

Yuehu Maintenance Manual

Containing diagnostic and maintenance service information for Yuehu SEV models, this maintenance manual is for internal use only

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1.1 Warnings and precautions

1.1.1 Description and operation

1.1.1.1 Warnings and precautions

Definition of “WARNING”, “CAUTION” and “TIP”

General and specific “WARNING”, “CAUTION” and “TIP” are included in the diagnostic and maintenance procedures in this maintenance manual. To ensure the normal operations of vehicles, maintenance information is provided by Dayun to help the system diagnosis and maintenance by the aftermarket technicians. However, technicians may be harmed by certain procedures if they fail to follow the recommended methods. To prevent the occurrence of these hazards, “WARNING”, “CAUTION” and “TIP” are prepared. However, not all hazards can be foreseen. Such information appears in a conspicuous position in the maintenance manual. To prevent the following cases, such information is compiled:

- Severe personal injuries
- Vehicle damage
- Unnecessary vehicle maintenance
- Unnecessary parts replacement
- Improper maintenance or replacement of vehicle parts

Definition of “WARNING”

A “WARNING” requires you to take necessary measures or not take prohibited measures. Consequences of ignoring the “WARNING” may include:

- Severe personal injuries
- Severe personal injuries to the driver and/or passengers of the vehicle

Definition of “ATTENTION”

A “CAUTION” requires you to pay special attention to required or prohibited measures. Consequences of ignoring the “CAUTION” may include:

- Vehicle damage
- Unnecessary vehicle maintenance
- Unnecessary parts replacement
- Improper operation or performance of the system or component under maintenance
- Damage to related systems or parts
- Damage to fasteners, basic or specialized tools
- Leakage of drive motor coolant, lubricant, or other major fluids

Definition of “TIP”

A “TIP” emphasizes the need for a diagnostic or maintenance procedure. The “TIP” is intended to:

- Clarify maintenance procedures
- Provide additional information to complete a maintenance procedure
- Clarify the reasons for following the recommended maintenance procedures
- Provide information that will help complete the maintenance procedure more efficiently

- Provide experience information for technicians to complete the maintenance procedure easier

Warnings about vehicle parking

Warning!

To avoid accidental fire, never park the vehicle in a place with high temperature and heat source.

Warnings about vehicle lift

Warning!

When removing major components from the vehicle and supporting the vehicle with a lift, use a jack stand to support the part of the vehicle corresponding to the part to be removed, thus avoiding damage to the vehicle, severe personal injuries, or even fatal accidents.

Warnings about handling ABS components

Warning!

Personal injuries and/or improper system operation may be caused by the attempt to disassemble or disconnect certain system components because certain components in the Anti-Lock Braking System (ABS) cannot be serviced individually. Only components available for disassembly and assembly can be serviced.

Warnings about collision and repair of licensed equipment

Warning!

It is required to work in a well-ventilated area and wear respirators, goggles, ear plugs, welder's gloves, and protective clothing, to avoid personal injury due to exposure to toxic fumes from welding arcs or plated (zinc oxide) metals during grinding/cutting any type of metal or sheet molded parts.

Warnings about assistant driving

Warning!

An assistant should drive the vehicle while the technician is inspecting the reported faulty part. Personal injuries may occur if failure to do so.

Warnings about disconnecting the battery

Warning!

Unless otherwise stated in the operating procedures, the vehicle shall be powered off and all electrical loads shall be "OFF" before any electrical component is serviced. Moreover, if tools or equipment can easily contact the exposed energized electrical terminals, the negative cable of the battery shall be disconnected. Personal injury and/or damage to the vehicle and vehicle components may be caused by violation of these safety instructions.

Warnings about airbags

Warning!

When the airbag is serviced, the negative terminal of the battery shall be disconnected for at least 90s before any other maintenance operation.

Warnings about power batteries

Warning!

1. Wear insulating gloves, high-voltage insulating shoes, and helmets during the installation of connecting copper bars.
2. Before the assembly of connecting copper bars, confirm that there are no foreign matters such as heat-shrinkable sleeves (adhesive tape) on the contact surface between the connector and the pole.
3. During the placement of short-circuit prevention tooling, check whether the device is placed correctly before installing the harness.
4. To prevent short circuits, wrap the exposed copper bars not connected to the poles with insulating tape.
5. Handle the power batteries gently.
6. After assembly, test the power battery pack for air tightness.

Warnings about brake dust

Warning!

When the wheel brake components are serviced, avoid the following operations:

- Never grind the brake friction lining
- Never grind the brake friction lining with sandpaper
- Never clean the wheel brake components with a dry brush or compressed air

Warning!

Fibers may be contained in some models or aftermarket retrofit brake components, which may be mixed with the dust. Severe personal injuries may be caused by breathing in dust that contains fibers. Dust from the brake components may be cleaned with a damp cloth.

Warnings about brake fluid

Warning!

Highly susceptible to moisture and humidity absorption, brake liquids that may be contaminated with water in an open container shall not be used. System fault, loss of vehicle control, and personal injury may be caused by the use of inappropriate or contaminated brake fluid.

The skin and eyes may be irritated by brake fluids. In case of exposure, take the following measures:

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

Warnings about the replacement of brake pipe

Warning!

During replacement, install and secure the brake pipe carefully. Correct fasteners shall be used. Failure to do so may result in damage to the brake pipe and braking system, leading to personal injury.

Warnings about inhalation of R134a

Warning!

Avoid inhalation of air conditioning refrigerant HFC134a (R134a) and lubricant vapors or mists. Eyes, nose, and throat may be irritated if contact with them. Work in a well-ventilated area. Use maintenance equipment (R134a recovery equipment) certified to meet the requirements of SAEJ2210 for discharging R134a from the air conditioning system. Ventilate the work area before proceeding with the maintenance in the event of unexpected drainage of the system. Contact the refrigerant and lubricant manufacturer for additional information on health and safety.

Warnings about collision and profiling

Warning!

Profiling is allowed only in the recommended areas. Failure to do so may disrupt the structural integrity of the vehicle and personal injury in the event of a vehicle collision.

Warnings about window cracks

Warning!

Apply the protective tape to the window or windshield in a crossing pattern to prevent further damage to the window or windshield or personal injury if a window or windshield is cracked but still intact.

Warnings about the window lift function

Warning!

The window will stop closing and drop down a distance automatically if a foreign object is sensed between the window frame and the window during the automatic closing of the window. Never use any part of the body to test the anti-pinch function.

If an object gets stuck at the moment when the car window is completely closed, the anti pinch function will not work.

Warnings about eye protection

Warning!

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

Warnings about the handling of glass and sheet metal

Warning!

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

Warnings about moving parts and hot surfaces

Warning!

Avoid contact with moving parts and hot surfaces to prevent injury when working around a running drive motor.

Warnings about removal of expansion kettle cover

Warning!

Never remove the expansion kettle cover until the drive motor is cooled, to avoid burns. When the drive motor and radiator are not cooled, removing the expansion kettle cover may result in hot, high-pressure liquid and steam released from the cooling system.

Warnings about maintenance of the cooling system

Warning!

Even if the solution in the radiator is not boiling, the solution temperature will be much higher than the boiling temperature as long as there is pressure in the cooling system. When the drive motor is not cooled and the pressure is still high, if the expansion kettle cover is opened to perform maintenance on the cooling system, the coolant of the drive motor will be boiled immediately and may be sprayed onto the operator, resulting in severe burns.

Warnings about road tests

Warning!

The vehicle for the road test is subject to all traffic laws and regulations to ensure safety. Never attempt any operation that could jeopardize the control of the vehicle. Severe personal injuries and vehicle damage may be caused by violation of the above safety instructions.

Warnings about airbag systems

Warning!

This vehicle is provided with an airbag system, and the following consequences may occur if failure to follow proper operating procedures:

- Deployed airbag
- Personal injuries
- Unnecessary airbag system maintenance

Warning!

The following codes should be observed to avoid these conditions:

- Please refer to the airbag system components view to determine if the maintenance operations are performed on, around, or in the wiring of the airbag system components.
- If the maintenance operations are performed on, around, or in the wiring of the airbag system components, the airbag system should be released.

Warnings about high temperatures in the deployed airbag module

Warning!

The metal surfaces of the deployed airbag system components may be hot, and the following measures shall be taken to avoid fire and personal injury:

- Before touching any metal surfaces of airbag system components, allow sufficient cooling time.
- No inflated airbag system component should be placed next to any flammable material.

Warnings about clock springs of the airbag system

Warning!

Damage to the helical coils inside the clock spring and coil malfunction may be caused by incorrect installation of the clock spring assembly, resulting in improper functioning of the airbag module, and consequently personal injuries.

Warnings about scrapping the safety system airbag module

Warning!

Non-deployed airbag modules shall not be disposed of as regular shop waste, to prevent personal injuries caused by accidental deployment of airbags. Severe disease or personal injuries may be caused by some of the substances contained in the non-deployed module if the sealed container is damaged during the scrapping process. Use the deployment procedure to scrap the non-deployed airbag modules safely.

Warnings about pickup and storage of airbag modules of the airbag system

Warning!

During the transportation of non-deployed airbag modules:

- Never handle the airbag module by carrying wires or connectors on it.
- The airbag opening should not face you or anyone else.

Warning!

During the storage of the non-deployed airbag module, the airbag opening should not face the surface on which the airbag module is placed. The airbag opening should not be facing downward. It is prohibited to place any objects on the airbag modules. There should be enough space around the airbag for allowing it to deploy accidentally, otherwise it will hurt people.

Non-deployed airbag modules should not be immersed in water or contact with other liquids.

Non-deployed airbag modules should not be placed near a source of ignition or in a hot area to prevent personal injuries caused by accidental deployment of the airbag.

Warnings about handling crash sensors of the airbag system

Warning!

The crash sensor of the airbag system should not be hit or shaken. Before the crash sensor is powered on, the crash sensor should be securely fastened. Personal injuries may be caused by accidental denotation or non-denotation of the airbag system if failure to follow proper installation procedures.

Warnings about power batteries

Warning!

A set of sealed high-voltage power batteries is contained in the electric vehicle. Improperly exposed power batteries may cause a risk of intense combustion and electric shock, leading to severe injuries or deaths and environmental pollution.

Warnings about safety precautions for high-voltage risks

Warning!

When the high-voltage power is not disconnected, never touch high-voltage components with bare hands.

This vehicle is provided with high-voltage components such as OBPS assembly, high-voltage wiring harness assembly, charging socket, power battery, EDS assembly, and electric compressor.

The surface temperature of the EDS assembly and the electric vacuum pump is relatively high after a long-time operation of the vehicle. The surface temperature of the compressor of the electric air conditioner and the radiator is relatively high when the air conditioner is used for cooling. Never touch the above components with bare hands in these cases.

Never disassemble the high-voltage electrical components in the vehicle, and unplug or disconnect the high-voltage connectors and cables in the vehicle at will, otherwise severe injuries from electric shock and vehicle damage may occur. Orange bellows are used for wrapping the high-voltage cables in the vehicle for your identification.

Warnings about vehicle collisions

Warning!

In the event of a vehicle collision (including front, rear, left, and right body collisions and ground impacts):

- Stop driving safely and set the gear switch to P even if the vehicle is still available for driving. Never touch the body metal.
- In no case should the maintenance operations be performed on the vehicle when it is not completely powered-off.
- Check whether the high-voltage components and wiring harnesses of the vehicle are damaged or exposed (determine the position of the components according to the high-voltage component layout diagram). Never touch the high-voltage wiring harness, connectors, and other high-voltage components, as well as the power batteries, to prevent personal injuries. To prevent high-voltage shock hazards, never contact with broken or exposed wiring harnesses. In particular, check the power batteries on the floorboard carefully if the floorboard of the vehicle scratches against the ground. Wear insulated protective clothing (including insulated gloves, insulated shoes, and insulated clothing) with a voltage resistance of 1000V or more if you need to contact any high-voltage cables or components.
- Do not touch the vehicle, stay away from the vehicle, and immediately contact a professional technician from an authorized vehicle dealer to check and repair the vehicle if the extent of the damage to the vehicle cannot be estimated. Inform the emergency personnel who come to handle the accident at the first opportunity that it is an electric vehicle, and prevent anyone else from approaching, touching, or moving the vehicle.
- Please try to confirm with a professional before cutting the vehicle if the driver is trapped and the high-voltage DC bus cannot be disconnected. Rinse the battery area and the ground with a large amount of fire-fighting water before cutting, to clear or dilute the leaking electrolyte, and to prevent the sparks from igniting the electrolyte during cutting, which may lead to a fire. During cutting, do not touch the high-voltage cables and battery pack.
- Never disassemble the high-voltage harnesses and high-voltage parts at will.

- A fire may be caused by the leakage or damage to the electrolyte of the power battery. Contact an authorized vehicle dealer immediately if it occurs. No leaking electrolytes should be touched with hands. If the skin or eyes are exposed to the electrolyte inadvertently, rinse with plenty of water and seek medical attention immediately.
- Leave the vehicle immediately and always use plenty of water to extinguish the fire if the vehicle is smoking or on fire. Severe injuries or deaths may be caused by failure to do so.
- To avoid damage to the EDS assembly, no towing with all four wheels on the ground is allowed if a trailer is required.
- Contact an authorized vehicle dealer for handling if the vehicle needs to be repaired or painted after an impact. Do not disassemble it at will. Before painting, remove the high-voltage components such as the power battery, high-voltage harness, and EDS assembly. This is because the life of the power battery may be affected by the exposure of the power battery to higher temperatures in the spraying operation room. In addition, failure to remove the power battery from the vehicle may pose a safety hazard to maintenance personnel who are not professionally trained in electric vehicle maintenance.
- Please place the reflective tripod about 100m behind the vehicle, or about 150m behind the vehicle if on the highway immediately after the vehicle breakdown or accident, to warn the passing vehicles or pedestrians.

Warnings about charging methods and information

Warning!

During charging, high-voltage and current may occur in the high-voltage system. The operating instructions should be followed strictly. Severe injuries or death may occur if failure to do so. Please read the charging section carefully before charging.

Warnings about starting the vehicle

Warning!

No continuous operation of vehicle power-on/off is allowed.

Warnings about driving the vehicle

Warning!

No driving after drinking is allowed.

Severe injuries may be caused by accidental movement of the vehicle.

When the vehicle is running, no operation of the starter switch is allowed.

When shifting gears or parking in a parking space, the gear information displayed on the instrument should be observed to verify that it is the expected gear.

The brake pedal and accelerator pedal should not be depressed simultaneously.

When the vehicle is running, avoid emergency braking.

When the vehicle is turning, slow down as much as possible and never make sharp turns.

Do not drive to steep road surfaces, to ensure safety.

Driving through deep water should be avoided. Do not wade deeper than the lower edge of the body and drive at low speeds if it is needed to pass through waterlogged roads.

In the event of a vehicle breakdown or accident in the rain, do not open the front hatch cover at will. When the vehicle is running, if a serious scratch occurs on the underfloor, contact an authorized vehicle dealer for handling.

Warnings about stopping or parking

Warning!

Severe injuries may be caused by improper parking.

Set the gear in P to avoid accidental movement of the vehicle during parking or stopping.

No children or people with mobility impairments should be left in the vehicle. They may operate the shift paddles and cause movement of the vehicle, which may cause an accident and consequently result in severe injuries.

Warnings about charging

Warning!

If an electronic medical device, such as an implanted pacemaker or cardiovascular defibrillator is used, before charging, the effects of EV charging on the device should be checked. The functioning of the electronic medical device may be affected by charging.

If you have a pacemaker or cardiovascular defibrillator implanted, during charging, the following should be noted:

- Do not stay in the vehicle.
- Do not take something by entering the vehicle.

The functioning of the electronic medical device may be affected by charging, resulting in personal injury or death.

Please check whether the skin and shell of the charging cable are damaged before charging. If so, please contact the authorized vehicle dealer for repair or replacement. No use of damaged charging cables is allowed.

No use of the charging plug, a high-voltage electrical device, by a child is allowed. No operation by a child is allowed during the charging process.

Check to confirm that the charging port and charging plug are free of water or other debris, or rust or corrosion. To avoid short circuits, electric shock, or even injury or death, do not charge if there is water or corrosion on the charging port or charging plug.

The power supply equipment, vehicles to be charged, charging cables and charging plugs should be kept away from rain, snow, and standing water, as well as sources of ignition.

During charging, if there is moisture near the charging port, to ensure safety, please disconnect the power supply first, then the plug at the power supply end (do not touch the metal piece of the charging plug with your hands or other parts of your body, so that no safety accident occurs in the event of possible faults of the charging system), and then pull out the charging plug at the vehicle end. If necessary, wear insulated gloves, and contact an authorized vehicle dealer as soon as possible for testing and confirmation.

Before charging, if the vehicle has been driven in the rain, dry the body near the charging port before charging by opening the charging port. There should be no residual rainwater in the charging socket and surroundings.

When the charging system is in operation, there may be sparks inside. The charging equipment should not be used in an environment where gasoline, paint, or flammable liquids are used or stored.

During charging, the charging port should be kept dry and clean and appropriate precautions should be taken if necessary.

Check the charging plug timely to see if it is firm and in a dry state during charging in the event of sudden changes in weather (windy, rainy, or snowy). Do not touch the charging cable and the body in the event of lightning.

During charging, take protective measures to prevent children and other un-related personnel from approaching the charging vehicle and charging cables.

To avoid electric shock or fire, do not squeeze the charging cable during charging.

Do not place the charging cable inside the vehicle during charging.

Keep the charging cable away from sources of ignition during charging.

During charging, do not approach or touch the cooling fan of the front hatch.

Use a socket of 220V 16A or above if household power is used for charging.

During charging, the following should be noted:

- The metal parts of the charging port and charging plug should not be touched.
- If there is an electric spark in the electric vehicle or in-vehicle charger, do not touch the electric vehicle or any device. Electric shock may occur if failure to do so, and resulting in personal injury or death.
- Avoid charging the vehicle at a low or high ambient temperature (midday in winter and early evening in summer are recommended).
- In summer, charging in hot environments such as direct sunlight should be avoided.
- Make sure the charging cable is in the natural extension state during charging. No hanging in the air is allowed.
- Immediately and safely disconnect the power supply if you notice a peculiar odor or smoke in the vehicle.
- Do not plug and unplug the charging plug with wet hands and standing in a place where there is water, liquid, or snow. Failure to do so may cause electric shock, resulting in personal injury or death.
- Please hold the insulated part of the charging plug when unplugging it. Do not directly drag or pull the charging cable.
- Do not disassemble or modify the charging port at will.
- Do not extend or modify the charging cable or plug at will. Failure to do so may cause hazards.

Warnings about charging methods

Warning!

Charging equipment that meets GB/T20234 Plugs, Socket-outlets, Vehicle Couplers, and Vehicle Inlets for Conductive Charging of Electric Vehicles - General Requirements should be used. Failure to do so may cause malfunctions or fires, resulting in severe injury or death.

To ensure that the charging plug is connected and locked, before charging, please read the operating instructions on the charging equipment carefully. Failure to do so may cause malfunction of the vehicle or charging equipment.

No charging of the vehicle by a child is allowed.

During charging, do not plug or unplug the charging plug at will.

Start or stop charging in strict accordance with the operating procedures of the charging pile.

Please press the emergency stop button on the charging pile in time to stop charging, evacuate people around the vehicle, and handle it according to the relevant procedures at the scene if smoke or odor is coming from the charging port or abnormal phenomena inside the vehicle.

Warnings about the charging procedure

Warning!

The inside of the charging socket (including the jack) should be checked for debris, dust, water, etc. before charging. If so, no charging is allowed. Debris and dust should be removed from the inside of the charging socket (including the jack) and wiped with water. The inside of the charging socket should be kept clean and dry before charging is continued.

The jack of the charging socket should be checked for damage, ablation, or discoloration of the jack color before charging. Do not charge and contact an authorized vehicle dealer if any of the above occurs.

Warnings about maintenance

Warning!

After operation, the temperature of the vehicle is high. Take protective measures and observe the following during vehicle inspection or maintenance:

The vehicle should be parked on a level surface with the gear in P. The 12V lead-acid battery should not be connected or disconnected when the vehicle is powered on.

The cooling fan of the vehicle may start at any time. During maintenance, the negative terminal of the 12V lead-acid battery should be disconnected.

Secure or remove loose clothing and jewelry such as rings and watches, and wear protective eyewear when performing maintenance. Electric shock or burns may be caused by metal ornaments when they come in contact with powered parts.

High-voltage components, wiring harnesses, and connectors should not be maintained privately, disassembled, moved, or replaced arbitrarily, which may result in serious burns or electric shock, causing severe injury or death.

If the vehicle is supported by a jack, do not go under it. Use a safety stand if you go under the vehicle for operations.

Keep the vehicle fluids away from children or pets.

Please make sure that the charging plug of the vehicle is unplugged and the remote control air conditioner is turned off when replacing the fuse or lead-acid battery. When the vehicle is powered off, disconnect the negative terminal of the battery to prevent the power battery from charging the lead-acid battery.

Note the polarity when connecting the cable of the 12V lead-acid battery. The positive cable should not be connected to the negative terminal or the negative cable should not be connected to the positive terminal.

Cautions for filling brake fluid in the braking system

Caution

Use only brake fluid from a clean, sealed brake fluid container that complies when adding brake fluid to the brake master cylinder storage tank. The model should be suitable for the DOT4 type. System contamination may occur if failure to use the recommended brake fluid, which may damage the rubber seals and/or rubber gaskets inside the hydraulic braking system components.

Cautions for brake calipers

Caution

To avoid damage to the brake line, use a wire or special tool to hold the caliper in place when removing the caliper.

Cautions for effects of brake fluid on paint and electrical components

Caution

Contact with paint, electrical connectors, wires or cables should be avoided from the brake fluid. Paint may be damaged by brake fluid, causing corrosion of electrical components. Immediately rinse the contact area with water if brake fluid comes in contact with paint. Wipe the brake fluid away with a clean rag if brake fluid comes in contact with electrical connectors, wires, or cables.

Cautions for EDS assembly lift

Caution

Do not support the jack under any sheet metal parts or lines when lifting or supporting the EDS assembly for whatever reason. Damage to components or personal injuries may be caused by any incorrect way of lifting the EDS assembly.

Cautions for removal of exterior logos

Caution

Plastic flat edged tools should be used for dismantling signs/nameplates to avoid damaging the paint.

Cautions for fasteners

Caution

Correct fasteners should be used in the correct position. The part number of the fasteners to be replaced should be correct. The maintenance procedures contain specific statements on fasteners to be replaced or requiring the use

of thread locking adhesive or sealant. Unless otherwise stated, no paint, lubricant, or corrosion inhibitor should be used on fasteners or fastener attachment surfaces. The torque and clamping force of the fastener may be affected by the coatings, resulting in damage to the fastener. Use the correct tightening sequence and tightening torque to avoid damage to the parts and system when installing fasteners.

Cautions for handling electrostatic discharge sensitive components

Caution

Many solid-state electrical components may be damaged by electrostatic discharges. The electrostatic discharge symbol may not appear on all components susceptible to electrostatic discharges. All electrical components should be handled carefully. To avoid damage from electrostatic discharge, observe the following safety instructions:

- Touch the metal ground point to discharge static electricity from your body (especially after sliding on the vehicle seat) before servicing any electronic component.
- Exposed terminals should be not touched. The terminals may be connected to circuits susceptible to damage from electrostatic discharge.
- Do not allow the tool to touch the exposed terminals when servicing the connector.
- Unless otherwise indicated, do not remove the components from the protective housing.
- Unless otherwise required in the diagnostic procedure, avoid the following operations:
- Jumper or ground the component or connector.
- Connect the probe of the test equipment to the component or connector. Connect the ground lead first when using the test probe.

Before opening the protective housing of the component, ground it. Do not place the solid-state components on metal workbenches or top of televisions, radios, and other electrical equipment.

Press the key lock button to ensure that the vehicle is powered off when disconnecting the battery

Caution

Make sure that the vehicle is powered off when connecting or disconnecting battery cables, battery charger, or jumper cables. Failure to do so may cause damage to the control module or other electrical components.

Cautions for no twisting or bending when installing hoses

Caution

Do not twist the inlet and outlet hoses during installation. Do not allow the cable to be bent or deformed to facilitate installation. Failure to do so may cause damage to components.

Cautions for damage to the machined surface

Caution

The sealing surface, which is a machined surface, should not be etched, scratched, or damaged. Leakage may be caused by damage to the machined surface.

Cautions for the control module of the power system and electrostatic discharge

Caution

To prevent electrostatic discharge from damaging the electronic control module on the vehicle, do not touch the connector pins or soldered parts on the circuit board.

Cautions for gear ring disassembly

Caution

The ring should not be pried off the differential case. The ring or the differential case may be damaged if the ring is pried off the differential case.

Cautions for sealants

Caution

No room-temperature hardening sealant should enter the threaded blind holes. The fasteners will be hydraulically locked during tightening if room-temperature hardening sealant enters the threaded blind holes. In the event of hydraulic locking of the fasteners, the fasteners or other components may be damaged, and no correct clamping force will be applied when the fasteners are tightened. No correct sealing of the component may be obtained due to incorrect clamping force, resulting in leakage. Components may be loosened or separated if failure to tighten the fasteners properly, resulting in serious damage to the drive motor.

Cautions for the use of the fault diagnosis instrument

Caution

Note the following cases before performing diagnostics on the vehicle. Failure to do so may cause damage to the control module.

- The software of the fault diagnosis instrument and the terminal shall be the latest version.
- The battery of the vehicle shall be fully charged, with a battery voltage between 12 and 14V.
- The fault diagnosis instrument shall be firmly connected to the termination cable.
- When programming the control module, do not connect the battery charger to the battery.

Cautions for test probes

Caution

The probe of the test equipment (digital multimeter, etc.) should not be inserted into the wiring harness connector or fuse box terminals. Most terminals may be deformed by the diameter of the test probe, which may result in poor contact, and consequently lead to system malfunction. Specialized tools should be used to probe the terminals from the front. Terminals should not be tested with clips or any other alternatives.

Caution

Make sure that the terminal test adapter selected matches the dimensions of the connector terminals when testing assemblies with specialized tools. The terminal test adapter should not be selected visually, as some connector terminal holes may appear larger than the actual terminals in the holes. The terminals may be damaged by the use of a large terminal test adapter.

Cautions for power batteries

Caution

Note the following cases to avoid damage to the power battery:

- The vehicle should not be stored at a high temperature of 45°C for more than 1 days. The vehicle should be promptly placed in a shady environment.
- The vehicle should not be stored at a low temperature of -20°C for more than 3 days. The vehicle should be promptly placed in a warm environment.
- When the battery level is less than 15%, the vehicle should not be parked for more than 14 days and should be recharged in time.
- The power battery in the vehicle should not be used for other purposes.

Cautions for temperature control device of the power battery

Caution

Damage to the power battery caused by high or low ambient temperature may be avoided by the following methods:

- The vehicle should not be parked in an environment with an ambient temperature of more than 45°C for more than 1 day.
- Start the power battery heater only when the charging cable is connected. So, when the charging cable is not connected, the vehicle should not be parked in an environment with an ambient temperature below -20°C for more than 3 days.

Cautions for stopping or parking

Caution

Park the vehicle carefully in locations with protrusions or fixed restriction blocks. Failure to do so may cause damage to the vehicle bumper and other components. Stop the vehicle before the wheels come into contact with these protrusions. Take out the key when leaving the vehicle.

1.1.1.2 Safety instructions for maintenance of the electric vehicle

Low-voltage and high-voltage electrical components are contained in the electrical equipment on the pure electric vehicle. Among them, low-voltage electrical components include instruments, audio, light, and horn, and high-voltage electrical components include EDS assembly, OBPS assembly, and air conditioning compressor.

High-voltage components are indicated with orange warning labels. The content requirements on the warning labels should be noted. To avoid electric shock injury, high-voltage components, high-voltage cables (orange), and their connectors should not be touched.

To prevent electric shock, do not touch the exposed or broken cables on the vehicle.

The electrical equipment should not be released, disassembled, or modified by any non-professional maintenance personnel at will. Failure to do so may cause burns, even electric shock and death, and other serious consequences due to touching the high-voltage electricity.

1.1.1.3 Safety measures for the maintenance of the electric vehicle

Insulated protective gear

- A. Insulated protective clothing
- B. Insulated rubber shoes
- C. Safety goggles
- D. Insulated gloves

Before operation, the maintenance personnel shall wear insulated protective equipment:

- Insulated protective clothing should be worn.
- Insulated rubber shoes should be worn.
- Protective goggles should be worn.
- Insulated gloves should be worn: Appropriate anti-high-voltage electrician's gloves or anti-battery electrolyte acid-alkaline gloves should be selected according to the work situation.

Caution

Check the insulated protective equipment before use to ensure that it is free of damage, holes, and cracks and that the internal and external surfaces are clean and dry. To ensure safety, do not work with water.

Insulated tools

- A. Insulated rubber pads
- B. Insulated tools
- C. Power battery workbench

Use of insulated tools:

- The maintenance area should be provided with insulated rubber pads.
- When operating on energized components, maintenance personnel shall use insulated tools.
- Use a specialized workbench with insulated pads when servicing the power battery and electronic control components.

Caution

Check the insulated tools before use to ensure that they are free of damage, holes, and cracks and that the internal and external surfaces are clean and dry. To ensure safety, do not work with water.

Maintenance site

- A. High-voltage warning sign
- B. Carbon dioxide or ammonium phosphate fire extinguishers
- C. Warning line
- D. Specialized grounding wire for the maintenance station

Requirements for the maintenance site:

- Before maintenance operations, take insulation measures: Use guardrails for isolation and erect high-voltage warning signs to warn un-related persons to stay away from the area to avoid safety accidents.

- Provide fire hydrants at designated locations on the maintenance site and use water to extinguish fires.
- Connect the body with a ground wire to the grounding wire of the special maintenance station for electric vehicles before servicing the high-voltage equipment.
- The work environment should be clean and well-ventilated, and away from liquids and flammable materials.

Maintenance safety

Caution

Safety precautions for maintenance operations:

- **Wait for more than 5min for the motor controller, charger, and other components with internal capacitive elements to be fully discharged after disconnecting the DC bus.**
- **When repairing vehicles, assign a full-time guardian. The nationally recognized "Special Operation Permit (Electrician)" and "Junior (including) or above Electrician's License" (vocational qualification certificate) are mandatory for the guardian and maintenance personnel.**
- **The guardian is responsible for overseeing the entire process of maintenance:**

Supervise the compliance of the composition of maintenance personnel, the use of tools, the wearing of protective equipment, the safety protection of spare parts, and maintenance safety warning signs with the requirements.

Responsible for checking the safety operation procedures for maintenance during the maintenance process. The checking by the guardian should be based on the safety operation procedures for maintenance. The operation shall be directed by the guardian according to the safety operation procedures for maintenance. The guardian shall be informed of the completion of an operation by the maintenance personnel. The operation flow sheet shall be completed by the guardian.

- **No overhaul of the high-voltage part shall be performed by untrained personnel. To avoid safety accidents, no one is allowed to carry out dangerous operations with a sense of chance.**

1.1.1.4 Safe operation of the electric vehicle

Overhaul of the high-voltage system

- Verify that no one else is performing high-voltage maintenance operations to avoid danger before powering on the vehicle.
- Disconnect the power supply from the starting switch, the negative battery cable, and the DC busbar when servicing the high-voltage system. Assign a full-time guardian for custody and make sure that no one will re-install them during the maintenance process.
- Wrap the exposed high-voltage parts removed with insulating tape immediately when servicing high-voltage wires.
- Secure the harness according to the body mounting hole requirements when installing the high-voltage wires.
- To avoid electric shock, do not touch the electrically charged parts of the high-voltage harness plug with

your fingers. Small metal tools or iron bars should be prevented from touching the electrically charged parts of the plug.

Measurement with a multimeter

- Use a multimeter to measure the high-voltage circuit of the vehicle before overhauling the high-voltage system, to ensure that there is no electricity. The methods are as follows: measure the voltage between the power battery and the vehicle after disconnecting the DC bus for 5 minutes, to initially determine whether there is a leakage. Stop the operation immediately if the voltage is detected to be greater than or equal to 36V. Check and determine the leakage part.
- Select a correct range when using a multimeter to measure high-voltage. The multimeter for testing shall have an accuracy of no less than 0.5 and a DC voltage measurement position with a range greater than or equal to 500V.
- Follow the principle of "one-handed operation" when using a multimeter to measure high-voltage.
- Insulated crocodile clips shall be provided on one pen of the multimeter (withstand voltage of 3KV and overcurrent capability of 5A). During measurement, clamp the crocodile clips to one of the terminals of the circuit, and then connect the other pen to the terminal to be measured to obtain the readings. Hold the pen with one hand only during each measurement.
- Do not touch the metal part of the pen when using the multimeter to measure high-voltage.

Vehicle handling

In the event of vehicle abnormalities, accidents, fires, and water immersion:

- Do not start the vehicle again in the event of a vehicle accident.
- Use plenty of water to extinguish the fire immediately in the event of a vehicle fire.
- Wait until the water surface is free of bubbles and nuisance sound before salvaging in the event of water immersion in the vehicle. To prevent electric shock, after power consumption, wear insulated protective equipment before salvage operations.

1.1.1.5 Overhaul of the power battery

- During the overhaul of the power battery, to prevent the electrolyte from leaking and causing injuries, the maintenance personnel shall wear gloves and protective glasses to prevent skin corrosion and eye irritation caused by the battery electrolyte.
- The power battery is still powered on because disconnecting the DC bus only cuts off the power supply from the power battery to the high-voltage power equipment. To avoid electric shock, wrap the exposed high-voltage parts with insulating tape when it is necessary to overhaul the power battery.
- Use a specialized hoist for the power battery when carrying the power battery to the specialized battery maintenance workbench. Do not lift the power battery directly by hand.

1.2 Vehicle inspection

1.2.1 Description and operation

1.2.1.1 Items to be checked during the operation of the vehicle

Horn operation

Honk the horn occasionally to ensure its proper functioning and to check the position of all buttons.

Operation of the braking system

Be alert to the abnormal sound of the braking system, increased travel of the brake pedal, or repetitive brake runout when braking. In addition, a part of the braking system may be malfunctioning if the brake warning light is on or flashing.

Operation of tire, vehicle, and alignment

Steering wheel or seat vibration at normal highway speeds should be noted, which indicates that one of the wheels may need balancing. Also, side-to-side misalignment on a flat, straight road should be noted, which indicates a possible need for tire pressure adjustment or wheel alignment.

Operation of the steering system

Be alert to changes in steering action. In the event of difficulty in turning the steering wheel, too much free travel, or noise in the steering or parking, checking is required.

Operation of the lighting system

Each function of the vehicle lights corresponds to the pattern on the instrument. In the event of any inconsistency between the light pattern on the instrument and the lights turning on and off, adjustment in time is required.

1.2.1.2 Items to be checked during each filling

Inspection of the coolant level and condition of the expansion kettle

The coolant level of the expansion kettle should be checked and coolant should be added if necessary. The condition of the coolant of the expansion kettle should be checked and the dirty coolant should be replaced if necessary.

Inspection of the washing liquid level of the front windshield

The washing liquid level of the reservoir should be checked and washing liquid should be added if necessary.

1.2.1.3 Items should be checked at least once a month

Inspection of tire, wheel, and air pressure

Tires should be checked for abnormal wear or damage, and wheels should be checked for damage. The pressure when the tires are cold should be checked, and the recommended pressure on the tire label should be maintained.

Operation of vehicle lights

The operation of license plate lamps, front combination lamps (both high and low beam), rear combination lamps, fog lamps, high-mounted brake lamps, rear back door lamps, and hazard warning lamps should be checked.

Inspection of oil leakage

Check the ground underneath the vehicle periodically for water or other liquids after parking the vehicle for a period. Dripping of the air conditioning system after use is normal. Find the cause and troubleshoot immediately if a leakage is

found.

1.2.1.4 Items to be checked at least twice a year

Level of the reservoir of the brake master cylinder

The fluid should be checked and kept at the correct level. A low level may indicate wear of the brake pads in the disc brakes, for which maintenance is required. The vent holes in the reservoir lid should be checked to ensure that they are free of dirt and that the air passages are clear.

Lubrication of door and window seals

A clean rag should be used to apply a coat of silicone-based grease to the seal.

Items to be checked at each fluid change

1. Reducer oil

The fluid level should be checked and fluid should be added if necessary. Please refer to 1.4.2.1 Reducer oil level inspection procedure. Please refer to Reducer oil filling and replacement.

2. Inspection of the braking system

Caution: A low brake fluid level may indicate wear of the brake pads in the disc brakes, for which maintenance is required. In addition, there may be a problem with the braking system if the warning light of the braking system stays off or on. There may be a problem with the ABS if the warning light of the ABS stays off or on. Complete this inspection when removing the wheel for rotation. Lines and hoses should be checked for proper connection, as well as for snags, leaks, cracks, or abrasions. The brake pads in the disc brakes should be checked for wear. The surface condition of the brake discs and other brake components should be checked, including the brake wheel cylinders and parking brake. The parking brake adjustment should be checked and the interval between brake checks should be shortened if driving habits or driving conditions require frequent braking.

3. Inspection of suspension and seals

The front and rear suspension and steering systems should be checked for damaged, loosened, or missing parts and for signs of wear or inadequate lubrication. Seals should be cleaned and checked for damage, cracks, or leaks and, seals should be replaced if necessary.

1.2.1.5 Items to be checked at least once a year

Condition and operation of seat belts

The seat belt system should be checked, including webbing, buckles, retractors, guide rings, and anchors.

Storage of accompanying tools

Rattling noises in the rear of the vehicle should be noted and the accompanying tools should be returned to the tool kit after each use.

Lubrication and maintenance

All door hinges should be lubricated, including the front hatch cover, charging port covers, luggage compartment hinges and limiters, latches, glove box, etc.

Cleaning of underbody

First, deposits gathered in the closed areas of the vehicle should be loosened, and then, the underbody should be cleaned. After winter, the underbody should be cleaned at least once a year. Corrosive substances used to remove snow, ice, and dust can be removed by cleaning the underbody.

Warning!

To avoid electrical shock injury, follow the safety precautions for maintenance during underbody cleaning.

Cooling system of the drive motor

Warning!

Avoid contact with moving parts and hot surfaces to prevent injury when working around a running drive motor. The coolant of the drive motor should be checked. If the coolant of the drive motor is excessively dirty or rusty, the cooling system of the drive motor should be drained, flushed, and filled with new coolant of the drive motor. Proper coolant concentration of the drive motor should be maintained to ensure proper freeze, boil, and corrosion protection properties and operating temperature of the drive motor. Hoses should be checked and cracked, swollen or deteriorated hoses should be replaced. The clamps should be tightened, the exterior of the radiator and the condenser of the air conditioning system should be cleaned, and the filler cover and filler neck should be cleaned. The cooling system and cover should be tested for pressure to ensure the proper functioning of the system.

Make sure the vehicle is on a clean, hard, and level surface when lifting the vehicle. All lifting devices should meet the weight requirements and be in good working order. All vehicle loads should be evenly distributed and stationary. Make sure that the lifting device does not exert excessive force on or damage the frame struts if the vehicle is supported only by the frame struts.

1.3 Vehicle hoisting

1.3.1 Description and operation

1.3.1.1 Vehicle lifting and hoisting

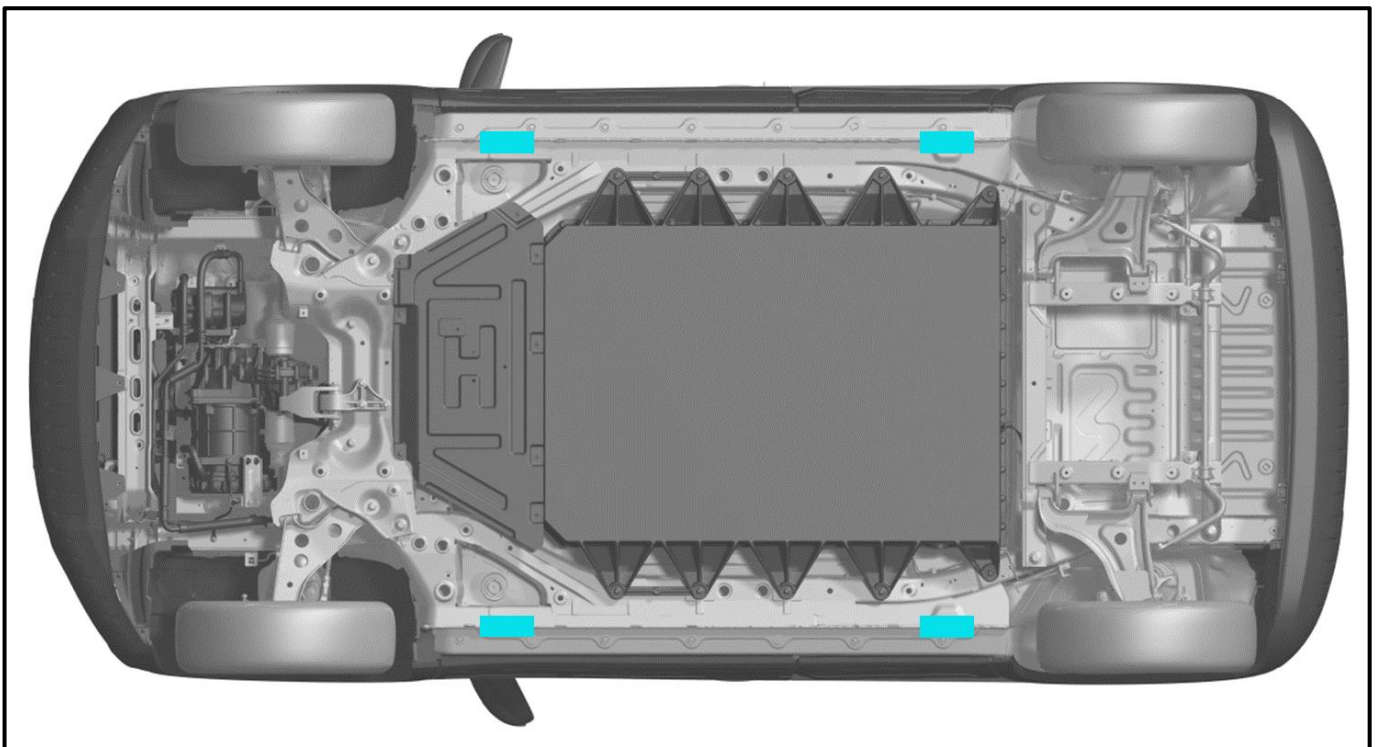
Warning!

Please refer to "Warnings about vehicle lift" in "Warnings and precautions". Always use a jack stand when performing any work on or under a vehicle supported only by a jack, to avoid personal injury.

Caution

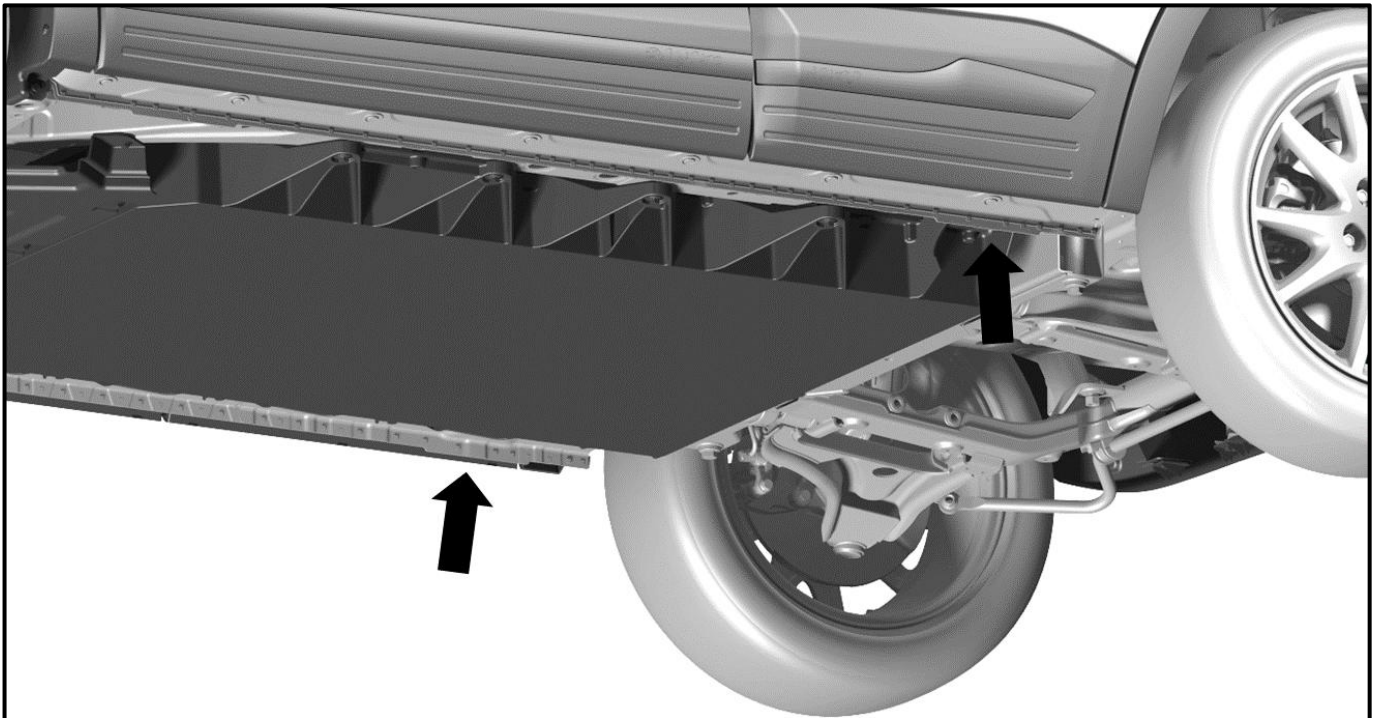
Position the outrigger support points accurately when lifting from the underbody. To avoid damage to the high-voltage battery, do not lift the bottom plate of the high-voltage battery. Take special care to ensure that you do not break the bottom plate of the battery when using the rescue tool. Make sure the vehicle is on a clean, hard, and level surface before starting any lifting procedure. All lifting devices should meet the weight requirements and be in good working order. All vehicle loads should be evenly distributed and stationary. Make sure that the lifting device does not exert excessive force on or damage the frame struts if the vehicle is supported only by the frame struts.

Vehicle lifting point



Vehicle lifting - Frame contact lifter

Rear-end lifter pads

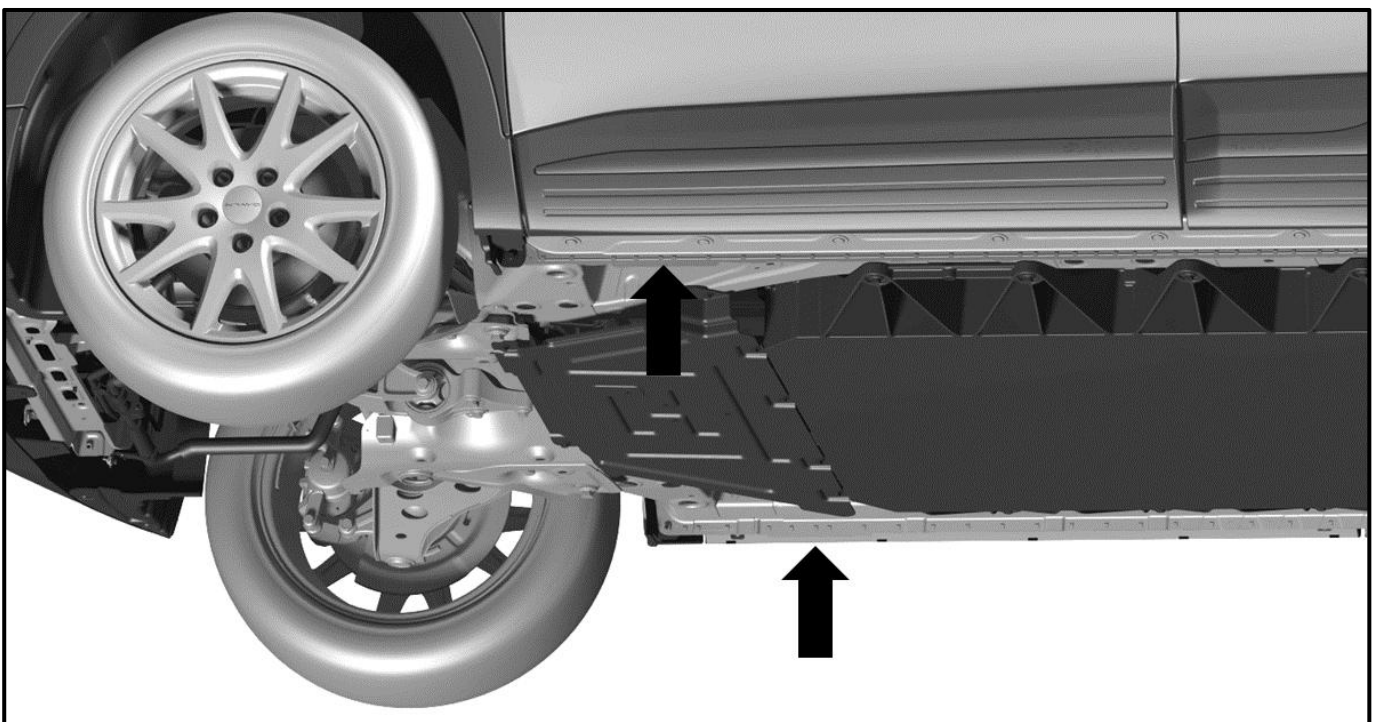


Caution

Do not allow the rear-end lifter pads to touch the battery pack or other sheet metal or plastic parts.

The lifter pads should be placed at the corresponding lifting tabs on the body.

Front-end lifter pads



Caution

Do not allow the front-end lifter pads to touch the battery pack, other sheet metal, or other plastic parts such as the bottom guard.

The lifter pads should be placed at the corresponding lifting tabs on the body.

1.4 Maintenance

1.4.1 Specifications

1.4.1.1 Fluid capacity and specifications

Application	Fluid capacity	Fluid specifications
Reducer gear oil	0.7L±0.05L	75W-90 GL-4 gear oil
Brake fluid	0.38±0.05L	Compliance with DOT4
Washing liquid	2L	Freezing point of -25°C (winter)/ freezing point of -5°C
Air conditioning refrigerant	370g±10g	R134a (HFC134a)
Refrigeration oil grade of the air conditioning system	120g	POE

1.4.1.2 Instructions for tire rotation

Caution

Eliminate the cause of the fault if uneven tire wear is evident. It is recommended to check the dynamic balance of the wheel assembly simultaneously if the tires are rotated.

1. It is recommended to cross-rotate the tires when performing a brake check on the tires according to the maintenance schedule described in the “User Manual”, or cross-rotate the tires when the difference in tread depth between the front and rear tires reaches 1.5 mm (0.08 in).
2. The vehicle should be lifted and supported. Please refer to 1.3.1.1 Vehicle lifting and hoisting.

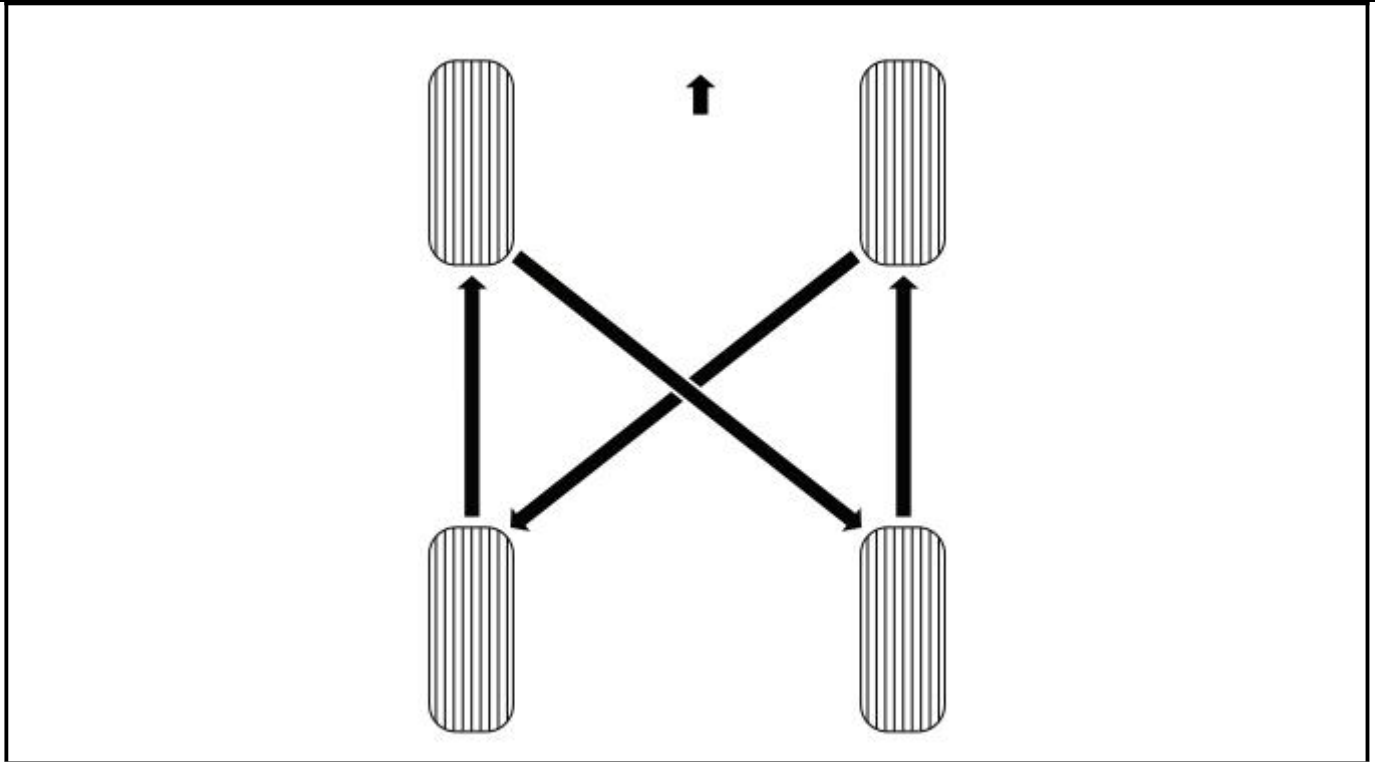
Caution

The original position of each tire and wheel assembly relative to the vehicle should be recorded.

1. The tire and wheel assembly should be removed. Please refer to 4.4.5.1 Wheel replacement.
2. The tire and wheel assembly should be rotated as shown below.

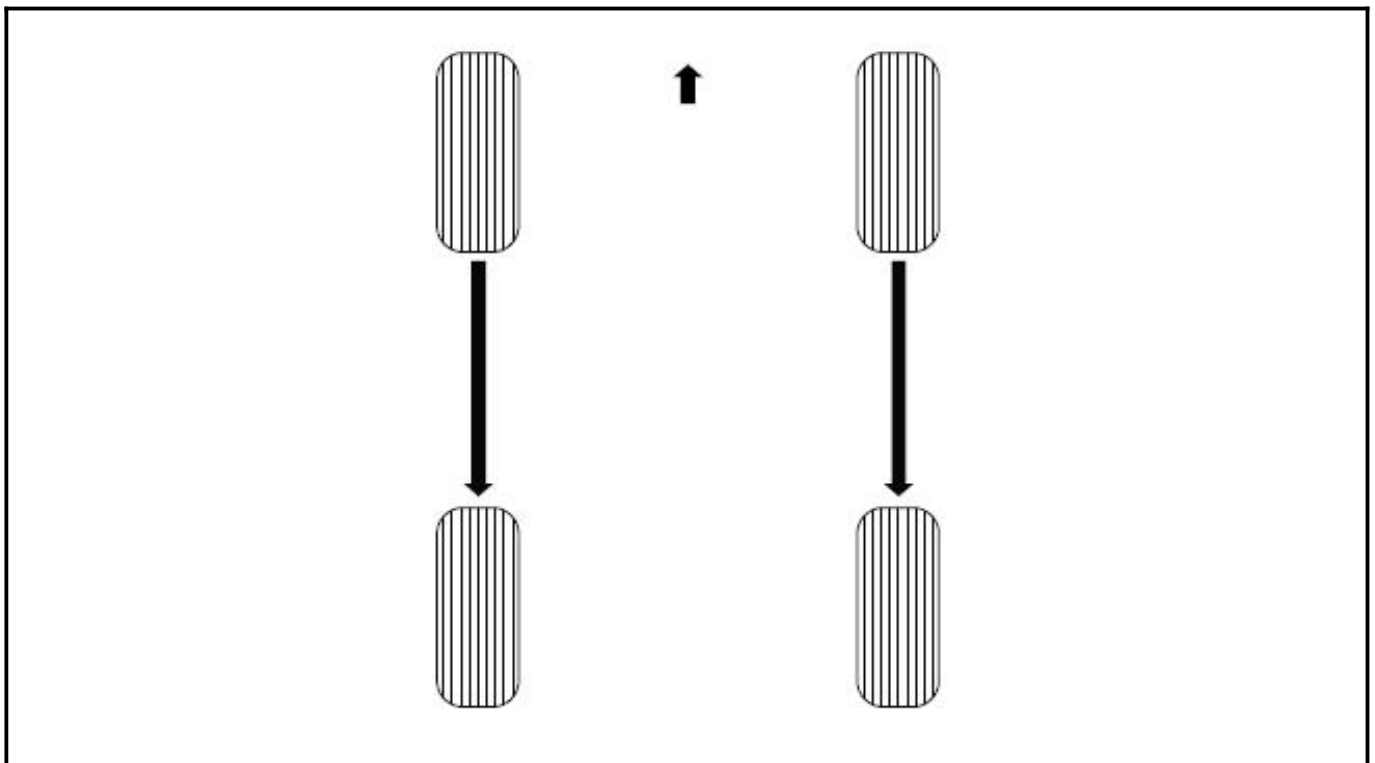
Caution

Perform a cross-rotation of a tire with "no direction of rotation" as shown below.



Caution

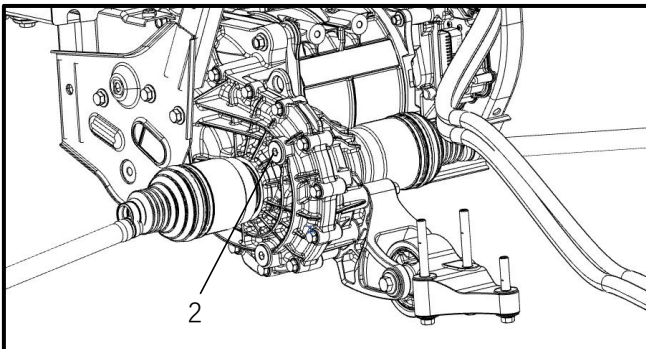
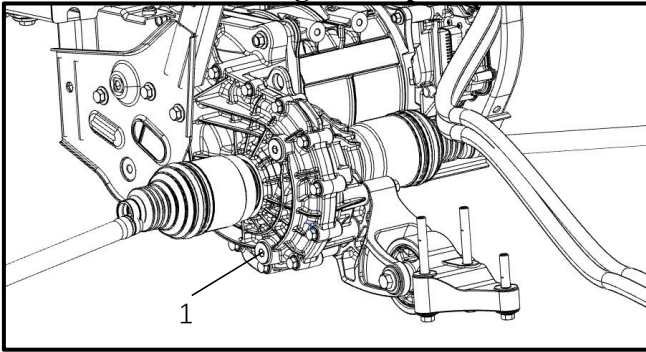
Perform a parallel rotation of a tire with "no direction of rotation" as shown below.



1. Tires and wheel assembly should be installed; Please refer to 4.4.5.1 Wheel replacement.
2. The safety bracket should be removed.
3. The vehicle should be dropped off.
4. The tire inflation pressure should be checked and adjusted.

1.4.2 Description and operation

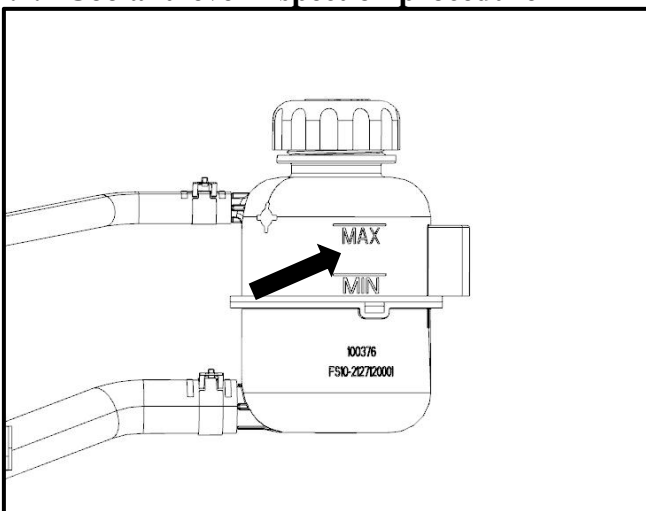
1.4.2.1 Reducer oil filling and replacement



Reducer lubricant replacement

1. The oil draining bolt 1 should be removed counterclockwise, and the bolt gasket (inner diameter of $\phi 20$) should be replaced and tightened ($30\text{N}\cdot\text{m} \pm 5\text{N}\cdot\text{m}$) after the oil is completely drained.
2. The oil draining bolt 2 should be removed counterclockwise, and the bolt gasket (inner diameter of $\phi 20$) should be replaced and tightened ($30\text{N}\cdot\text{m} \pm 5\text{N}\cdot\text{m}$) after the oil is completely drained.
 - a. The first maintenance (replacement) of reducer gear oil should be performed after the vehicle has been used for 1 year or 5000km and should be replaced every 3 years or 60,000km in later years. Note: 75W-90 gear oil should be used. The filling volume of the EDS assembly is $0.7 \pm 0.05\text{L}$, and the filling site is the oil filling port.
 - b. Every time the gear oil is replaced, the sealing gasket on the oil filling (draining) bolt (2pcs, inner diameter of $\phi 20$) should also be replaced. The sealing gasket should comply with the requirements of the national standard JB/T 982-1977 Combined Sealing Gasket.
 - c. During each repair or maintenance, the reducer should be checked for oil seepage (leakage) and handled properly.

1.4.2.2 Coolant level inspection procedure



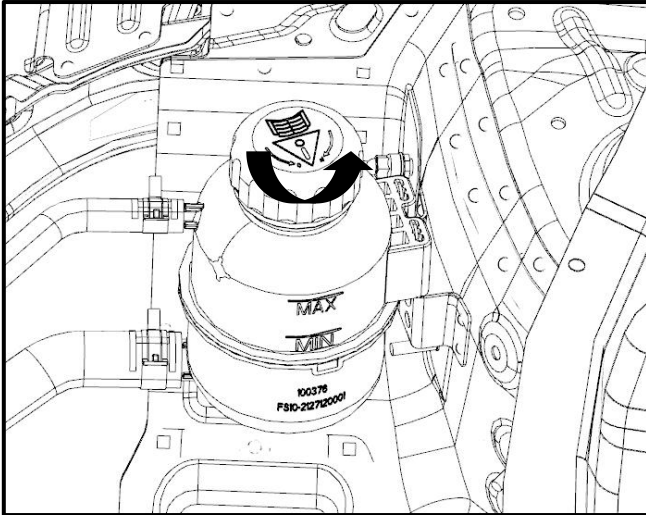
Inspection procedure

1. The coolant level should be checked
 - a) The expansion kettle level should be checked, and the level position should remain between MIN and MAX.
 - b) The filler cover should be unscrewed and checked whether the coolant color is muddy.

Caution

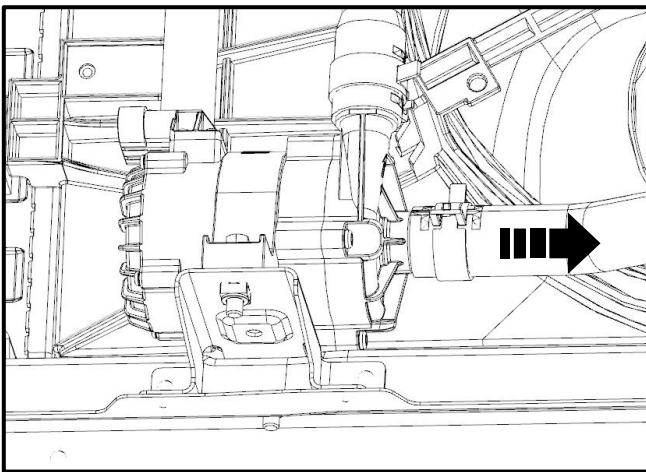
The coolant should be added if the coolant level is not within the specified range. The coolant should be replaced if the coolant color is muddy.

1.4.2.3 Coolant replacement procedure



Draining procedure

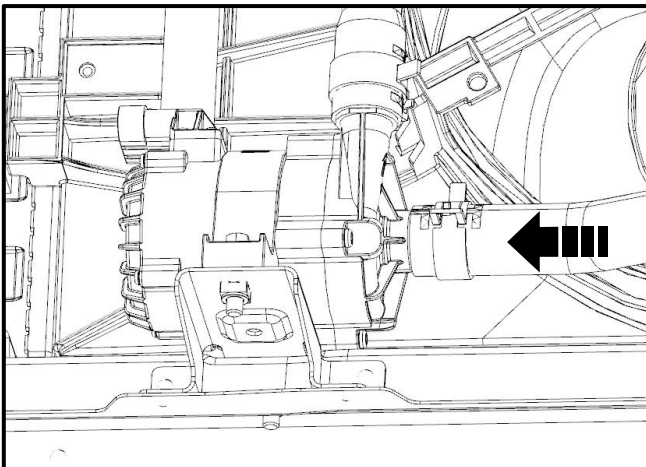
1. The expansion kettle cover should be opened



2. The inlet hose of the electronic water pump should be disconnected and a recovery container should be used to receive the drained coolant.

Caution:

The coolant should be subject to centralized recycling and disposal, for scrapping or recycling. To protect the environment, the old coolant should not be discharged into the downpipe.

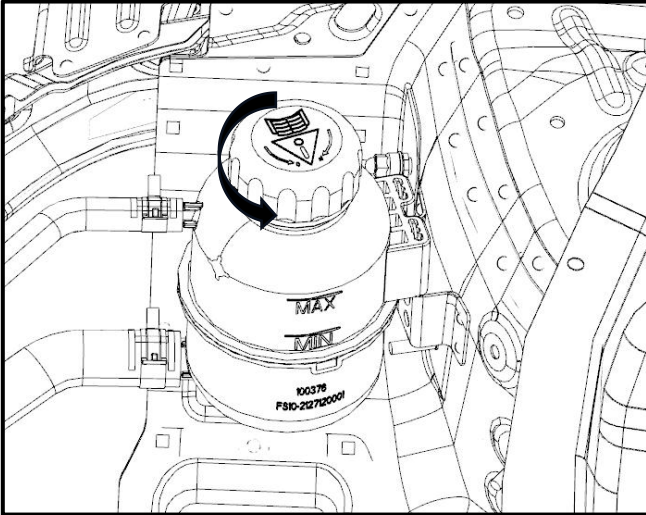


Filling procedure

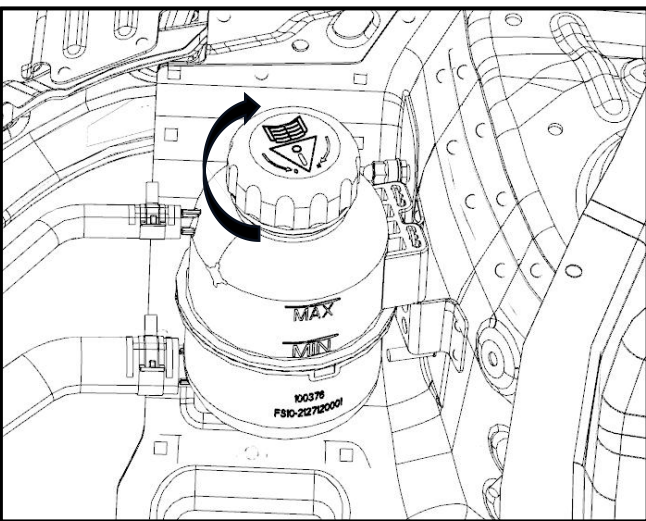
1. The inlet hose of the electronic water pump should be connected and the line should be connected completely

Caution

Align the clamps to be flush with and in the middle of the marked line locations.

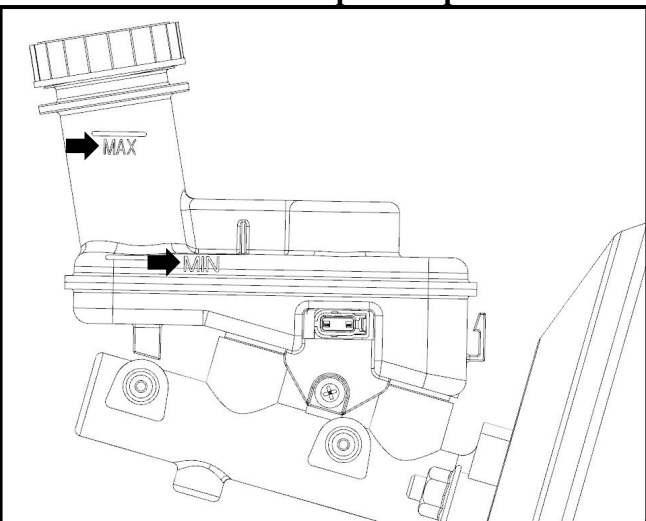


2. The expansion kettle cover should be opened to start filling the coolant and filling the expansion kettle with coolant between the MIN line and MAX line. If the coolant level in the expansion kettle is found to fall, the coolant should be replenished in time to keep the coolant level between the MIN line and the MAX line.



3. The de-airing port of the expansion kettle should be observed. The expansion kettle cover should be tightened when there is a continuous bubble-free coolant outflow at the de-airing port of the expansion kettle and the coolant level in the expansion kettle is no longer falling. The coolant filling is completed.

1.4.2.4 Brake fluid level inspection procedure



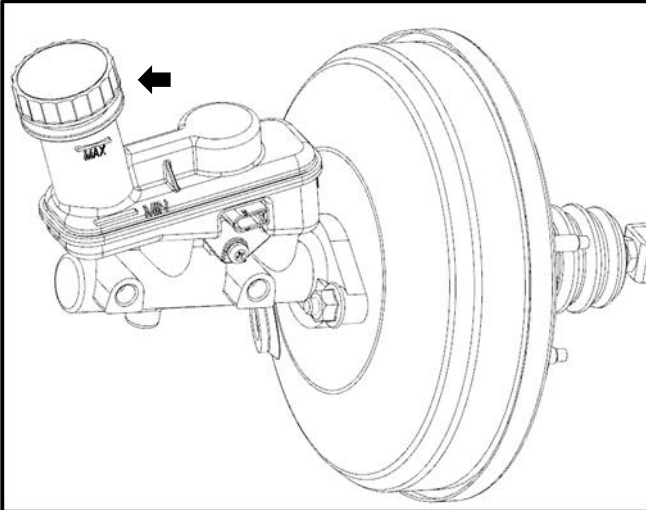
Inspection procedure

1. The brake fluid level should be checked
 - a) The reservoir level should be checked, and the level position should be between MIN and MAX.
 - b) The filler cover should be unscrewed to check whether the brake fluid color is muddy.

Caution

The brake fluid should be added if the brake fluid is not within the specified range. The brake fluid should be replaced if the brake fluid color is muddy.

1.4.2.5 Brake fluid filling and replacement



1. Brake fluid filling and replacement
 - a) Adjustment proceduresPlease refer to 1.4.2.6 Hydraulic braking system venting procedure.

Caution

Perform the hydraulic braking system venting procedure when replacing the brake fluid.

1.4.2.6 Hydraulic braking system venting procedure

Warning!

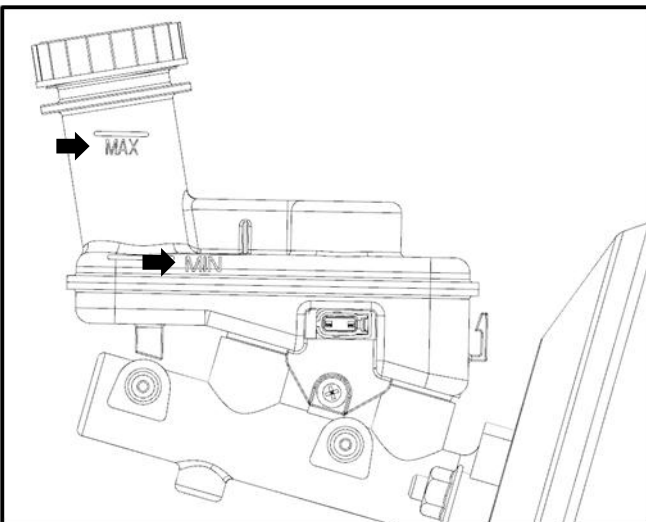
Please refer to "Cautions for filling brake fluid in the braking system" in "Warnings and precautions".

Caution

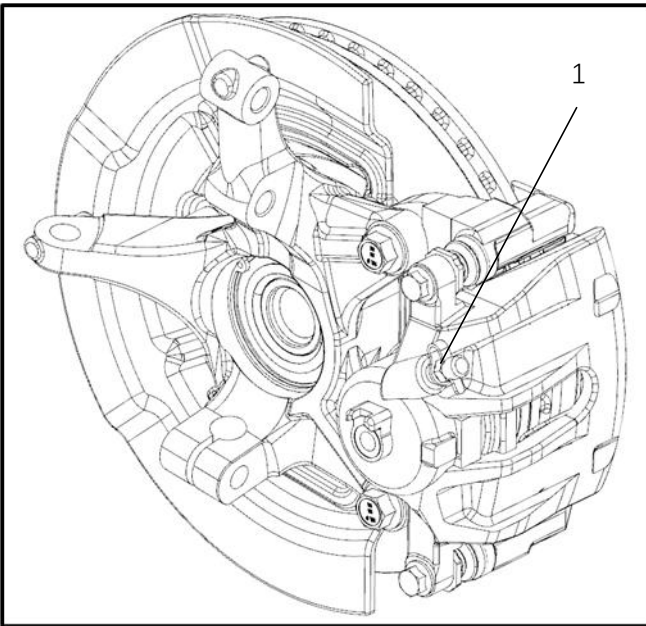
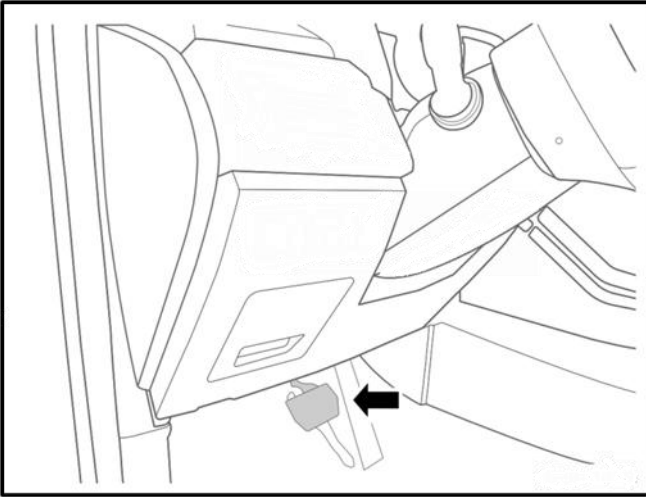
The ex-factory ABS hydraulic brake governor is filled with fluid and vented, during normal maintenance procedures involving the governor, air does not enter the ABS hydraulic brake governor. In such cases, a manual venting procedure is used.

Caution

Please refer to "Cautions for effects of brake fluid on paint and electrical components" in "Warnings and precautions".



1. Hydraulic braking system venting
 1. The power should be kept off, and the brake pedal should be depressed several times until the pressure in the booster is completely removed.
 2. The brake fluid should be filled into the reservoir and the reservoir level should be kept between MIN and MAX during venting operation.



3. The brake pedal should be depressed slowly to the bottom and held still.

4. The dust cover 1 of the venting screw should be removed and a clear tube should be attached to the rear venting screw on the left rear brake caliper so that the tube is immersed in the brake fluid in the clear container. Air should be vented from the left rear brake caliper as described below.
5. The brake pedal should be depressed slowly, not in a rush.
6. While the brake pedal is depressed, the venting screw should be released to vent air from the brake caliper.
7. The rear venting should be tightened screw slightly after the air bubbles have escaped into the brake fluid container.
8. The brake pedal should be released slowly.
9. Steps f-g should be repeated until all air is vented.
10. When the venting screw is released, no more bubbles appear in the container indicating that all the air has been vented.

Caution

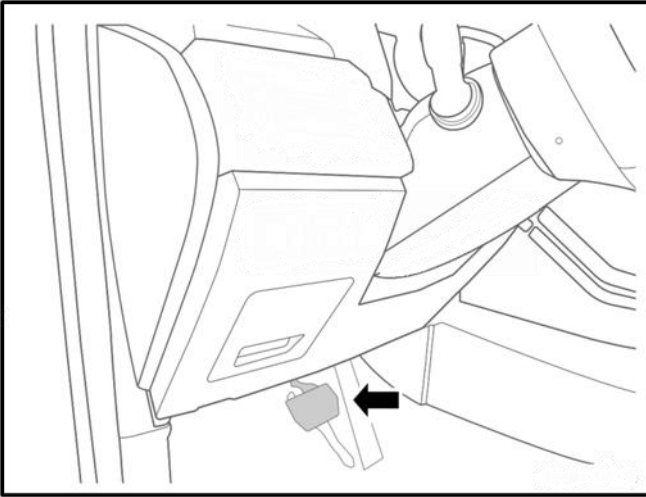
During the venting process, the master cylinder reservoir level should be kept at least halfway up.

11. The venting screw should be tightened.

Torque: $9 \pm 1 \text{ N} \cdot \text{m}$

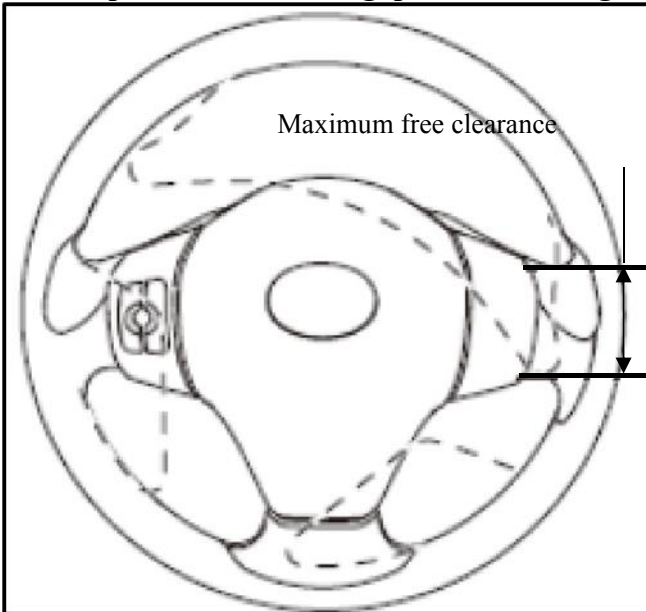
12. The air in the remaining calipers should be vented in the order of right front, right rear, and left front.

The procedure in steps d-i should be followed.



13. Check whether the brake pedal is soft after all air has been vented from the brake calipers. If so, repeat the entire venting procedure until it is normal.

1.4.2.7 Inspection of the free gap of the steering wheel



Inspection procedure

1. The vehicle should be parked on a level surface with the tires facing straight ahead

Caution

It is impossible to adjust the free gap of the vehicle. When the universal joint of the intermediate shaft is normal, the electric steering column with the intermediate shaft assembly should be replaced.

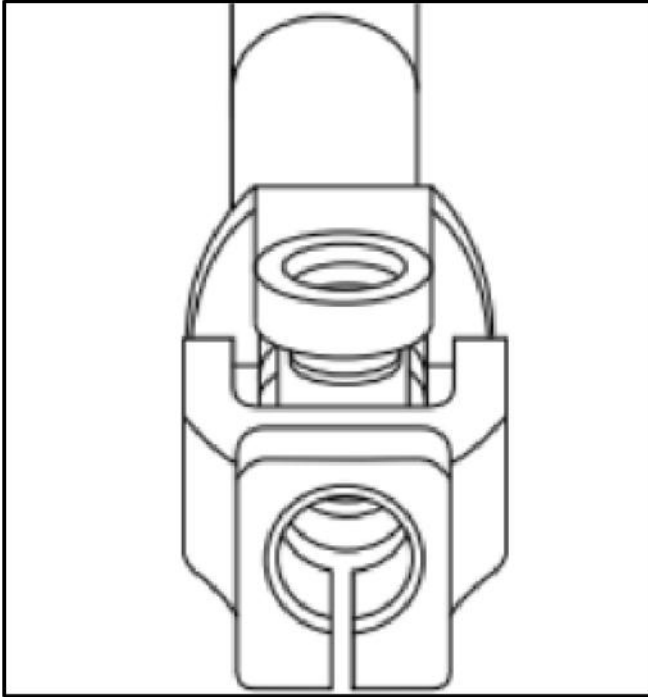
2. The free gap of the steering wheel should be checked
 - a. The steering wheel should be turned to check the free gap of the steering wheel.

Caution

While turning, feel for the gap between the upper and lower shafts. Replace the upper and lower intermediate shafts if there is a gap.

Maximum free clearance: 30 mm

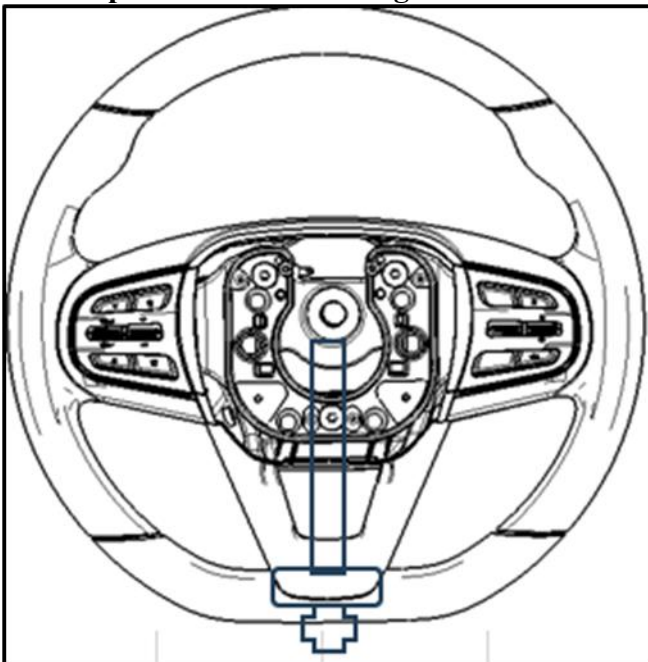
1.4.2.8 Inspection of the universal joint of the intermediate shaft



Inspection procedure

1. The carpet at the intermediate shaft should be lifted up
2. The universal joint of the intermediate shaft should be checked
 - a. One end of the universal joint of the intermediate shaft should be fixed and the other end of the universal joint of the upper and lower intermediate shaft should be twisted in clockwise and counterclockwise directions.
 - b. Feel any movement. Replace the intermediate shaft if there is any movement.

1.4.2.9 Inspection of the steering force



Inspection procedure

1. The vehicle should be parked on a level surface with the wheels facing straight ahead
2. Disconnect the negative cable of the storage battery
3. The airbag of the driver should be removed
4. Connect the negative cable of the storage battery
5. The steering force should be checked
 - a. A torque wrench should be used to check whether the fixing nut of the steering wheel is tightened at the correct torque.
 - b. The vehicle should be powered on.
 - c. A torque wrench should be used to turn the steering wheel 90 degrees to the left and 90 degrees to the right to check the steering force torque when turning left and right.

Steering force (reference): the steering force in the powered-on state is 2.0 N·m.

Caution

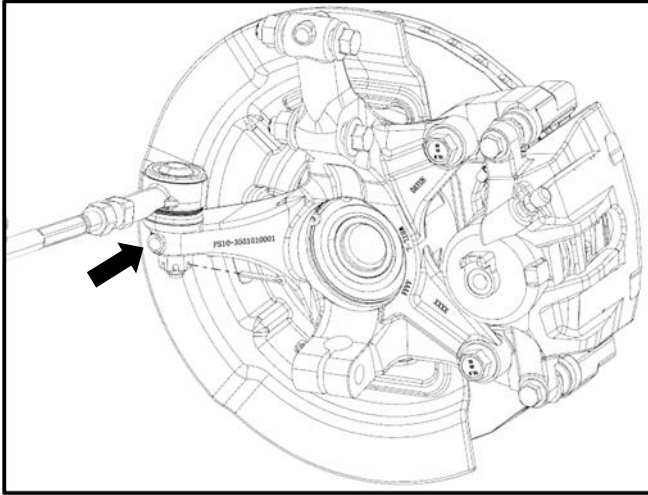
Before the inspection, consider the tire type, pressure, and contact patch.

6. Disconnect the negative cable of the storage battery
7. The torque of the fixing nut of the steering wheel should be re-checked

Torque: 50N·m

8. The airbag on the side of the driver should be installed
9. Connect the negative cable of the storage battery

1.4.2.10 Inspection of the ball head of the steering cross-tie rod



Inspection procedure

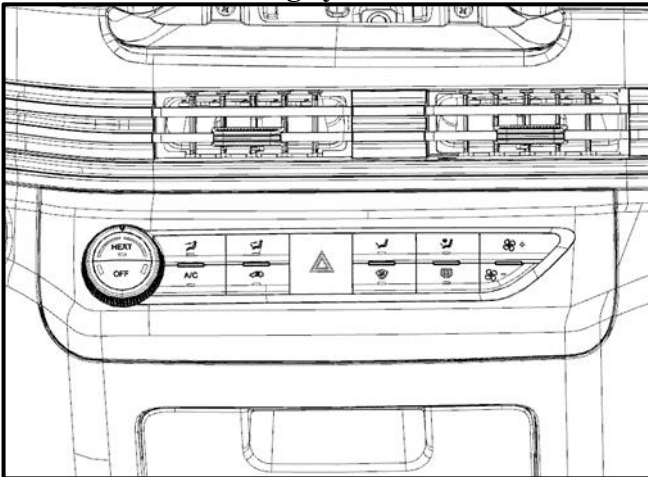
1. The left front wheel should be removed
2. The ball head of the steering cross-tie rod should be removed
3. The ball head of the steering cross-tie rod should be checked
 - a. The bolt on the ball head should be shaken back and forth more than 5 times.
 - b. A torque wrench should be used to test the nut torque to 50 ± 5 N-m.
 - c. The dust cover of the ball head should be checked for grease leakage.

Caution

The left and right side steering cross tie rod ball joints are inspected the same way.

4. The ball head of the steering cross-tie rod should be installed
5. The front wheel should be installed

1.4.2.11 Air conditioning system function test



Inspection procedure

1. Vehicle power-on
2. The function of the air conditioning system should be tested
 - a. The A/C button is operated and the temperature adjustment button is operated to check the display temperature indication, and whether the cold and warm air function of the air conditioner works properly.

Caution

Adjust the air volume to meet the demand if the subjective feeling is too cold or too hot.

- b. The HEAT button is operated to check whether the air temperature is normal.
- c. The air volume adjustment button is operated to check whether the air volume has changed and whether it matches the displayed air volume position while viewing the air volume position on the display.
- d. The windshield defogging button is operated to check whether the defogging function is working properly.
- e. Each air outlet mode button is operated to check whether the air volume from the air outlet changes.
- f. The inner and outer cycle switching buttons are operated to check whether the inner and outer cycle functions are working properly.
- g. The rear window defrost button is operated to check whether the rear window defrost function is working properly.
- h. The warning alarm light button is operated to check whether the exterior dual flash function is working properly.
- i. The OFF button is operated to check whether the air conditioner is off.

1.4.2.12 Measurement of the insulation resistance

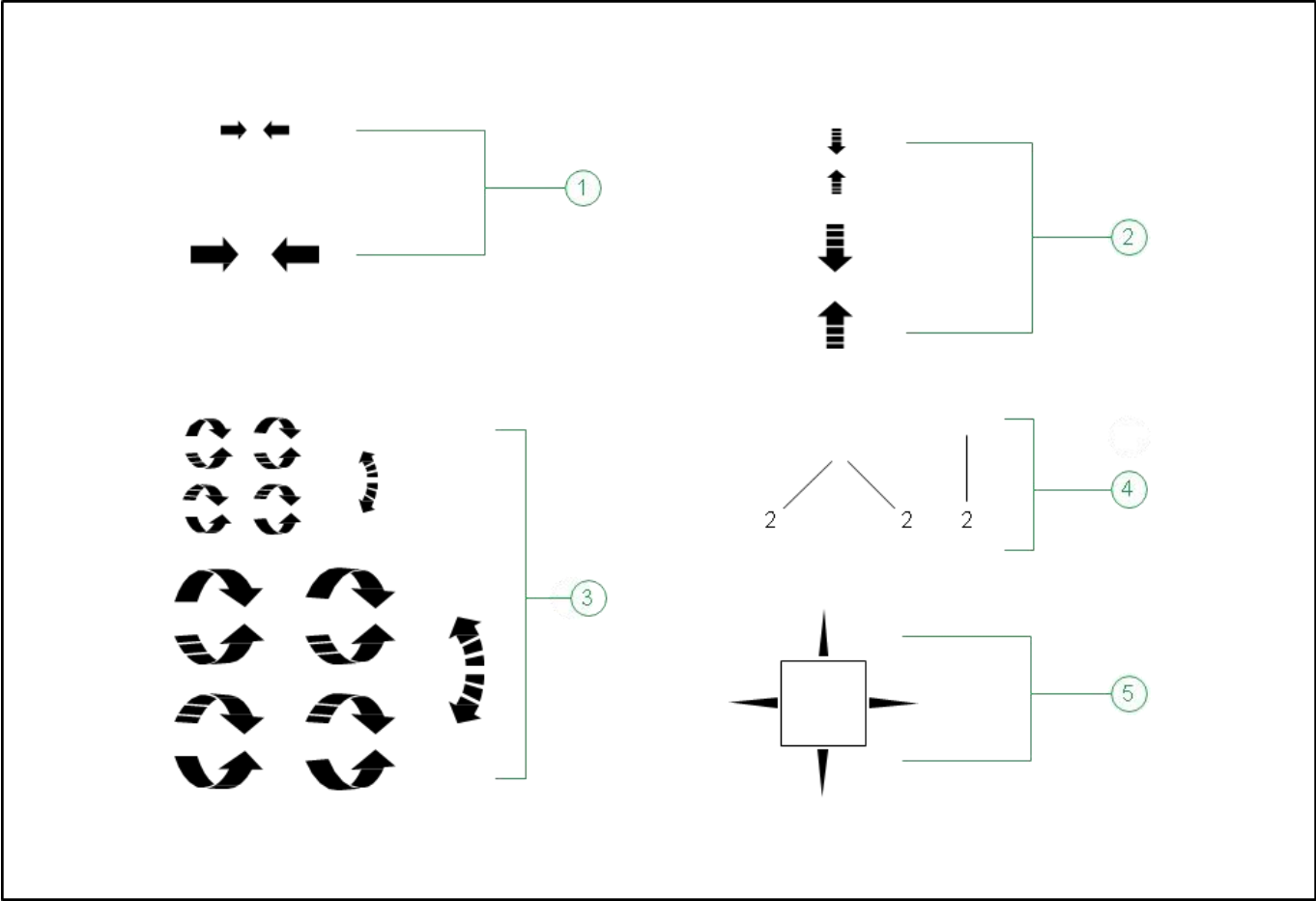
Calibration procedure

1. The negative wiring harness of the 12V battery should be unplugged, the vehicle key should be pressed to close the lock and make sure the vehicle is released from high voltage (all lights and displays of the vehicle have been turned off), and the vehicle should be left still more than 5 minutes.
2. Insulated gloves and insulated clothing should be worn, the high-voltage harness connector should be removed from the vehicle and tested with a hand-held insulation resistance tester.
 - a. The red pen should be used to contact the positive or negative terminal of the high-voltage connector.
 - b. The black pen should be used to contact the ground position of the body-in-white (be sure to touch a well-conducted part of the body-in-white or the negative harness of the battery).
 - c. The test button should be pressed, and the insulation value should be read out, which is accepted if greater than $2M\Omega$.

1.5 Maintenance information system

1.5.1 Description and operation

1.5.1.1 Description of arrows and symbols used in the manual



Legend

- 1. Indicating arrow
- 2. Movement direction arrow
- 3. Directional arrow
- 4. Part number marking
- 5. Local zoom

1.6 Health and safety

1.6.1 Description and operation

1.6.1.1 Description

Personal safety or health issues may be affected by many of the operations associated with vehicle maintenance and repair. Some of the relevant hazardous operations and materials and equipment, as well as safety codes to avoid such hazards are listed in this section. Not all matters relating to health and safety are covered in this section. Therefore, ensuring safety and health should be the precondition for all operations and procedures, as well as the handling of materials.

Consult the instruction manual provided by the manufacturer or supplier of the product before using any product.

1.6.1.2 Acids and bases

They are used for cleaning of batteries and other materials. Irritating or aggressive to the eyes, skin, sense of smell, and throat, they may cause burns to the body and damage to ordinary protective clothing. Splashing on eyes, skin and clothing should be avoided. Appropriate protective clothing, gloves, and goggles should be worn. Inhaling spray should be avoided.

Flushing equipment should be provided nearby so that prompt assistance is always available in the event of a spill.

Signs displaying hazards should be provided nearby.

1.6.1.3 Safety airbag

Observe the no-smoking rule for highly flammable and explosive cases.

Mounted in the steering wheel, and the front dashboard of the occupant, the airbag can be a secondary safety system.

