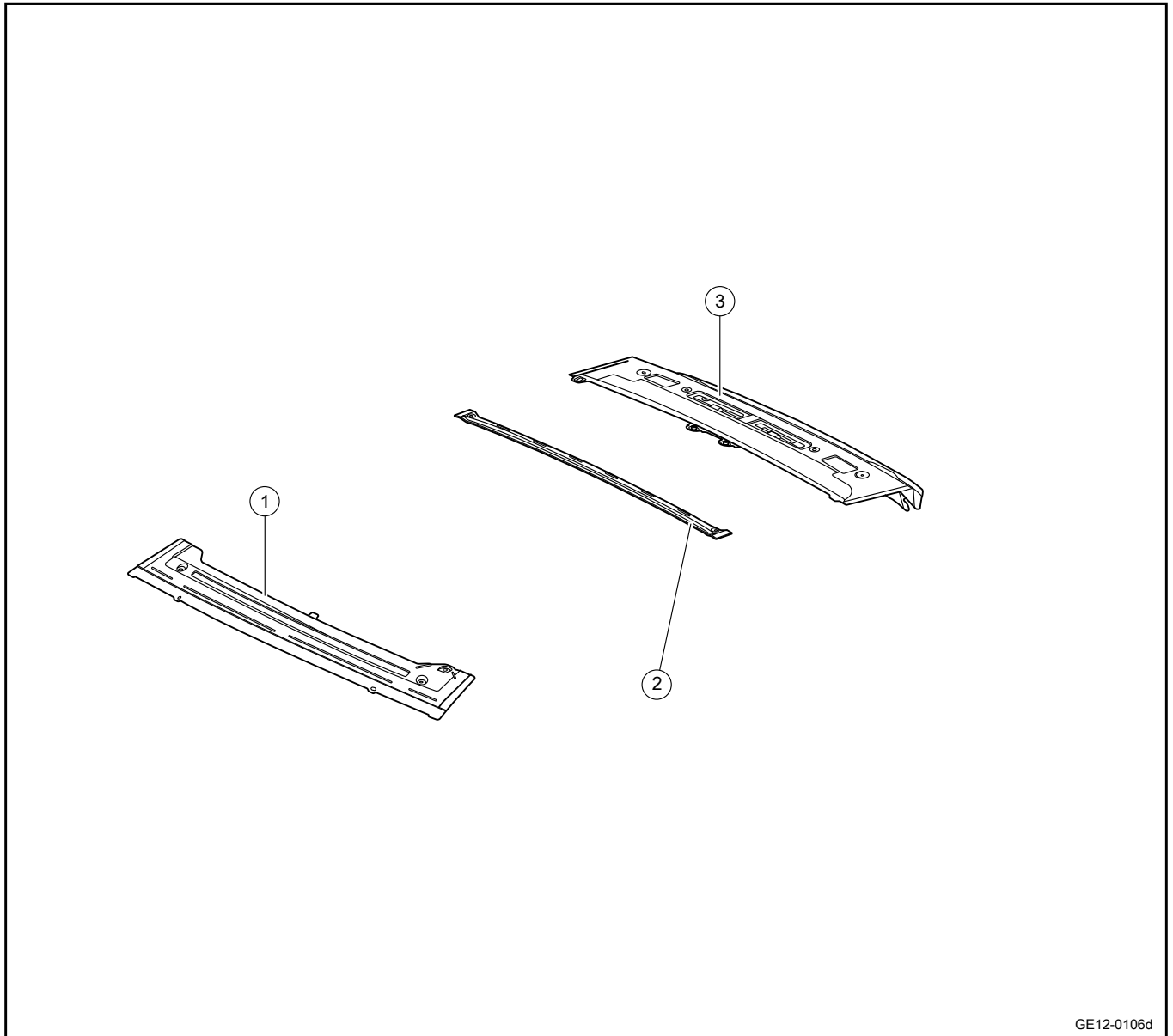


GE12-0126d

1. Rear wall upper cross member assembly

2. Rear wall subassembly

12.12.3.12 Vehicle roof

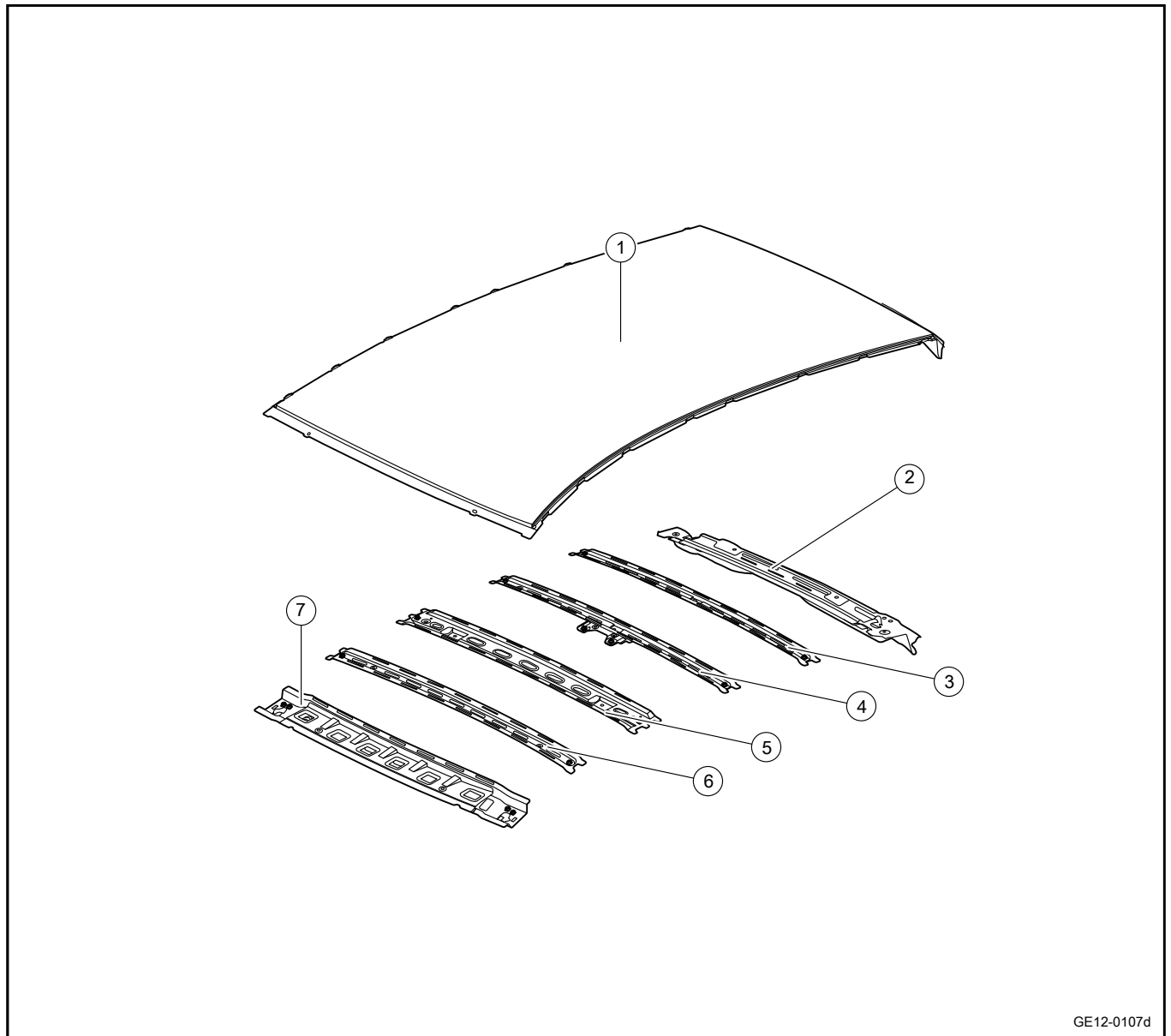


GE12-0106d

- 1. Roof front cross member assembly
- 2. Headliner middle cross member

- 3. Roof rear cross member assembly

12.12.3.13 Vehicle roof(low figuration)



GE12-0107d

- | | |
|---------------------------------------|---|
| 1. Roof headliner | 5. Headliner middle cross beam assembly |
| 2. Headliner rear cross beam assembly | 6. Headliner front cross beam |
| 3. Headliner cross beam | 7. Headliner front cross beam reinforcing plate |
| 4. Headliner cross beam | |

Vehicle Body, Sheet Metal and
Painting

Paint coating

12-355

12.13 Paint coating

12.13.1 Specification

12.13.1.1 Specification

Refer to the technical specifications provided by material suppliers.

12.13.2 Instructions and operations

12.13.2.1 Paint coating description

Paint is a kind of mixed liquid and can be coated on multiple substrates. The paint forms a solid paint film after drying, thus realizing the targets of substrate protection and attractive appearance. The following 4 paints have already been painted when vehicles leave the factory to provide good anti-corrosion performance and gloss.

1. Electrophoresis primer
2. Middle paint
3. Color paint
4. Clear lacquer (transparent outer coating)

The main function of electrophoresis primer:

1. Rust-proof
2. Improvement of working adhesion
3. Improvement of limited filling

The main function of middle coating:

1. Filling
2. Isolation/tightness
3. Foiling color paint

The main function of colored paint:

1. Adding color
2. Providing gloss

The main function of clear lacquer:

Clear lacquer is at the outermost layer of the whole paint surface and has the following main functions:

1. Including anti-ultraviolet ray materials to resist the ultraviolet ray in sunshine.
2. Resists corrosion of painted surfaces by environmental dust (acid rain).
3. Allowing the lacquer to have friction resistance performance.
4. Providing better gloss for the lacquer.

Paint spraying is required to restore the repaired parts; spraying process specified by the manufacturer must be strictly complied with during repair. Please refer to [Paint Spraying Process for Rigid Surface](#)

12.13.2.2 Routine vehicle paint maintenance

Please observe the following principles when carrying out daily maintenance of paintwork:

1. Please notice not to touch body paint with oily hands or scrub the paint with oily cloth during the vehicle repair and maintenance. Do not place the oily tools or the cleaning cloth with organic solvent on the body to avoid chemical reactions.
2. Do not carry out the secondary painting if there is no clear scratch to avoid improper paint color or poor combination.
3. Vehicles parking for a long time should be parked in a garage or well-ventilated areas. Vehicles should be covered with a dedicated body cover in winter. Cool places should be selected for temporary parking.
4. Avoid severe impacts, collisions and scratches of the body paint film. Damaged, sunken or fallen paint should be repaired timely, better in the maintenance stations authorized by Geely.