A high-energy propellant that produces an extremely hot gas when ignited is contained in the airbag inflator. Sealed and stored in an airtight assembly, this propellant enables the airbag to be filled with gas when the airbag is actuated. During maintenance, the airbag cannot be opened. Failure to do so may lead to dangerous contact with the propellant. Wear full protective clothing when handling spilled materials if a rupture of the inflator is detected. Wear safety goggles and gloves during maintenance and handling after the airbag is activated normally. Handle the activated airbags according to the relevant local laws. After direct exposure to gas derivatives:

- Rinse the contact area with water thoroughly
- If appropriate, seek medical assistance

Airbag - operations to be performed

Before performing the following operations, for your safety, please try to wear protective gear. Power off the vehicle, disconnect the negative cable of the battery, and wait for 90s before proceeding with the removal work when removing the airbag.

- The airbag assembly should be stored in an upright position.
- The airbag assembly should be kept dry during storage.
- Keep your hands away from the electrodes and keep the airbag as far away from your body as possible when handling the airbag assembly.
- The airbag assembly should be placed with the cover facing up.

- The airbag assembly should be checked carefully for damage.
- Disconnect the negative cable of the battery, and wait for 60s before standing to the side of the airbag assembly when connecting the airbag.
- Accurately calibrate and maintain all equipment.
- After handling an activated airbag, always wash your hands.

Airbags - operations to be avoided

- Flammable materials should not be stored together with components or inflators.
- The airbag assembly should not be immersed in water or contact with other liquids.
- The inflator should not be stored in temperatures above 80°C.
- Components should not be stored upside down.
- The inflator housing should not be opened.
- The inflator should not be exposed to open flames or heat sources.
- No other objects should be placed on the component cover.
- Do not use damaged components.
- The airbag assembly or the inflator should not be touched within 10 minutes of activation.
- No electrical probes should be used on the circuit.

1.6.1.4 Air conditioning refrigerant

Frostbite may be caused by skin contact.

Follow the instructions provided by the manufacturer, avoid exposed light, and wear appropriate goggles and protective gloves.

Immediately rinse the contact area with water in the event of skin or eye contact with the refrigerant. Rinse the eyes with an appropriate rinsing solution. Do not rub. Seek medical assistance as appropriate.

Air conditioning refrigerant - operations to be avoided

- The refrigerant should not be stored in sunlight or areas with heat sources.
- When filling, do not keep the refrigerant bottles in an upright position. The valves should be kept facing downwards.
- The refrigerant bottles should not be exposed to frost or snow.
- The refrigerant bottles should not fall off.
- Under no circumstances should the refrigerant be vented directly to the atmosphere.
- Refrigerants should not be mixed for use.

1.6.1.5 Adhesives and sealants

Cautions for the use of adhesives/sealants

Keep the surface of the adhesive application area clean and wipe it with a special cleaning agent before using the adhesive/sealant, thus not affecting the bonding effect. When the sealant is used, no room temperature curing type adhesive

should enter into the thread blind holes. Entering the room-temperature curing sealant into the thread blind holes may cause a hydraulic locking effect on the fasteners during fastening, which will result in damage to the fasteners and/or other parts. In addition, no correct clamping force will be obtained for the fasteners during fastening, which will lead to a poor sealing effect of the sealant, and consequently no proper tightening of the fasteners. As a result, the components may be loosened or separated, leading to serious damage to the drive motor and other components. Follow the instructions of the manufacturer and wear appropriate goggles and protective gloves.

Health and safety

Hazardous substances may be contained in the materials used in adhesives/sealants, which may cause acute and chronic poisoning, occupational diseases, skin diseases, and other illnesses after long-term exposure. Use ventilation and air exchange devices to keep the workplace ventilated when applying the adhesive. During operation, wear protective gloves, masks, protective clothing, etc. After the operation, wash your hands carefully and keep a clean and neat workplace and sanitary environment.

- Clean up the waste adhesive or solvent-contaminated waste in time. Do not pile them for a long time.
- In general, store the product in a non-smoking area. Use the product with care and cleanliness. Where possible, use the applicator or container for application.

Repair of adhesives/sealants

- Usually, a vehicle breakdown or accident may result in deformation of the body, cracking of the steel plate, peeling off of the weld joints, etc. Sometimes, localized damage to other assembled parts such as the drive motor, chassis, etc. may occur, leading to the peeling off and destruction of some adhesive/sealant-type products. Select the adhesive with the same properties according to the material and functional requirements of the components in the process of vehicle repair. The adhesives/sealants that can be used in the process of vehicle repair are listed below and can be selected for use in the process of vehicle repair.

Body repair

In the event of deformation or cracking of the interior trim and steel panels of a vehicle, the adhesive applied to the body falls off or breaks down. During the repair process, the areas applied with adhesive should be repaired.

- First, a tool should be used to remove the adhesive from the surface of the body. Alcohol should be used to clean, the remaining adhesive.
- A special cleaning agent should be used to wipe the adhesive application area to avoid residual adhesive and other impurities left on the application surface.
- Then, apply the repair adhesive to the original application area to achieve a bonding and sealing effect.

Product	Substrate	Purpose
Windshield adhesive	One-component polyurethane	Room temperature curing polyurethane adhesive for direct bonding and sealing of automotive window glass. With good bonding properties, the adhesive can react with moisture in the air and is characterized by excellent properties such as high strength, aging resistance, vibration fatigue resistance, low-temperature resistance, and no corrosion after curing.
Cleaning	-	For cleaning all surfaces in contact with the primer and adhesive.

agent		
Pressure-sensitive tape	Acrylic tape	For bonding anti-scratch strips, nameplates, guards, fenders, door edge protection, and various decorative strips on the body. This tape is characterized by excellent weather resistance and durability.
Heat-sensitive tape	Acrylic tape	Mainly for bonding rubber-type sealing strip systems in automobiles. With a strong bonding effect, this tape can avoid gaps and corrosion problems due to poor bonding. It has strong sealing properties.
Primer for adhesive tape	-	Use different primers according to the material of the bonding surface. Keep the bonding surface clean. Apply the primer evenly on the bonding surface with a brush after thorough drying. Attach the tape after drying.

Repair of spare parts

Repair the damaged interior parts and gearboxes by bonding and sealing. When applying the sealant, clean the bonding surface to avoid burrs and cracks affecting the bonding effect.

Adhesive for repair of spare parts

Name	Purpose
Silicone rubber flat sealant	It is used for plane sealing of large gaps and flexible connectors, such as reducer box, flange, bottom shell, and end cap combined surface and other parts. Before applying the sealant, remove the residual sealant from the sealing surface. After cleaning and drying, apply the closed line of sealant with the appropriate diameter in the sealing surface (or gasket). After applying the sealant, align and fit the parts immediately to avoid misalignment. Tighten the bolts, remove the extruded excess sealant, or clean it with a razor blade after curing. This type of sealant should be solvent-free, can be cured at room temperature, not corroding parts, and characterized by resistance to impact, media, and high temperature.
Anaerobic thread-locking sealant	It is used for tightening and locking of bolts, nuts, and screws. When applying the sealant, the engaging area should be cleaned and dried before the sealant is applied to the engaging area by dripping. It is characterized by good resistance to impact, vibration, leakage, and corrosion after curing at room temperature.
Anaerobic sealant	It is used for sealing and bolt locking of flat parts with relatively small gaps requiring isolation from air for curing. It is characterized by resistance to water, oil, and corrosion.

Other maintenance materials

Name	Purpose
Anti-loosening fluid	It is used for locking and fastening threads up to size M6.
Rust inhibitor	It is a rust-preventive agent with rubber as the base material. It is used for sound insulation and anti-rust treatment of automobile chassis and is characterized by corrosion resistance and sound insulation.

Precautions

The adhesive/sealant is used to prevent water and dirt from entering the vehicle and is characterized by corrosion protection. The original sealing joints are obvious and should be re-sealed if damaged. Select a high-consistency filler when sealing open joints with an adhesive/sealant. The instructions for the selected material should be followed.

- Take precautions to avoid spraying into component openings (e.g., door locks, window lift slots, window regulators, and seat belt retractors) as well as any moving, rotating parts when spraying adhesive/sealant-type materials. Make sure all drain holes in the body are open After spraying the adhesive/sealant.
- During construction operations, wear special protective glasses and gloves to prevent injury.
- The vehicle leaves the factory with the sheet metal of the body painted. After the repair and/or replacement of parts, treat all exposed metal surfaces with a rust-preventive primer before applying the adhesive.

- **After adhesive repair, dry and cure some of the adhesive/sealant (dry and operate otherwise according to the requirements of the adhesive/sealant manufacturer).**

1.6.1.6 Coolant

It may be, for example, isopropyl alcohol, ethylene glycol, glycol, and methanol.

It is a highly flammable and combustible material.

It is suitable for the coolant circulation system and windshield washing fluid of the vehicle.

Vapors may be produced by motor coolant when heated to high temperatures. Inhaling these vapors should be avoided. The dose of motor coolant absorbed directly through the skin after direct contact with motor coolant can be toxic or harmful. Swallowing the motor coolant by mistake may be life-threatening. Go to the hospital immediately to seek medical assistance.

Do not use these products in conjunction with ordinary foodstuffs or connect them to a drinking water supply.

1.6.1.7 Asbestos

Lung damage and even cancer may be caused by inhaling asbestos dust. When handling the waste asbestos dust, wet and place it in sealed containers and clearly label it on the surface of the containers for easy and safe disposal.

Wet it first if cutting or drilling is to be attempted on asbestos-containing material. Use hand tools or low-speed power tools only.

1.6.1.8 Battery acid

During charging, the gases released are explosive. No open flame operation near a charging battery or a recently charged battery is allowed. Keep good ventilation.

1.6.1.9 Brake fluid

If slight irritation is caused by splashing on the skin and eyes, direct contact with the brake fluid with the skin and eyes should be avoided if possible.

1.6.1.10 Chemical materials

Use, store, and handle chemical materials carefully, including solvents, sealants, adhesives, paints, resin foams, battery acid, drive motor coolant, brake fluid, lubricating oils, and greases. Toxic, noxious, aggressive, irritating, or highly flammable, they mainly contain highly hazardous odors and dust.

Long-term overexposure to chemicals may lead to immediate or chronic, transient or permanent, cumulative, superficial, life-threatening, or potentially life-span-affecting effects.

Chemical materials - operations to be performed

- The warnings and precautions on the ingredient containers, as well as any accompanying leaflets, posters, or other instructions for use, should be read carefully and followed. Contact the manufacturer for health and safety information forms for ingredients.

- If exposed to chemical material, remove it from the skin and clothing as soon as possible, take off the heavily soaked clothing immediately, and wash it thoroughly.
- To avoid direct contact with skin and eyes, strictly follow step-by-step instructions and wear protective clothing.
- Wash before taking a break, eating or drinking, smoking, or using washroom facilities when working with chemical materials.
- The work area should be kept clean, tidy, and free from chemical spills.

Chemical materials - operations to be avoided

- Unless otherwise instructed by the manufacturer, do not mix chemical materials. Other toxic or hazardous chemicals may be formed by some chemicals. Other toxic or hazardous gases may be released if mixed and explosions and other accidents may occur.
- Do not spray chemical materials in an enclosed environment.
- Unless otherwise instructed by the manufacturer, do not heat the chemical materials as some chemical materials are highly flammable and others may emit toxic and hazardous gases.
- Keep the containers of chemical materials closed as they emit gases that could accumulate to toxic, hazardous, or explosive levels. Heavier than air, certain gases can accumulate in enclosed spaces.
- Do not place chemical materials in containers unlabeled.
- Do not use chemical materials to clean hands and clothing. The skin may become dry due to chemicals, especially solvents, and fuels, which may cause allergies, skin inflammation, or affect your health by absorbing toxic and harmful substances directly through the skin. Do not use empty containers for storing other chemical materials unless they have been cleaned under supervision.
- Chemical materials should not be sniffed or smelled. Poisoning or injury may still occur due to short-term exposure to high concentrations of gas.

1.6.1.11 Dust

Powders, dust, and dirt can be irritating, harmful, or toxic. Inhalation of powdered chemical materials and dust from dry friction operations should be avoided. In the event of poor ventilation, respiratory mask protection should be worn to prevent inhalation of dust.

Explosion hazards may occur due to fine dust of combustible substances. Explosions and sources of ignition should be avoided.

1.6.1.12 Electric shock

Low-voltage and high-voltage electrical components are contained in the electrical equipment on the pure electric vehicle. Do not touch the high-voltage components, high-voltage cables, and their connectors to avoid electric shock. To prevent electric shock, do not touch the exposed or broken cables on the vehicle. The electrical equipment should not be released, disassembled, or modified by any non-professional maintenance personnel at will. Failure to do so may cause

burns, even electric shock and death, and other serious consequences due to touching the high-voltage electricity. Electric shock may be caused by misuse of electrical equipment without following instructions, or misuse of equipment in good condition.

The electrical equipment should be serviced for the required period and tested frequently. Label the faulty equipment and preferably move the same out of the work area. Cords, cables, plugs, and receptacles should not be subject to abrasion, kinking, cracking, or other damage. Electrical equipment and cords should not come into contact with water.

Protect the electrical equipment with the correct fuse. The electrical equipment should not be misused. Equipment that has any potential for malfunctioning should not be used, which may affect personal safety. The cables of mobile electrical equipment should not be pinched and damaged. Provide basic first aid training for specialized electrical operators.

If an electric shock occurs: The power should be turned off before making contact with the victim. If the power supply cannot be turned off, the power supply should be removed from the victim with a dry insulator material.

Provide first aid at the scene immediately if you were specifically trained in first aid.

Medical assistance should be sought.

1.6.1.13 Fire

Extremely flammable materials may be used for vehicle maintenance. Toxic and harmful gases may be produced by burning some materials. When storing and handling flammable materials or solvents, observe fire safety, especially close to electrical equipment or where welding is in progress. Make sure that there are no fire hazards before using electrical and welding equipment. Have an appropriate fire extinguisher around the work area when welding or using heating equipment.

1.6.1.14 First aid

The relevant personnel should comply with the law, and be professionally trained in first aid in the workplace. Rinse with water for at least 10 min if splashing in the eyes. Wash the contaminated area with soap and water if the skin is contaminated. Immerse the frostbite area in ice or cold water if you get frostbite. Transfer the personnel who have inhaled toxic gases to fresh air immediately. Go to the hospital immediately for medical assistance if the adverse reaction persists. If the liquid is ingested accidentally, inform the physician of the information indicated on the container or roll label. Unless indicated on the roll label, do not blindly induce vomiting.

1.6.1.15 Foam - Polyurethane

Un-matured substances should be not handed or contacted by persons with chronic respiratory disease, asthma, bronchial problems, or those suffering from hereditary allergies. Immediate irritation and allergic reactions may be caused by spare parts, vapors, or sprays, which may be toxic and harmful. The vapors or sprays should not be inhaled. Use these materials in a well-ventilated environment and where respiratory protection is provided. The mask should not be removed immediately after spraying and can be removed when the vapors and spray have completely dissipated. Toxic and noxious gases may be produced by the combustion of un-matured components with matured foam. During foam operations, do not smoke, use open flames, and electrical equipment unless the vapors and sprays have been completely removed. Perform any

thermal cutting of foam materials or special foam materials in a well-ventilated environment.

1.6.1.16 Gas cylinder

Store oxygen, acetylene, argon, and propane gases in gas cylinders at a pressure of 13.8 MPa, and when handling these cylinders, take special care to avoid mechanical damage to the cylinders or valves during handling. Label the gas filled in the cylinder clearly and appropriately. Store the cylinders in a well-ventilated area and protect them from snow, ice, or direct sunlight. Do not store the fuel gases, such as acetylene and propane, in oxygen cylinders.

The leakage of gas cylinders and lines should be noted and prevented, and sources of ignition should be avoided. Work with gas cylinders should be performed only by professionally trained personnel.

1.6.1.17 General workshop tools and equipment

All tools and equipment should be kept in good working condition at all times and operated correctly during use. No tool or equipment should be used for a purpose contrary to its designed function.

Equipment such as cranes, jacks, axles, chassis stands, or slings should not be subject to loads above the maximum limits to which they can be subjected. Overloading may not always cause immediately apparent damage and may cause severe accidents the next time it is used.

Tools or equipment damaged or in poor working condition should not be used, especially certain high-speed equipment such as grinding wheels. Shattered grinding wheels may occur after damage, causing severe injury.

When using grinding wheels, chisels, or abrasive blasting equipment, wear appropriate eye protection.

When using abrasive blasting equipment, handling asbestos-containing materials, or working with spraying equipment, wear appropriate respiratory masks.

Provide ventilation equipment to control the level of dust, spray, and fumes in the environment.

1.6.1.18 Lubricants and greases

Prolonged and repeated contact with mineral oils and greases should be avoided. The eyes and skin may be irritated by all lubricants and greases.

Loss of natural oils of the skin may be caused by prolonged and repeated exposure to mineral oils, resulting in dryness, irritation, and dermatitis. In addition, harmful substances that can cause skin cancer may be contained in the used gear oil. Skin protection equipment should be used and proper rinsing equipment should be provided. No used gear oil should be used as a lubricant or for any other purpose where it may come into direct contact with the skin.

Health protection and safety code

- Prolonged and repeated contact with fluids should be avoided, especially used fluids.
- Protective clothing, including impermeable gloves, should be worn.
- Oil-soaked wipes should not be placed in the pocket.
- Contaminating clothing, especially intimate apparel, with oil should be avoided.
- No clothing or footwear contaminated with oil should be worn. Regularly wash workwear and keep it clean.

- Provide first aid treatment for open wounds in time.
- While working, the barrier cream should be applied to your skin, thus avoiding direct contact of your skin with the oil.
- The oil should be removed by washing with soap and water. A protectant that contains lanolin should be applied, which will help replace the natural oils that have been removed from the skin.
- Seek medical attention immediately if skin lesions occur.
- Before working, the grease should be removed as much as possible from components.
- If there is a risk of direct contact with the eyes, wear goggles, such as chemical goggles or face shields. Also, provide eye-washing equipment.

Environmental precautions

Assign an authorized or licensed waste handler or used fluid recycler to recycle used fluids. Contact the handling site of the relevant department of the local authority if you have any doubts.

Pouring used waste fluids directly into the ground, into a sewer or drainage device, or a water pipe is illegal.

1.6.1.19 Noise

Hearing loss may be caused by extremely high decibel noise due to certain operations. In this case, wear appropriate hearing protection.

1.7 Vehicle specifications

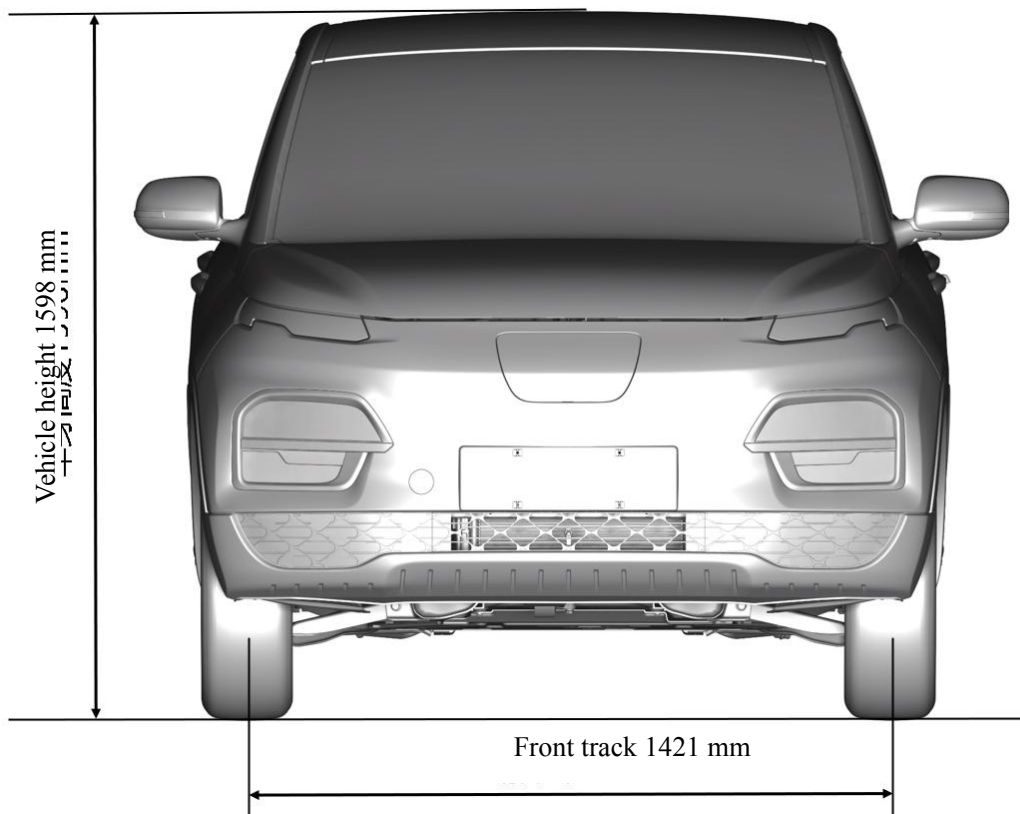
1.7.1 Specifications

1.7.1.1 Overall dimensions

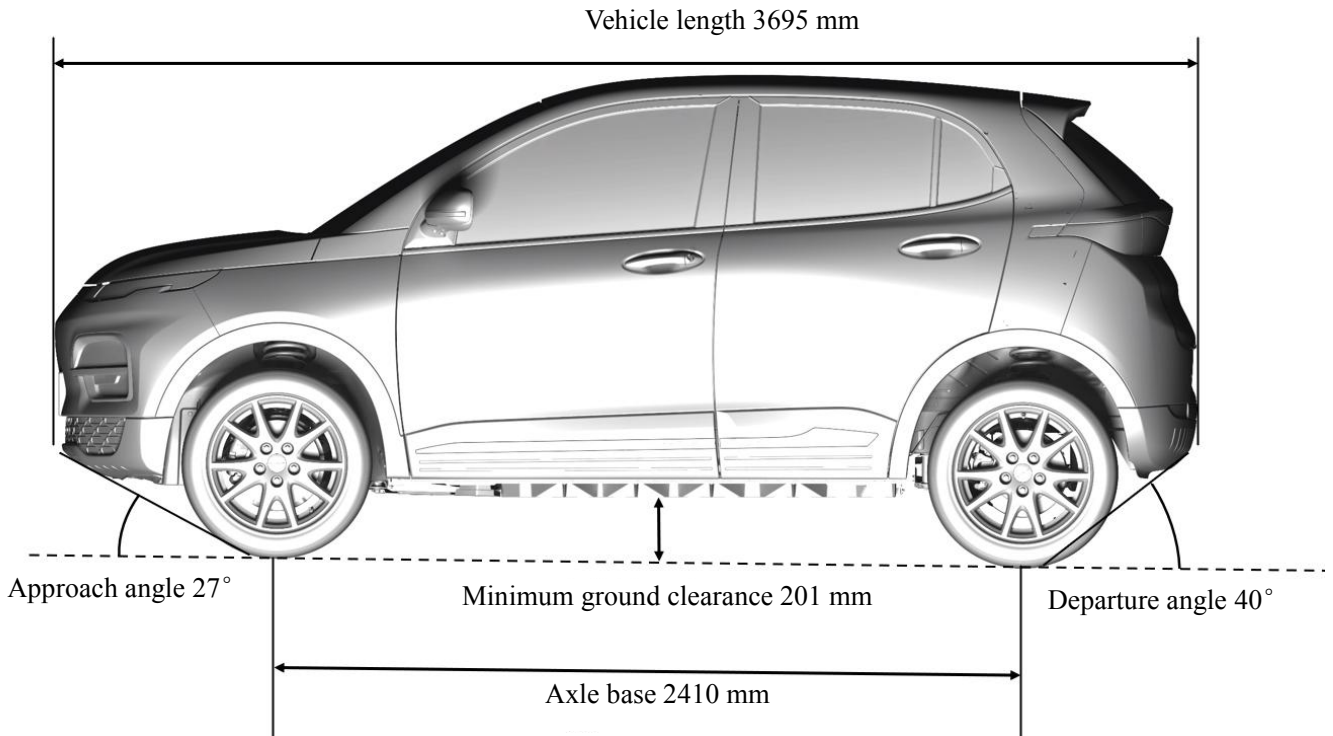
Vehicle size

Project	Value	Unit
Vehicle length	3695	mm
Vehicle width	1685	mm
Vehicle height	1598	mm
Front wheelbase	1421	mm
Rear wheelbase	1418	mm
Axle base	2410	mm
Approach angle (no load)	27	°
Departure angle (no load)	40	°
Minimum ground clearance (unloaded)	201	mm

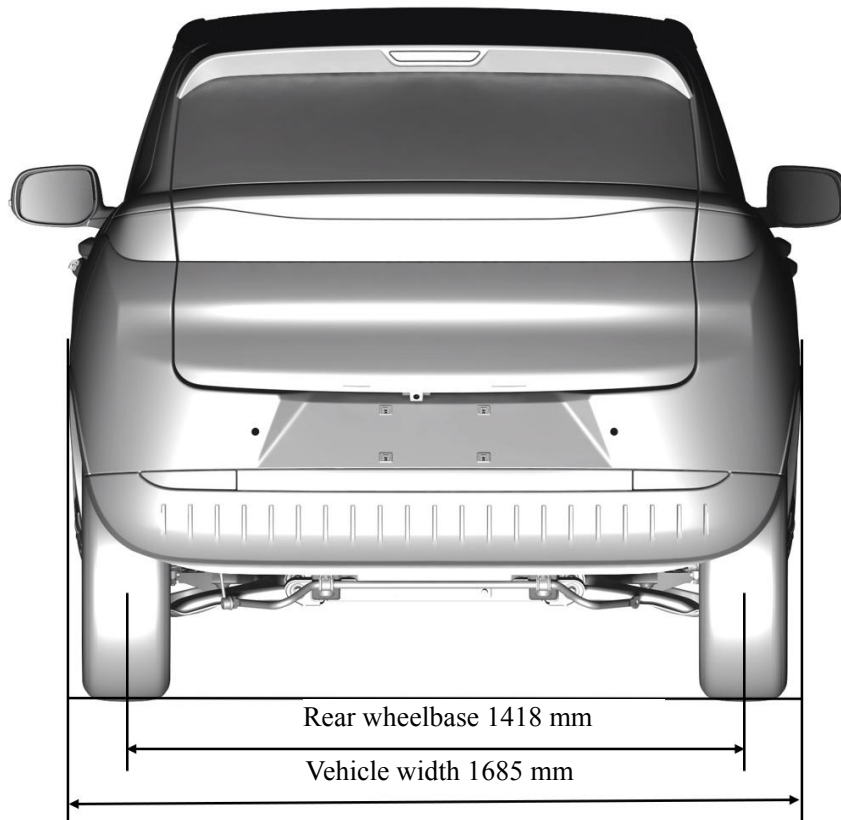
Front view



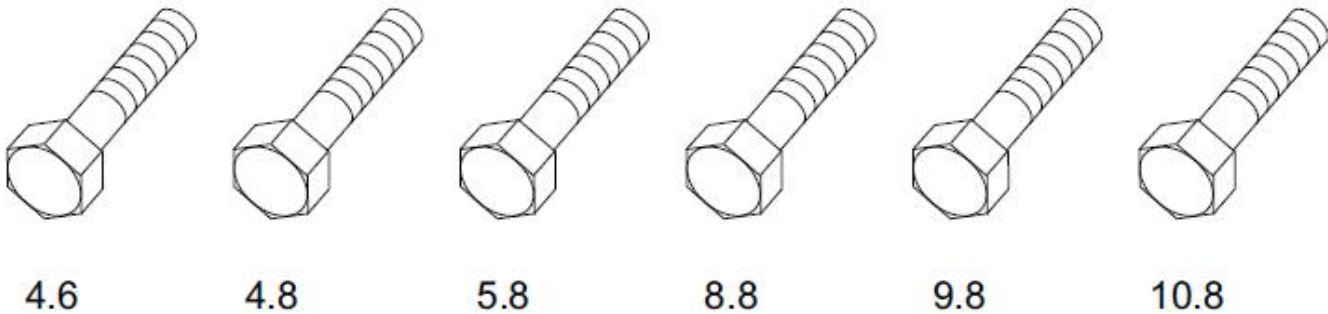
Side view



Back view



1.7.1.2 Fastener specifications

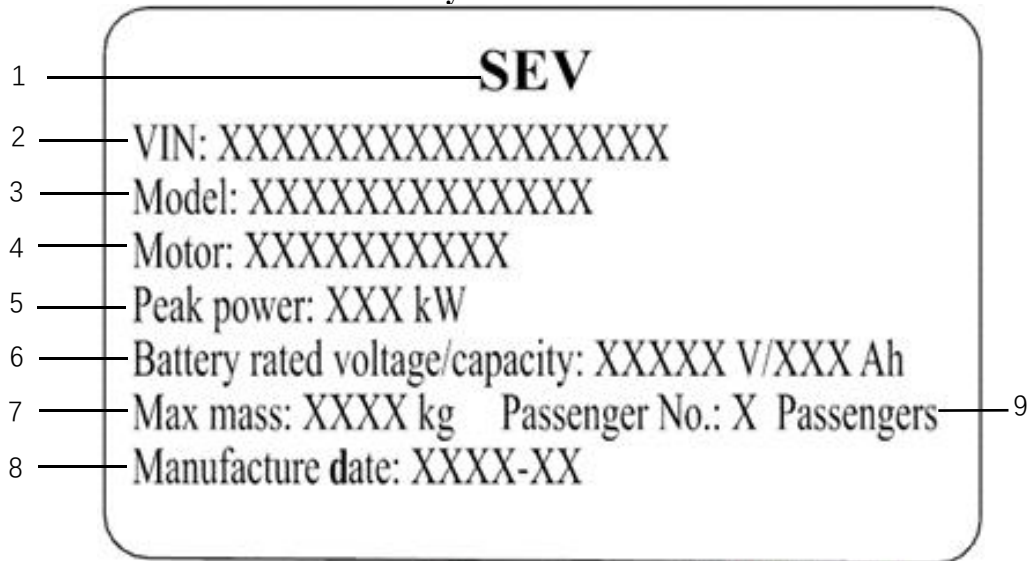


A portion of the standard ISO-defined metric fastener sizes has been used in the Yuehu Automotive Engineering Standards, aiming at reducing the number of fastener sizes used while maintaining the optimal thread quality for each thread size. As shown above, the strength ratings of metric bolts increase with the number.

1.8 Vehicle identification number

1.8.1 Description and operation

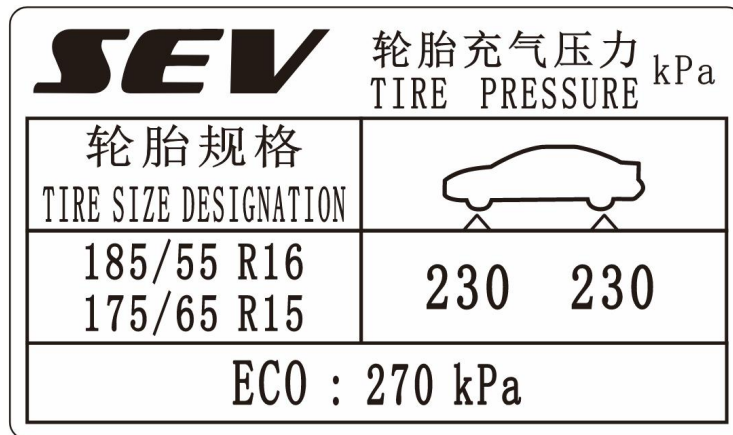
1.8.1.1 Sign - Vehicle certificate of conformity



- | | |
|----------------------------------------|---------------------------------------------------------|
| 1. Brand | 6. Rated voltage/rated capacity of power battery system |
| 2. Vehicle identification number (VIN) | 7. Maximum permissible weight |
| 3. Vehicle model | 8. Manufacture date |
| 4. Drive motor model | 9. Number of passengers |
| 5. Peak power of driving motor | |

In the lower center of the right center column, there is a sign of certificate of conformity.

1.8.1.2 Tire information sign



Below the outside of the left-center column, a tire label is permanently posted. The tire information is indicated hereon. The tire size, inflation pressure, and ECO tire pressure are listed on the label.

1.8.1.3 Motor system identification number and position

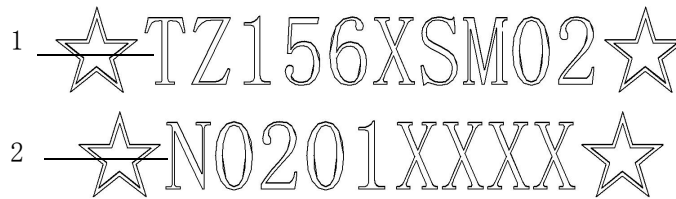
Motor system identification number

Motor assembly

1	浙江创驱智能科技有限公司 Zhejiang Chuangqu Intelligent Technology Co., Ltd.			
2	产品名称 PRODUCT NAME	驱动电机总成 E-Axle	绝缘等级 INSULATION CLASS	H
3	型号 TYPE	TZ156XSM02	额定电压 RATED VOLTAGE	336VDC
	持续转矩 CONT. TORQUE	60N.m	峰值转矩 PEAK TORQUE	105N.m
	最高工作转速 MAX. RPM	12000rpm	工作制 WORK MODE	S9
	持续功率 CONT. POWER	18KW	峰值功率 PEAK POWER	35kw
	相数 PHASE	3	防护等级 IP CLASS	IP67

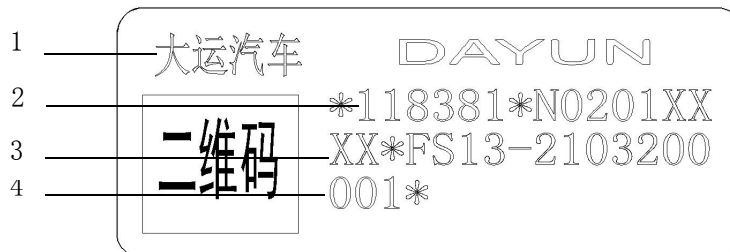
- 1. Manufacturer
- 2. Product name
- 3. Motor Model

Motor stamping number



- 1. Motor Model
- 2. Batch number

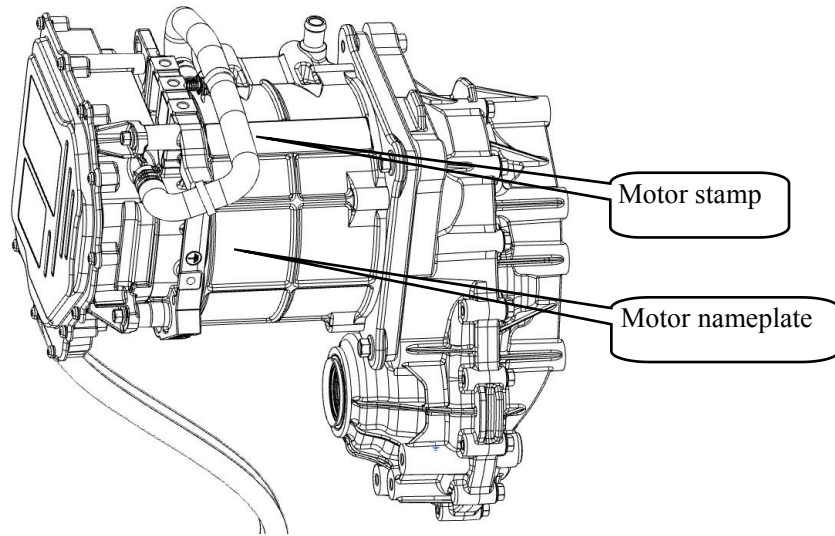
QR code label of the EDS assembly



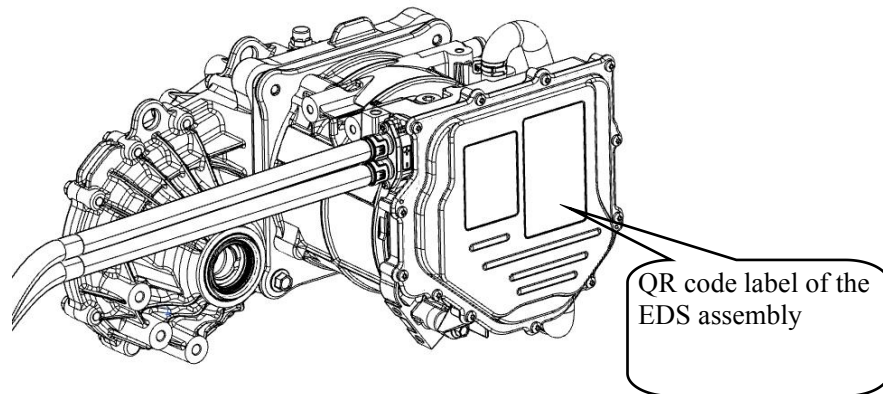
- 1. Dayun logo
- 2. Supplier code
- 3. Batch number
- 4. Part No.

Motor system identification number and position

On the housing underneath the motor (the vehicle is viewed from the bottom up), the motor nameplate and motor stamping number are indicated.

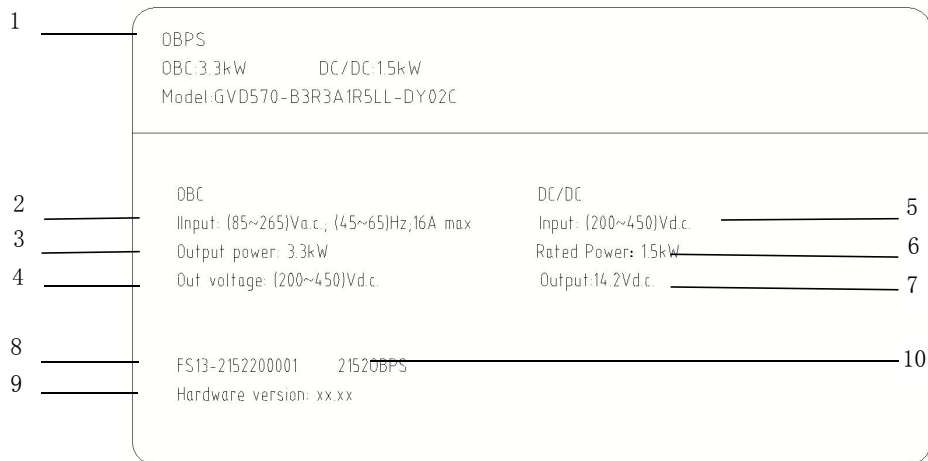


On the motor controller cover of the EDS assembly, the QR code label of the EDS assembly is placed.



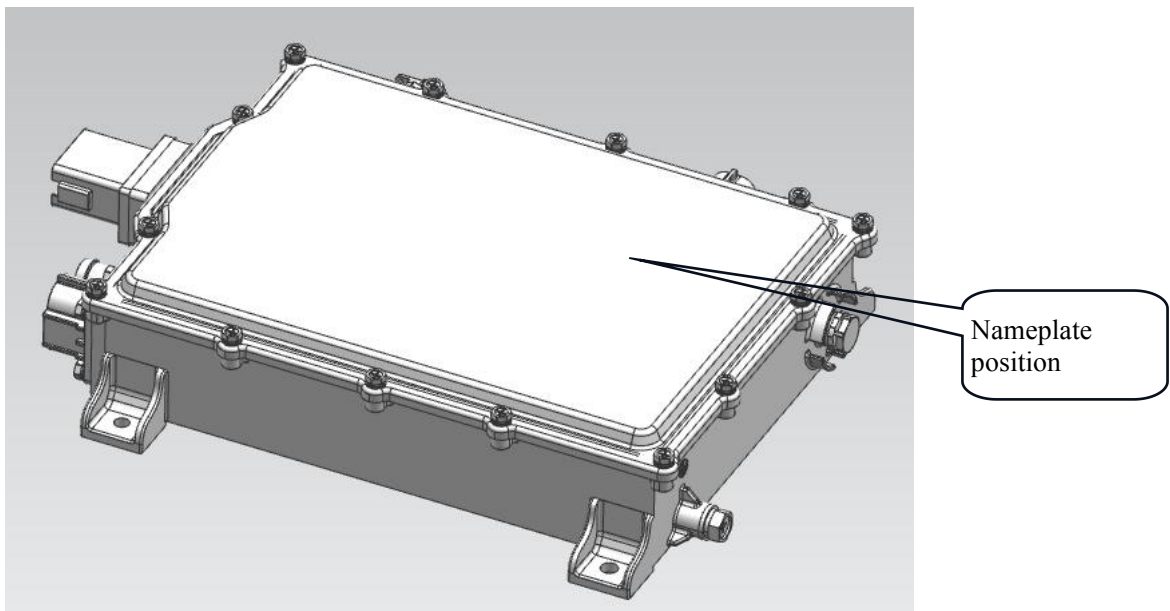
1.8.1.4 OBPS assembly identification and position

OBPS assembly nameplate

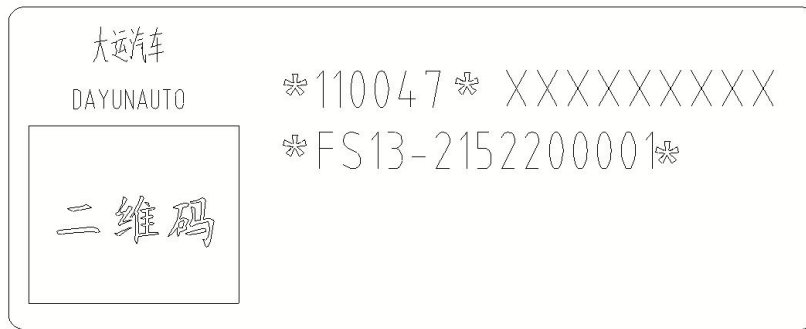


- | | |
|----------------------------------------|------------------------|
| 1. Designation of parts and components | 6. DCDC power rating |
| 2. OBC input voltage | 7. DCDC output voltage |
| 3. OBC output power | 8. Part number |
| 4. OBC output voltage | 9. Hardware version |
| 5. DCDC input voltage | 10. Model |

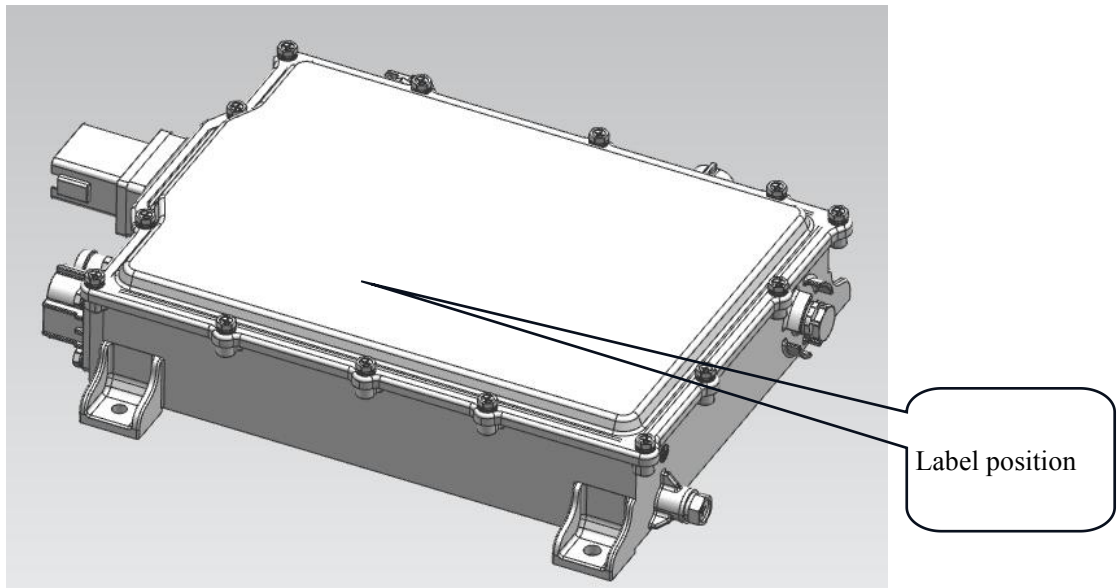
OBPS assembly nameplate position



OBPS assembly label



OBPS assembly label position



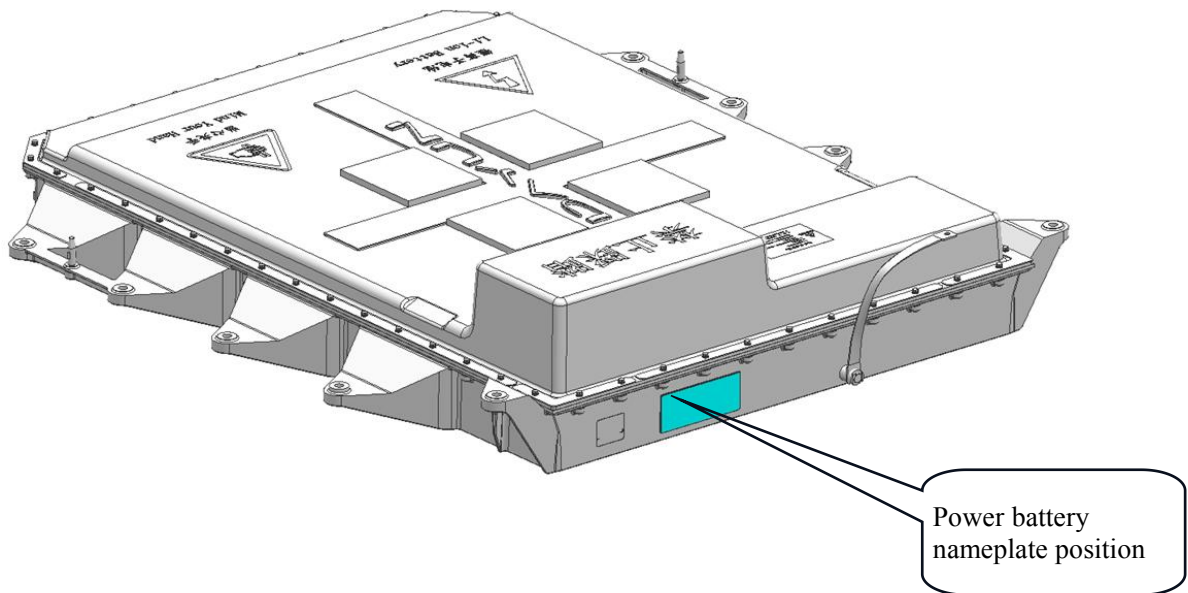
1.8.1.5 Power battery identification and position

Power battery nameplate

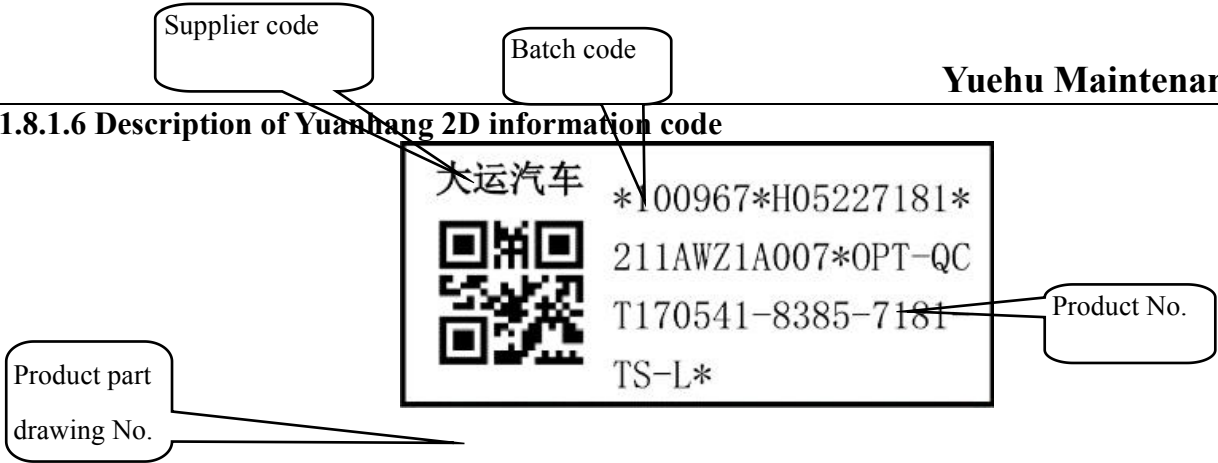
动力电池总成					
1	供应商代码	1041	零件号	FS13-2101010001	7
2	电动汽车储能装置种类	三元锂离子动力电池	成箱后的储能装置型号	DEE30710021	8
3	储能装置总成标称电压 (V)	306.6	储能装置总储电量 (kWh)	30.66	9
4	储能装置总成质量 (kg)	205	批次号	XXXXXXXXXX	10
5	产品序号	XXXXXXXXXXXXXXXXXXXXXXXXXX			
6	储能装置总成生产企业	山西大运盟固利新能源科技有限公司			

- | | |
|--------------------------------------------------------|--------------------------------------------------------|
| 1. Supplier code | 6. Manufacturer of the energy storage device |
| 2. Type of energy storage device for electric vehicles | 7. Part number |
| 3. Nominal voltage of the energy storage device | 8. Model of the energy storage device |
| 4. Quality of the energy storage device | 9. Total storage capacity of the energy storage device |
| 5. Product S/N | 10. Batch number |

Power battery nameplate position

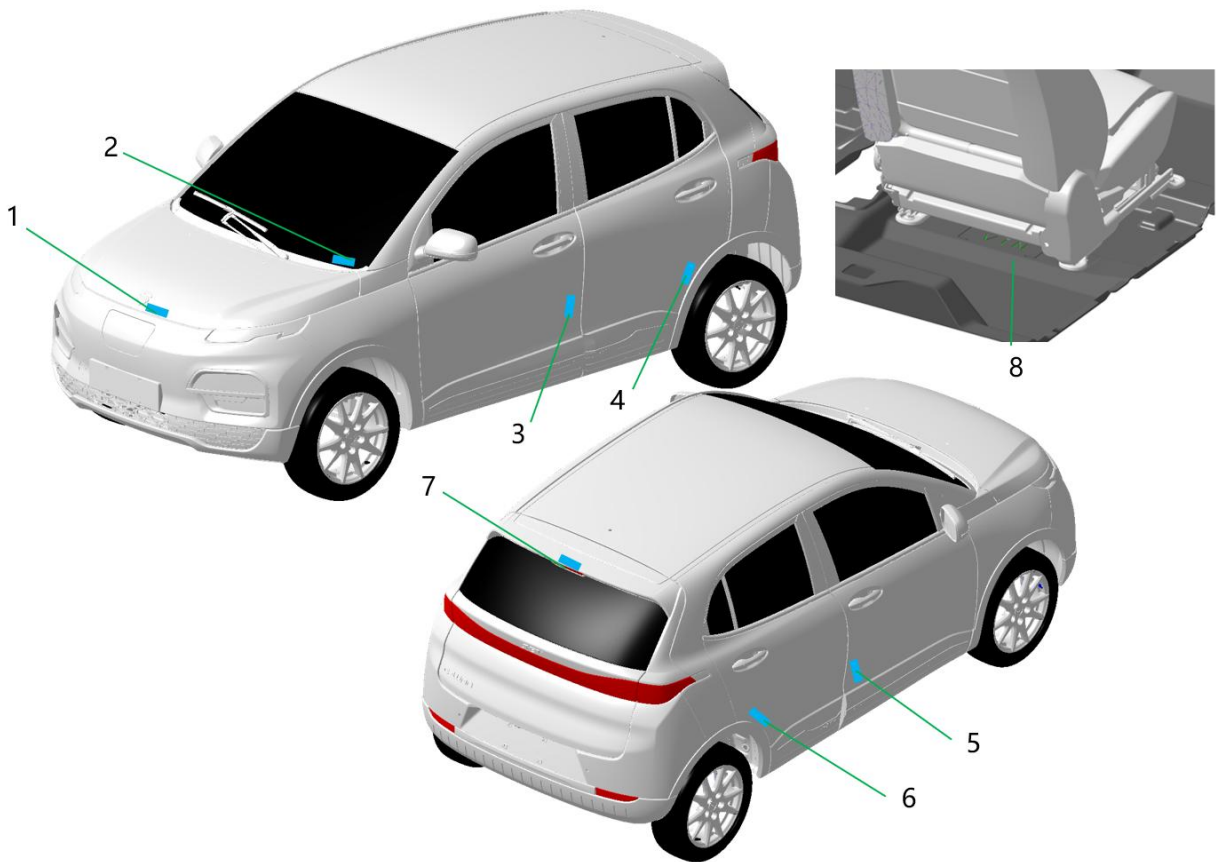


1.8.1.6 Description of Yuanhang 2D information code



The coding order of the QR code is: *, first field (supplier code), *, second field (batch number), *, third field (part drawing No.), *, fourth field (it can be empty if there is no content), *. Do not omit "*", which is a separator. That is, add the separator "*" in the middle of each field. It should be started and ended with the "*" symbol.

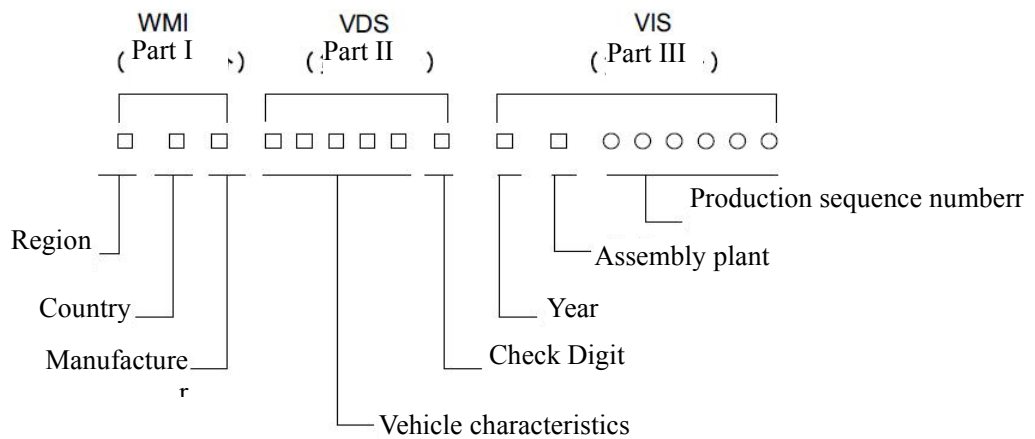
1.8.1.7 Vehicle identification number



1. On the plane of the inner panel of the cover, near the cover latch (pasted)
2. At the left windshield pillar (paste)
3. Below the upper latch of the left front door sheet metal (pasted)
4. Underneath latch on left rear door sheet metal (pasted)
5. Under the upper latch of the right front door sheet metal (pasted)
6. Under the upper latch of the right rear door sheet metal (pasted)
7. Upper side of the inner panel of the back door (pasted)
8. Rear cross member of the floor under the passenger seat (scored)

1.8.1.8 Description of vehicle identification number (VIN)

Composition of the VIN: As shown in the figure below, three parts (17 digits in total), namely the World Manufacturer Identifier (WMI), the Vehicle Description Section (VDS), and the Vehicle Indication Section (VIS) form the VIN.



The table below shows the meaning of each digit:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Manufacturer			Vehicle type	Body type and power system characteristics	Restraint system	Drive type and transmission type	Inspection digit	Year	Assembly line	Production sequence number						

World Manufacturer Identifier (WMI) (digits 1 to 3)

"World Manufacturer Identifier " for passenger vehicles of the Company

Code	Manufacturer
LR6	Chengdu Dayun Automotive Group Co., Ltd.

4th code - vehicle type

Code	Sedan	Sports passenger vehicle	Multi-purpose passenger vehicle
Vehicle type	J	Y	D

5th to 6th code - body type and power system characteristics

If more than one drive motor is used in the vehicle, the sum of the peak power of the drive motors should be regarded as the peak power of the drive motor.

Code	Body type	Fuel type/battery type	Engine capacity	Peak power of driving motor
AA	Hatchback	Pure electric / lithium battery	/	62 kW
AB	Hatchback	Pure electric / lithium battery	/	68 kW
AC	Hatchback	Pure electric / lithium battery	/	145 kW
AD	Coupe	Pure electric / lithium battery	/	75 kW
AE	Hatchback	Fuel cell/hydrogen fuel	/	130 kW
AF	Hatchback	Hybrid	1.8 L	30 kW
AG	Hatchback	Gasoline	2.0 T	/
AH	Hatchback	Gasoline	2.4 T	/
AJ	Hatchback	Diesel	1.9 T	/
AK	Hatchback	Pure electric / lithium battery	/	35 kW
AL	Sedan	Pure electric / lithium battery	/	250 kW
AM	Sedan	Pure electric / lithium battery	/	500 kW
AN	Hatchback	Pure electric / lithium battery	/	500 kW

7th code - constraint system

Code	Restraint system	Code	Restraint system
A	Seat belts	B	Seat belts, driver's airbag
C	Seat belts, driver's airbag, passenger's airbag	D	Seat belts, driver's airbag, passenger's airbag, front side airbags
E	Seat belts, driver's airbags, passenger's airbags, passenger side airbags	F	Seat belts, driver's airbags, passenger's airbags, passenger side airbags, side air curtains
G	Seat belts, driver's airbags, passenger's airbags, side air curtains	/	/

8th code - drive type and transmission type

Code	Product characteristics	Code	Product characteristics	Code	Product characteristics
A	Front-wheel drive, manual transmission	B	Front-wheel drive, automatic transmission	C	Rear-wheel drive, manual transmission
D	Rear-wheel drive, automatic transmission	E	All-wheel drive, manual transmission	F	All-wheel drive, automatic transmission
G	Front-wheel drive, fixed-gear-ratio transmission	H	Rear-wheel drive, fixed-gear-ratio transmission	J	All-wheel drive, fixed-gear-ratio transmission

9th code - inspection digit

Any of the numbers "0 to 9" or the letter "X" may be the inspection digit, which is used to check the accuracy of the vehicle identification number record. Calculate the inspection digit with a certain formula.

10th code - year

Year	Code	Year	Code	Year	Code	Year	Code
2019	K	2025	S	2031	1	2037	7
2020	L	2026	T	2032	2	2038	8
2021	M	2027	V	2033	3	2039	9
2022	N	2028	W	2034	4	2040	A

Yuehu Maintenance Manual

2023	P	2029	X	2035	5	2041	B
2024	R	2030	Y	2036	6	2042	C

11th code - assembly line

Code	Assembly plant
C	Chengdu Dayun Automotive Group Co., Ltd.
S	Shiyan Branch of Chengdu Dayun Automobile Co., Ltd.
G	Guangzhou Branch of Chengdu Dayun Automobile Co., Ltd.
X	Yuncheng Branch of Chengdu Dayun Automobile Co., Ltd.

12th-17th code - production S/N

1.9 Noise, vibration, and abnormal sound

1.9.1 Description and operation

1.9.1.1 Diagnostic information and steps

Wind noise/airborne sound

Warning!

Please refer to "Warnings about assistant driving" in "Warnings and precautions".

Note that when the technician is inspecting the reported faulty part, the vehicle should be driven by an assistant.

Failure to do so may cause an injury accident.

To confirm the exact location of the wind noise, test drive in the vehicle. Generally, wind noise may indicate major and minor leaks. During the repair process, if not all leaks are repaired, the wind noise should be reduced only, other than eliminated.

During the test drive, the maintenance personnel shall bring the following tools to help diagnose the exact location of the wind noise:

- Stethoscope
- Masking tape
- Caulking strip
- Marking pen
- Screwdriver

Perform a road test according to the following procedure:

- A route with flat streets in four directions: east, south, west, and north should be selected.
- A street with a smaller traffic flow or less noise should be selected to avoid interfering with the test.
- The road test should be performed at the speed at which the customer considers that the vehicle produces the most noticeable or produces noise, and it is strictly prohibited to exceed the speed limit according to the law.

Wind noise produced under the following conditions is external wind noise:

- Wind noise should be heard immediately when the window is lowered while driving the vehicle.
- When the tape is applied to the decorative sealing strips and gaps, the wind noise should disappear immediately.

Internal wind noise is caused when air escapes from the vehicle and the repair should be carried out as follows:

- Tape should be applied over the body door lock strut relief valve while determining the leak location. Immediately, air pressure builds up inside the car and wind noise will increase.
- A stethoscope should be used to confirm the leak location.
- The masking tape should be applied to temporarily repair the leak.
- The road test should continue to confirm if the wind noise is completely eliminated or if there are other leak locations.
- After all leak locations are identified through the road test, the vehicle should return to the repair shop and it is needed to apply professional and reasonable positioning methods and sealing materials for permanent

repairs.

Vibration

Most high-speed vibrations are caused by the wheels being out of dynamic balance. If vibration exists after the dynamic balance, the cause may include:

- Out-of-round tires
- Out-of-round rims
- Tires with hardness deviation

The free runout of tires and wheels should be measured, but all reasons for vibration cannot be clarified. The three causes mentioned above are known as load radial runout, and repairs to the defective vehicle must be made by replacing the original tire and wheel assembly with one that is known to be in good condition.

Low-speed vibration that occurs at lower speeds is usually due to runout. High-speed vibration that occurs at higher speeds is usually due to imbalance or runout.

Uneven tire alignment

There are usually two ways to align tires that have been properly balanced but are still vibrating. One method is to use an automatic machine tool that installs tires on the machine tool and grinds away a small amount of rubber from the high spots on the left and right tire treads. Alignment of tires using this method is usually permanent. If the alignment is performed properly, the appearance of the tire or the life of the tire tread will not be significantly affected. It is not recommended to use a machine tool with a cutting edge to repair tires when aligning them, as this will shorten the life of the tire and will not resolve the problem completely.

Another method is to disassemble the tire and turn it 180° on the rim. This method should only be used after a diagnosis has been made that the vibration is due to the tire and wheel assembly. This is because this method is equally likely to cause vibration in an intact wheel assembly.

Abnormal noise

If the drive motor produces a crunching sound under the vehicle at higher speeds, check if the heat shield contacts the body bottom:

- Lift the vehicle and perform a visual inspection.
- Bend the heat shield slightly to form a gap between the shield and the body bottom.

The vehicle front squeaks in cold weather

Check the front balance bar vibration isolation rubber sleeve:

- Perform a road test of the vehicle in the cold state and drive over potholes in the road to maximize front suspension travel.
- Disassemble the vibration isolation rubber sleeve and wrap the tape around the front balance bar before reinstalling the vibration isolation rubber sleeve over the tape.

Dull noise from the rear of the vehicle when going over bumps

Check that the spare tire in the luggage compartment is properly secured:

- Open the luggage compartment and check the spare tire and accompanying tools.
- Re-secure the spare tire and accompanying tools.
- Perform a road test of the vehicle and check that the noise is eliminated.

Glass knocking sound from the rear of the vehicle when driving over bumpy roads

Check for improperly adjusted rear door latches

- Perform a road test of the vehicle and check this condition.
- Release the latch nut and adjust the latch.

Crunching sound of door

Check for a crunching sound from the wiring harness connector inside the door interior trim:

- Tap the interior trim and carefully check for the crunching sound.
- Disassemble the door interior trim and wrap foam pads around the wiring harness connectors as appropriate according to the car reality.

Squeaks when using the doors:

Check the door hinges for the lubrication situation.

- Open and close the door and carefully check for door squeaks.
- Lubricate and grease door hinges with the rust release agent.

1.9.1.2 Maintenance guide

Wind noise/airborne sound

External wind noise

The repair method for wind noise leaks is very close to that for water leaks. Please refer to the diagnostic information and steps. The actual repair procedure depends on the type of seal being repaired.

Vibration

Under-vehicle balancing of wheels and tires

Perform the dynamic wheel balancing with an electronic under-vehicle balancer. The dynamic balancer is easy to use and can perform both static and dynamic balancing. Unlike the on-vehicle balancing, under-vehicle balancer cannot correct the brake disc imbalance. However, the precision of the under-vehicle balance resolves this problem by fixing the wheel to the balancer so that a cone passes through the back of the center hole without passing through the wheel nut hole.

On-vehicle balancing of wheels and tires

On-vehicle balancing can correct vibrations caused by out-of-balance brake discs.

Warning!

The lower control arm should be supported in its normal horizontal position to avoid damage to the drive axle.

Do not operate the vehicle with a gear engaged when the wheels have sunk to full travel.

1. It is prohibited to disassemble the balance blocks installed when the wheels are dynamically balanced under the vehicle during on-vehicle dynamic balancing operations.

2. If more than 25 g (1lb) of balance blocks are required for dynamic balancing, the balance blocks should be divided into two pieces and installed on the inner and outer rims respectively.
3. The driven wheel and wheel assembly are driven by the drive motor.

Alignment and assembly of wheels and tires

Wheels and tires are assembled in factories, and assembling is to match the lighter part of the tire's dynamic balance (also known as the light point) to the heavier part of the wheel's dynamic balance (also known as the heavy point).

When tires are first shipped from the factory, the high point of the tire initially bears a red paint mark or a label on the external wall of the tire.

The low point of the wheel is at the valve core

Before disassembling the tire from the wheel, the tire's valve core location should be marked to ensure that it can be installed in its original position.

Abnormal noise

Repair of abnormal noise

The abnormal noise comes mainly from relative motion between vehicle parts that should not exist. There are three ways to fix the abnormal noise:

- Firmly tighten the parts so that there is no relative motion while the vehicle is traveling.
- Dismantle the parts so that they will not contact each other during operation.
- Isolate parts so that no abnormal noise occurs when the parts move. Uniform and low-friction surfaces can be used to eliminate viscous sliding between parts.

1.10 Water leakage

1.10.1 Description and operation

1.10.1.1 Diagnostic information and steps

Diagnosis of water leakage

Caution

All leak areas must be found before the next step can be taken; random repairs may only temporarily plug the leaks, but potentially lead to more difficult repairs in the future. Local tests should be continued within the overall scope to ensure that all leakage points are identified.

Proper testing and diagnosis of the vehicle are required during the repair of body water leakage. Adjust incorrectly positioned parts and repair leaks with appropriate repair materials.

First, the circumstances that led to water leakage should be determined.

Next, if a general area of water leakage is detected, a water or air hose should be applied to identify the exact leakage point. If the water leakage site is not obvious, a rainfall test bench will be used to determine the exact leakage site. It may be necessary to disassemble a portion of the interior trim or a portion of the part to find the exact water leakage site.

Preparation for leakage testing

- The vehicle is designed to operate under normal environmental conditions.
- The design criteria for the sealing materials and components of the vehicle have taken into account the sealing strength that needs to be achieved considering the natural environmental factors. However, these specifications and criteria cannot take all anthropogenic conditions into account.
- The leakage test procedure is related to natural environmental factors and can determine the rideability of the vehicle under normal conditions.
- The first step in diagnosing a leak is to determine under what conditions the leak occurred. If the general area of the leak can be determined, a water or air hose can be applied to isolate the exact point of water ingress. Repairing a leak may require the disassembly of some trims or parts.
- If the leak occurs in a door, back door, window or window glass lift mechanism, the reason may not necessarily be the poor performance of sealing strips. Perhaps, these parts can be adjusted to repair the water leakage fault.

Depending on the leak location, it may be necessary to disassemble certain trims or parts when repairing the leak.

1.10.1.2 Maintenance guide

Repair of body water leakage

1. Cut a section of the joint adhesive of the area of the leak, whether inside or outside the vehicle.
2. Clean and remove all old adhesive residue from the area of the leak.
3. Apply the body and joint sealant to the cleaned water leakage site.
4. Wait several hours for the joint adhesive to fully cure.
5. Detect if there are still leaks.

6. Install the previously disassembled trims and parts.

Upon the repair of fixed window water leakage faults, it may be necessary to disassemble certain trims or parts depending on the location of the leak.

1. Determine the exact location of the leak.
2. If the front windshield is leaking at the edges, repair the water leakage site with a special joint adhesive or replace the front windshield with a new seal.
3. If the fixed window is leaking at the side, use the special adhesive and repair or replace the window with a new seal.

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2.1 Power battery system

2.1.1 Specifications

2.1.1.1 Power battery parameters

Project	Model and parameter
Battery type	Ternary Lithium Battery
Battery model	DEE30710021
Cooling method	Natural cooling
Battery capacity (Ah)	100
Battery energy (kWh)	30.66
Nominal voltage (V)	306.6
Battery weight (kg)	205
Charging temperature	-20°C~55°C
Discharge temperature	-30°C~55°C
Storage temperature	-30°C~45°C
IP grade	IP67

2.1.1.2 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Upper cover fixed bolt	M5*20 fitting	3-5
Module fixed bolt	M6*85	6-10
Copper bar fixed bolt	M6*12	7-9
Ground wire fixed nut	M6	3.5-4.5
BMS master-slave control mounting bolt	Hexagon socket M4*55 fitting	1.4-1.8
Ventilated explosion-proof valve mounting bolt	M4*16 fitting	1.6-2.4
Ground wire mounting bolt	M8*16	9-11
Four-pin high-voltage socket mounting bolt	Hexagon socket M4*55 fitting	1.6-2.4
Discharge socket mounting bolt	Hexagon socket M4*55 fitting	1.6-2.4
Charging socket mounting bolt	M5*16 fitting	3.5-4.5
Communication socket mounting bolt	Hexagon socket M4*55 fitting	1.6-2.4
Bolt connecting the BDU to the discharge socket	M4*12	2.6-3.4
Bolt connecting the BDU to the charging socket	M4*12	5-6
BDU fixed bolt	M5*16 fitting	5-6

2.1.2 Working Principle

2.1.2.1 Working Principle

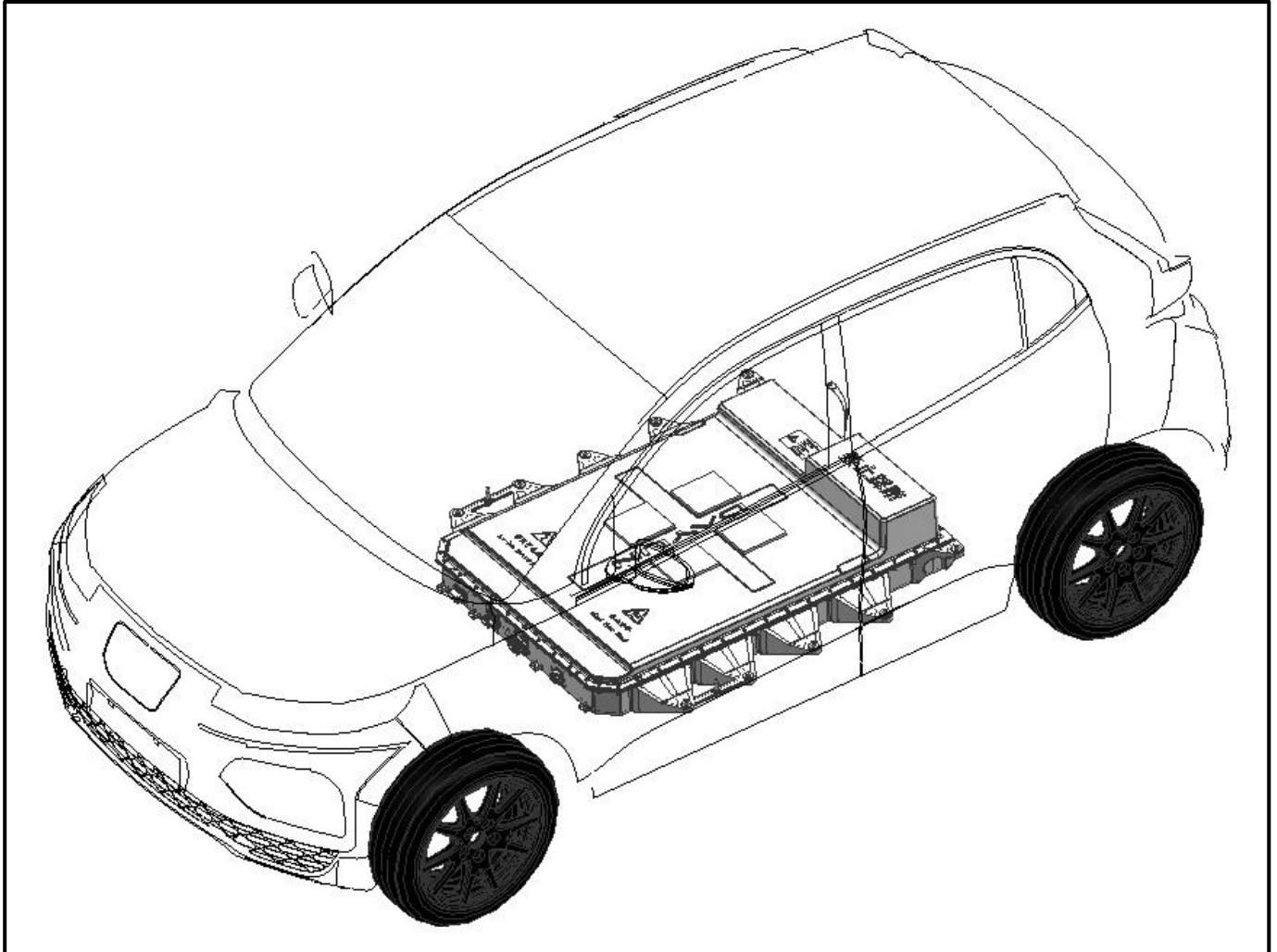
The ternary lithium-ion battery is adopted, which consists of a battery module, BMS, BDU, battery box, high and low-voltage electrical connections, and thermal management system.

S.N.	Component name	Function Introduction
1	Battery module	Store electrical energy
2	BMS	Detect the battery voltage and temperature, control the operating status of the battery and produce alarms upon faults
3	BDU	Proceed with high-voltage breaking, overcurrent protection, current monitoring, etc.
4	Battery box	The battery box provides mechanical protection, load bearing and sealing for the battery system.
5	High and low-voltage electrical connections	The high-voltage connection provides the current carrier for charging and discharging, and the low-voltage electrical connection provides the carrier for the electrical signals collected by the BMS and controlled by the relay;

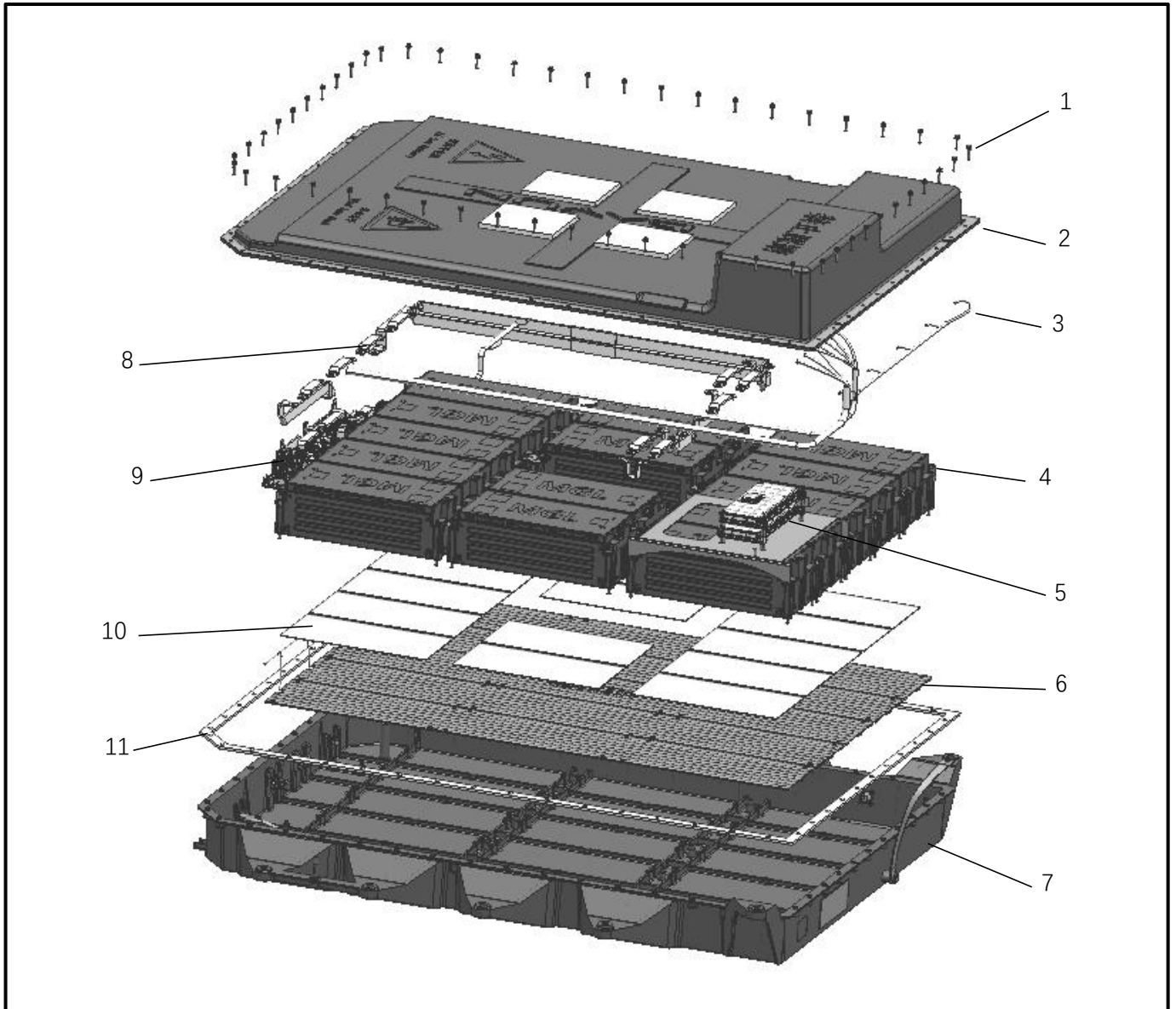
6	Thermal management system	Allow the battery to operate at a reasonable operating temperature and maintain thermal safety.
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2.1.3 Component location

2.1.3.1 Component location



2.1.4 Breakdown drawing of the component

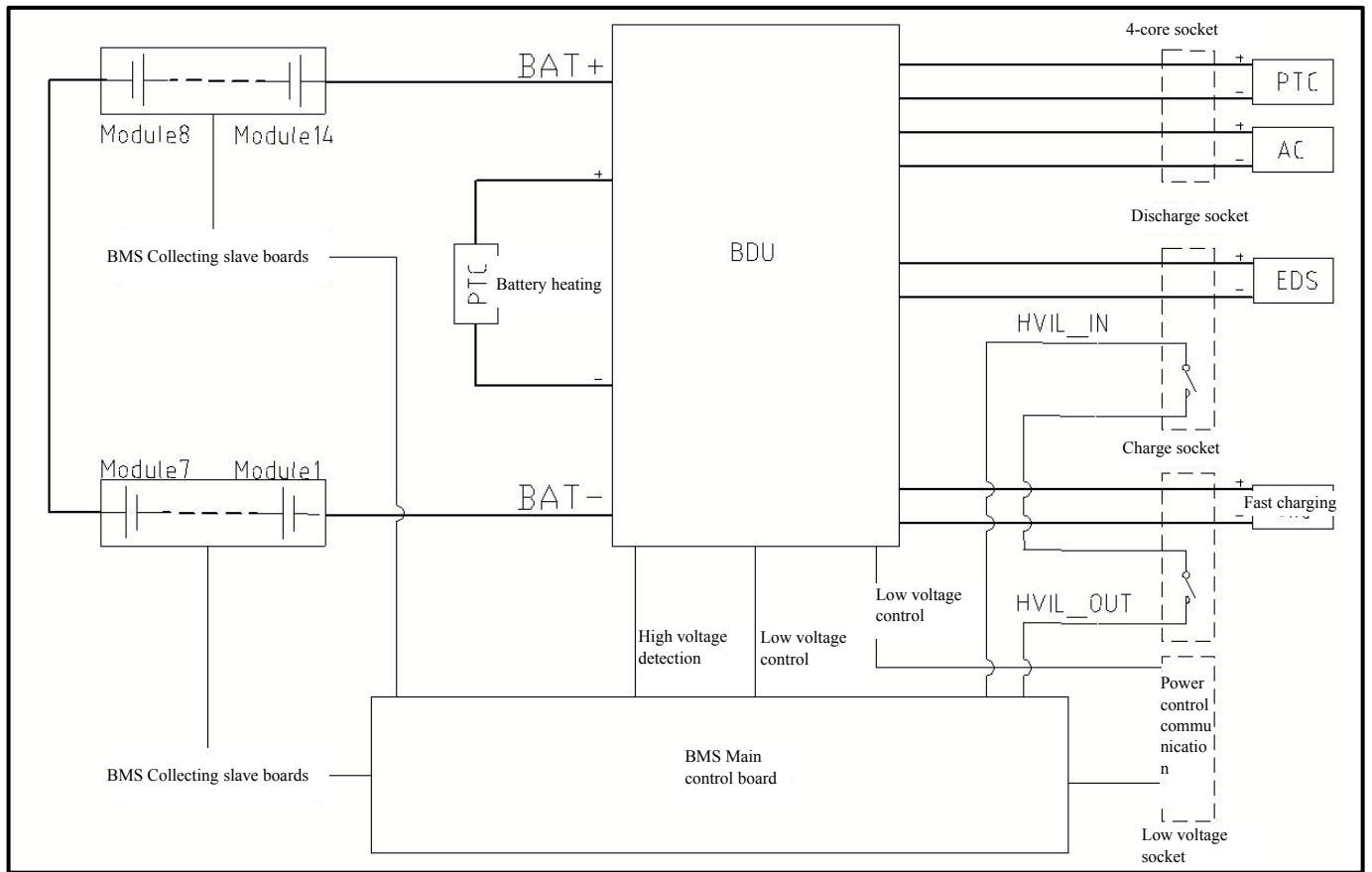


- | | |
|-------------------------------------|--------------------|
| 1. Upper/lower cover fastening bolt | 7. Lower tank |
| 2. Upper cover | 8. Copper bar |
| 3. Wiring harness | 9. BDU |
| 4. Battery module | 10. Thermal pad |
| 5. BMS | 11. Sealing gasket |
| 6. PTC heating plate | |

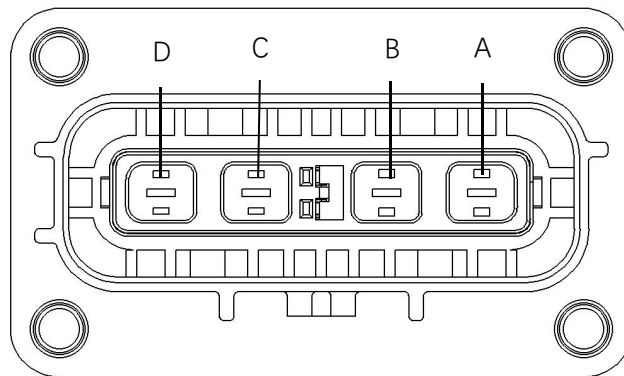
2.1.5 Electrical principle

2.1.5.1 Electrical principle

Simple electrical diagram of the power battery system

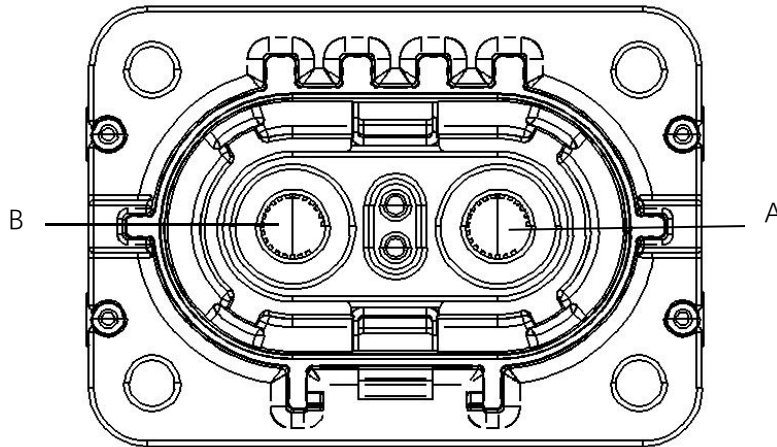


Controller terminal list



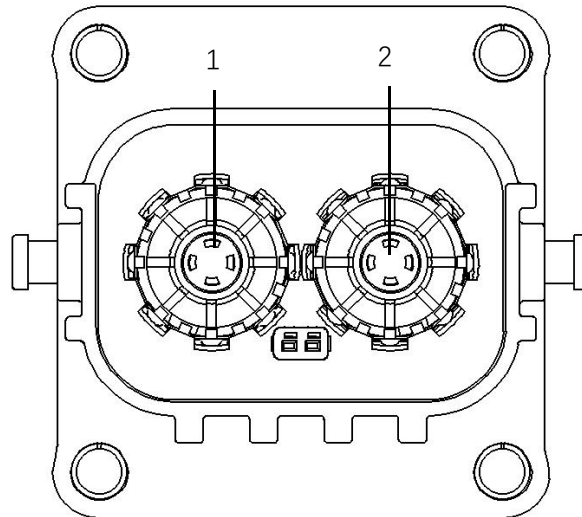
AC/PTC interface socket: HVIL-F4P (16A) -A-1

Terminal number	Terminal description
A	PTC+
B	PTC-
C	AC+
D	AC-



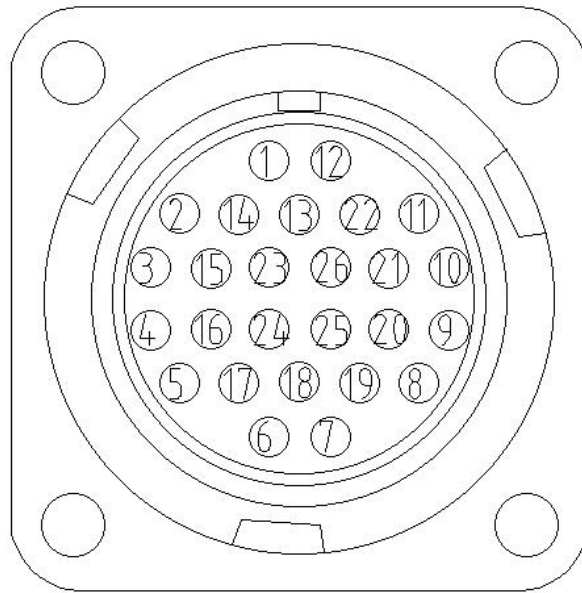
Discharge port socket: EVH3-P2ZK-A G001

Terminal number	Terminal description
A	Negative
B	Positive



Charging port socket: EVH4-C2ZJ-HA G007

Terminal number	Terminal description
1	Positive
2	Negative



Communication interface socket: RC-EV-ZS26A

Pin	Network name	Pin description	Remarks
1	BMS_VCC	12V constant power	/
2	GND	Complete to ground	/
3	CANH_VMU	Vehicle CANH	Optional terminal resistance
4	CANL_VMU	Vehicle CANL	Optional terminal resistance
5	CANH_CHG	Charging CANH	Optional terminal resistance
6	CANL_CHG	Charging CANL	Optional terminal resistance
7	CANH_LMU	Intranet CANH	/
8	CANL_LMU	Intranet CANL	/
9	ECLOCK_FEEDBACK	Electronic lock position feedback 2	/
10	ECLOCK_FEEDBACK	Electronic lock position feedback 3	/
11	T4+	Slow-charging temperature sensor at the positive terminal	/
12	A+	Fast-charging power supply & wakeup	/
13	QCHG_GND	Fast-charging power supply to ground	/
14	CC2	Fast-charging connection confirmation	/
15	KEY_ON	Wakeup when running	/
16	T1+	Fast-charging temperature sensor at the negative terminal	/
17	T3+	Fast-charging temperature sensor at the negative terminal	/
18	T1/T3-	Fast-charging temperature sensor to ground	/
19	T2/T4-	Slow-charging temperature sensor to ground	/
20	T2+	Slow-charging temperature sensor at the positive terminal	/
21	CRO	Collision signal	PWM signal (high and low-level trigger and message trigger enabled)
22	K5-	Air-conditioning PTC relay control wire	/
23	HVIL_IN	High-voltage interlock input	/
24	HVIL_OUT	High-voltage interlock output	/
25	K1-	Pre-charge positive relay control wire	/
26	K2+	Main positive relay control wire	/

2.1.5.2 Diagnostic description

Fault prevention measures

1. Operate in strict accordance with the instructions;
2. Perform regular maintenance and servicing;
3. Update the relevant software to ensure that it is the latest version;
4. Avoid direct sunlight and keep away from heat sources.

2.1.5.3 Data list

Short Name CN	Description CN	Normal value range (FN)	Unit
Maximum sustainable discharge power of the battery	Maximum sustainable discharge power of the battery	[0,127.5]	KW
Maximum peak discharge power of the battery	Maximum peak discharge power of the battery	[0,127.5]	KW
Maximum sustainable back-off power	Maximum sustainable back-off power	[0,127.5]	KW
Maximum peak back-off power	Maximum peak back-off power	[0,127.5]	KW
Instantaneous power	Instantaneous power	[0,127.5]	KW
Battery voltage	Battery voltage	[0,500]	V
Battery current	Battery current	[-500,500]	A
Battery SOC	Battery SOC	[0,100]	%
Total negative contactor status	Total negative contactor status	0 : Open 1 : Close 2 : Error 3 : Reserve	N/A
General battery status (alarm level)	General battery status (alarm level)	0 : Normal 1 : Level1 2 : Level2 3 : Level3 4 : Level4 5 : Level5 6 : Reserve 7 : Reserve	N/A
Power battery status	Power battery status	0 : Initial 1 : Standby 2 : HV PowerUp Completed 3 : HV PowerDown Completed 4 : Reserve 5 : Reserve 6 : Reserve 7 : Reserve	N/A
Fast-charging voltage	Fast-charging voltage	[0,500]	V
Fast-charging current	Fast-charging current	[-500,500]	A
Maximum permissible charging voltage	Maximum permissible charging voltage	[0,1200]	V
Maximum permissible charging	Maximum permissible charging	[-400,400]	A

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current	current		
Slow-charging voltage request	Slow-charging voltage request	[0,500]	V
Slow-charging current request	Slow-charging current request	[0,50]	A
Slow-charging permissible control	Slow-charging permissible control	0 : Charge Inhibited 1 : Charge Allowed	N/A
Charging mode control	Charging mode control	0 : Charge Mode 1 : Heating Mode 2 : Cooling Mode 3 : TherBalanceMode	N/A
Remaining charging time	Remaining charging time	[0,900]	min
Battery pack heating status	Battery pack heating status	0 : Not heating 1 : Heating 2 : Heating Completed 3 : Heating Error	N/A
Heating failure	Heating failure	0 : No Error 1 : Heating timeout 2 : PTC Temperature High 3 : PTCOpen circuit	N/A
Fast-charging status	Fast-charging status	0 : Not Charge 1 : Charging 2 : Charge Completed 3 : Charge Error	N/A
Slow-charging status	Slow-charging status	0 : Not Charge 1 : Charging 2 : Charge Completed 3 : Charge Error	N/A
External charging status	External charging status	0 : Normal 1 : Error 2 : Reserve 3 : Reserve	N/A
Fast-charging positive relay status	Fast-charging positive relay status	0 : Open 1 : Close 2 : Error 3 : Reserve	N/A
Battery pack cooling status	Battery pack cooling status	0 : Not Cooling 1 : Cooling 2 : Cooling Completed 3 : Cooling Error	N/A
Battery pack thermal equalization status	Battery pack thermal equalization status	0 : Not TherBalance 1 : TherBalance 2 : TherBalance Completed 3 : TherBalance Error	N/A
Fast-charging gun connection status	Fast-charging gun connection status	0 : No Connect 1 : Connected	N/A
Battery heating/cooling/equalization interrupt	Battery heating/cooling/equalization interrupt	0 : Normal 1 : Brake	N/A
Maximum voltage subsystem number	Maximum voltage subsystem number	[0,1]	N/A
Maximum battery voltage unit No.	Maximum battery voltage unit No.	[0,30]	N/A
Maximum battery unit voltage	Maximum battery unit voltage	[0,4.5]	V

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Minimum voltage battery subsystem number	Minimum voltage battery subsystem number	[0,1]	N/A
Minimum voltage cell code	Minimum voltage cell code	[0,30]	N/A
Minimum battery unit voltage	Minimum battery unit voltage	[4.5]	V
Maximum temperature subsystem number	Maximum temperature subsystem number	[0,5]	N/A
Maximum temperature probe unit code	Maximum temperature probe unit code	[0,54]	N/A
Maximum temperature value	Maximum temperature value	[-40,210]	°C
Minimum temperature subsystem number	Minimum temperature subsystem number	[0,5]	N/A
Minimum temperature probe subsystem code	Minimum temperature probe subsystem code	[0,54]	N/A
Minimum temperature value	Minimum temperature value	[-40,210]	°C
Battery SOH	Battery SOH	[0,100]	%
Number of battery unit strings	Number of battery unit strings	[0,255]	N/A
Total number of power battery temperature probes	Total number of power battery temperature probes	[0,60]	N/A
Total number of unit storage batteries	Total number of unit storage batteries	[0,255]	—
Insulation resistance value	Insulation resistance value	[0,60000]	KΩ
Module temperature	Module 1 temperature	[-40,210]	°C
	Module 2 temperature	[-40,210]	°C
	Module 3 temperature	[-40,210]	°C
	Module 4 temperature	[-40,210]	°C
	Module 5 temperature	[-40,210]	°C
	Module 6 temperature	[-40,210]	°C
	Module 7 temperature	[-40,210]	°C
	Module 9 temperature	[-40,210]	°C
	Module 9 temperature	[-40,210]	°C
	Module 10 temperature	[-40,210]	°C
	Module 11 temperature	[-40,210]	°C
	Module 12 temperature	[-40,210]	°C
	Module 13 temperature	[-40,210]	°C
	Module 14 temperature	[-40,210]	°C
	Module 15 temperature	[-40,210]	°C
	Module 16 temperature	[-40,210]	°C
	Module 17 temperature	[-40,210]	°C
	Module 18 temperature	[-40,210]	°C
	Module 19 temperature	[-40,210]	°C
	Module 20 temperature	[-40,210]	°C
	Module 21 temperature	[-40,210]	°C
	Module 22 temperature	[-40,210]	°C
	Module 23 temperature	[-40,210]	°C
	Module 24 temperature	[-40,210]	°C
	Module 25 temperature	[-40,210]	°C
	Module 26 temperature	[-40,210]	°C
	Module 27 temperature	[-40,210]	°C
	Module 28 temperature	[-40,210]	°C
Unit voltage	No. 1 unit voltage	[0,4.5]	V
	No. 2 unit voltage	[0,4.5]	V
	No. 3 unit voltage	[0,4.5]	V

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No. 4 unit voltage	[0,4.5]	V
No. 5 unit voltage	[0,4.5]	V
No. 6 unit voltage	[0,4.5]	V
No. 7 unit voltage	[0,4.5]	V
No. 8 unit voltage	[0,4.5]	V
No. 9 unit voltage	[0,4.5]	V
No. 10 unit voltage	[0,4.5]	V
No. 11 unit voltage	[0,4.5]	V
No. 12 unit voltage	[0,4.5]	V
No. 13 unit voltage	[0,4.5]	V
No. 14 unit voltage	[0,4.5]	V
No. 15 unit voltage	[0,4.5]	V
No. 16 unit voltage	[0,4.5]	V
No. 17 unit voltage	[0,4.5]	V
No. 18 unit voltage	[0,4.5]	V
No. 19 unit voltage	[0,4.5]	V
No. 20 unit voltage	[0,4.5]	V
No. 21 unit voltage	[0,4.5]	V
No. 22 unit voltage	[0,4.5]	V
No. 23 unit voltage	[0,4.5]	V
No. 24 unit voltage	[0,4.5]	V
No. 25 unit voltage	[0,4.5]	V
No. 26 unit voltage	[0,4.5]	V
No. 27 unit voltage	[0,4.5]	V
No. 28 unit voltage	[0,4.5]	V
No. 29 unit voltage	[0,4.5]	V
No. 30 unit voltage	[0,4.5]	V
No. 31 unit voltage	[0,4.5]	V
No. 32 unit voltage	[0,4.5]	V
No. 33 unit voltage	[0,4.5]	V
No. 34 unit voltage	[0,4.5]	V
No. 35 unit voltage	[0,4.5]	V
No. 36 unit voltage	[0,4.5]	V
No. 37 unit voltage	[0,4.5]	V
No. 38 unit voltage	[0,4.5]	V
No. 39 unit voltage	[0,4.5]	V
No. 40 unit voltage	[0,4.5]	V
No. 41 unit voltage	[0,4.5]	V
No. 42 unit voltage	[0,4.5]	V
No. 43 unit voltage	[0,4.5]	V
No. 44 unit voltage	[0,4.5]	V
No. 45 unit voltage	[0,4.5]	V
No. 46 unit voltage	[0,4.5]	V
No. 47 unit voltage	[0,4.5]	V
No. 48 unit voltage	[0,4.5]	V
No. 49 unit voltage	[0,4.5]	V
No. 50 unit voltage	[0,4.5]	V
No. 51 unit voltage	[0,4.5]	V

	No. 52 unit voltage	[0,4.5]	V
	No. 53 unit voltage	[0,4.5]	V
	No. 54 unit voltage	[0,4.5]	V
	No. 55 unit voltage	[0,4.5]	V
	No. 56 unit voltage	[0,4.5]	V
	No. 57 unit voltage	[0,4.5]	V
	No. 58 unit voltage	[0,4.5]	V
	No. 59 unit voltage	[0,4.5]	V
	No. 60 unit voltage	[0,4.5]	V
	No. 61 unit voltage	[0,4.5]	V
	No. 62 unit voltage	[0,4.5]	V
	No. 63 unit voltage	[0,4.5]	V
	No. 64 unit voltage	[0,4.5]	V
	No. 65 unit voltage	[0,4.5]	V
	No. 66 unit voltage	[0,4.5]	V
	No. 67 unit voltage	[0,4.5]	V
	No. 68 unit voltage	[0,4.5]	V
	No. 69 unit voltage	[0,4.5]	V
	No. 70 unit voltage	[0,4.5]	V
	No. 71 unit voltage	[0,4.5]	V
	No. 72 unit voltage	[0,4.5]	V
	No. 73 unit voltage	[0,4.5]	V
	No. 74 unit voltage	[0,4.5]	V
	No. 75 unit voltage	[0,4.5]	V
	No. 76 unit voltage	[0,4.5]	V
	No. 77 unit voltage	[0,4.5]	V
	No. 78 unit voltage	[0,4.5]	V
	No. 79 unit voltage	[0,4.5]	V
	No. 80 unit voltage	[0,4.5]	V
	No. 81 unit voltage	[0,4.5]	V
	No. 82 unit voltage	[0,4.5]	V
	No. 83 unit voltage	[0,4.5]	V
	No. 84 unit voltage	[0,4.5]	V
First character of software version	First character of software version	[0,255]	N/A
Second character of software version	Second character of software version	[0,255]	N/A
Third character of software version	Third character of software version	[0,255]	N/A
Fourth character of software version	Fourth character of software version	[0,255]	N/A
First character of hardware version	First character of hardware version	[0,255]	N/A
Second character of hardware version	Second character of hardware version	[0,255]	N/A
Third character of hardware version	Third character of hardware version	[0,255]	N/A
Fourth character of hardware version	Fourth character of hardware version	[0,255]	N/A

2.1.5.4 Fault code description

SN	DTC Number	Failure Type	Description CN (Content is the faults in DTC list in both English and Chinese)	DTC Byte(Hex)
1	U1100	17	Over Diagnostic Voltage	110017
2	U1100	16	Under Diagnostic voltage	110016
3	U0001	88	Bus-off PTCAN	000188

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4	U0100	87	Missing VCU (ECU)	010087
5	U0114	87	Missing CDU_OBC (ECU)	011487
6	U0101	87	Missing MCUF (ECU)	010187
7	P1100	01	"SumVolHighErr_L1	110001
8	P1101	03	Total discharge voltage too high - level 1"	110103
9	P1102	01	"SumVolHighErr_L3	110201
10	P1102	02	Total charging voltage too high - level 3"	110202
11	P1102	04	"SumVolLowErr_L1	110204
12	P1103	01	Total discharge voltage too low - level 1"	110301
13	P1104	01	"SumVolLowErr_L2	110401
14	P1104	03	Total discharge voltage too low - level 2"	110403
15	P1105	03	"SumVolLowErr_L4	110503
16	P1106	02	Total discharge voltage too low - level 4"	110602
17	P1107	01	"SumVolLowErr_L1	110701
18	P1108	03	Total charging voltage too low - level 1"	110803
19	P1109	01	"CurDischgHighErr_L1	110901
20	P1109	02	Discharge current too high - level 1 "	110902
21	P1109	04	"CurDischgHighErr_L3	110904
22	P1110	01	Discharge current too high - level 3 "	111001
23	P1111	04	"CurChgHighErr_L3	111104
24	P1112	03	Charging current too high - level 3 "	111203
25	P1113	01	"CurFeabackhigh_L2	111301
26	P1113	04	Feedback current too high - level 2 "	111304
27	P1114	01	"CellVolHighErr_L1	111401
28	P1114	04	Discharge unit voltage too high - level 1"	111404
29	P1115	01	"CellVolHighErr_L3	111501
30	P1115	04	Charge unit voltage too high - level 3"	111504
31	P1116	03	"CellVolLowErr_L1	111603
32	P1117	01	Discharge unit voltage too low - level 1"	111701
33	P1118	01	"CellVolLowErr_L2	111801
34	P1119	01	Discharge unit voltage too low - level 2"	111901
35	P1119	02	"CellVolLowErr_L4	111902
36	P1119	03	Discharge unit voltage too low - level 4"	111903
37	P111A	02	"CellVolLowErr_L1	111A02
38	P111A	04	Charging unit voltage too low - level 1"	111A05
39	P111B	04	"CellTempBalErr_L4	111B04
40	P111C	04	Discharge battery temperature imbalance - level 4"	111C04
41	P111D	04	"CellTempBalErr_L3	111D04
42	P111E	04	Charge battery temperature imbalance - level 3"	111E04
43	P111F	04	"CellTempHighErr_L1	111F04
44	P1120	04	Discharge battery temperature too high - level 1"	112004
45	P1121	04	"CellTempHighErr_L4	112104
46	P1122	04	Discharge battery temperature too high - level 4"	112204
47	P1123	04	"CellTempHighErr_L1	112304
48	P1124	05	Charging battery temperature too high - level 1"	112405
49	P1125	04	"CellTempHighErr_L4	112504

50	P1126	04	Charging battery temperature too high - level 4"	112604
51	P1127	03	"CellTempLowErr_L1	112703
52	P1128	03	Discharge battery temperature too low - level 1"	112803
53	P1129	03	"CellTempLowErr_L4	112903
54	P1130	01	Discharge battery temperature too low - level 4"	113001
55	P1131	01	"CellTempLowErr_L3	113101
56	P1132	01	Charge battery temperature too low - level 3"	113201
57	P1133	04	"CellVolDevErr_L1	113304
58	P1136	04	Discharge unit voltage difference high - level 1"	113604
59	P1137	00	"CellVolDevErr_L1	113700
60	P1137	03	Charging unit voltage difference high - level 1"	113703
61	P1138	05	"BatSOCHigh_L1	113805
62	P1139	04	SOC too high - level 1"	113904
63	P1140	04	"BatSOCHigh_L2	114004
64	P1141	01	SOC too high - level 2"	114101
65	P1142	00	"BatSOCHigh_L2	114200
66	P1143	03	SOC too high - level 3"	114303

2.1.6 Disassembly and installation

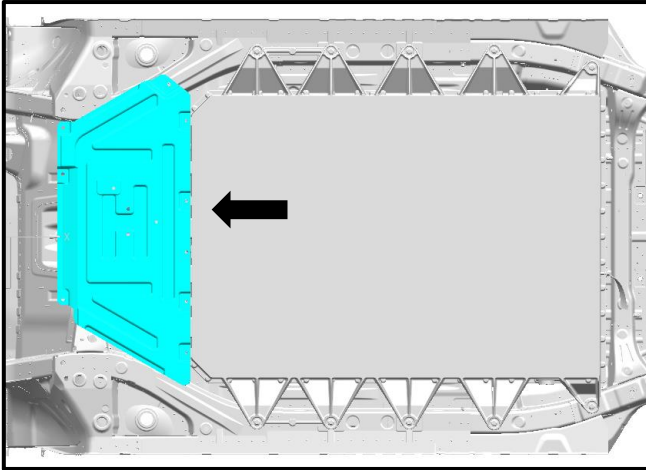
Safety instructions for power battery assembly repair

1. Under the principle of safety first, attention must be paid to safety during the dismantling of the power battery assembly and the insulation meter should be used to measure the positive voltage of the power battery assembly to confirm whether the discharge is completed, i.e., whether the national standard requirements are satisfied with the electrical energy of less than 0.2J and the voltage of less than 60V;
2. Before disassembling the power battery assembly, the high-voltage components associated must be disconnected first;
3. The power battery assembly must be labeled after the disassembly is completed to facilitate recovery.

Warning!

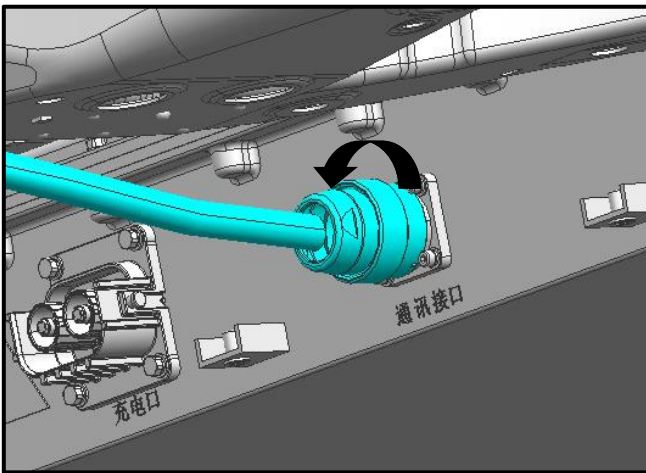
It is prohibited to open the battery box by personnel other than the staff of the power battery assembly manufacturer. If it is needed to overhaul the interior of the battery pack, please contact the after-sales service center of Dayun Auto.

2.1.6.1 Disassembly of power battery assembly

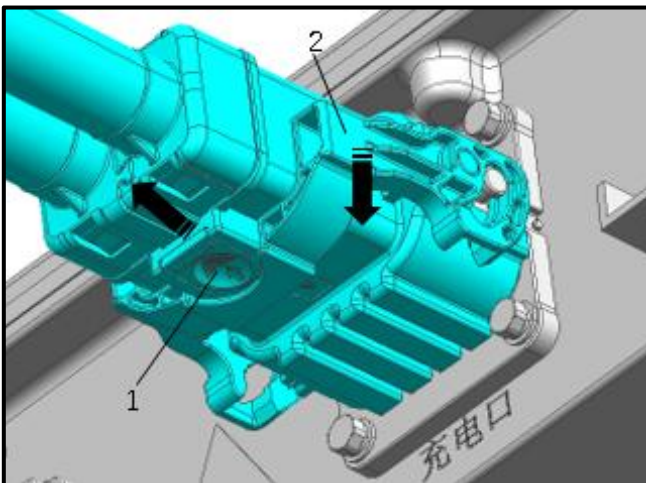


Disassembly procedure:

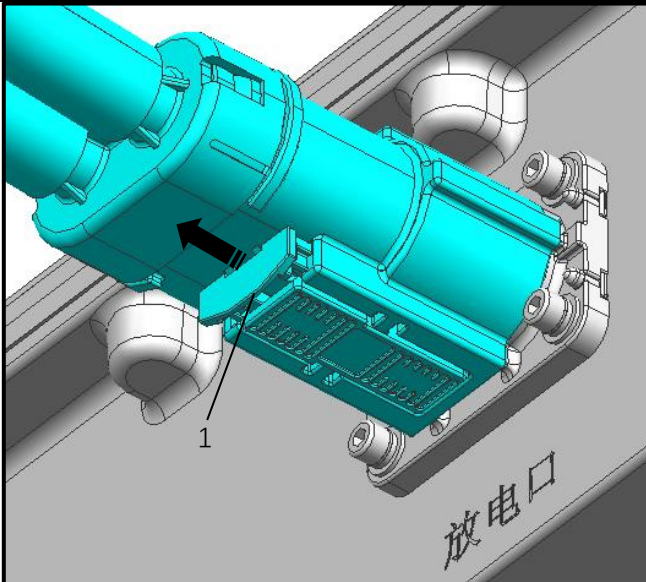
1. Ensure that the vehicle is powered down before disassembling the power battery assembly.
2. To disassemble the exterior guard in front of the battery pack; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard



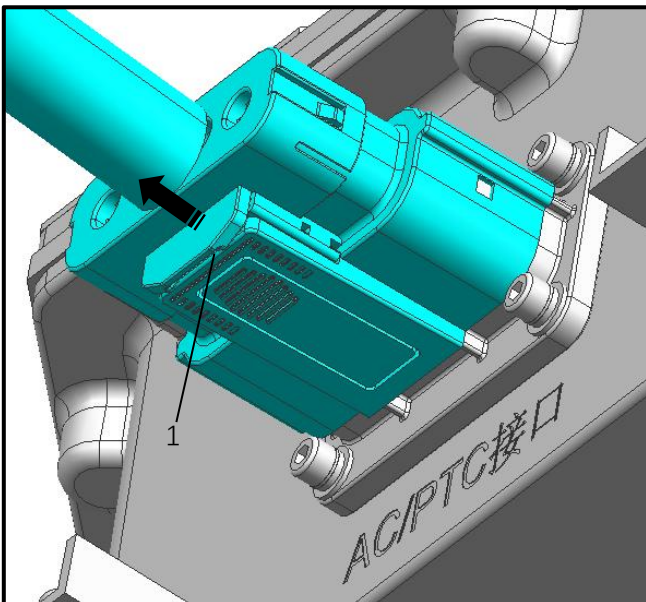
3. Remove the low-voltage plug from the battery communication interface.
Caution: Rotate and pull out the low-voltage plug counterclockwise to remove the plug.



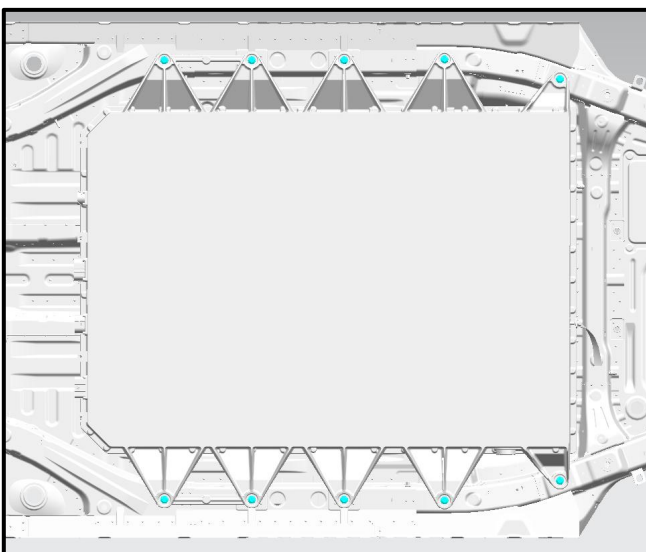
4. Unplug the high-voltage plug at the battery charging port:
 - a. Pull out the latch shown in serial number 1;
 - b. Rotate the handle shown in serial number 2 downward;
 - c. Unplug this high-voltage plug.



5. Unplug the high-voltage plug at the battery discharge port:
 - a. Pull out the latch shown in serial number 1;
 - b. Unplug this high-voltage plug.



6. Unplug the high-voltage plug at the battery AC/PTC interface:
 - a. Pull out the latch shown in serial number 1;
 - b. Unplug this high-voltage plug.



7. Use a lifting platform to hold the bottom of the power battery.
8. Disassemble the bolts connecting the power battery to the body.

9. Disassemble the nut holding the ground wire at the body end to disengage the ground wire from the body.

10. Lower the lifting platform, use the lifting equipment to place the power battery in a safe area, and completely disassemble the power battery.

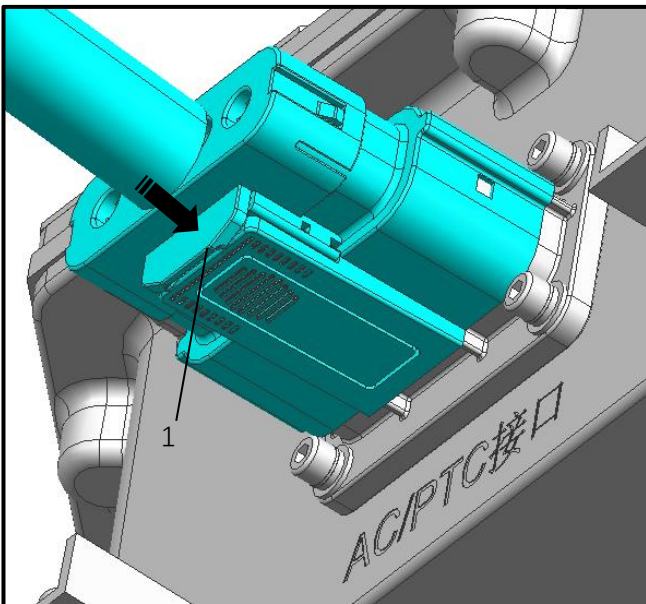
2.1.6.2 Installation of power battery assembly

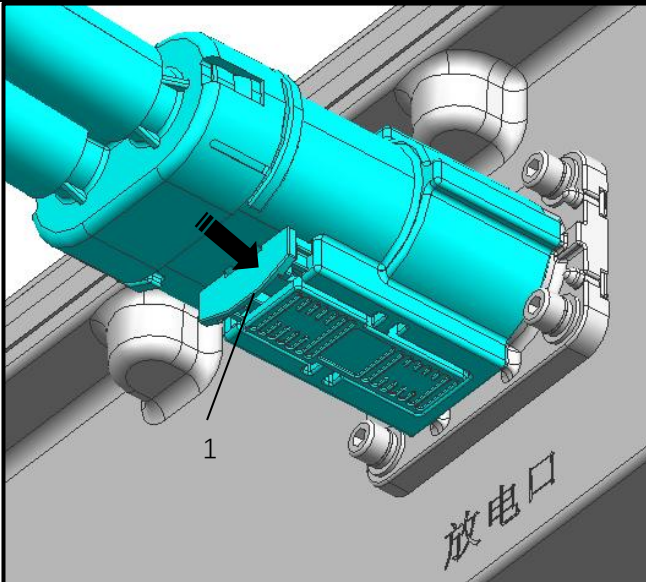
Installation procedure:

1. Lift the power battery onto the lifting platform.
2. Raise the lifting platform and stop raising it when the two locating pins at the front and rear area of the power battery are close to the location holes at the bottom of the body.
3. Adjust the position of the lifting platform, so that the two locating pins of the power battery are aligned to the location holes at the bottom of the body. Continue to raise the lifting platform, and the locating pins penetrate into the location holes until the battery pack fits both sides of the plane and the body. Stop raising the lifting platform.
4. Fasten the ground wire to the body grounding point.
5. Install and tighten the bolts connecting the power battery to the body with a torque of 60 ± 5 N•m.
6. Insert the high-voltage plug at the battery AC/PTC interface:

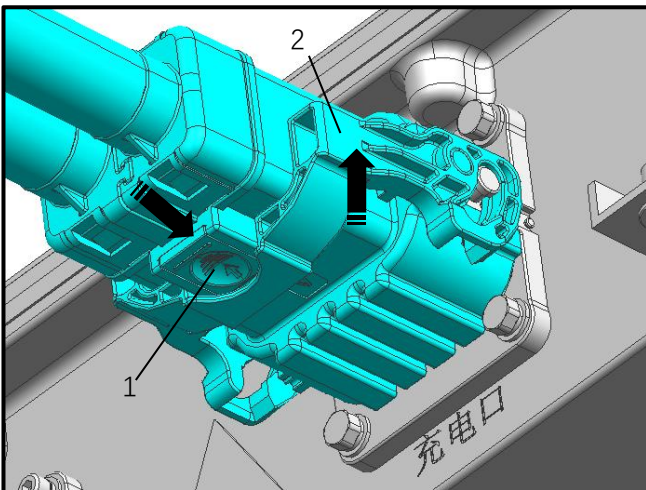
- a. Insert this high-voltage plug;
- b. Firmly press the latch shown in serial number

1.

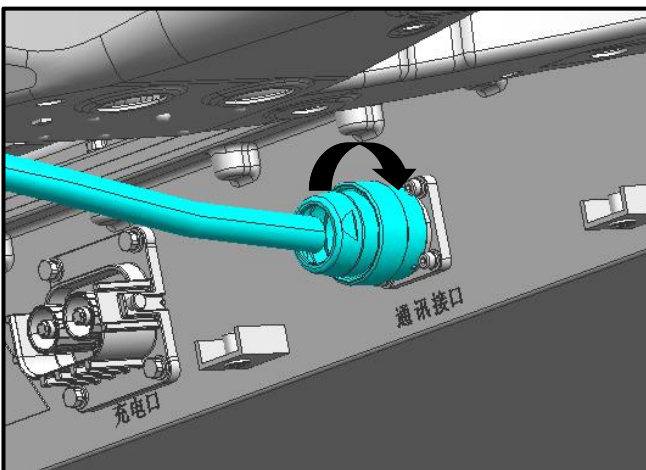




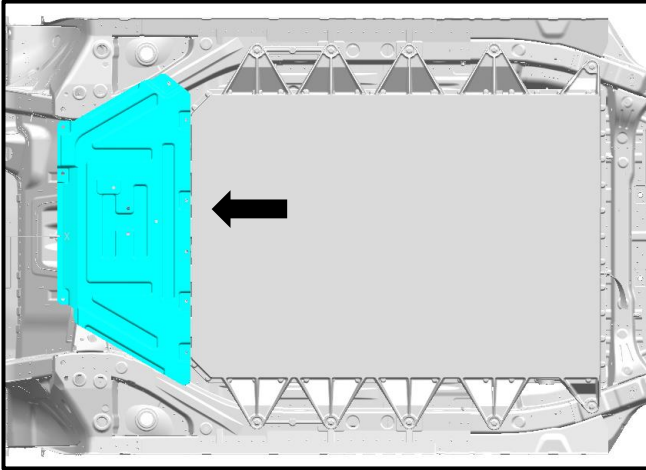
7. Insert the high-voltage plug at the battery discharge port:
- Insert this high-voltage plug;
 - Firmly press the latch shown in serial number 1.



8. Insert the high-voltage plug at the battery charging port:
- Insert this high-voltage plug;
 - Turn the handle shown in serial number 2 upward;
 - Firmly press the latch shown in serial number 1.



9. Insert the low-voltage plug at the battery communication interface.
- Note: Turn clockwise and insert the low-voltage plug to insert the low-voltage plug.**



10. To install the exterior guard in front of the battery pack; Please refer to 13.7.2.2 Replacement of the front engine compartment lower guard.

2.1.7 Maintenance and servicing

Maintenance Precautions for Power Battery Pack

1. Regular (Recommended: Every three months) maintenance of the power battery pack can maintain its optimal working condition and extend its actual service life. Inspection items:

- a. No abnormalities in voltage and temperature points;
- b. Power battery pack and body fixed well, no damage to the box;
- c. The wiring harness is free of wear, the connectors are free of rust, and the connections are not loose.

2. If the vehicle is left unused for a long time (more than 1 month), please refer to the following for parking:

- a. SOC is stored at a state of 50% to 80%, and the storage environment temperature is controlled within the range of -20°C to 35°C . And it shall be guaranteed that the battery status (including SOC) is checked every two weeks to avoid low battery voltage;

- b. Every two weeks, the key should start, and it is needed to check the meter readings and the battery capacity SOC value. If the SOC is below 20%, charging should take place immediately;

3. It is prohibited to use the battery in the place of strong static electricity and a strong magnetic field. Otherwise, it is easy to destroy the battery safety protection device and result in hidden dangers;

4. The testing and maintenance of battery performance should be operated by designated professionals;

5. In order to prevent the electrolyte from leaking and causing injuries when servicing the power battery, the maintenance personnel must wear acid and alkali-resistant gloves and protective glasses to prevent the electrolyte from corroding the skin and splashing into the eyes;

6. Disconnecting the DC bus only cuts off the power supply from the power battery to the high-voltage power equipment, but the power battery is still electrified. When it is necessary to overhaul the power battery, the exposed high-voltage parts should be wrapped with insulating rubber tape to avoid electric shock;

7. Use a specialized hoist for the power battery when carrying the power battery to the specialized battery maintenance workbench. Do not lift the power battery directly by hand.

2.2 EDS system

2.2.1 Specifications

2.2.1.1 EDS parameters

Motor type	Permanent magnet synchronous motor	Motor cooling mode	Water-cooling
Peak power of the motor (@336V @30s)	35kW	Motor rated power (@336v)	18kW
Peak torque of the motor (@336V @30s)	105N•m	Motor rated torque (@336v)	60N•m
Motor peak speed (@336v @30s)	12000rpm	Motor rated speed (@336v)	3275rpm
Peak power of electric drive assembly (@336v @30s)	33kW	Rated power of electric drive assembly (@336v)	17kW
Peak speed of electric drive assembly (@336v @30s)	998rpm	Rated torque of electric drive assembly (@336v)	721N•m
Peak torque of electric drive assembly (@336v @30s)	1262N•m	D-EDS assembly quality	(42±2)kg
Wiring method	Y	Operating mode	S9
Rated current	75A	Maximum efficiency of electric drive assembly	94%
Water flow	≥8L/min	Peak current	125A@60s
Temperature sensor arrangement	Motor and controller, one for each	Operating voltage range (DC)	(210~410)V
Ambient operating temperature range	-40℃~85℃	IP grade	IP67
Insulation grade	Grade H	Rated voltage (DC)	336V
Inlet temperature	≤65℃	Reducer speed ratio	12.02

2.2.1.2 Fastener specifications

Name	Specifications	Mounting torque (N•m)
Motor grounding point fixed bolt	M8x16	25±3
Bolt connecting the frame beam to the motor	M10x50	55±5
Bolt connecting the motor fixed bracket to the motor	M10x20	55±5
Bolt connecting the suspension bracket to the reducer	M10x65	55±5
Bolt connecting the frame beam to gearbox 1	M10x25	55±5
Bolt connecting the frame beam to gearbox 2	M8x20	25±3

2.2.2 Working Principle

2.2.2.1 Working Principle

Motor controller: The motor controller should be able to respond to the torque command and speed command issued by the vehicle controller, control the drive motor to drive the vehicle in electric mode, and carry out energy recovery while coasting or braking. Motor controller (MCU) is mainly designed for the drive control of the passenger car, and to output the three-phase AC power required by the drive motor and monitor the functions and faults of the main subsystems. In addition to its own fault diagnosis, MCU works with the vehicle controller (VCU) for the purpose of safety processing of vehicle faults, to ensure vehicle safety.

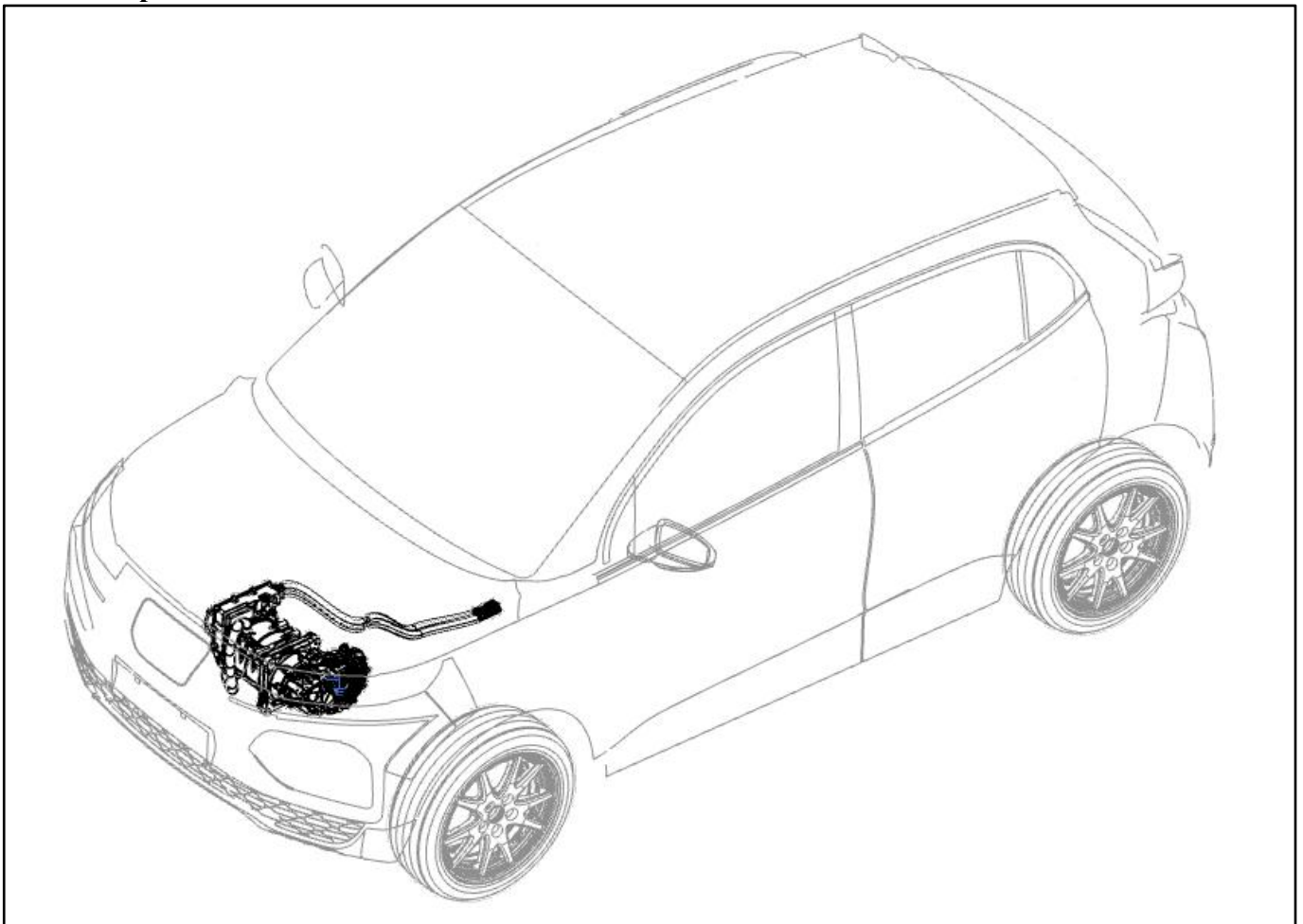
Drive motor: The motor controller converts the DC power output from the power battery pack into the three-phase AC power required by the drive motor assembly, and after the three-phase AC power is fed to the drive motor winding, the coil generates a rotating magnetic field. The permanent magnet inside the rotor, under the action of the rotating magnetic field,

produces a rotating torque synchronized with the rotating magnetic field, to drive the rotor shaft. The torque magnitude produced is approximately proportional to the current value, and the speed of rotation is related to the frequency of the three-phase current. In order to ensure accurate and efficient operation of the drive motor, it is necessary to determine the position (electrical angle) of the rotor, so a resolver is added to the drive motor to continuously detect the angle of rotor rotation.

Reducer: Inside the reducer are two gear pairs and a differential, and the reducer amplifies the torque output from the drive motor by a certain multiple (speed ratio) and reduces the speed of the motor by a certain coefficient. Finally, the reducer drives the vehicle through the drive shaft; when the vehicle needs to make a turn, the differential adjusts the speeds of the left and right wheels at the right time in order to ensure vehicle stability.

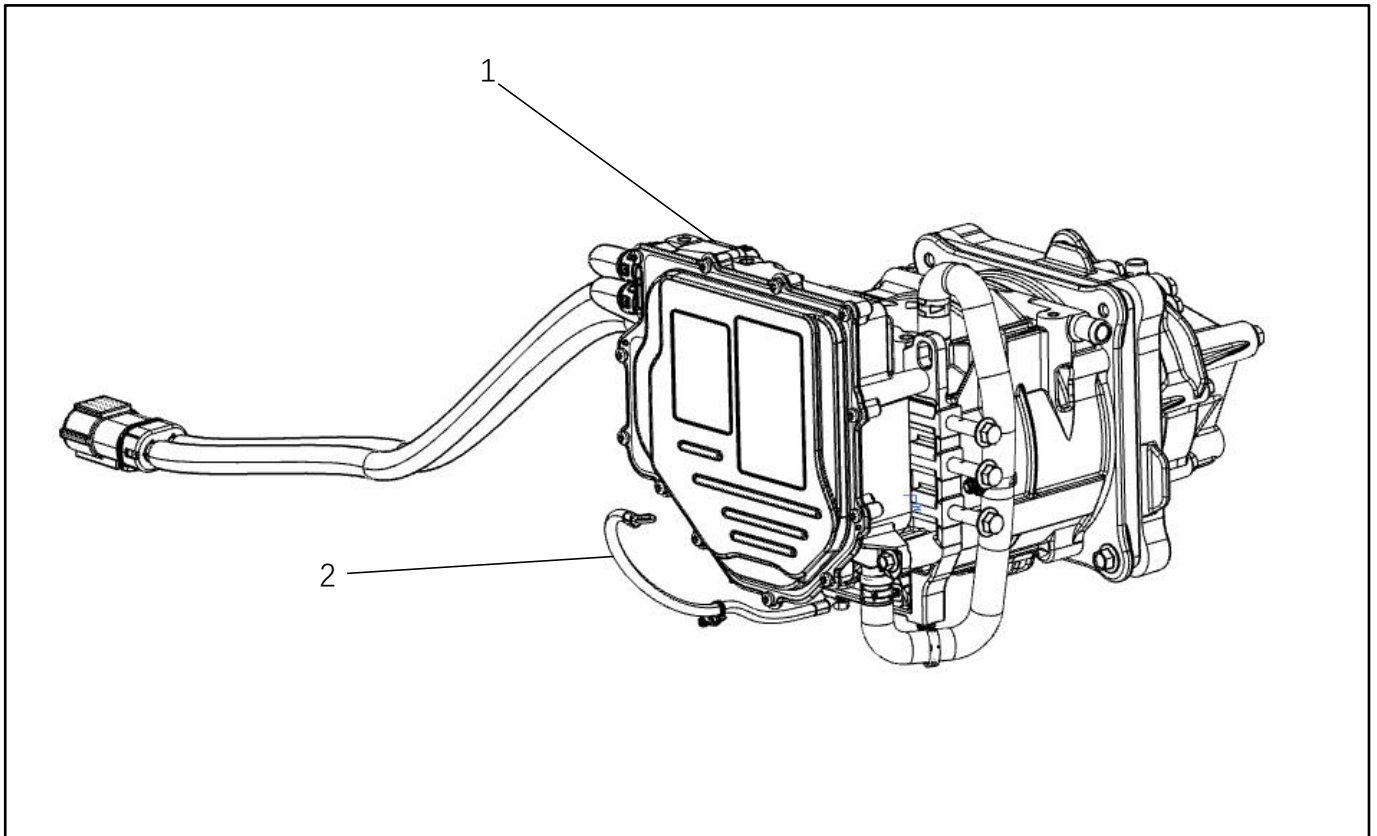
2.2.3 Component location

2.2.3.1 Component location



2.2.4 Breakdown drawing

2.2.4.1 Breakdown drawing

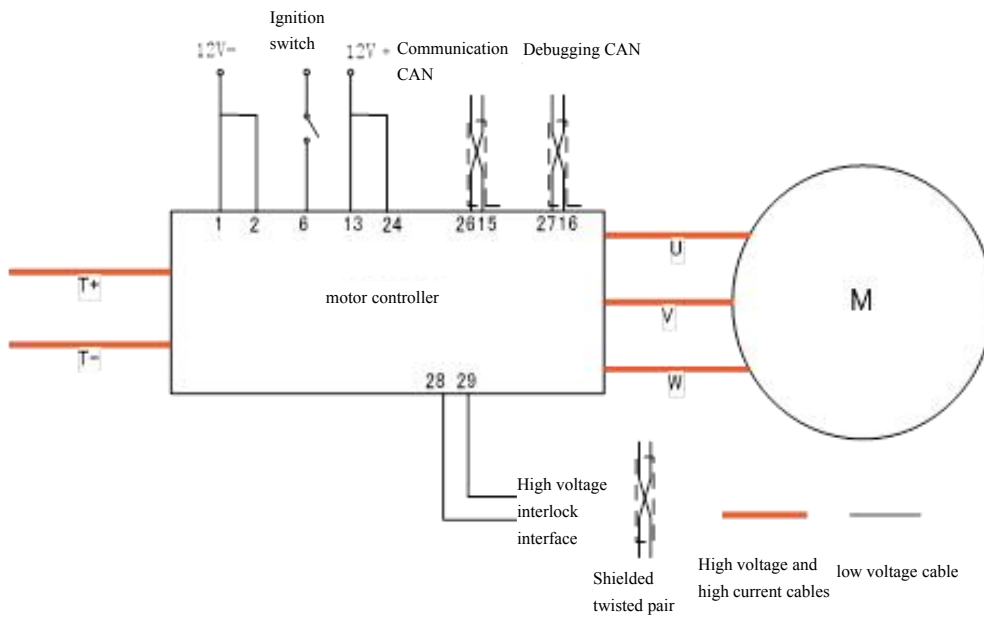


1. EDS assembly

2. D-EDS assembly ground wire

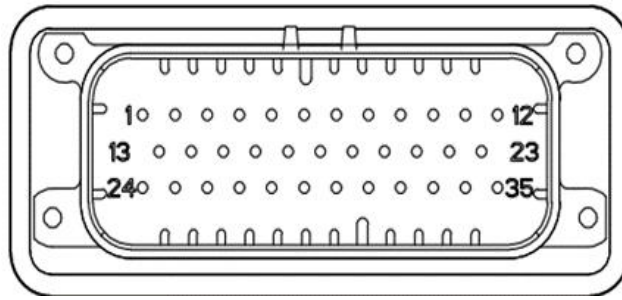
2.2.5 Electrical block diagram

2.2.5.1 Electrical diagram



2.2.5.2 Controller terminal list

Controller terminal list



Pin number (electrical appliance end)	Function definition	Operating voltage (V) Operating current (A)	Remarks
1	K131 battery power supply-_1	6-18V 1-3A	/
2	K131 battery power supply-_2	6-18V 1-3A	/
6	K115 ignition switch	6-18V 1-3A	/
13	K130 battery power supply+	6-18V 1-3A	/
15	Vehicle CAN-	0.8-5.5V 0.005-0.1A	/
16	Debugging CAN-	0.8-5.5V 0.005-0.1A	/
24	K130 battery power supply+	6-18V 1-3A	/
26	Vehicle CAN+	0.8-5.5V 0.005-0.1A	/
27	Debugging CAN+	0.8-5.5V 0.005-0.1A	/
28	High-voltage interlock+	/	/
29	High-voltage interlock -	/	/

2.2.5.3 Diagnostic information and steps

Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

Fault code

S.N.	DTC display	DTC meaning	Possible cause	Maintenance suggestion
------	-------------	-------------	----------------	------------------------

	code			
1	P110006	Current control fault	1. Peripheral interference 2. Motor controller fault	1. Check the installation of the motor and vehicle 2. Check if the high and low-voltage connectors are loose. 3. Replacement of EDS assembly
2	P0A4400	Motor overspeed fault	1. The motor shaft is disconnected from the vehicle 2. The vehicle travels at high speeds on steep slopes downhill 3. The vehicle tire slips	1. Check the motor shaft connection to the vehicle 2. Check the tire for slip
3	P110107	Motor blocking fault	1. The vehicle resistance is too large 2. The handbrake is not released 3. The motor controller or motor fails	1. Check the external resistance of the vehicle 2. Check whether the handbrake is released 3. Replacement of EDS assembly
4	P11102C	U-phase current sensor fault	1. Peripheral interference 2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit 3. Motor controller fault	1. Check if the high and low-voltage connectors are loose. 2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 3. Check for water stains inside the whole motor controller 4. Replacement of EDS assembly
5	P11102D	U-phase current sensor fault	1. Peripheral interference 2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit 3. Motor controller fault	1. Check if the high and low-voltage connectors are loose. 2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 3. Check for water stains inside the whole motor controller 4. Replacement of EDS assembly
6	P11102A	Zero drift fault of U-phase current sensor	1. Peripheral interference 2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit 3. Motor controller fault	1. Check if the high and low-voltage connectors are loose. 2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 3. Check for water stains inside the whole motor controller 4. Replacement of EDS assembly
7	P111128	U-phase current drift fault	1. Motor controller fault or motor fault	1. Check whether the high-voltage input connection of the motor controller is normal 2. Check whether the motor rotary transformer is normal 3. Check whether the motor three-phase line input connection is normal 4. Replacement of EDS assembly
8	P111119	U-phase software overcurrent fault	1. Motor controller fault or motor fault	1. Check whether the high-voltage input connection of the motor controller is normal 2. Check whether the motor rotary transformer is normal

				<p>3. Check whether the motor three-phase line input connection is normal</p> <p>4. Replacement of EDS assembly</p>
9	P11122C	V-phase current sensor fault	<p>1. Peripheral interference</p> <p>2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit</p> <p>3. Motor controller fault</p>	<p>1. Check if the high and low-voltage connectors are loose.</p> <p>2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>3. Check for water stains inside the whole motor controller</p> <p>4. Replacement of EDS assembly</p>
10	P11122D	V-phase current sensor fault	<p>1. Peripheral interference</p> <p>2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit</p> <p>3. Motor controller fault</p>	<p>1. Check if the high and low-voltage connectors are loose.</p> <p>2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>3. Check for water stains inside the whole motor controller</p> <p>4. Replacement of EDS assembly</p>
11	P11122A	V-phase current sensor zero drift fault	<p>1. Peripheral interference</p> <p>2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit</p> <p>3. Motor controller fault</p>	<p>1. Check if the high and low-voltage connectors are loose.</p> <p>2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>3. Check for water stains inside the whole motor controller</p> <p>4. Replacement of EDS assembly</p>
12	P111328	V-phase current drift fault	<p>1. Motor controller fault or motor fault</p>	<p>1. Check whether the high-voltage input connection of the motor controller is normal</p> <p>2. Check whether the motor rotary transformer is normal</p> <p>3. Check whether the motor three-phase line input connection is normal</p> <p>4. Replacement of EDS assembly</p>
13	P111319	V-phase software overcurrent fault	<p>1. Motor controller fault or motor fault</p>	<p>1. Check whether the high-voltage input connection of the motor controller is normal</p> <p>2. Check whether the motor rotary transformer is normal</p> <p>3. Check whether the motor three-phase line input connection is normal</p> <p>4. Replacement of EDS assembly</p>
14	P11142C	W-phase current sensor fault	<p>1. Peripheral interference</p> <p>2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit</p> <p>3. Motor controller fault</p>	<p>1. Check if the high and low-voltage connectors are loose.</p> <p>2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>3. Check for water stains inside the whole motor controller</p> <p>4. Replacement of EDS assembly</p>
15	P11142D	W-phase current	<p>1. Peripheral interference</p>	<p>1. Check if the high and low-</p>

		sensor fault	<ol style="list-style-type: none"> 2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit 3. Motor controller fault 	<ol style="list-style-type: none"> 1. voltage connectors are loose. 2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 3. Check for water stains inside the whole motor controller 4. Replacement of EDS assembly
16	P11142A	W-phase current sensor zero drift fault	<ol style="list-style-type: none"> 1. Peripheral interference 2. The motor controller is of poor airtightness inside and has water stains, affecting the sensor circuit 3. Motor controller fault 	<ol style="list-style-type: none"> 1. Check if the high and low-voltage connectors are loose. 2. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 3. Check for water stains inside the whole motor controller 4. Replacement of EDS assembly
17	P111528	W-phase current drift fault	<ol style="list-style-type: none"> 1. Motor controller fault or motor fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage input connection of the motor controller is normal 2. Check whether the motor rotary transformer is normal 3. Check whether the motor three-phase line input connection is normal 4. Replacement of EDS assembly
18	P111519	W-phase software overcurrent fault	<ol style="list-style-type: none"> 1. Motor controller fault or motor fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage input connection of the motor controller is normal 2. Check whether the motor rotary transformer is normal 3. Check whether the motor three-phase line input connection is normal 4. Replacement of EDS assembly
19	P111619	Three-phase hardware overcurrent faults	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the current comparison circuit 2. Motor controller fault or motor fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage input connection of the motor controller is normal 2. Check whether the motor rotary transformer is normal 3. Check whether the motor three-phase line input connection is normal 4. Check for water stains inside the whole motor controller 5. Replacement of EDS assembly
20	P11201C	Bus voltage acquisition fault	<ol style="list-style-type: none"> 1. Motor controller fault 	<ol style="list-style-type: none"> 1. Replacement of EDS assembly
21	P112117	Bus software overvoltage fault	<ol style="list-style-type: none"> 1. Power battery voltage is too high 2. Accidental disconnection of high-voltage relay 3. Motor controller fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage battery pack voltage is too high 2. Check whether the high-voltage relay is accidentally disconnected 3. Replacement of EDS assembly
22	P112116	Bus software undervoltage fault	<ol style="list-style-type: none"> 1. Relay is not closed 2. Power battery voltage is too low 3. Motor controller fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage relay is closed 2. Check whether the high-voltage battery pack voltage is too

				low 3. Replacement of EDS assembly
23	P112217	Bus hardware overvoltage fault	<ol style="list-style-type: none"> 1. Battery pack voltage is too high 2. The high-voltage relay is disconnected during energy recovery 3. The motor controller is of poor airtightness inside and has water stains, affecting the voltage comparison circuit 4. Motor controller fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage battery pack voltage is too high 2. Check whether the high-voltage relay is accidentally disconnected 3. Check for water stains inside the whole motor controller 4. Replacement of EDS assembly
24	P11302C	Motor stator temperature sensor fault	<ol style="list-style-type: none"> 1. Stator temperature sensor is short-circuited to the shield layer 2. Stator temperature sensor circuit is abnormal 	<ol style="list-style-type: none"> 1. Check motor rotary transformer wire stator temperature sensor wiring 2. Check stator temperature sensor resistance value 3. Replacement of EDS assembly
25	P11302D	Motor stator temperature sensor fault	<ol style="list-style-type: none"> 1. Stator temperature sensor is disconnected or the wiring harness is loose 2. Stator temperature sensor circuit is abnormal 	<ol style="list-style-type: none"> 1. Check motor rotary transformer wire stator temperature sensor wiring 2. Check stator temperature sensor resistance value 3. Replacement of EDS assembly
26	P11314B	Motor stator overtemperature fault	<ol style="list-style-type: none"> 1. Cooling system fault 2. Motor fault 	<ol style="list-style-type: none"> 1. Check for water pump and fan fault 2. Replacement of EDS assembly
27	P11322C	Fault of electronic water-cooling plate temperature sensor	<ol style="list-style-type: none"> 1. Motor controller fault 	<ol style="list-style-type: none"> 1. Replacement of EDS assembly
28	P11322D	Fault of electronic water-cooling plate temperature sensor	<ol style="list-style-type: none"> 1. Motor controller fault 	<ol style="list-style-type: none"> 1. Replacement of EDS assembly
29	P11334B	Electronically controlled water-cooled plate overtemperature fault	<ol style="list-style-type: none"> 1. Cooling system fault 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Check for water pump and fan fault 2. Replacement of EDS assembly
30	P114022	Rotary transformer excitation signal amplitude too high fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Replacement of EDS assembly
31	P114021	Rotary transformer excitation signal amplitude too low fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Replacement of EDS assembly
32	P114028	Rotary transformer excitation signal amplitude offset too high fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Replacement of EDS assembly
33	P114027	Rotary transformer excitation signal amplitude jitter too high fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Replacement of EDS assembly
34	P114011	Rotary transformer	<ol style="list-style-type: none"> 1. The motor controller is of 	<ol style="list-style-type: none"> 2. Turn off the key for more than

		excitation signal short circuit to ground fault	poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault	2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
35	P114012	Rotary transformer excitation signal short circuit to power supply fault	1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
36	P114013	Rotary transformer excitation signal mutual short circuit fault	1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
37	P114010	Abnormal rotary transformer excitation signal voltage fault	1. The motor controller is of poor airtightness inside and has water stains, affecting the excitation circuit 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
38	P114122	Sinusoidal carrier signal amplitude too high error	1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault	1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
39	P114121	Sinusoidal carrier signal amplitude too low error	1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault	1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
40	P114128	Sinusoidal carrier signal amplitude offset too high fault	1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault	1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly

			5. Motor fault	
41	P114222	Cosine carrier signal amplitude too high fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
42	P114221	Cosine carrier signal amplitude too low fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
43	P114228	Cosine carrier signal amplitude offset too high fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
44	P114321	Sinusoidal or cosine carrier signal amplitude too low fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
45	P114322	Sinusoidal or cosine carrier signal amplitude too high fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Check whether the rotary transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
46	P11432B	Excessive difference in the ratio of the sinusoidal or cosine	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the 	<ol style="list-style-type: none"> 1. Check for water stains inside the whole motor controller 2. Check whether the rotary

		carrier signal fault	carrier return buffer circuit 2. The rotary transformer connector is loose 3. The rotary transformer wiring harness is in bad contact 4. Motor controller fault 5. Motor fault	transformer connector is connected too tightly 3. Check whether the rotary transformer wiring harness is abnormal 4. Replacement of EDS assembly
47	P1144DD	Phase-locked loop signal loss fault	1. The rotary transformer connector is loose 2. The rotary transformer wiring harness is in bad contact 3. Motor controller fault 4. Motor fault	1. Check whether the rotary transformer connector is connected too tightly 2. Check whether the rotary transformer wiring harness is abnormal 3. Replacement of EDS assembly
48	P1144DE	Rotary transformer speed change too high fault	1. The rotary transformer connector is loose 2. The rotary transformer wiring harness is in bad contact 3. Motor controller fault 4. Motor fault	1. Check whether the rotary transformer connector is connected too tightly 2. Check whether the rotary transformer wiring harness is abnormal 3. Replacement of EDS assembly
49	P056300	Storage battery overvoltage fault	1. The storage battery voltage is too high or too low 2. DCDC fault	1. Check the storage battery voltage 2. Check DCDC
50	P117216	Battery undervoltage alarm	1. The storage battery voltage is too high or too low 2. DCDC fault	1. Check the storage battery voltage 2. Check DCDC
51	P056200	Battery undervoltage fault	1. The storage battery voltage is too low 2. DCDC fault	1. Check the storage battery voltage 2. Check DCDC
52	P117317	Driver power supply operating voltage overvoltage fault	1. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
53	P117316	Driver power supply operating voltage undervoltage fault	1. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
54	P003300	Vehicle CAN offline fault	1. The vehicle CAN high is short circuited to ground 2. Vehicle CAN is low short-circuited to power supply 3. Vehicle CAN is high and CAN is low short-circuited 4. Vehicle CAN load is too high 5. Vehicle CAN chip is incompatible 6. Vehicle communication terminal resistance is open-circuited 7. The vehicle CAN low-voltage wiring harness layout is poor 8. There is vehicle EMC interference	1. Check the CAN level of the vehicle 2. Check the CAN communication load factor of the vehicle 3. Check that the CAN transceiver chip meets the design requirements 4. Check terminal resistance 5. Check the vehicle CAN low-voltage wiring harness for smoothness 6. Troubleshoot the vehicle CAN controllers one by one 7. Replacement of EDS assembly

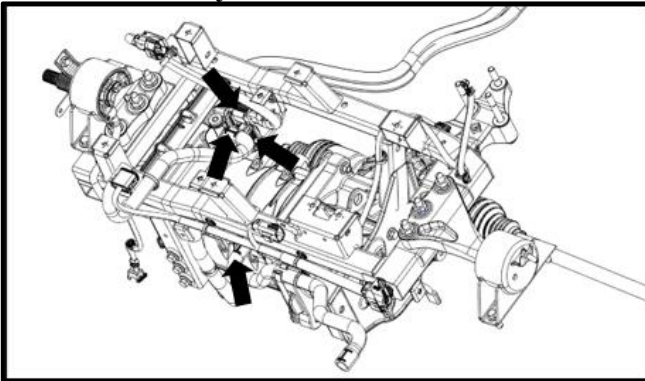
55	P118356	Trap fault	1. VPU controller fails	1. Replacement of EDS assembly
56	P110404	The system fails upon the power-up initialization self-test	1. Poor airtightness inside the motor controller with water stains affects the power-up initialization test 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
57	P116210	IGBT upper half-bridge fault	1. Poor airtightness inside the motor controller with water stains affects the drive circuit or IGBT circuits 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
58	P116310	IGBT lower half-bridge fault	1. Poor airtightness inside the motor controller with water stains affects the drive circuit or IGBT circuits 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
59	P116500	Comprehensive hardware fault	1. Poor airtightness inside the motor controller with water stains affects the associated hardware circuits 2. Motor controller fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
60	P1171C0	Parity check fault in TLF35584	1. VPU fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
61	P1171C1	uC LDO ground short fault of TLF35584	1. VPU fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
62	P1171C2	uC LDO overvoltage fault of TLF35584	1. VPU fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
63	P1171C3	uC LDO undervoltage fault of TLF35584	1. VPU fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
64	P1171C4	Reference voltage short circuit to ground fault of TLF35584	1. VPU fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
65	P1171C5	Reference overvoltage fault of TLF35584	1. VPU fault	1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly

66	P1171C6	Reference undervoltage fault of TLF35584	1. VPU fault	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
67	P1170DA	NABE fault	<ol style="list-style-type: none"> 1. Poor airtightness inside the motor controller with water stains affects the main power supply circuits 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
68	P118002	MCU QSPI1 fault	1. VPU fault	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
69	P118102	MCU QSPI1 fault	1. VPU fault	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Replacement of EDS assembly
70	P116010	Driver chip fault	<ol style="list-style-type: none"> 1. Poor airtightness inside the motor controller with water stains affects the drive circuits 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
71	P116610	VCPLD monitoring of driver chip fault	<ol style="list-style-type: none"> 1. Poor airtightness inside the motor controller with water stains affects the drive circuits 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
72	P116710	VCPLD monitoring of upper bridge IGBT fault	<ol style="list-style-type: none"> 1. Poor airtightness inside the motor controller with water stains affects the drive circuit or IGBT circuits 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
73	P116810	VCPLD monitoring of lower bridge IGBT fault	<ol style="list-style-type: none"> 1. Poor airtightness inside the motor controller with water stains affects the drive circuit or IGBT circuits 2. Motor controller fault 	<ol style="list-style-type: none"> 1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not 2. Check for water stains inside the whole motor controller 3. Replacement of EDS assembly
74	P111819	VCPLD monitoring of hardware overcurrent fault	<ol style="list-style-type: none"> 1. The motor controller is of poor airtightness inside and has water stains, affecting the current comparison circuit 2. Motor controller fault or motor fault 	<ol style="list-style-type: none"> 1. Check whether the high-voltage input connection of the motor controller is normal 2. Check whether the motor rotary transformer is normal 3. Check whether the motor three-phase line input connection is normal 4. Turn off the key for more than

				<p>2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>5. Check for water stains inside the whole motor controller</p> <p>6. Replacement of EDS assembly</p>
75	P112317	VCPLD monitoring of hardware overvoltage fault	<p>1. Battery pack voltage is too high</p> <p>2. The high-voltage relay is disconnected during energy recovery</p> <p>3. The motor controller is of poor airtightness inside and has water stains, affecting the voltage comparison circuit</p> <p>4. Motor controller fault</p>	<p>1. Check whether the high-voltage battery pack voltage is too high</p> <p>2. Check whether the high-voltage relay is accidentally disconnected</p> <p>3. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>4. Check for water stains inside the whole motor controller</p> <p>5. Replacement of EDS assembly</p>
76	P1174DA	VCPLD monitoring of NABE fault	<p>1. Poor airtightness inside the motor controller with water stains affects the main power supply circuits</p> <p>2. Motor controller fault</p>	<p>1. Turn off the key for more than 2 minutes and re-power up the system, and observe whether the fault recurs or not</p> <p>2. Check for water stains inside the whole motor controller</p> <p>3. Replacement of EDS assembly</p>
77	P11F687	VCU_ACU frame timeout fault	<p>1. ACU CAN bus is short-circuited</p> <p>2. ACU is not powered up</p> <p>3. ACU is not installed</p> <p>4. ACU fault</p>	<p>1. Check if ACU is installed</p> <p>2. Check ACU low-voltage power supply</p> <p>3. Check ACU CAN cable connection</p>
78	P11F683	VCU_ACU frame checksum fault	<p>1. CAN bus experiences interference</p> <p>2. ACU fault</p>	<p>1. Check CAN bus for abnormalities</p> <p>2. Check ACU control for abnormalities</p>
79	P11F787	VCU_FrontMotorContorl frame timeout fault	<p>1. FrontMotorContorl CAN bus is short-circuited</p> <p>2. FrontMotorContorl is not powered up</p> <p>3. FrontMotorContorl is not installed</p> <p>4. FrontMotorContorl fault</p>	<p>1. Check if FrontMotorContorl is installed</p> <p>2. Check FrontMotorContorl low-voltage power supply</p> <p>3. Check FrontMotorContorl CAN cable connection</p>
80	P11F783	VCU_FrontMotorContorl frame checksum fault	<p>1. CAN bus experiences interference</p> <p>2. FrontMotorContorl fault</p>	<p>1. Check CAN bus for abnormalities</p> <p>2. Check FrontMotorContorl control for abnormalities</p>
81	P11F287	VCU_PowerContorl AndStatus frame timeout fault	<p>1. BMS CAN bus is disconnected</p> <p>2. BMS is not powered up</p> <p>3. BMS is not installed</p> <p>4. BMS fault</p>	<p>1. Check if BMS is installed</p> <p>2. Check BMS low-voltage power supply</p> <p>3. Check BMS CAN cable connection</p>

2.2.6 Disassembly and installation

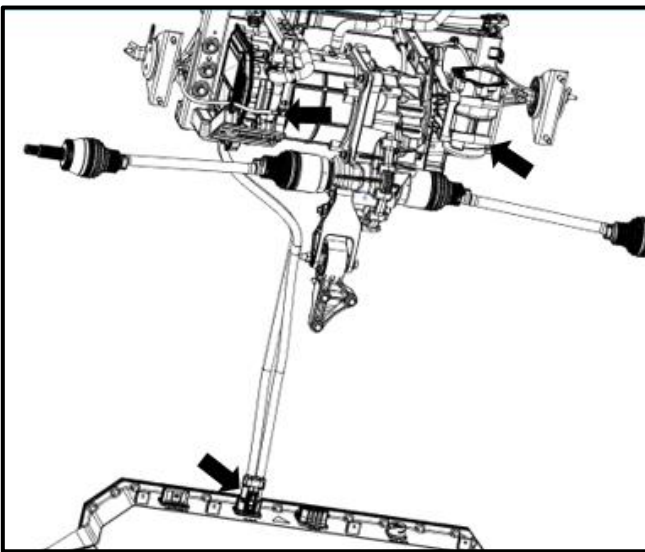
2.2.6.1 Disassembly and installation of EDS assembly



Disassembly process

1. Turn off the ignition switch and power down the vehicle.
2. Disconnect the negative cable of the storage battery.
3. Remove the EDS system inlet and outlet pipes with a pipe clamp, unplug the OBPS DC high-voltage wiring harness and MCU low-voltage connector, and drain the coolant from the EDS system.

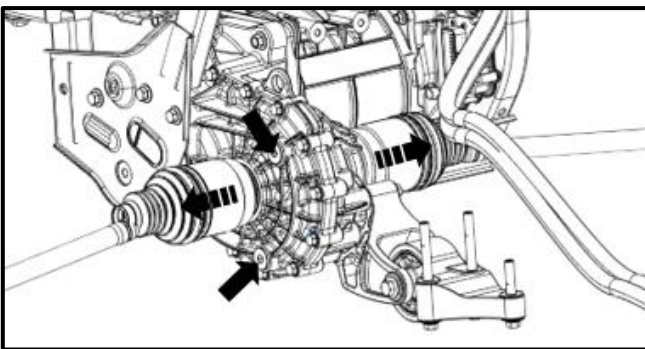
Caution: After the water pipes are disconnected, the pipe openings and the motor inlet and outlet should be completely closed to prevent debris from entering.



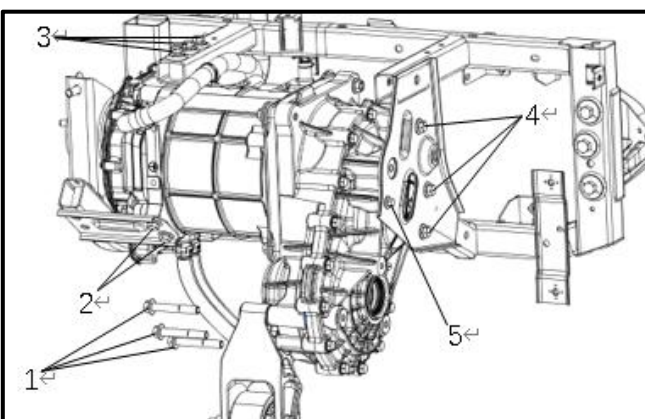
4. Lift the vehicle to a suitable position.
5. Disconnect the MCU high-voltage wiring harness from the battery pack and the ground wire fixed bolt. Please refer to 2.1.6.1 Disassembly and installation of power battery assembly discharge port plug-in.
6. Remove the air-conditioning compressor and related accessories, and remove the compressor fixed bracket. Please refer to 9.2.8.4 Disassembly and installation of compressor and 9.2.8.5 Disassembly and installation of compressor bracket.

Warning!

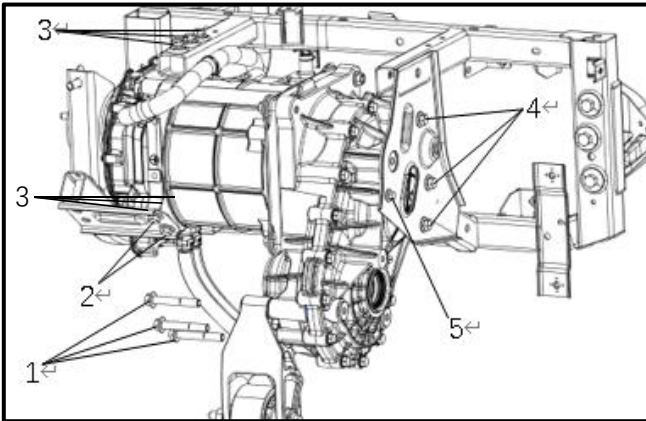
Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.



7. Drain the reducer gear oil, (after draining the oil, it is needed to clean the adsorbed metal residue on the magnetic body of the oil draining bolt), and then disassemble the left front tire, right front tire and front constant velocity drive-shaft assembly. Please refer to 4.2.7 Disassembly and installation of drive system.

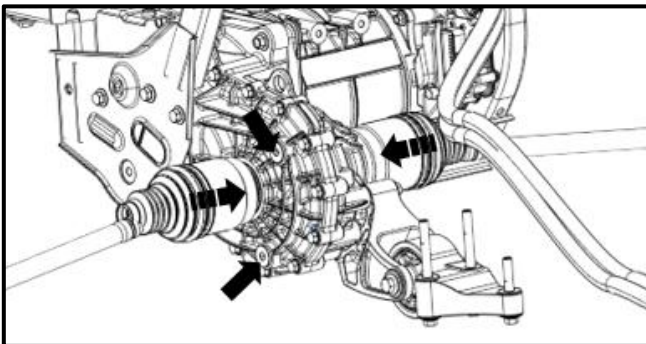


8. Push the lift trolley directly under the EDS assembly for support, remove the bolts (1-5) connecting the EDS assembly to the frame beam and suspension bracket, and then transfer the EDS assembly to the powertrain subassembly table.



Installation procedure:

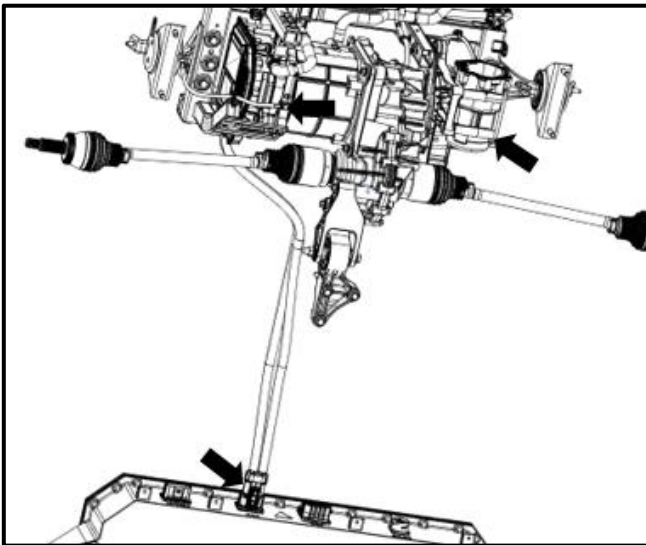
1. Push the EDS assembly under the front engine compartment frame beam of the vehicle with a lift trolley and lift it to a proper height.
2. Connect the EDS assembly to the frame beam and suspension bracket with bolts (1-5). (Bolt 1 torque: 55 ± 5 N.m, bolt 2 torque: 55 ± 5 N.m, bolt 3 torque: 55 ± 5 N.m, bolt 4 torque: 55 ± 5 N.m, bolt 5: 25 ± 3 N.m)



3. Install the left front tire, right front tire and front constant velocity drive-shaft assembly. Please refer to 4.2.7 Disassembly and installation of drive system.

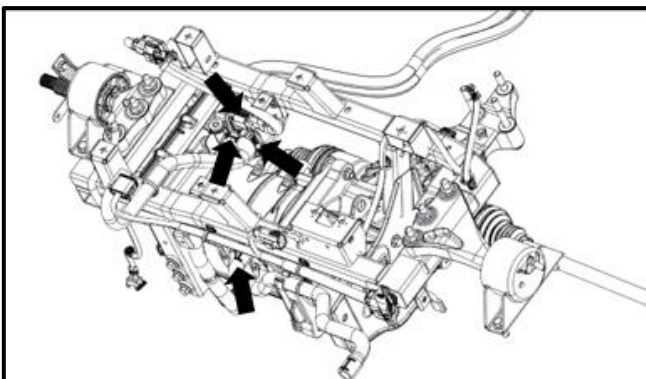
4. Fill the reducer gear oil and install and tighten the oil filling bolt (tightening torque: 30 ± 5 N.m) and oil draining bolt (tightening torque: 30 ± 5 N.m).

Caution: Check the half shaft splines for burrs, and if so, clean the burrs before installation. Check the oil seals after installation to make sure they are not damaged.



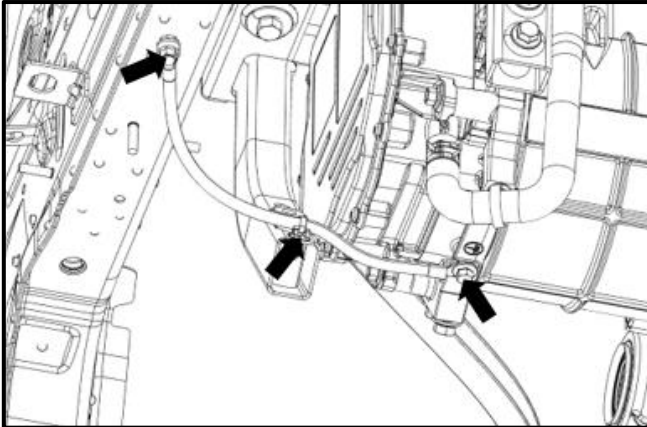
5. Install the compressor fixed bracket, air-conditioning compressor and related accessories. Please refer to 9.2.8.4 Disassembly and installation of compressor and 9.2.8.5 Disassembly and installation of compressor bracket.

6. Install the connectors connecting the MCU high-voltage wiring harness to the battery pack, and the ground wire fixed bolts (tightening torque: 25 ± 3 N.m). Please refer to 2.1.6.1 Disassembly and installation of power battery assembly discharge port plug-in.



7. Lower the vehicle from the lift to level ground.
8. Instal the EDS system inlet and outlet pipes with a pipe clamp, insert the OBPS DC high-voltage wiring harness and MCU low-voltage connector.

2.2.6.2 Disassembly and installation of D-EDS assembly ground wire



Disassembly process

1. Lift the vehicle to a suitable height.
2. Disassemble the fixed bolts securing the ground wire on the motor.
3. Disassemble the fixed fasteners securing the ground wire on the frame beam.
4. Disassemble the fixed nuts securing the ground wire on the body.

Warning!

Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.



Installation procedure:

1. Lift the vehicle to a suitable height.
2. Install the fixed bolts securing the ground wire on the motor (tightening torque: 25 ± 3 N-m).
3. Install the fixed fasteners securing the ground wire on the frame beam.
4. Install the fixed nuts securing the ground wire on the body (tightening torque: 9 ± 1 N-m).

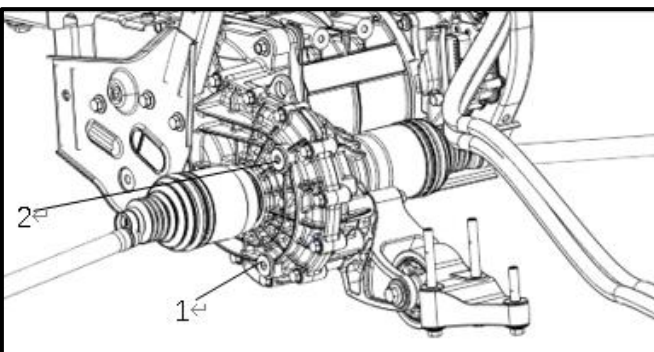
2.2.7 Maintenance and servicing

2.2.7.1 Reducer lubricant replacement

The first maintenance (replacement) of reducer gear oil should be performed after the vehicle has been used for 1 year or 5000km and should be replaced every 3 years or 60,000km in later years.

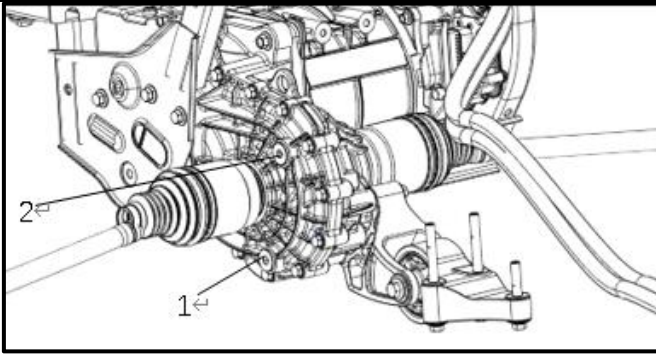
Every time the gear oil is replaced, the sealing gasket on the oil filling (draining) bolt (2pcs, inner diameter of $\phi 20$) should also be replaced. The sealing gasket should comply with the requirements of the national standard JB/T 982-1977 Combined Sealing Gasket.

During each repair or maintenance, the reducer should be checked for oil seepage (leakage) and handled properly.



Step 1: Drain the oil

Remove the oil draining bolt 1 counterclockwise, completely drain the oil and replace it with a new bolt and gasket and tighten them at torque: 30 ± 5 N-m.



Step 2: Fill the oil

Remove the oil draining bolt 2 counterclockwise, fill the oil and replace it with a new bolt and gasket and tighten them at torque: $30\pm 5\text{N}\cdot\text{m}$.

Caution: The oil filling amount is $(0.7\pm 0.05)\text{L}$.

2.3 OBPS system

2.3.1 Specifications

2.3.1.1 OBPS operating parameters

OBC basic parameters		DC/DC basic parameters	
Output power (kW)	3.3	Rated power (kW)	1.5
Input voltage (Va.c.)	85~265	Peak power (kW)	1.8
Input current (A)	≤16	Output voltage (Vd.c.)	14.2
Output voltage (Vd.c.)	200~450	Output current (A)	108 max
Output current (A)	0~10	Input voltage (Vd.c.)	200~450

2.3.1.2 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
OBPS assembly fixed bolts	M6×25	13±1

2.3.2 Working Principle

2.3.2.1 Working Principle

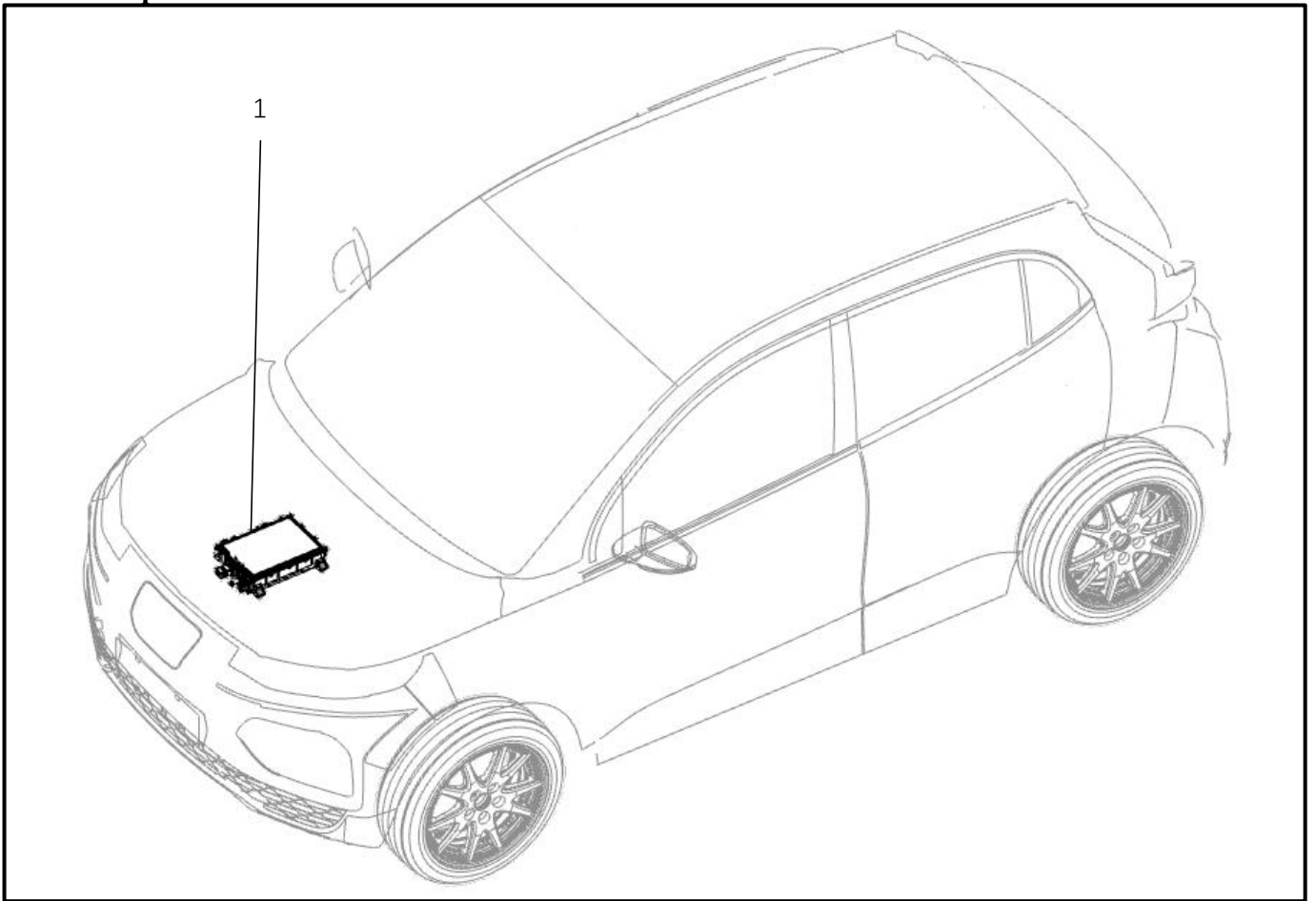
OBC and DC/DC are included in the OBPS assembly;

The OBC is an important device that connects the AC charging pile and converts AC 220V into high-voltage DC to charge the power battery;

DC/DC is a device that converts high-voltage DC power of the power battery to low-voltage DC power for the storage battery.

2.3.3 Component location

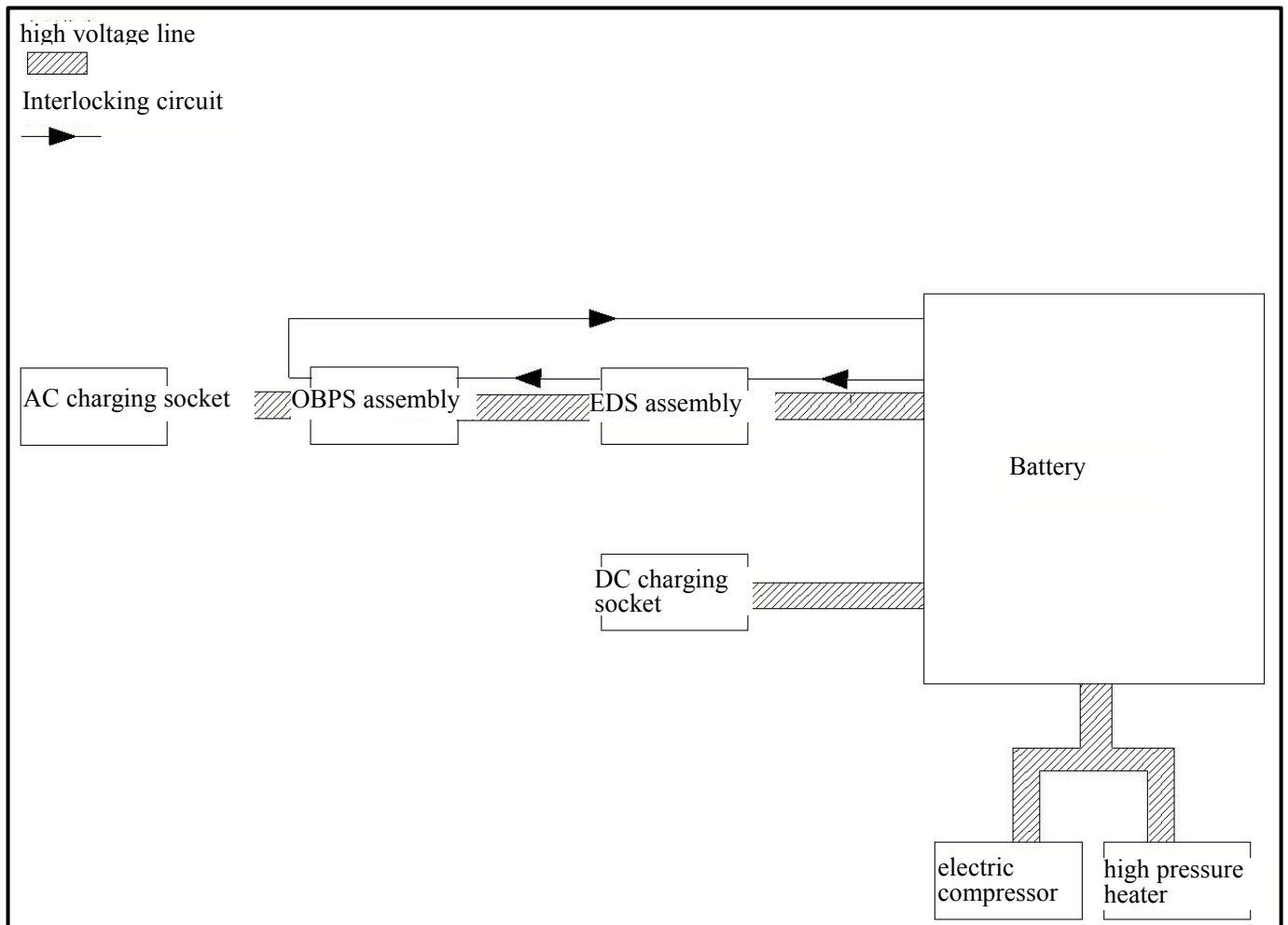
2.3.3.1 Component location



1. OBPS assembly

2.3.4 Electrical principle

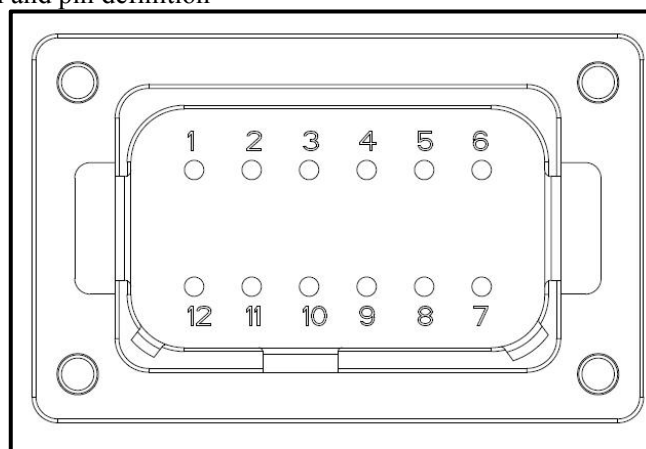
2.3.4.1 Electrical principle



2.3.5 Controller terminal list

2.3.5.1 Controller terminal list

Low-voltage connector model and pin definition



Low-voltage connector model: AT04-12PA-PM02

Pin	Function	Remarks
1	KL30 constant power input positive	Connect the 0.5mm ² unshielded cable
2	HVIL+	Connect the 0.5mm ² unshielded cable
3	CAN-H	Connect the 0.5mm ² unshielded cable

4	LOCKING MOTOR+	Connect the 0.5mm2 unshielded cable
5	LOCKING MOTOR SENSE	Connect the 0.5mm2 unshielded cable
6	/	/
7	KL15	Connect the 0.5mm2 unshielded cable
8	/	/
9	LOCKING MOTOR-	Connect the 0.5mm2 unshielded cable
10	CAN-L	Connect the 0.5mm2 unshielded cable
11	HVIL-	Connect the 0.5mm2 unshielded cable
12	KL31 constant power output negative	Connect the 0.5mm2 unshielded cable

2.3.6 Fault code description

2.3.6.1 Fault code description

Hierarchy list of OBC faults

S.N.	Fault description	Troubleshooting	Vehicle fault rating	Description
1	Charger hardware fault	Stop charging	Charge: Level 3	
2	Input overvoltage	Stop charging	Charge: Level 3	
3	Input undervoltage	Stop charging	Charge: Level 3	
4	Output overvoltage	Stop charging	Charge: Level 3	
5	Output undervoltage	Stop charging	Charge: Level 3	
6	Overtemperature shutdown	Stop charging	Charge: Level 3	
7	Can communication fault	Stop charging	Charge: Level 3	
8	Charger overcurrent fault	Stop charging	Charge: Level 3	
9	High-temperature derating	Derate the output	Charge: Level 2	

Hierarchy list of DCDC faults

S.N.	Fault description	Troubleshooting	Vehicle fault rating	Description
1	DC hardware fault	Stop charging	Charge: Level 2	
2	Input overvoltage	Stop charging	Charge: Level 1	
3	Input undervoltage	Stop charging	Charge: Level 2	
4	Output overvoltage	Stop charging	Charge: Level 1	
5	Output undervoltage	Stop charging	Charge: Level 2	
6	Communication fault	Stop charging	Charge: Level 1	
7	Overtemperature shutdown	Stop charging	Charge: Level 2	
8	Output overcurrent	Stop charging	Charge: Level 1	
9	High-temperature derating	Derate the output	Charge: Level 1	

Fault level explanation:

When the system fault level is 0, the vehicle is fault-free;

When the system fault level is 1, the produced system fault level is 1 with a warning;

When the system fault level is 2, the produced system fault level is 2, and the motor torque output limit is 50% with a limit speed of 30km/h. A power reduction indication is produced;

When the system fault level is 3, the produced system fault level is 3, and VCU outputs 0 torque command to the motor as the front motor is not enabled;

When the system fault level is 4, the produced system fault level is 4 and all relays and controllers are disconnected in accordance with the power-down process; (for a level 4 fault reported by the motor, the VCU records a DTC and prohibits the vehicle from being powered up until the DTC is cleared);

When the system fault level is 5, the produced system fault level is 5 and all relays and controllers are disconnected immediately;

For level 3 and below faults, the main negative DCDC relay will be closed and the DCDC will operate;

While charging, it is needed to stop charging and power down at high voltage when there is a level 3 or higher fault in the system.

2.3.6.2 Fault code table

No.	DTC Display	DTC Meaning	Faults Types	Description	DTC-Set Condition	Faults-Recover Condition	Possible Fault Causes	Corrective Action
1	P15004B	0x1500	0x4B	OBC level 1 overtemperature fault	Temperature exceeds 85°C	Temperature drops to 65°C	The fan fails	Check that the fan operates properly when the temperature exceeds 65°C
2	P15014B	0x1501	0x4B	OBC level 2 overtemperature fault	Temperature exceeds 100°C	Temperature drops to 75°C	The fan fails	Check that the fan operates properly when the temperature exceeds 66°C
3	P150316	0x1503	0x16	OBC input undervoltage fault	Input voltage is lower than 75V	Input voltage exceeds 80V	Grid fluctuations cause voltage dips	If it occurs by chance, it is a normal phenomenon ; otherwise, it is needed to check whether the power supply voltage of the power supply equipment is normal.

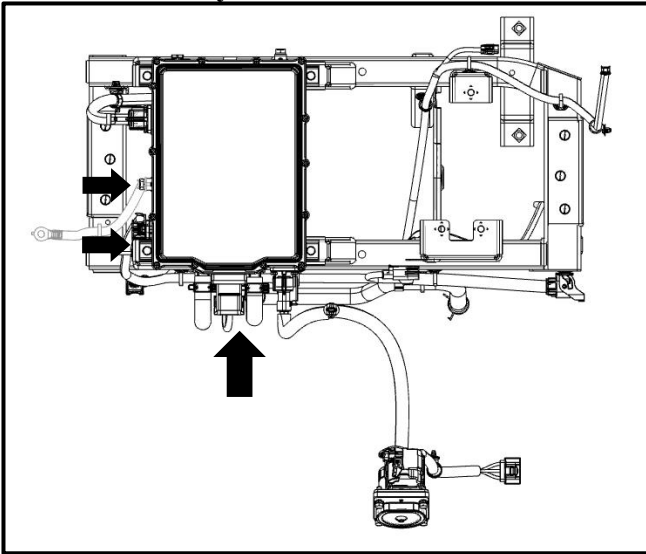
Yuehu Maintenance Manual

4	P150417	0x1504	0x17	OBC input overvoltage fault	Input voltage exceeds 280V	Input voltage is lower than 270V	Grid fluctuations cause voltage dips	If it occurs by chance, it is a normal phenomenon; otherwise, it is needed to check whether the power supply voltage of the power supply equipment is normal.
5	P150517	0x1505	0x17	OBC output overvoltage fault	Output voltage is higher than 445V	Output voltage is lower than 435V	The hardware fails	Contact the manufacturer
6	P150616	0x1506	0x16	OBC output overvoltage fault	Output voltage is lower than 185V	Selow-frequency-recovery	Battery voltage is not given	Check whether the vehicle relay is damaged and whether the BMS has opened the relay; and contact the manufacturer
7	P150719	0x1507	0x19	OBC input overcurrent fault	Input current exceeds the CC, CP limits	Input current lower than the CC, CP limits	The hardware fails	Contact the manufacturer
8	P150819	0x1508	0x19	OBC output overcurrent fault	Output current is higher than 12A	Output current is lower than 10A	The hardware fails	Contact the manufacturer
9	U011487	0xC114	0x87	Loss of communication between OBC and BMS nodes	Msg (0x390 0x393 0x3F2) messages have been lost continuously for 100ms	Resume sending 5 consecutive frames	The BMS is not working properly or the signal wire connecting the OBC to the vehicle is of poor contact.	<ol style="list-style-type: none"> 1. Check that the BMS is functioning properly 2. Check that the signal wire is in good contact
10	P14004B	0x1500	0x4B	DC level 1 overtemperature fault	Temperature exceeds 85°C	Temperature drops to 65°C	The fan fails	Check that the fan operates properly when the temperature exceeds 65°C
11	P14014B	0x1501	0x4B	DC level 2 overtempe	Temperature exceeds	Temperature drops to	The fan fails	Check that the fan

				ature fault	110°C	75°C		operates properly when the temperature exceeds 66°C
12	P140316	0x1503	0x16	DC input undervolta ge fault	Input voltage is lower than 180V	Input voltage exceeds 190V		
13	P140417	0x1504	0x17	DC input overvoltag e fault	Input voltage exceeds 445V	Input voltage is lower than 435V		
14	P140517	0x1505	0x17	DC output overvoltag e fault	Output voltage is higher than 16V	Output voltage is lower than 15V	The hardware fails	Contact the manufacture r
15	P140616	0x1506	0x16	DC output overvoltag e fault	Output voltage is lower than 9V	Self- recovery (hiccup)		
17	P140819	0x1508	0x19	DC output overcurren t fault	Output current is higher than 120A	Output current is lower than 110A	The hardware fails	Contact the manufacture r
18	U100187	0xD001	0x87	Loss of communic ation between DC and BMS nodes	Msg(0x390) messages have been lost continuously for 100ms	Resume sending 5 consecutive frames	The VCU is not working properly or the signal wire connecting the DC to the vehicle is in poor contact.	1. Check that the BMS is functioning properly 2. Check that the signal wire is in good contact
19	U005588	0xC055	0x88	BusOff 总线关闭	When the ECU detects 2 consecutive entries into BUSoff, the DTC code is recorded	When the ECU resumes sending 1 frame of the message, the fault is recovered	CAN BusOff	Check CAN bus

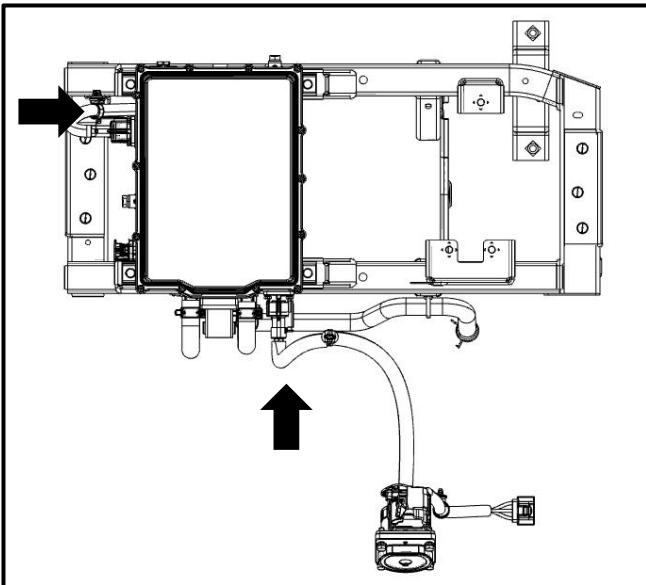
2.3.7 Disassembly and installation

2.3.7.1 Disassembly and installation of OBPS assembly

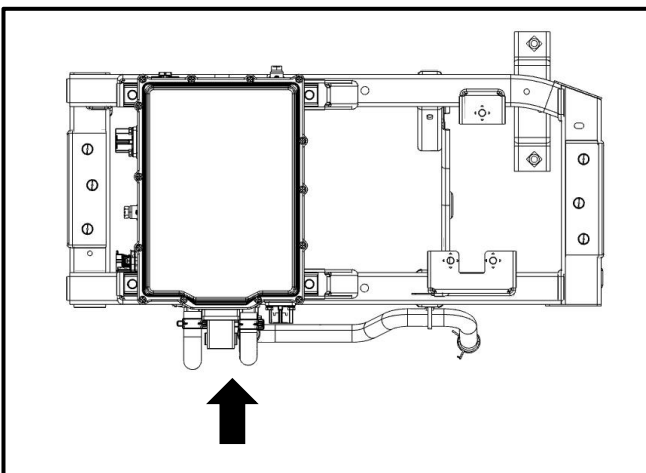


Disassembly process

1. It is to operate the starting switch to make the power mode to OFF state;
2. Open the front hood and unplug the negative harness of the 12V storage battery;
3. Wait for 5 minutes or more;
4. Unplug the OBPS assembly communication plug-in;
5. Disassemble the low-voltage output negative harness from the OBPS assembly;
6. Disassemble the low-voltage output positive connector from the OBPS assembly;



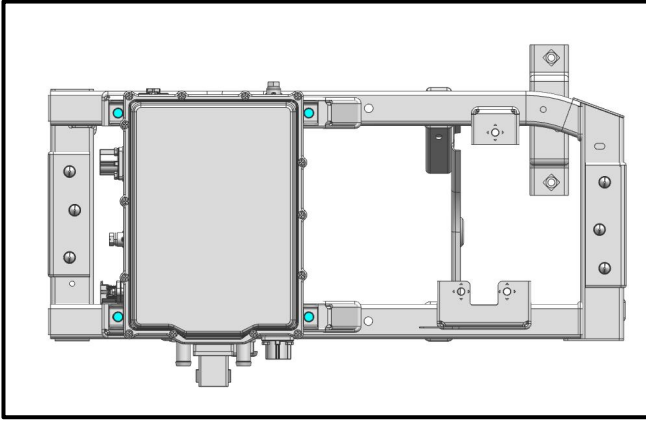
7. Disconnect the high-voltage DC output connector, and AC input connector of the OBPS assembly separately (no sequence required);



8. Remove the clamping hoops from the OBPS assembly inlet and OBPS assembly outlet pipes with a pipe clamp, and then disconnect the OBPS assembly inlet and OBPS assembly outlet pipes, respectively;

Caution

Watch out for coolant spills.