5. High-quality detergent should be applied for body decoration cleaning. Do not scrub the body heavily during waxing and avoid paint layer penetration and exposure of original body. Some special and highly corrosive traces (such as asphalt, bird droppings, insects, etc.) should be removed in time. For this purpose, dedicated detergent must be used. Do not use a knife to scrape the traces or use gasoline to eliminate them to avoid paint damages.
6. Before, during and after vehicle utilization, it is required to clean dust on the body timely and reduce the dust adhesion due to static electricity of the body as possible.
7. Flush the body timely after rain. The rain stains on the body after rain will gradually decrease, but the concentration of acid materials in rainwater gradually increases. If the body is not flushed with clean water timely, the surface coating will be damaged after a long term.
8. Wait until the power synthesis box cools down and then wash the vehicle. Do not wash the vehicle under burning sun or at high temperature to prevent traces of detergent after drying up. The dedicated detergent must be used when customers wash vehicles by themselves, but do not use the high alkaline washing powder, suds or detergents to avoid washing away the grease in paint and accelerating the paint aging. When your vehicle is washed in a car washing station, please pay attention to prevent the washer from using the dewaxing detergent and avoid paint damages. Especially the vehicles running in coastal or heavily polluted areas should be flushed once per day.

9. Clean and soft cloth or sponge should be used to wipe and wash the vehicle. Prevent metal filings and sand inside and do not dry cloth, towel or sponge to polish the vehicle to avoid scratches. During the scrubbing process, scrub the vehicle from top to bottom along the direction of water flow and do not make circles or scrub it horizontally.
10. Irregularly wax the paint surface and regularly (once a quarter) go to Geely authorized service station for maintenance, so as to restore the brightness of the paint surface of the vehicle body in time. In addition, body paint protection film is also available. 3M paint protection film (rhinoceros skin) is a colorless and transparent paint protection film with super toughness. It can be used to protect the bumper, front engine compartment cover, front and rear doors, rear-view mirrors and other paint baking surfaces, and protect the paint surface of the car from being scratched by slight collision.

12.13.2.3 Warnings and notice in performing paint mixing and painting operations

Warning

During paint mixing and painting operations, diffuse solvents can cause serious respiratory illnesses. Operation must be in strict accordance with the manufacturer's instructions for paint, equipment and safety devices. During operations in accordance with this procedure, wear special protective equipment such as gas masks, anti-static clothing, protective eyewear and gloves to prevent injury.

Caution

Do not mix paint systems or alternative products from different manufacturers. Mixed use of incompatible products may lead to the following phenomena:

1. Primer peeling.
2. Poor inter-coat bonding.
3. Insufficient curing.
4. Reduced gloss.
5. Poor color accuracy.
6. Coating damage (pits, bubbles, orange peel tarnish).