9. Use an 8# socket set to disassemble the 4 bolts securing the OBPS assembly so that the OBPS assembly can be gently removed from the vehicle.

Installation procedure:
It is opposite to the disassembly procedure.

2.3.8 Maintenance and servicing

2.3.8.1 Maintenance and servicing

It is to operate the starting switch to make the power mode to OFF state, unplug the negative harness of the 12V storage battery, wait for more than 5 minutes, wear insulated gloves and insulated clothing, disassemble the high-voltage wiring harness connector from the vehicle, use a handheld insulation resistance tester for testing. The red meter pen should contact the positive or negative terminal of the high-voltage connector, and the black meter pen should contact the ground wire on the body in white (ensure contact with the conductive parts or the negative harness of the storage battery on the body in white). Then, it is needed to press the test button to read the insulation value and the test is passed if the value is greater than $2M\Omega$.

2.4 High-voltage cable systems

2.4.1 Specifications

2.4.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
DC charging socket fixed bolt	M6×25	7±1
DC charging harness fixed bracket bolt	M6×25	9±1
DC charging harness fixed bracket nut	M6	9±1
AC charging socket fixed bolt	M6×25	7±1

2.4.2 System operating principle

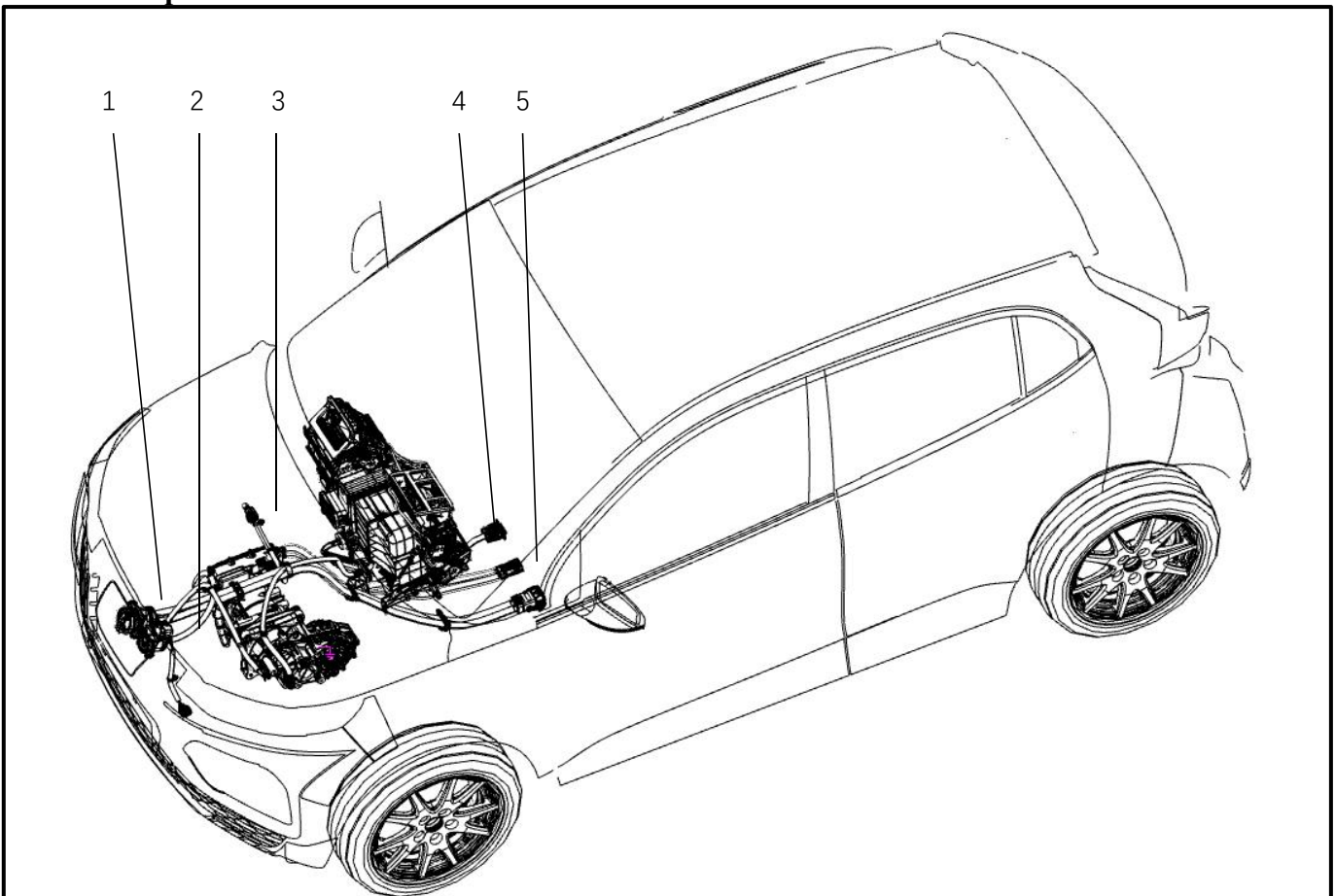
2.4.2.1 System operating principle

Pure electric vehicles have a high-voltage cable system. For the high-voltage cable system, a power battery supplies energy to the high-voltage components such as the EDS assembly, electric compressor and PTC heater. In addition, the high-voltage cable system also includes a DC fast charging system and an AC slow charging system. All of these high-voltage components are connected by a high-voltage cable system, which will deliver electrical energy.

The high-voltage cable system mainly includes the following components: DC charging socket assembly, AC charging socket assembly, OBPS harness assembly, EDS harness, and PTC/AC harness. Among others, the EDS harness accompanies the EDS assembly and the PTC/AC harness accompanies the air-conditioning box.

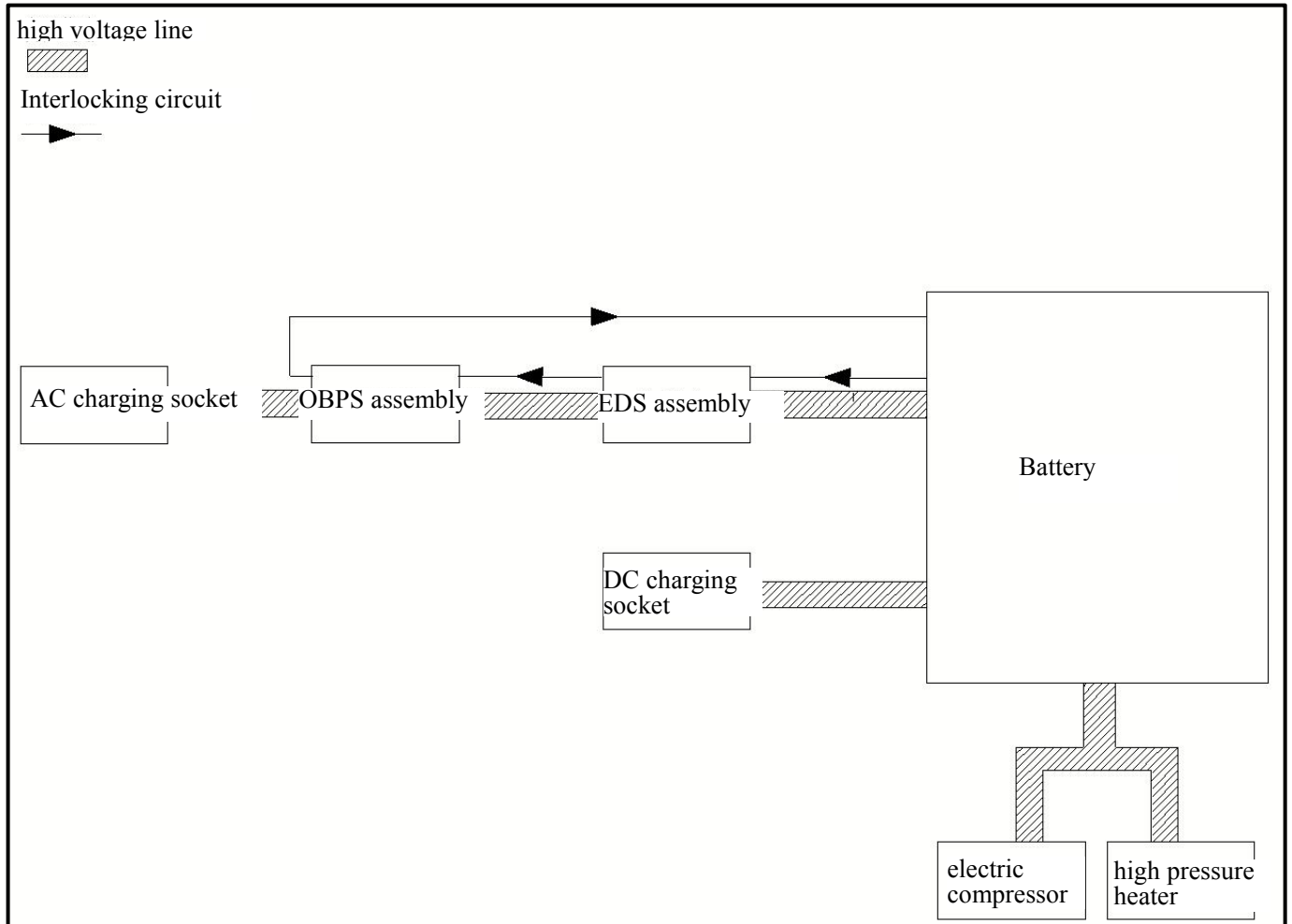
2.4.3 Component location

2.4.3.1 Component location



1. DC charging socket assembly
2. AC charging socket assembly
3. OBPS harness assembly
4. PTC/AC harness
5. EDS harness

2.4.4 Electrical block diagram



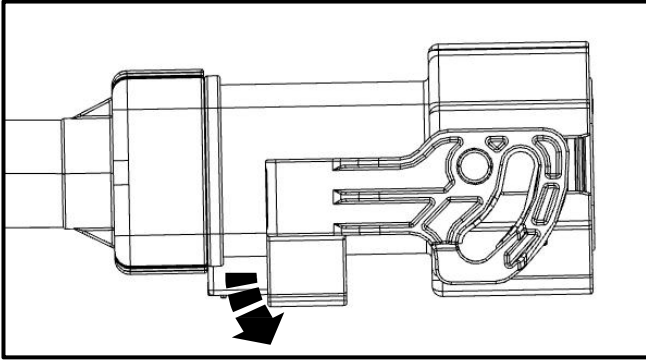
2.4.5 Disassembly and installation

Warning!

Please refer to “Warnings about disconnecting the storage battery” in “Warnings and precautions”.

2.4.5.1 Connector disassembly and installation procedure as follows

Type I high-voltage connector (with a handle)



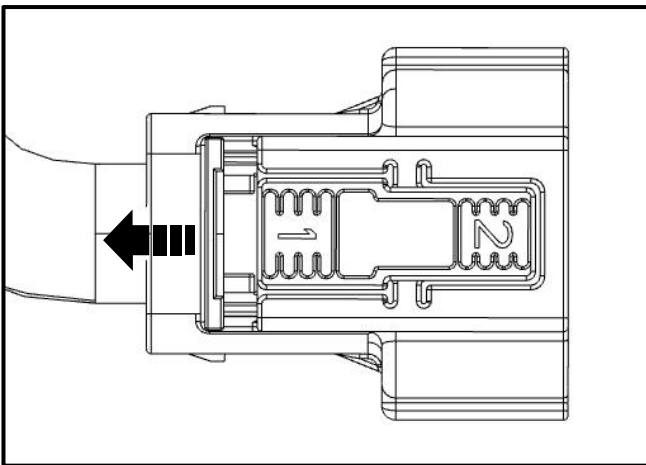
Disassembly procedure:

1. Gently pry the power handle latch by hand or with a screwdriver
2. Disengage the power handle from the lock and then slowly raise the power handle upward and the connector will slowly exit from the handle
3. When the power handle turns from a horizontal position to a vertical position, the connector is fully removed.

Installation procedure:

It is opposite to the disassembly procedure

Type II high-voltage connectors (clamping type)



Disassembly procedure:

1. Pull the secondary latch of the connector loose
2. Press the connector connecting lock card and pull the connector outward until it is pulled out

Installation procedure:

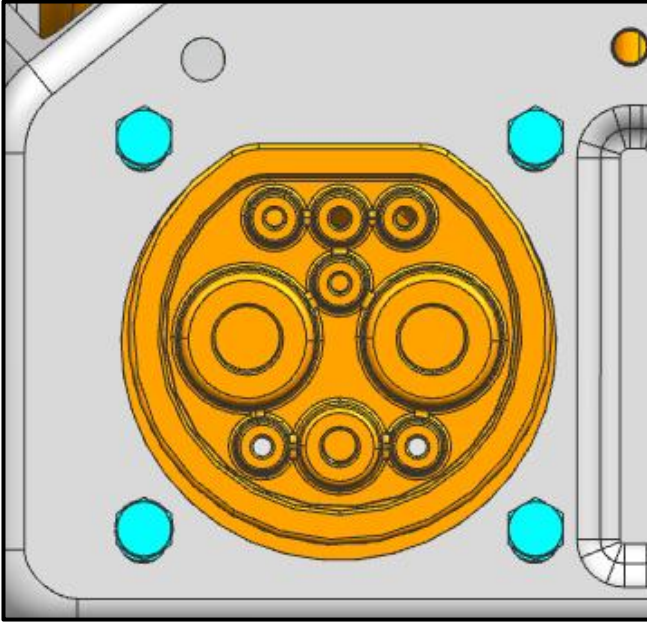
It is opposite to the disassembly procedure

Caution

When connection, pay attention to “three steps: insertion, sound and confirmation”.

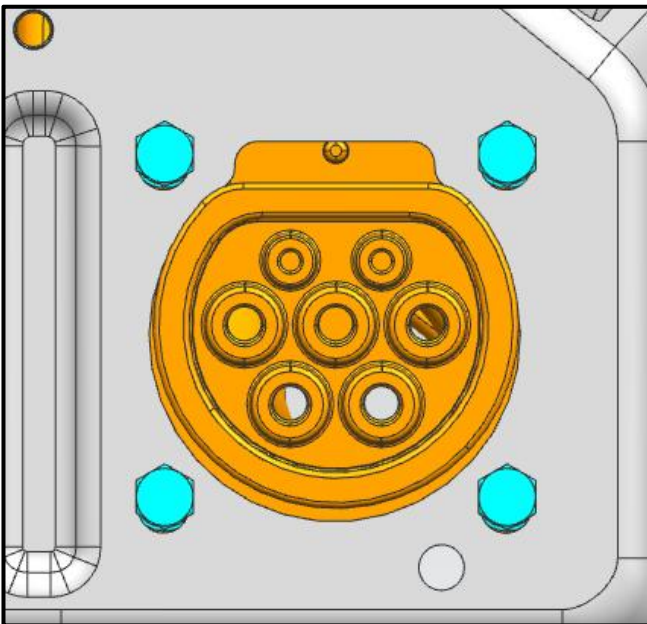
2.4.5.2 Torque requirements for high-voltage cable disassembly and installation

DC charging socket assembly

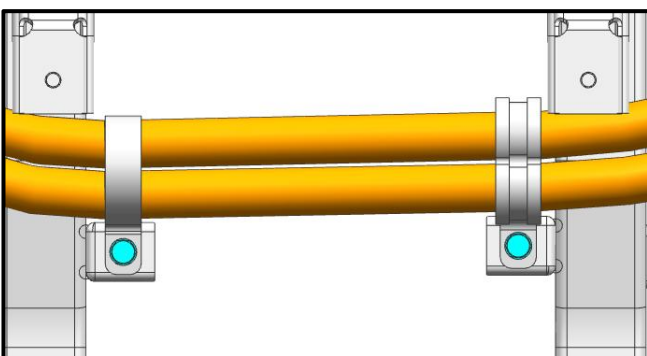


Operating torque:

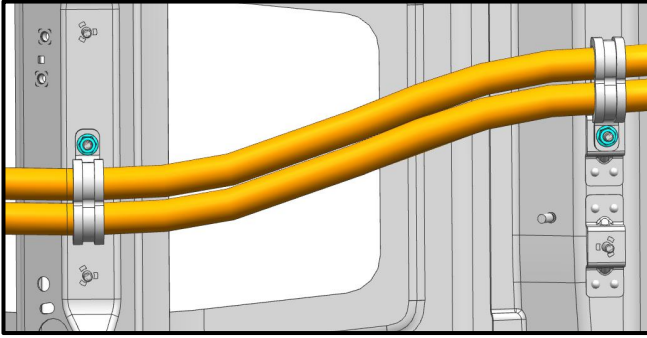
1. The tightening torque of four M6 bolts securing the DC charging socket assembly and charging port mounting bracket is $7 \pm 1\text{N}\cdot\text{m}$



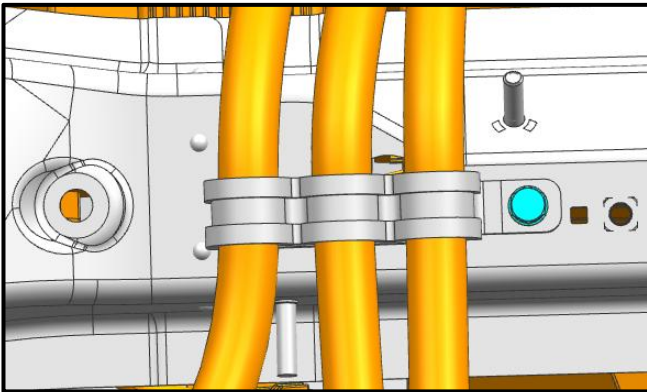
2. The tightening torque of four M6 bolts securing the AC charging socket assembly and charging port mounting bracket is $7 \pm 1\text{N}\cdot\text{m}$



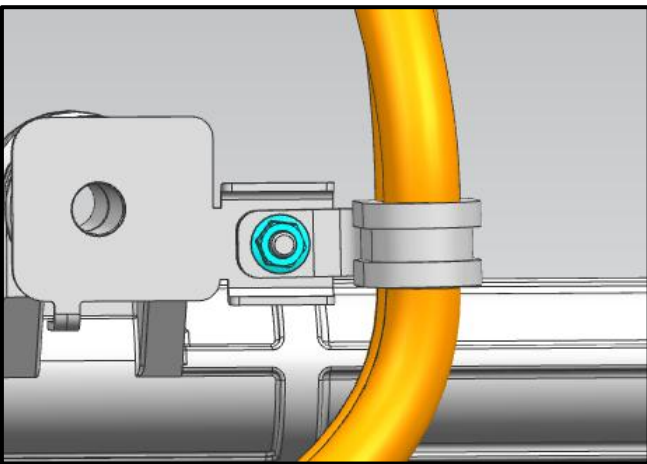
3. The tightening torque of two M6 bolts securing the DC charging socket assembly bracket and frame beam welding assembly is $9 \pm 1\text{N}\cdot\text{m}$



4. The tightening torque of two M6 nuts securing the DC charging socket assembly bracket and front engine compartment frame assembly is $9 \pm 1\text{N}\cdot\text{m}$



5. The tightening torque of one M6 bolt securing the EDS assembly harness, air-conditioning box harness bracket and front engine compartment frame assembly is $9 \pm 1\text{N}\cdot\text{m}$



6. The tightening torque of one M6 nut securing the EDS assembly harness bracket and power battery high-voltage wiring harness bracket is $9 \pm 1\text{N}\cdot\text{m}$

2.4.6 Maintenance and servicing

2.4.6.1 Steps for troubleshooting of the high-voltage cable system

1. Visual inspection

- a. Check for aftermarket additions that may affect the high-voltage cable system.
- b. Check high-voltage cable system components for visible damage or other visible faults.
- c. Check for water or foreign objects in the high-voltage cable system.
- d. Check whether the wiring harness of the high-voltage cable system is loosely connected and whether connectors are corroded.

2. Troubleshooting method

High-voltage line open-circuit fault:

- a. It is to operate the starting switch to make the power mode to OFF state;

- b. Disconnect the negative battery cable;
- c. Disconnect the OBPS harness connector (OBPS side);
- d. Measure the bus voltage with a multimeter after 5min.

Caution

Do not proceed with subsequent steps until the bus voltage is below 36V.

Use a multimeter to measure the resistance between the two ends of the harness connector of the same circuit, and the resistance value needs to be less than 1Ω. If not, the connector should be repaired or replaced.

High-voltage line insulation fault:

- a. It is to operate the starting switch to make the power mode to OFF state;
- b. Disconnect the negative battery cable;
- c. Disconnect the OBPS harness connector (OBPS side);
- d. Measure the bus voltage with a multimeter after 5min.

Caution

Do not proceed with subsequent steps until the bus voltage is below 36V.

Disassemble one end of the harness connector from the electrical appliance, and use a multimeter to measure the resistance between the connector terminal and both ends of the electrical appliance housing connecting the other end of the harness. The resistance value needs to be greater than or equal to 20MΩ. If not, the connector should be repaired or replaced.

High-voltage line mutual short-circuit fault:

- a. It is to operate the starting switch to make the power mode to OFF state;
- b. Disconnect the negative battery cable;
- c. Disconnect the OBPS harness connector (OBPS side);
- d. Measure the bus voltage with a multimeter after 5min.

Caution

Do not proceed with subsequent steps until the bus voltage is below 36V.

Remove the wiring harness from the electrical appliance, and use a multimeter to measure the resistance between the positive and negative terminals of the connector. The resistance value should be greater than or equal to 20MΩ. If not, the connector should be repaired or replaced.

2.5 Cooling system

2.5.1 Specifications

2.5.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolt securing the electronic water pump on the body	M6×25	9±1
Clamps for fixing the expansion kettle overflow pipe and fixed bolts for the body	M6×16	9±1
Clamps for fixing the expansion kettle outlet pipe and fixed bolts for the body	M6×16	9±1

2.5.1.2 Electronic fan specifications

Project	parameter	Unit
Rated voltage	13.5	V
Operating voltage range	9~16	V
Rated current (high-speed gear)	≤15	A
Rated current (low-speed gear)	≤12	A
Rated speed (high-speed gear)	2700±150	r/min
Rated speed (low-speed gear)	2250±150	r/min
Rated noise	≤72	dB (A)
Rated air volume	Static pressure: 80Pa, air volume ≥1700	m ³ /h
Remaining unbalance of assembly fan	≤15	g·mm

2.5.1.3 Electronic water pump specifications

Project	parameter	Unit
Rated voltage	12	V
Operating voltage range	8~20	V
Rated current	4.6±10%	A
Operating ambient temperature	-40~125	°C
Noise of single water pump unit	≤40	dB (A)
Speed control method	PWM signal	-

2.5.2 System operating principle

2.5.2.1 System operating principle

1. Overview

The cooling system of this vehicle is a drive motor cooling system, consisting of the drive motor (including motor controller), on-board charger (including DC/DC), water pump, expansion kettle, radiator assembly, electronic fan assembly, mounting bracket, cooling water pipe and other parts.

2. Drive motor

The high-speed rotation of the drive motor rotor will produce high temperature and heat transfer through the body. If not cooled down, the drive motor cannot work properly, so the drive motor body is equipped with a coolant channel, enabling the circulation of coolant for the purpose of heat exchange with the outside. This keeps the operating temperature of the drive motor within a certain range, prevents the drive motor from overheating, and ensures the normal operation of the vehicle.

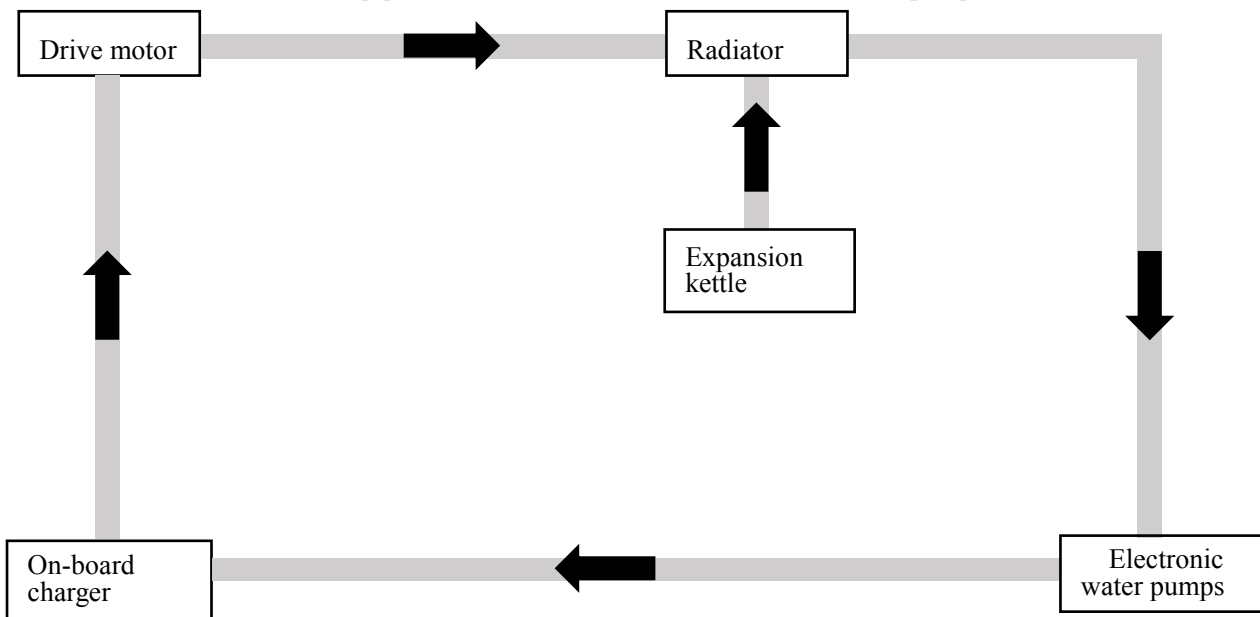
During the operation of the on-board charger, the high-voltage AC current is converted to high-voltage DC current, and

the conversion process will produce a lot of heat, so the on-board charger also has a coolant channel inside, enabling the circulation of coolant to reduce the operating temperature of the on-board charger.

The motor controller not only controls the high-voltage three-phase power supply of the drive motor, but also converts the high-voltage DC power of the power battery into low-voltage DC power to charge the lead-acid storage battery. Heat is produced in the process, so coolant circulation is needed for heat dissipation.

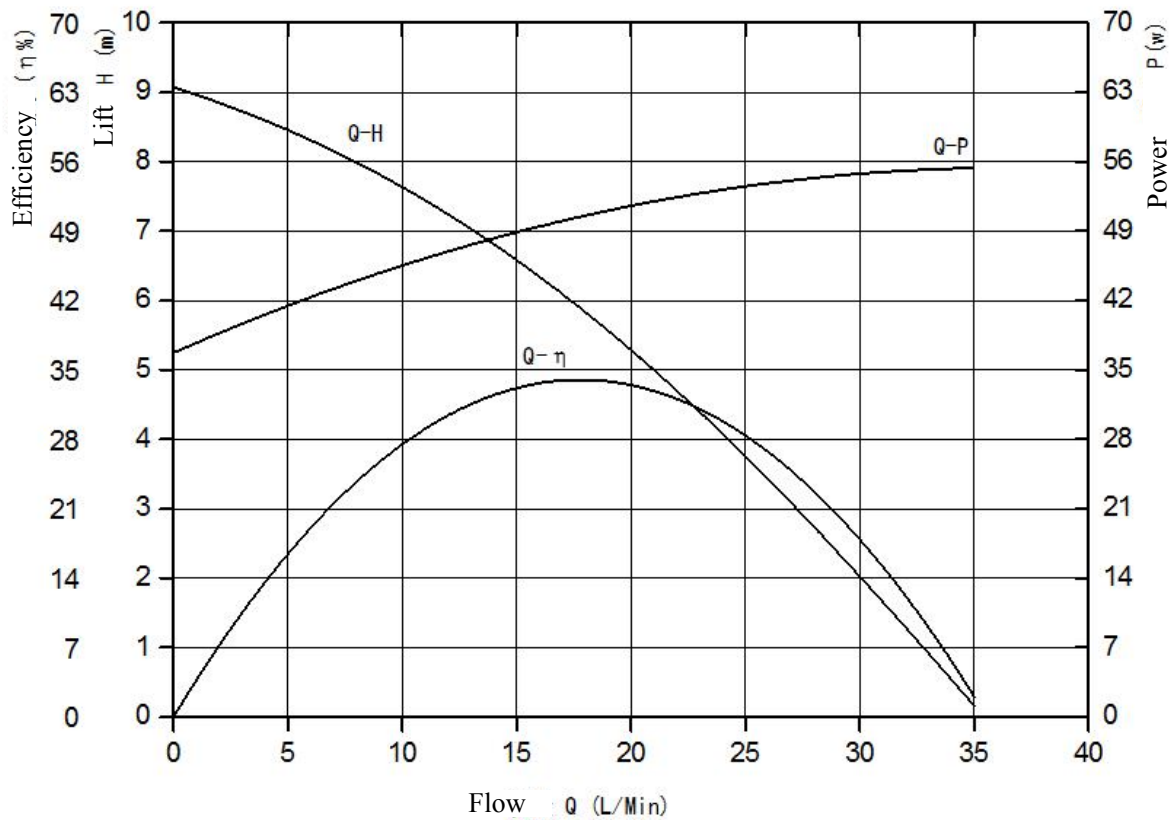
The drive motor cooling system is to dissipate heat through coolant circulation for the motor controller, on-board charger, drive motor, and the three major components through the heat exchange of the radiator with the outside for the purpose of heat dissipation.

The flow of coolant in the pipelines, driven by the electrically driven water pump, is shown below:



3. Electronic water pumps

The cooling system of this vehicle contains an electrically driven water pump, driven by a low-voltage circuit, which provides pressure for coolant circulation. The cooling water pump flow and pressure performance curve graph is shown below:



4. Expansion kettle

The expansion kettle assembly is a clear plastic kettle, similar to a washer fluid jug, and the expansion kettle assembly is connected to the radiator via a water pipe.

As the temperature of the coolant gradually increases and the coolant expands, some of the coolant flows into the expansion kettle assembly from the radiator and various parts due to the expansion, and the air trapped in the radiator and fluid passages is exhausted into the expansion kettle.

When the vehicle stops, the coolant cools and flows back automatically, and the previously discharged coolant is sucked back into the radiator. This keeps the coolant in the radiator at the right level all the time and improves cooling efficiency.

When the cooling system is cold, the coolant level should remain between the MIN (minimum) and MAX (maximum) marks on the expansion kettle assembly.

5. Electronic fan assembly

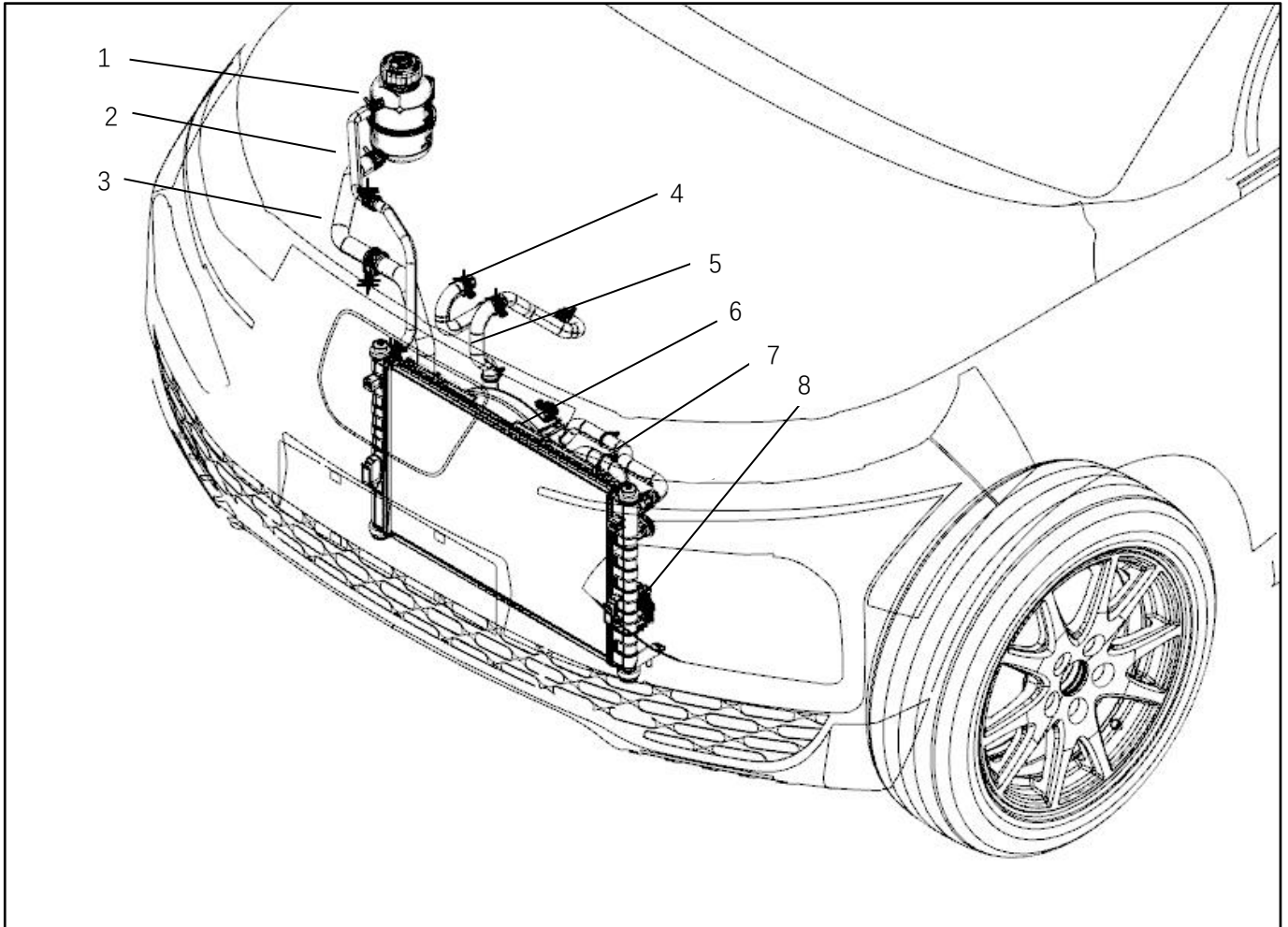
The electronic fan assembly is mounted to the rear of the front engine compartment radiator, and increases the ventilation rate of the radiator and air-conditioning condenser, thus helping to cool the vehicle faster when it runs at a low speed.

6. Coolant

The coolant used in this vehicle is G48-24 anti-freezing solution with a freezing point of -35°C. The use of ordinary clear water is prohibited.

2.5.3 Component location

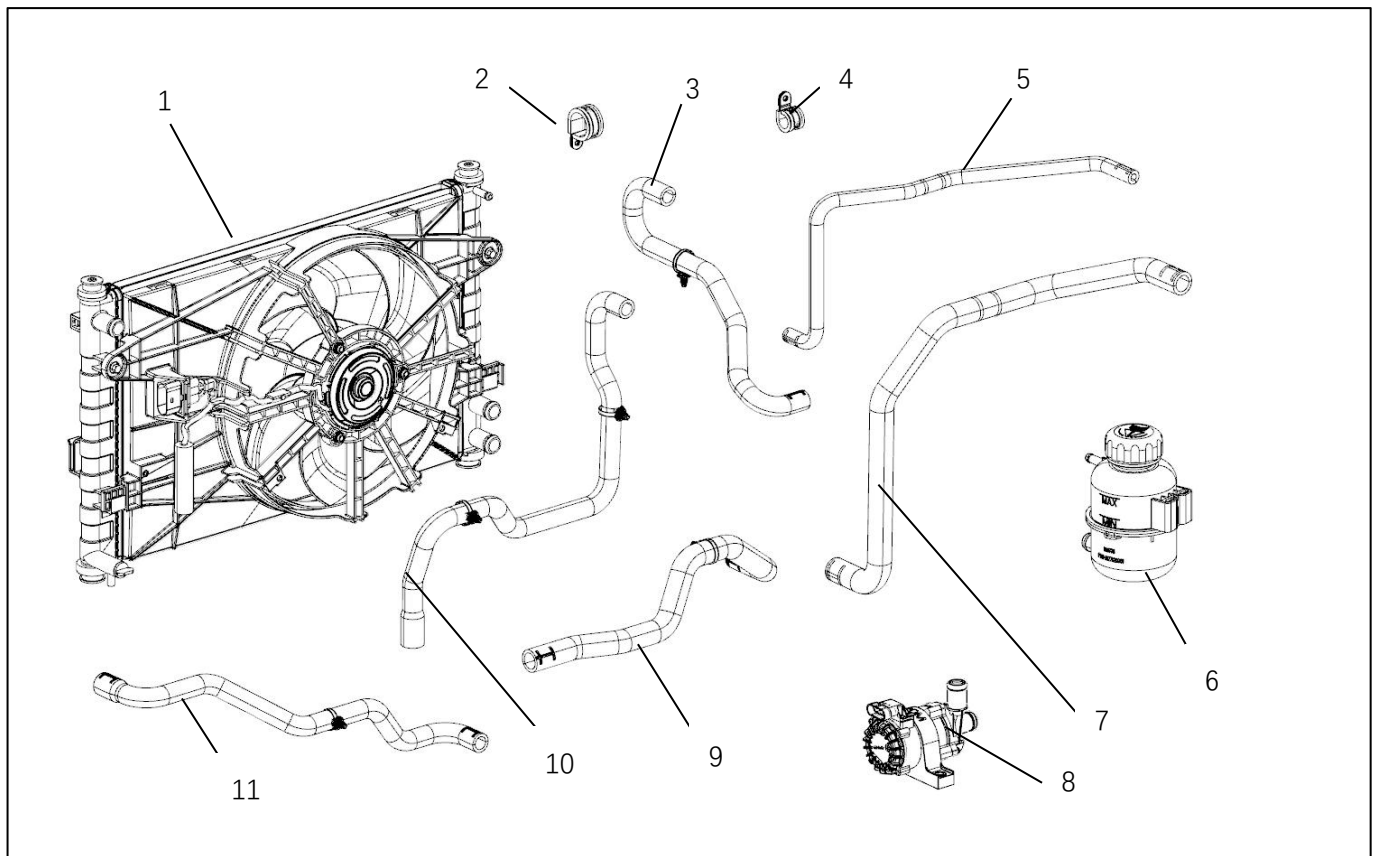
2.5.3.1 component location



- | | |
|-----------------------------------|--------------------------------|
| 1. Expansion kettle | 5. OBPS inlet pipe assembly |
| 2. Expansion kettle overflow pipe | 6. Radiator and electronic fan |
| 3. Expansion kettle outlet pipe | 7. OBC outlet pipe assembly |
| 4. OBC outlet pipe assembly | 8. Electronic water pumps |

2.5.4 Breakdown drawing

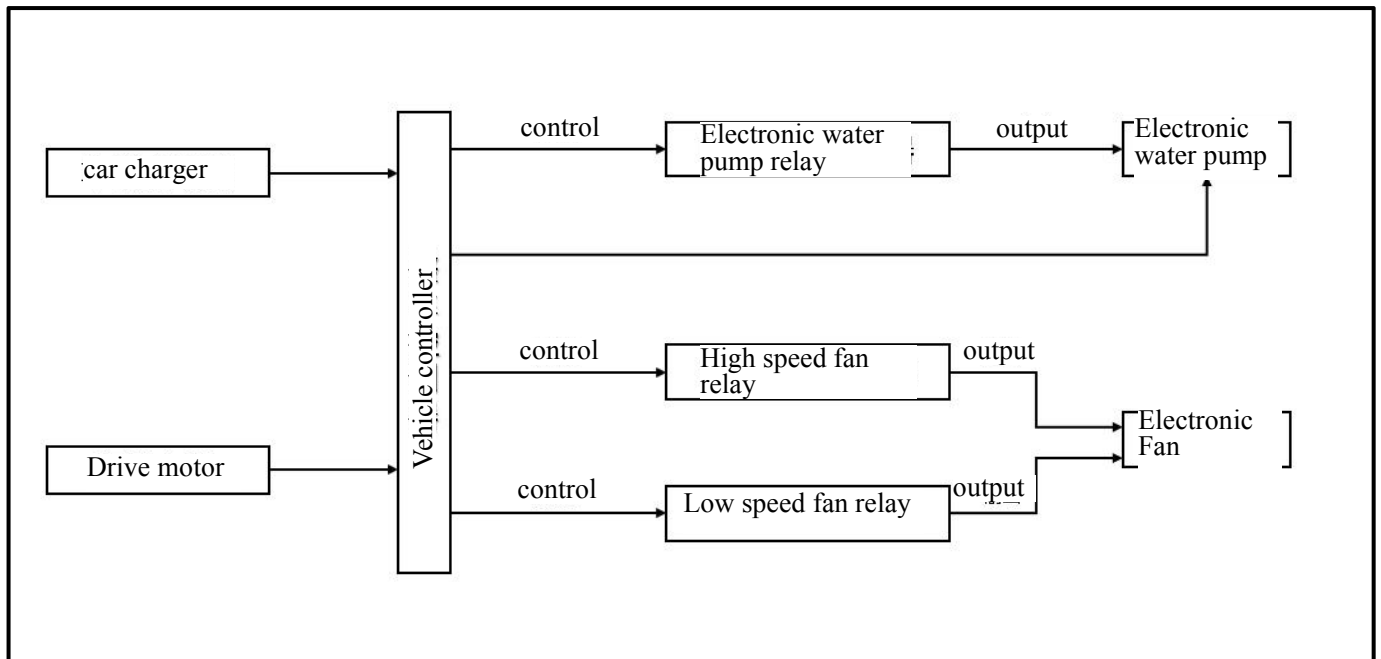
2.5.4.1 Breakdown drawing



- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> 1. Electronic water pump radiator and electronic fan 2. Pipe clamp I motor outlet pipe assembly 3. OBC outlet pipe assembly 4. Pipe clamp II 5. Expansion kettle overflow pipe 6. Expansion kettle | <ul style="list-style-type: none"> 7. Expansion kettle outlet pipe 8. Electronic water pumps 9. Radiator water outlet pipe assembly 10. OBC inlet pipe assembly 11. Motor outlet pipe assembly |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

2.5.5 Electrical block diagram

2.5.5.1 Electrical block diagram



2.5.6 Diagnostic information

2.5.6.1 Diagnostic description

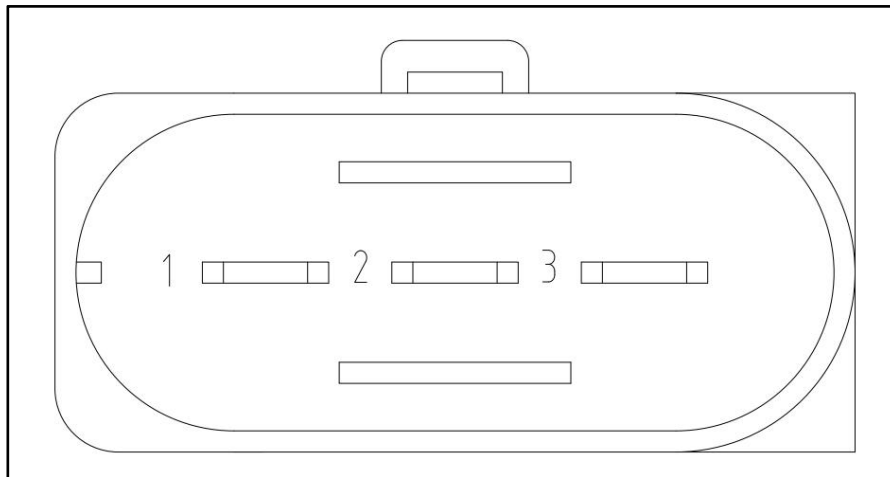
Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

2.5.6.2 Visual inspection

1. Check for aftermarket additions that may affect the cooling system performance.
2. Check the cooling system components and wires that are easily accessible or visible for visible damage or conditions that could cause a fault.
3. Check the cooling system pipelines that are easily visible or visible for coolant leakage.

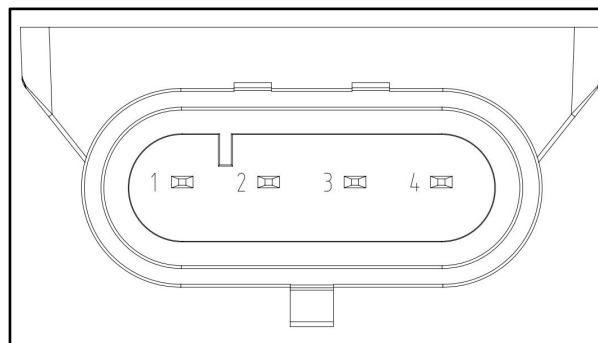
2.5.6.3 Cooling system terminal list

1. Electronic fan harness connectors



Terminal number	Color of wire	Terminal description
1	R	Connect the positive terminal of the power supply at a high speed
2	Bl	Connect the positive terminal of the power supply at a low speed
3	B	Grounding

2. Electronic water pump connector



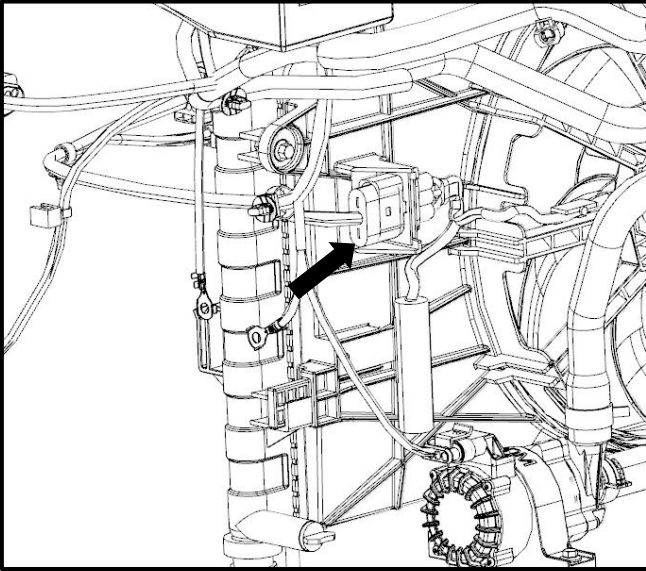
Terminal number	Terminal description
1	Negative terminal of power supply
2	Fault signal output
3	Positive terminal of power supply
4	Control signal

2.5.7 Disassembly and installation

2.5.7.1 Replacement of electronic fan and radiator (front-end cooling module)

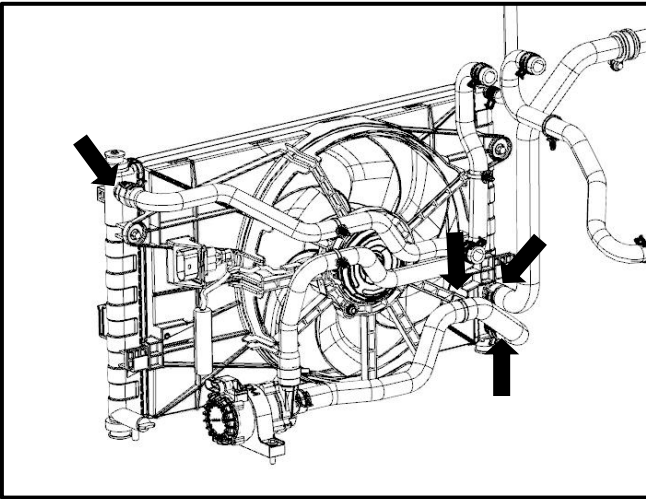
Warning! The storage battery should be powered off upon the replacement!

Caution: Specialized clamp pliers should be used to disassemble or install water pipe clamps!

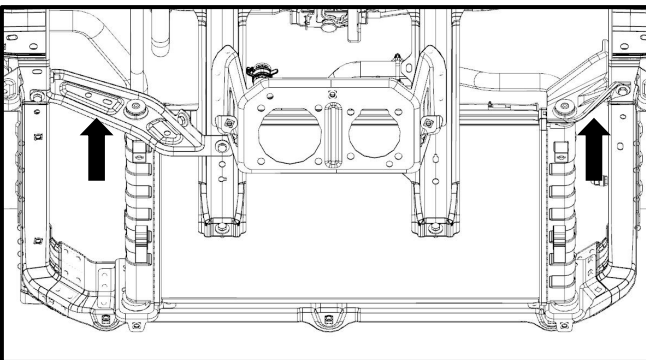


Disassembly process

1. Power down the vehicle, and disconnect the negative cable of the storage battery
2. Open the front engine compartment cover
3. To disassemble the front bumper; Please refer to 13.7.3.7 Replacement of front bumper
4. To disassemble the condenser; Please refer to 9.2.8.2 Replacement of condenser
5. To discharge the coolant; Please refer to 1.2.4.3 Coolant discharge
6. Disconnect the electronic fan assembly harness connector

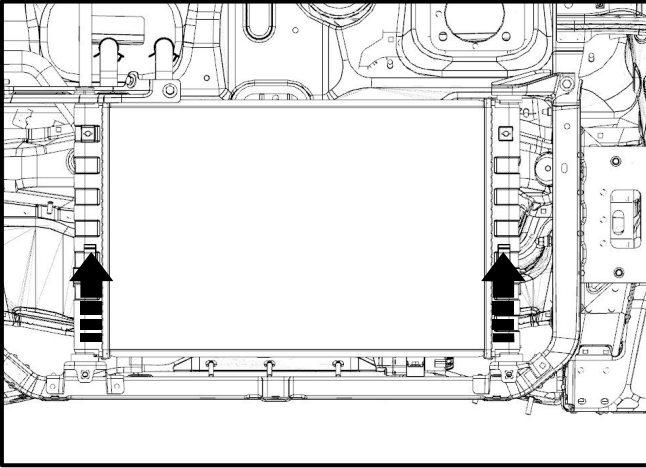


7. Disassemble the three water pipes connected to the radiator and the fixed cable ties
 - a. Disassemble the motor outlet pipe.
 - b. Disassemble the radiator outlet pipe.
 - c. Disassemble the expansion kettle outlet pipe.
 - d. Disassemble the radiator outlet pipe fixed cable ties.



8. Disassemble the left and right fixed mounting brackets for the locating pins on the radiator and electronic fan assembly

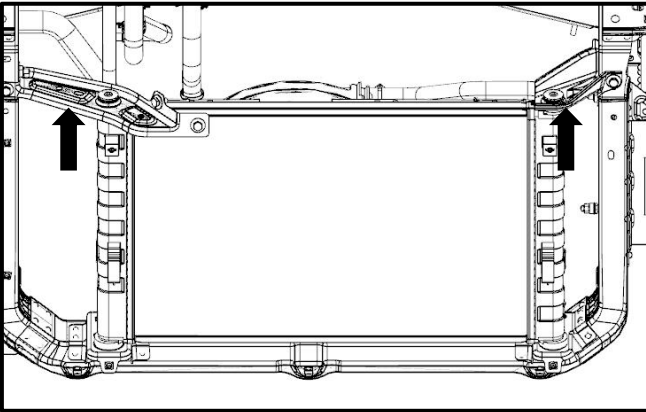
9. Remove the radiator and electronic fan assembly by pulling out the lower locating pin of the radiator and electronic fan assembly.



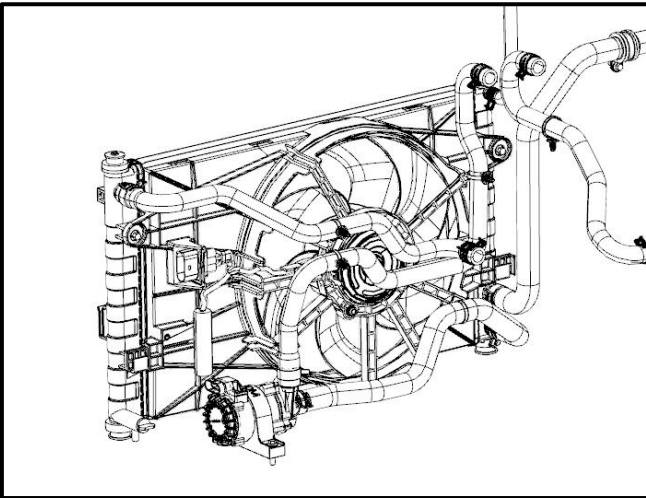
Installation process

Caution: 1. Pay attention to “three steps: insertion, sound and confirmation” when plugging and connecting wiring harness connectors and quick connectors; 2. The position of the clamps should be flush with the position of the labeled line of the pipeline and be in the middle of the labeled line.

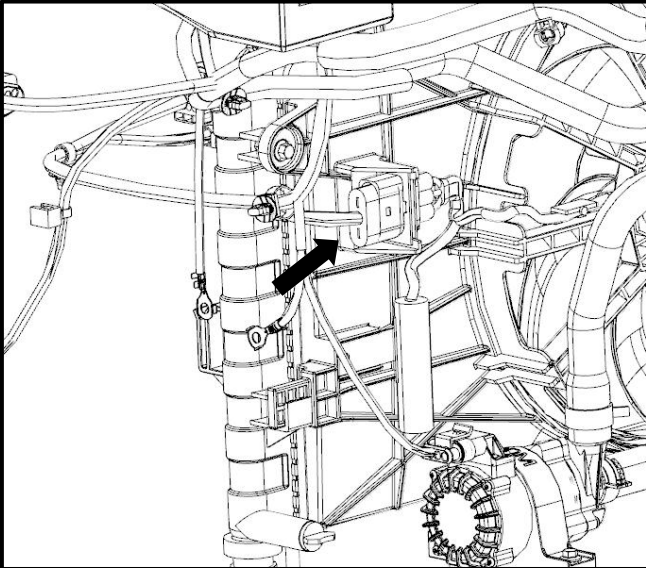
1. Put in the radiator and electronic fan assembly, and secure the fixed bracket of the mounting pin on the radiator



2. Secure the cooling water pipes to the radiator and electronic fan assembly, and make sure the clamps and cable ties are in place.



3. Connect the electronic fan assembly harness connector



4. Fill the expansion kettle with coolant till the coolant level is between MIN and MAX lines.
5. Install the condenser
6. Install front bumper device
7. Connect the negative cable of the storage battery
8. Close the front engine hood

2.5.7.2 Replacement of expansion kettle

Warning! The storage battery should be powered off upon the replacement!

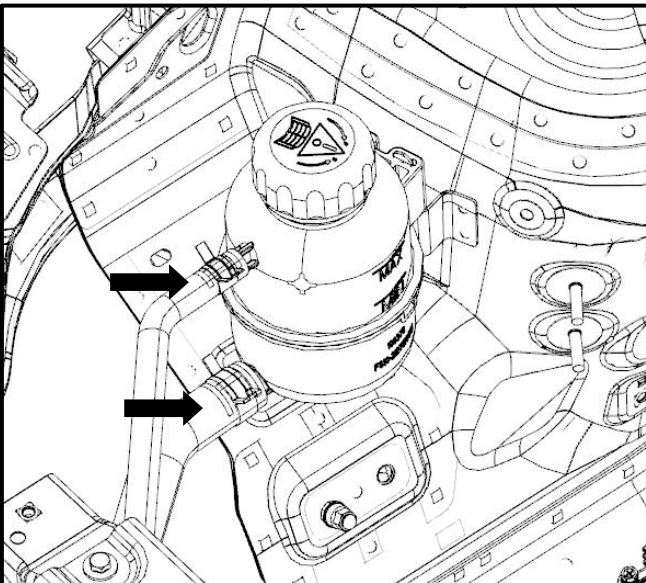
Caution: Specialized clamp pliers should be used to disassemble or install water pipe clamps!

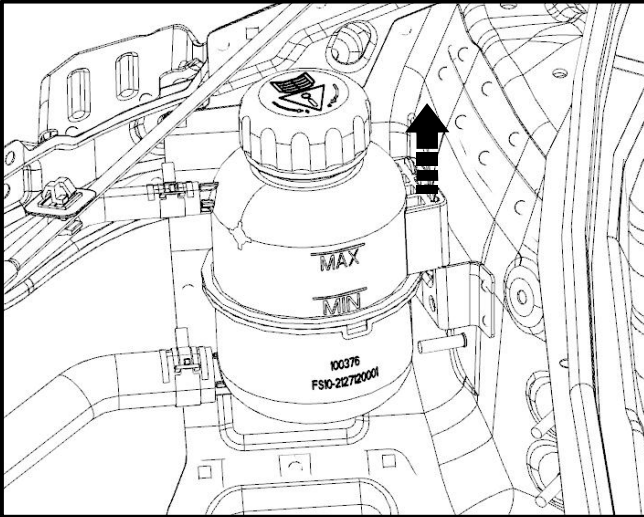
Disassembly process

1. Power down the vehicle, and disconnect the negative cable of the storage battery
2. Open the front engine compartment cover
3. To discharge the coolant; Please refer to 1.2.4.3

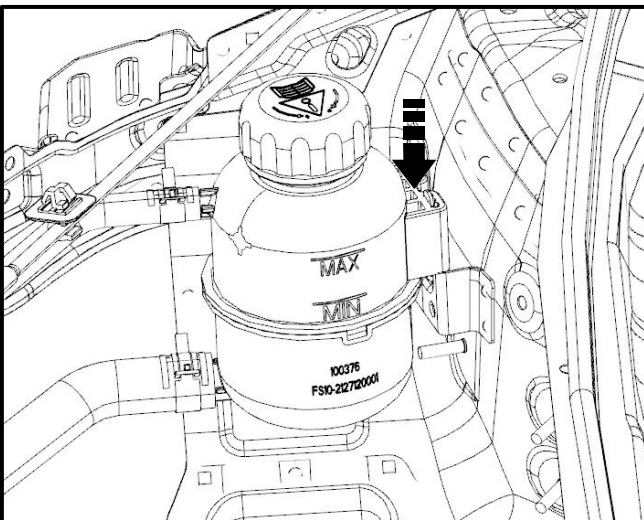
Coolant discharge

4. Disassemble the cooling water pipe
 - a. Remove the expansion kettle overflow pipe;
 - b. Remove the expansion kettle outlet pipe.





5. To disassemble the expansion kettle, it is needed to pull the expansion kettle upward from the body bracket to disassemble the expansion kettle

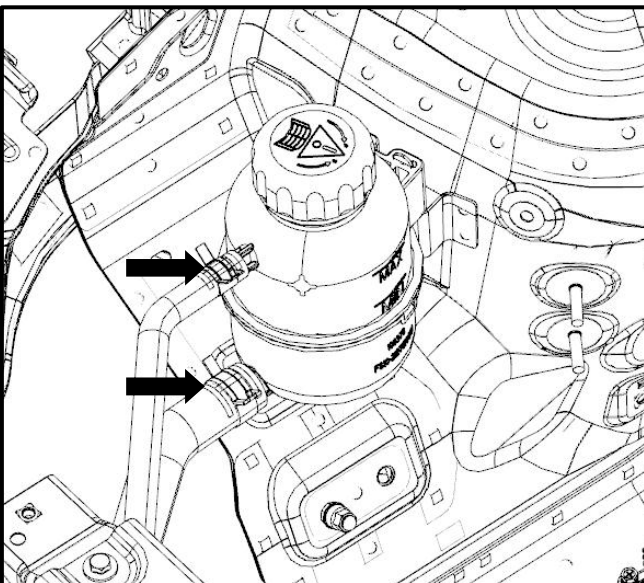


Installation process

Caution:

Align the clamps to be flush with and in the middle of the marked line locations.

1. To install the expansion kettle, it is needed to insert the expansion kettle into the body fixed bracket from top to bottom

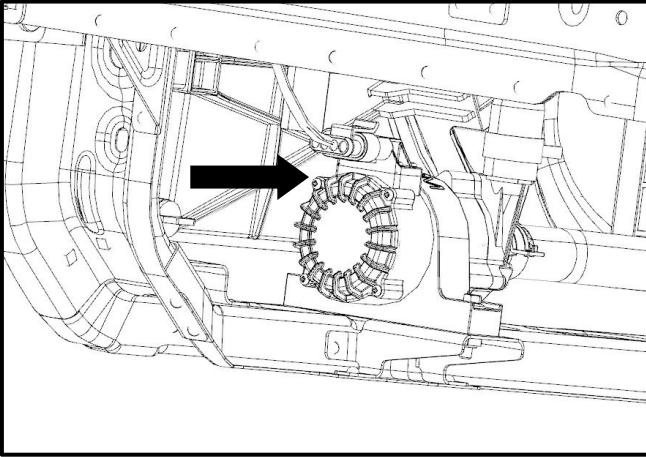


2. Install the cooling water pipe
 - a. Install the expansion kettle overflow pipe;
 - c. Install the expansion kettle outlet pipe.
 1. Fill the expansion kettle with coolant till the coolant level is between MIN and MAX lines.
 2. Close the front engine hood

2.5.7.3 Replacement of electronic water pump

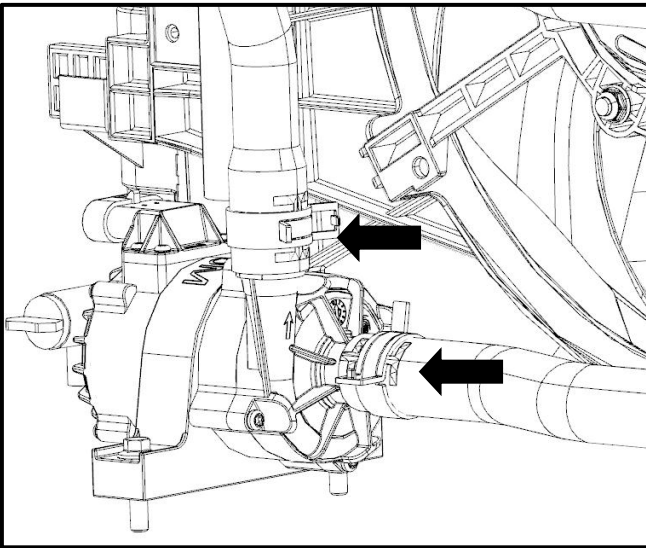
Warning! The storage battery should be powered off upon the replacement!

Caution: Specialized clamp pliers should be used to disassemble or install water pipe clamps!

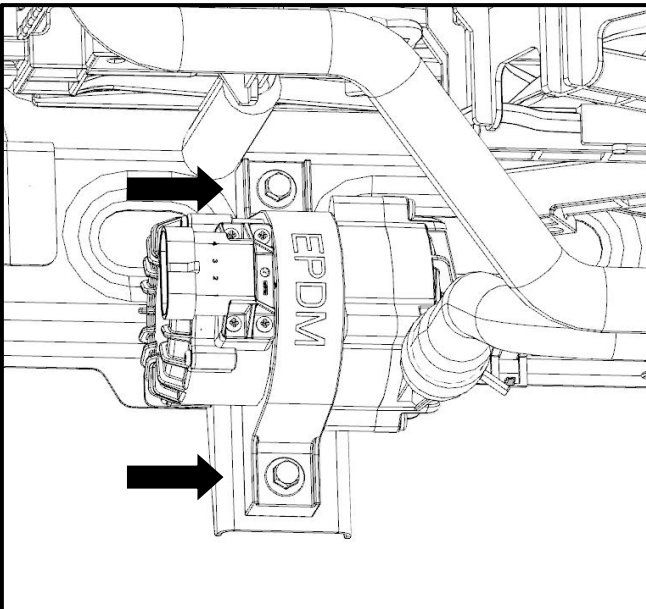


Disassembly process

1. Power down the vehicle, and disconnect the negative cable of the storage battery;
2. Open the front hood;
3. To discharge the coolant; Please refer to 1.2.4.3 Coolant discharge;
4. Disconnect the electronic water pump harness connector;

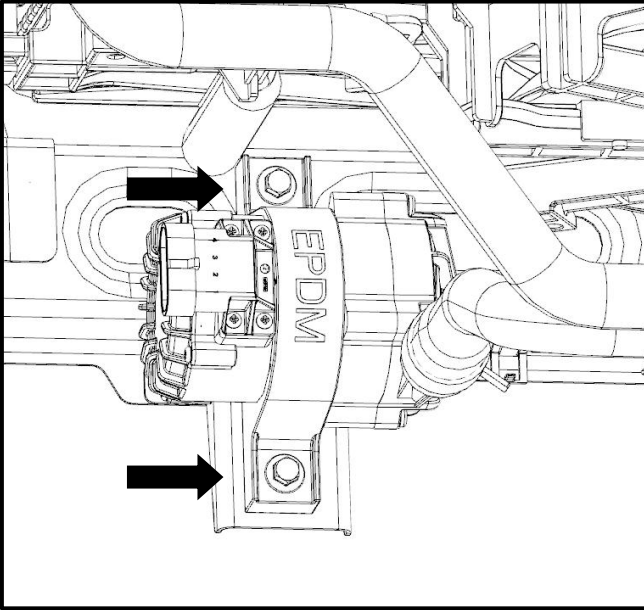


5. Disassemble the cooling water pipe;
 - a. Remove the expansion kettle overflow pipe;
 - b. Remove the expansion kettle outlet pipe;



6. Remove the electronic water pump fixed bolts, take down the electronic water pump and complete the disassembly;

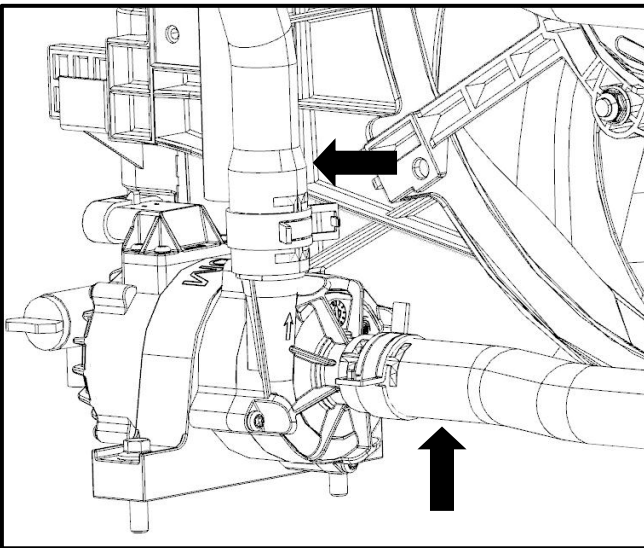
7. To disassemble the expansion kettle, it is needed to pull the expansion kettle upward from the body bracket to disassemble the expansion kettle.



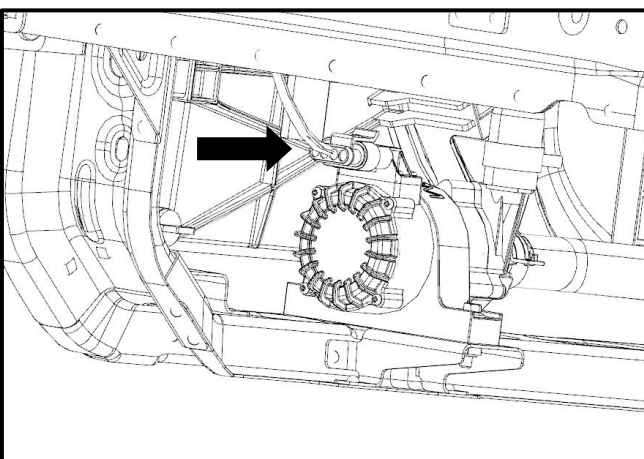
Installation process

Caution: 1. Pay attention to “three steps: insertion, sound and confirmation” when plugging and connecting wiring harness connectors and quick connectors; 2. The position of the clamps should be flush with the position of the labeled line of the pipeline and be in the middle of the labeled line.

1. To install the electronic water pump, it is needed to bolt the electronic water pump to the body bracket;



2. Install the cooling water pipe
- a. Connect the expansion kettle overflow pipe.
 - b. Connect the expansion kettle outlet pipe.



3. Connect the electronic water pump harness connector
4. Fill coolant
5. Connect the negative cable of the storage battery

3 Suspension system

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3.1 Warnings and precautions

3.1.1 Warnings and precautions

3.1.1.1 Warnings and precautions

Warning!

An assistant should drive the vehicle while the technician is inspecting the reported faulty part; otherwise, personal injury may occur.

Warnings about disconnecting the battery

Warning!

Before the servicing of any electrical components, the starting switch power mode must be OFF and all electrical loads must be "OFF".

Unless otherwise stated in the operating procedures. Moreover, if tools or equipment can easily contact the exposed energized electrical terminals, the negative cable of the battery shall be disconnected. Personal injury or damage to the vehicle and vehicle components may be caused by violation of these safety instructions.

Warnings about road tests

Warning!

The road test of the vehicle must be carried out in a safe manner and all traffic laws must be observed. Do not make any attempts that may jeopardize vehicle control. Violation of the above safety instructions can result in serious personal injury and damage to the vehicle.

3.2 Front suspension

3.2.1 Specifications

3.2.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)	Remarks
Front subframe front point bolt	M14×90	165±10	—
Front subframe rear point bolt	M14×60	165±10	—
Left front swing arm front point bolt	M12×75	135±10	Coat the red gum
Left front swing arm rear point bolt	M12×65	135±10	Coat the red gum
Left front swing-arm rear point nut	M12	135±10	—
Left swing arm ball head bolt	M12	110±10	—
Left swing arm ball nut	M12	110±10	—
Right front swing arm front point bolt	M12×75	135±10	Coat the red gum
Right front swing arm rear point bolt	M12×65	135±10	Coat the red gum
Right front swing arm rear point nut	M12	135±10	—
Right swing arm ball head bolt	M12	110±10	—
Right swing arm ball head nut	M12	110±10	—
Front stabilizer bar connecting rod nut	M10	70±5	Coat the red gum
Front stabilizer bar connecting rod nut	M10	70±5	Coat the red gum
Upper point nut of the left front strut assembly	M12	70±5	—
Lower fixed nut for left front strut	M12	115±10	—
Lower fixed bolt of the left front strut	M12×55	115±10	—
Upper point nut of the right front strut assembly	M12	70±5	—
Lower fixed nut of the right front strut	M12	115±10	—
Lower fixed bolt of the right front strut	M12×55	115±10	—
Front stabilizer bar mounting bracket bolt	M8×16	30±5	—
Wheel bolt	M12×28	110±10	—

3.2.1.2 General specifications

Passability	Minimum turning radius (mm)	1080
	Minimum ground clearance (no load)	201
	Approach angle (°) (no load)	27
	Departure angle (°) (no load)	40

3.2.2 Description and operation

3.2.2.1 Description and operation

A vehicle's front suspension system serves to maximize the friction between the tires and the road and can provide good steering maneuverability and stability, as well as ensure passenger comfort. It absorbs energy from vertically accelerating wheels, allowing the wheels to bump with the road surface while the frame and body remain stable. The front suspension used in this vehicle is a McPherson independent suspension, which includes the following components: springs, dampers and stabilizer bars.

3.2.2.2 Suspension system terminology

1. Sprung mass:

- Sprung mass refers to the weight of the car supported by the spring.
- The sprung mass should be greater than the unsprung mass for proper maneuverability.

Some examples of sprung mass:

- a. Body and frame.
- b. Load or cargo.
- c. Power battery.

Sprung components include:

- a. Frame (including subframe).
- b. Body (including complete body).
- c. Power system (motor controller, drive motor, reducer).
- d. Steering gear.

2. Unsprung mass :

Unsprung mass refers to the weight of the car that is not supported by the spring.

The smaller the unsprung mass is, the better maneuverability and ride smoothness will be.

Some examples of unsprung mass:

- a. Wheels and tires.
- b. Wheel bearings and hubs.
- c. Steering knuckle.
- d. Brake components (components on the wheels).

Unsprung components include:

- a. Wheels/tires, ball joints, bearings, control arms, etc.
- b. Steering knuckles, brakes, etc.
- c. Light unsprung mass means good suspension response.

3. Components other than the sprung mass or unsprung mass:

Steering tie rods, drive shafts, stabilizer bar connecting rods, and other components other than the sprung components or the unsprung components.

3.2.3 System operating principle

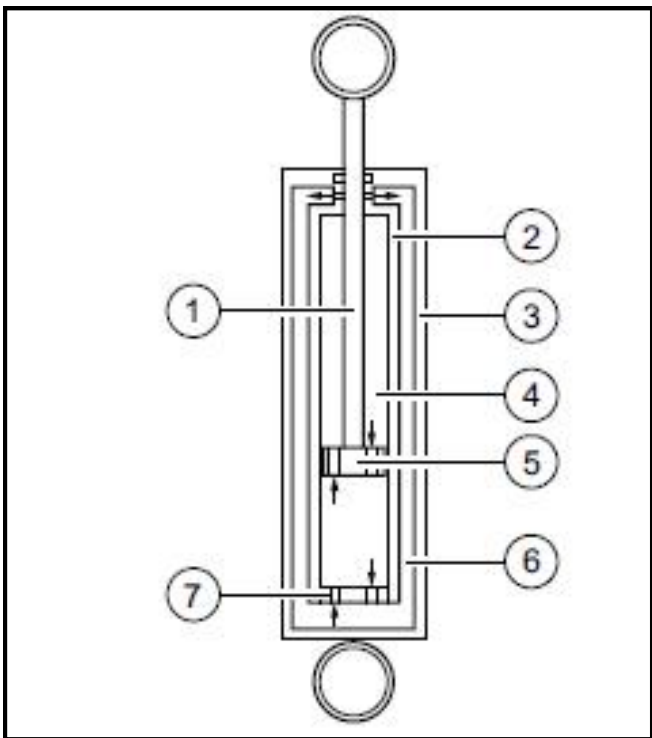
3.2.3.1 Operating principle of suspension system components

Spring:

The stiffness of the spring affects the response of the sprung mass when the car is traveling. A car with low spring stiffness can completely eliminate bumps and provide an extremely smooth ride experience, but at the same time it is prone to dive and squat during braking and acceleration, and prone to rollover or tumbling while turning. Cars with too much spring stiffness are slightly less smooth over bumpy roads, but there is very little body movement, which means that it is allowed to drive the vehicle in a quicker manner, even while turning. So while the spring itself may seem simple, the balance between passenger comfort and the maneuverability of the car requires a second consideration in design. This is because the spring is excellent at absorbing energy, but is slightly poor at dissipating the energy.

As a result, the suspension system requires a component - damper. If no damping structure is used, the spring will pop open at an uncontrollable rate and release the energy it absorbed from the bump and continue to pop up at its own frequency until all the energy initially applied to it has been used up. The suspension itself, built on the spring, causes the car to travel in a bouncy and uncontrolled manner depending on the terrain.

Damper:



1. Piston push rod
2. Inner cylinder
3. Outer cylinder
4. Hydraulic chamber
5. Piston and valve
6. Liquid storage space
7. Inner cylinder bottom valve

It controls unexpected spring motion through a process called damping. The damper converts the kinetic energy of the suspension motion into heat energy that can be dissipated through the hydraulic oil.

Then, it can slow down and diminish the magnitude of the vibratory motion. The upper support of the damper is attached to the frame (i.e., the sprung mass) and the lower support is attached to the axle (i.e., the unsprung mass) near the wheel. One of the most common types of damper in a double-cylinder design is one where the upper support is attached to a piston rod and the rod is connected to a piston as the piston is in a cylinder filled with hydraulic oil. The inner cylinder is

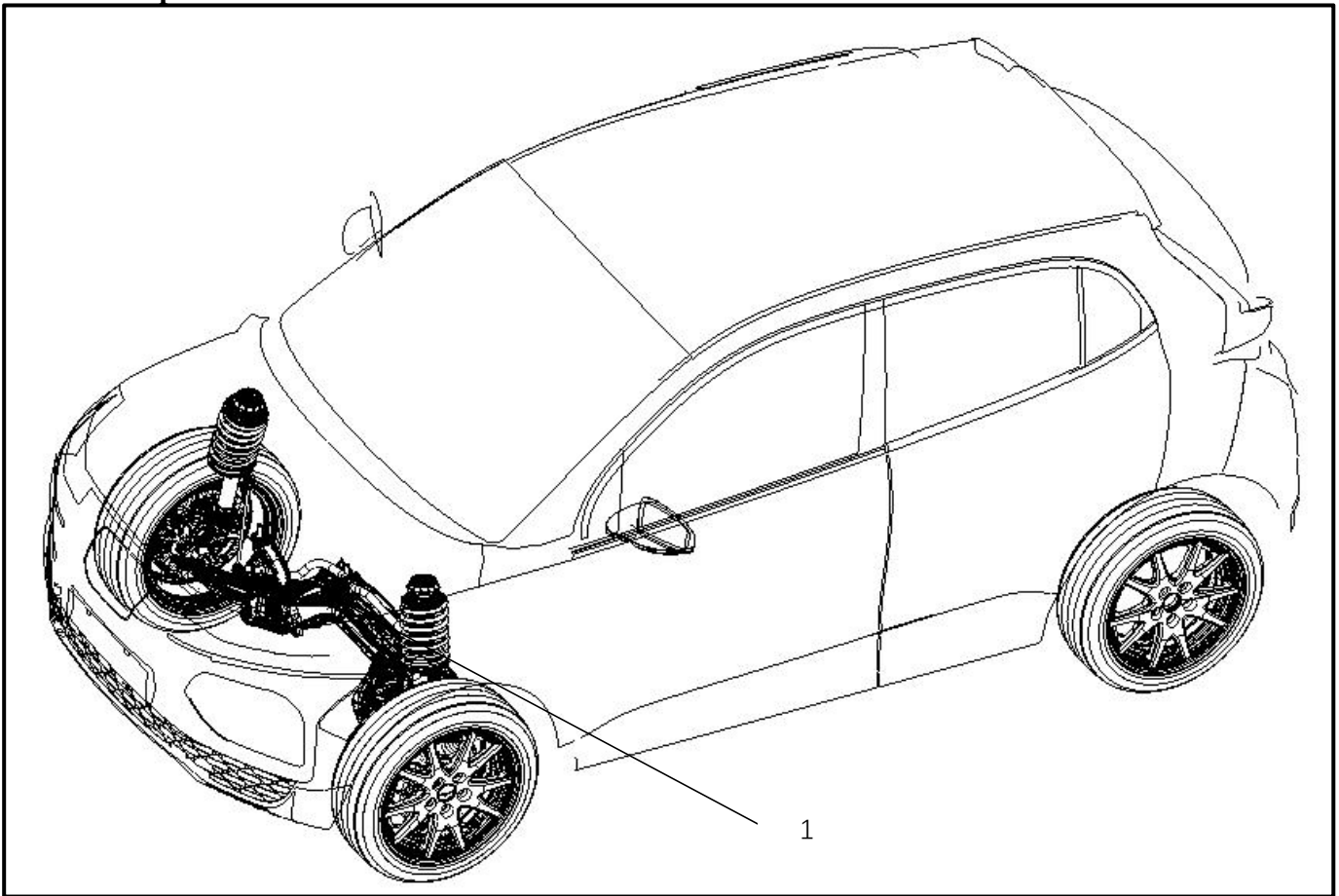
called the pressure cylinder and the outer cylinder is called the reservoir cylinder. The reservoir cylinder stores the excess hydraulic oil. When the wheel encounters a bumpy road surface and causes the spring to compress and tension, the energy of the spring is transferred to the damper through the upper support and down through the piston rod to the piston. The piston is punched with holes through which hydraulic oil can leak out as the piston moves up and down inside the pressure cylinder. Because these holes are so tiny, only a very small amount of hydraulic oil can pass through them even under great pressure. This slows down the movement of the piston, which in turn slows down the movement of the spring. The damper operates in two cycles - the compression cycle and the tension cycle. The process of compressing the hydraulic oil below the piston as it moves downward is called the compression cycle, and the process of compressing the hydraulic oil above the piston as it moves upward to the top of the pressure cylinder is called the tension cycle. For a typical car, the resistance of its tensile cycle is greater than that of its compression cycle. Also note that the compression cycle controls the motion of the unsprung mass of the vehicle; while the tension cycle controls the motion of the relatively heavier sprung mass. All modern dampers are equipped with a speed sensing function - the faster the suspension moves, the more resistance the damper provides. This allows the damper to adjust to the road conditions and control all the unexpected movements that can occur in a moving vehicle, including bouncing, rollover, braking dive and acceleration squat.

Stabilizer bar:

It is used in conjunction with a damper to provide additional stability to a moving vehicle. The stabilizer bar is a metal rod that spans the entire axle and effectively connects the two sides of the suspension together. When the suspension moves up and down on one wheel, the stabilizer bar transfers the movement to the other wheels. This results in a smoother ride and reduces the tilt of the vehicle. In particular, it counteracts the car rollover tendency on the suspension while turning.

3.2.4 Component location

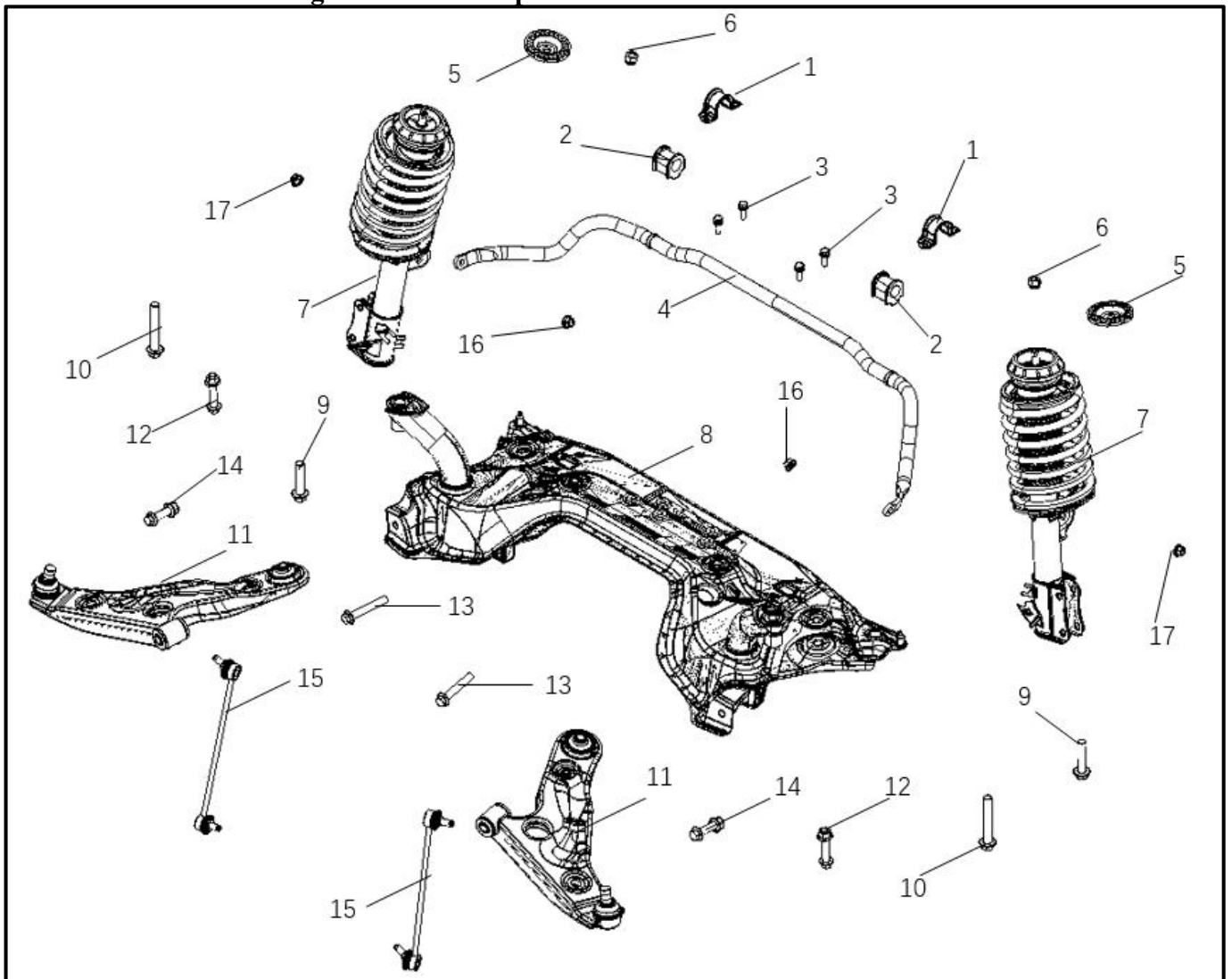
3.2.4.1 Component location



1. Front suspension assembly

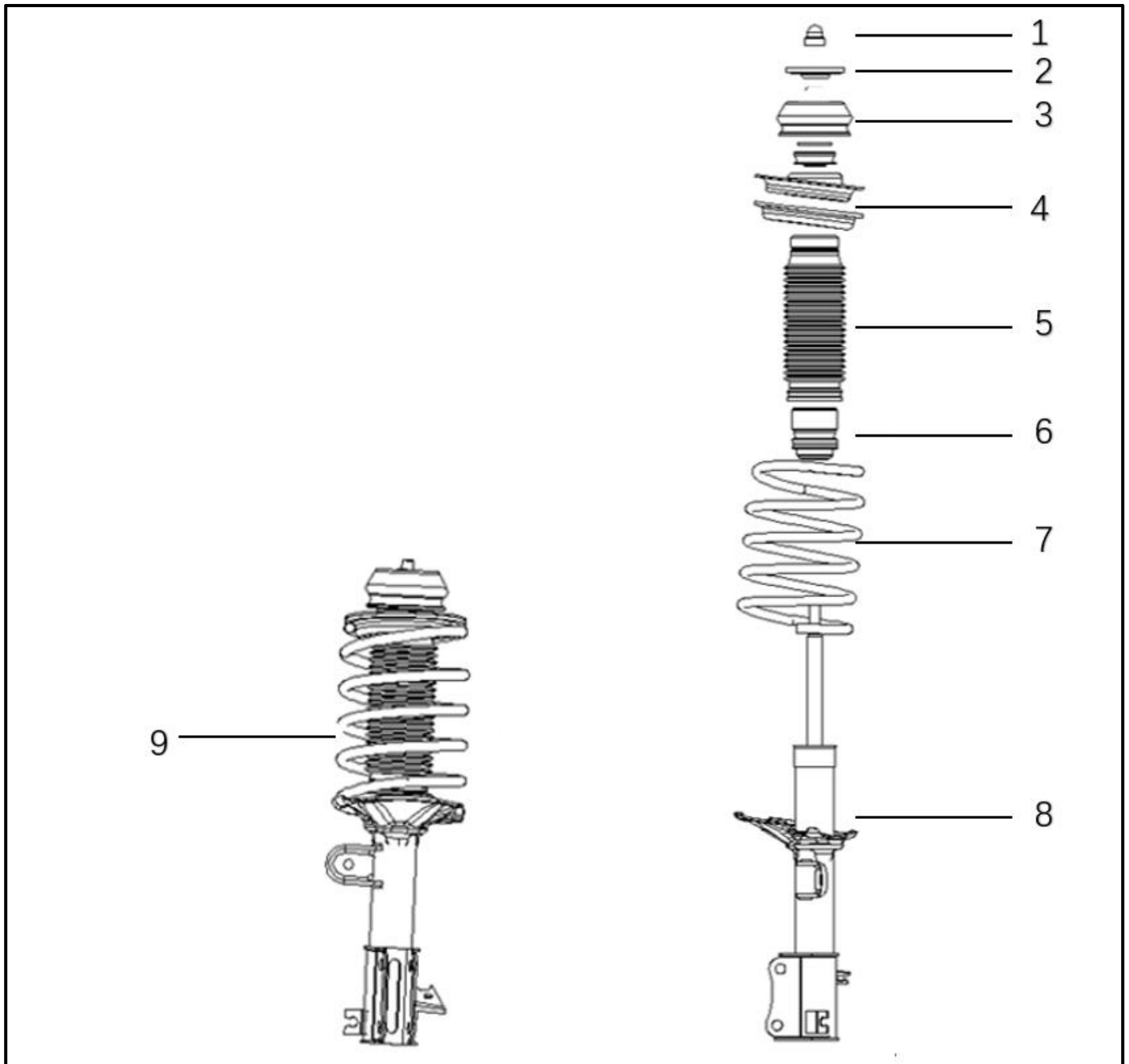
3.2.5 Breakdown drawing

3.2.5.1 Breakdown drawing of the front suspension



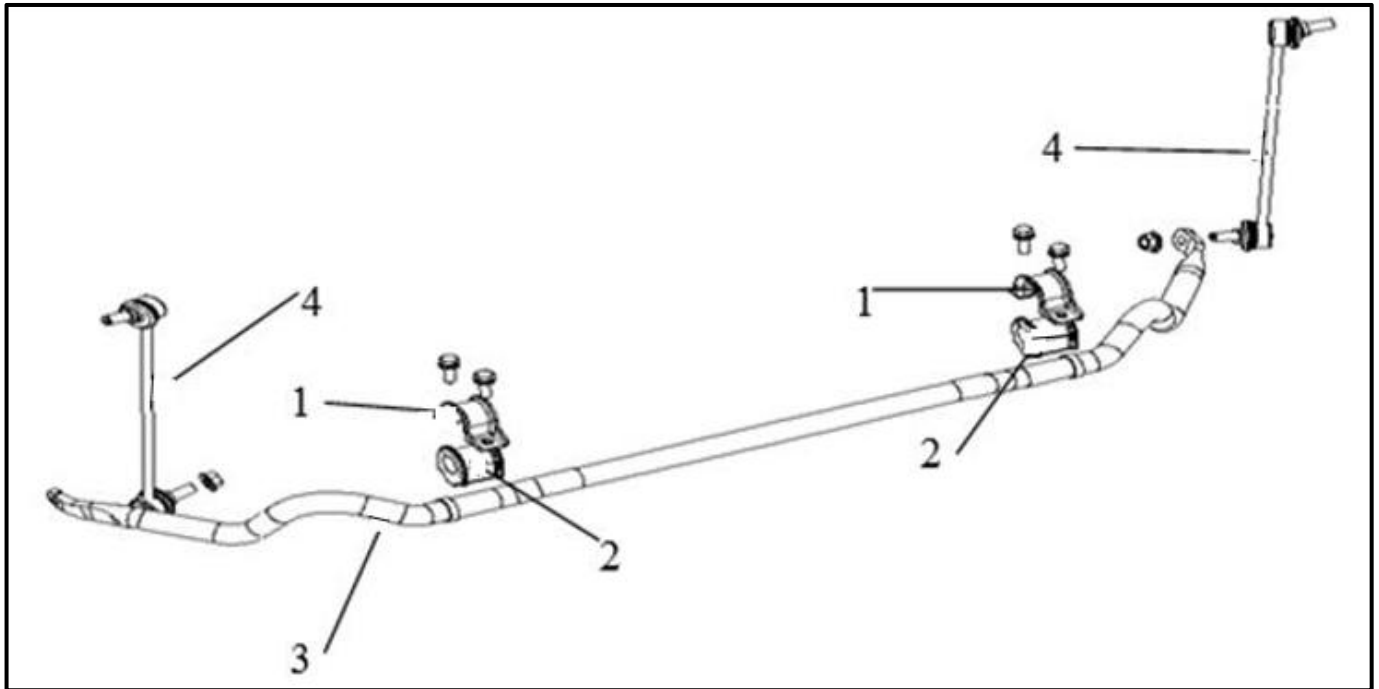
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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> 1. Front stabilizer bar mounting bracket 2. Front stabilizer bar bushing 3. Front stabilizer bar and front subframe fixed bolt and washer combination 4. Front stabilizer bar 5. Mounting cover plate 6. Mounting cover plate fixed nut 7. Front strut assembly 8. Front subframe assembly 9. Fixed bolt securing the front subframe rear point on the body | <ul style="list-style-type: none"> 10. Fixed bolt securing the front subframe front point on the body 11. Front lower swing arm assembly 12. Fixed bolt and nut securing the front lower swing arm rear point on the front subframe 13. Fixed bolt securing the front lower swing arm front point on the front subframe 14. Bolt connecting the front lower swing arm to steering knuckle 15. Front stabilizer bar connecting rod assembly 16. Fixed nut securing the front stabilizer bar connecting rod to the front stabilizer bar 17. Fixed nut securing the front stabilizer bar connecting rod to the front strut assembly |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Breakdown drawing of the front strut



- | | |
|----------------------------------------------------|--------------------------------|
| 1. Upper fixed nut dust cover of the front strut | 6. Front strut dust cover |
| 2. Upper mounting pad of the front strut | 7. Front coil spring |
| 3. Upper mounting support of the front strut | 8. Front strut column assembly |
| 4. Upper mounting support of the front coil spring | 9. Front strut assembly |
| 5. Front strut buffer block | |

Lateral stabilizer of the front suspension



- 1. Mounting bracket of the front lateral stabilizer bar
- 2. Front lateral stabilizer bar bushing

- 3. Front lateral stabilizer bar assembly
- 4. Front lateral stabilizer bar connecting rod assembly

3.2.6 Diagnostic information and steps

3.2.6.1 Diagnostic description

Please refer to 3.2.2.1 Description and operation to start system diagnosis. When a fault occurs, reviewing the “Description and operation” information will help determine the correct diagnostic procedure for the fault, and will also help determine if the condition described by the customer is normal. Please refer to 3.2.2.1 Description and operation. Confirm the proper system diagnostic procedures.

3.2.6.2 Inspection of front damper

Front damper is too soft

Step 1	Check whether the front tire pressure is normal
No	Adjust tire air pressure to the standard value according to the specifications on the tire label.
Yes - Step 2	Check whether the car is overloaded
Yes	Ask the user and explain the normal load of the vehicle to the user.
No - Step 3	Check whether the compression and rebound effect of the front damper is normal a. Quickly press and release the front damper bumper corner closest being tested to compare the compression and rebound effect with a normal and comparable vehicle.
No	Replace the front damper. Please refer to 3.2.7.2 Replacement of front strut assembly
Yes - Step 4	The system functions properly.

Noisy front damper

Step 1	Check whether the front damper is installed properly and whether the front damper components are working properly (There must be no abnormalities such as looseness).
No	Replace the front damper if necessary. Please refer to 3.2.7.2 Replacement of front strut assembly
Yes - Step 2	Check whether the compression and rebound effect of the front damper is normal a. Quickly press and release the front damper bumper corner closest being tested to compare the compression and

	rebound effect with a normal and comparable vehicle.
No	Replace the front damper. Please refer to 3.2.7.2 Replacement of front strut assembly
Yes - Step 3	The system functions properly.

Leaking front damper oil

Step 1	Check whether the front damper is installed properly and whether the front damper components are working properly (There must be no abnormalities such as looseness).
No	Replace the front damper if necessary. Please refer to 3.2.7.2 Replacement of front strut assembly
Yes - Step 2	Check the sealing of the front damper when it is fully extended and that the dust cover is not broken or damaged.
No	Replace the front damper. Please refer to 3.2.7.2 Replacement of front strut assembly
Yes - Step 3	Check whether the oil on the front damper is excessive
No	Replace the front damper. Please refer to 3.2.7.2 Replacement of front strut assembly
Yes - Step 4	The system functions properly.

3.2.6.3 Inspection of ball pin and steering knuckle

Step 1	Raise the front end of the vehicle so that the front suspension is in a free suspension status.
Step 2	Grasp the top and bottom of the front tires and pull the top of the wheel inward and outward.
Step 3	Please note whether there is any clearance and whether the steering knuckle is moving horizontally relative to the control arm
Step 4	If any of the following conditions occur, the parts assembly must be replaced. <ul style="list-style-type: none"> a. Ball joints are loose. b. The ball seal is broken. c. The ball head bolts are disconnected from the steering knuckle. d. Ball head bolts are loose on the steering knuckle. e. Ball head bolts twist in their seats when pressed with a finger.
Step 5	Replace the damaged swing arm assembly.

3.2.7 Disassembly and installation

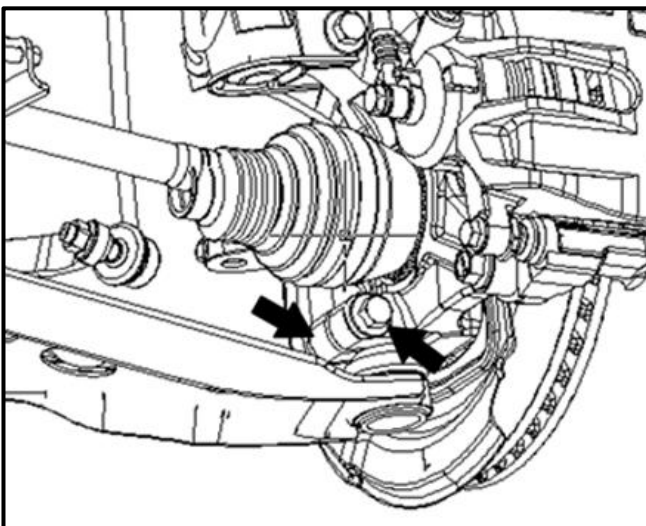
3.2.7.1 Replacement of front lower swing arm assembly

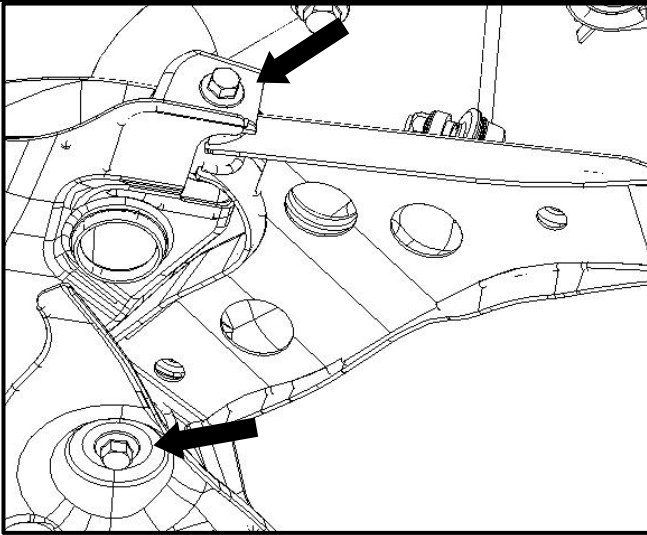
Disassembly process

Warning!

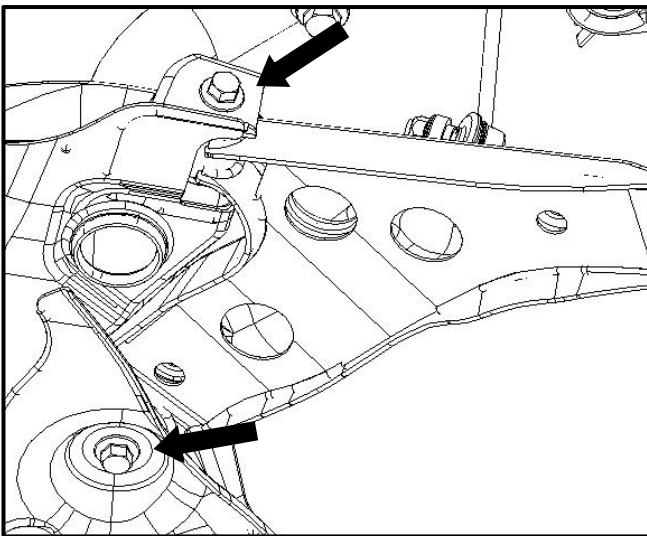
Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.

1. Vehicle hoisting
2. To disassemble front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Disassemble the front lower swing arm assembly
 - a. Remove 1 bolt and 1 nut and disconnect the front lower swing arm ball pin from the front steering knuckle.





- b. Remove 2 bolts and 1 nut and disconnect the front lower swing arm assembly from the front subframe.

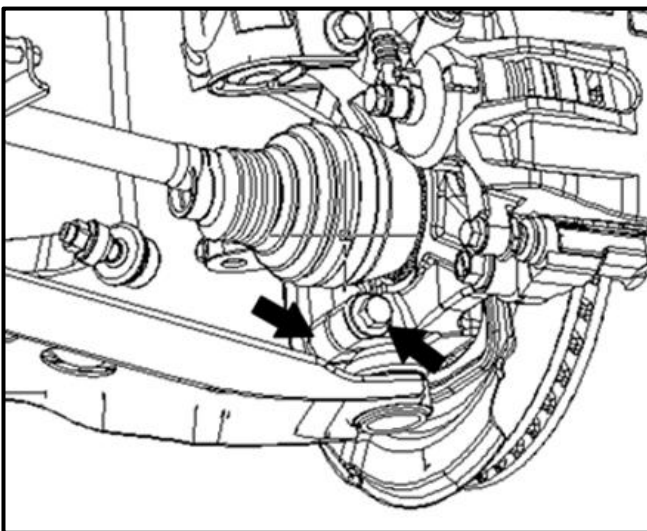


Installation process

Caution:

The bolts need to be coated with red glue as required during assembly.

1. Install the front lower swing arm assembly
 - a. Install the front lower swing arm assembly on the front subframe, and install 2 bolts and 1 nut.
Torque: $135\pm 10\text{N}\cdot\text{m}$



- b. Connect the front lower swing arm ball pin to the steering knuckle and install 1 bolt and 1 nut.
Torque: $110\pm 10\text{N}\cdot\text{m}$

2. To install front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Lower the vehicle

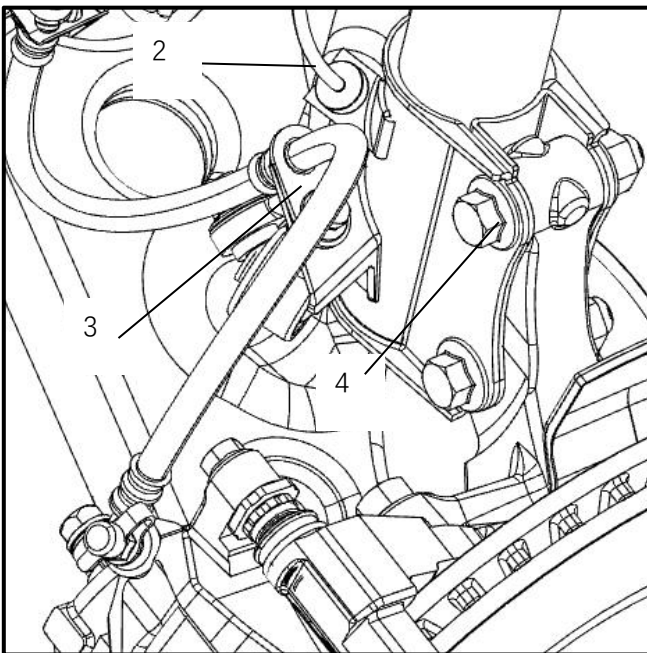
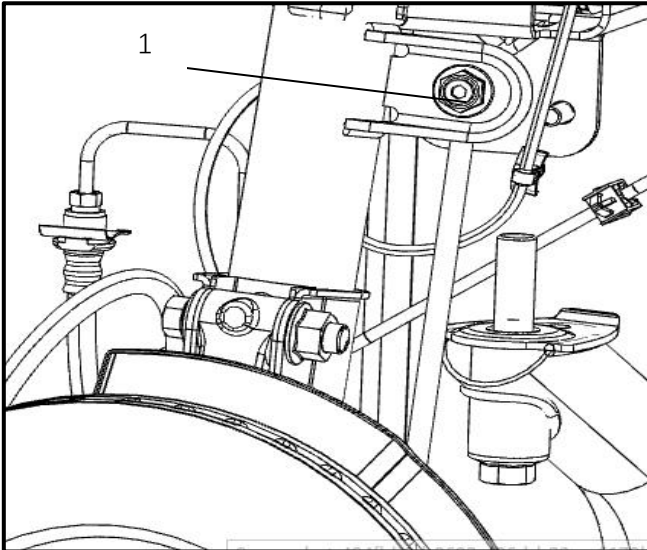
3.2.7.2 Replacement of front strut assembly

Disassembly process

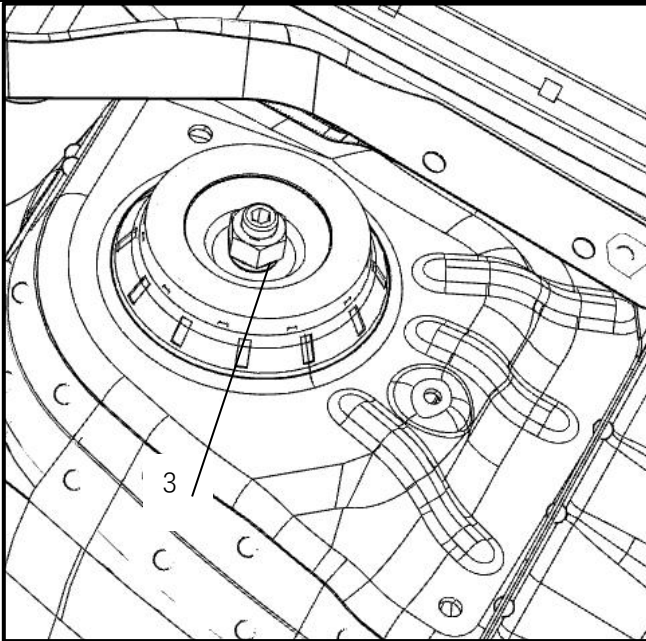
Warning!

Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.

1. Open the front cabin cover.
2. Disconnect the negative cable of the storage battery
3. Vehicle hoisting
4. To disassemble the wheels; Please refer to 3.4.5.1 Replacement of wheels
5. Disassemble the nut 1 that connects the front stabilizer bar connecting rod to the front damper and disengage the front stabilizer bar connecting rod from the front damper.



6. Disassemble the front strut assembly
 - a. Disconnect the front wheel speed sensor harness 2 from the front strut assembly.
 - b. Disassemble the fixing clip 3 of the front brake fuel pipe and disengage the front brake fuel pipe.
 - c. Disassemble the 2 bolts and the nut assembly 4 that connect the steering knuckle to the front damper.



d. Disassemble one fixed nut 3 at the upper part of the front damper.

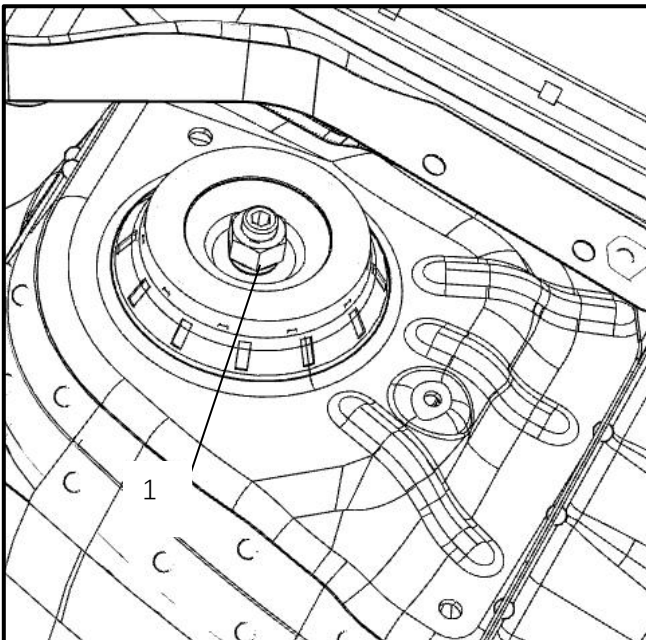
Caution

When removing the 1 fixed nut at the upper part, hold the front strut assembly with your hand to prevent bruising your feet and damaging the half shaft dust boot.

e. Remove the front strut assembly from the wheel cover side.

Caution

The methods for the disassembly of the left and right front strut assemblies are similar.

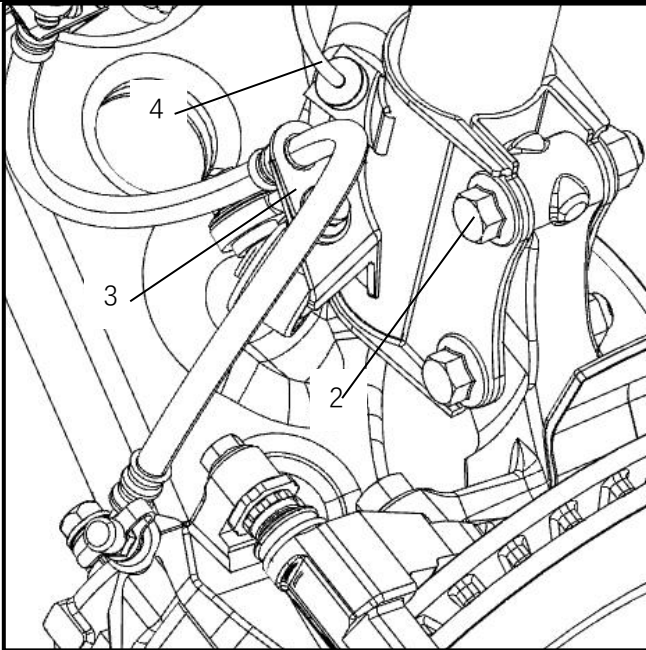


Installation process

1. Install the front strut assembly

a. Thread the 1 screw at the top of the front damper assembly into the front compartment side mounting hole, install the upper cover plate of the front damper and tighten the one fixed nut 1 at the upper part.

Torque: $70 \pm 5 \text{ N} \cdot \text{m}$

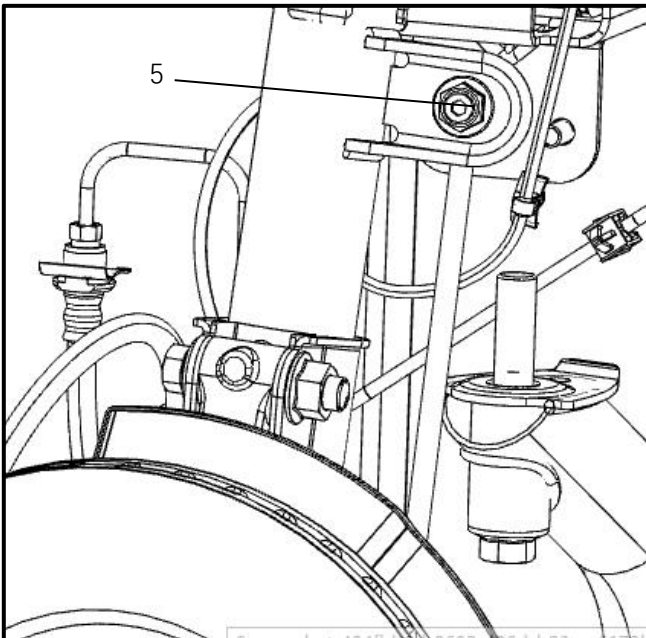


b. Install the 2 bolts and the nut assembly 2 that connect the steering knuckle to the front damper.

Torque: $115 \pm 10 \text{ N} \cdot \text{m}$

c. Install the fixing clip 3 of the front brake fuel pipe.

d. Install and clamp the front wheel speed sensor harness 4.



2. Install the nut 5 that connects the front stabilizer bar connecting rod to the front damper.

Torque: $70 \pm 5 \text{ N} \cdot \text{m}$

3. To install front wheels; Please refer to 3.4.5.1

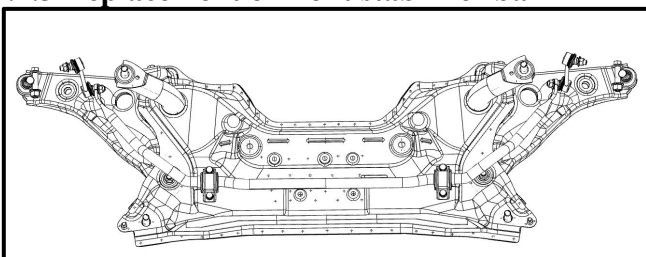
Replacement of wheels

4. Lower the vehicle

5. Connect the negative cable of the storage battery

6. Close the front cabin cover.

3.2.7.3 Replacement of front stabilizer bar



Disassembly process

1. Put the front wheels in the forward position

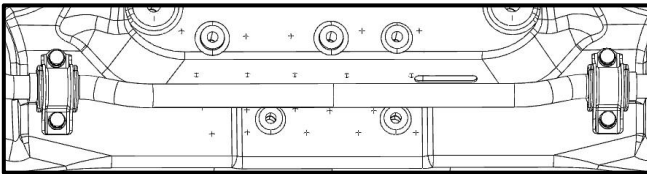
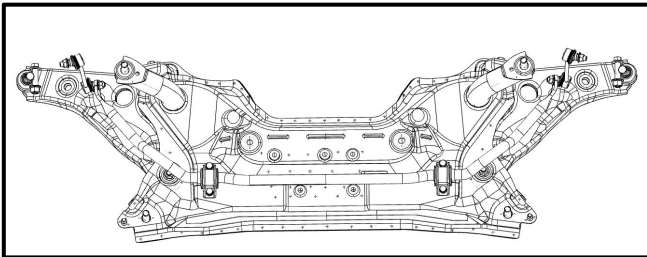
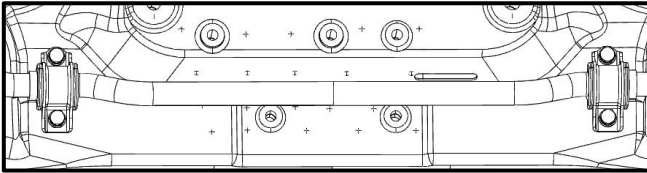
2. Disassemble the steering column shroud

3. Disengage the steering linkage drive shaft assembly

Warning!

Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.

4. Open the front cabin cover.
5. Disconnect the negative cable of the storage battery
6. Vehicle hoisting
7. To disassemble the front wheels; Please refer to 3.4.5.1 Replacement of wheels
8. To disassemble the front subframe assembly; Please refer to 3.2.7.6 Replacement of front subframe assembly
9. Disassemble the front lateral stabilizer bar assembly



Disassemble the 4 bolts, and 2 front lateral stabilizer bar mounting brackets and remove the front lateral stabilizer bar assembly.

Installation process

1. Install the front lateral stabilizer bar assembly
 - a. Align the limiting bumps on the 2 front stabilizer bar bushings with the limiting dimples on the front subframe and push the front stabilizer bar against the rear subframe
 - b. Install the two front lateral stabilizer bar mounting brackets 1 on the bushings and install the four bolts 2 securing the front lateral stabilizer bar assembly to the front subframe assembly
- Torque: $30 \pm 3 \text{N} \cdot \text{m}$
2. Connect the front stabilizer bar connecting rod assembly to the front stabilizer bar assembly 3
3. To install the front subframe assembly; Please refer to 3.2.7.6 Replacement of front subframe assembly
4. To install front wheels; Please refer to 3.4.5.1 Replacement of wheels
5. Lower the vehicle
6. Install the steering linkage drive shaft assembly
7. Install the steering column shroud
8. Connect the negative cable of the storage battery
9. Close the front cabin cover.

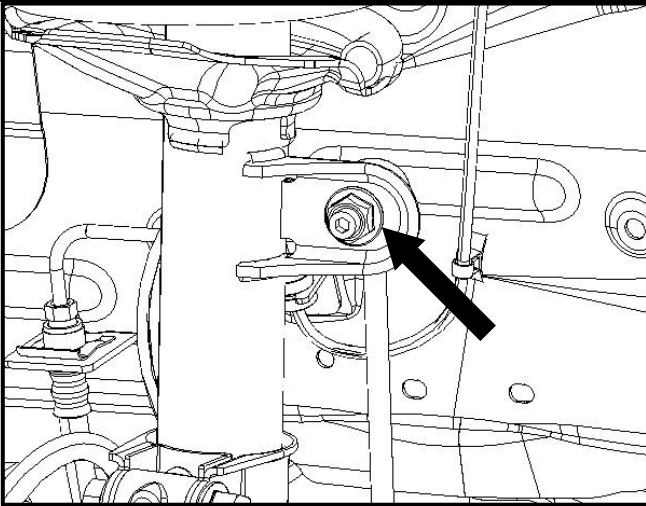
3.2.7.4 Replacement of front stabilizer bar connecting rod

Disassembly process

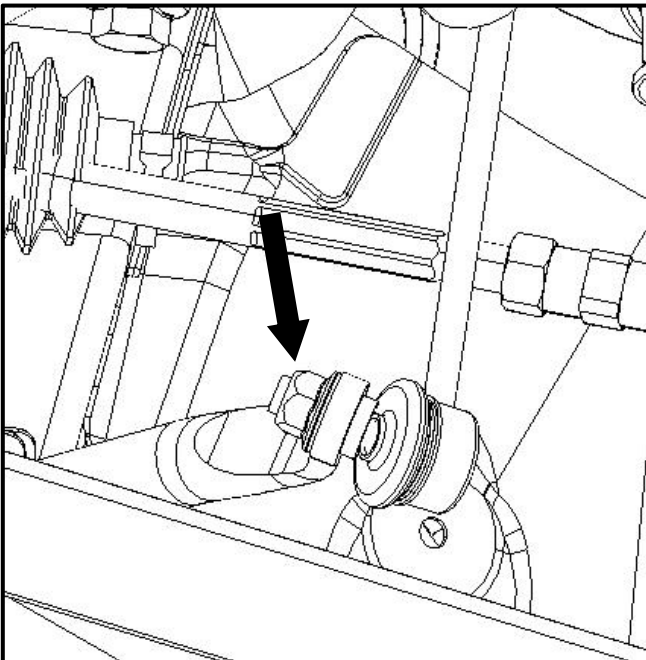
1. Vehicle hoisting
2. To disassemble front wheels; Please refer to 3.4.5.1 Replacement of wheels

3. Disassemble the front lateral stabilizer bar connecting rod assembly

(a) Remove 1 nut and disengage the front lateral stabilizer bar connecting rod assembly from the front strut.



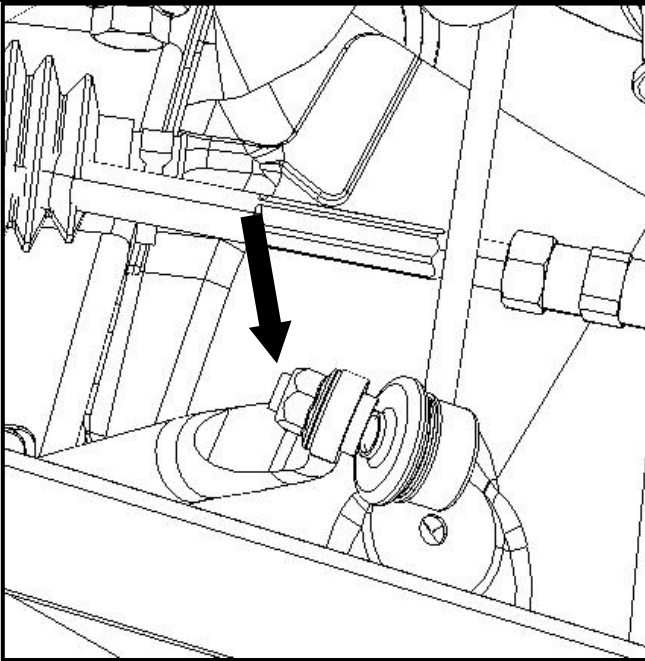
(b) Remove 1 nut to remove the front lateral stabilizer bar connecting rod assembly.



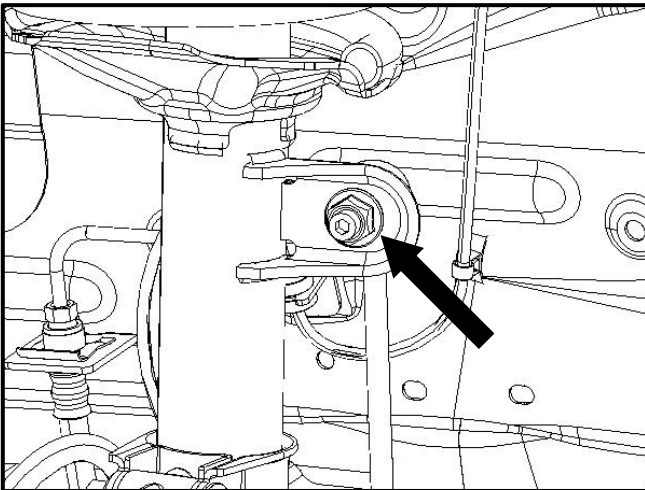
Installation process

Caution:

Coat the nut with the red gum as specified during the assembly.



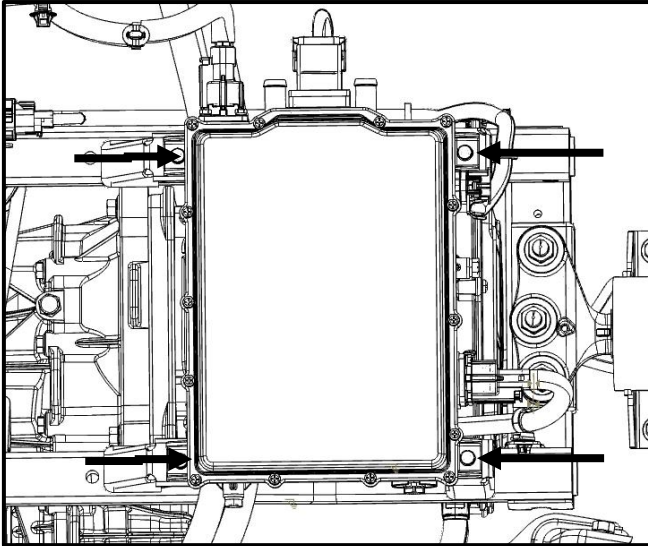
1. Install the front lateral stabilizer bar connecting rod assembly
 - a. Connect the lower ball pin of the front lateral stabilizer bar connecting rod assembly to the stabilizer bar and install 1 nut.
Torque: $70\pm 5\text{N}\cdot\text{m}$



- b. Connect the front lateral stabilizer bar connecting rod assembly to the front strut and install 1 nut.
Torque: $70\pm 5\text{N}\cdot\text{m}$

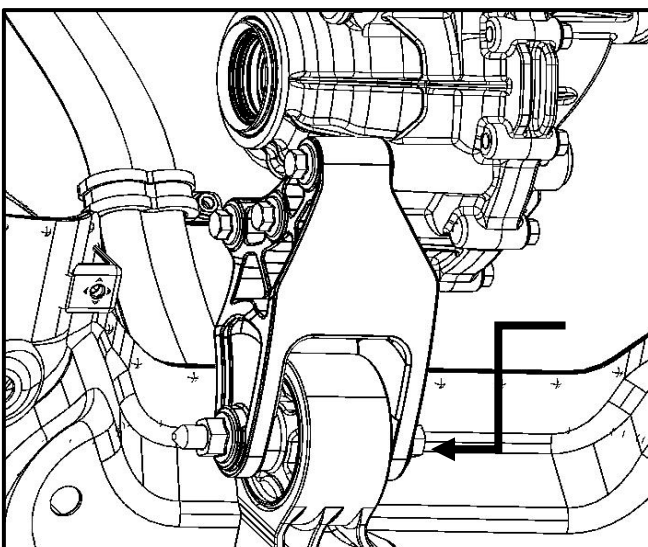
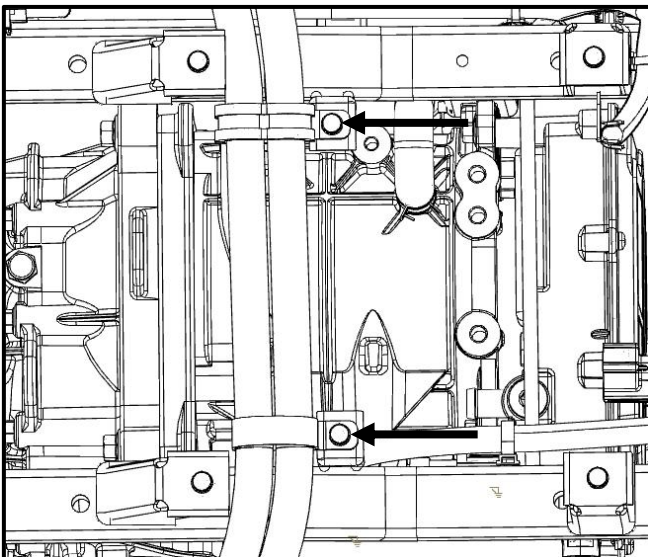
2. To install front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Lower the vehicle

3.2.7.5 Replacement of frame beam

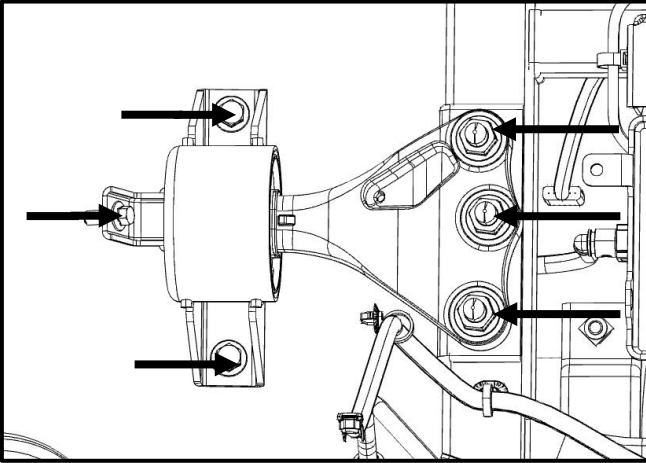


Disassembly process

1. Turn off the ignition switch.
2. Disconnect the positive and negative terminals of the storage battery
3. To recover the air-conditioning refrigerant and refrigerant oil; Please refer to 2.5.7.1 Replacement of electronic fan and radiator (front-end cooling module) for the air-conditioning refrigerant recovery method
4. To drain the coolant from the high-pressure cooling system; Please refer to 2.5.7.3.
5. Disconnect AC charging socket assembly, power battery harness assembly, water pump outlet pipe, PTC harness assembly, air-conditioning compressor power harness assembly, and rear MCU harness assembly (if any)
6. To disassemble the OBPS assembly; Please refer to 2.3.7.1 Disassembly and installation of OBPS assembly
7. Disconnect the motor controller outlet pipe, four-in-one outlet pipe, power low-voltage harness, front MCU harness assembly, etc.
8. Disconnect the air-conditioning high-pressure pipe and the air-conditioning low-pressure pipe
9. Support the front drive motor assembly and reducer assembly at their lowest points with a lift tray
10. Remove 1 bolt securing the front axle rear suspension assembly to the front axle rear suspension mounting bracket



11. Disassemble the front axle left suspension assembly.



12. Disassemble the front axle right suspension assembly.

13. Take out the entire frame beam assembly module from under the front engine compartment

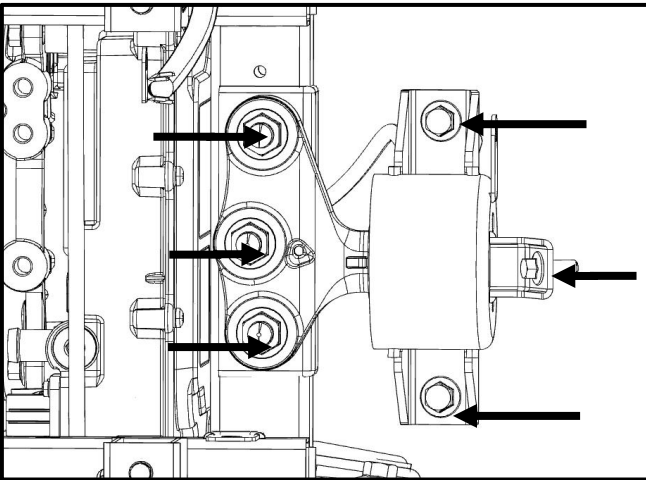
14. Disassemble the electric compressor and compressor bracket

Please refer to 9.2.8.4 Replacement of compressor

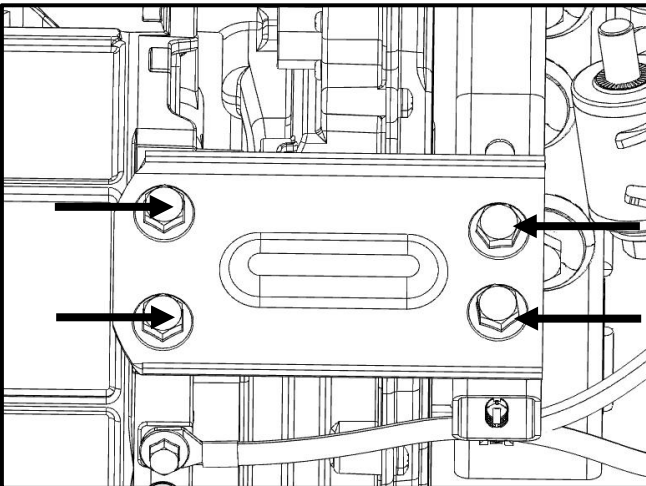
Please refer to 9.2.8.5 Replacement of compressor bracket

15. Disassemble the electronic vacuum pump with the mounting bracket assembly and vacuum tank assembly

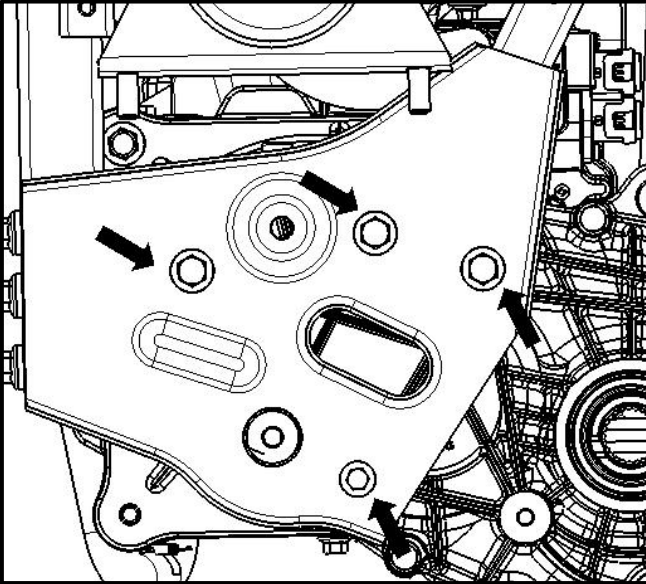
Please refer to 7.6.6.5 Disassembly and installation of electronic vacuum pump assembly



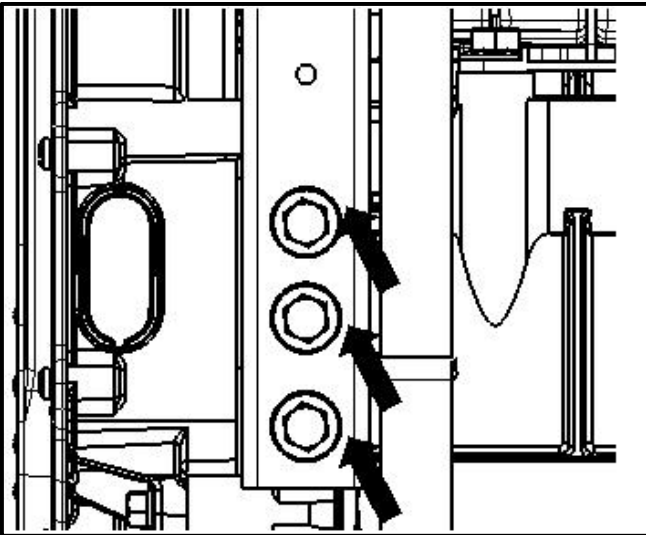
16. Disassemble the motor mounting bracket mounting bolts.



17. Disassemble the reducer assembly mounting bolts



18. Disassemble 3 mounting bolts securing the frame beam to the motor



Installation procedure:

Installation is performed in the reverse order of disassembly.

3.2.7.6 Replacement of front subframe assembly

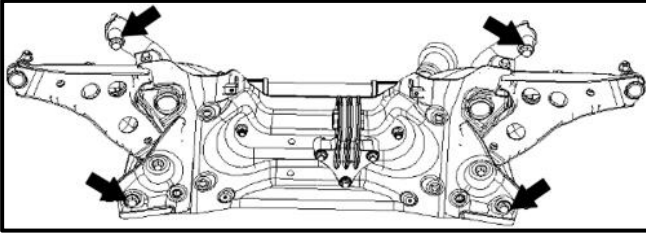
Disassembly process

Warning!

Please refer to “Warnings about vehicle lift” in 3.1.1 “Warnings and precautions”.

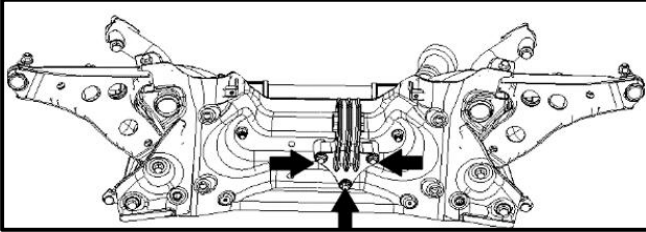
1. Put the front wheels in the forward position
2. Disengage the steering gear assembly from the steering column assembly
3. Vehicle hoisting
4. To disassemble front wheels; Please refer to 3.4.5.1 Replacement of wheels
5. Disconnect the front lateral stabilizer bar connecting rod assembly
6. Disconnect the steering gear outer ball joint
7. Disconnect the front lower swing arm ball pin
8. Disconnect the front axle rear suspension assembly from the front axle rear suspension mounting bracket

9. Disassemble the front and rear sections of the front engine compartment lower guard plate



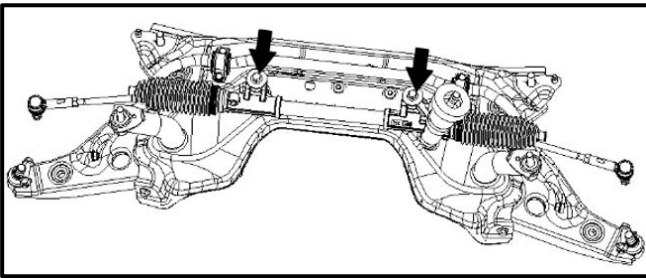
10. Disassemble the subframe with a swing arm assembly

- a. Support the subframe with a swing arm assembly and remove the 4 bolts.



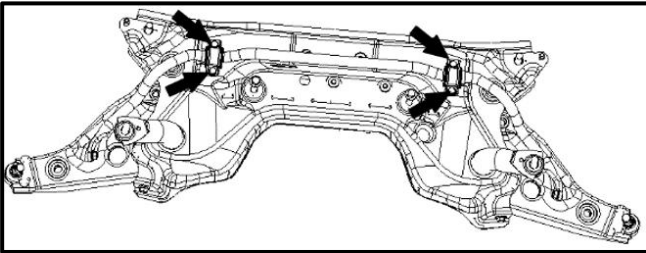
11. Disassemble the front axle rear suspension assembly

- a. Remove 3 bolts.



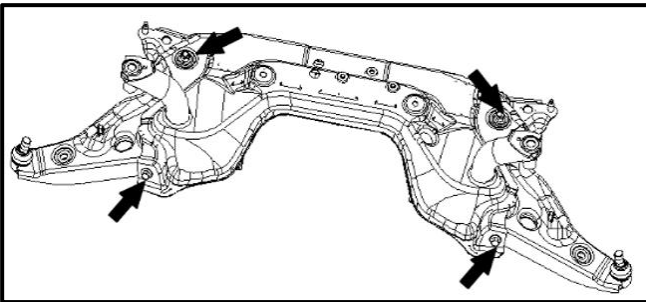
12. Disassemble the steering gear with a crosswise tie rod assembly

- a. Remove 2 bolts.



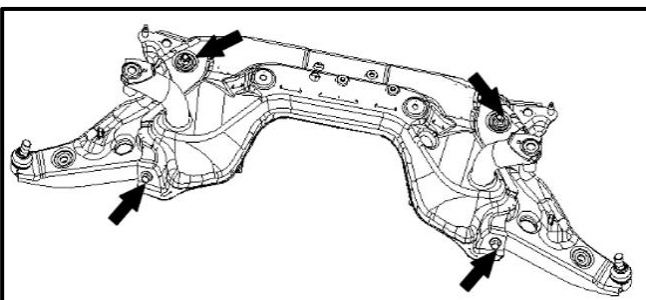
13. Removing the front stabilizer bar

- a. Remove 4 bolts.



14. Disassemble the front lower swing arm assembly

- a. Remove the 4 bolts and the 2 nuts.



Installation process

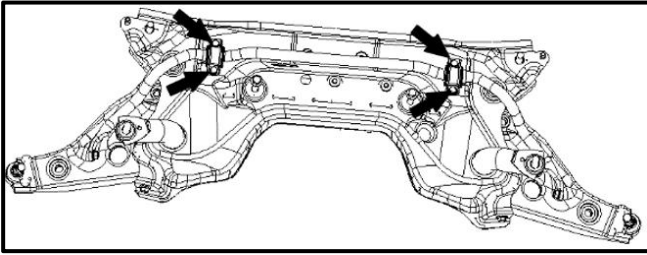
Caution:

Check the front wheel toe-in

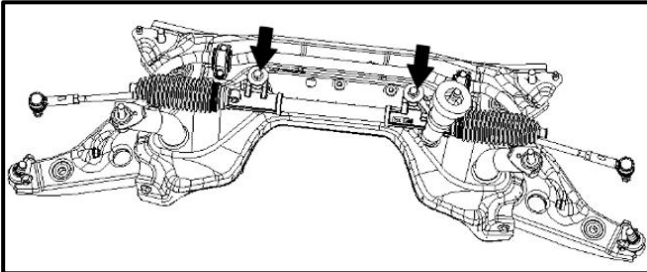
1. Install the front lower swing arm assembly

- a. Installation of 4 bolts and 2 nuts

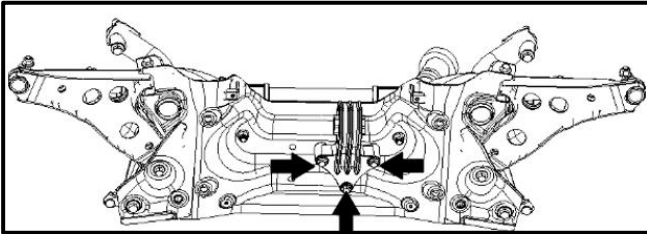
Torque: $135 \pm 10 \text{N.m}$



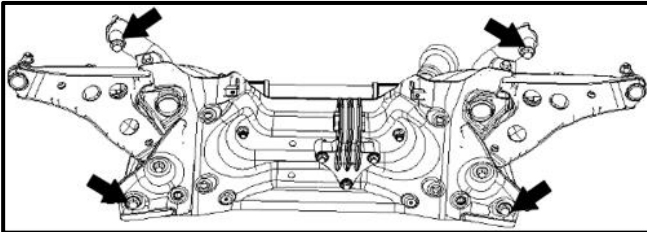
2. Install the front stabilizer bar
 - a. Install 4 bolts.Torque: $30\pm 3\text{N.m}$



3. Install the steering gear with a crosswise tie rod assembly
Install 2 bolts.
Torque: $110\pm 10\text{N.m}$



4. Install the front axle rear suspension assembly
Install 3 bolts.
Torque: $70\pm 5\text{N.m}$



5. Install the subframe with a swing arm assembly
Support the subframe with a swing arm assembly,
and install 4 bolts
Torque: $165\pm 10\text{N.m}$

6. Install the front and rear sections of the front engine compartment lower guard plate
7. Connect the front axle rear suspension assembly to the front axle rear suspension mounting bracket
8. Connect the front lower swing arm ball pins
9. Connect the steering gear outer ball joint
10. Connect the front lateral stabilizer bar connecting rod assembly
11. Install the front wheels
12. Lower the vehicle
13. Connect the steering gear assembly to the steering column assembly

3.3 Rear suspension

3.3.1 Specifications

3.3.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)	Remarks
Rear subframe front point bolt	M14×145	165±10	—
Rear subframe rear point bolt	M14×130	165±10	—
Left rear swing arm front point bolt	M12×80	135±10	Coat the red gum
Left rear swing arm rear point bolt	M12×70	135±10	Coat the red gum
Rear point nut of left rear swingarm	M12	135±10	—
Left swing arm ball head bolt	M12	110±10	—
Left swing arm ball nut	M12	110±10	—
Right rear swing arm front point bolt	M12×80	135±10	Coat the red gum
Right rear swing arm rear point bolt	M12×70	135±10	Coat the red gum
Right rear swing arm rear point nut	M12	135±10	—
Right swing arm ball head bolt	M12	110±10	—
Right swing arm ball head nut	M12	110±10	—
Rear crosswise tie rod nut	M12	55±5	—
Rear crosswise tie rod nut	M12	55±5	—
Rear stabilizer bar connecting rod nut	M10	70±5	Coat the red gum
Rear stabilizer bar connecting rod nut	M10	70±5	Coat the red gum
Rear stabilizer bar mounting bracket bolt	M8×25	30±3	—
Upper mounting point fixed nut of the left rear strut assembly	M12	70±5	—
Left rear strut lower fixed nut	M12	115±10	—
Lower fixed bolt of left rear strut	M12×55	115±10	—
Upper mounting point fixed nut of the right rear strut assembly	M12	70±5	—
Lower fixed nut of the right rear strut	M12	115±10	—
Lower fixed bolt of the right rear strut	M12×55	115±10	—
Wheel bolt	M12	110±10	—

3.3.2 Description and operation

3.3.2.1 Description and operation

MacPherson independent suspension, includes two dampers, a rear subframe assembly and a rear stabilizer bar and other parts. The rear suspension assembly is connected to the underside of the body bottom through rubber bushings located on the front side of each control arm. This structure maintains the wheels attached to the body and balances the bouncing of the left and right wheels through the dampers and coil springs to minimize the vehicle vibration and keep a smooth ride.

3.3.3 System operating principle

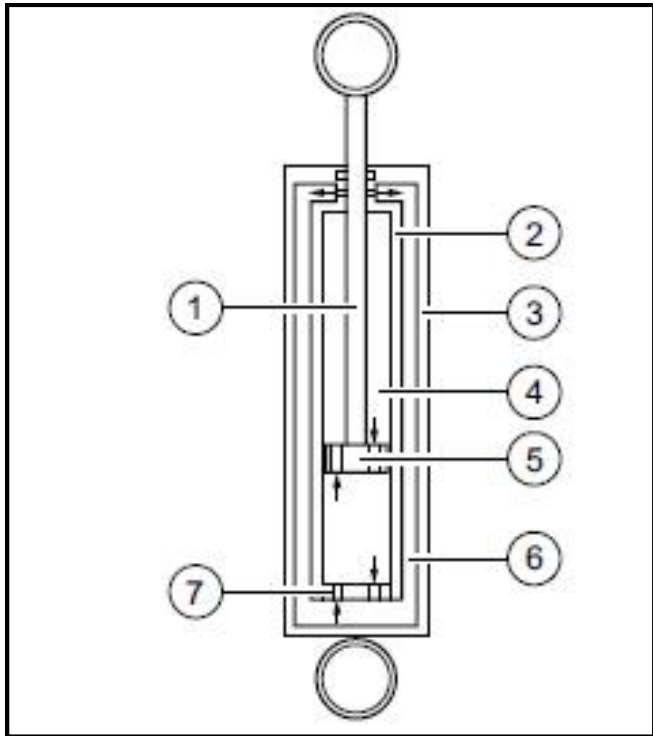
3.3.3.1 Operating principle of suspension system components

Spring:

The stiffness of the spring affects the response of the sprung mass when the car is traveling. A car with low spring stiffness can completely eliminate bumps and provide an extremely smooth ride experience, but at the same time it is prone to dive and squat during braking and acceleration, and prone to rollover or tumbling while turning. Cars with too much spring stiffness are slightly less smooth over bumpy roads, but there is very little body movement, which means that it is allowed to drive the vehicle in a quicker manner, even while turning. So while the spring itself may seem simple, the balance between passenger comfort and the maneuverability of the car requires a second consideration in design. This is

because the spring is excellent at absorbing energy, but is slightly poor at dissipating the energy. As a result, the suspension system requires a component - damper. If no damping structure is used, the spring will pop open at an uncontrollable rate and release the energy it absorbed from the bump and continue to pop up at its own frequency until all the energy initially applied to it has been used up. The suspension itself, built on the spring, causes the car to travel in a bouncy and uncontrolled manner depending on the terrain.

Damper:



1. Piston push rod
2. Inner cylinder
3. Outer cylinder
4. Hydraulic chamber
5. Piston and valve
6. Liquid storage space
7. Inner cylinder bottom valve

It controls unexpected spring motion through a process called damping. The damper slows down and mitigates the magnitude of vibratory motion by converting the kinetic energy of the suspension motion into heat energy that can be dissipated through the hydraulic oil. The upper support of the damper is attached to the frame (i.e., the sprung mass) and the lower support is attached to the axle (i.e., the unsprung mass) near the wheel. One of the most common types of damper in a double-cylinder design is one where the upper support is attached to a piston rod and the rod is connected to a piston as the piston is in a cylinder filled with hydraulic oil. The inner cylinder is called the pressure cylinder and the outer cylinder is called the reservoir cylinder. The reservoir cylinder stores the excess hydraulic oil. When the wheel encounters a bumpy road surface and causes the spring to compress and tension, the energy of the spring is transferred to the damper through the upper support and down through the piston rod to the piston. The piston is punched with holes through which hydraulic oil can leak out as the piston moves up and down inside the pressure cylinder. Because these holes are so tiny, only a very small amount of hydraulic oil can pass through them even under great pressure. This slows down the movement of the piston, which in turn slows down the movement of the spring. The damper operates in two cycles - the compression cycle and the tension cycle. The process of compressing the hydraulic oil below the piston as it moves downward is called the compression cycle, and the process of compressing the hydraulic oil above the piston as it moves upward to the top of the pressure cylinder is called the tension cycle. For a typical car, the resistance of its tensile cycle is greater than that of its

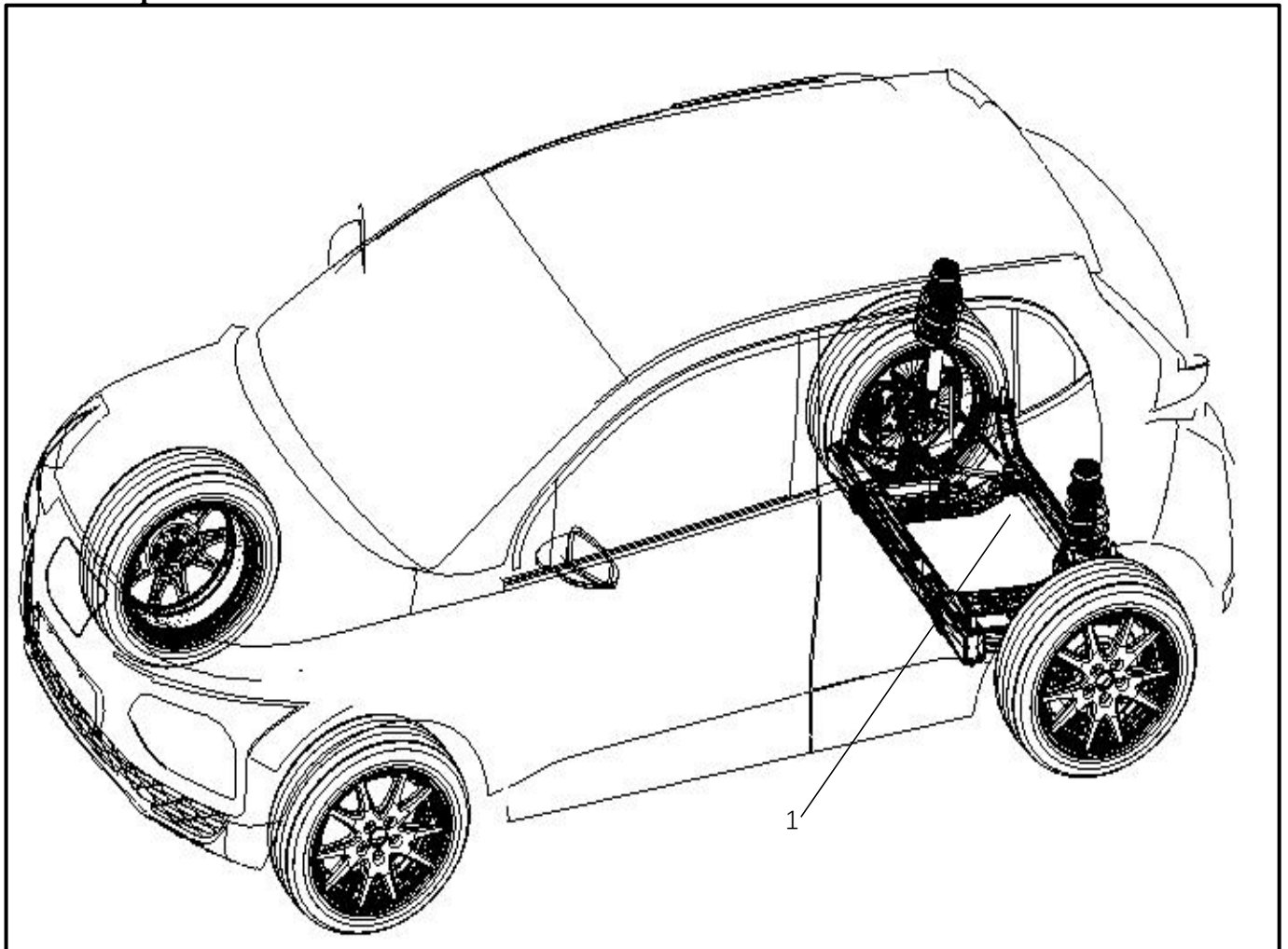
compression cycle. Also note that the compression cycle controls the motion of the unsprung mass of the vehicle; while the tension cycle controls the motion of the relatively heavier sprung mass. All modern dampers are equipped with a speed sensing function - the faster the suspension moves, the more resistance the damper provides. This allows the damper to adjust to the road conditions and control all the unexpected movements that can occur in a moving vehicle, including bouncing, rollover, braking dive and acceleration squat.

Stabilizer bar:

It is used in conjunction with a damper to provide additional stability to a moving vehicle. The stabilizer bar is a metal rod that spans the entire axle and effectively connects the two sides of the suspension together. When the suspension moves up and down on one wheel, the stabilizer bar transfers the movement to the other wheels. This results in a smoother ride and reduces the tilt of the vehicle. In particular, it counteracts the car rollover tendency on the suspension while turning.

3.3.4 Component location

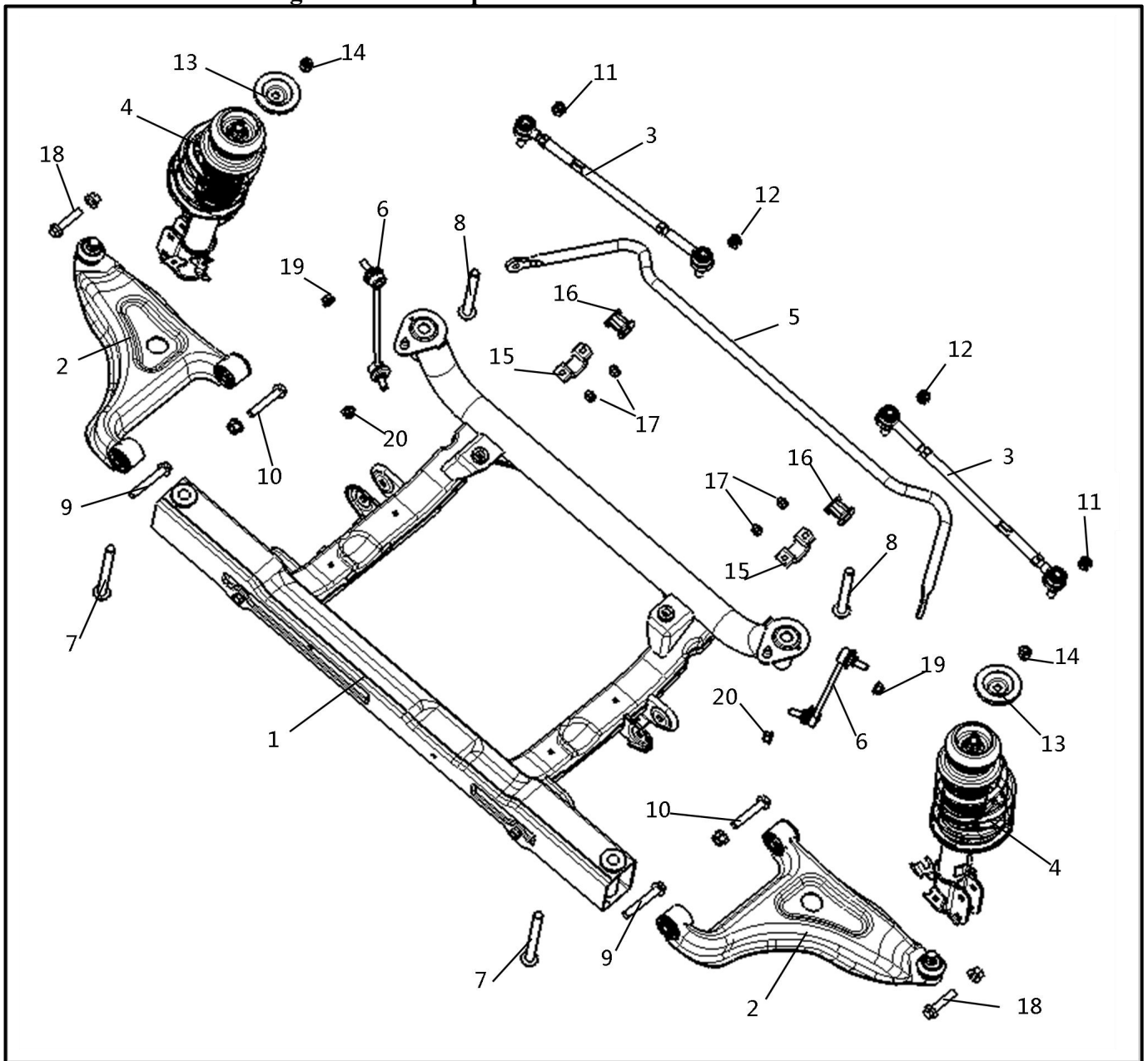
3.3.4.1 Component location



1. Rear suspension assembly

3.3.5 Breakdown drawing

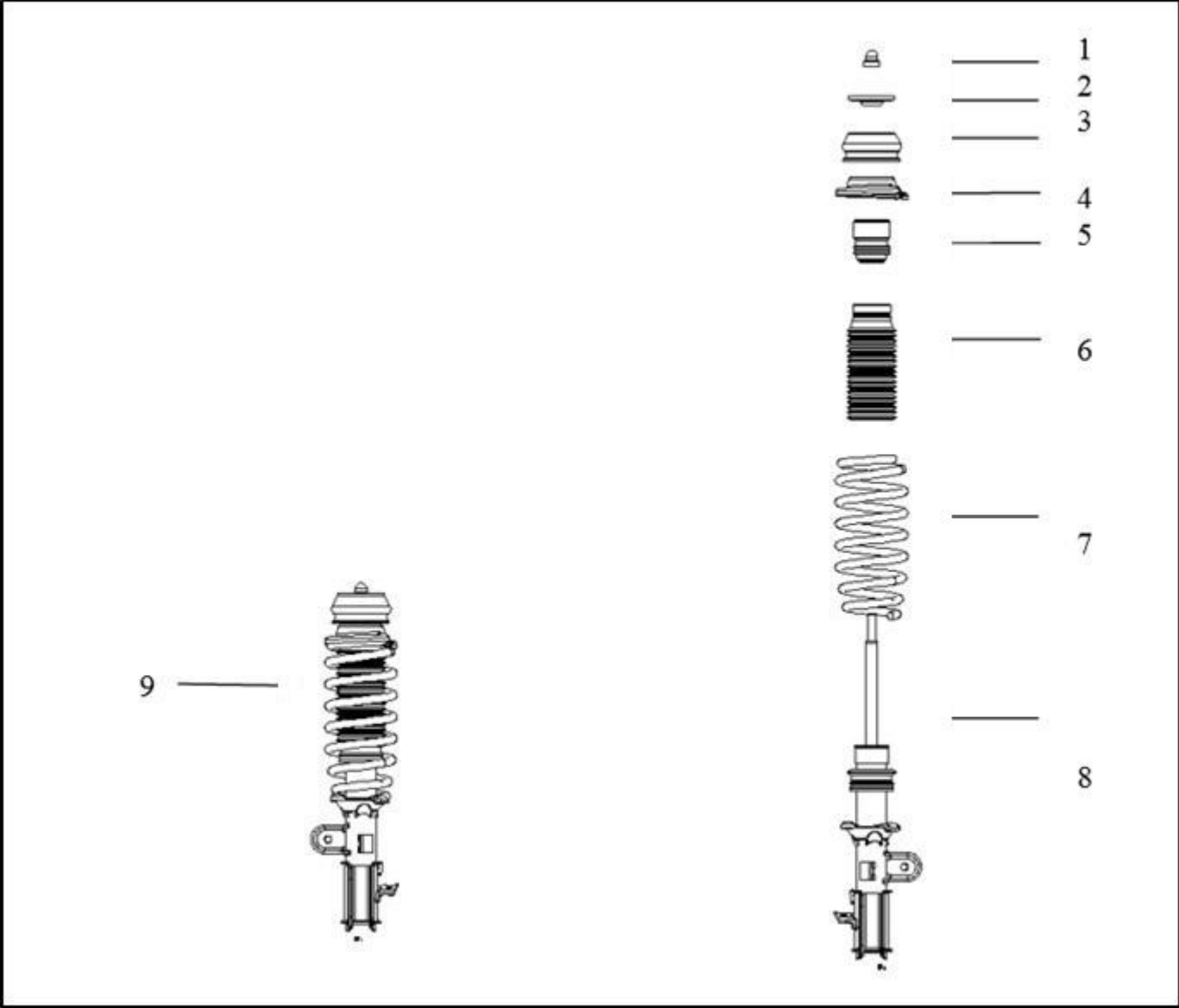
3.3.5.1 Breakdown drawing of the rear suspension



- 1. Rear subframe assembly
- 2. Left/right rear lower swing arm assembly
- 3. Rear crosswise tie rod assembly
- 4. Left/right rear strut assembly
- 5. Rear stabilizer bar
- 6. Rear stabilizer bar connecting rod assembly
- 7. Mounting bolt securing the rear subframe to the body front point
- 8. Mounting bolt securing the rear subframe to the body rear point
- 9. Mounting bolt securing the swing arm to the subframe front point
- 10. Mounting bolt and nut securing the swing arm to the subframe rear point

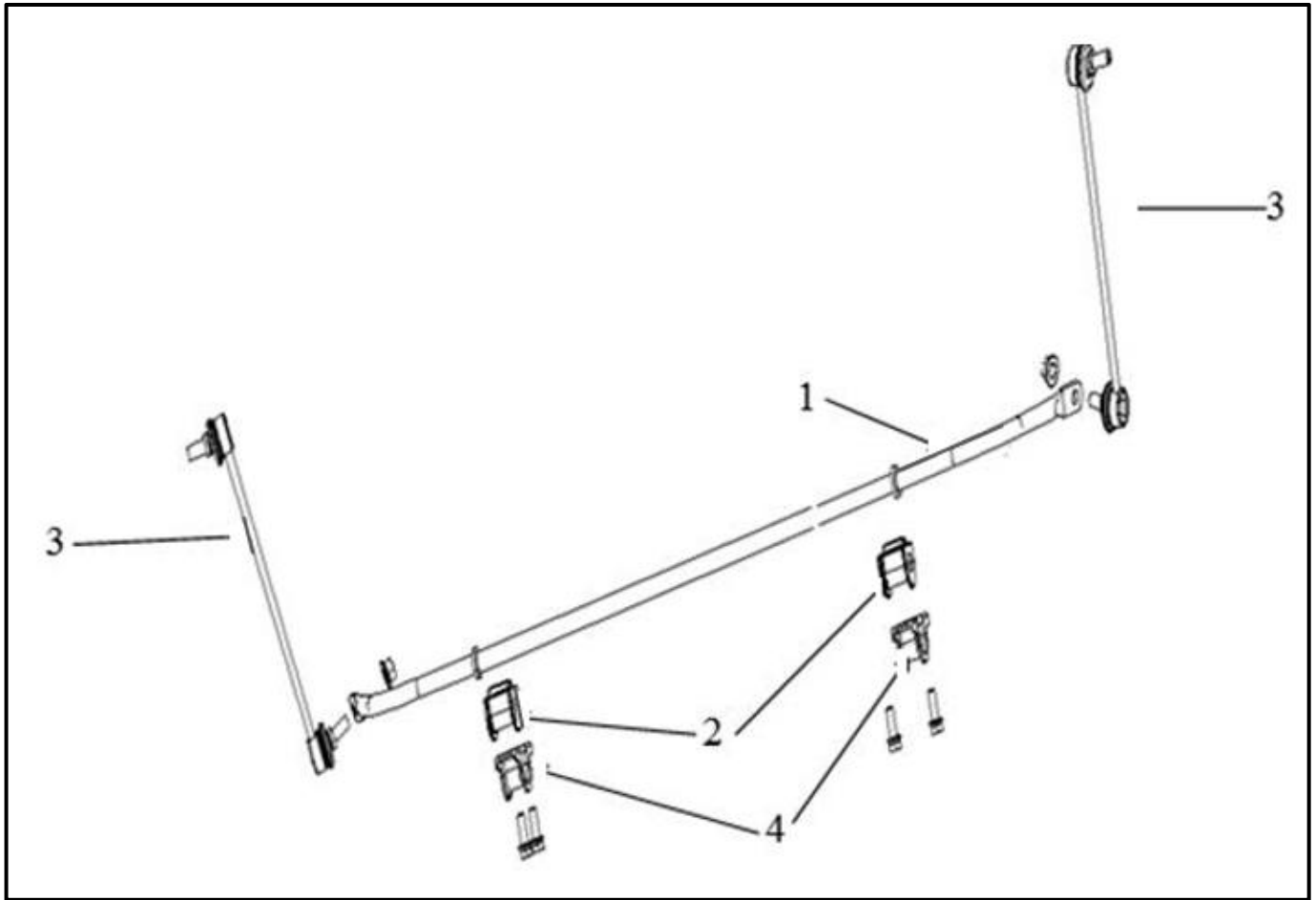
- 11. Mounting nut securing the rear crosswise tie rod assembly to the steering knuckle
- 12. Mounting nut securing the rear crosswise tie rod assembly to the subframe
- 13. Mounting cover plate
- 14. Mounting nut securing the rear strut to the body
- 15. Rear stabilizer bar bracket
- 16. Rear stabilizer bar bushing
- 17. Mounting bolt securing the rear stabilizer bar to the rear subframe
- 18. Mounting bolt and nut securing the rear swing arm to the steering knuckle
- 19. Mounting nut securing the rear stabilizer bar connecting rod to the strut
- 20. Mounting nut securing the rear stabilizer bar connecting rod to the stabilizer bar

Left rear strut assembly (right rear strut assembly symmetrical to the left assembly)



- | | |
|---------------------------------------------|----------------------------|
| 1. Gasket | 6. Rear strut buffer block |
| 2. Upper mounting bushing of the rear strut | 7. Rear strut assembly |
| 3. Lower bushing of the rear strut | 8. Rear strut dust cover |
| 4. Rear strut bushing support | 9. Rear strut assembly |
| 5. Rear strut washer | |

Rear stabilizer bar unit (including the rear stabilizer bar connecting rod assembly)



- 1. Rear stabilizer bar assembly
- 2. Rear stabilizer bar bushing

- 3. Rear stabilizer bar connecting rod assembly
- 4. Rear stabilizer bar bracket

3.3.6 Disassembly and installation

3.3.6.1 Replacement of rear strut assembly

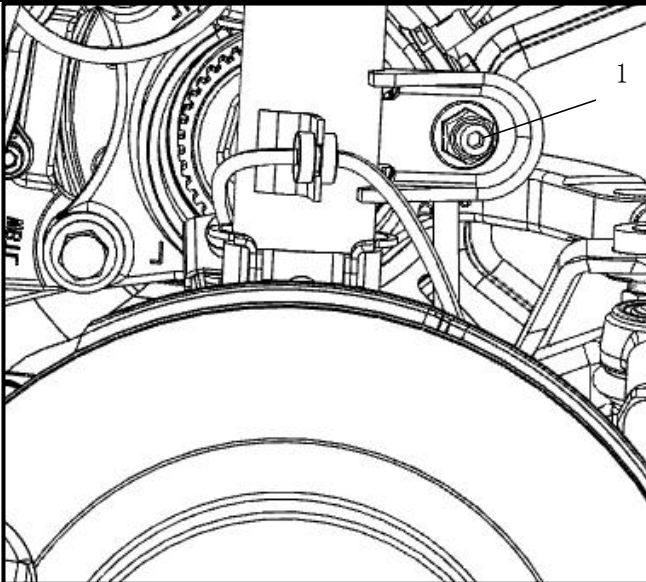
Disassembly process

1. Open the back door
2. Remove the body back door sealing strip
3. Disassemble the back door sill guard
4. Disassemble the left rear doorway sealing strip
5. Disassemble the left rear door sill guard body
6. Disassemble the left C-pillar lower guard body

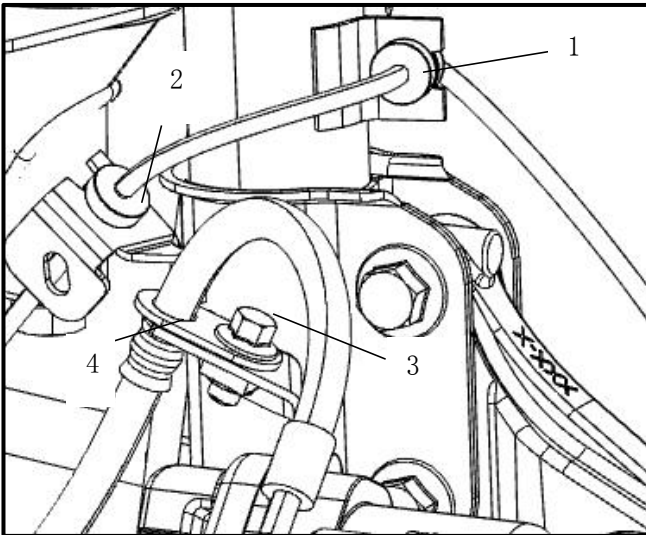
Warning!

Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.

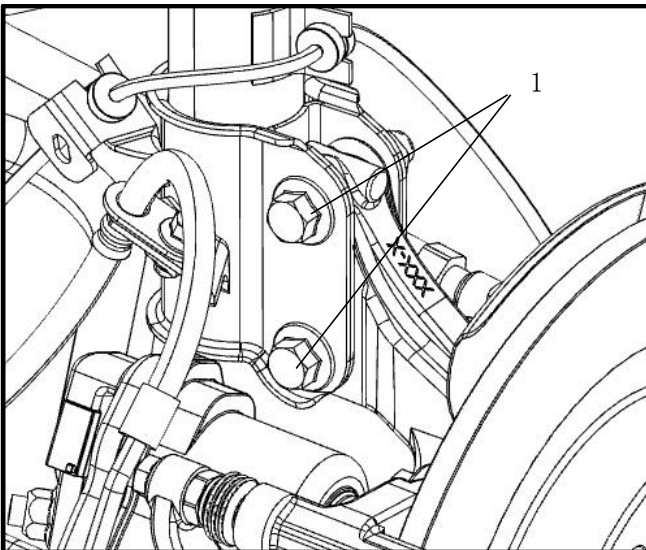
7. Open the front cabin cover.
8. Disconnect the negative cable of the storage battery
9. Vehicle hoisting
10. To disassemble the wheels; Please refer to 3.4.5.1 Replacement of wheels



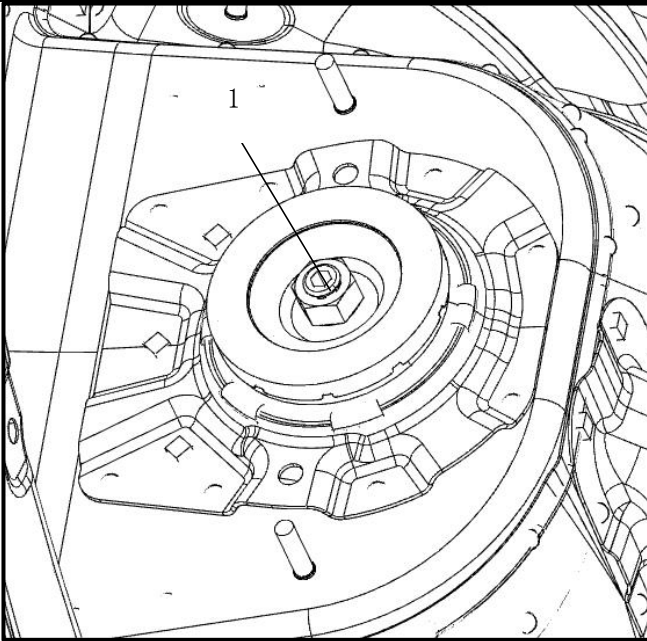
11. Disconnect and disengage the rear stabilizer bar connecting rod and remove the nut 1



12. Disconnect the connection points 1 and 2 of the wheel speed sensing harness on the rear strut assembly
13. Disconnect the fixing point 3 of the brake hose on the rear strut assembly and disengage the brake hose from the rear strut assembly 4



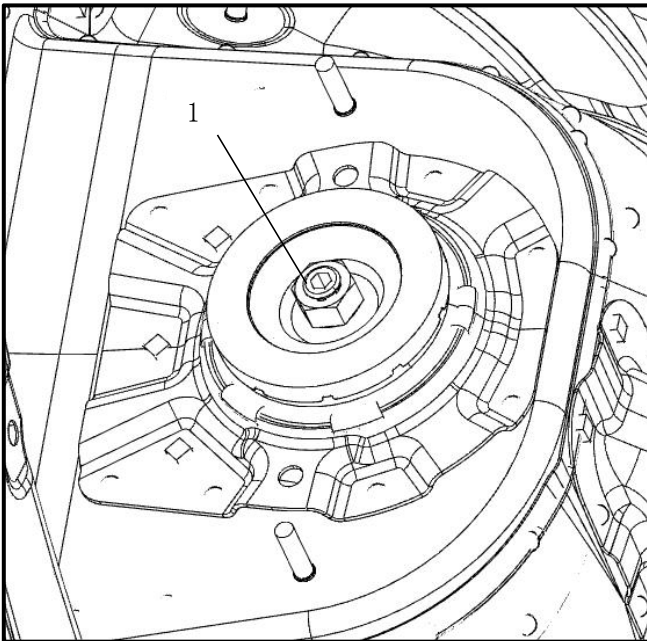
14. Disassemble the rear strut assembly
 - a. Remove the 2 bolts and 2 nuts 1 at the strut and steering knuckle.



- b. Disassemble the nut 1 connecting the rear strut assembly to the body.
- c. Disassemble the upper mounting pad of the rear strut and remove the rear strut assembly.

Caution:

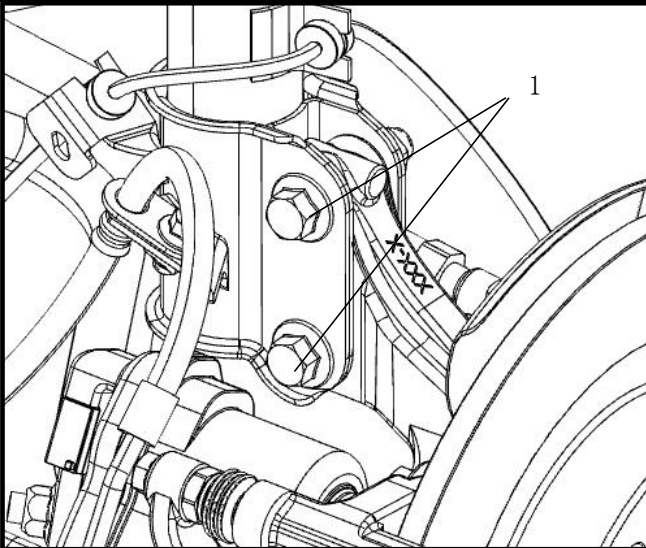
When removing the nut, hold the rear strut assembly with your hand to prevent bruising your feet.



Installation process

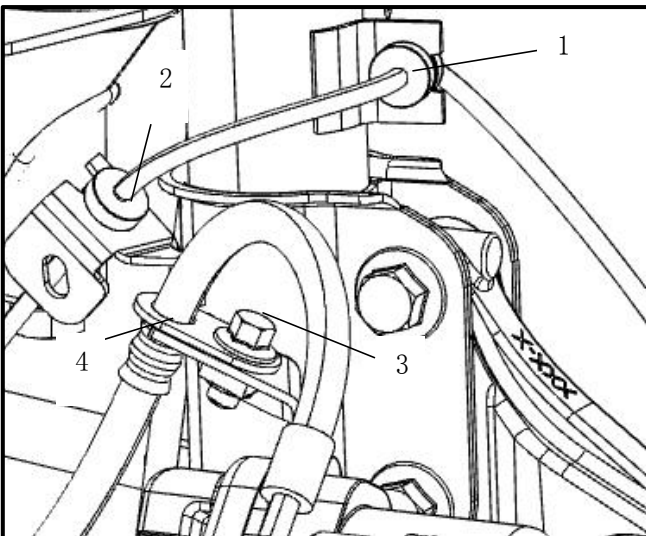
1. Install the rear strut assembly
 - a. Raise the rear strut assembly, align it to the body mounting hole, and install the upper mounting pad of the rear strut
 - b. Install the nut 1 connecting the rear strut assembly to the body.

Torque: 70 ± 5 N.m

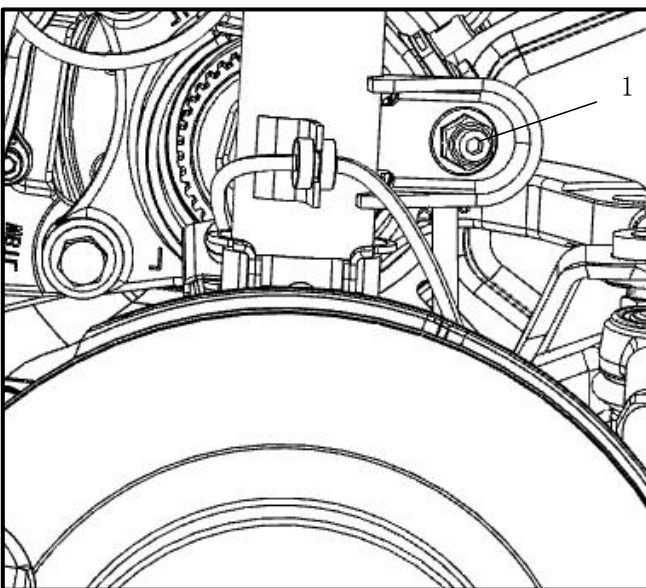


- c. Install the 2 bolts and 2 nuts 1 at the strut and steering knuckle.

Torque: $115\pm 10\text{N.m}$



2. Install the connection points 1 and 2 of the wheel speed sensing harness on the rear strut assembly, connect the brake hose to the rear strut assembly 4, and install the fixing point 3 of the brake hose on the rear strut assembly.



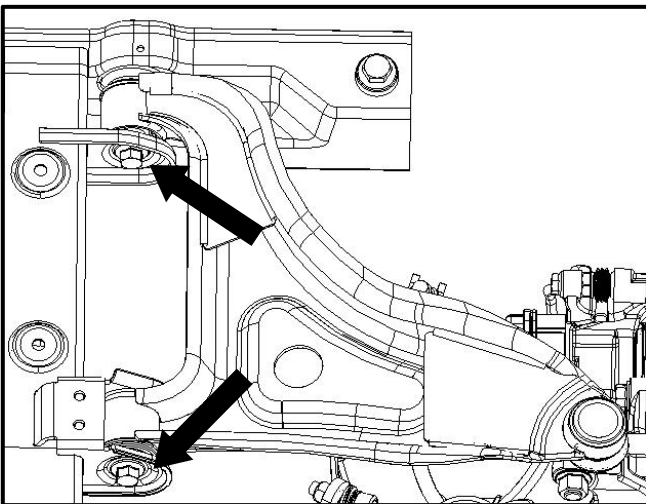
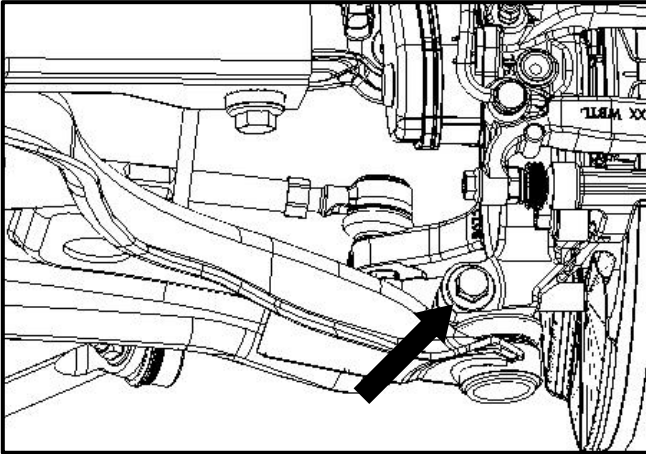
3. Install rear stabilizer bar connecting rod to the rear strut connecting nut 1

Torque: $70\pm 5\text{N.m}$

4. To install the wheels; Please refer to 3.4.5.1 replacement of wheels
5. Lower the vehicle
6. Connect and disconnected negative cable of the storage battery

7. Close the front cabin cover.
8. Open the back door
9. Install the left C-pillar lower guard body
10. Install the left rear door sill guard body
11. Install the left rear doorway sealing strip
12. Install the rear back door sill guard
13. Install the body back door sealing strip
14. Close the back door.

3.3.6.2 Replacement of rear lower swing arm



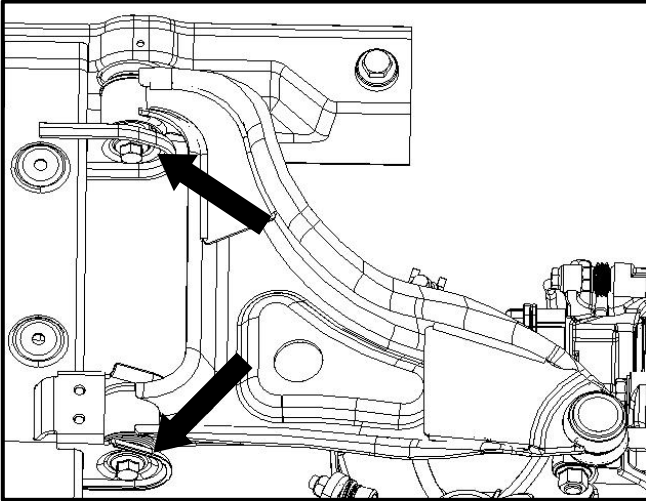
Disassembly process

1. Vehicle hoisting
2. Disassemble the rear wheels
3. Disassemble the rear lower swing arm assembly
 - a. Remove 1 bolt and 1 nut and disconnect the front lower swing arm ball pin from the rear steering knuckle.
 - b. Remove 2 bolts and 1 nut and disconnect the front lower swing arm assembly from the rear subframe.

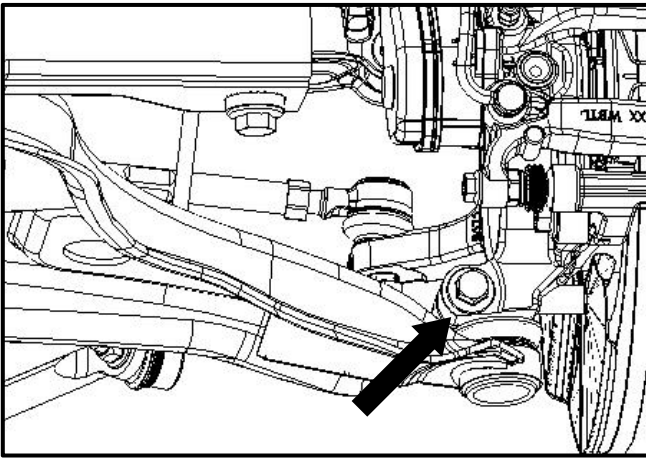
Installation process

Caution:

The bolts need to be coated with red glue as required during assembly.



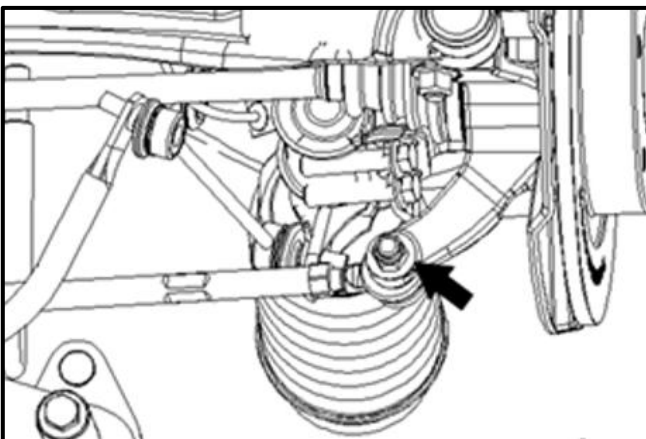
1. Install the rear lower swing arm assembly
 - a. Install the rear lower swing arm assembly to the rear subframe, and install the 2 bolts and 1 nut.
Torque: $130\pm 10\text{N.m}$



- b. Connect the rear lower swing arm ball pin to the rear steering knuckle assembly and install the 1 bolt and 1 nut.
Torque: $110\pm 10\text{N.m}$

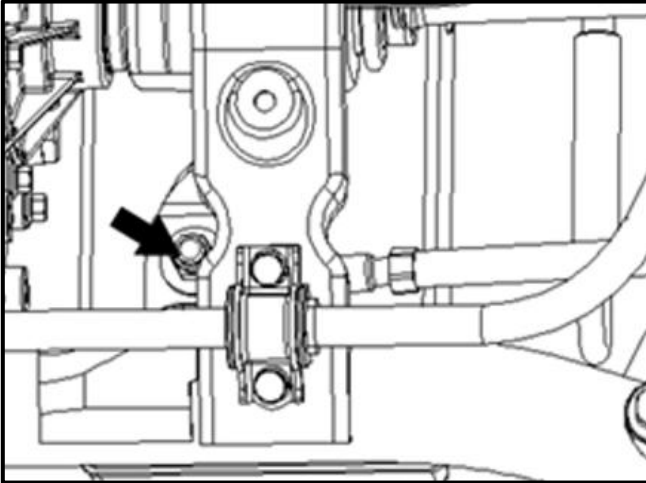
2. To install front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Lower the vehicle

3.3.6.3 Replacement of rear crosswise tie rod



Disassembly process

1. Vehicle hoisting
2. To disassemble front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Disassemble the rear crosswise tie rod assembly
 - a. Remove 1 nut and disconnect the rear crosswise tie rod ball pin from the rear steering knuckle.



- b. Remove 1 nut and disconnect it from the rear subframe.

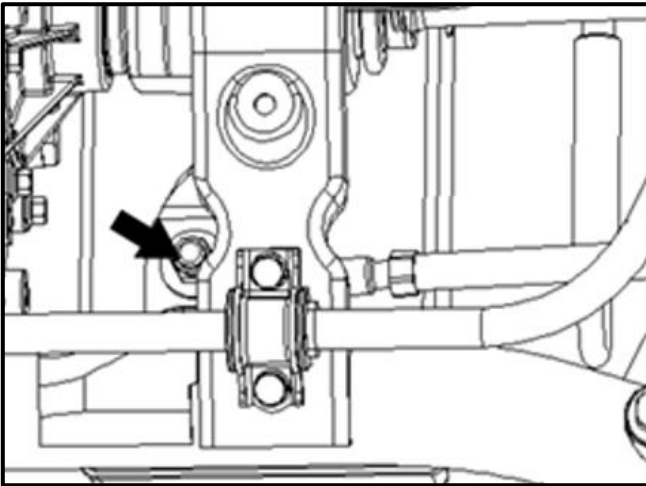
Installation process

Caution:

※**Check the rear wheel toe-in.**

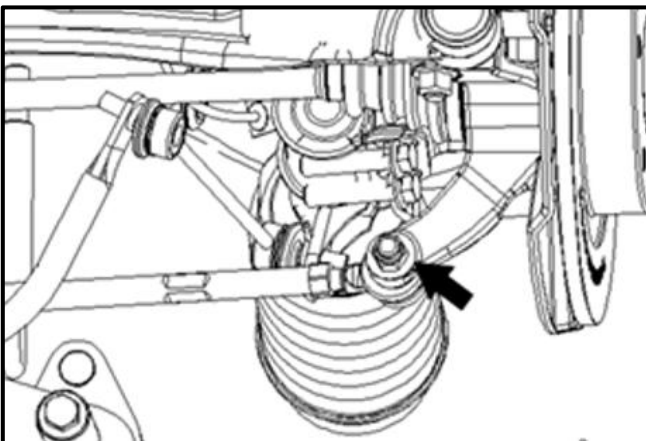
1. Install the rear crosswise tie rod assembly
 - a. Connect the rear crosswise tie rod ball pin to the rear subframe and install 1 nut;

Torque: 55 ± 5 N·m



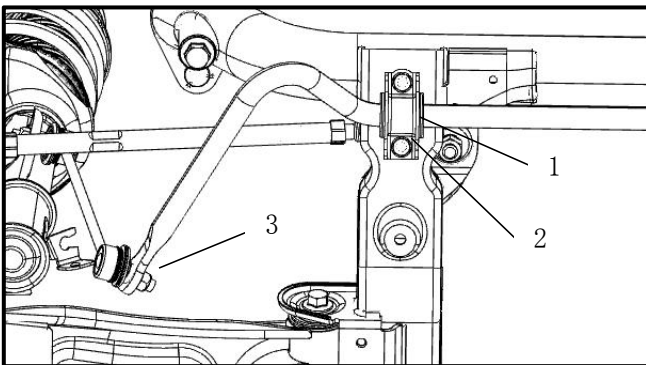
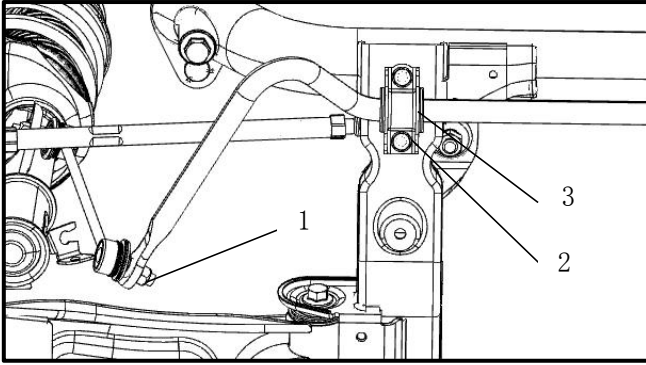
- b. Connect the rear crosswise tie rod ball pin to the rear steering knuckle and install 1 nut.