12.13.2.4 Cautions during finishing varnish maintenance and repair

Caution

1. Avoid washing the vehicle under direct sunlight.
2. Avoid using the strong soap and chemical detergent.
3. Use brushless automatic vehicle cleaning equipment.
4. Avoid using products containing acid or alkali.
5. Do not use the brush or broom to remove snow or ice
6. After cleaning thoroughly, the remaining rinse water should be wiped dry immediately, and do not let it dry in air on the surface. It is recommended to wipe dry with soft chamois leather.
7. Only when the defect on the surface can be eliminated by the method of polishing, can the vehicle be polished.
8. If the surface condition is not serious, the maintenance part should be narrowed as much as possible.
9. Avoid removing too much clear paint or it will cause premature paint damage.
10. Use electric polishing equipment in strict accordance with the requirements of polishing manufacturers. Do not use wax or silicone products to cover vortex blot (the user will not be satisfied with the blot reappearing soon).

12.13.2.5 Notices for anti-corrosion treatment

Caution

1. When spraying sound insulation or anti-corrosive materials, precautions must be taken to avoid spraying into the openings of components (such as door locks, window regulator grooves, window regulators and seat belt retractors) and any moving and rotating components. After spraying the material, ensure that all vent holes on the body are open.
2. When repairing the body with an open flame, the foamed sound insulation material must be removed from the repaired part. When reinstalling the soundproofing material, avoid inhaling harmful dust.
3. When performing this procedure, special protective glasses and gloves should be worn to prevent injury.
4. When the vehicle leaves the factory, the body metal plates have been primed by electrophoretic coating. After repair and/or replacement of parts, all exposed metal surfaces must be treated with an anti-rust primer.
5. If the original coating or anti-corrosive material is damaged during welding or heating, cleaning and re-corrosion treatment are required.
6. During collision maintenance, the metal will be exposed, and these surfaces must be re-painted with special anti-corrosion materials.
7. The purpose of the sealant is to prevent water and dust from entering the vehicle, and it also acts as a corrosion inhibitor. The original seal joints are obvious. If these seals are damaged, they should be corrected by resealing. The joint of the newly replaced plate should be resealed. The sealant used must remain flexible after curing and painting. Seal open joints closed with sealant by high-consistency filler. Follow the descriptions for the selected materials.
8. The sound insulation material can control the general noise level in the vehicle. When the sound insulation layer is damaged due to maintenance or replacement of new panels, they must be replaced with the same materials.

12.13.3 Diagnostic information and procedures

12.13.3.1 Common paint defects and treatment

Caution

The black boxes in the table indicate the treatment of the defect.

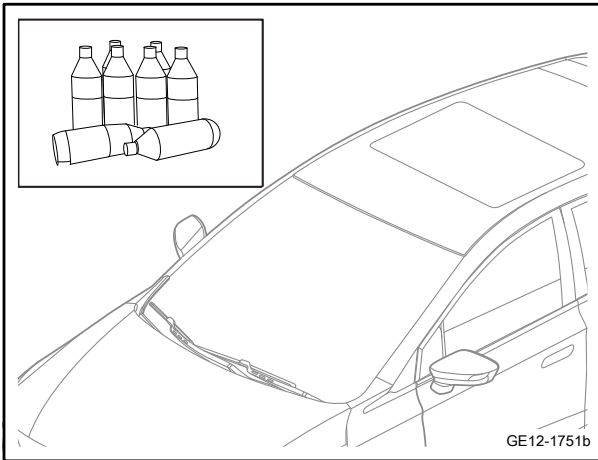
Name	Causes	Treatment
Powder	<ul style="list-style-type: none"> A. The paint film is subject to strong erosion. Such as the intense ultraviolet light. B. The proportion of paint is wrong during construction. C. The coating has poor light and weather resistance. D. Vehicles are not cleaned regularly or cleaned thoroughly. E. The selected vehicle cleaner is not suitable or the polishing paste is coarse. 	<ul style="list-style-type: none"> A. Polishing and refining treatment. □ B. Conventional grind and polishing treatment □ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting. ■
Plastic paint peeling	<ul style="list-style-type: none"> A. The adhesive force of coating and substrate is too poor or the upper coating is too hard compared with the lower coating. B. The coating film is too thick and the paint film is subject to erosion of steam, acid, and alkali of the air. C. The recoatability of the lower coating is bad, or with improper processing. There are defects of pinholes and grinning on the upper coating. 	<ul style="list-style-type: none"> A. Polishing and refining treatment. □ B. Conventional grind and polishing treatment □ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting. ■
Cracking	<ul style="list-style-type: none"> A. The primer base has not been fully blended before spraying. B. The surface coating is too thickly sprayed. C. The intermediate coating is too thickly sprayed. 	<ul style="list-style-type: none"> A. Polishing and refining treatment. □ B. Conventional grind and polishing treatment □ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting. ■
Bird droppings erosion	<ul style="list-style-type: none"> A. Bird droppings dripping erosion. 	<ul style="list-style-type: none"> A. Polishing and refining treatment (mild erosion). ■ B. Conventional grind and polishing treatment (moderate erosion). ■ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (severe erosion). ■
Scratch	<ul style="list-style-type: none"> A. The painting film hardness is low. B. Being scratched by a hard object. 	<ul style="list-style-type: none"> A. Polishing and refining treatment (minor abrasions). ■ B. Conventional grinding and polishing treatment (coarse scratch). ■ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (crack). ■

Name	Causes	Treatment
Corrosion	<ul style="list-style-type: none"> A. The painting film is thin on the edges. B. Scratches cause corrosion. C. Acid and alkali erosion. 	<ul style="list-style-type: none"> A. Polishing and refining treatment. □ B. Conventional grind and polishing treatment □ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (If the corrosion is serious, it needs to be repaired by sheet metal and then painting). ■
Paint peeling	<ul style="list-style-type: none"> A. The adhesive force of coating and substrate is too poor or the upper coating is too hard compared with the lower coating. B. The coating film is too thick and the paint film is subject to erosion of steam, acid, and alkali of the air. C. The recoatability of the lower coating is bad, or with improper processing. D. There are defects of pinholes and grinning on the upper coating. 	<ul style="list-style-type: none"> A. Polishing and refining treatment. □ B. Conventional grind and polishing treatment □ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (If the corrosion is serious, it needs to be repaired by sheet metal and then painting). ■
Acid rain erosion	<ul style="list-style-type: none"> A. Acid rain erosion 	<ul style="list-style-type: none"> A. Polishing and refining treatment (mild erosion). ■ B. Conventional grind and polishing treatment (moderate erosion). ■ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (severe erosion). ■
Loss of gloss	<ul style="list-style-type: none"> A. The painting film is subject to severe erosion of acid, alkali, arc, seawater, and salt mist. B. Under severe conditions, the painting film maintenance method is incorrect. C. The painting is not durable enough. D. The inappropriate proportion of the painting during the construction causes poor endurance of the painting film. 	<ul style="list-style-type: none"> A. Polishing and refining treatment (mild dulling). ■ B. Conventional grinding and polishing treatment (moderate dulling). ■ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (severe dulling). ■
Bubbling	<ul style="list-style-type: none"> A. The painting film is exposed to the humid environment for a long time and infiltrated by steam, and when the temperature rises, the steam jacks up the bubbles. B. The substrate is corroded by the substance infiltrated. C. The painting film is subject to the erosion of gasoline, acid, and alkali. 	<ul style="list-style-type: none"> A. Polishing and refining treatment. □ B. Conventional grind and polishing treatment □ C. Deep grind and polishing refurbishment treatment □ D. Repair locally with painting (If the corrosion is serious, it needs to be repaired by sheet metal and then painting). ■