Torque: 55 ± 5 N·m



2. To install rear wheels; Please refer to 3.4.5.1 replacement of wheels
3. Lower the vehicle

3.3.6.4 Replacement of rear stabilizer bar



Warning!
Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.

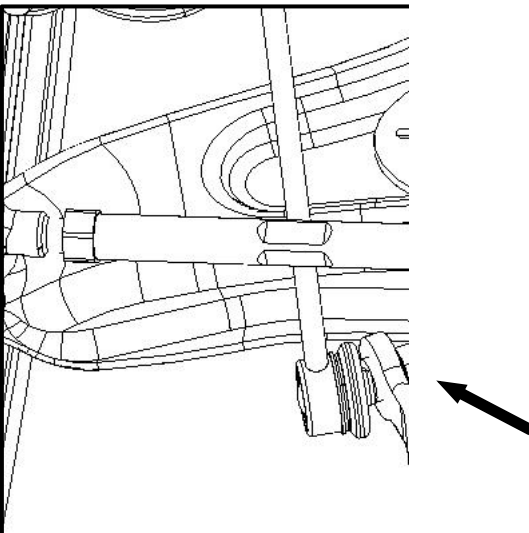
Disassembly process

1. Open the front cabin cover.
2. Disconnect the negative cable of the storage battery
3. Vehicle hoisting
4. Disconnect the rear stabilizer bar connecting rod assembly 1
5. Disassemble the 4 bolts 2 securing the rear lateral stabilizer bar assembly to the rear subframe assembly, remove the 2 rear lateral stabilizer bar mounting brackets 3, and remove the rear front lateral stabilizer bar assembly.

Installation process

1. Align the limit bumps on the 2 rear stabilizer bar bushings to the limit dimples on the rear subframe and push the rear stabilizer bar against the rear subframe
2. Install the 2 rear lateral stabilizer bar mounting brackets 1 on the bushings and install the 4 bolts 2 securing the rear lateral stabilizer bar assembly to the rear subframe assembly
3. Connect the rear stabilizer bar connecting rod assembly to the rear stabilizer bar assembly 3
4. Lower the vehicle
5. Connect the negative cable of the storage battery
6. Close the front cabin cover.

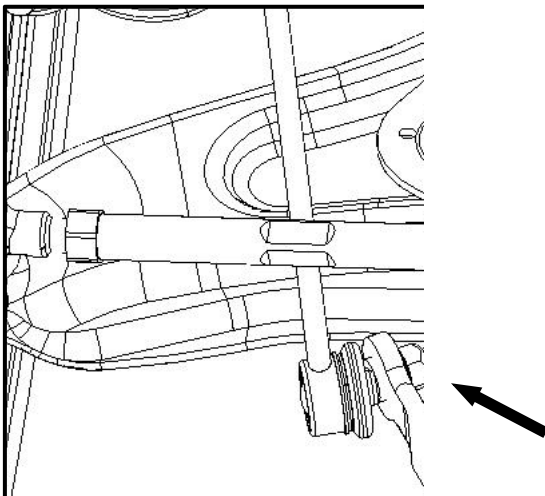
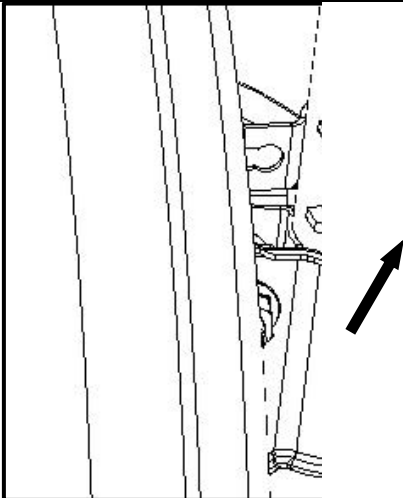
3.3.6.5 Replacement of rear stabilizer bar connecting rod



Disassembly process

1. Vehicle hoisting
2. To disassemble front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Disassemble the rear lateral stabilizer bar connecting rod assembly
 - a. Remove 1 nut and disconnect the rear lateral stabilizer bar connecting rod assembly from the rear strut.

- b. Remove 1 nut to remove the rear lateral stabilizer bar connecting rod assembly.



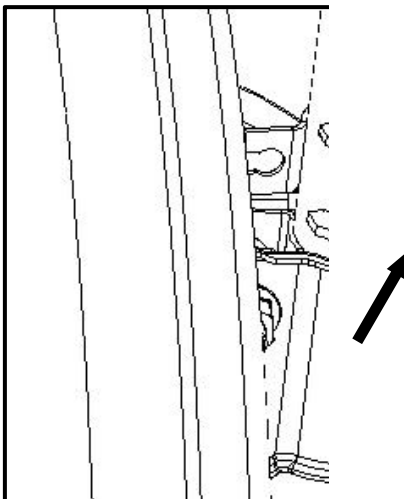
Installation process

1. Install the rear lateral stabilizer bar connecting rod assembly
 - a. Assemble the rear lateral stabilizer bar connecting rod assembly to the rear stabilizer bar and install 1 nut.

Torque: 70 ± 5 N·m

- b. Connect the rear lateral stabilizer bar connecting rod assembly to the rear strut and install 1 nut.

Torque: 70 ± 5 N·m

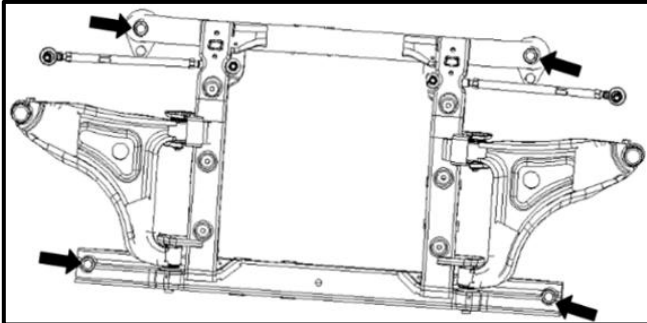


2. To install front wheels; Please refer to 3.4.5.1 Replacement of wheels
3. Lower the vehicle

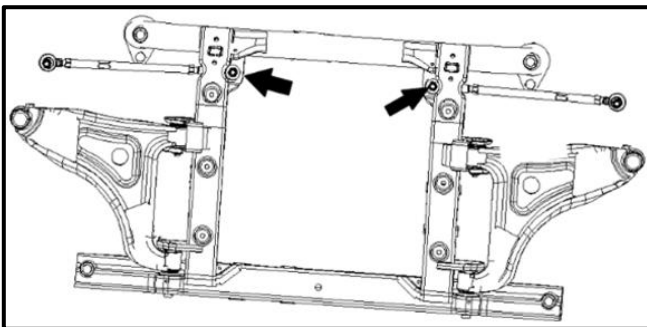
3.3.6.6 Replacement of rear subframe

Disassembly process

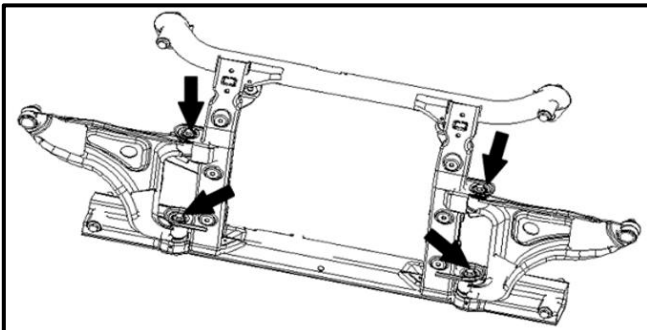
1. Vehicle hoisting
2. To disassemble front wheels; Please refer to 3.4.5.1 Replacement of wheels



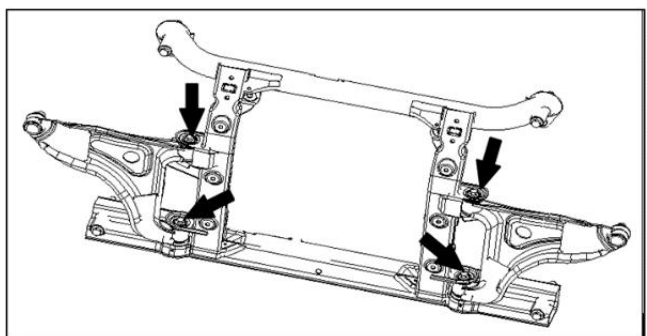
3. Disconnect the rear lateral stabilizer bar connecting rod assembly
4. Disassemble the rear stabilizer bar
5. Disconnect the outer ball joint of the rear crosswise tie rod
6. Disconnecting the rear lower swing arm ball pin
7. Disassemble the rear subframe with a swing arm assembly
- a. Support the rear subframe with a swing arm assembly and remove the 4 bolts.



8. Disassemble the rear crosswise tie rod assembly
- a. Remove 2 nuts.



9. Disassemble the rear lower swing arm assembly
- a. Remove the 4 bolts and the 2 nuts.



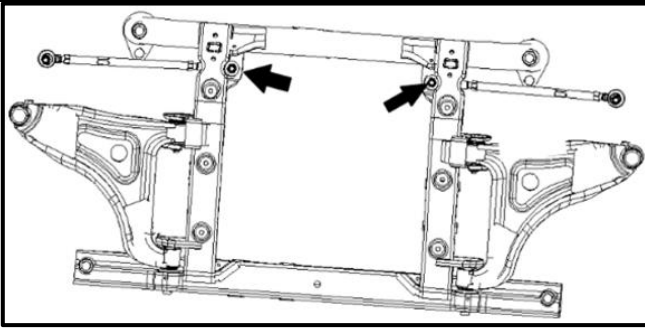
Installation

Caution:

Check the rear wheel toe-in.

1. Install the rear lower swing arm assembly
- a. Installation of 4 bolts and 2 nuts.

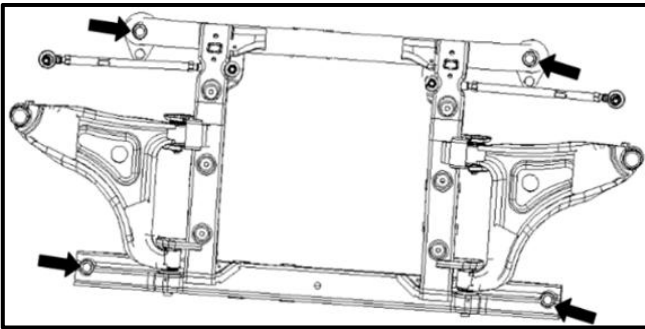
Torque: $130 \pm 10 \text{ N.m}$



2. Install the rear crosswise tie rod assembly

a. Remove 2 nuts.

Torque: 55 ± 5 N·m



3. Install the rear subframe with a swing arm assembly

a. Support the rear subframe with a swing arm assembly, and install 4 bolts.

Torque: 165 ± 10 N·m

4. Connect the rear lower swing arm ball pin;

5. Connect the outer ball joint of the rear crosswise tie rod;

6. Install the rear stabilizer bar;

7. Connect the rear lateral stabilizer bar connecting rod assembly;

8. To install front wheels; Please refer to 3.4.5.1 Replacement of wheels

9. Lower the vehicle

3.4 Wheels and tires

3.4.1 Specifications

3.4.1.1 Fastener specifications

Fastener name	Specifications	Torque range
Wheel bolt	M12	125±10 (N·m)

3.4.1.2 Tire specifications

Specifications	175/65R15 185/55R16
Cold pressure (front/rear)	220kPa
Wheel rim.	15*5J 16*6J

3.4.1.3 Front suspension positioning specifications

Caution

The following parameters refer to the technical parameters of the vehicle in a ready state.

Front wheel	Single-wheel toe-in	0±5'	/
	Total toe-in	0±10'	/
	Wheel camber	17'±30'	Camber difference: ±30'
	Kingpin inclination	11°34'±1°	/
	Kingpin caster	2°52'±1°	/

3.4.1.4 Rear suspension positioning specifications

Caution

The following parameters refer to the technical parameters of the vehicle in a ready state.

Rear wheel	Single-wheel toe-in	0±5'	/
	Total toe-in	0±10'	/
	Wheel camber	2'±30'	Camber difference: ±30'

3.4.2 Description and operation

3.4.2.1 Meaning of tire sidewall markings and air pressure description

Meaning of tire sidewall markings

E.g.: 205/55 r16 91 v

205 - nominal section width (in mm)

55 – flatness ratio (height-width ratio: %)

R - radial structure

16 - nominal rim diameter (in inch)

91 - load index

V – speed class (240 km/h)

Table of common speed and class:

Speed class	Maximum speed (km/h)
S	180
T	190

H	210
V	240
W	270
Y	300
ZR	Above 240

Air pressure description

Tire air pressure has a decisive influence on the wear and tear and failure damage aspects of tires. Therefore, it is important to maintain the standard air pressure and check the air pressure regularly for safe driving.

- The load capacity of a tire corresponds to its inflation pressure, and the reasonable air pressure of a tire must be determined according to the load of the vehicle. Climate and seasonal changes should not be used as a reason to adjust tire pressure.

- At the beginning of the new tire's life cycle, the tire's outer edge dimensions will change due to the heat generated by the flexing motion, which will lower the tire's air pressure, so the air pressure should be checked and adjusted after 24 hours of use or 2,000 - 3,000 km of driving.

- The tire pressure should be increased by 10 - 15 % when driving at high speeds for long periods of time.

1. Dangers of insufficient air pressure

Insufficient air pressure will lead to increased tire sidewall deformation and heat generation, greatly reducing tire life and bringing the following problems and safety hazards:

- a. Excessive wear in the tire shoulder position.
- b. Higher likelihood of a tire bulging on impact.
- c. Decreased adhesion between tire components and consequent delamination.
- d. Sidewall crush damage due to severely insufficient air pressure.
- e. Abnormal wear between the bead section and the rim due to excessive tire bump and rim damage.
- f. Increased rolling resistance and higher fuel consumption.

2. Dangers of excessive air pressure

Excessive air pressure will result in a decrease in the grounded area of the tire tread, increased rigidity of the carcass, and decreased cushioning, and will bring about the following problems as well as safety hazards:

- a. Excessive wear at the center of the tread.
- b. Increased risk of tire rupture or even blowout when the tire is impacted by external forces.
- c. Reduced maneuverability due to reduced grounded area and susceptibility to ditching, skidding, and other hazards.
- d. Reduced ride comfort.
- e. Poor ride smoothness and driving with excessive air pressure for a long period of time easily lead to damage to the vehicle chassis.

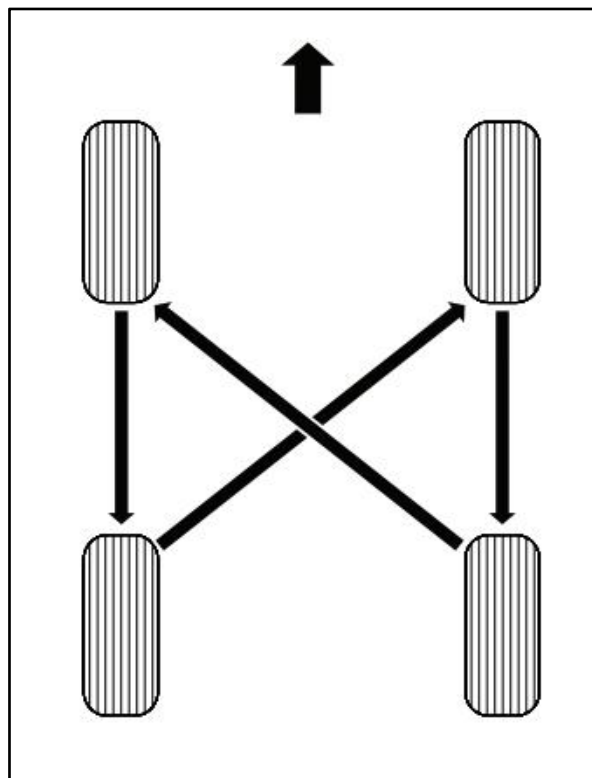
- 3. Hazards of uneven tire pressure on the same suspension.
 - a. Uneven braking force from side to side.
 - b. Deviation upon steering.
 - c. Reduced maneuverability.
 - d. Deviation upon acceleration.
 - e. Deviation while driving.

3.4.2.2 Tire rotation

Vehicle front and rear wheels can be worn to distinct extents due to the load borne while the vehicle is running, so in order to avoid the tire wear in a single direction, regular and timely tire rotation can make the tire wear even, and thus extend the tire life. It is recommended to rotate the tires every 5,000 - 8,000 km, and the main purpose of tire rotation is to:

- a. Ensure even tire wear and fatigue for stability and economy.
- b. Tire conditions should be checked upon tire rotation to detect damage timely and prevent accidents.

The tire rotation method is shown in the figure:



3.4.3 System operating principle

3.4.3.1 Wheel alignment

The driver turns the steering wheel to drive the car in the desired direction. However, if the driver has to keep operating the steering wheel to keep the vehicle running in a straight line when driving on a straight road, or if he has to use a lot of force to steer the vehicle when turning a corner, the driver has to consume a lot of physical strength and experience a lot of mental stress. To solve this problem and to prevent premature tire wear, the wheels are mounted on the body (or chassis) at an angle according to certain requirements. These angles are collectively known as "wheel alignment". Alignment is a

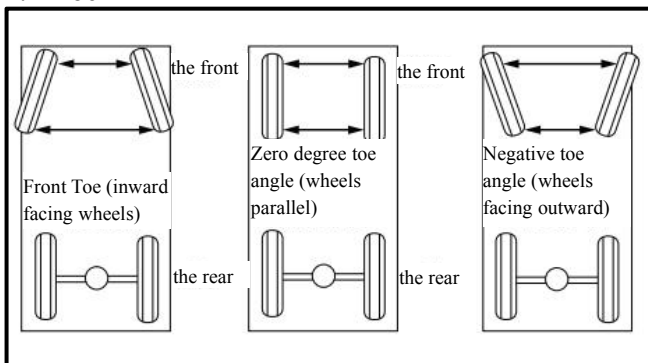
comprehensive term that refers to the angular relationship between front and rear axles, wheels, steering components and suspension components.

Steering can be easy if the wheels are correctly aligned. In a straight line, the driver only needs to operate the steering wheel to keep it in the forward position, and only a small amount of force is needed when turning. In other words, when all the angular relationships that constitute "wheel alignment" are correctly adjusted, steering will be easy. But even if just one of these angular relationships is adjusted improperly, the following problems may arise: difficult steering; poor steering stability; poor steering return; and shortened tire life. The vehicle's alignment angles include: toe-in, camber, caster, king pin inclination, steering angle, included angle, advancement angle, and friction radius.

The above angles and dimensions depend on the suspension system, the tire drive system (front-powered front-wheel drive or front-powered rear-wheel drive, two-wheel drive or four-wheel drive), and the steering system (manual steering or power steering) of the vehicle. Adjusting these angles and dimensions will optimize the drivability and steering stability, as well as extend component life.

Usually, the only angle recommended for adjustment during servicing is toe-in.

1. Toe-in



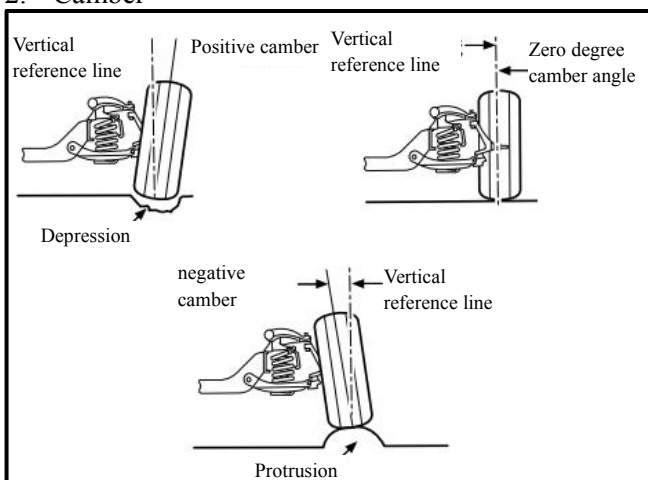
The toe-in is used to measure how far the wheels turn forward or off the centerline of the vehicle. Another understanding of the toe-in can be described as the distance between the front of two wheels compared to the distance between the rear wheels of the same vehicle.

If the wheels are perfectly parallel to each other, the two measurements should be equal and that means the toe-in angle is zero degree.

If the front of the wheel is tilted inward toward the centerline, the toe-in angle is positive. When the wheels are tilted outward, the toe-in angle is negative.

Positive and negative toe-in angles are also commonly referred to as front wheel toe-in and front wheel toe-out. The function of the toe-in is to compensate for the tendency of the tires to roll inward or outward due to camber and road resistance, ensuring the vehicle runs straight forward.

2. Camber



Camber is the angle of inclination of a tire with respect to a vertical reference line; when the top of a wheel is tilted outward, the camber is positive.

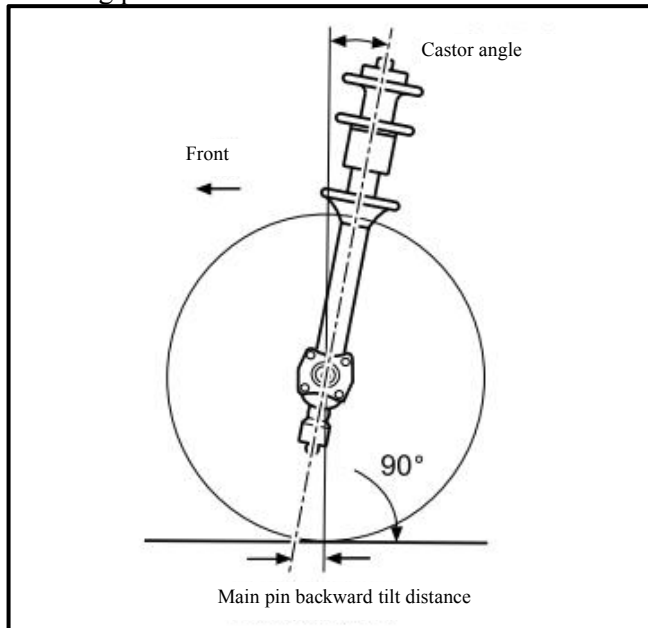
When the top of a wheel is tilted inward, the camber is negative. Camber settings can affect vehicle direction control and tire wear.

Various suspension and steering devices are designed to minimize tire tread wear and transfer the traction force by keeping the wheels perpendicular to the ground and running in a straight line.

Improper camber settings can cause tires to wear too fast or wear unevenly. Excessive positive camber will wear the outer tread, and when the load on the outer tread is higher than that on the inner tread, such uneven wear will occur.

Excessive negative camber will wear the inner tire tread, and uneven wear when the load on the inner tread is higher than that on the outer tread.

3. King pin inclination



The king pin inclination is the angle at which the king pin axis is tilted forward or backward. The king pin inclination is obtained by measuring the angle between the steering axis and the vertical line when viewed from the side. A backward tilt from the vertical line is called positive king pin inclination, and a forward sidewall tilt is called negative king pin inclination.

The centerline of the steering axis has a point of intersection with the ground, and the tire has a center point of contact with the road. The distance between these two points is called the king pin inclination displacement. King pin inclination produces stability in a straight line: If the vehicle has positive king pin inclination, the left journal has a tendency to sink when the wheels are turned to the left. (This is due to the fact that the journals rotate along the steering axis, which is tilted).

But since the journal is fixed to the wheel assembly, and since the ground also makes it impossible to move downward, the journal doesn't actually move downward, but the left steering knuckle is forced upward. This causes the body to rise slightly. When the steering is completed, after releasing the steering wheel, the weight of the lifted body forces the steering knuckle to move downward, so that the journal can go back to the original position, a forward position.

3.4.4 Diagnostic information and steps

3.4.4.1 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

3.4.4.2 Visual diagnosis

1. Check for aftermarket additions that would affect the wheels and tires.
2. Inspect system components that are easily accessible or visible for visible damage or conditions that could cause a fault.
3. Check for the following conditions:
 - a. Noticeable tire and wheel runout.
 - b. Noticeable drive axle runout.
 - c. Incorrect tire pressure.
 - d. Incorrect warpage height.
 - e. Wheels bent or damaged.
 - f. Debris on tires or wheels.
 - g. Abnormal or excessive tire wear.
 - h. Defects in tires include tread deformation, separation or bulging due to collision damage. Slight tire sidewall

indentations are normal and do not affect ride quality.

3.4.4.3 Initial inspection before tire alignment

Caution

Before aligning the tires, the following steps must be performed. Otherwise, new faults may occur due to inaccurate alignment

Step 1	Check for abnormal tire inflation pressure and abnormal tire wear
Yes	Adjust tire pressure to specified values and replace tires as necessary
No - Step 2	Check for loose wheel bearings
Yes	Replace the brake assembly if necessary. Please refer to 7.3.6.4 Replacement of brake assembly and 7.4.5.4 Replacement of rear brake assembly
No - Step 3	Check for loose lower swing arm ball joint
Yes	Tighten the nuts and replace the lower swing arm assembly if necessary; Please refer to 3.2.7.1 Replacement of front lower swing arm assembly;
No - Step 4	Check for abnormal amounts of wheel and tire runout
Yes	Measure and correct the amount of tire runout.
No - Step 5	Check for abnormal vehicle warpage height
Yes	Correct the vehicle warpage before adjusting the toe-in.
No - Step 6	Check strut assembly for incorrect installation
Yes	Replace the strut assembly. Please refer to 3.2.7.2 Replacement of front strut assembly and 3.3.6.1 Replacement of rear strut assembly
No - Step 7	Check for the loose control lower swing arm bushing
Yes	Tighten the connecting bolts of the control lower swing arm and replace the lower swing arm assembly if necessary. Please refer to 3.2.7.1 Replacement of front lower swing arm assembly
No - Step 8	Check that the vehicle's overall mass is normal and that it is not overloaded, etc.
Yes	Restore the vehicle to its complete mass status when it leaves the factory.
No - Step 9	Perform a four-wheel alignment procedure.

3.4.4.4 Wheel vibration diagnostics

Step 1	The vehicle should be subject to a road test to confirm the fault phenomenon and check if the vibration described by the customer is a fault
No	Replace the wheels. Please refer to 3.4.5.1 replacement of wheels
Yes - Step 2	Determine if the vehicle speed is above 65 km/h when the vibration occurs
No	Go to Step 5
Yes - Step 3	Perform an under-vehicle tire dynamic balance and road test the vehicle to confirm the fault
No	Fault resolution
Yes - Step 4	Perform the on-vehicle final balancing and road test the vehicle to confirm the fault
No	Fault resolution
Yes - Step 5	Check the free end face and radial runout of the wheels (standard value: 1.0 mm/0.0394 in) for compliance with the specified values
No	Go to Step 8
Yes - Step 6	Check for unbalance in the car's drive system Thoroughly inspect the drive shaft and constant velocity universal joints.
No	Replace the damaged components
Yes - Step 7	Check the runout of the hub flange (standard value: 0.26 mm/0.0102 in) for compliance with the specified values
No	Replace the hub assembly. Please refer to 7.3.6.4 Replacement of brake assembly and 7.4.5.4 Replacement of rear brake assembly
Yes - Step 8	Remove the wheel assembly, disassemble the tire from the assembly, and measure the wheel runout (standard value: 0.8 mm/0.03 in) for compliance with the specified values
No	Replace the wheels. Please refer to 3.4.5.1 replacement of wheels
Yes - Step 9	Replace the tires.
Step 10	Confirm that the fault has been eliminated

3.4.4.5 Inspect the wheel runout

Measure the amount of wheel runout with a dial gauge, either on or off the vehicle, but make sure the mounting surface is correct. A tire measuring meter can be installed or not upon the measurement. The radial and end runout on the inner and outer surfaces of the rim flange should be measured and the dial gauge should be fixed next to the wheel and tire assembly. Then, it is needed to slowly rotate the wheel for one circle and record the reading of the dial gauge. If the measured value exceeds the following specifications and the vibration is not eliminated though wheels are balanced, it is needed to replace the wheel.

Aluminum wheels

Radial runout: 0.8 mm (0.03 in)

End runout: 0.8 mm (0.03 in)

Free radial runout: 1.5 mm (0.06 in)

3.4.4.6 Diagnosis of abnormal wheel wear

There are many reasons for abnormal and premature tire wear, including incorrect inflation pressure, no regular wheel rotation, poor driving habits or incorrect wheel alignment. If a wheel alignment needs to be performed again due to tire wear, make sure to adjust the toe-in as close to zero as the specifications allow.

Rotate the tires if any of the following conditions occur:

- a. Front tires wear differently compared to rear tires.
- b. The left front and right front tires are in different states of wear.
- c. Different wear of the left and right rear tires.

Check wheel alignment if any of the following occurs:

- a. The left front and right front tires are in different states of wear.
- b. Uneven tread wear on any of the front tires.
- c. Feathery abrasions on one side of the tread strips or blocks of the front tires.

Several typical tire wear conditions are shown below:

1. Eccentric wear

Reason:

- a. Failure of rotating components such as axles and bearings.
- b. Braking system failure.
- c. Rapid start, rapid braking.
- d. Uneven center of gravity of wheel weight.
- e. Incompatible tire and rim sizes.

2. Feathery abrasions in the tire sidewall area

Reason:

- a. Incorrect toe-in value.

3. Abnormal wear:

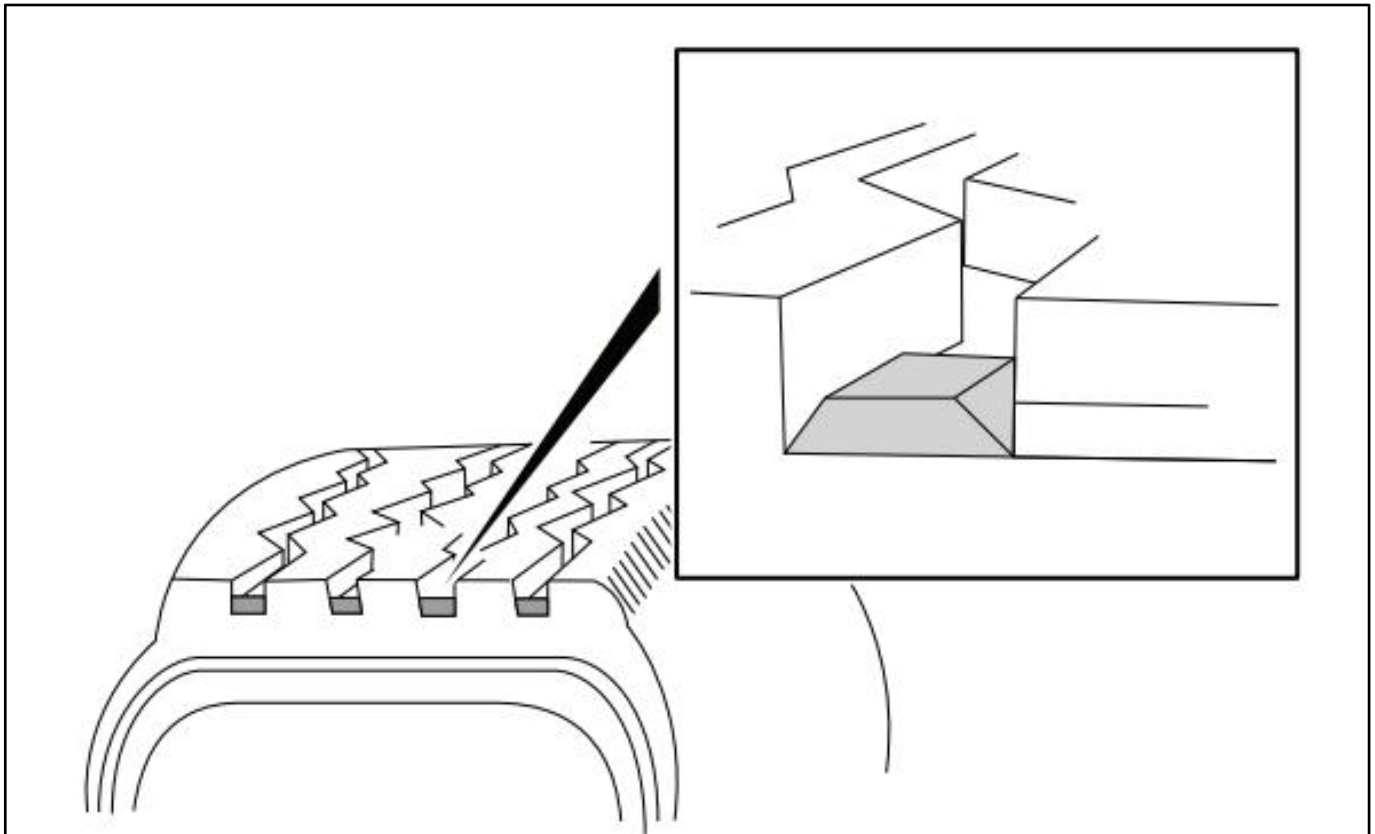
Reason:

- a. Incorrect camber angle.
- b. Incorrect toe-in value.
- c. Incorrect dynamic balance.
- d. Incorrect four-wheel alignment

3.4.4.7 Diagnosis of excessive wheel wear

Step 1	Check that the tires are properly balanced and that the air pressure in the tires is normal
No	Adjust tire pressure to standard values and dynamically balance the tires.
Yes - Step 2	Check that the vehicle's wheels are properly aligned
No	Readjust the wheel alignment.
Yes - Step 3	Check whether the tires experience normal wear
No	Replace the tires. Caution: The vehicle's wheels should be aligned immediately after the tires are rotated.
Yes - Step 4	Check if the wheel runout is normal
No	Measure the runout of the wheel flange and replace the wheel if necessary.
Yes - Step 5	Check that the steering crosswise tie rod ball joints are working properly (No wear or looseness or other faults)
No	Tighten the nuts and replace the steering crosswise tie rod if necessary. Please refer to 8.2.7.2 Disassembly and installation of the electric steering column with an intermediate shaft assembly;
Yes - Step 6	Check that the lower swing arm ball joints are working properly (No wear or looseness or other faults)
No	Tighten the nuts and replace the lower swing arm assembly if necessary. Please refer to 3.2.7.1 Replacement of lower swing arm assembly
Yes - Step 7	Check for excessive wheel runout
Yes	Measure wheel runout, reassemble wheels and tires, and replace the damaged components if necessary.
Step 8	Confirm that the fault has been eliminated.

3.4.4.8 Tire wear indicator markings



3.4.4.9 Correction of radial tire runout

1. Fault definition:

When the vehicle is traveling in a straight line at a certain speed, the vehicle deviates from the original direction to the left or right without any external force exerted through the steering wheel.

2. Benchmarks for determining vehicle deviation:

- (a) When a vehicle travels in a straight line at a certain speed, in order to maintain its original direction, it is needed to exert a force on the steering wheel that prevents it from rotating in a clockwise or counterclockwise direction.
- (b) When the vehicle is traveling in a straight line at a certain speed, and the steering wheel is released, the vehicle deviates to the left or right from the original direction of travel {usually referred to the situation of deviating by more than 1 m (39.4 in) from the original direction of travel while the vehicle travels for 100 m (3940 in)}.

Caution

Before a deviation correction, the vehicle should be inspected for a few basic items :

- a. **Check the front and rear wheel brakes for drag, etc.**
- b. **Check for excessive differences in tire wear on the same suspension.**
- c. **Check for excessive differences in tire air pressure on the same suspension.**

If any of the above items is abnormal, please adjust it to the normal state before a road test of the vehicle to confirm whether the fault has been eliminated.

Please perform a road test of the vehicle under safe conditions and observe all traffic laws. Do not make any attempts that may jeopardize vehicle control. Violation of the above safety instructions can result in serious injury accidents and damage to your vehicle.

3. Correction procedure:

Caution

Please perform a road test of the vehicle under safe conditions and observe all traffic laws. Do not make any attempts that may jeopardize vehicle control. Violation of the above safety instructions can result in serious injury accidents and damage to your vehicle.

Step 1	Perform a road test of the vehicle to determine if it deviates from the original direction
No	Explain to the customer the definition of deviation. Depending on the road conditions, the vehicle may deviate from the original direction seemingly for a short period of time.
Yes - Step 2	Check the vehicle for normal front wheel toe-in values
No	Readjust the vehicle's front wheel toe-in values and align the wheels if necessary. Please refer to 3.4.5.2 Adjustment of front wheel toe-in
Yes - Step 3	Check that the vehicle's wheel alignment meets the specified values
No	Adjust the wheel alignment.
Yes - Step 4	Check all positioning parameters of the vehicle against the values in the specifications and confirm if they meet the specifications
No	Go to Step 10.
Yes - Step 5	Perform the left tire rotation procedure. A. Switch the left front wheel assembly with the left rear wheel assembly. B. Perform a road test of the vehicle. C. Check whether the vehicle deviates from the original direction as well
No	The system functions properly
Yes - Step 6	Perform the right tire rotation procedure. A. Switch the right front wheel assembly with the right rear wheel assembly. B. Perform a road test of the vehicle. C. Check whether the vehicle deviates from the original direction as well
No	The system functions properly
Yes - Step 7	Check for excessive wheel runout
No	Reassemble the tires and replace tires or wheels if necessary; Please refer to 3.4.5.1 Replacement of wheels
Yes	Fault resolution

3.4.5 Disassembly and installation

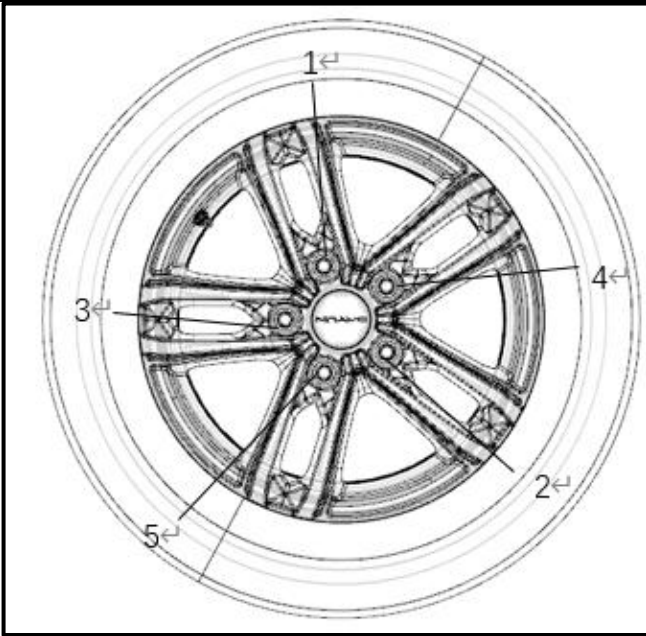
3.4.5.1 Replacement of wheels

Warning!

Please refer to "Warnings about vehicle lift" in "Warnings and precautions".

Caution

Please refer to "Cautions about fasteners" in "Warnings and precautions".

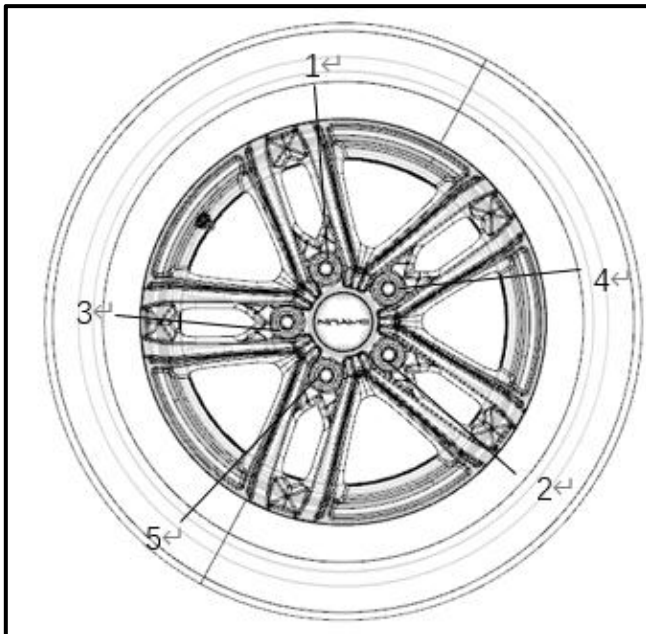


Disassembly process

1. Disassemble the wheel
 - a. Loosen the 5 wheel bolts in the order shown in the figure;
 - b. Vehicle hoisting;
 - c. Disassemble the wheel bolts and take off the wheel.

Caution

The methods for the disassembly of the left and right wheels are similar.



Installation process

1. Install the wheel
 - a. Install the tire and pre-tighten the 5 wheel bolts in the order shown in the figure;
 - b. Lower the vehicle and tighten the 5 wheel nuts.
Torque: $160 \pm 10 \text{ N} \cdot \text{m}$

Caution

Tighten the tire nuts diagonally

Caution

The left and right side wheels are installed in a similar way

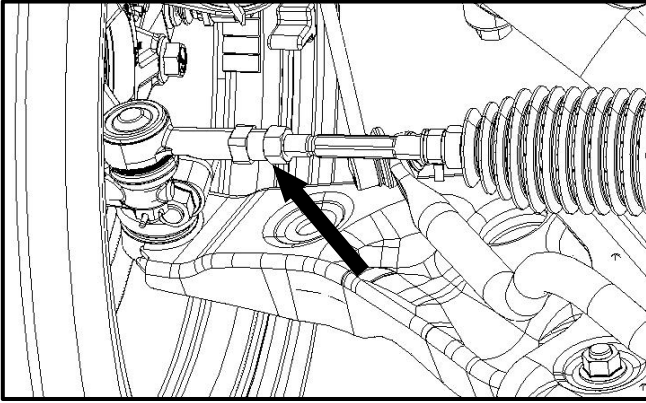
3.4.5.2 Adjustment of front wheel toe-in

Adjustment procedures

Warning!

Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.

1. Vehicle hoisting



2. Adjusting the front wheel toe-in
 - a. Adjust THE four-wheel air pressure within the standard range.

Caution

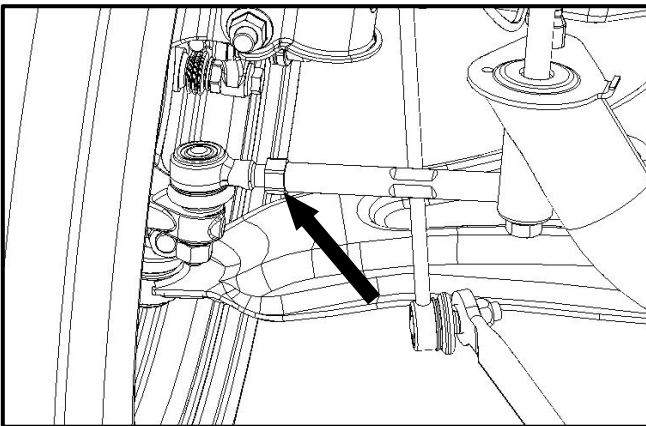
Equipment used: wheel alignment system

- b. Release the fixed nuts at the left and right ends of the crosswise tie rod.
- c. Turn the cross-wise tie rod clockwise or counterclockwise to adjust the front wheel toe-in values at each end;
- d. Before adjusting the toe-in value of the rear wheels within the standard range, tighten the fixed nuts on the left and right ends of the crosswise tie rod respectively.

Torque: $85\pm 5\text{N}\cdot\text{m}$

- e. The vehicle should be dropped off.

3.4.5.3 Adjustment of rear wheel toe-in



Adjustment procedures

Warning!

Please refer to “Warnings about vehicle lift” in “warnings and precautions”.

1. Vehicle hoisting
2. Adjust the rear wheel toe-in
 - a. Adjust the four-wheel air pressure within the standard range;

Caution

Equipment used: wheel alignment system

- b. Release the fixed nuts at the left and right ends of the crosswise tie rod;
- c. Turn the cross-wise tie rod clockwise or counterclockwise to adjust the rear wheel toe-in values at each end;
- d. After adjusting the toe-in value of the rear wheels within the standard range, tighten the fixed nuts on the left and right ends of the crosswise tie rod respectively.

Torque: $55\pm 5\text{N}\cdot\text{m}$

- e. The vehicle should be dropped off.

4 Drive system

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4.1 Warnings and precautions

4.1.1 Warnings and precautions

4.1.1.1 Warnings and precautions

Warning!

An assistant should drive the vehicle while the technician is inspecting the reported faulty part; otherwise, personal injury may occur.

Warnings about disconnecting the battery

Warning!

Before the servicing of any electrical components, the starting switch power mode must be OFF and all electrical loads must be "OFF".

Unless otherwise stated in the operating procedures. Moreover, if tools or equipment can easily contact the exposed energized electrical terminals, the negative cable of the battery shall be disconnected. Personal injury or damage to the vehicle and vehicle components may be caused by violation of these safety instructions.

Warnings about road tests

Warning!

The road test of the vehicle must be carried out in a safe manner and all traffic laws must be observed. Do not make any attempts that may jeopardize vehicle control. Violation of the above safety instructions can result in serious personal injury and damage to the vehicle.

4.2 Drive shaft system

4.2.1 Specifications

4.2.1.1 Fastener specifications

Fastener name	Specifications	Quantity	Torque range / (N·m)
Steering crosswise tie rod nut	M12	2	70±5
Drive shaft locknut	FS10-2203012001 (M20×1.5-6H)	2	240±20
Hexagonal flange bolts	M12×55	2	115±10
Hexagon nut with flange	M12	2	115±10

4.2.2 Description and operation

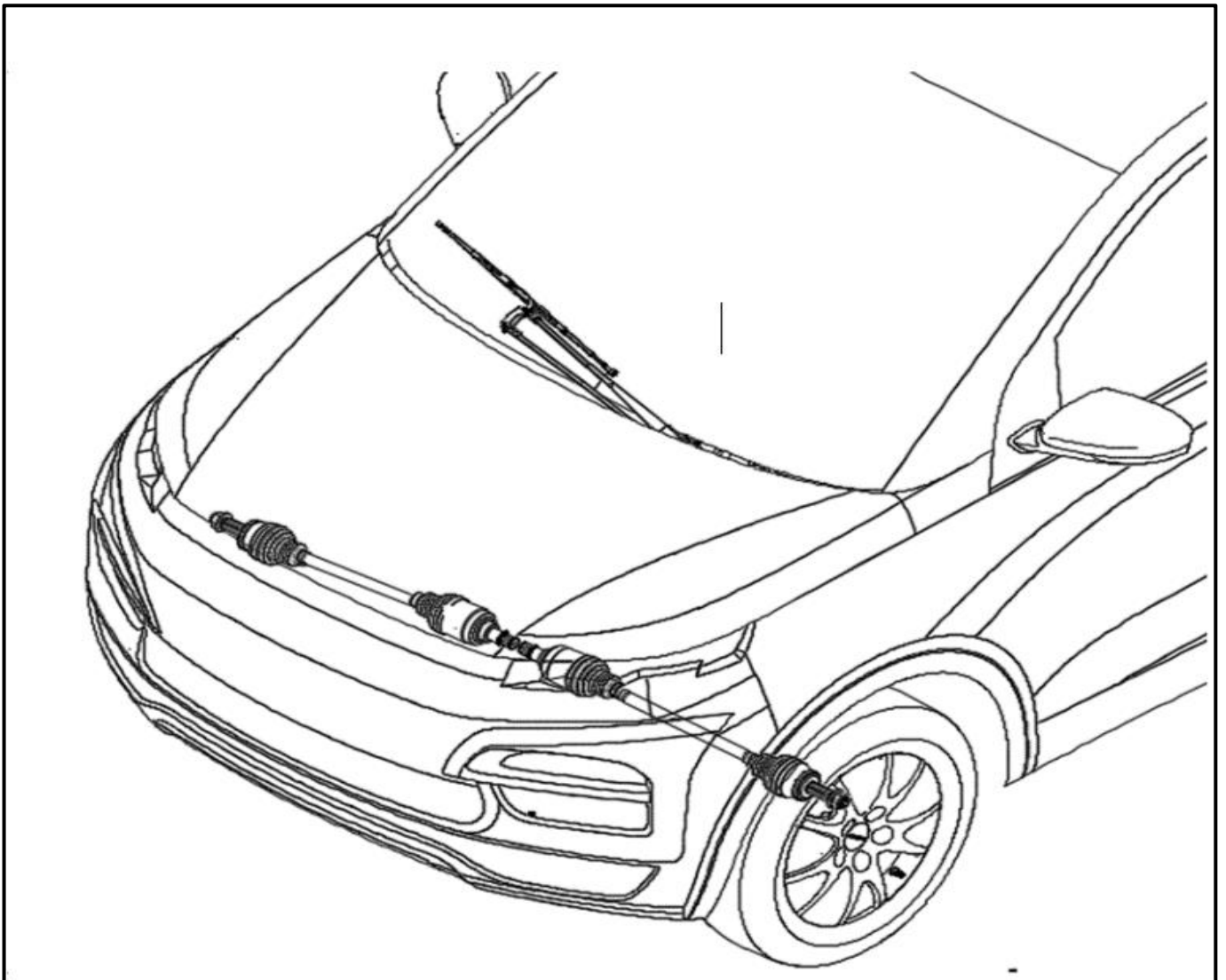
The drive shaft system consists of a left/right front constant velocity drive-shaft, with a retractable universal joint coupled to the output end of the reducer and a fixed universal joint coupled to the hub end of the brake.

4.2.3 System operating principle

The drive shaft transmits the torque output from the reducer to the brake hub bearing, and compensates for the change in the distance between the reducer and the brake due to wheel runout by means of the retractable universal joint, thus ensuring the reliable and smooth transmission of power.

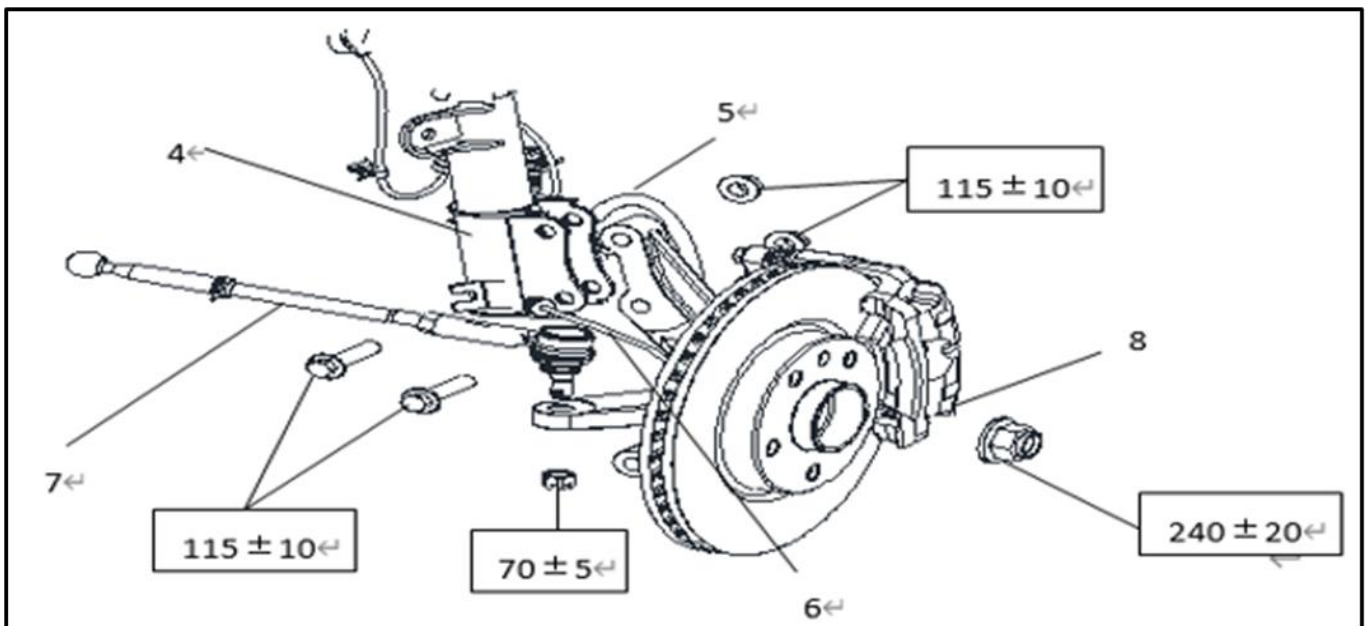
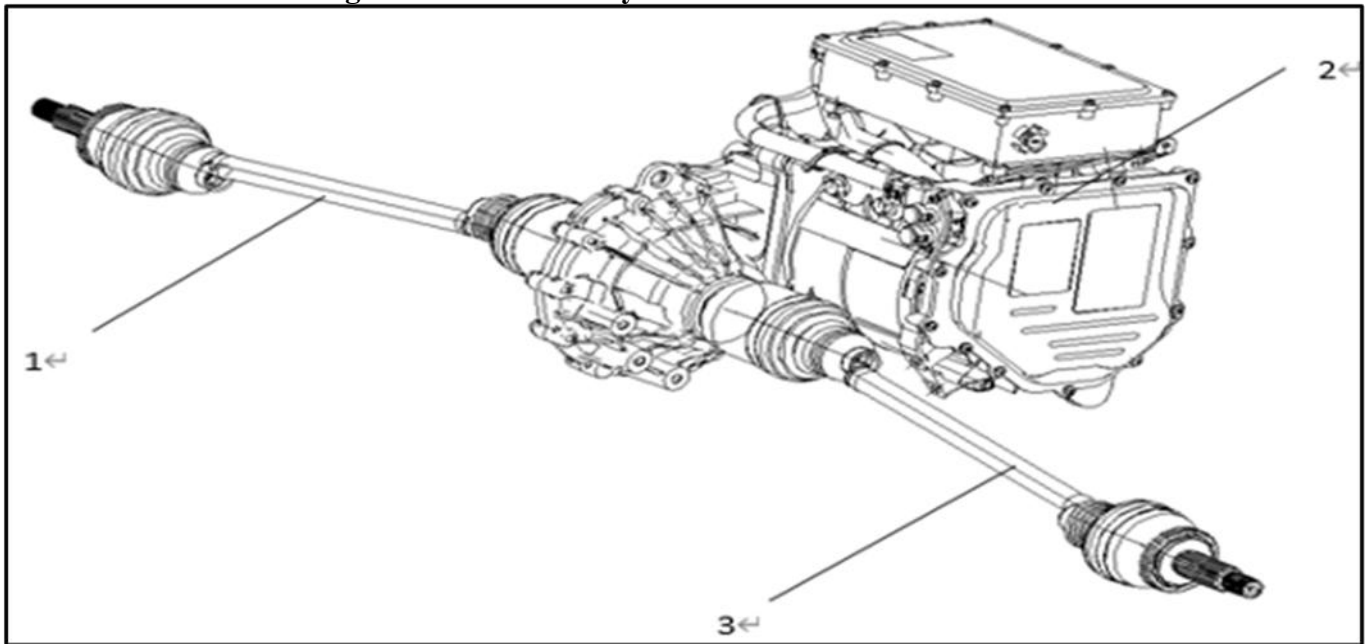
4.2.4 Component location

4.2.4.1 Component location



4.2.5 Breakdown drawing

4.2.5.1 Breakdown drawing of the drive shaft system



- | | |
|-------------------------------------------------------|-------------------------------------------------------|
| 1. Left front constant velocity drive-shaft assembly | 5. Right front brake hose assembly |
| 2. EDS assembly | 6. Right front wheel speed sensor assembly |
| 3. Right front constant velocity drive-shaft assembly | 7. Crosswise tie rod assembly |
| 4. Right front sliding strut assembly | 8. Right front brake with a steering knuckle assembly |

4.2.6 Diagnostic information and steps

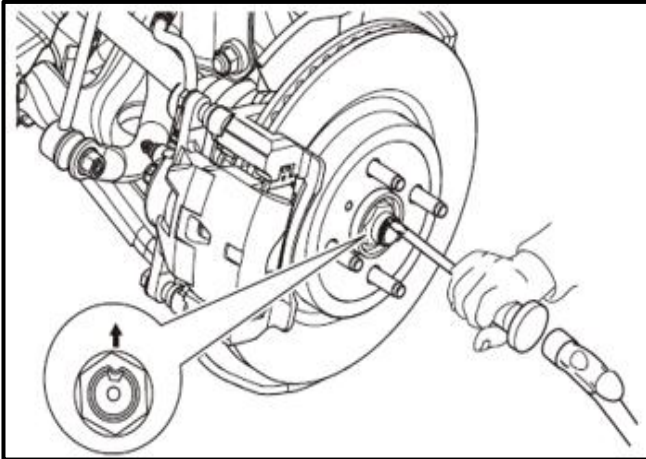
Fault phenomenon	Suspected component	Replacement
Noise	1. Fixed rzeppa constant velocity universal joint (abnormal wear)	Please refer to 4.2.7 Replacement of drive shaft
	2. Removable tripod constant velocity universal	

	joint (abnormal wear) 3. Dust cover at both ends (corrugated extrusion rubbing noise)	
Oil leakage	1. Fixed-end dust cover (broken) 2. Mobile-end dust cover (broken)	

4.2.7 Disassembly and installation

Warning!

Please refer to “Warnings about vehicle lift” in “Warnings and precautions”.



Disassembly procedure:

1. Vehicle hoisting;
2. To disassemble the wheels; Please refer to 3.4.5.1 Replacement of wheels;
3. To disassemble the front engine compartment bottom guard; Please refer to 13.7.2.2 Replacement of front engine compartment bottom guard;
4. Disassemble the right front drive shaft lockshaft nut
 - a. Pry out the recessed area of the right front drive shaft locknut.

Caution:

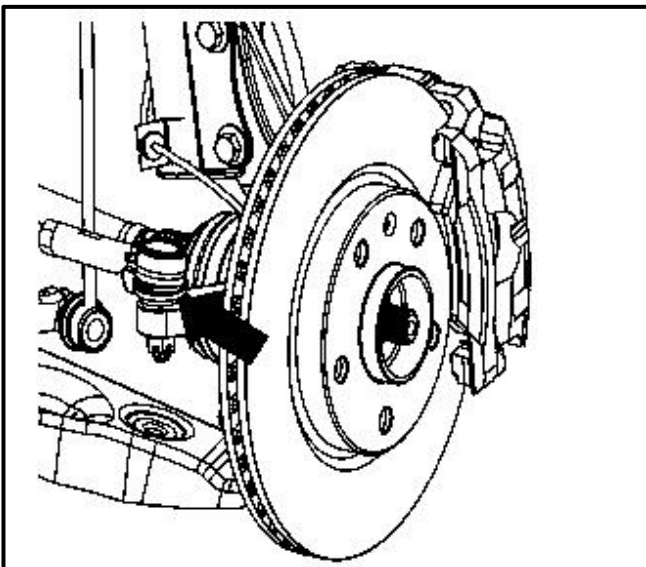
Fully release the locked part of the nut or the threads of the drive shaft will be damaged.

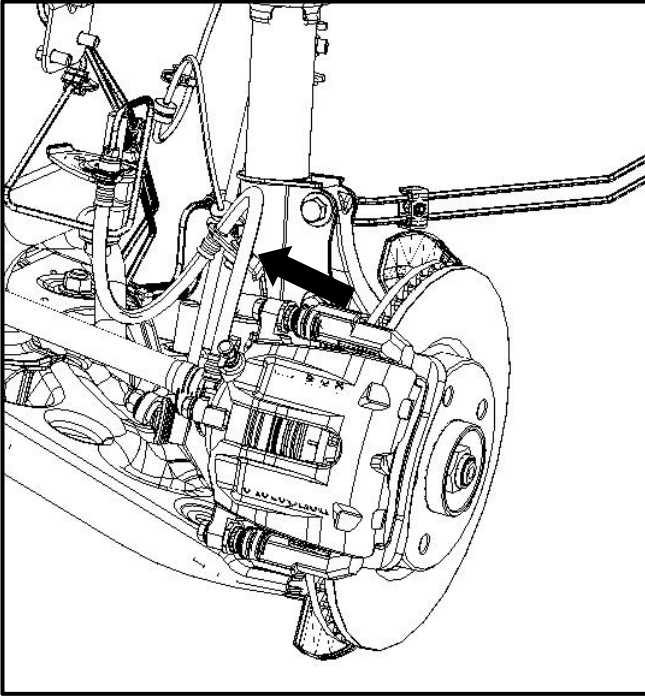
Remove the right front drive shaft locknut with brake force applied to the brake footstep.

5. Disengage the crosswise tie rod assembly
 - a. Remove the nut and disengage the crosswise tie rod assembly.

Remarks:

If the ball pin turns with the nut, stabilize the double-ended bolt with a hex wrench.





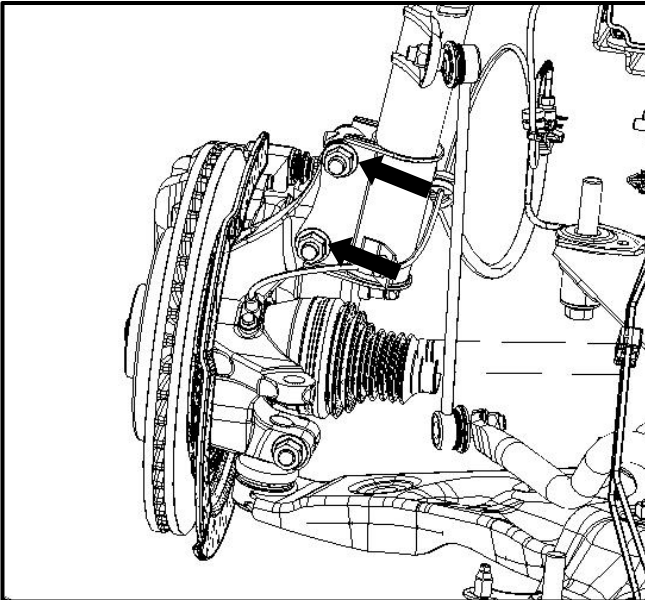
6. Disengage the right front brake hose assembly and the right front strut assembly by removing 1 bolt and disengage the right front brake hose assembly from the right front strut assembly.
7. Disengage the right front wheel speed sensor assembly and the right front brake with a steering knuckle assembly.

Remove 1 bolt and disengage the right front wheel speed sensor assembly from the steering knuckle.

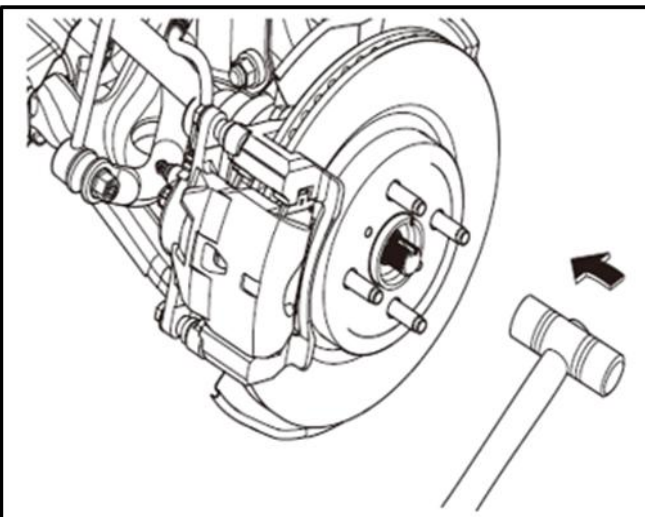
Caution:

Do not damage the wheel speed sensor.

Prevents foreign objects from adhering to the wheel speed sensor.



8. Disengage the right front brake with a steering knuckle assembly and the right front strut assembly by removing the 2 bolts and 2 nuts, and disengage the right front sliding strut assembly from the right front brake with a steering knuckle assembly.

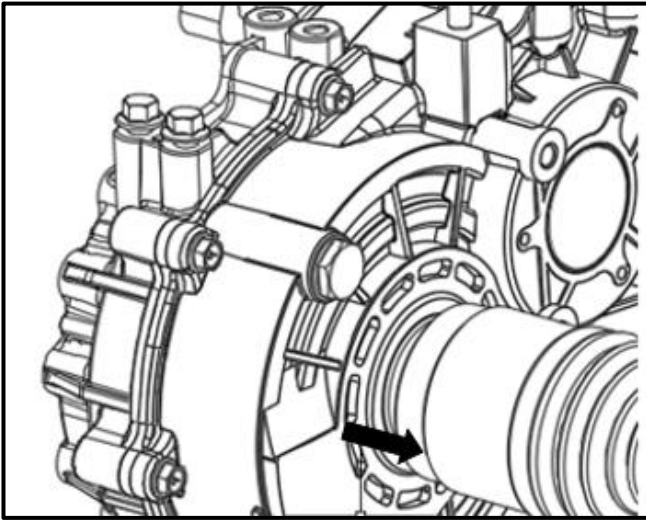


9. Disengage the right front drive shaft assembly
 - a. Make assembly marks on the right front drive shaft assembly and the right front hub flange assembly.
 - b. Use a plastic hammer to disengage the right front drive shaft assembly from the right front hub.

Caution:

Be careful not to damage the drive shaft rubber sheath and the wheel speed sensor rotor.

10. Remove the right front drive shaft assembly
- Remove the right front drive shaft assembly.
Remove the front drive shaft assembly from the reducer assembly.



Caution:
Do not damage the drive shaft rubber dust cover and reducer output oil seal.

Drop the front drive shaft assembly.

Check:

The drive shaft assembly should be inspected and replaced in case of any of the following conditions.

Caution:

Place the drive shaft assembly horizontally during the inspection.

- Check and verify that the outer universal joints have no significant clearance in the radial direction.
- Check and make sure the inner universal joints slide smoothly in the axial direction.
- Check and verify that the inner universal joints have no significant clearance in the radial direction.
- Check the dust cover for damage.

Installation procedure:

Installation is performed in the reverse order of the disassembly procedure.

Caution:

When installing the front drive shaft, a friction reducing agent needs to be applied to the fitting end faces of the drive shaft fixed knuckle and the hub bearing (please refer to the application method of the friction reducing agent).

Install the front drive shaft and ensure that the open side of the drive shaft snap ring faces down.

Be careful not to damage the drive shaft dust cover and output oil seal.

Horizontally move the drive shaft assembly.

Align the assembly marks.

Be careful not to damage the wheel speed sensor.

Prevent foreign objects from adhering to the wheel speed sensor.

Do not twist the front wheel speed sensor harness when installing the front wheel speed sensor.

Tighten fasteners to specified torque values.

Add lubricating oil to the reducer.

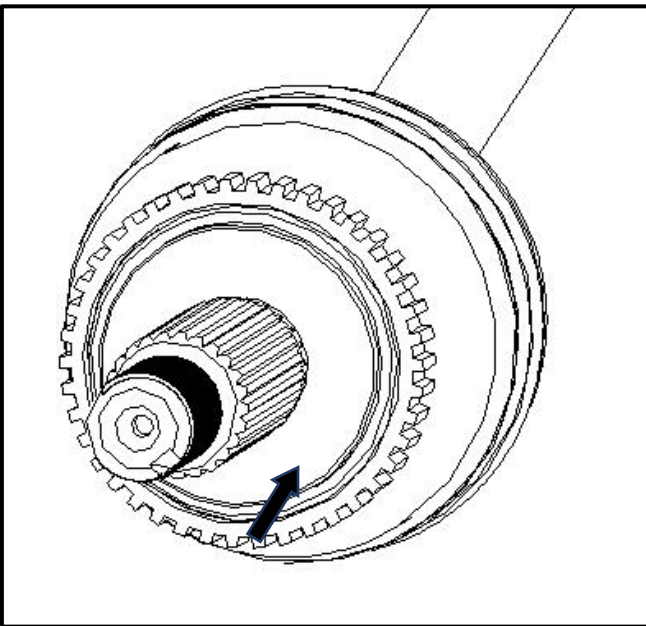
Check and adjust reducer lubricating oil level.

Adjust the front wheel alignment.

Check the wheel speed sensor signals.

Application method of the friction reducing agent:

- Clean the end faces of the drive shaft fixed section;
- Use a fine brush or writing brush to brush the Dow Corning friction reducing agent on the end faces of the drive shaft fixed section;
- The coating should be uniform and fully dried before loading.



5 Suspension system

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5.1 Warnings and precautions

5.1.1 Warnings and precautions

Warning!

An assistant should drive the vehicle while the technician is inspecting the reported faulty part; otherwise, personal injury may occur.

Warnings about disconnecting the battery

Warning!

Before the servicing of any electrical components, the starting switch power mode must be OFF and all electrical loads must be "OFF".

Unless otherwise stated in the operating procedures. Moreover, if tools or equipment can easily contact the exposed energized electrical terminals, the negative cable of the battery shall be disconnected. Personal injury or damage to the vehicle and vehicle components may be caused by violation of these safety instructions.

Warnings about road tests

Warning!

The road test of the vehicle must be carried out in a safe manner and all traffic laws must be observed. Do not make any attempts that may jeopardize vehicle control. Violation of the above safety instructions can result in serious personal injury and damage to the vehicle.

5.2 Front suspension system

5.2.1 Specifications

5.2.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Left suspension reinforcement bracket and fixed bolts of the body	M8×20	25±5
Fixed bolt securing the left suspension to the body left longitudinal beam	M10×25	70±5
Fixed nut securing the left suspension to the power module assembly	M12	120±10
Fixed bolt securing the right suspension reinforcement bracket to the body	M8×20	25±5
Fixed bolt securing the right suspension to the body right longitudinal beam	M10×25	70±5
Fixed nut securing the right suspension to the power module assembly	M12	120±10
Fixed bolt securing the rear suspension bracket to the power module assembly	M10×65	55±5
Fixed nut securing the rear suspension to the rear suspension bracket	M12	120±10
Fixed bolt securing the rear suspension to the rear suspension bracket	M12×120	120±10
Fixed bolt securing the rear suspension to the front subframe	M10×110	70±5
Fixed bolt securing the rear suspension to the front subframe	M10×65	70±5

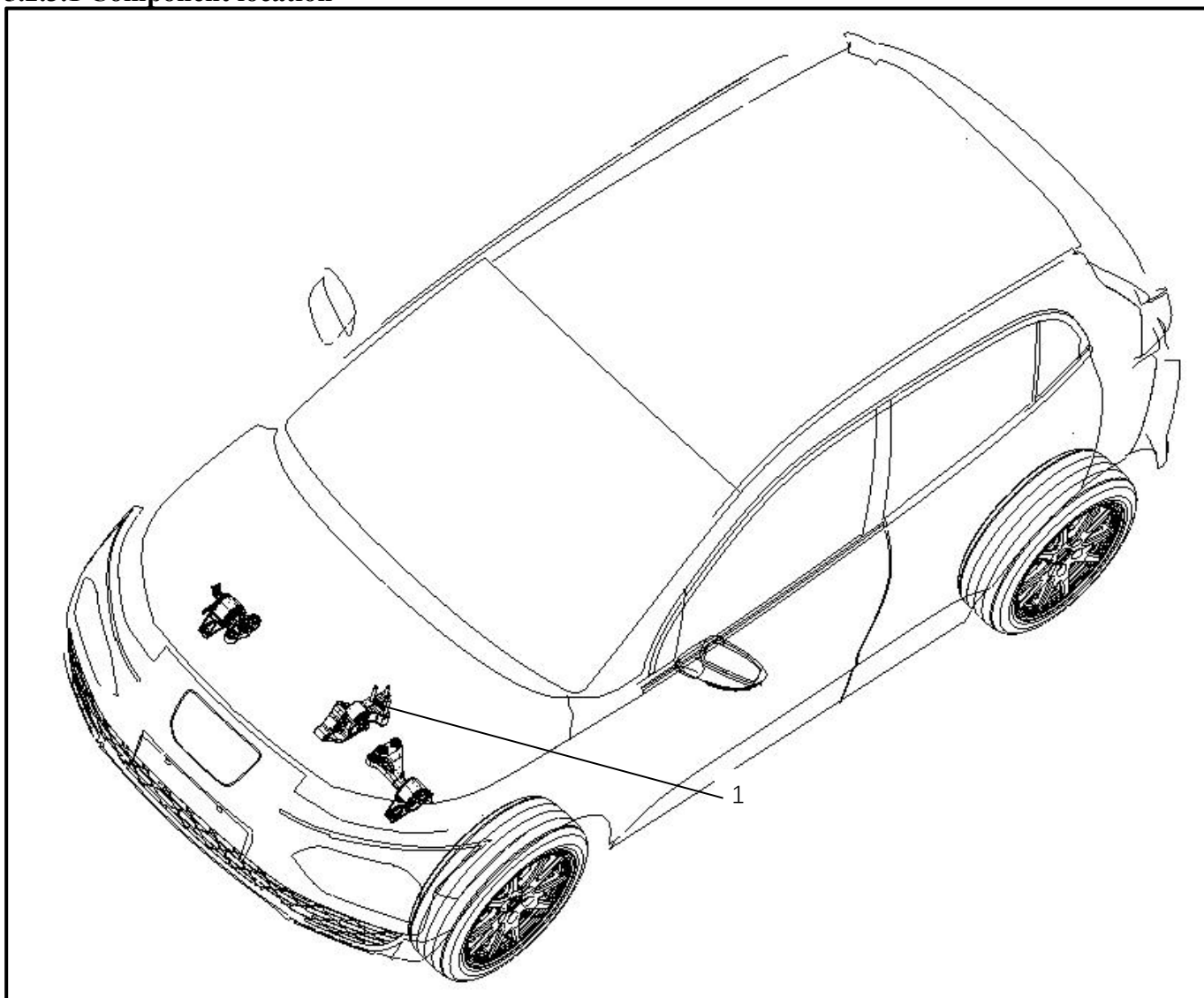
5.2.2 Description and operation

5.2.2.1 Description and operation

The suspension system is a vibration damping system that connects the powertrain (motor and reducer) with the body, and consists of the left suspension assembly, the right suspension assembly, the rear suspension assembly and the rear suspension bracket, whose main roles are to support the powertrain and dampen the vibration transmitted to the body.

5.2.3 Component location

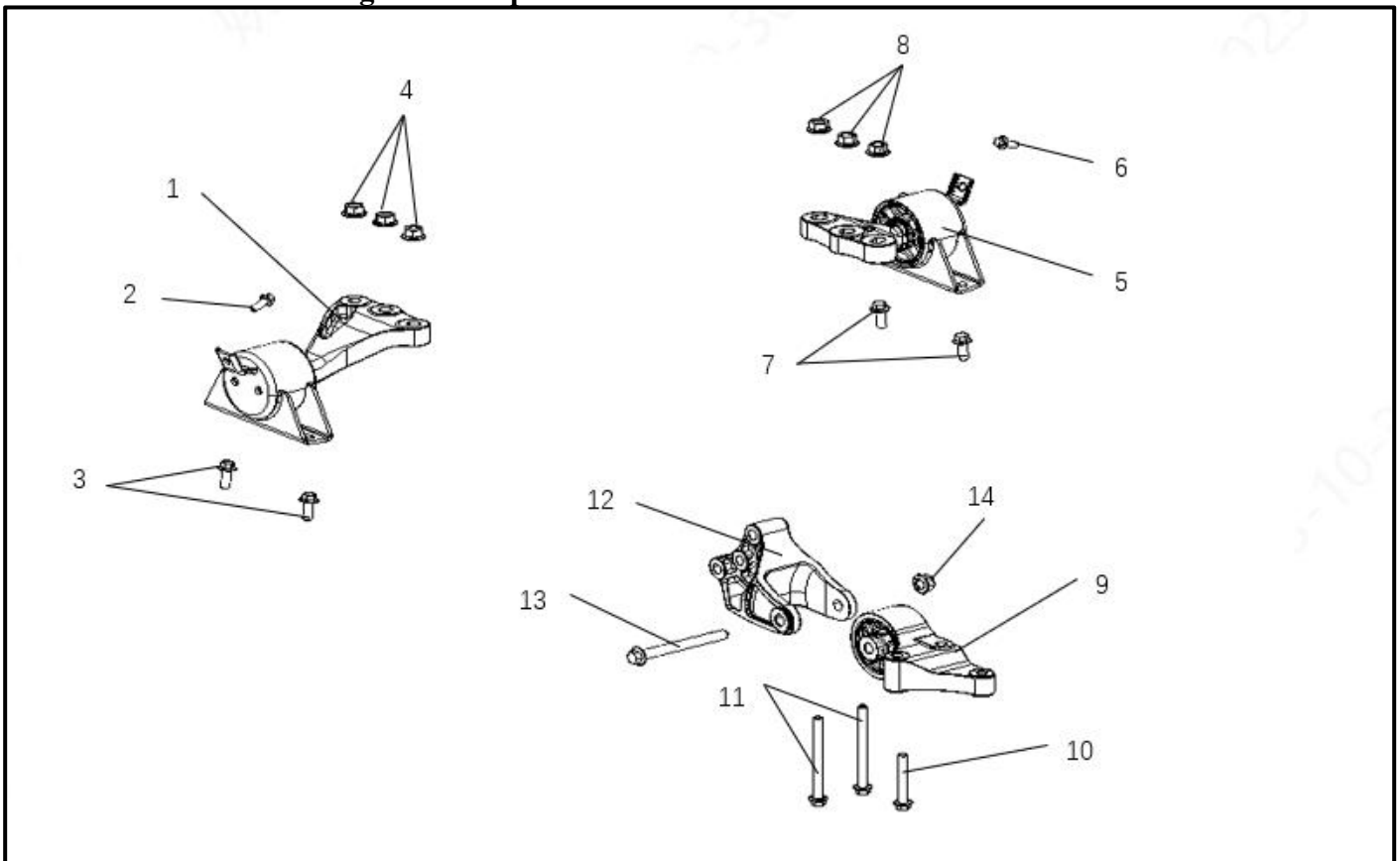
5.2.3.1 Component location



1. Suspension system

5.2.4 Breakdown drawing

5.2.4.1 Breakdown drawing of the suspension

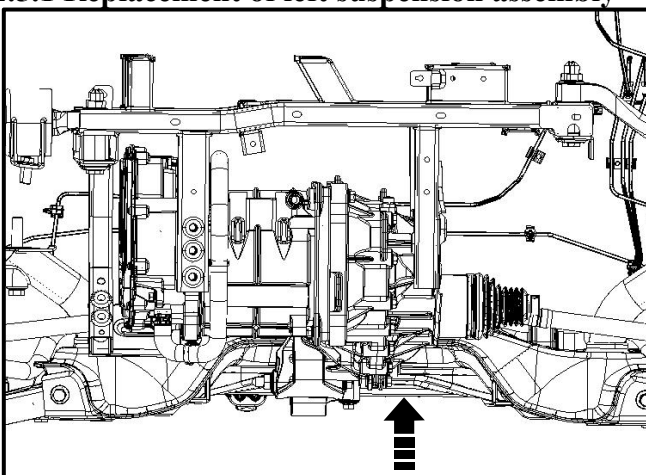


- 1. Front axle left suspension assembly
- 2. Hexagonal flange bolts
- 3. Hexagonal flange bolts
- 4. Hexagon nut with flange
- 5. Front axle right suspension assembly
- 6. Hexagonal flange bolts
- 7. Hexagonal flange bolts

- 8. Hexagon nut with flange
- 9. Front axle rear suspension assembly
- 10. Hexagonal flange bolts
- 11. Hexagonal flange bolts
- 12. Front axle rear suspension bracket
- 13. Hexagonal flange bolts
- 14. Hexagon nut with flange

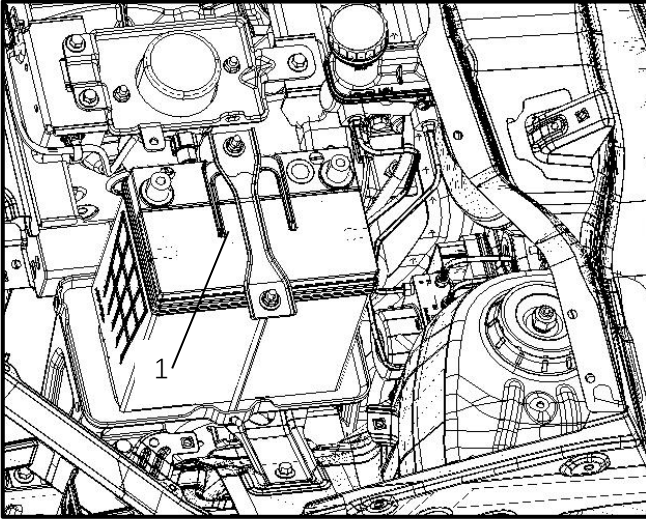
5.2.5 Disassembly and installation

5.2.5.1 Replacement of left suspension assembly

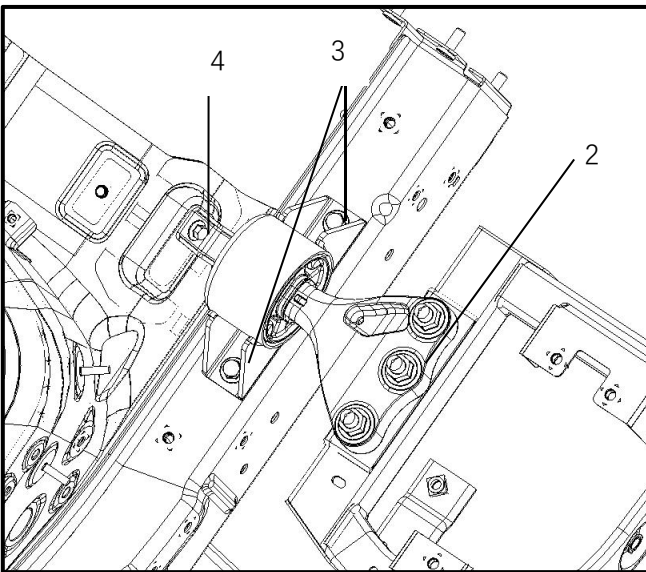


Disassembly process

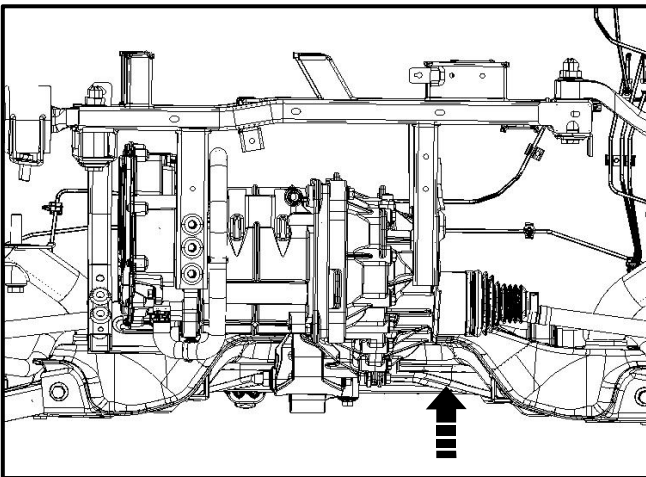
- 1. Vehicle hoisting
- 2. To disassemble the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard
- 3. Lower the vehicle
- 4. Use a jack to support the lowermost point of the reducer



5. Remove the mounting bracket of the storage battery
6. Remove the electrical box
7. Remove the storage battery 1

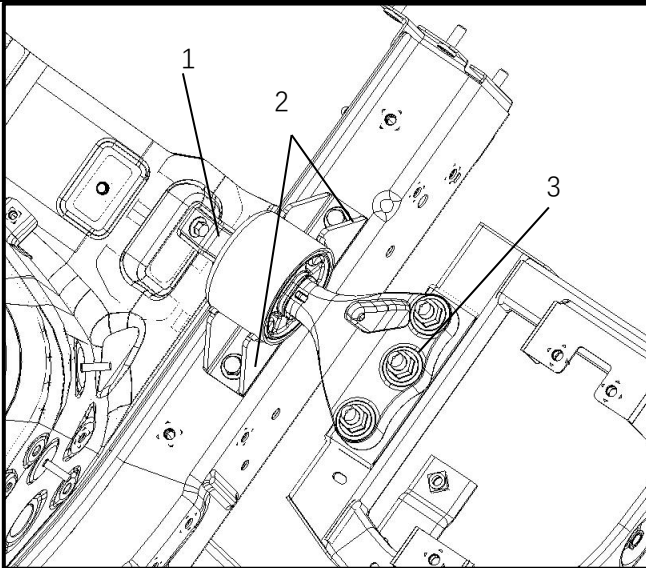


8. Remove the three nuts 2 connecting the left suspension to the frame beam
9. Remove bolts 3 and 4 connecting the left suspension to the body
10. Remove the left suspension assembly



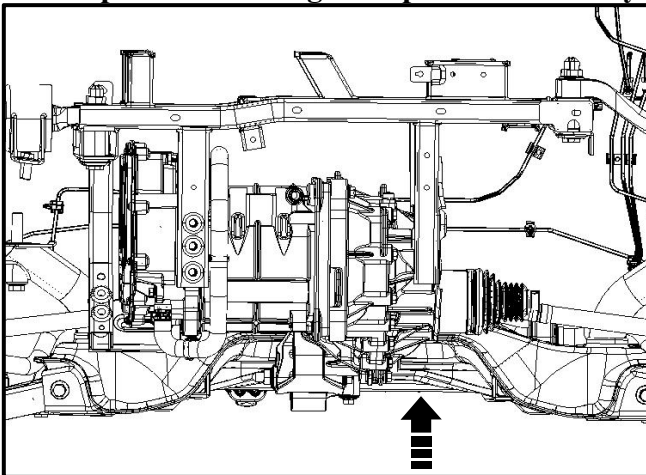
Installation process

1. Vehicle hoisting
2. Use a jack to support the lowermost point of the reducer



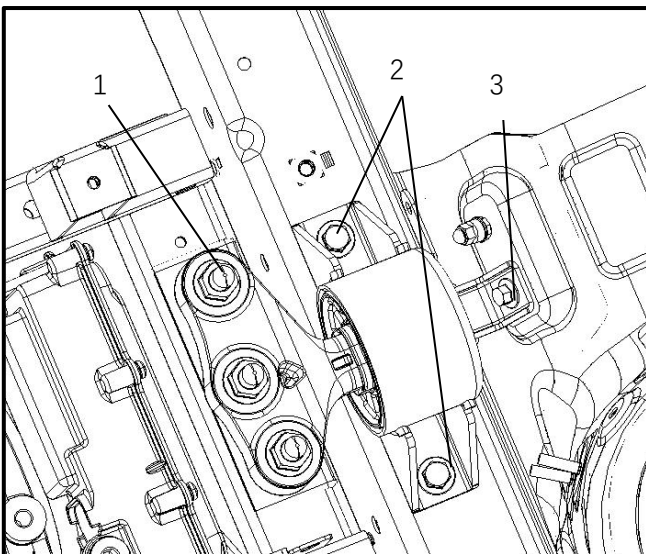
3. Install bolts 1 and 2 connecting the left suspension assembly to the body
Torque: 25 ± 5 N·m, 70 ± 5 N·m
4. Install the three nuts 3 connecting the left suspension assembly to the frame beam
Torque: 120 ± 10 N·m
5. To install the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard

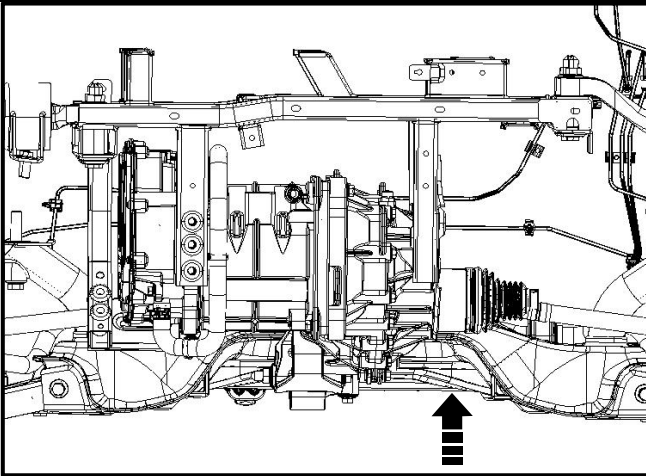
5.2.5.2 Replacement of right suspension assembly



Disassembly process

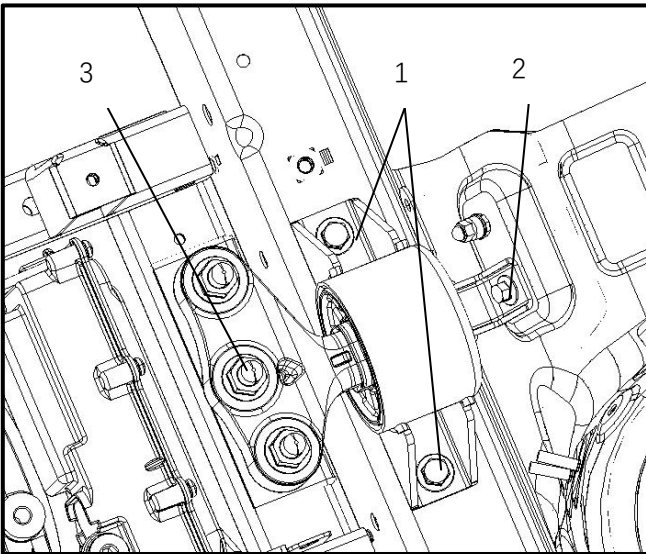
1. Vehicle hoisting
2. To disassemble the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard
3. Lower the vehicle
4. Use a jack to support the lowermost point of the reducer
5. Remove the nut 1 connecting the right suspension to the frame beam
6. Remove bolts 2 and 3 connecting the right suspension to the body
7. Remove the right suspension assembly





Installation process

1. Vehicle hoisting
2. Use a jack to support the lowermost point of the reducer



3. Install nuts 1 and 2 connecting the right suspension to the body

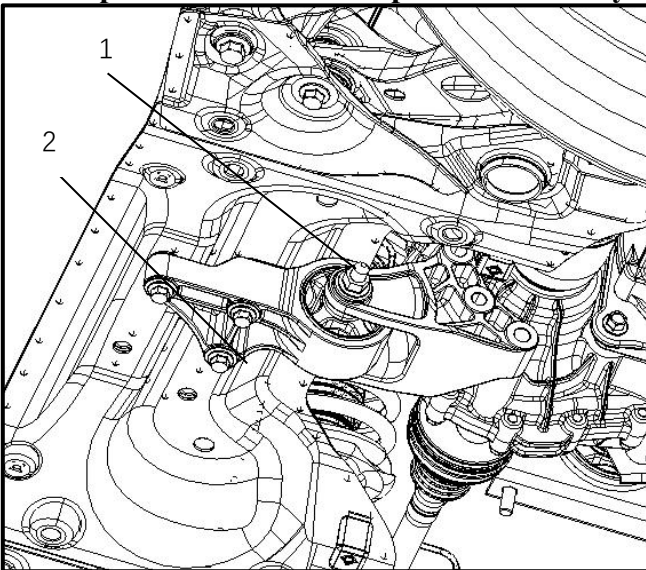
Torque: 25 ± 5 N·m, 70 ± 5 N·m

4. Install the nut 3 connecting the right suspension to the frame beam

Torque: 120 ± 10 N·m

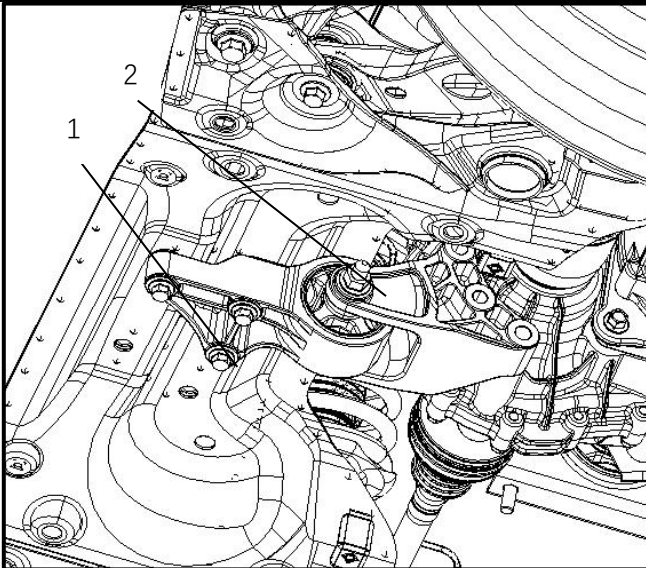
5. To install the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard

5.2.5.3 Replacement of rear suspension assembly



Disassembly process

1. Vehicle hoisting
2. To disassemble the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard
3. Remove the bolt and nut 1 connecting the rear suspension to the rear suspension mounting bracket
4. Remove the three bolts 2 connecting the rear suspension to the subframe



Installation process

1. Vehicle hoisting
2. Install the three bolt 1 connecting the rear suspension to the subframe

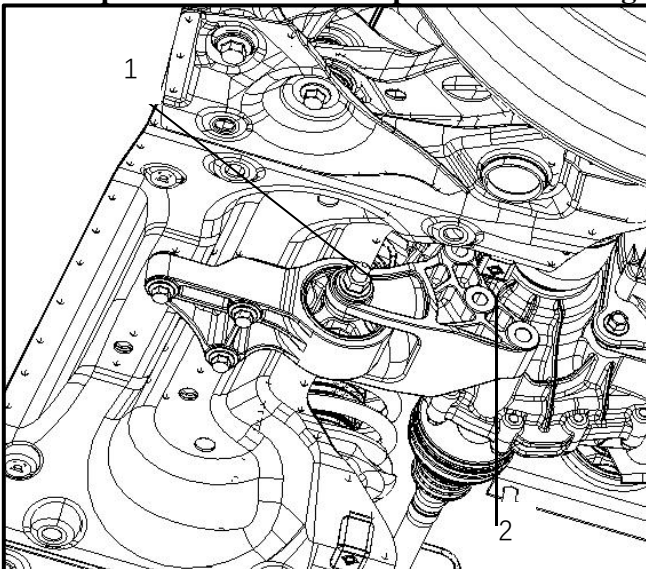
Torque: $70 \pm 5 \text{ N}\cdot\text{m}$

3. Install the bolt and nut 2 connecting the rear suspension to the rear suspension mounting bracket

Torque: $120 \pm 10 \text{ N}\cdot\text{m}$

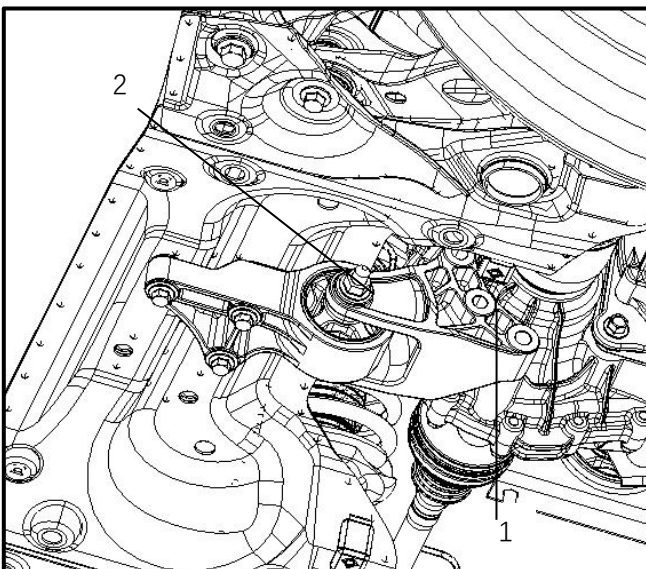
4. To install the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard

5.2.5.4 Replacement of rear suspension mounting bracket



Disassembly process

1. Vehicle hoisting
2. To disassemble the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard
3. Remove the bolt and nut 1 connecting the rear suspension to the rear suspension mounting bracket
4. Remove the three bolts 2 connecting the rear suspension mounting bracket to the reducer



Installation process

1. Vehicle hoisting
2. Install the three bolts 1 connecting the rear suspension to the reducer

Torque: $55 \pm 5 \text{ N}\cdot\text{m}$

3. Install the bolt and nut 2 connecting the rear suspension to the rear suspension mounting bracket

Torque: $120 \pm 10 \text{ N}\cdot\text{m}$

4. To install the front engine compartment lower guard; Please refer to 13.7.2.2 Replacement of front engine compartment lower guard

6 Electronic gearshift system

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6.1 Warnings and precautions

6.1.1 Warnings and precautions

Warning!