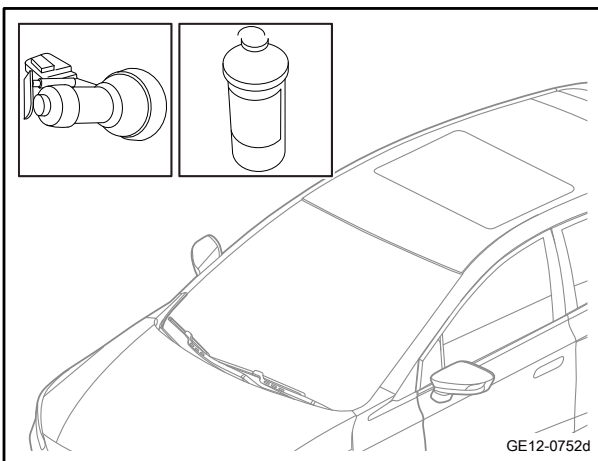
12.13.4 Removing and installing

12.13.4.1 Common coating film defect treatment example

- 1 Clean the surface to be polished with degreasing material before polishing.



- 2 First, moisten the sponge sufficiently, and squeeze out the excess water. Apply a small amount of polishing wax to the paint surface to be polished, and adjust the speed of the polisher.

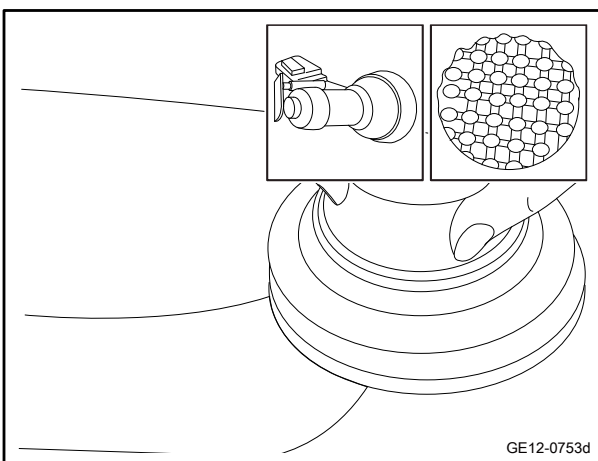


- 3 Put the sponge on the painted surface and then turn on the polisher at a speed of 2500-3000 r/min. Then lightly press for 3-5s for glazing.

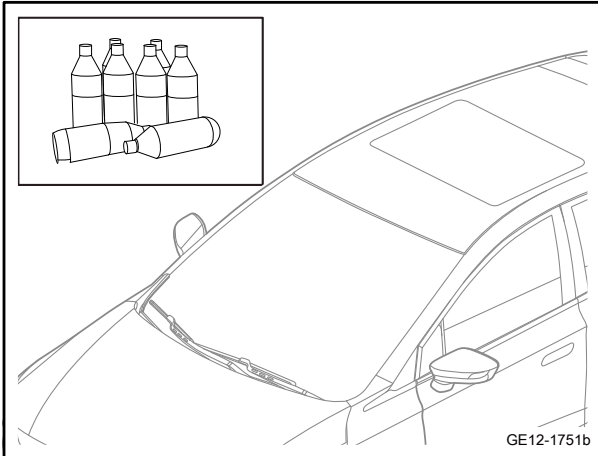
Caution

Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.

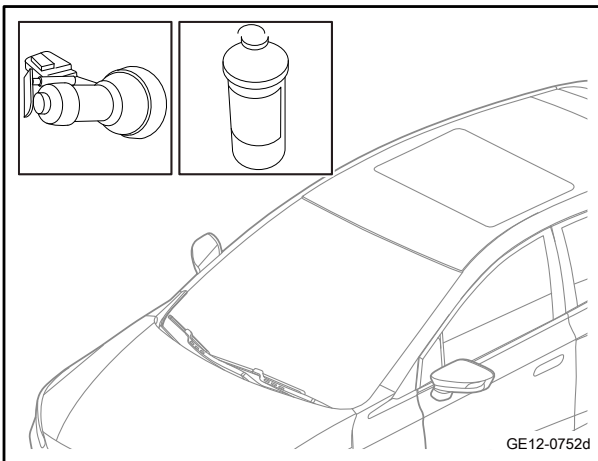
- 4 Wipe off the excess wax with cloth.



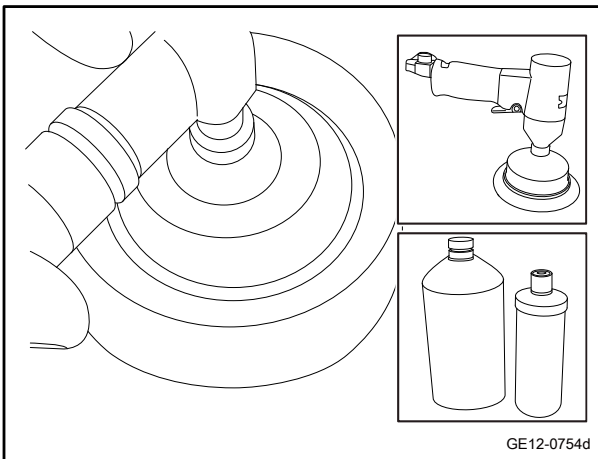
12.13.4.2 Conventional grind and polishing treatment example



- 1 Clean the surface to be polished with degreasing material before polishing.



- 2 Apply a proper amount of polishing paste to the paint surface to be polished and adjust the speed of the polishing machine.



- 3 Put the wool ball on the paint surface and then turn on the machine. The speed should be 2500-3000 r/mi.

Caution

Keep the machine moving smoothly and gently as well as avoid excessive grinding. Ensure as-short-as-possible time for grinding and as-small-as-possible grinding area.