An assistant should drive the vehicle while the technician is inspecting the reported faulty part; otherwise, personal injury may occur.

Warnings about disconnecting the battery

Warning!

Before the servicing of any electrical components, the starting switch power mode must be OFF and all electrical loads must be "OFF".

Unless otherwise stated in the operating procedures. Moreover, if tools or equipment can easily contact the exposed energized electrical terminals, the negative cable of the battery shall be disconnected. Personal injury or damage to the vehicle and vehicle components may be caused by violation of these safety instructions.

Warnings about road tests

Warning!

The road test of the vehicle must be carried out in a safe manner and all traffic laws must be observed. Do not make any attempts that may jeopardize vehicle control. Violation of the above safety instructions can result in serious personal injury and damage to the vehicle.

6.2 Electronic gearshift system

6.2.1 Specifications

6.2.1.1 Fastener specifications

Fastener name	Specifications	Quantity	Torque range / (N·m)
Cross-slotted pan head screws, spring washers and flat washers fittings	ST4.8×1.6	6	2±0.5

6.2.2 Description and operation

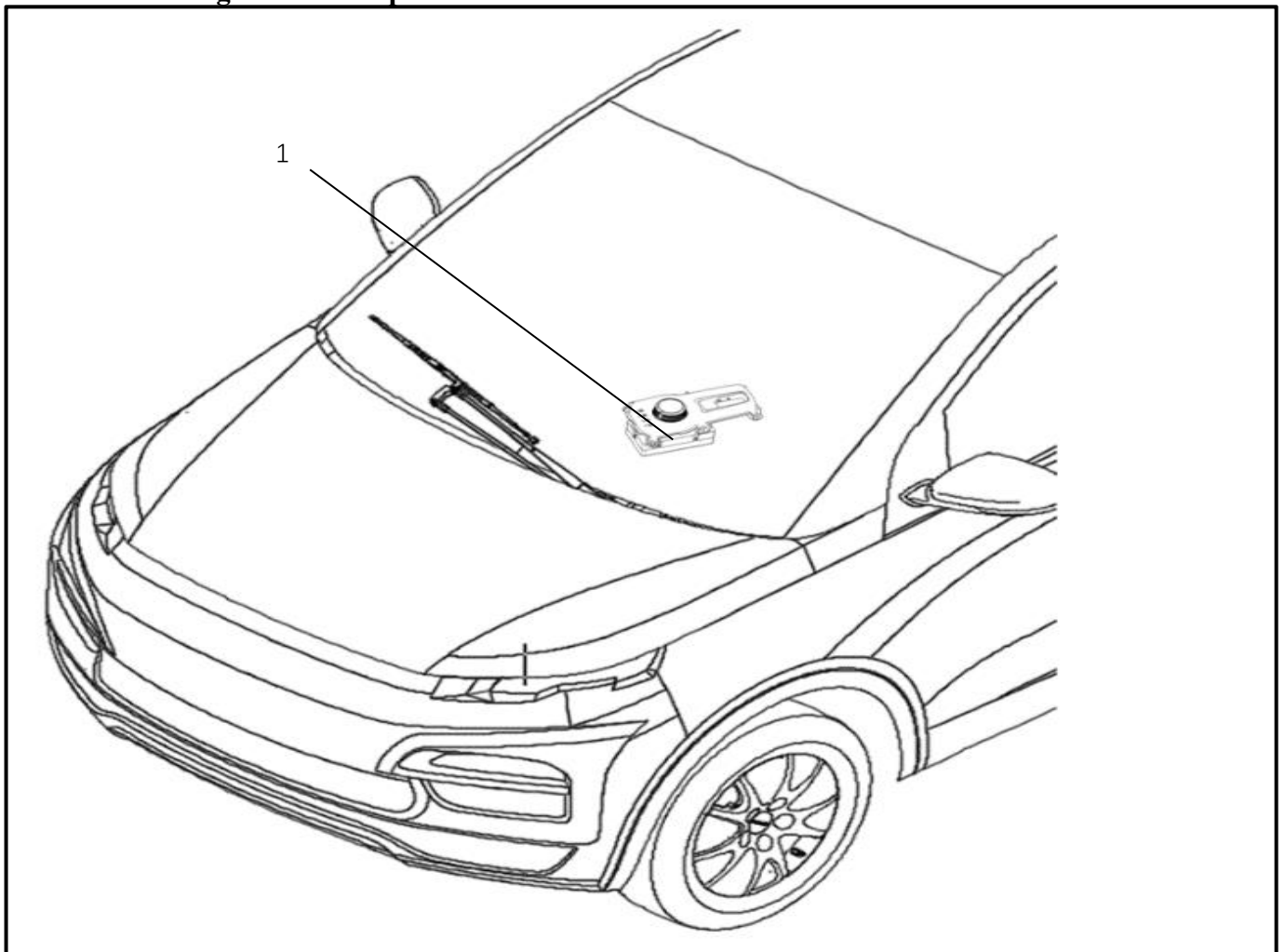
The electronic gearshift system consists of a shift knob assembly that sends a shift request to the VCU based on the driver's shift intent.

6.2.3 System operating principle

The shift knob sends gear request information (physical gear) to the VCU, which sends logical gears to control the vehicle's driving status based on the current driving state.

6.2.4 Component location

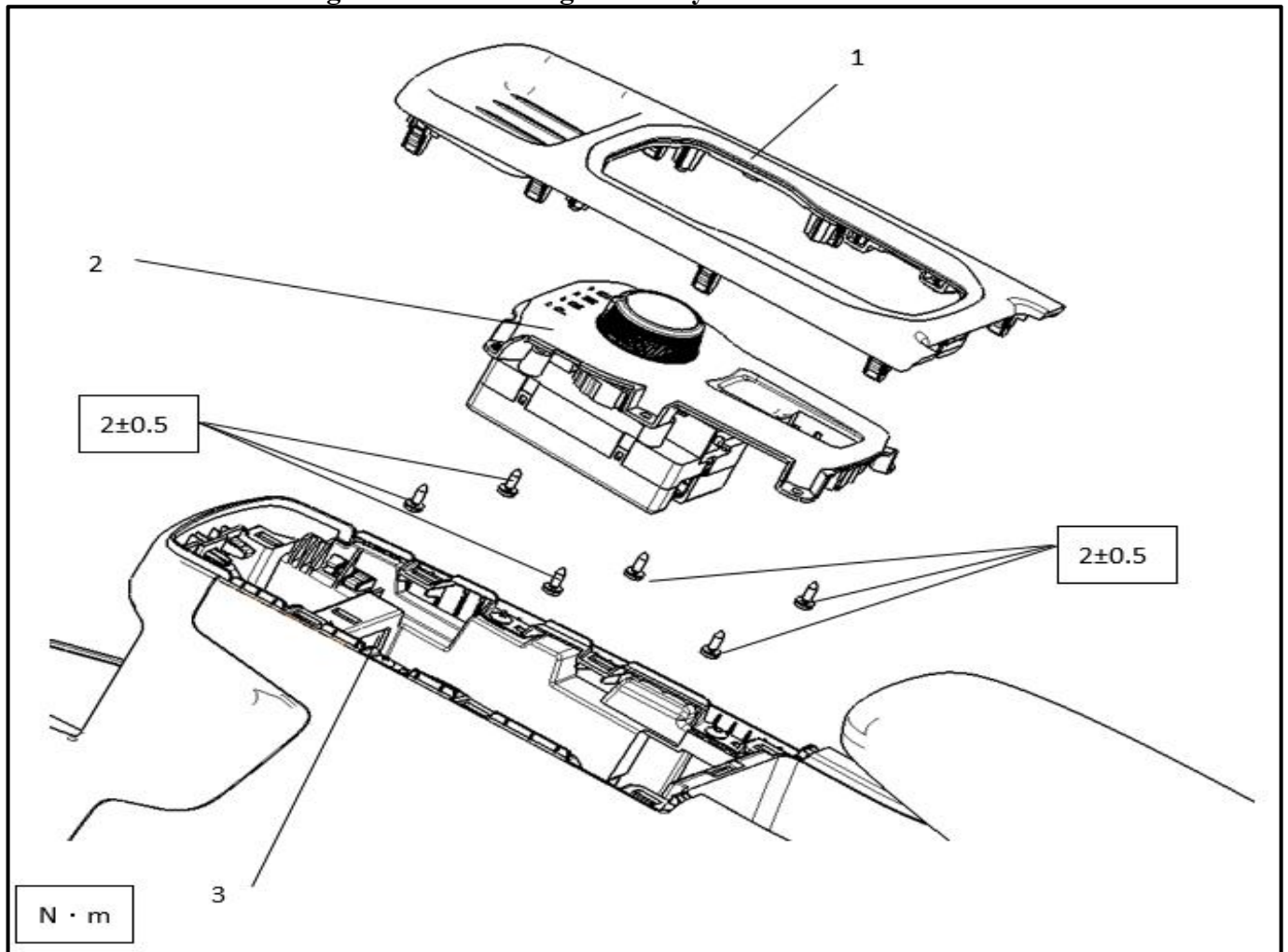
6.2.4.1 Electronic gearshift component location



1. Electronic gearshift

6.2.5 Breakdown drawing

6.2.5.1 Breakdown drawing of the electronic gearshift system



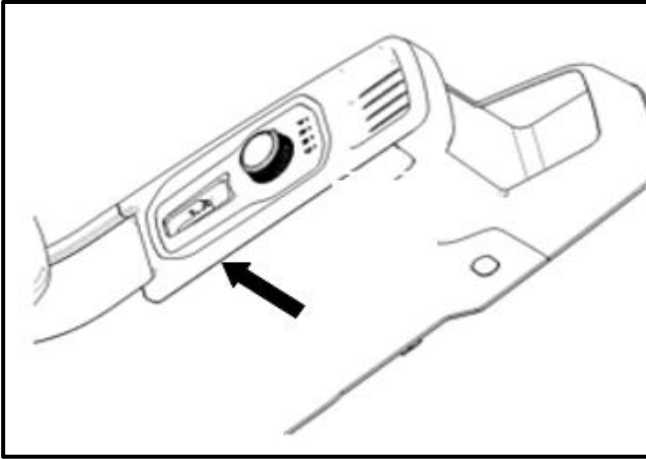
- 1. Auxiliary instrument panel upper panel assembly
- 2. Shift knob assembly

- 3. Auxiliary instrument panel frame assembly

6.2.6 Diagnostic information and steps

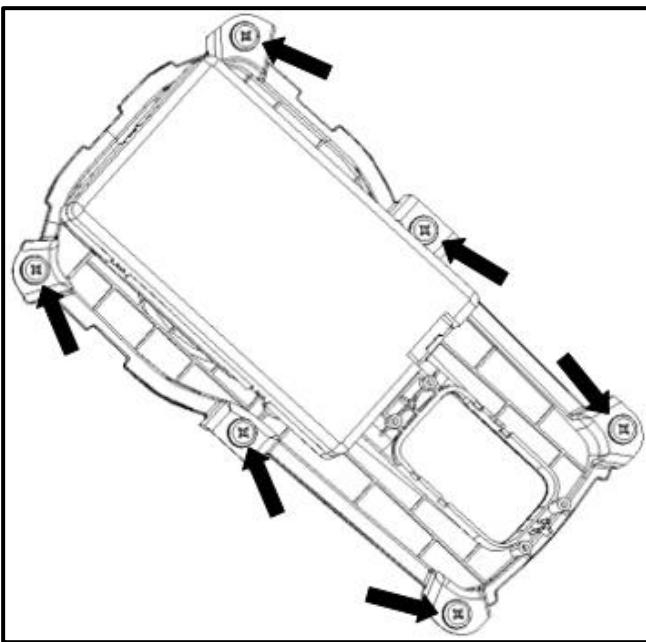
Fault phenomenon	Suspected component	Replacement
Knob jam	1. Solenoid valve will not engage	Please refer to the replacement of shift knob assembly
	2. Check if the wiring harness connectors are loose	
Invalid gear signal	1. Hall sensor fails	
	2. The circuit board is abnormal	

6.2.7 Disassembly and installation



Disassembly procedure:

1. Disconnect the negative terminal of the storage battery
2. Disassemble the upper panel assembly of the auxiliary instrument board



3. Disassemble the shift knob assembly

Remove the 4 screws of the hand brake park (6 screws for EPB park) and disengage the shift knob assembly from the auxiliary instrument panel body assembly

Check

The shift assembly should be inspected and replaced in case of any of the following conditions.

- (a) Check that the shift knob can be rotated.
- (b) Check that the gear indicator light is illuminated.

Installation procedure:

Installation is performed in the reverse order of the disassembly procedure.

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7.1 Warnings and precautions

7.1.1 Warnings and precautions

7.1.1.1 Warnings and precautions

Warnings about handling ABS (antilock braking system) components

Warning!

Certain components of the ABS cannot be serviced individually, and attempts to disassemble or disconnect certain system components may result in personal injury or improper system operation; only those components that are permissible to disassemble and install can be serviced.

Warnings about brake dust

Warning!

The following operations should be avoided during the servicing of the brake components:

- a. Do not grind brake friction linings.
- b. Do not use sandpaper to grind the brake friction linings.
- c. Do not use a dry brush or compressed air to clean the brake components.

Fibers may be contained in some models or aftermarket retrofit brake components, which may be mixed with the dust. Inhaling dust containing fibers can result in serious injuries.

A damp cloth to clear any dust from the brake components.

Warnings about brake fluid

Warning!

Brake fluid is composed of polyethylene glycol, which is highly susceptible to moisture and hygroscopicity. Do not use brake fluid that may be contaminated with water in open containers; use of inappropriate or contaminated brake fluid may result in system failure, loss of vehicle control, and personal injury.

Warnings about brake fluid irritation

Warning!

The skin and eyes may be irritated by brake fluids. In case of exposure, take the following measures:

- a. Eye contact - flush eyes thoroughly with water.
- b. Skin contact - rinse with soap and water.

Warning!

Brake fluid must not contaminate the vehicle paint

Warnings about the replacement of brake pipe

Caution

When replacing the brake pipe, please install and fix it carefully. The holes must be fitted in place and correct fasteners are required. Otherwise, damage to the brake pipe and the braking system may occur, causing personal injury.

Cautions for filling brake fluid in the braking system

Caution

Use only brake fluid from a clean, sealed brake fluid container that complies with DOT4 when adding brake fluid to the brake master cylinder storage tank. Failure to use the recommended brake fluid can result in contamination that can damage the rubber seals or rubber gaskets inside hydraulic braking system components.

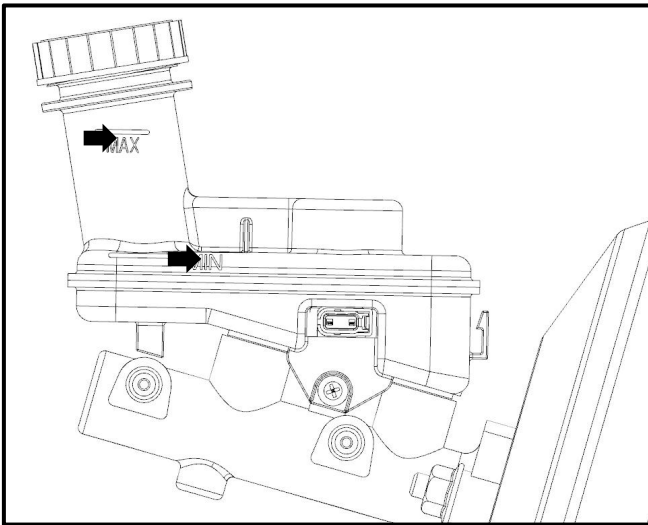
Cautions for brake calipers

Caution

Use a steel wire to hang up the brake caliper when removing the brake caliper, in order to avoid damaging the brake pipe.

7.2 Braking system exhaust procedure

7.2.1 Brake fluid level detection procedure

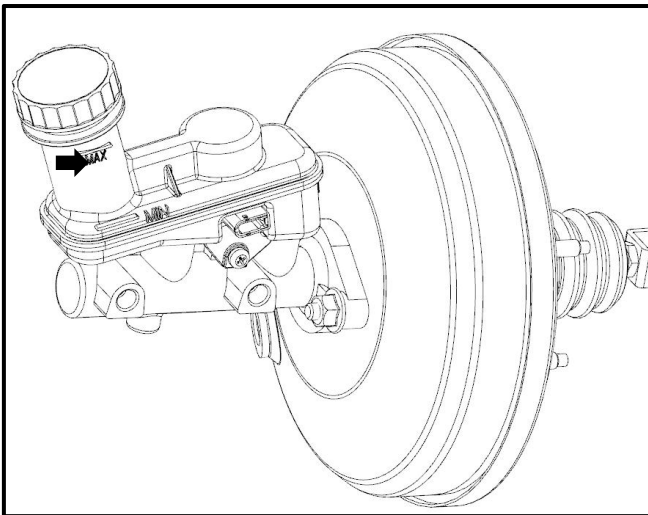


1. The brake fluid level should be checked
 - a. The reservoir level should be checked, and the level position should be between MIN and MAX.
 - b. The filler cover should be unscrewed to check whether the brake fluid color is muddy.

Caution

The brake fluid should be added if the brake fluid is not within the specified range. The brake fluid should be replaced if the brake fluid color is muddy.

7.2.2 Brake fluid filling and replacement



1. Brake fluid filling and replacement
 - a. Adjustment procedures
Please refer to 4.2.3 Hydraulic braking system exhaust procedure

Caution

Perform the hydraulic braking system venting procedure when replacing the brake fluid.

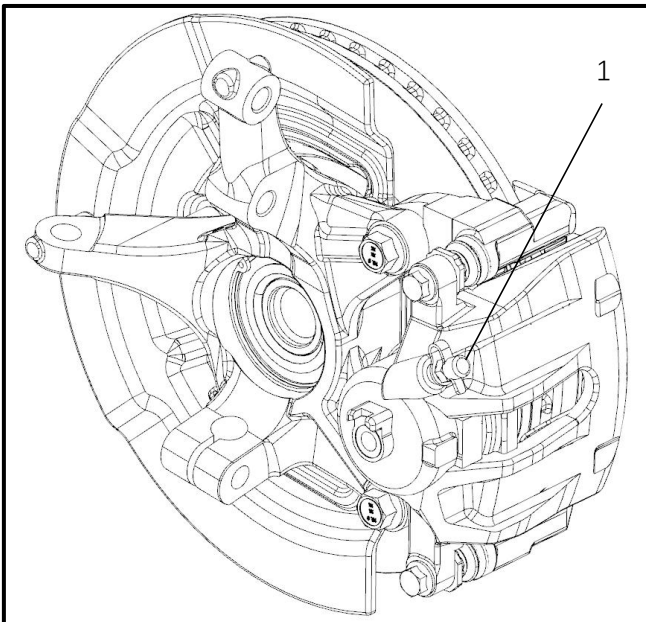
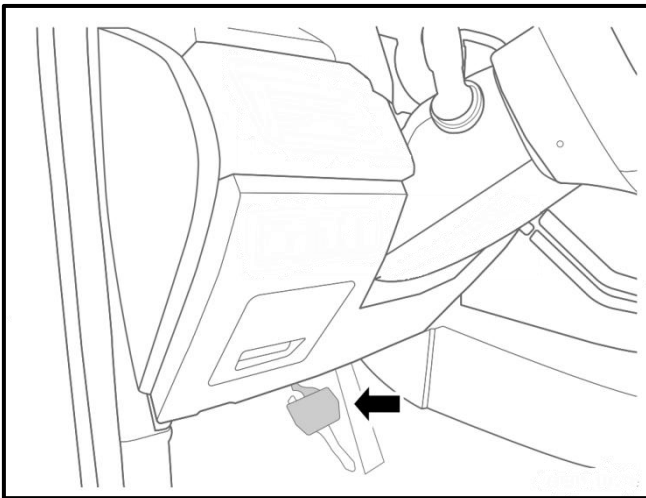
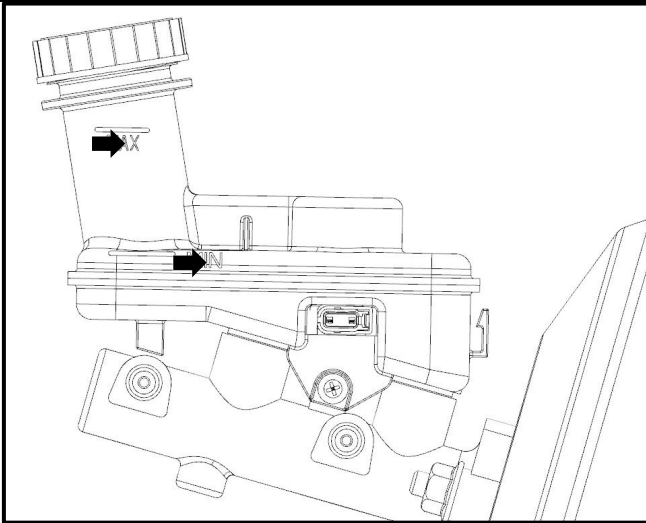
7.2.3 Hydraulic braking system venting procedure

Warning!

Please refer to "Cautions for filling brake fluid in the braking system" in "Warnings and precautions".

Caution

The ex-factory ABS hydraulic brake governor is filled with fluid and vented, during normal maintenance procedures involving the governor, air does not enter the ABS hydraulic brake governor. In such cases, a manual venting procedure is used.



1. Hydraulic braking system venting
 - a. The power should be kept off, and the brake pedal should be depressed several times until the pressure in the booster is completely removed.
 - b. The brake fluid should be filled into the reservoir and the reservoir level should be kept between MIN and MAX during venting operation.
- c. The brake pedal should be depressed slowly to the bottom and held still.

- d. The dust cover 1 of the venting screw should be removed and a clear tube should be attached to the rear venting screw on the left rear brake caliper so that the tube is immersed in the brake fluid in the clear container. Air should be vented from the left rear brake caliper as described below.
- e. The brake pedal should be depressed slowly, not in a rush.
- f. While the brake pedal is depressed, the venting screw should be released to vent air from the brake caliper.
- g. The rear venting should be tightened screw slightly after the air bubbles have escaped into the brake fluid container.
- h. The brake pedal should be released slowly.
- i. Steps f-g should be repeated until all air is vented.
- j. When the venting screw is released, no more bubbles appear in the container indicating that all the air has been vented.

Caution

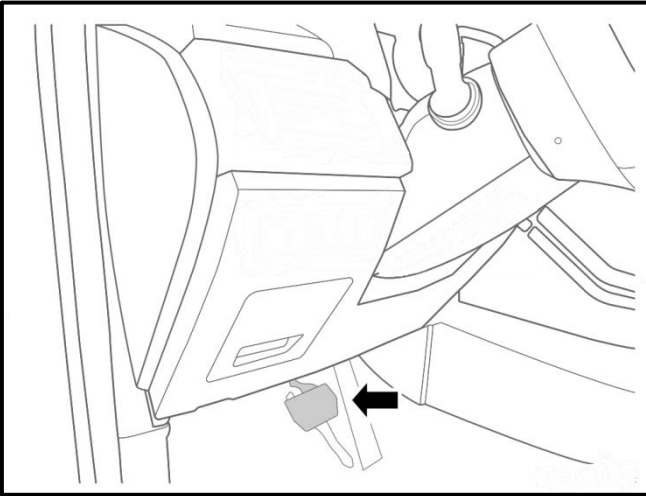
During the venting process, the master cylinder reservoir level should be kept at least halfway up.

- k. The venting screw should be tightened.

Torque: 9N·m

- l. The air in the remaining calipers should be vented in the order of right front, right rear, and left front.

Follow the procedures in steps d-k.



- m. Check whether the brake pedal is soft after all air has been vented from the brake calipers. If so, repeat the entire venting procedure until it is normal.

7.3 Front wheel brake

7.3.1 Specifications

7.3.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolt securing the brake to the damper	M12×55	115±10
Brake disc fixed screw	M6	9±1
Guide pin fixed bolt	M8	25±3
Fixed bolt securing the brake caliper assembly to the steering knuckle	M12	100±10

7.3.1.2 Front disc brake component specifications

Application	Standard	Metric (mm)
Brake disc thickness	Standard value	22
	Minimum value	19
Allowable end face runout of front brake disc	Maximum value	0.04
Thickness of front brake pad	Standard value	11
	Minimum value	2

7.3.2 Description and operation

7.3.2.1 Description and operation

Components of the front disc braking system:

The front disc braking system consists of the following components:

Brake pad: The mechanical output force from the hydraulic brake caliper is applied on the friction surface of the brake disc.

Brake pad guide piece: It is located between the disc brake pad and the brake caliper bracket, and keeps the brake pad moving smoothly so as to eliminate noise.

Brake disc: The mechanical output force of the disc brake pads acting on the friction surface of the brake disc is used to slow down the rotational speed of the tires and wheel assemblies for vehicle braking.

Brake caliper: Under the liquid pressure from the brake master cylinder, it converts the liquid pressure into mechanical output force acting on the brake pad; when the master cylinder returns to the original position, the brake caliper piston automatically returns to the original position.

Brake caliper and brake pad bracket: They are used to hold the disc brake pad and caliper in place, and to maintain the correct fitting position with the hydraulic brake caliper, so that the brake pad slide when the mechanical output force is applied to the inner brake pad.

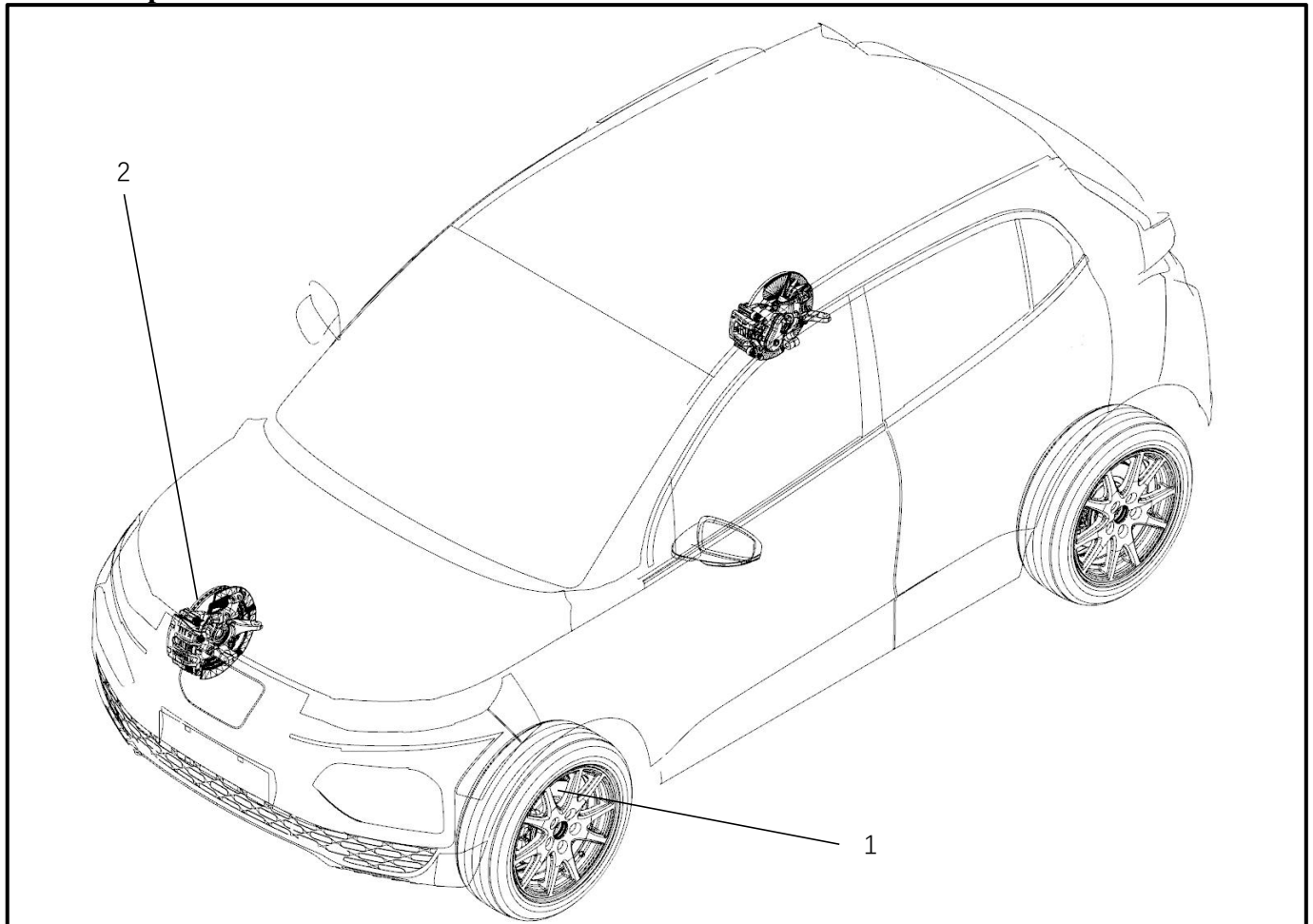
Brake caliper guide pin: It is used to install the hydraulic brake caliper and fix the caliper in place, and maintain the correct fitting position with the caliper bracket, so that the caliper slides relative to the brake pad when a mechanical output force is applied.

Operation of the front disc braking system: The mechanical output force from the hydraulic brake caliper piston acts on the inner brake pad, and when the piston pushes the inner brake pad outward, the caliper housing pulls the outer brake pad inward at the same time, so that the output force is evenly distributed. The brake pad will act on the friction surfaces on both

sides of the disc to slow down the rotational speed of the tires and wheel assemblies, and the functioning of the brake pad guide piece and caliper guide pin is very important for the even distribution of the braking force. The normal function of the brake pad guide piece and caliper guide pin is very important for the even distribution of braking force.

7.3.3 Component location

7.3.3.1 Component location

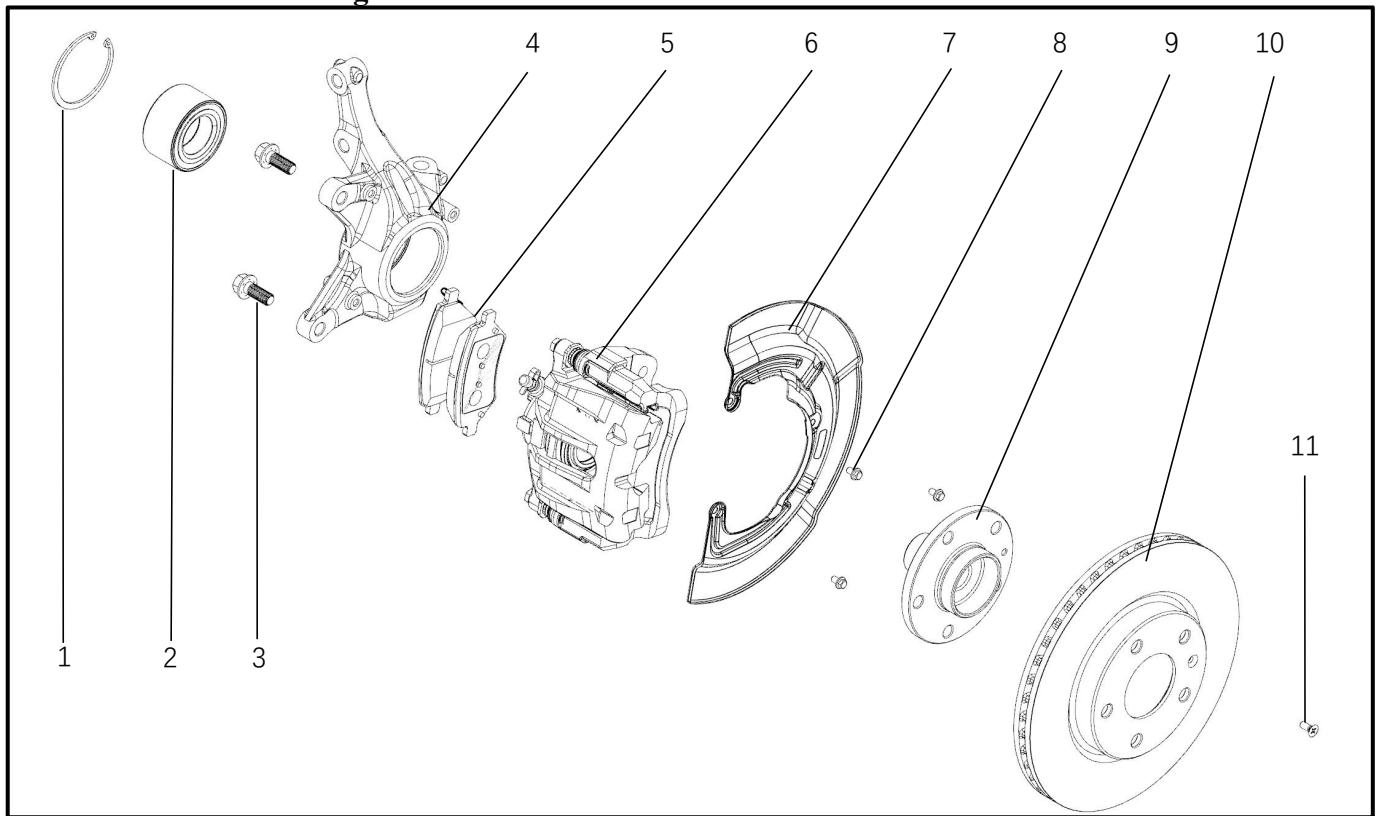


1. Left front brake with steering knuckle assembly

2. Right front brake with a steering knuckle assembly

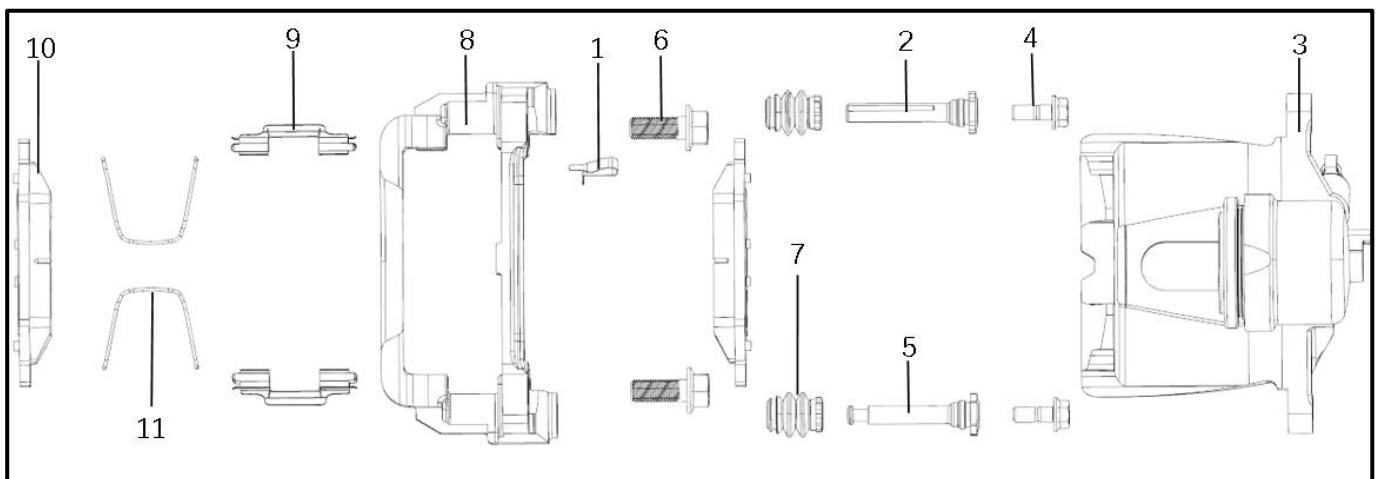
7.3.4 Breakdown drawing

7.3.4.1 Breakdown drawing of the front brake



- | | |
|---------------------------|----------------------------|
| 1. Jump ring | 7. Fender |
| 2. Bearing | 8. Fender fixed bolt |
| 3. Caliper bracket bolt | 9. Wheel hub |
| 4. Steering knuckle | 10. Brake disc |
| 5. Brake lining | 11. Brake disc fixed screw |
| 6. Brake caliper assembly | |

7.3.4.2 Breakdown drawing of the front brake caliper assembly



- | | |
|-------------------------|-------------------------|
| 1. Alarm piece | 7. Guide pin dust cover |
| 2. Primary guide pin | 8. Caliper bracket |
| 3. Caliper body | 9. Guide piece |
| 4. Guide pin fixed bolt | 10. Brake lining |
| 5. Secondary guide pin | 11. Splay spring |
| 6. Caliper bracket bolt | |

7.3.5 Diagnostic information and steps

7.3.5.1 Inspection of brake pad

1. Periodically inspect the brake pad and replace it if it exceeds the specifications.
2. Replace the disc brake pad per axle set if required.
3. Check the friction surface of the disc brake pad, breaks or damage.

7.3.5.2 Inspection of brake caliper

1. Inspect the caliper housing for cracks, severe wear and damage and replace the caliper if any of these conditions occur.
2. Inspect the caliper piston dust cover seals for cracks, breakage, chips, aging and improper installation in the caliper body, and replace the caliper if any of these conditions occur.
3. Check for brake fluid leaks around the caliper piston dust cover seal rings and on the disc brake pad, and replace the caliper if there are signs of brake fluid leakage.
4. Check whether the caliper piston can smoothly enter the caliper cylinder with a complete stroke, and ensure smooth and even movement of the caliper piston in the caliper cylinder. If the caliper piston is blocked or difficult to reach the bottom, the brake caliper should be replaced.

7.3.5.3 Inspection of brake pad guide piece

1. Inspect the brake pad guide piece for missing, severely corroded, and bent mounting tab signs.
2. If any of these conditions occur, the brake pad guide piece needs to be replaced. Ensure that the brake pad slide smoothly on the disc brake pad guide piece without blocking.

7.3.5.4 Inspection of brake caliper guide pin

Check the brake caliper guide pin for the following conditions:

1. Blocking
2. Jamming
3. Cracked or broken sheath
4. Missing sheath

If any of these conditions occur, the brake caliper and the dust cover seal ring need to be replaced.

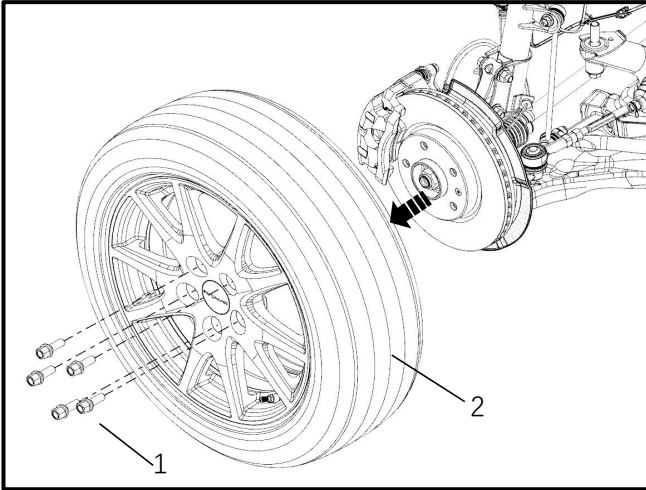
7.3.5.5 Inspection of brake disc surface and wear

1. Clean the brake disc friction surface with industrial alcohol or a permitted brake cleaner equivalent.
2. Check the brake disc friction surface for the following conditions:
 - a. Severe rust and/or pitting
 - b. Minor surface corrosion
 - c. Cracks and/or burn spots

- d. Severe discoloration and bluing
3. If one or more of these conditions occur on the friction surface of the brake disc, the disc requires surface dressing or replacement.

7.3.6 Disassembly and installation

7.3.6.1 Disassembly and installation of brake caliper

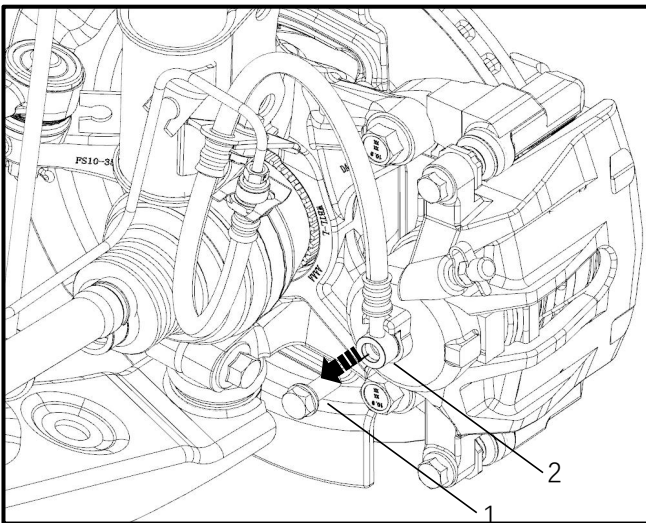


Disassembly process

1. Lift the vehicle to a suitable position.
2. Disassemble the wheel nut 1.

Torque: Please refer to 3.4.5.1 Replacement of wheels.

3. Remove the wheel assembly 2.

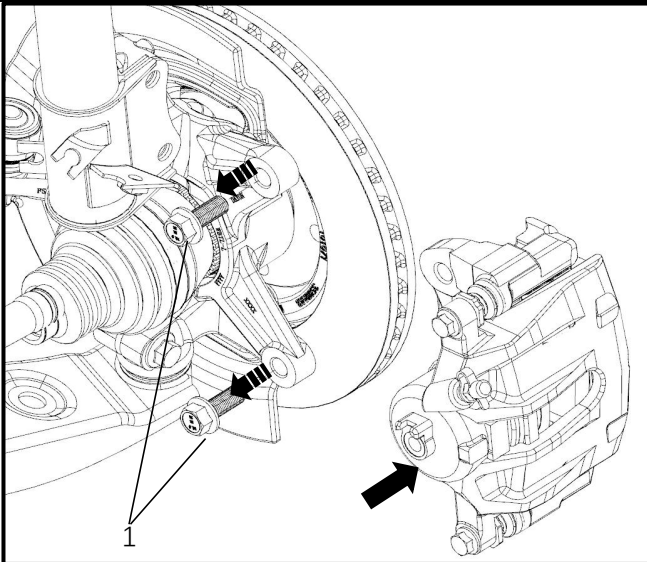


4. Disassemble the brake hose fuel inlet bolt 1.

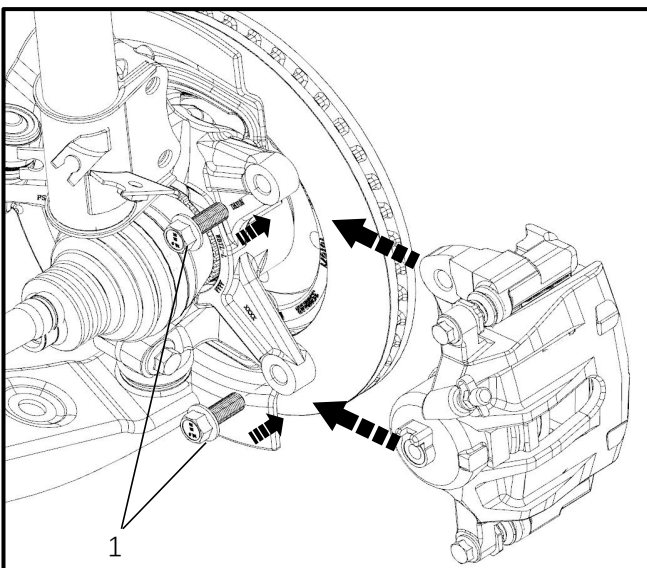
Torque: Please refer to 7.7.4 Disassembly and installation of brake hose.

Caution: Fuel inlet bolt gasket is not reusable

5. Remove the brake hose fuel inlet 2.

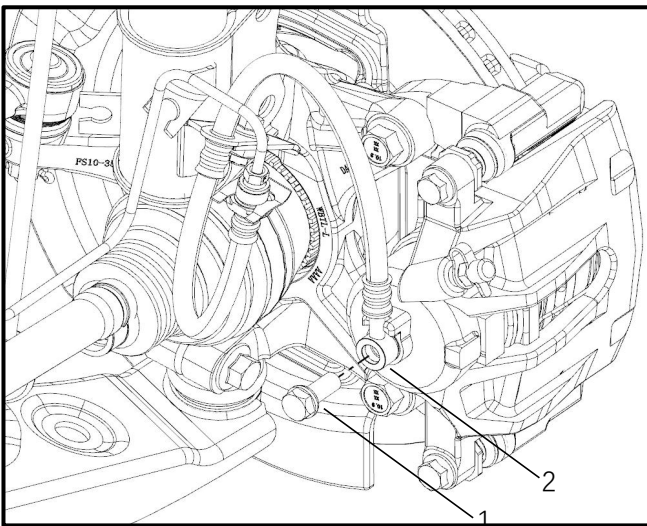


6. Release the fixed bolt securing the brake caliper to the steering knuckle 1.
- Torque: $110 \pm 10 \text{ N} \cdot \text{m}$
7. Remove the brake caliper.

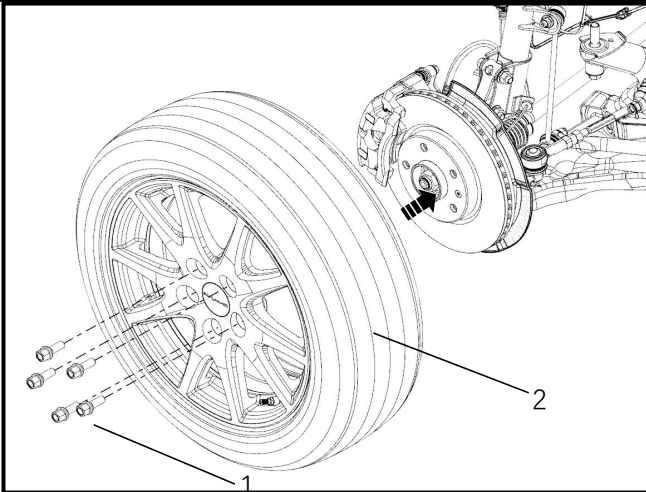


Installation process

1. Lift the vehicle to a suitable position.
2. Align the brake caliper bracket mounting holes to the steering knuckle and tighten the bolt 1.



3. Assemble the brake hose 2.
 4. Tighten the fuel inlet bolt 1.
- Torque: Please refer to 7.7.4 Disassembly and installation of brake hose.

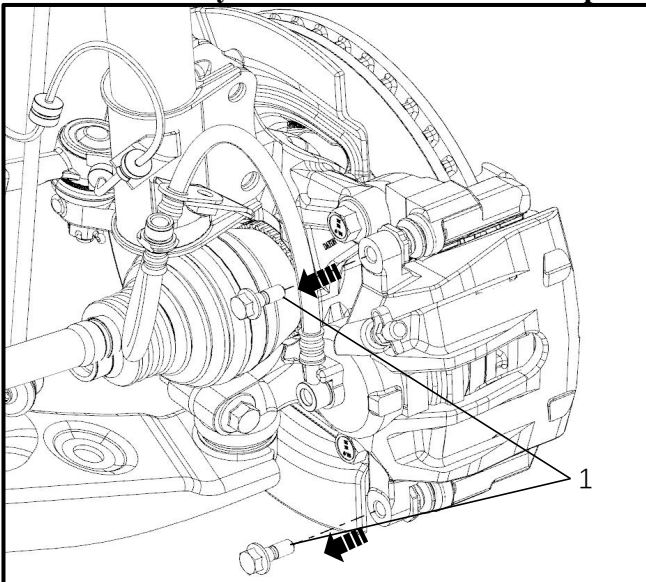


5. Assemble the wheel assembly 2 and tighten the wheel bolt 1.

Caution: Fill the brake fluid and allow air discharge after replacing the brake caliper.

Please refer to 1.4.2.6 Hydraulic braking system exhaust procedure to exhaust air.

7.3.6.2 Disassembly and installation of brake pad

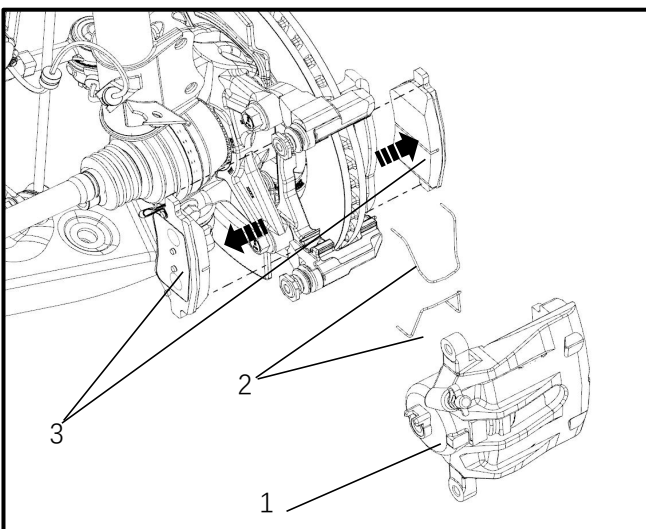


Disassembly procedure:

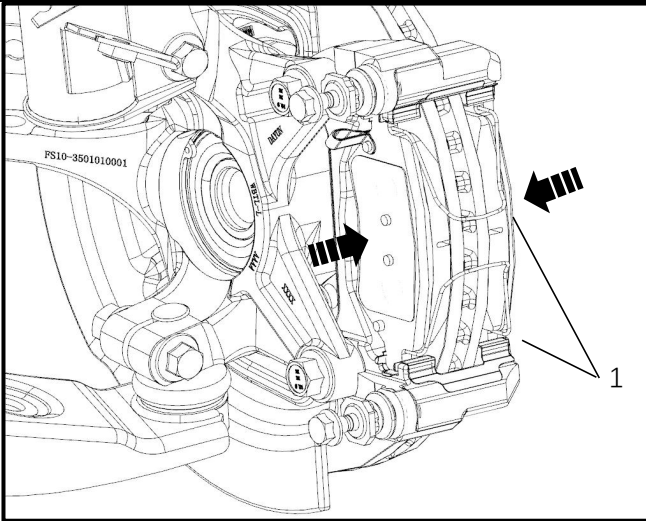
1. Lift the vehicle to a suitable position.
2. To disassemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.
3. Disassemble the guide pin fixed bolt 1 and remove the brake caliper body.

Torque: $25 \pm 3 \text{ N} \cdot \text{m}$

Caution: To replace the friction pad only, it is not required to disassemble the brake hose or drain the brake fluid. However, it is necessary to use a wire to hang up the brake caliper so as not to damage the brake pipe.

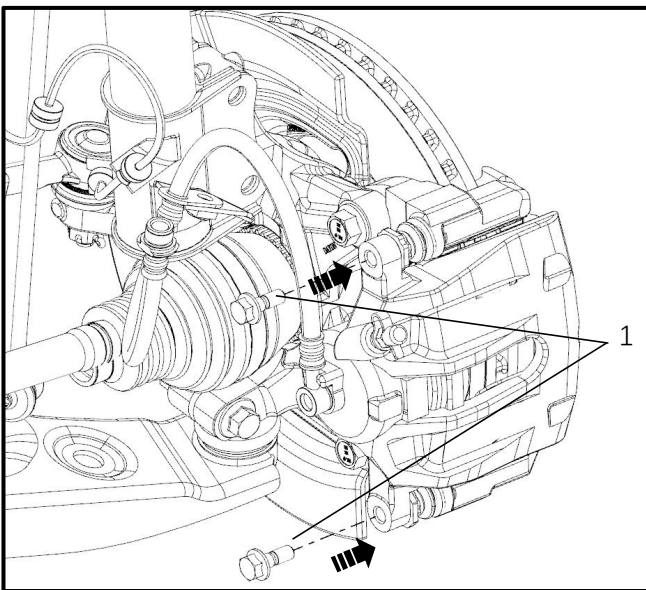


4. Remove the brake caliper body 1.
5. Remove the splay spring 2.
6. Remove the inner and outer brake linings 3.



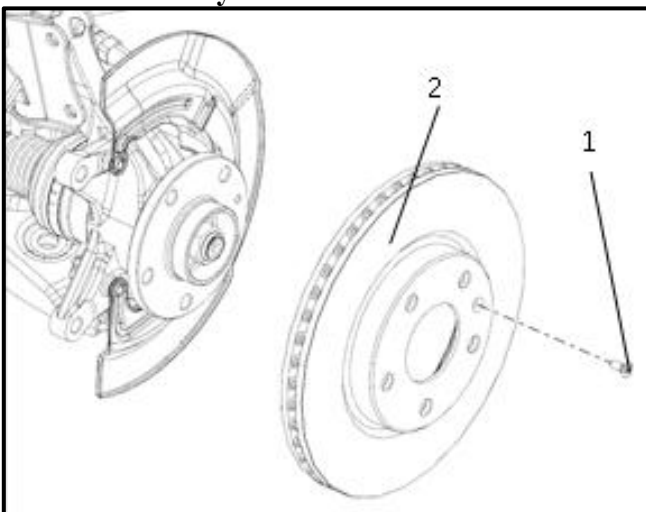
Installation process

1. Install the inner and outer brake linings into the brake caliper bracket.
2. Assemble the splay spring 1.



3. Tighten the guide pin fixed bolt 1.
Torque: $25 \pm 3 \text{ N} \cdot \text{m}$

7.3.6.3 Disassembly and installation of front brake disc

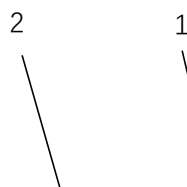


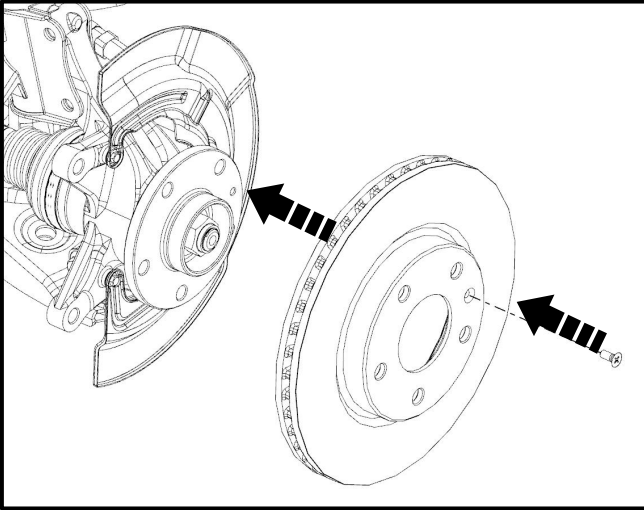
Disassembly process

1. Lift the vehicle to a suitable position.
2. To disassemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.
3. To disassemble the brake caliper; Please refer to 7.3.6.1 Disassembly and installation of brake caliper.

Caution: To replace the brake disc, it is not needed to remove the brake hose or drain the brake fluid. However, it is necessary to use a wire to hang up the brake caliper so as not to damage the brake pipe.

4. Disassemble the brake disc fixed screw 1.
Torque: $9 \pm 1 \text{ N} \cdot \text{m}$
5. Remove the brake disc 2 from the hub 3.

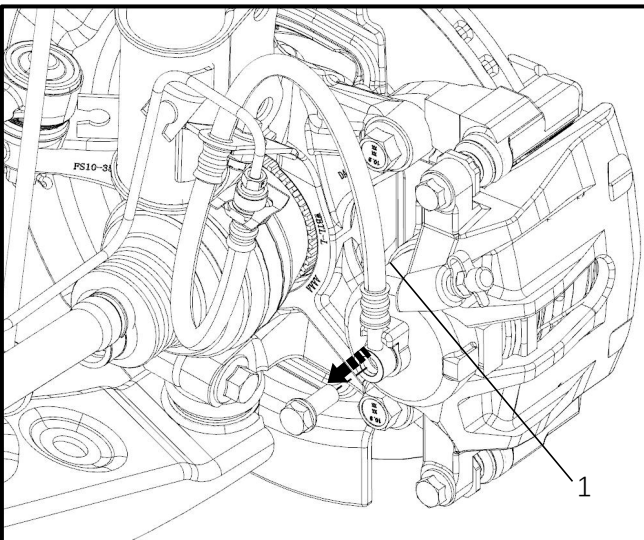




Installation process

1. Assemble the brake disc to the hub and tighten the screws.
2. To assemble the brake caliper; Please refer to 7.3.6.1 Disassembly and installation of brake calipers.
3. To assemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.

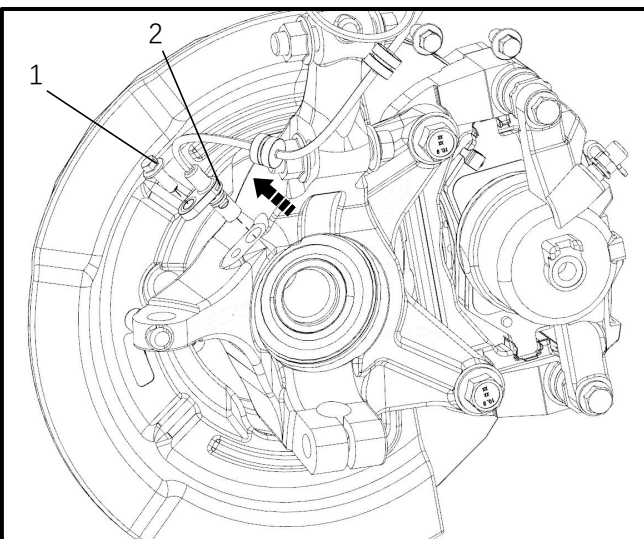
7.3.6.4 Disassembly and installation of brake assembly



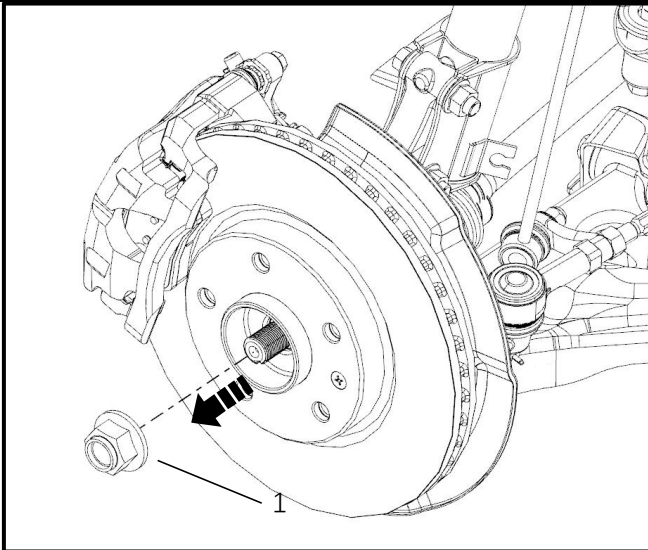
Disassembly process

1. Lift the vehicle to a suitable position.
2. To disassemble the wheel assembly; Please refer to the disassembly procedure of wheel assembly.
3. To disassemble the brake hose 1; Please refer to 7.7.4 Disassembly and installation of brake hose.

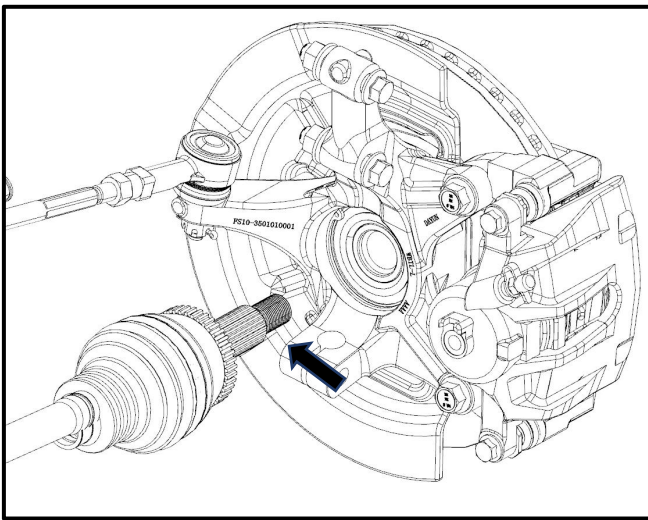
Caution: The gaskets on the brake hose fuel inlet bolts are not reusable.



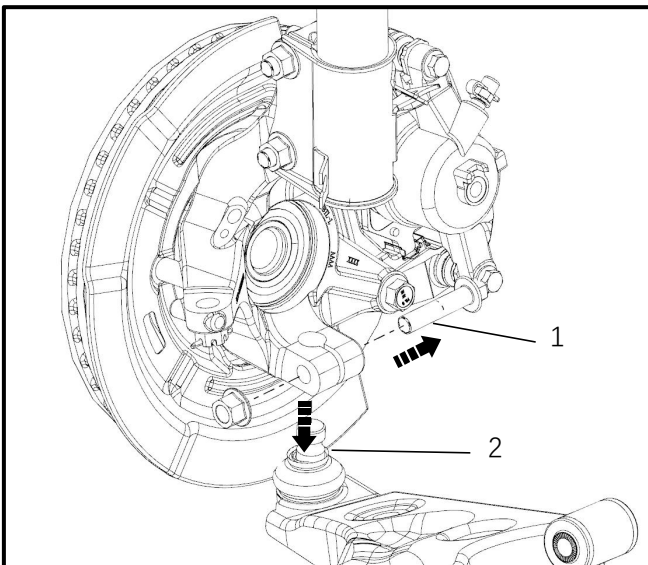
4. Disassemble the front wheel speed sensor fixed bolt 1.
5. Remove the front wheel speed sensor 2.



6. Disassemble the drive shaft nut 1.
Torque: Please refer to 4.2.7 Disassembly and installation.

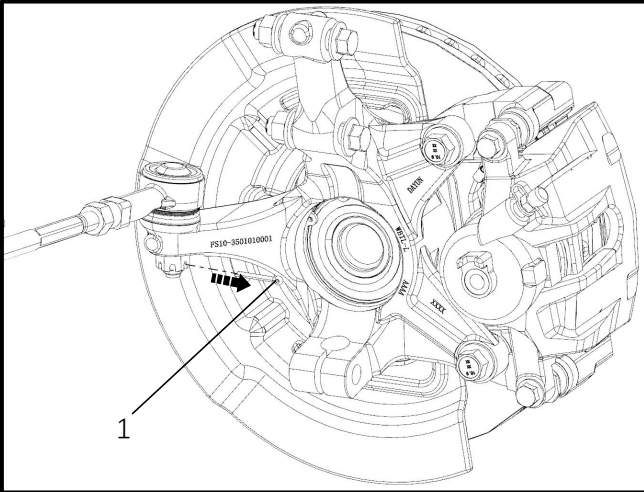


7. Remove the drive shaft from the brake.

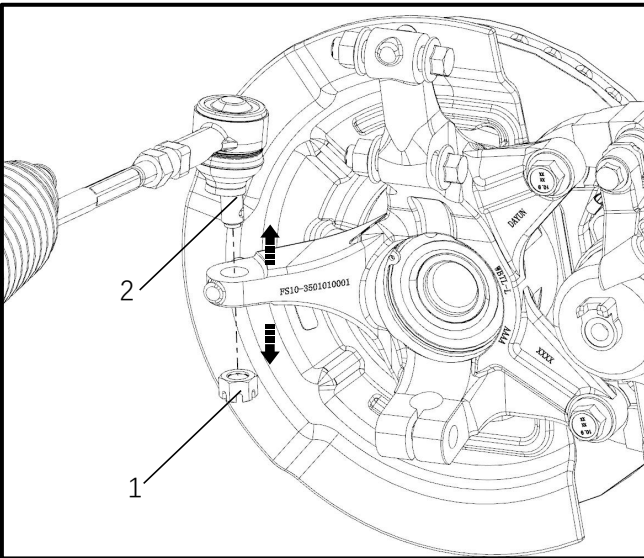


8. Disassemble the front lower swing arm ball joint fixed bolt 1 and take out the lower swing arm ball joint 2.
Torque: Please refer to 3.2.7.1 Replacement of front lower swing arm assembly.

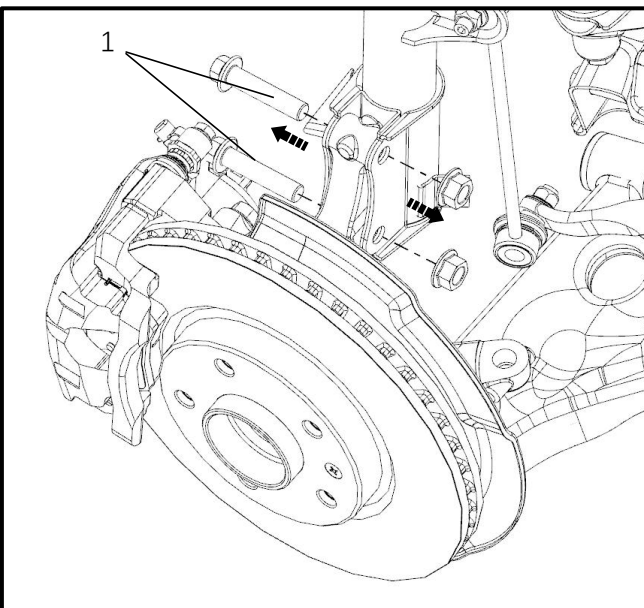
9. Disassemble the outer ball head nut cotter pin 1 of steering gear.

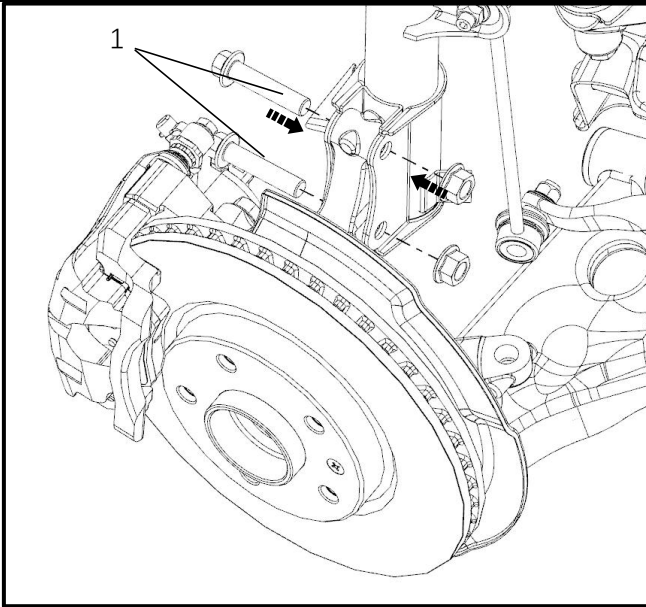


10. Disassemble the outer ball head slotted nut 1 of steering gear and take out the outer ball joint 2 of steering gear.
Torque: Please refer to 8.3.5.1 Disassembly and installation of mechanical steering gear.



11. Disassemble the fixed bolt 1 securing the brake to the damper and remove the brake assembly.
Torque: $115 \pm 10 \text{ N} \cdot \text{m}$

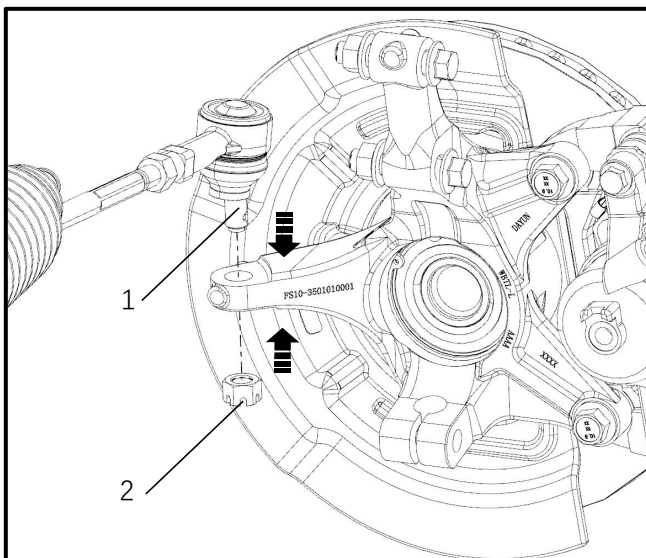




Installation procedure:

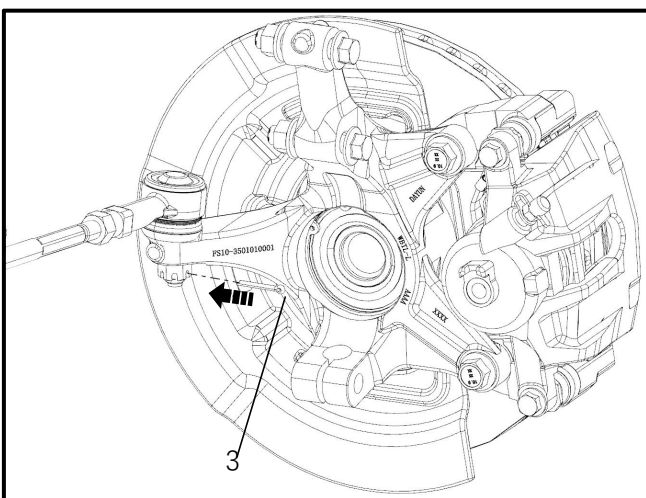
1. Align the brake to the damper mounting hole and tighten bolt 1.

Torque: $115 \pm 10 \text{ N} \cdot \text{m}$

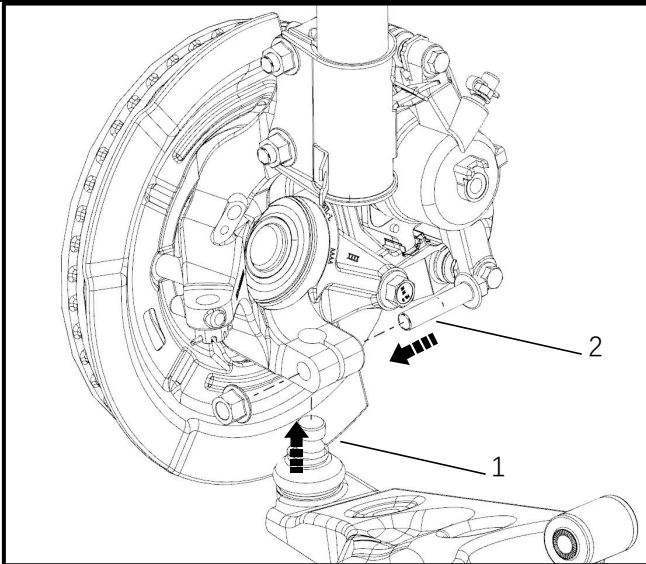


2. Assemble the outer ball joint 1 of steering gear and tighten the slotted nut 2.

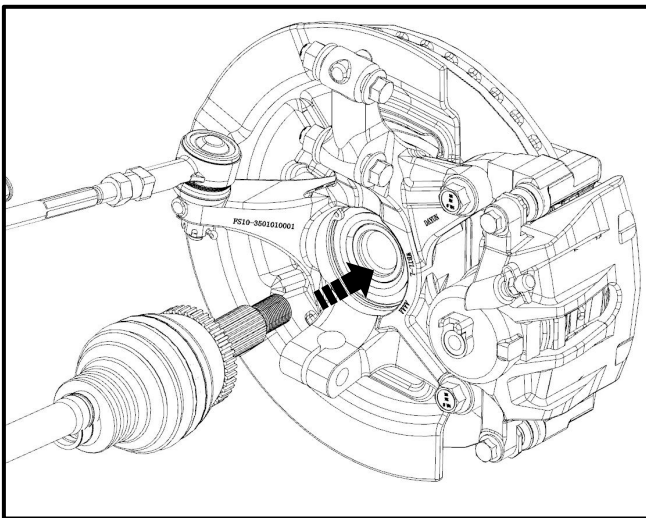
Torque: Please refer to 8.3.5.1 Disassembly and installation of mechanical steering gear.



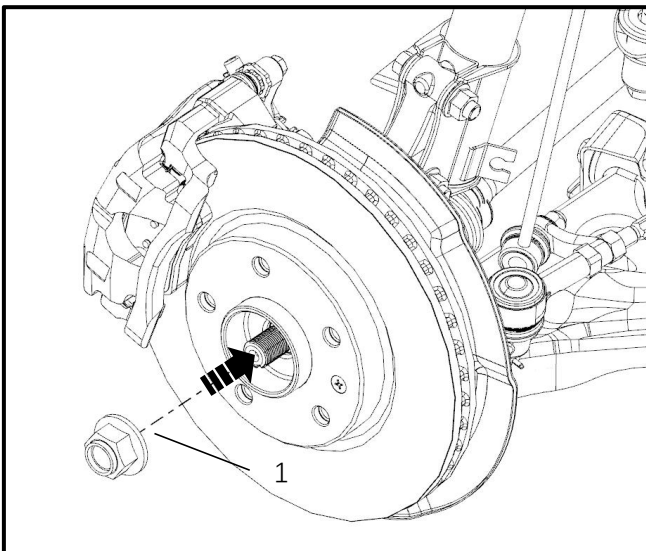
3. Assemble the cotter pin 3.



4. Assemble the front lower swing arm ball joint 1 and tighten the bolt 2.
Torque: Please refer to 3.2.7.1 Replacement of front lower swing arm assembly.



5. Assemble the drive shaft and tighten the drive shaft nut 1.
Torque: Please refer to 4.2.7 Disassembly and installation.



6. To fill the braking system with brake fluid and exhaust the air; Please refer to 1.4.2.6 Hydraulic braking system exhaust procedure.
7. To assemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.

7.4 Rear wheel brake

7.4.1 Specifications

7.4.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolt securing the rear brake to the damper	M12×55	115±10N·m
Rear brake disc fixed screw	M6	9±1N·m
Rear brake guide pin fixed bolt	M8	25±3N·m
Fixed bolt securing the rear brake caliper assembly to the steering knuckle	M10	70±5N·m

7.4.1.2 Rear brake component specifications

Application	Standard	Metric (mm)
Scrap thickness of brake disc	Standard value	10
	Minimum value	7
Allowable end face runout of rear brake disc	Maximum value	0.04
Thickness of rear brake disc pad	Standard value	10.2
	Minimum value	2

7.4.2 Description and operation

7.4.2.1 Overview

Components of the disc braking system:

The rear disc braking system consists of the following components:

Brake pad:

The mechanical output force from the hydraulic brake caliper is applied on the friction surface of the brake disc.

Brake pad guide piece:

It is located between the disc brake pad and the brake pad mounting bracket, and keeps the brake pad moving smoothly so as to eliminate noise.

Brake disc:

Vehicle braking is performed by using the mechanical output force of the disc brake pads acting on the friction surface of the brake disc to slow down the speed of the tires and wheel assemblies.

Brake caliper with EPB assembly:

Under the liquid pressure from the brake master cylinder, it converts the liquid pressure into a mechanical output force acting on the inner brake pad; when the master cylinder returns to its original position, the brake caliper piston automatically returns to its original position. The brake caliper is integrated with an electronic parking brake EPB motor, allowing electronic parking through the EPB switch.

Brake caliper bracket:

It is used to hold the disc brake pad and caliper in place, and to maintain the correct fitting position with the hydraulic brake caliper, so that the brake pad slide when the mechanical output force is applied to the brake pad.

Brake caliper guide pin:

It is used to install the hydraulic brake caliper and fix the caliper in place, and maintain the correct fitting position with

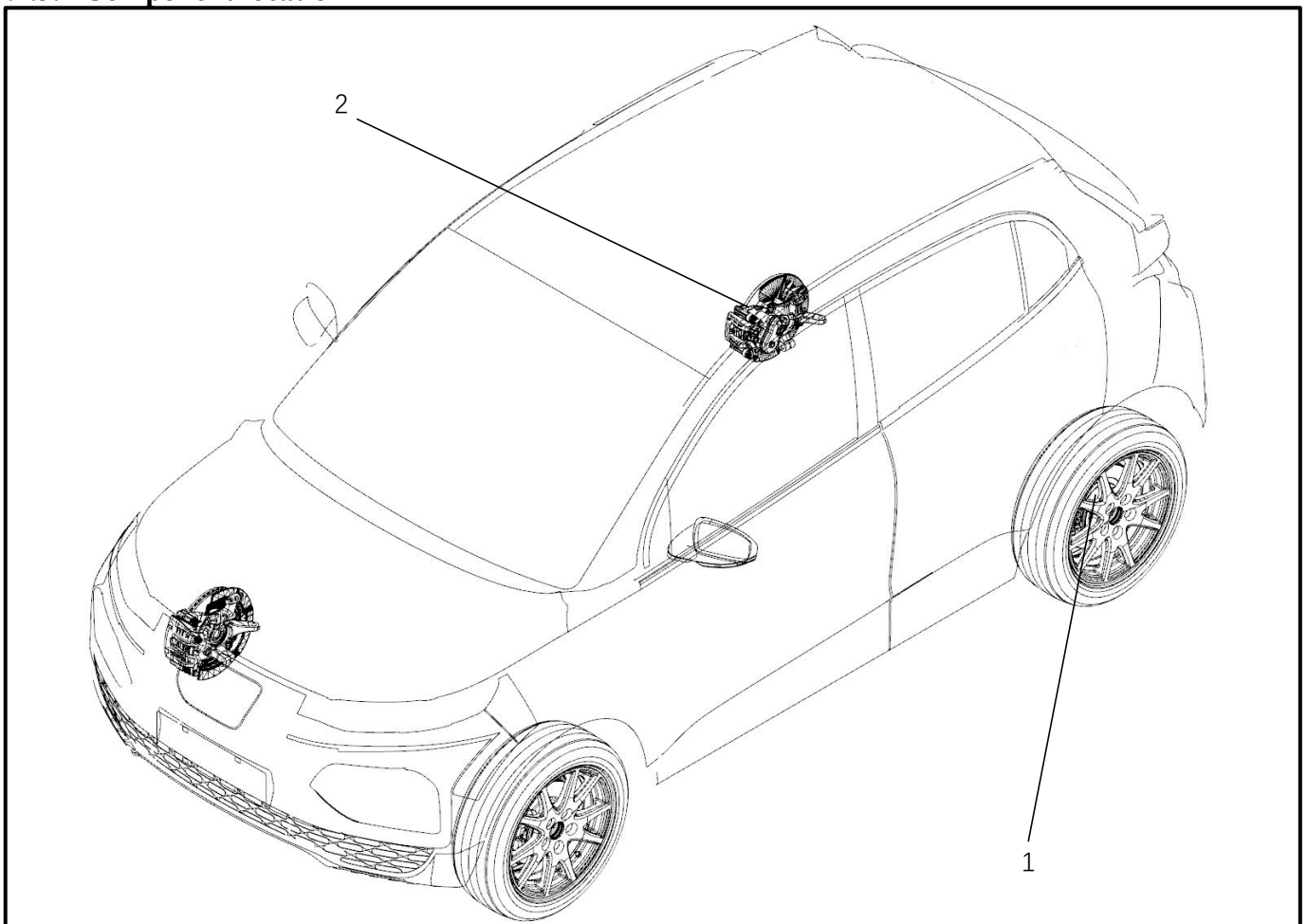
the caliper bracket, so that the caliper slides relative to the brake pad when a mechanical output force is applied.

Operation of the rear disc braking system:

The mechanical output force from the hydraulic brake caliper piston acts on the inner brake pad, and when the piston pushes the inner brake pad outward, the caliper housing pulls the outer brake pad inward at the same time, so that the output force is evenly distributed. The brake pad will act on the friction surfaces on both sides of the disc to slow down the rotational speed of the tires and wheel assemblies, and the functioning of the brake pad guide piece and caliper guide pin is very important for the even distribution of the braking force. The normal function of the brake pad guide piece and caliper guide pin is very important for the even distribution of braking force.

7.4.3 Component location

7.4.3.1 Component location

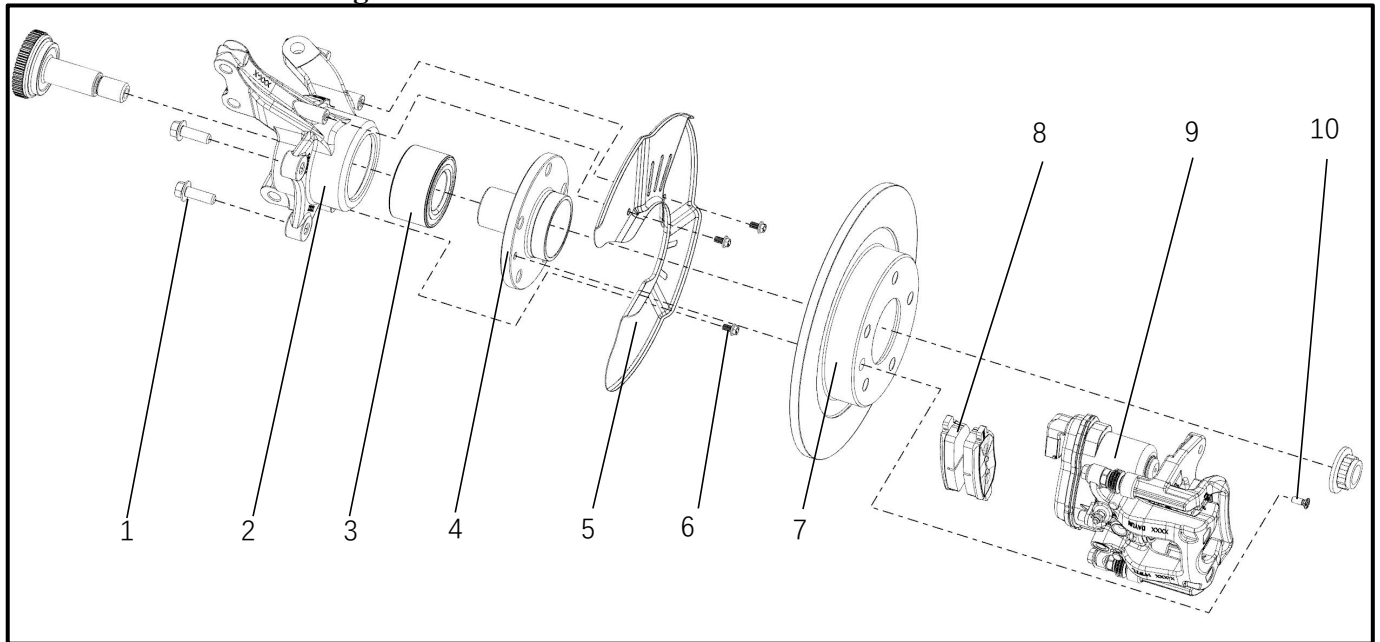


1. Left rear brake with a steering knuckle assembly

2. Right rear brake with steering knuckle assembly

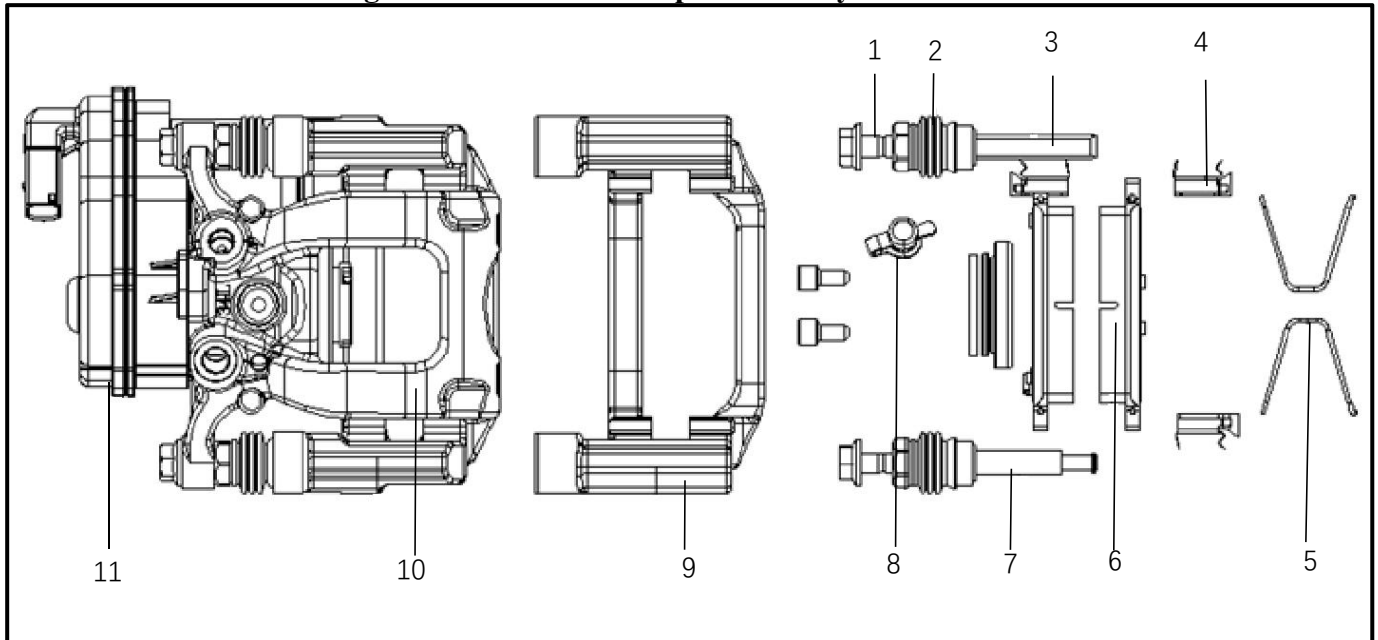
7.4.4 Breakdown drawing

7.4.4.1 Breakdown drawing of the rear brake



- | | |
|--------------------------------------|------------------------------------|
| 1. Brake caliper assembly fixed bolt | 6. Fender fixed bolt |
| 2. Steering knuckle | 7. Brake disc |
| 3. Bearing | 8. Brake lining |
| 4. Wheel hub | 9. Brake caliper with EPB assembly |
| 5. Fender | 10. Brake disc fixed bolt |

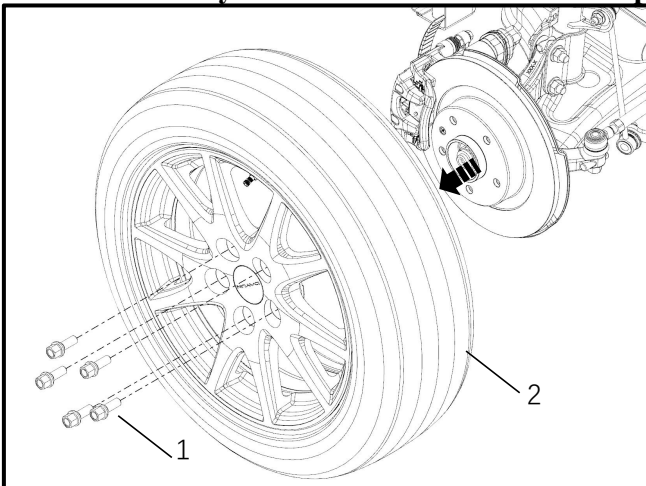
7.4.4.2 Breakdown drawing of the rear brake caliper assembly



- | | |
|-------------------------|--------------------------|
| 1. Guide pin fixed bolt | 7. Secondary guide pin |
| 2. Guide pin dust cover | 8. Bleeder screw |
| 3. Primary guide pin | 9. Brake caliper bracket |
| 4. Guide piece | 10. Brake caliper body |
| 5. Splay spring | 11. EPB |
| 6. Brake lining | |

7.4.5 Disassembly and installation

7.4.5.1 Disassembly and installation of brake caliper

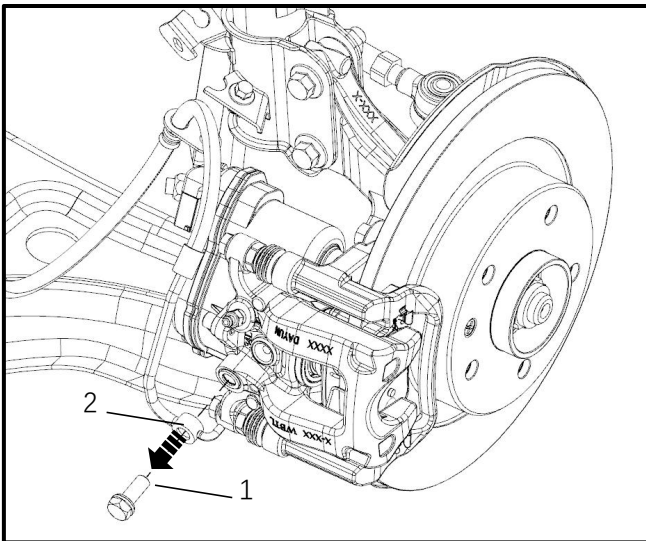


Disassembly process

1. Lift the vehicle to a suitable position.
2. Disassemble the wheel nut 1.

Torque: Please refer to 3.4.5.1 Replacement of wheels.

3. Remove the wheel assembly 2.

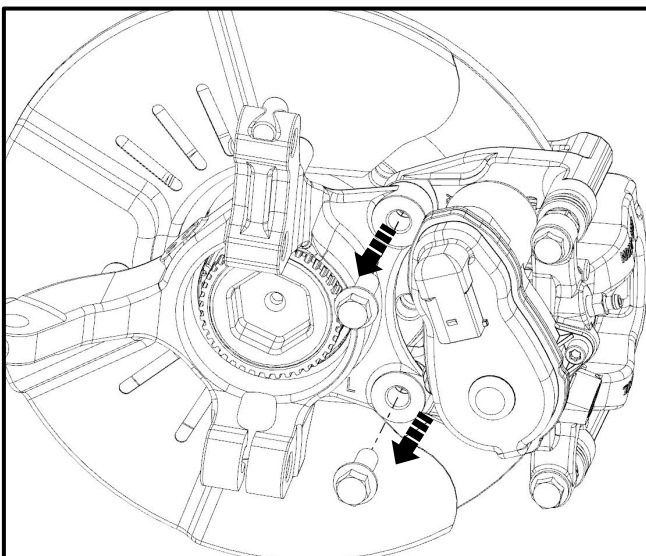


4. Disassemble the brake hose fuel inlet bolt 1.

Torque: Please refer to 7.7.4 Disassembly procedure of brake hose.

Caution: The gaskets on the brake hose fuel inlet bolts are not reusable.

5. Remove the brake hose fuel inlet 2.



6. Release the fixed bolt securing the brake caliper to the steering knuckle.

Torque: $70 \pm 5 \text{ N} \cdot \text{m}$

7. Remove the brake caliper.

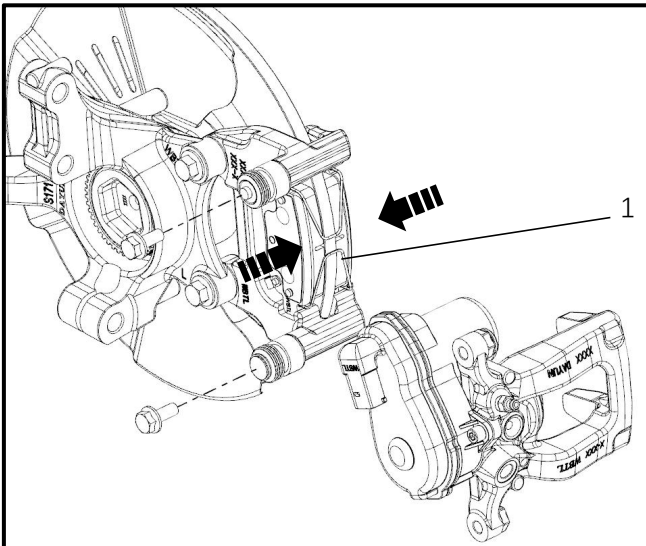
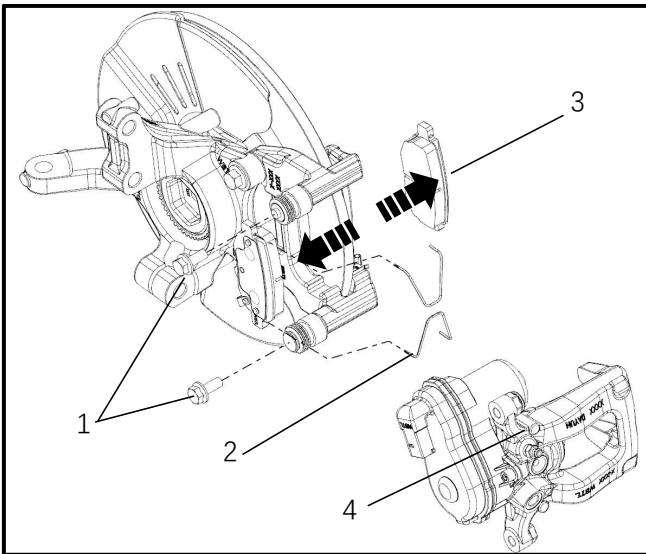
7.4.5.2 Disassembly and installation of brake pad

Disassembly procedure:

1. Lift the vehicle to a suitable position.
2. To disassemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.
3. Disassemble the guide pin bolt 1.
Torque: 25 ± 3 N·m

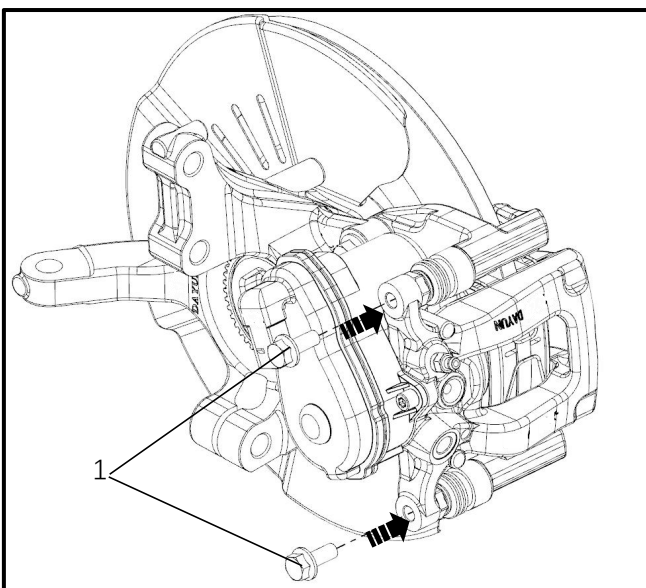
Caution: To disassemble the brake hose, it is not needed to replace the friction pad.