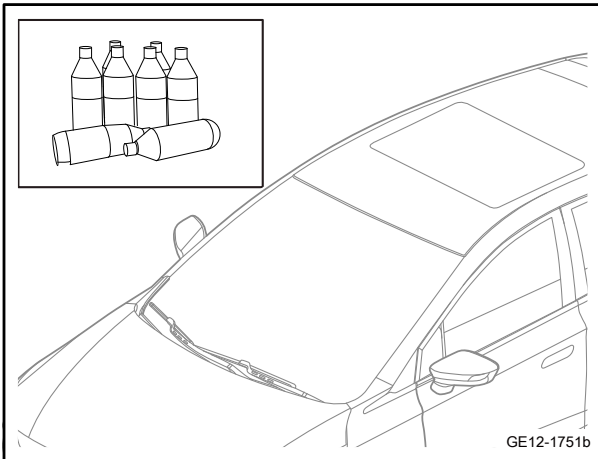
- 4 Fully moisten the sponge first, squeeze out the excessive water. Apply a small amount of glazing wax to the paint surface to be polished, attach the sponge onto the paint surface and then turn on the machine at a speed of 2500-3000 r/min. Then lightly press for 3-5s for glazing.

Caution

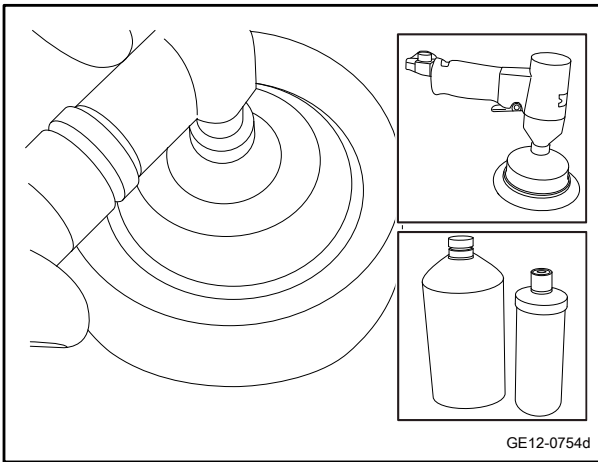
Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.

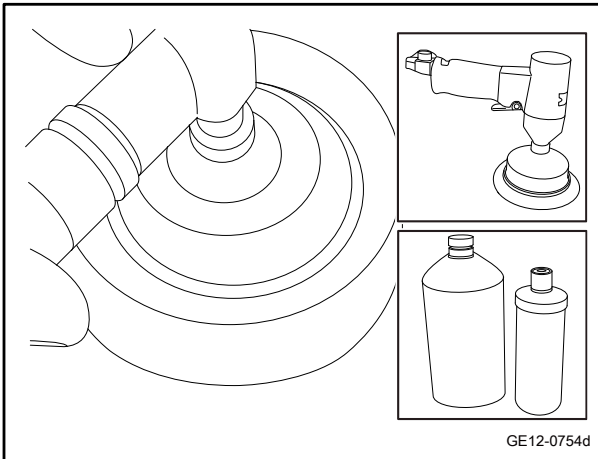
12.13.4.3 Deep polishing treatment example

- 1 Grind the damaged paint surface with 2000 # water abrasive paper, making it parallel and cling to the paint surface to be ground, and grind it round.



- 2 Clean up the surface and polish dust.
- 3 Apply a proper amount of polishing paste to the paint surface to be polished and adjust the speed of the polishing machine.

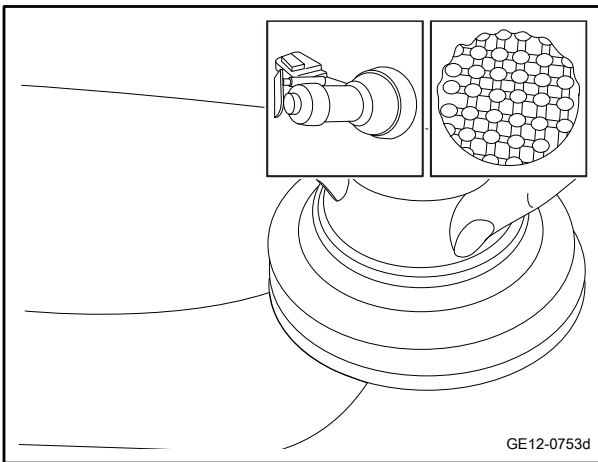




- 4 Affix the wool ball to the lacquer surface before starting the machine, with the revolving speed being 2,500 – 3,000 r/min.

Caution

Keep the machine moving smoothly and gently as well as avoid excessive grinding. Make sure the grinding time is as short as possible (3-5s) and the grinding area is as small as possible.



- 5 Fully moisten the sponge first, squeeze out the excessive water. Apply a small amount of glazing wax to the paint surface to be polished, attach the sponge onto the paint surface and then turn on the machine at a speed of 2500-3000 r/min. Then lightly press for 3-5s for glazing.

Caution

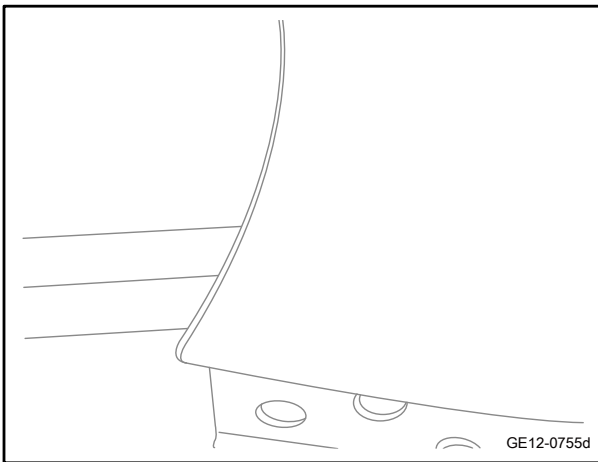
Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.

12.13.4.4 Rigid surface spray paint process

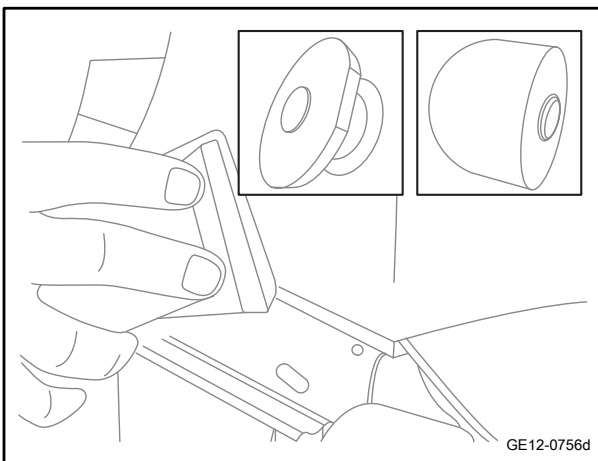
Now, take the fender as an example to illustrate the process of local spraying (paint touch-up)

Caution

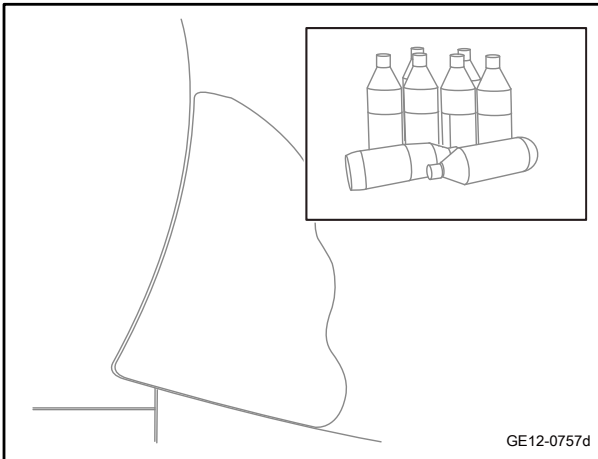
All paint repairs on rigid surfaces must meet Geely standards. Confirm the repair area and select the repair range. For example: partial repair, whole repair and complete vehicle repair. In case of the damage caused by a collision, perform the corresponding repair after the sheet metal repair according to the damage situation or spray paint after replacing the parts.



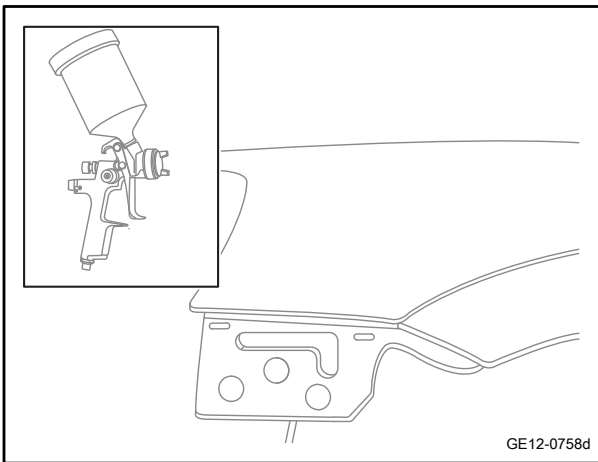
- 1 The fender is severely scratched, and local spraying (paint touch-up) process is performed.



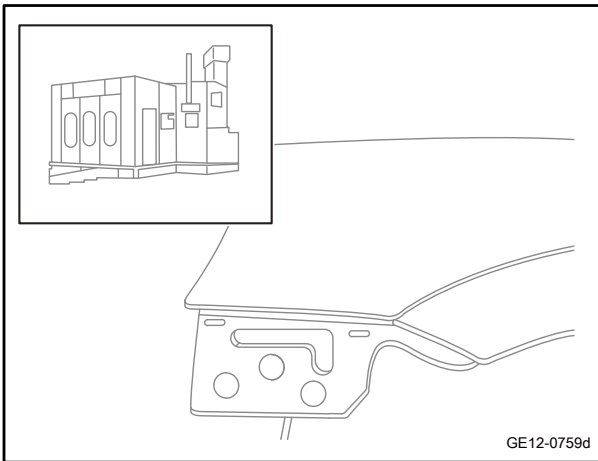
- 2 Use coarse-grained sandpaper to polish the damaged paint surface (round grinding).



- 3 After polishing, use degreaser to remove oil and clean.



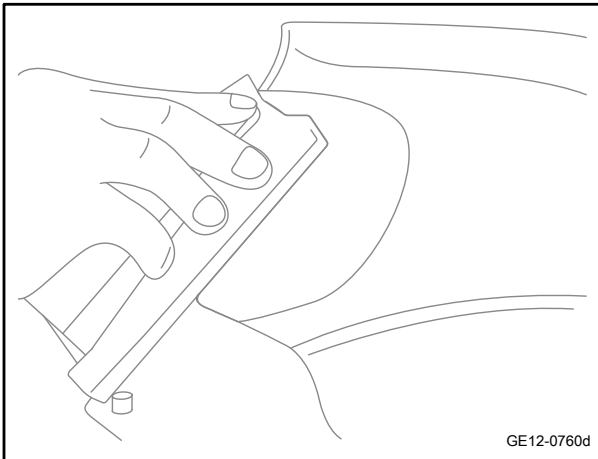
- 4 When spraying the middle coating, it is important to control the range of the spray primer. In addition, the edge position of the coating shall be gradual and not stepped.



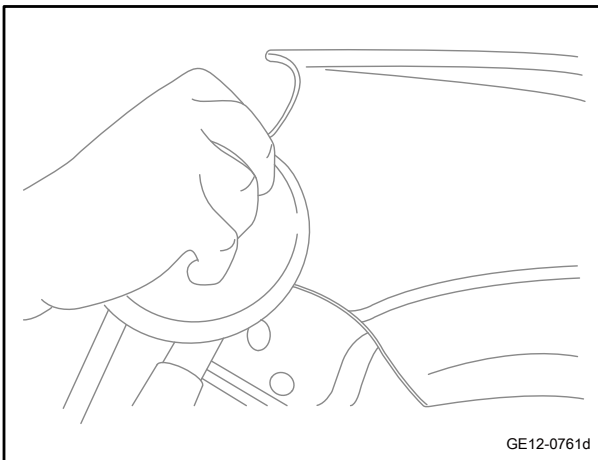
- 5 Flash drying for 4-5min, and then dry by baking for 20-30min.

Caution

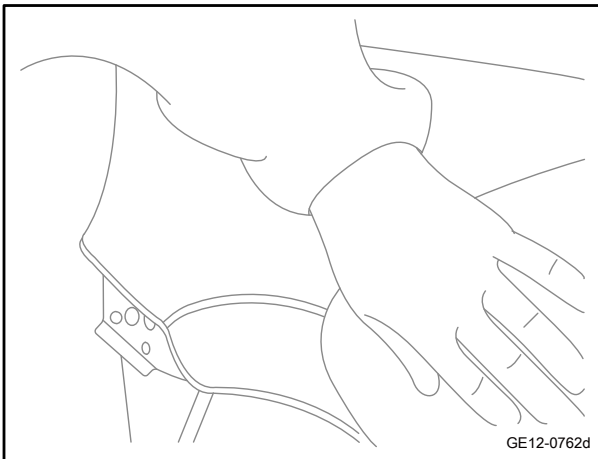
Hold the machine moving gently and steadily during operation. Don't take too long to avoid overheating and burning the paint.



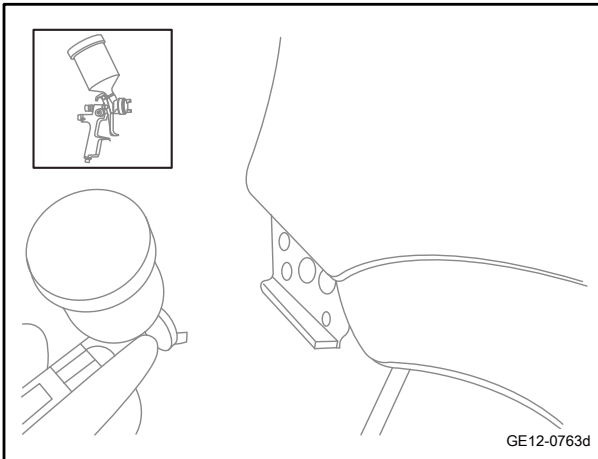
6 After drying, fine grinding with fine-grained sandpaper.



7 Grind with super fine-grained sandpaper and expand the grinding range.



8 Use sticky gauze to remove dust before spraying after polishing.



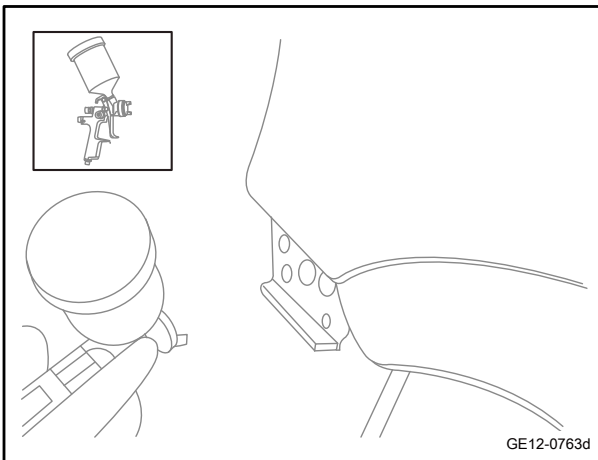
- 9 Spray the base color paint.

Air pressure 150-200 kPa (21.8-29.0 psi)

Spraying distance 20-30cm (7.87-11.81 in)

Caution

For the purpose of color transition, the spraying range should be slightly wider than layer beneath it.



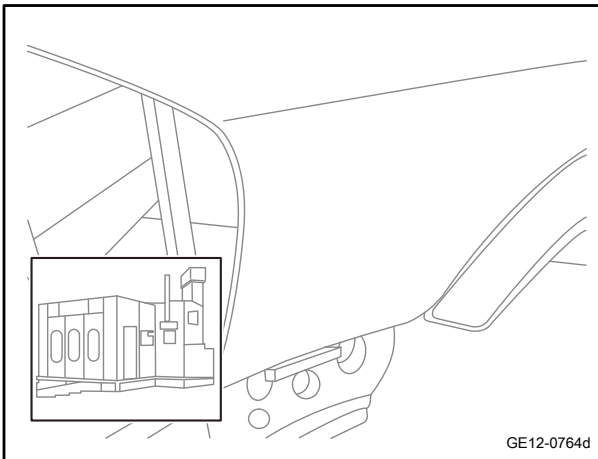
- 10 After flash drying for 2-3min, spray the second coat of base paint until the interface position is no longer obvious.

Air pressure 150-200 kPa (21.8-29.0 psi)

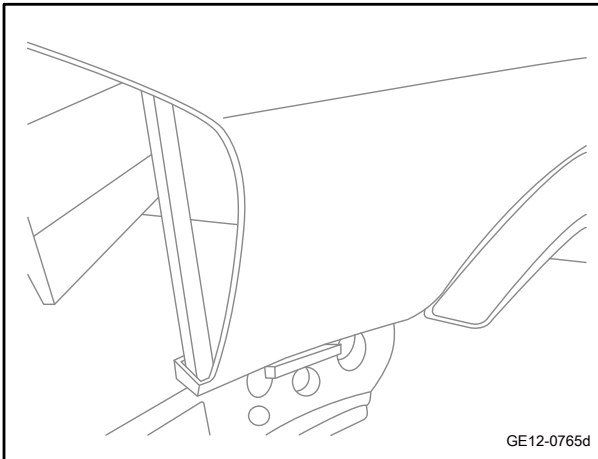
After flash drying for 2-3min, spray the second coat of base paint until the interface position is no longer obvious.

Air pressure 150-200 kPa (21.8-29.0 psi)

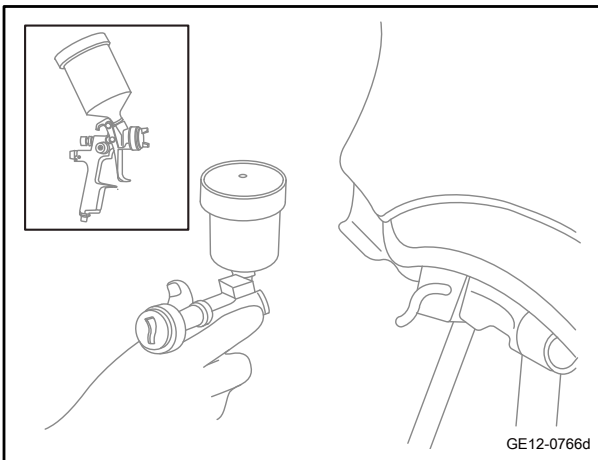
Spraying distance 20-30cm (7.87-11.81 in)



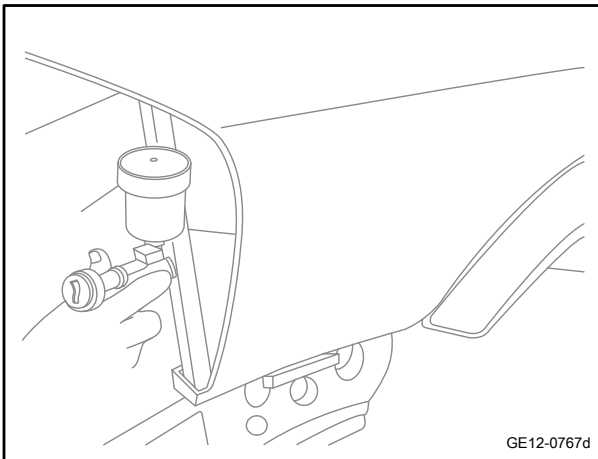
- 11 Flash drying for 4-5min, and then drying for 20-30min.



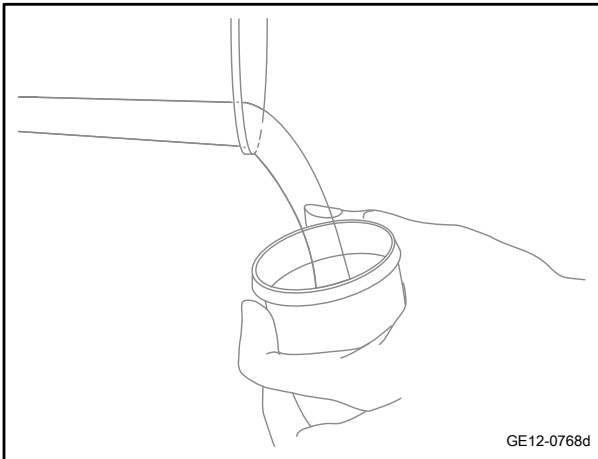
- 12 Use the sticky gauze to remove dust before spraying the lacquer after drying.



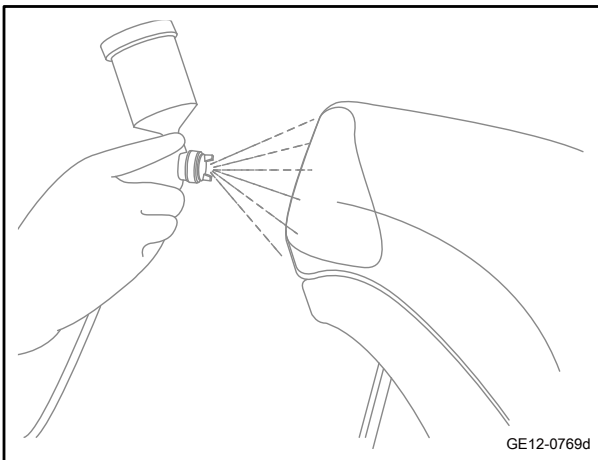
- 13 Spraying the clear lacquer and the spraying range completely covers the range of the base colour paint.
Air pressure 150-200 kPa (21.8-29.0 psi)
Spraying distance 20-30cm (7.87-11.81 in)



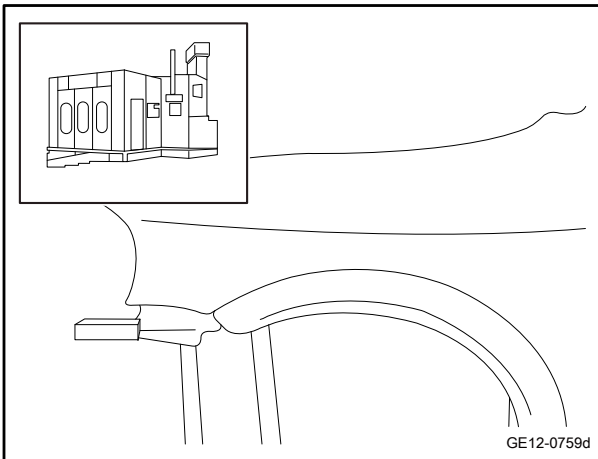
- 14 Flash drying for 2-3min, spray the second coat of transparent paint, and the spraying scope completely covers the scope of the first layer of varnish.
Air pressure 150-200 kPa (21.8-29.0 psi)
Spraying distance 20-30cm (7.87-11.81 in)



- 15 After finishing the clear lacquer spraying, immediately replace the saliva or add interface additives or thinners to the original clear lacquer.



- 16 Spray 2-3 times of the saliva or the diluted clear lacquer at the interface position.



- 17 Dry in the paint baking room for 20-30min.
The temperature of the paint room is 70-80 °C (158-176 ° F)

12.13.4.5 Painting of rigid surfaces after sheet metal repair

Spray paint procedure on the repaired rigid sheet metal surface is similar to rigid surface spray paint process. It's only added with the following steps after primer grinding and before spraying primer color paint:

- 1 Apply poly-putty base.
- 2 Grind poly-putty base.

- 3 Dust blowing, oil removing, cleaning.
- 4 Apply the filling putty.
- 5 Sanding the surface of old coating film.
- 6 Clean, oil removing, and cover areas not painted.
Specific operation steps: refer to Rigid Surface Spray Paint Process

12.13.4.6 Plastic surface paint repair process

There are three basic requirements for plastic surface paint repair:

- 1 Paint has a certain adhesion to plastics without losing the mechanical properties.
- 2 The paint film should be flexible enough to make sure it will not break as the plastic distortion.
- 3 The original grain and rough texture of some plastic surface can be reflected.

Plastic surface paint repair process:

The plastic surface paint repair can refer to the above local spray paint process, and notice low temperature baking.

Baking conditions are 70-80°C (158-176°F), 20-30min.

12.13.4.7 Color matching of the paint

Caution

- All paint operations must be carried out in the well-ventilated environment and the operating room equipped with an exhaust device
- Thorough reading the related information and the product specification before the color matching operation to the paint.
- Personal safety protection must be taken during the painting operation.
- Hands and face must be cleaned after the painting operation.

Step 1	Confirm the color of the paint position to be touch up.
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- A. Confirm the color code of the paint position to be touch up.

Next step

Step 2	Confirm the paint formula.
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- A. Confirm the deployed data according to the color code of the paint position to be touch up.

Next step

Step 3	Prepare the paint the primary color.
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- A. Prepare and stir the primary color of the recorded date.

Next step

Step 4	Metering the matching color.
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- A. Put the measuring cup on the meter regulator. Refer to the color formula table, and confirm the color number and mix the required color master.

Next step

Step 5	Trial application.
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- A. Use a muddler to apply the matching paint to the test panel.

Note

Using a muddle well-dipped paint to apply a triangle on the test panel, and repeat applying until the base color of the test panel is covered.

Caution

If the sufficient curing time is not reserved and force drying is carried out, the air hole will appear on the test panel and the color ratio will be affected.

Next step

Step 6	Color comparison.
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- A. After the trial applying color is dried on the test panel, compare with the position of the paint position to be touch up of the original vehicle and confirm whether the color is consistent.

Note

When the paint dries, the relatively low-density pigment will move toward the surface. Therefore the color of the paint will be slightly different between the post-drying color and the just-applied color.

Caution

- Place the test board and the position of the paint position to be touch up of the original vehicle on the same level to make a comparison.
- At least 2 different light sources should be compared under different light sources before determining the color.
- A comparison should be made between direct angle, middle angle and indirect angle.

Yes

Carry out spraying/touching up paint.

No

Step 7 | Micro-matching color.

- A. Find out the difference between the color of the test panel and the actual vehicle paint. Add the amount of the primary color in the modulated paint for micro-matching color.

Note

A small amount of matching-color paint can be poured from multiple containers. Pour a different amount of color master into each container and make the color comparison respectively. Color master to be added is determined by the color on the test panel closest to the target color.

Next step

Step 8 | Trial application.

- A. Use a muddler to apply the matching paint to the test panel.

Note

Using a muddle well-dipped paint to apply a triangle on the test panel, and repeat applying until the base color of the test panel is covered.

Caution

If the sufficient curing time is not reserved and force drying is carried out, the air hole will appear on the test panel and the color ratio will be affected.

Next step

Step 9 | Color comparison.

- A. After the trial applying color is dried on the test panel, compare with the position of the paint position to be touch up of the original vehicle and confirm whether the color is consistent.

Note

When the paint dries, the relatively low-density pigment will move toward the surface. Therefore the color of the paint will be slightly different between the post-drying color and the just-applied color.

Caution

- Place the test board and the position of the paint position to be touch up of the original vehicle on the same level to make a comparison.
- At least 2 different light sources should be compared under different light sources before determining the color.
- A comparison should be made between direct angle, middle angle and indirect angle.

No

Go to Step 7.

Yes

Step 10	Carry out spraying/touching up paint.
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