4. Remove the brake caliper body 4.
5. Remove the splay spring 2.
6. Remove the inner and outer brake linings 3.



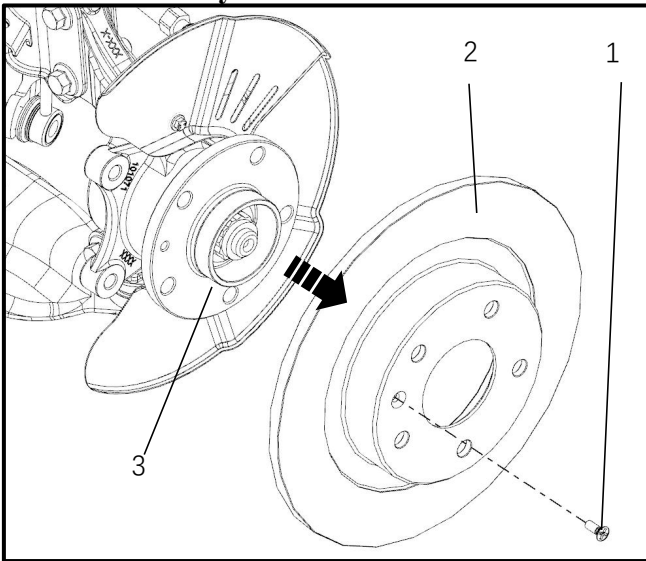
Installation process

1. Install the inner and outer brake linings into the brake caliper body.
2. Assemble the splay spring 1.



3. Tighten the fixed bolt 1 securing the brake caliper body to the caliper bracket.
Torque: 70 ± 5 N·m

7.4.5.3 Disassembly and installation of rear brake disc

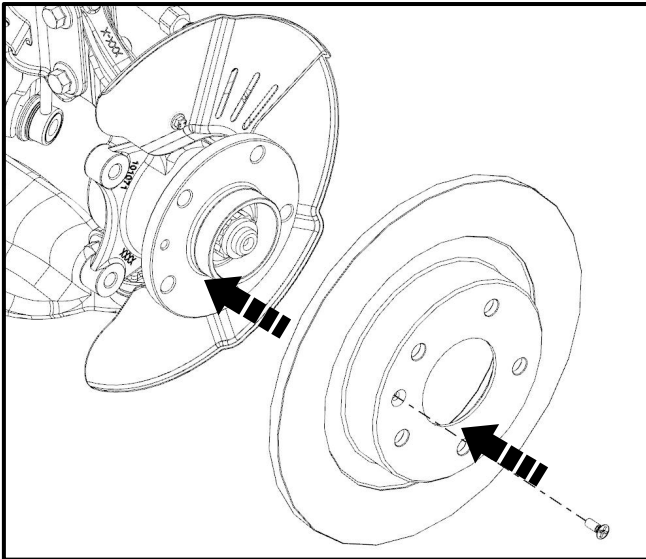


Disassembly process

1. Lift the vehicle to a suitable position.
2. To disassemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.
3. To disassemble the brake caliper; Please refer to 7.4.5.1 Disassembly and installation of brake caliper.

Caution: To replace the brake disc, it is not needed to remove the brake hose or drain the brake fluid. The caliper body assembly needs to be raised and hooked up with a rope to protect the brake fuel pipe.

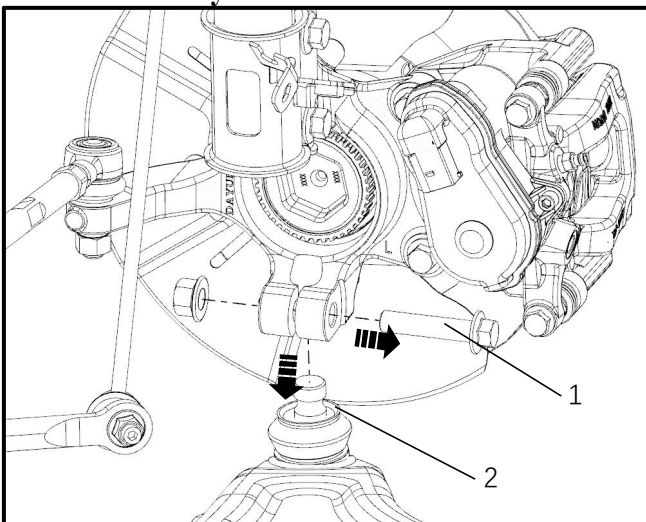
4. Disassemble the brake disc fixed screw 1.
Torque: $9 \pm 1 \text{ N} \cdot \text{m}$
5. Remove the brake disc 2 from the hub 3.



Installation process

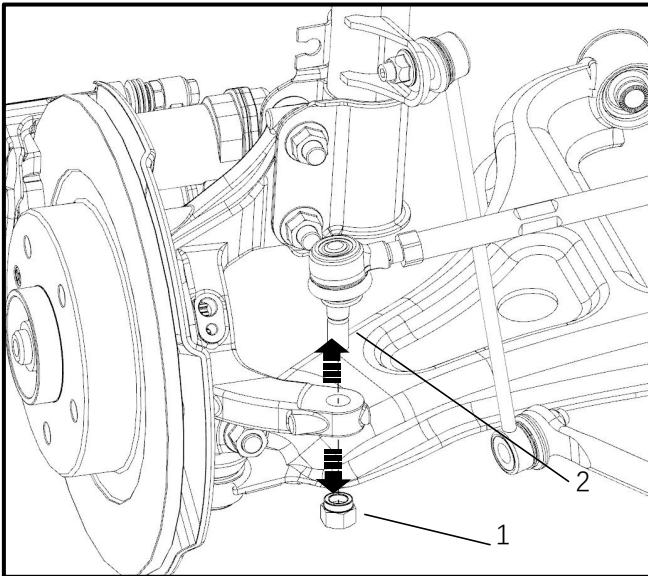
1. Assemble the brake disc to the hub and tighten the screws.
2. To assemble the brake caliper; Please refer to 7.4.5.1 Disassembly and installation of brake calipers.
3. To assemble the wheel assembly; Please refer to 3.4.5.1 Replacement of wheels.

7.4.5.4 Disassembly and installation of brake assembly

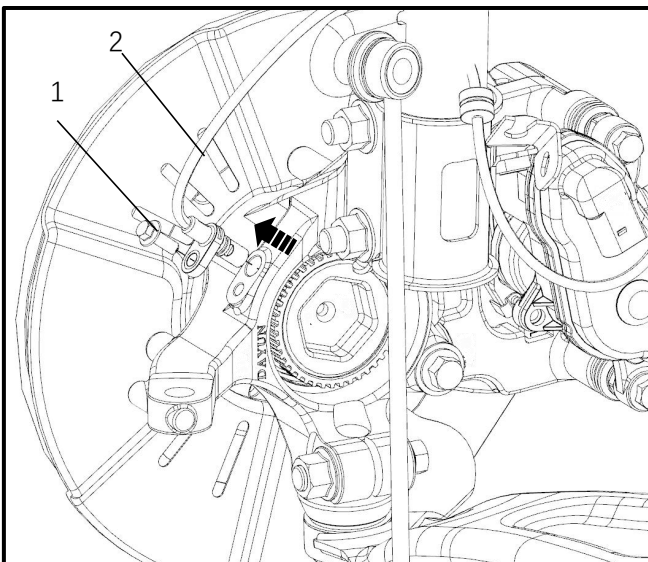


Disassembly process

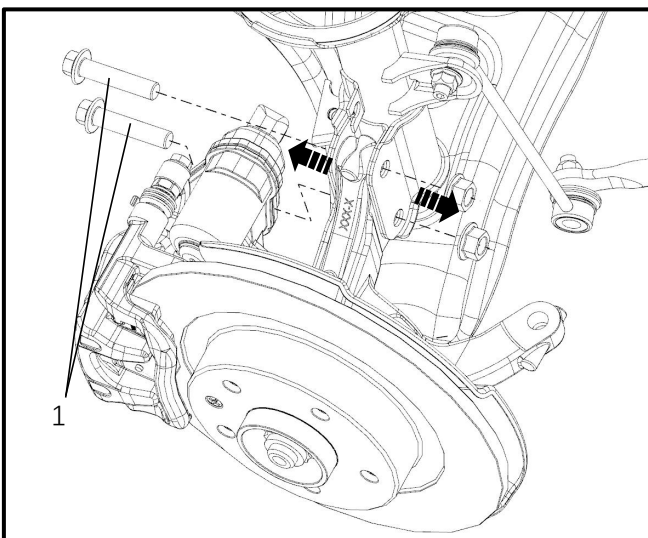
1. Disassemble the rear lower swing arm ball joint fixed bolt 1 and take out the lower swing arm ball joint 2.
Torque: Please refer to 3.3.6.2 Replacement of rear lower swing arm.



2. Disassemble the rear crosswise tie rod fixed nut 1 and take out the outer ball joint of steering gear 2.
Torque: Please refer to 3.3.6.3 Replacement of rear crosswise tie rod.



3. Disassemble the wheel speed sensor fixed bolt 1.
Torque: Please refer to 7.8.8 Disassembly and installation of wheel speed sensor
4. Remove the wheel speed sensor 2.



5. Disassemble the fixed bolt 1 securing the brake to the damper.
Torque: $115 \pm 10 \text{ N} \cdot \text{m}$
6. Remove the brake assembly.

Installation process

1. Lift the vehicle to a suitable position.
2. Assemble the brake with the rear lower swing

arm.

3. Assemble the brake with the rear crosswise tie rod.
4. Assemble the brake with the damper.
5. Assemble the wheel speed sensor.
6. Install the wheel assembly.

7.5 Footstep system

7.5.1 Brake footstep system

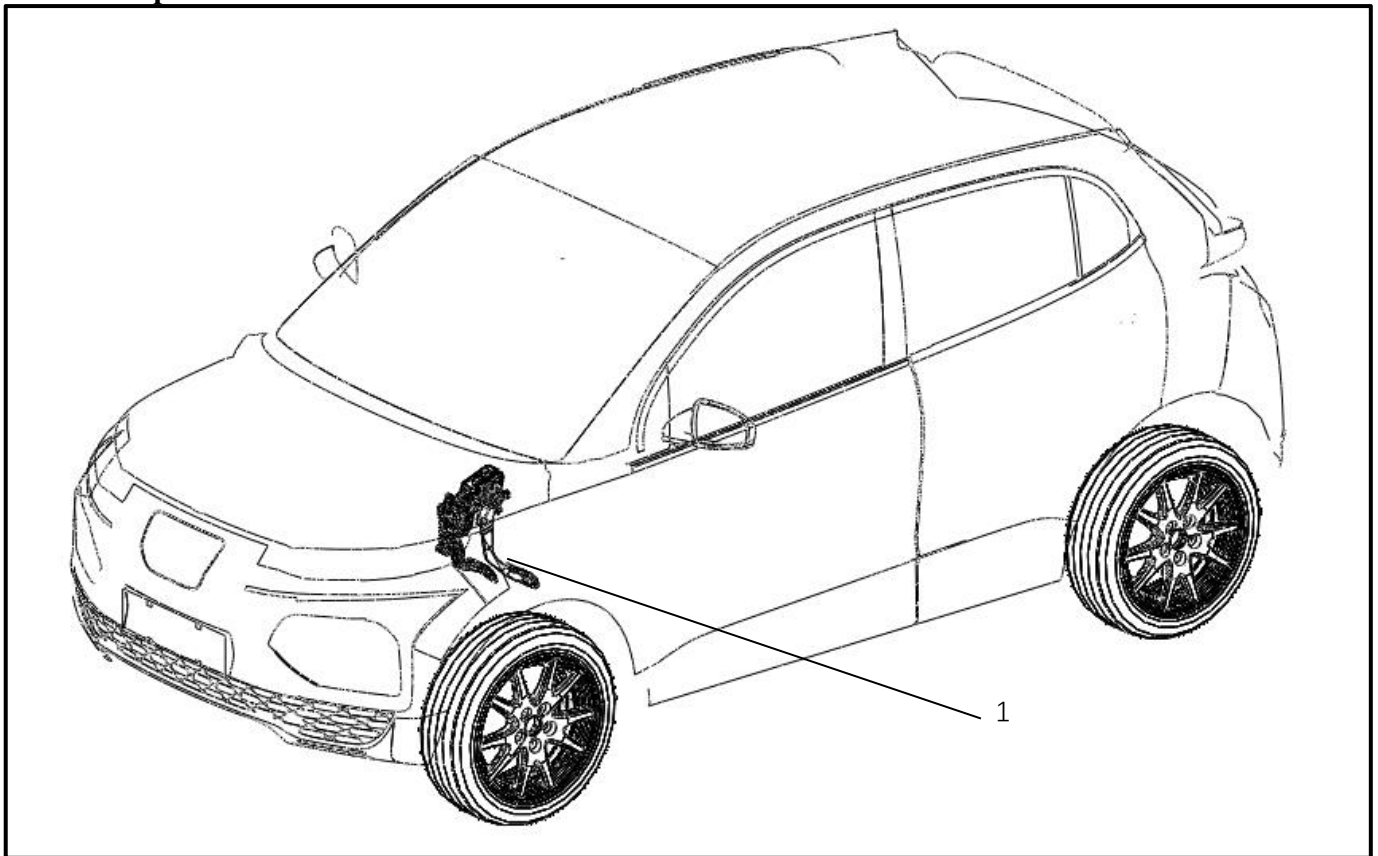
7.5.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Hexagonal flange bolts	Q1840616F36	9±1
Hexagon nut with flange	Q32008F38	25±5
Hexagonal flange bolts	Q1840816F36	25±5

7.5.1.2 Description and operation

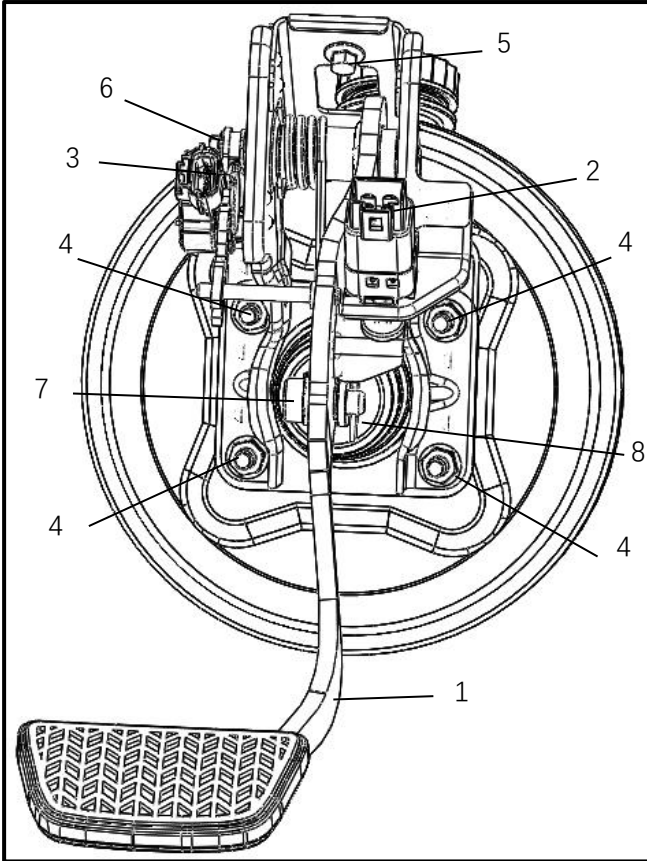
Receive, amplify and transmit the braking system input force from the driver.

7.5.1.3 Component location



1. Brake footstep assembly

7.5.1.4 Disassembly and installation of brake footstep assembly



Disassembly process

Brake footstep assembly

1. Remove the brake light switch 2 and the connecting harness from the footstep.
2. Disconnect the wiring harness connected to the angle sensor 3.
3. Release and remove the hexagonal flange bolt 5.
4. Release and remove the four hexagonal flange nuts 4 connected to the booster.
5. Remove the pin lockpin 8.
6. Remove the pin 7 connecting the booster U-fork.
7. Remove the brake footstep assembly 1.
8. Release and remove the hexagonal flange bolt 6 that secures the angle sensor.

Installation process

1. Connect the angle sensor to the brake footstep in the corresponding position with two 2 hexagonal flange bolts.
2. Thread the four holes in the brake footstep base onto the booster mounting studs and install and tighten the four hexagonal flange nuts.
3. Snap the booster U-fork into the corresponding position on the footstep arm, and thread the pin and lockpin.
4. Connect the upper footstep mounting point to the corresponding mounting hole on the body.
5. Connect the brake light switch and angle sensor harness.

7.5.2 Electronic accelerator footstep

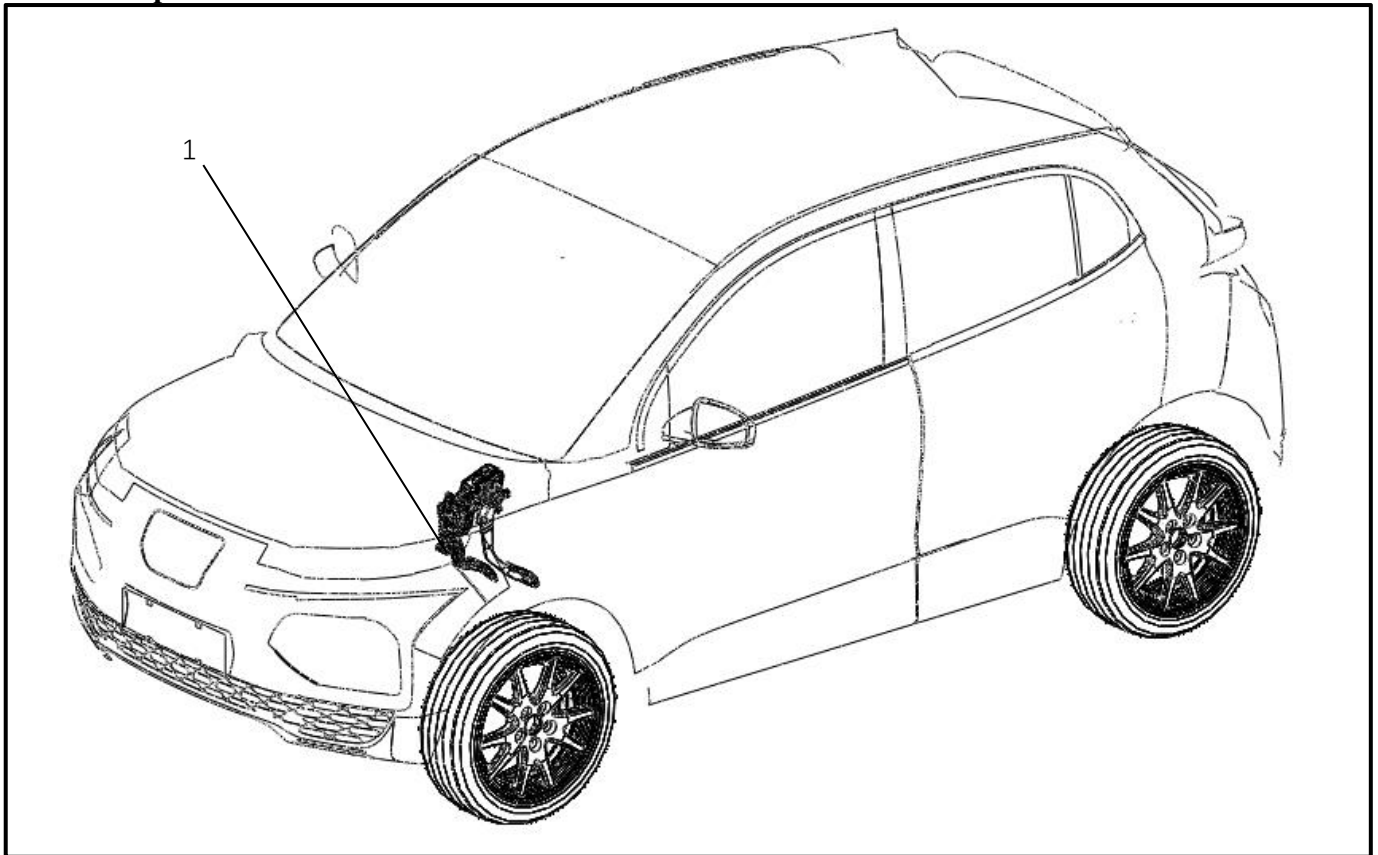
7.5.2.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Hexagon head bolt and spring washer fittings	Q1420620T21F36	9±1

7.5.2.2 Description and operation

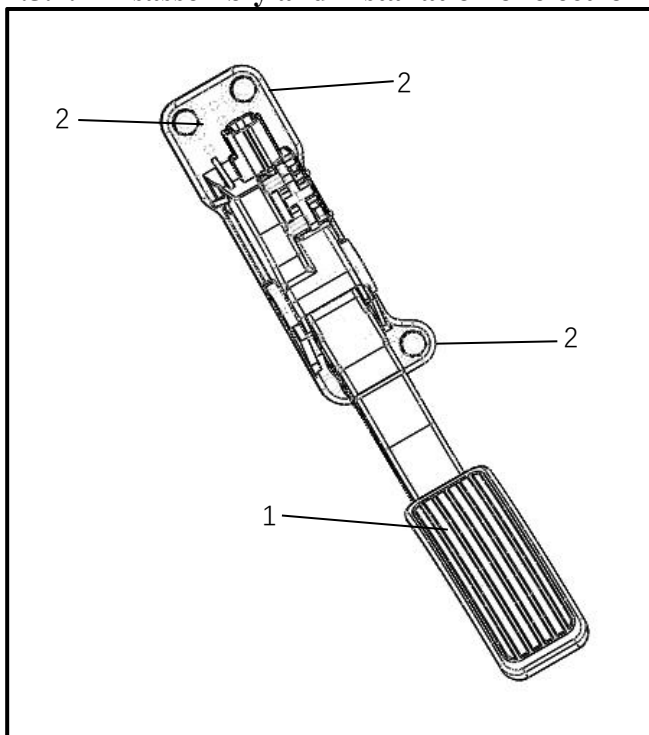
According to the driver's will and the step action, the footstep opening is converted into a voltage signal and output to the corresponding controller.

7.5.2.3 Component location



1. Electronic accelerator footstep assembly

7.5.2.4 Disassembly and installation of electronic accelerator footstep



Disassembly process

1. Remove the three hexagon head bolts and spring washer fittings 2 that hold the electronic accelerator footstep.
2. Disconnect the wiring harness connected to the electronic accelerator footstep assembly and remove the electronic accelerator footstep assembly 1.

Installation process

1. Connect the accelerator footstep connector to the wiring harness.
2. Secure the electronic accelerator footstep

assembly 1 to the corresponding body bracket with the three hexagon head bolts and spring washer fittings 2.

Torque: (9 ± 1) N·m

7.6 Brake booster system

7.6.1 Warnings and precautions

7.6.1.1 Warnings and precautions

Warnings about brake fluid

Warning!

Do not use brake fluid that may be contaminated with water in an open container. Use of improper or contaminated brake fluid may result in system failure, loss of vehicle control, and personal injury.

Cautions for filling brake fluid in the braking system

Caution

Use only brake fluid from a clean, sealed brake fluid container when adding brake fluid to the storage tank. Failure to use the recommended brake fluid can result in contamination that can damage the rubber seals or rubber gaskets inside hydraulic braking system components.

7.6.2 Specifications

7.6.2.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Vacuum booster with brake pump assembly fixed nut	M8	25±5
Electronic vacuum pump with bracket assembly fixed bolt	M8	25±5
Vacuum tank assembly fixed bolt	M8	25±5

7.6.3 Description and operation

7.6.3.1 Description and operation

Components of a vacuum booster system:

Vacuum booster with brake pump assembly: The footstep force is amplified in a certain ratio based on the vacuum condition to push the master cylinder piston to generate hydraulic pressure in the brake master cylinder and push the brake wheel cylinder. The friction plate squeezes the brake disc to generate resistance and control the vehicle deceleration or braking.

Vacuum hose I assembly: It is used to connect the vacuum booster to the vacuum tank to transfer vacuum;

Vacuum sensor: It is used to measure the gas pressure and vacuum in vacuum tanks;

Vacuum tank assembly: It is able to store gas and stabilize system pressure;

Vacuum hose II assembly: It is used to connect the electronic vacuum pump with the vacuum tank to facilitate the pumping of the electronic vacuum pump;

Electronic vacuum pump with mounting bracket assembly: It is used to extract the gas in the vacuum booster system and reduce the gas pressure in the vacuum tank and vacuum booster to reach the required vacuum degree;

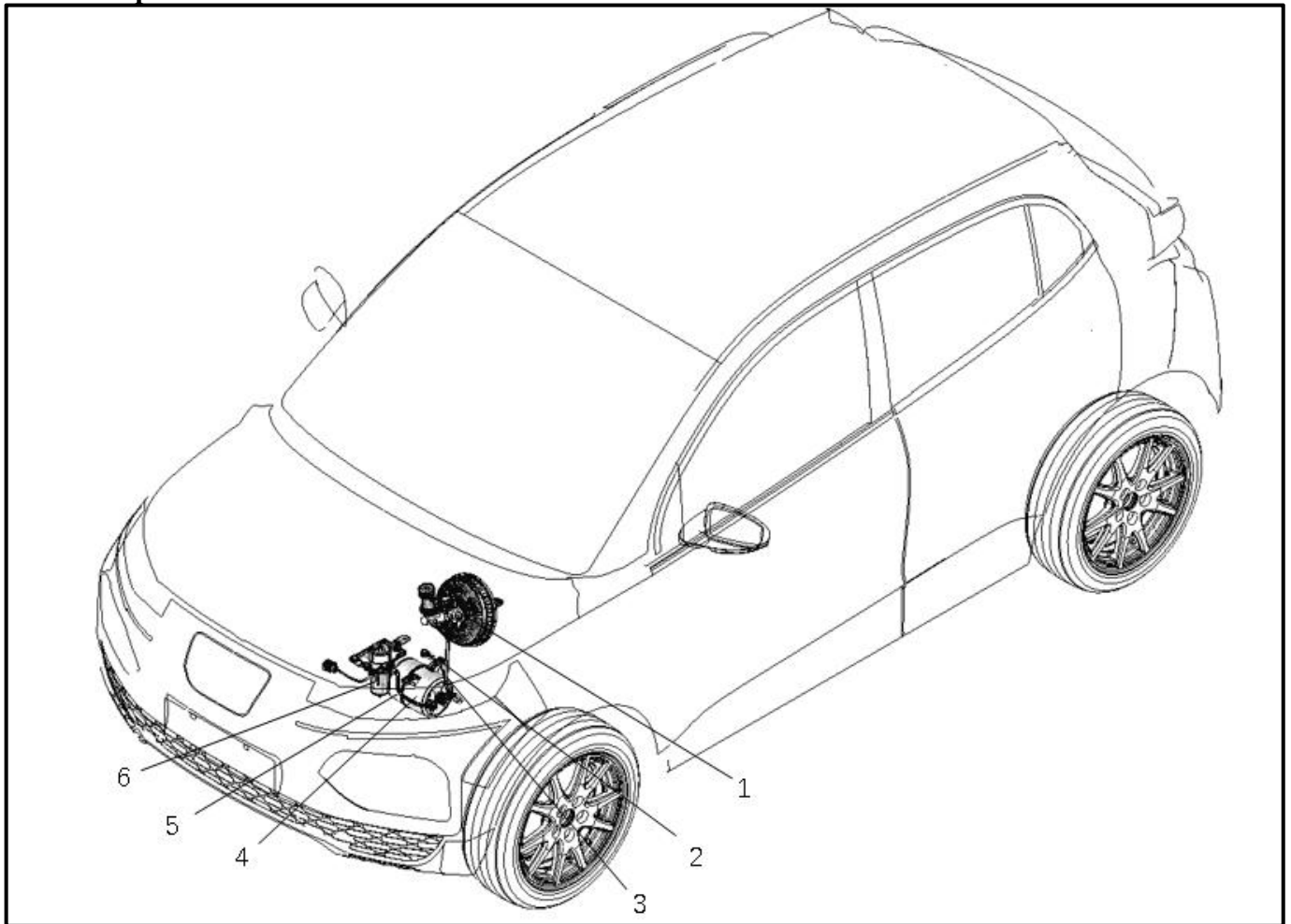
Operation of the vacuum booster system:

The vacuum sensor reads the magnitude of the vacuum inside the vacuum booster system to determine whether to start the electronic vacuum pump for pumping and vacuuming. When the input force from the footstep acts on the vacuum

booster push rod, the vacuum booster utilizes the pressure difference between the vacuum and the atmospheric pressure to amplify the footstep force, in order to push the piston of the master cylinder to generate hydraulic pressure and push the brake wheel cylinder. The friction pad extrudes the brake disc to generate resistance to control the vehicle deceleration or braking.

7.6.4 Component location

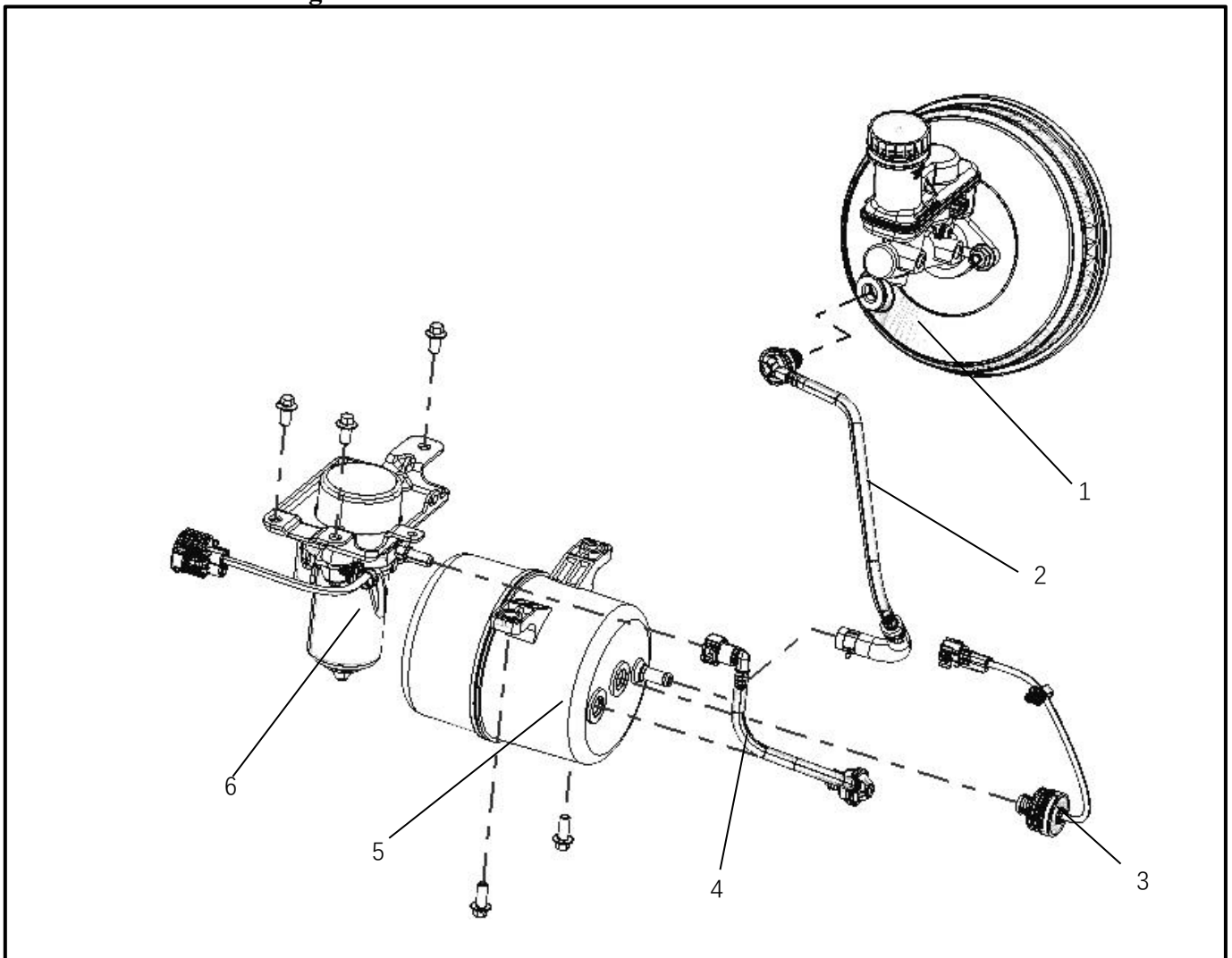
7.6.4.1 Component location



1. Vacuum booster with brake pump assembly
2. Vacuum sensor assembly
3. Vacuum hose I assembly
4. Vacuum tank assembly
5. Vacuum hose II assembly
6. Electronic vacuum pump with mounting bracket assembly

7.6.5 Breakdown drawing

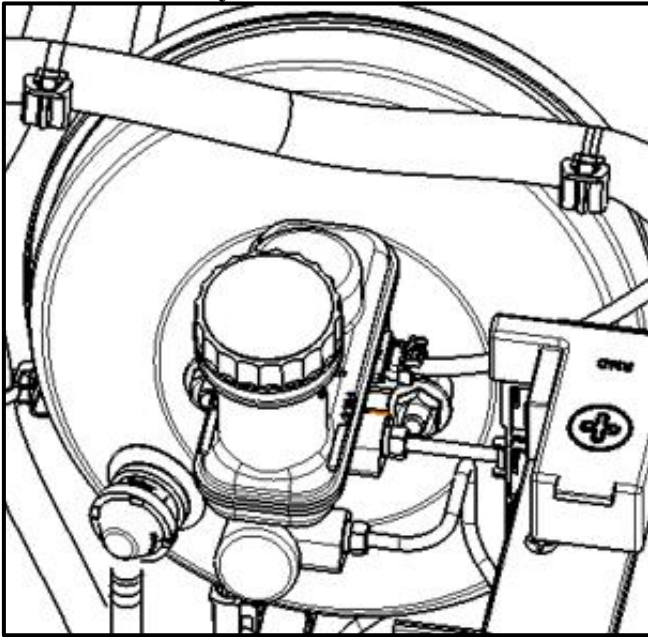
7.6.5.1 Breakdown drawing



- | | |
|--------------------------------------------------------|----------------------------------------------------------|
| 1. Vacuum booster with brake master cylinder assembly. | 4. Vacuum hose II assembly |
| 2. Vacuum hose I assembly | 5. Vacuum tank assembly |
| 3. Vacuum sensor assembly | 6. Electronic vacuum pump with mounting bracket assembly |

7.6.6 Disassembly and installation

7.6.6.1 Disassembly and installation of vacuum booster with brake master cylinder assembly



Disassembly process

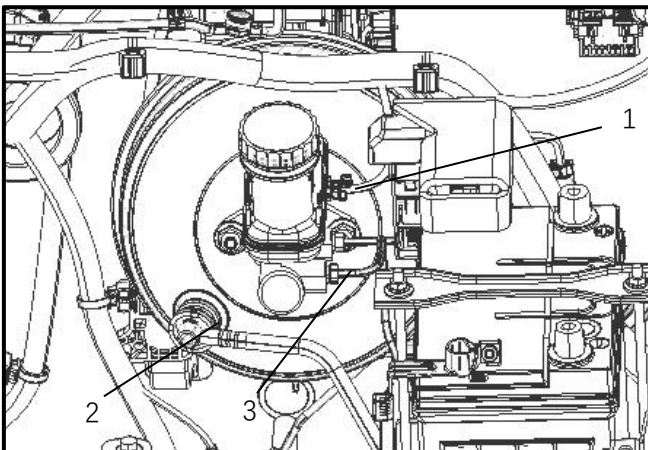
Warning!

Please refer to “Warnings about disconnecting the storage battery” in 1.1.1.1 Warnings and precautions.

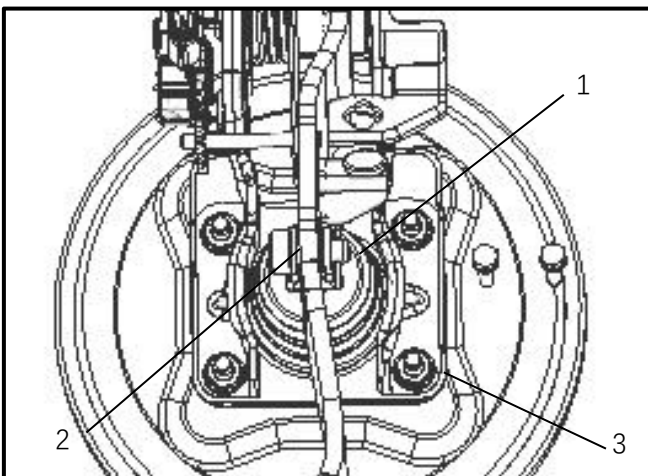
Caution

If brake fluid sticks to any painted surface, it should be cleaned off immediately.

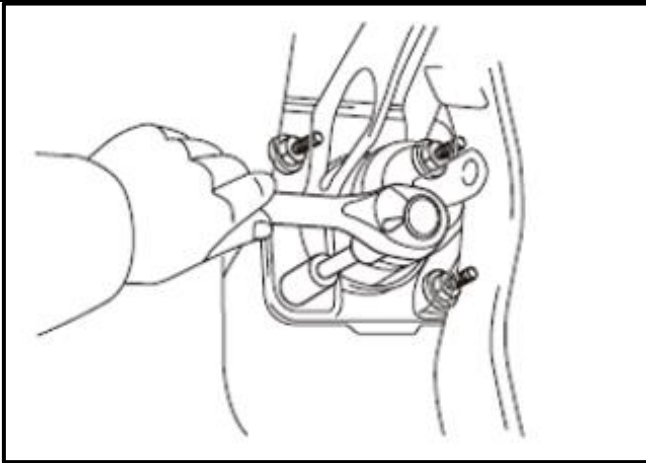
1. Disassemble the storage battery assembly.
2. Drain the brake fluid (please refer to 1.4.2.5 Filling and replacement of brake fluid).



3. Disconnect the level warning light switch connector 1.
4. Disconnect the vacuum hose 2.
5. Disconnect the two brake hard pipes 3 on the brake master cylinder.



6. Disassemble the lockpin 1.
7. Remove the brake footstep pin 2.
8. Disassemble the vacuum booster with brake master cylinder assembly.
 - a. Remove the four fixed nuts 3.
 - b. Remove the vacuum booster with brake master cylinder assembly.



Installation process

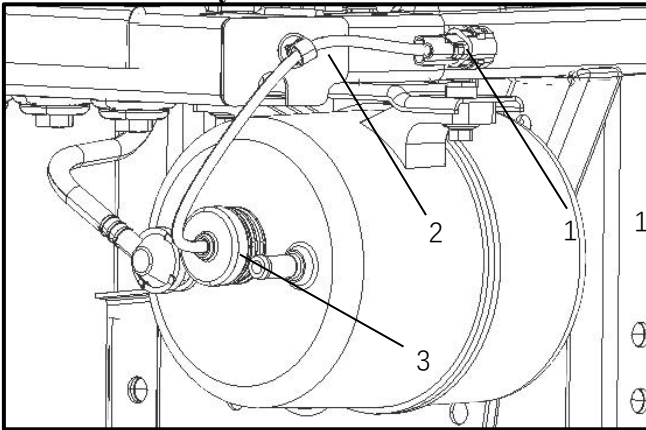
Install the vacuum booster with brake master cylinder assembly.

1. Tighten the four fixed nuts.
Torque: $25 \pm 5 \text{ N} \cdot \text{m}$
2. Install the brake footstep pin.
3. Install the lockpin.
4. Connect the brake hard pipe.
5. Connect the vacuum hose.
6. Connect the level warning light switch connector.
7. Fill the brake fluid.
8. Exhaust the air.

Inspection procedure

Use a torque wrench to check the correct tightening torque of the fixed nut.

7.6.6.2 Disassembly and installation of vacuum sensor assembly



Disassembly process

Warning!

Please refer to “Warnings about disconnecting the storage battery” in 1.1.1.1 Warnings and precautions.

1. Disconnect the negative terminal of the storage battery
2. Press the brake footstep to release the vacuum booster pressure
3. Disassemble the vacuum sensor assembly
 - a. Disconnect the vacuum sensor connector 1.
 - b. Remove the wiring harness tie 2.
 - c. Rotate and pull out the vacuum sensor assembly 3 along the vacuum sensor mounting plane in the normal direction.

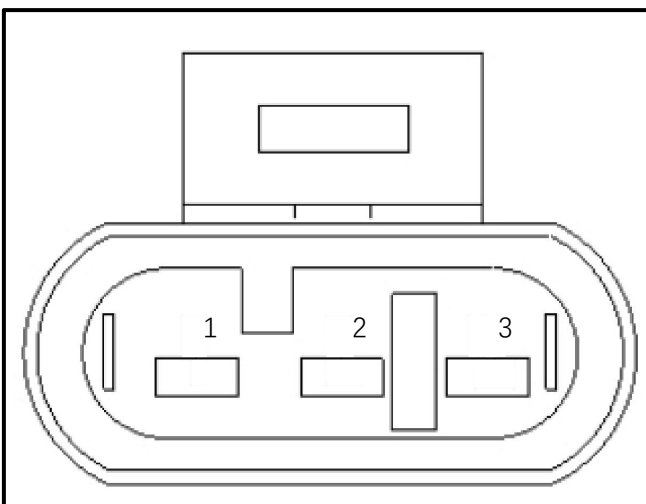
Installation process

1. Rotate and insert the vacuum sensor along the mounting plane in the normal direction.
2. Secure the wiring harness tie.
3. Connect the vacuum sensor connector.
4. Connect the negative terminal of the storage battery.

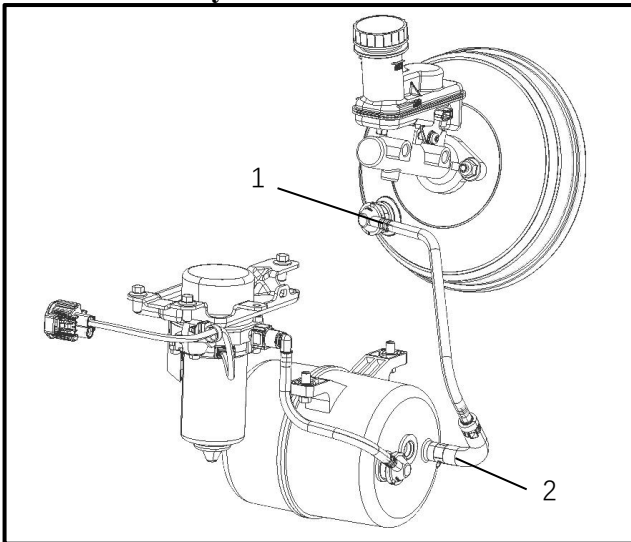
Inspection procedure

1. Pin definition

Pin No.	Function
1	Positive terminal of power supply
2	Negative terminal of power supply
3	Signal output 5v



7.6.6.3 Disassembly and installation of vacuum hose I assembly



Disassembly process

1. Rotate and pull out the check valve along the check valve mounting plane in the normal direction 1.
2. Use clamp pliers to release the clamp and move it away from the mounting mark area.
3. Rotate and pull out the vacuum hose 2 along the vacuum hose mounting surface in the normal direction.

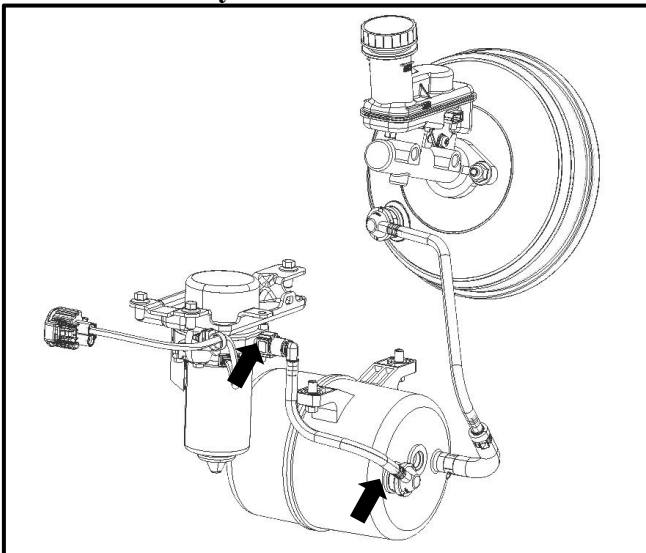
Installation process

1. Rotate and insert the vacuum hose I along the placement surface in the normal direction.
2. Use clamp pliers to release the clamp and move it to the mounting mark area.
3. Rotate and insert the check valve along the mounting plane in the normal direction.

Inspection procedure

1. Check that the clamp is assembled in the area marked for vacuum hose installation.
2. Verify that the check valve fits the mounting surface of the vacuum booster.

7.6.6.4 Disassembly and installation of vacuum hose II assembly



Disassembly process

1. Rotate and pull out the check valve along the check valve mounting plane in the normal direction.
2. Disconnect the plug where the vacuum hose II is connected to the electronic vacuum pump.

Installation process

1. Connect the plug where the vacuum hose II is connected to the electronic vacuum pump.
2. Rotate and insert the check valve along the mounting plane in the normal direction.

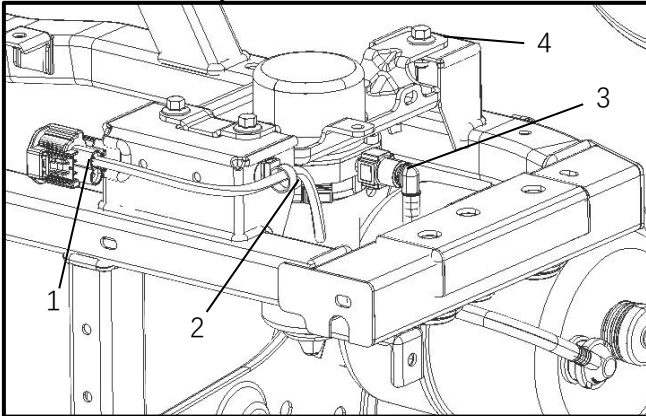
Inspection procedure

1. Verify that air flows from the vacuum tank to

the electronic vacuum pump and that no air flows from the electronic vacuum pump to the vacuum tank.

2. Verify that the check valve fits the mounting surface of the vacuum tank.
3. Verify that the plug can be easily removed.

7.6.6.5 Disassembly and installation of electronic vacuum pump assembly



Disassembly process

Warning!

Please refer to “Warnings about disconnecting the storage battery” in 1.1.1.1 Warnings and precautions.

1. Disassemble the storage battery assembly.
2. Disassemble the electronic vacuum pump assembly.
 - a. Disconnect the electronic vacuum pump connector 1.
 - b. Disengage clip 2 at the electronic vacuum pump harness connector end from the engine compartment cross member assembly.
 - c. Disconnect the vacuum hose II3 at the electronic vacuum pump inlet.
 - d. Remove the three bolts 4.
 - e. Remove the electronic vacuum pump assembly.

Installation process

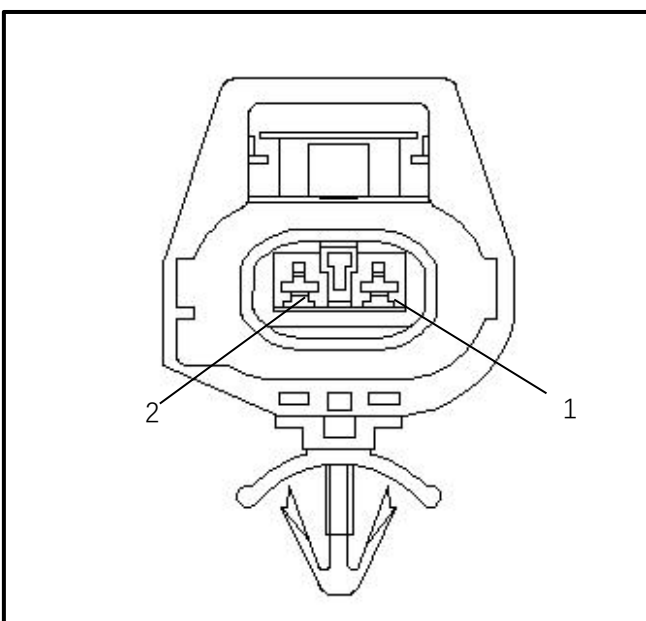
1. Install the electronic vacuum pump assembly.
 2. Install the two fixed bolts.
- Torque: $25 \pm 5 \text{ N} \cdot \text{m}$
3. Connect the vacuum hose II at the electronic vacuum pump inlet.
 4. Install the clips at the electronic vacuum pump harness connector end on the engine compartment cross member.
 5. Connect the vacuum pump connector.
 6. Connect the negative harness of the storage battery.

Inspection procedure

1. Pin definition

Pin No.	Function
1	Positive terminal of power supply
2	Negative terminal of power supply

2. Use a torque wrench to check the correct tightening torque of the fixed nut.



7.7 Brake piping system

7.7.1 Specifications

7.7.1.1 Fastener specifications

Fastener name	Fastener location	Torque range (N·m)
Bolt	Front brake hose x damper	25±5
Bolt	Left rear brake hose x damper	25±5
Bolt	Right rear brake hose x damper	25±5
Through bolt - front	Left front brake hose assembly x left front brake caliper assembly (right front, left rear, and right rear included)	35±5
Brake caliper		
Brake pipe interface M10	All brake pipe interface M10	16±2

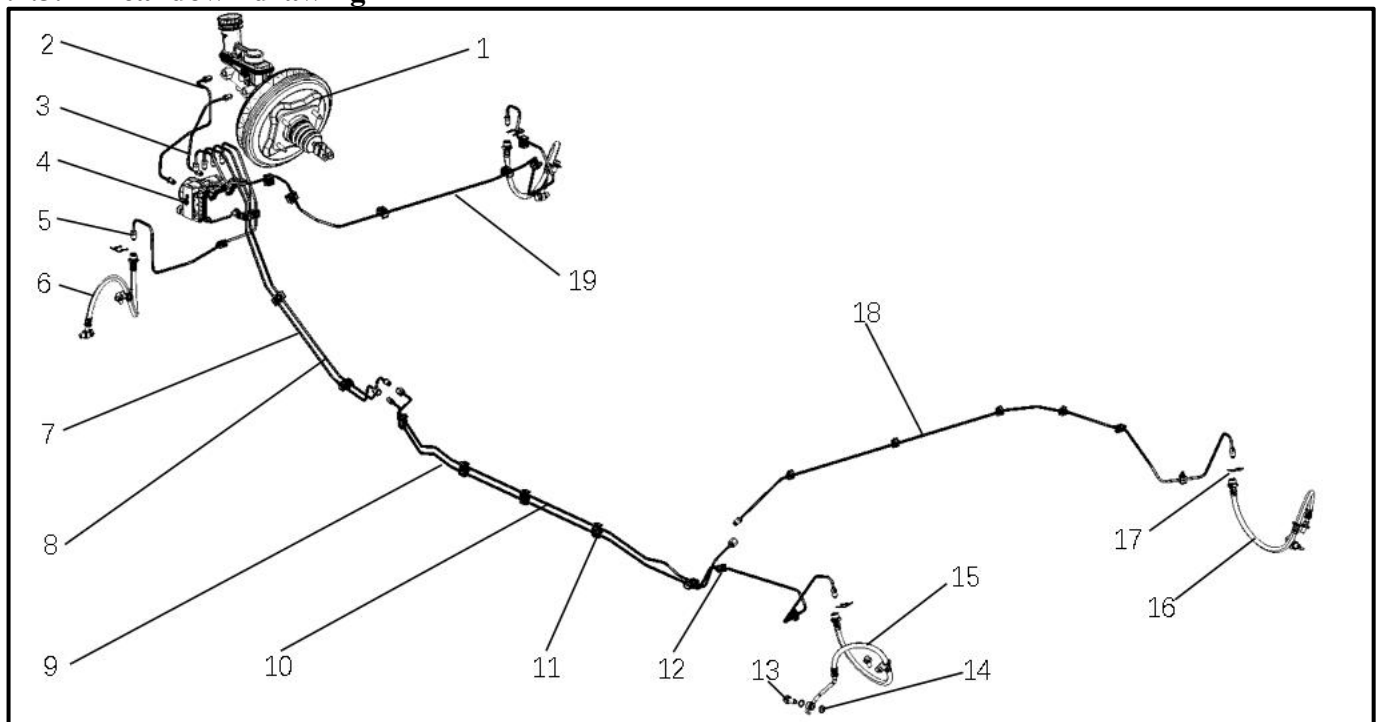
7.7.2 Description and operation

7.7.2.1 Description and operation

The brake piping system delivers the braking force required by the vehicle according to the driver's will, to keep the driver safe.

7.7.3 Breakdown drawing

7.7.3.1 Breakdown drawing



- | | |
|--------------------------------------------|------------------------------------|
| 1. Vacuum booster with brake pump assembly | 12. Single hole pipe clamp |
| 2. Front brake hard pipe I assembly | 13. Fuel inlet bolt |
| 3. Front brake hard pipe II assembly | 14. Copper gasket |
| 4. ABS hydraulic electronic control unit | 15. Left rear brake hose assembly |
| 5. Left front brake hard pipe assembly | 16. Right rear brake hose assembly |
| 6. Front brake hose assembly | 17. Corrugated clamp |
| 7. Left rear brake hard line I assembly | 18. Right rear brake hard line III |
| 8. Right rear brake hard line I assembly | 19. Right front brake hard line |
| 9. Left rear brake hard line | |
| 10. Right rear brake hard line | |

11. Double hole pipe clamp

7.7.4 Disassembly and installation

Inspection procedure

Check the brake hose and adjust or replace it if any of the following conditions exist:

1. Damaged, deteriorated, rusted, leaking, interfering, bent or kinked brake hoses.
2. Signs of leakage from fittings or connections between brake hoses and hard lines.

Disassembly process

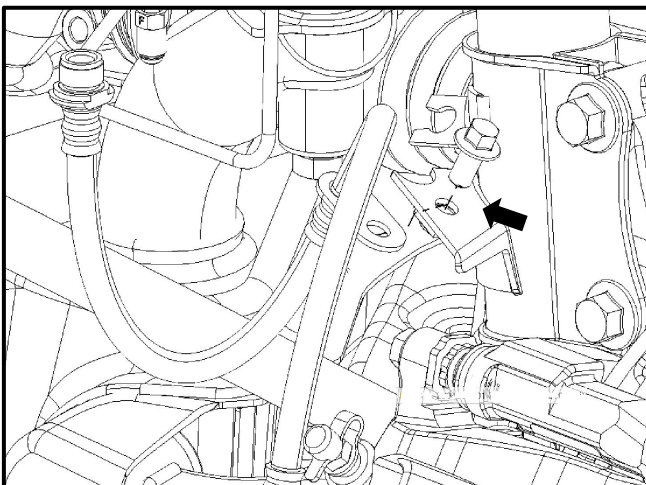
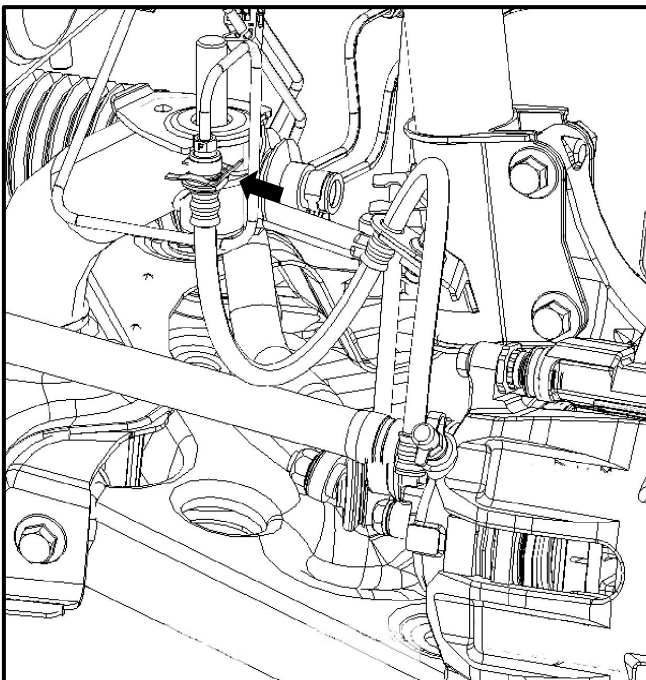
1. Lift the vehicle to a suitable position.
2. Remove the front wheel.
3. Drain the brake fluid.

CAUTION: If brake fluid comes in contact with any painted surface, clean it off immediately.

4. Remove the front brake hose assembly.
 - a. Remove the corrugated clamps and disconnect the front brake hose assembly.

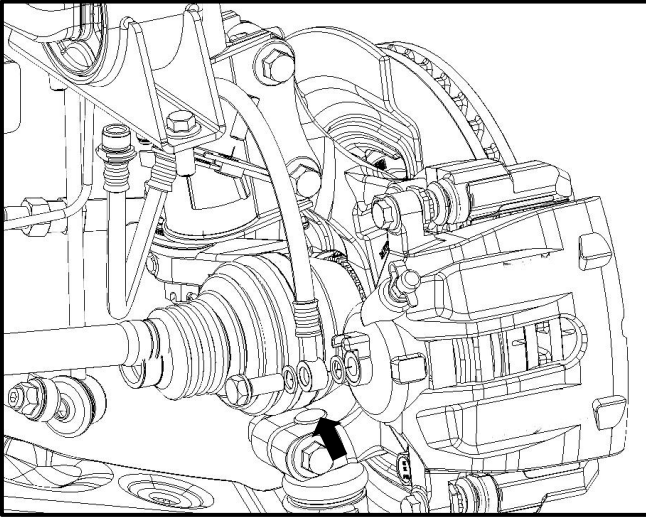
CAUTION: Do not bend or damage the brake hose.

Protect the disconnected hose from any foreign objects that may enter the brake hose.



- b. Remove 1 bolt and separate the front brake hose assembly from the front damper.

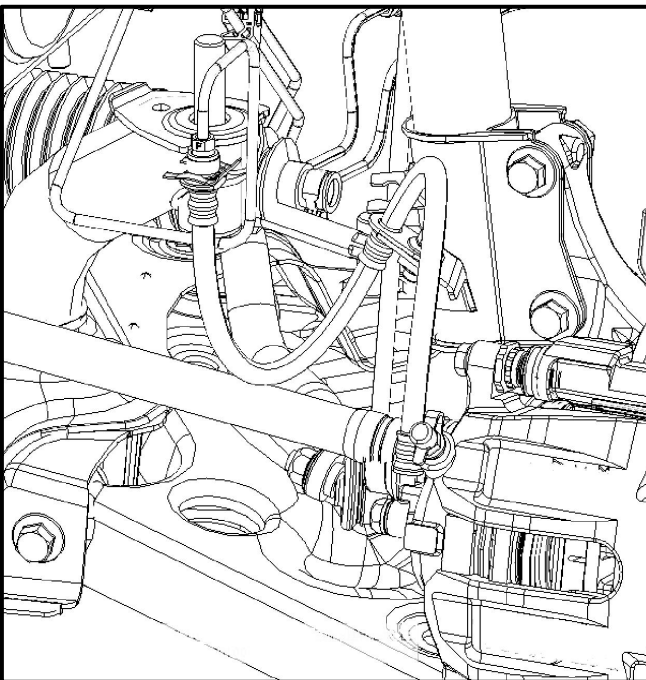
Torque: 25±5N.m



- c. Remove 1 fuel inlet bolt and 2 sealing washers.

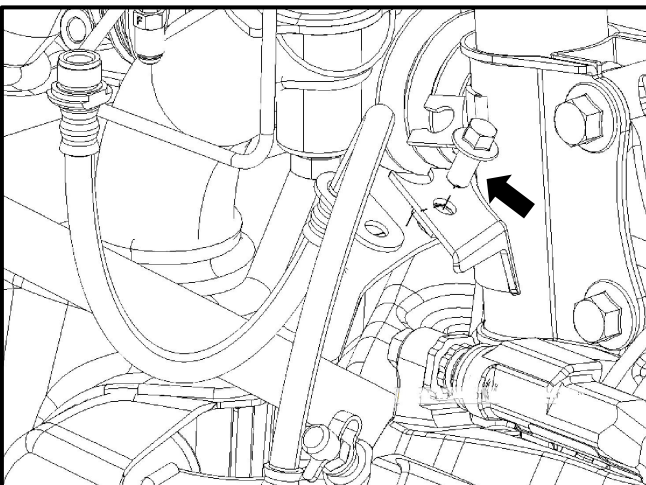
Torque: $35\pm 5\text{N.m}$

- d. Remove the front brake hose assembly.

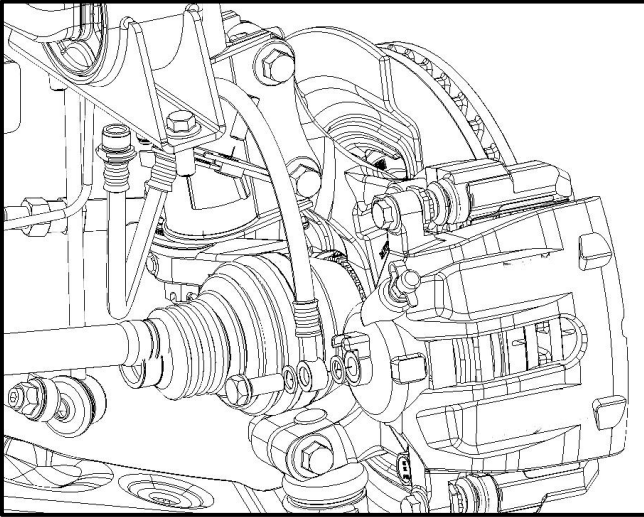


Installation process

1. Tighten the brake hose to the brake hard line fitting.



2. Tighten the bolts between the brake hose mounting point and the bracket.



3. Assemble the brake hose fitting to the brake caliper.

Caution:

Replace the sealing washers with new ones.

Do not bend or damage the brake hose.

Do not allow any foreign objects to enter the brake hose.

Tighten fasteners to specified torque values.

Bleed the braking system.

Disassembly and installation method of the left rear and right rear brake hose assemblies is as above.

7.8 Brake control system

7.8.1 Specifications

Fastening part	Specifications	Torque range (N·m)
Fixed bolts between ABS controller and mounting bracket	M8	8±2
Fixed bolts between ABS mounting bracket and body	M8×16	25±2
Fixed bolt between front wheel speed sensor and left steering knuckle	M6×16	9±1
Fixed bolt between rear wheel speed sensor assembly and steering knuckle	M6×16	9±1
Fixed bolts between EPB controller assembly and mounting bracket	M6×12	9±1

7.8.2 Description and operation

As soon as the ABS controller assembly detects a tendency for one or more wheels to brake lock, the hydraulic regulator module can react in time to terminate any further increase in wheel cylinder pressure or to start reducing the braking pressure, thus ensuring the vehicle's maneuvering stability and the shortest possible braking distance.

Warning!

Please refer to "Warnings about additional protection systems" in "Warnings and precautions".

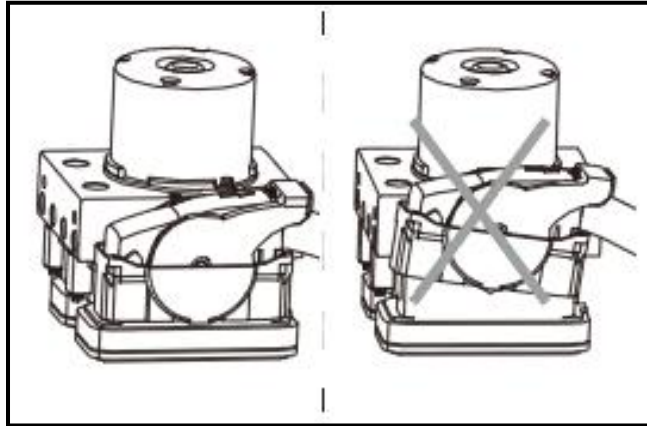
Caution

ABS is a component that involves safety. Therefore, at the time of servicing and diagnosing it, the following diagnostic precautions must be observed in addition to general safety precautions.

1. If ABS system parts need to be replaced for maintenance, replace them with genuine parts.
2. Before diagnosing the ABS system, if there is a fault in the underlying braking system, it must first be eliminated, such as:
 - a. Braking system noise.
 - b. Too hard brake footstep.
 - c. Brake footstep or vehicle vibration during normal braking.
 - d. Vehicle braking deviation.
 - e. Parking brake system fault.
3. The ABS controller (excluding brake lines, sensors, and other accessories) can only be replaced in its entirety, not disassembled or partially replaced/interchanged.
4. The following two conditions indicate that the ABS system has detected a fault:
 - a. After the ignition switch is turned on and the system completes self-test, the warning light remains illuminated.
 - b. The warning light stays on constantly during driving.

When the ABS system detects a fault, the driver can apply normal braking, but should minimize the amount of braking force applied to prevent wheel lock. When the warning light is illuminated, the driver needs to drive carefully and pit immediately for servicing to prevent further breakdowns that could lead to traffic accidents.

5. The following points need to be noted when connecting the ABS and sensor harnesses:
 - a. The ignition switch must be turned off before unplugging the ABS harness and sensor harness.
 - b. Ensure that the connector is dry and clean to avoid any foreign matter from entering.
 - c. The ABS harness connector must be installed in place both horizontally and vertically to avoid damages.

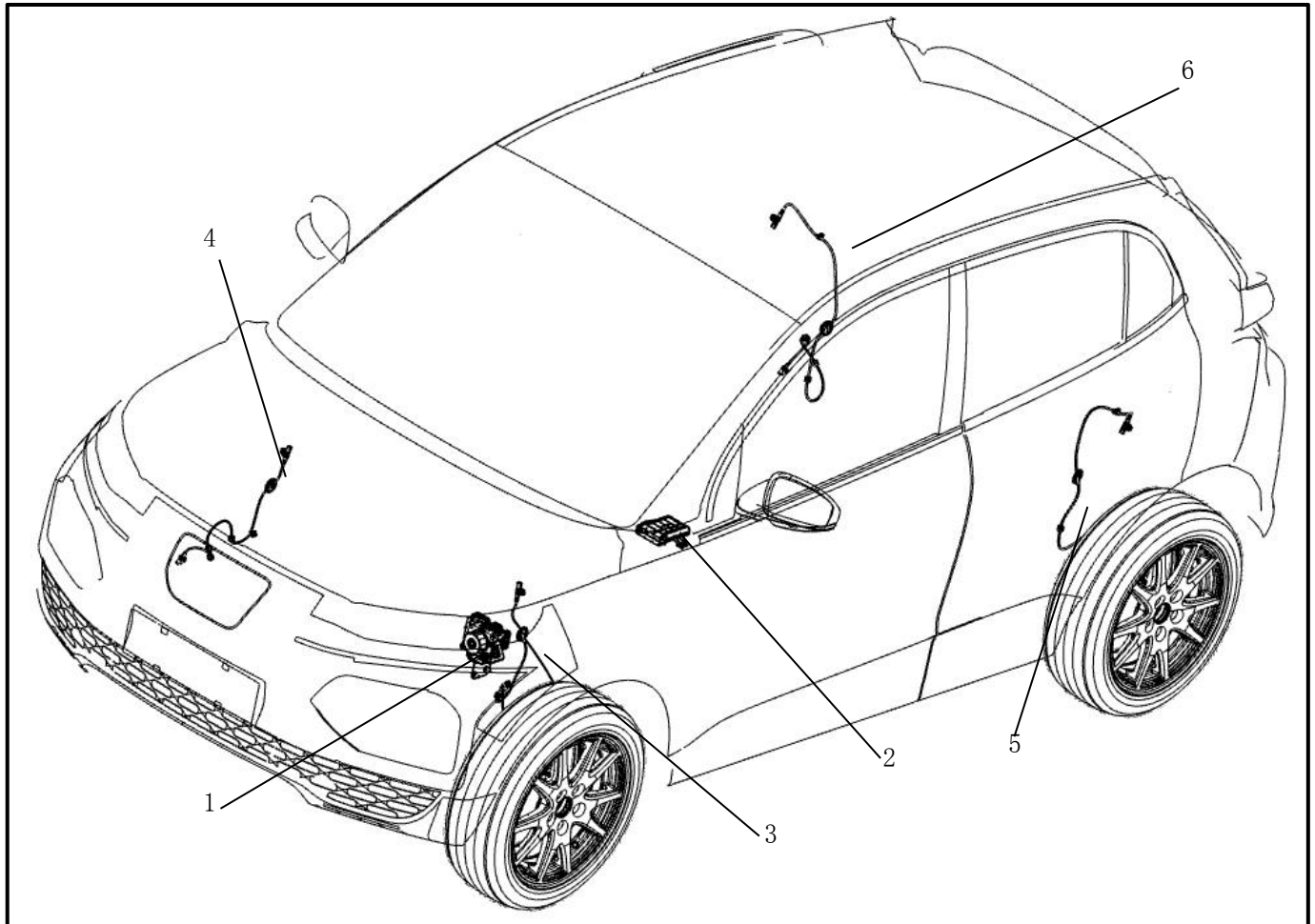


6. At the time of connecting ABS brake lines, make sure they are connected correctly!

The ABS ECU cannot determine if the brake lines are properly connected. Incorrect connections can lead to serious accidents. At the time of connecting the brake lines, the markings on the ABS assembly must be followed:

- a. MC1: Brake line 1 connecting the brake master cylinder;
 - b. MC2: Brake line 2 connecting the brake master cylinder;
 - c. FL: Brake line connecting the left front wheel brake wheel cylinder;
 - d. FR: Brake line connecting the right front wheel brake wheel cylinder.
 - e. RL: Brake line connecting the left rear wheel brake wheel cylinder;
 - f. RR: Brake line connecting the right rear wheel brake wheel cylinder.
7. ABS system generates noise in the following cases:
 - a. When the vehicle is powered up or the drive motor is started, a short "buzz" sound will be generated, which is a normal sound of the ABS self-test.
 - b. When the EBD intervenes in the braking process, the corresponding solenoid valve will generate some noise, which is a normal phenomenon.
 - c. ABS will have sound during normal operation, mainly in the following aspects: sound caused by actions of motor, solenoid valve and return pump in ABS hydraulic unit; sound caused by rebound of brake footstep; collision sound between suspension and body caused by emergency braking.

7.8.3 Component location

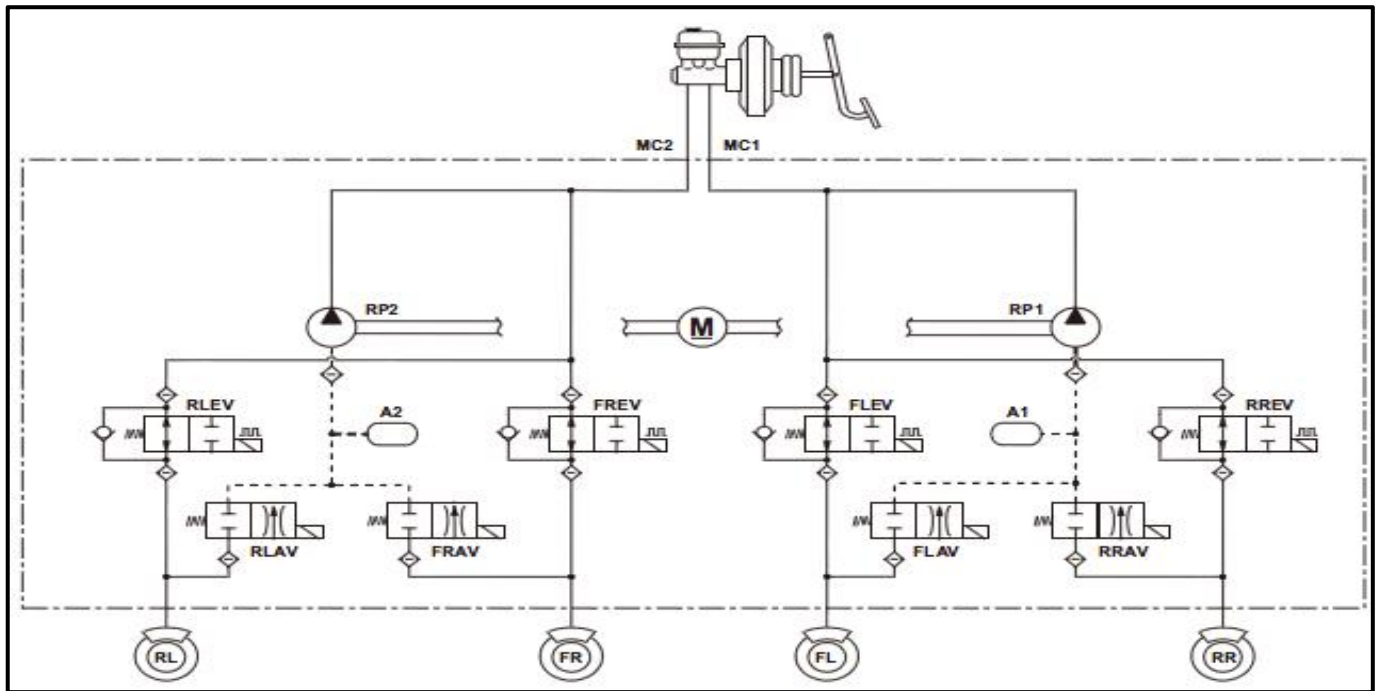


- | | |
|--------------------------------------------|-------------------------------------------|
| 1. ABS controller assembly | 5. Left rear wheel speed sensor assembly |
| 2. EPB controller assembly | 6. Right rear wheel speed sensor assembly |
| 3. Left front wheel speed sensor assembly | |
| 4. Right front wheel speed sensor assembly | |

7.8.4 Schematic

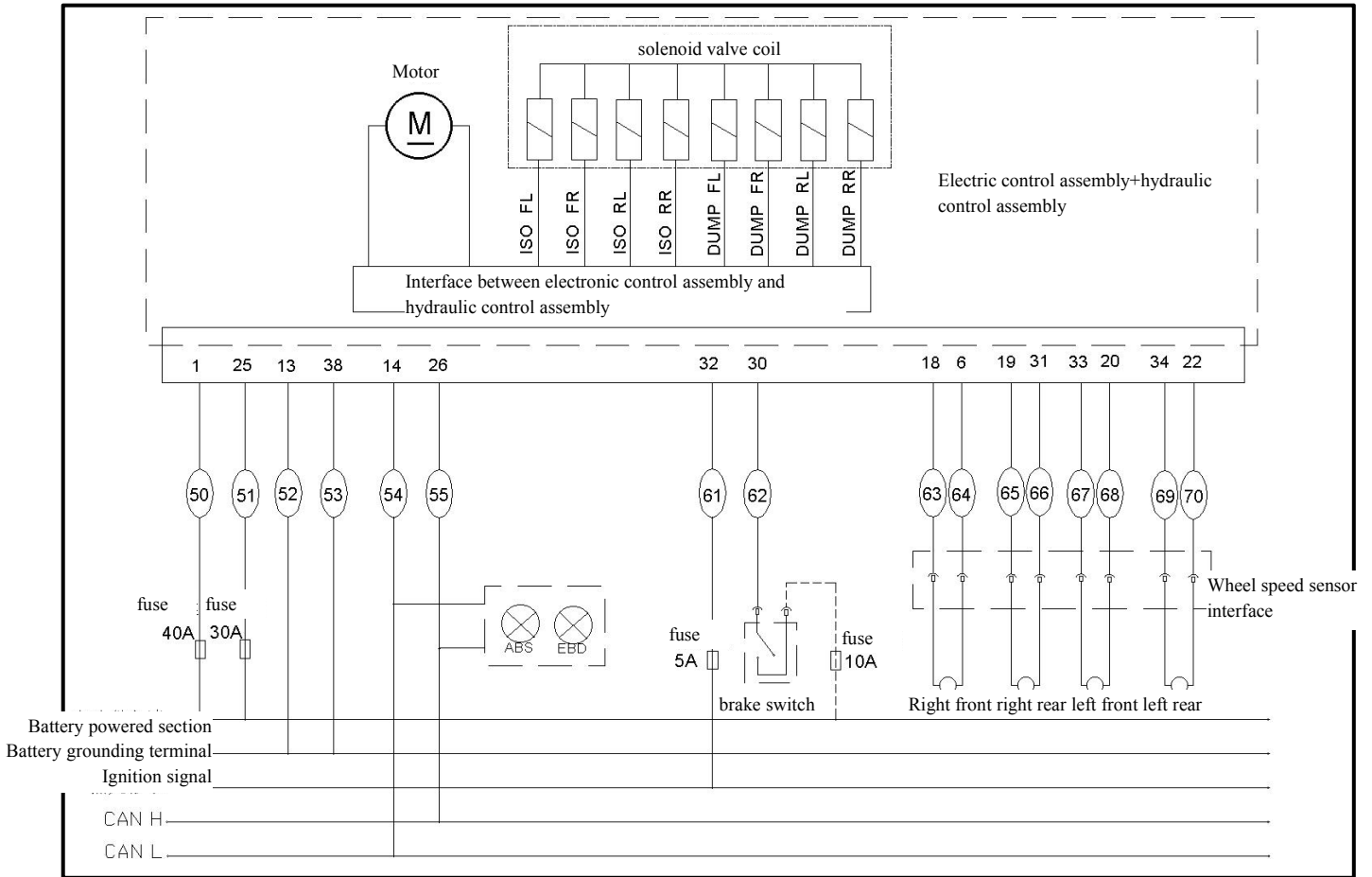
7.8.4.1 Hydraulic schematic

The system is arranged in an X-shape. The ABS hydraulic regulator consists of a motor, two return pumps, two accumulators with eight solenoid valves on the following principle:



MC1	Brake master cylinder circuit 1	RR	Right rear tire
MC2	Brake master cylinder circuit 2	FLEV	Left front wheel inlet valve
M	Motor	FLAV	Left front wheel outlet valve
RP1	Return pump 1	FREV	Right front wheel inlet valve
RP2	Return pump 2	FRAV	Right front wheel outlet valve
A1	Accumulator 1	RLEV	Left rear wheel inlet valve
A2	Accumulator 2	RLAV	Left rear wheel outlet valve
FL	Left front tire	RREV	Right rear wheel inlet valve
FR	Right front tire	RRAV	Right rear wheel outlet valve
RL	Left rear tire	/	/

7.8.4.2 Electrical schematic



Line No.	Function definition	12V supply current (A) or wire length (m)	Voltage range (V)	Minimum insulation resistance (Ω)
50	MOTOR_POWER+	<40	0-18	500K
51	VALVE_POWER+	<30	0-18	500K
52	MOTOR-	<40	-	-
53	GND	<30	-	-
54	CANL	<10m	0-18	500K
55	CANH	<10m	0-18	500K
61	IGN	<100m	0-18	500K
62	BRAKE_PEDAL	<10m	0-18	500K
63	RF_SENSOR+	<45m	0-18	500K
64	RF_SENSOR-	<45m	0-18	500K
65	RR_SENSOR+	<45m	0-18	500K
66	RR_SENSOR-	<45m	0-18	500K
67	LR_SENSOR+	<45m	0-18	500K
68	LR_SENSOR-	<45m	0-18	500K
69	LF_SENSOR+	<45m	0-18	500K
70	LF_SENSOR-	<45m	0-18	500K

7.8.5 Diagnostic information and steps

7.8.5.1 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will

help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

7.8.5.2 Routine inspection

Preliminary inspection

Prior to diagnosing the ABS system, components that may be causing the ABS system to fault and are easily accessible should be inspected first. Visual and appearance inspection procedures can quickly determine the fault so that no further diagnosis is required.

1. Ensure that only the recommended size tires and wheels are installed on the vehicle. All tires must have the same tread pattern and depth.
2. Check ABS controller, brake lines and connections for leaks.
3. Check the ABS system fuses to make sure they are not blown and are of the correct type.

The ABS system has three fuses, which are.

- a. Pump motor fuse (40A)
 - b. Solenoid valve fuse (30A)
 - c. Electronic control unit fuse (5A)
4. Check battery voltage and check for corroded or loose battery terminals. The normal operating voltage range of the ABS system is 9.3V to 16.8V.
 5. Check that the ABS ground wire earthing point is not loose and that the earthing position has not been altered.
 6. The ABS ground wire must be well sealed to prevent water and moisture from seeping into the ABS ECU connector through the holes in the wiring harness due to the capillary (siphon) effect, which can cause fault.

Measures to be taken:

Exposed ends of the harness should be coated with sealant and sealed with heat shrink tubing.

7. Perform visual and appearance inspections for the following electrical components
 - a. Ensure that wiring harnesses and connectors for ABS system related components are properly connected, pinched or cut.
 - b. Check whether the harness wiring is too close to high-voltage or high-current devices such as high voltage electricity or components, generators and motors, and aftermarket retrofitted stereo amplifiers.

Caution:

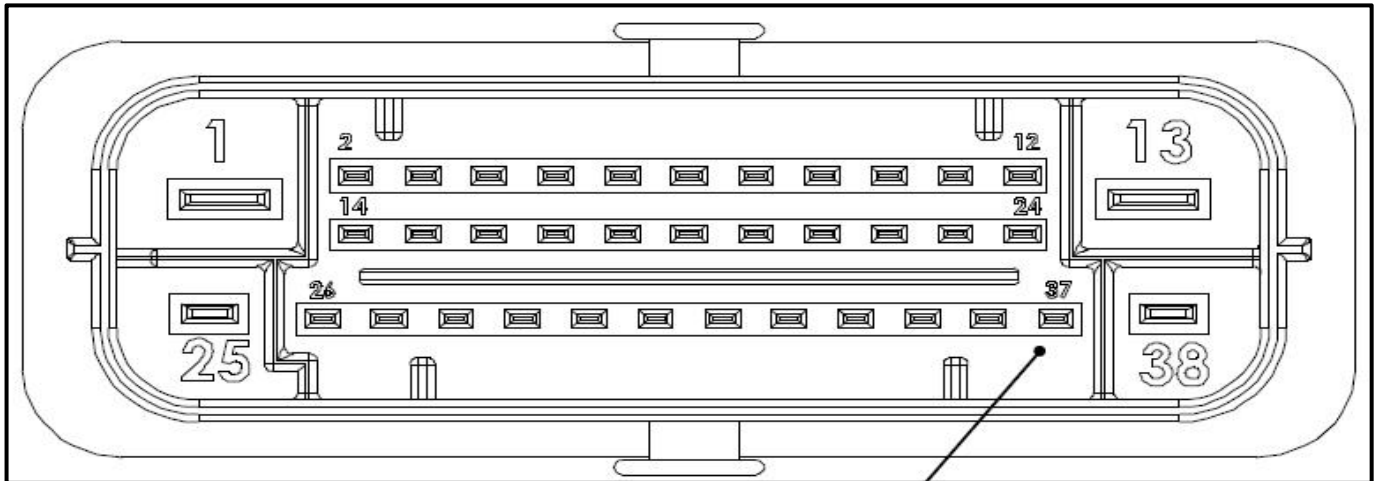
CAUTION: High-voltage or high-current devices may cause induced noise in the circuit, which may interfere with the proper operation of the circuit.

- c. ABS components are sensitive to electromagnetic interference (EMI). If an intermittent fault is suspected, check that aftermarket retrofitted anti-theft devices, lights or cell phones are not installed correctly.
8. ABS is an active safety system. Its main function is to maximize the use of ground adhesion to maintain the maneuverability and driving stability of the vehicle. However, ABS does not completely prevent the vehicle

from slipping when physical limits are exceeded or when the vehicle travels at high speeds on slippery surfaces.

9. If the ABS noise is excessive, it may be caused by the following reasons
 - a. The ABS controller is loosely secured to the bracket.
 - b. The ABS bracket is loosely secured to the body.
 - c. The shock absorber pad on the ABS bracket is missing or damaged.

7.8.5.3 ECU pin definitions



PinNo.	Function	Operating current	Termina typel mm*mm	Wire size mm*mm
1	Power supply (motor)	≤ 40 A	4.8*0.8	2.5
2	/	NA	1.5*0.64	NA
3	/	NA	1.5*0.64	NA
4	/	NA	1.5*0.64	NA
5	/	NA	1.5*0.64	NA
6	Right front wheel speed sensor signal	≤50mA	1.5*0.64	0.5
7	/	NA	1.5*0.64	NA
8	/	NA	1.5*0.64	NA
9	/	NA	1.5*0.64	NA
10	/	NA	1.5*0.64	NA
11	/	NA	1.5*0.64	NA
12	/	NA	1.5*0.64	NA
13	Power supply ground (motor)	≤ 40 A	4.8*0.8	2.5
14	CANL	≤70mA	1.5*0.64	0.5
15	/	NA	1.5*0.64	NA
16	/	NA	1.5*0.64	NA
17	/	NA	1.5*0.64	NA
18	Right front wheel speed sensor power supply	≤50mA	1.5*0.64	0.5
19	Right rear wheel speed sensor power supply	≤50mA	1.5*0.64	0.5
20	Left rear wheel speed sensor signal	≤50mA	1.5*0.64	0.5
21	/	NA	1.5*0.64	NA
22	Left front wheel speed sensor signal	≤50mA	1.5*0.64	0.5
23	/	NA	1.5*0.64	NA
24	/	NA	1.5*0.64	NA
25	Power supply (solenoid valve)	≤ 30 A	2.8*0.8	2.0

26	CANH	≤70mA	1.5*0.64	0.5
27	/	NA	1.5*0.64	NA
28	/	NA	1.5*0.64	NA
29	/	NA	1.5*0.64	NA
30	Brake footstep switch	≤20mA	1.5*0.64	0.5
31	Right rear wheel speed sensor signal	≤50mA	1.5*0.64	0.5
32	Ignition signal	≤20mA	1.5*0.64	0.5
33	Left rear wheel speed sensor power supply	≤50mA	1.5*0.64	0.5
34	Left front wheel speed sensor power supply	≤50mA	1.5*0.64	0.5
35	/	NA	1.5*0.64	NA
36	/	NA	1.5*0.64	NA
37	/	NA	1.5*0.64	NA
38	Power supply ground	≤ 30 A	2.8*0.8	2.0

7.8.5.4 Diagnostic information list for ABS controller assembly

S.N.	DTC display code	DTC meaning	Possible cause	Maintenance suggestion
1	0x503113	Open circuit of the left front wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
2	0x503112	Short circuit of left front wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
3	0x503123	Loss of left front wheel speed	The gap between the wheel speed sensor and the gear ring is too large	Check wheel speed sensor and wiring harness
4	0x503125	Sudden drop in speed of the left front wheel	The installation of the wheel speed sensor is unstable	Check wheel speed sensor and wiring harness
5	0x50312F	Unstable left front wheel speed	The wheel speed sensor is faulty or the wiring harness is loose	Check wheel speed sensor and wiring harness
6	0x503128	Mismatched left front tire	The tire pressure is too low or the size is mismatched	Check tire size and pressure
7	0x503413	Open circuit of the right front wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
8	0x503412	Short circuit of the right front wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
9	0x503423	Loss of right front wheel speed	The gap between the wheel speed sensor and the gear ring is too large	Check wheel speed sensor and wiring harness
10	0x503425	Sudden drop in speed of the right front wheel	The installation of the wheel speed sensor is unstable	Check wheel speed sensor and wiring harness
11	0x50342F	Unstable right front wheel speed	The wheel speed sensor is faulty or the wiring harness is loose	Check wheel speed sensor and wiring harness
12	0x503428	Mismatched right front tire	The tire pressure is too low or the size is mismatched	Check tire size and pressure
13	0x503713	Open circuit of the left rear wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
14	0x503712	Short circuit of left rear wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness

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15	0x503723	Loss of left rear wheel speed	The gap between the wheel speed sensor and the gear ring is too large	Check wheel speed sensor and wiring harness
16	0x503725	Sudden drop in speed of the left rear wheel	The installation of the wheel speed sensor is unstable	Check wheel speed sensor and wiring harness
17	0x50372F	Unstable left rear wheel speed	The wheel speed sensor is faulty or the wiring harness is loose	Check wheel speed sensor and wiring harness
18	0x503728	Mismatched left rear tire	The tire pressure is too low or the size is mismatched	Check tire size and pressure
19	0x503A13	Open circuit of the right rear wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
20	0x503A12	Short circuit of the right rear wheel speed sensor	The wheel speed sensor is damaged or the wiring harness shows open circuit	Check wheel speed sensor and wiring harness
21	0x503A23	Loss of right rear wheel speed	The gap between the wheel speed sensor and the gear ring is too large	Check wheel speed sensor and wiring harness
22	0x503A25	Sudden drop in speed of the right rear wheel	The installation of the wheel speed sensor is unstable	Check wheel speed sensor and wiring harness
23	0x503A2F	Unstable right rear wheel speed	The wheel speed sensor is faulty or the wiring harness is loose	Check wheel speed sensor and wiring harness
24	0x503A28	Mismatched right rear tire	The tire pressure is too low or the size is mismatched	Check tire size and pressure
25	0x501013	Open circuit of the left front normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
26	0x501012	Short circuit of the left front normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
27	0x50101D	Overtemperature of the left front normally open valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
28	0x501113	Open circuit of the left front normally closed valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
29	0x501112	The left front normally-closed valve is short-circuited	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
30	0x50111D	Overtemperature of the left front normally closed valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
31	0x501413	Open circuit of the right front normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
32	0x501412	Short circuit of the right front normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
33	0x50141D	Overtemperature of the right front normally open valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
34	0x501513	Open circuit of the right front normally closed valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
35	0x501512	Short circuit of the right front normally	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the

		closed valve		ABS assembly
36	0x50151D	Overtemperature of the right front normally closed valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
37	0x501813	Open circuit of the left rear normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
38	0x501812	Short circuit of the left rear normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
39	0x50181D	Overtemperature of the left rear normally open valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
40	0x501913	Open circuit of the left rear normally closed valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
41	0x501912	Left rear normally-closed valve short-circuit	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
42	0x50191D	Overtemperature of the left rear normally closed valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
43	0x501C13	Open circuit of the right rear normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
44	0x501C12	Short circuit of the right rear normally open valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
45	0x501C1D	Overtemperature of the right rear normally open valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
46	0x501D13	Open circuit of the right rear normally closed valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
47	0x501D12	Short circuit of the right rear normally closed valve	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
48	0x501D1D	Overtemperature of the right rear normally closed valve	Abnormal wheel speed caused ABS malfunction	Re-energize to see if it returns to normal; if not, replace the ABS assembly
49	0x500613	Open circuit of the solenoid valve high side	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
50	0x500612	Short circuit of the solenoid valve high side	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the ABS assembly
51	0xD10017	Excessive power supply voltage	The ABS power supply voltage is unstable	Check if the battery voltage is stable
52	0xD10016	Low power supply voltage	The ABS power supply voltage is unstable	Check if the battery voltage is stable
53	0x502015	Open motor circuit or short drive circuit	ABS assembly fault (possibly caused by live wire harness insertion and removal)	Re-energize to see if it returns to normal; if not, replace the ABS assembly
54	0x502079	Motor blocking or abnormal motor power supply	The motor power supply is abnormal or the motor is faulty	Re-energize to see if it returns to normal; if not, replace the ABS assembly
55	0x506C48	System fault	ABS assembly fault	Re-energize to see if it returns to normal; if not, replace the

				ABS assembly
56	0xC00188	CAN Bus off	The CAN bus is short circuited or abnormal	Wait for CAN communication to resume
57	0x504600	Faulty brake footstep connection	The brake footstep signal is incorrect	Check brake footstep signal

7.8.5.5 Repair of no fault code faults

If there is a fault in the braking system, but the ABS does not store a fault code, this type of fault is called a no fault code fault. No fault code faults are usually caused by a fault in the underlying braking system. For example:

CAUTION: Brake fluid leakage (may cause soft braking, excessive brake footstep travel, and, in severe cases, brake failure)

CAUTION: Use of poor-quality brake fluid (use of poor-quality brake fluid can corrode brake lines and internal components of the ABS hydraulic regulator module, and in severe cases can lead to brake failure)

CAUTION: Air in brake lines (may cause soft braking or even brake failure)

CAUTION: Clogged brake lines (may cause hard braking, brake runout, or even brake failure)

CAUTION: Excessive brake disc wear (may cause soft braking and excessive brake footstep travel)

CAUTION: booster fault (may cause hard or soft braking, excessive brake footstep travel, and even brake failure)

CAUTION: Incorrectly connected brake lines (may cause ABS performance degradation, tail swing, long braking distance, etc.)

Markings near the oil holes on the controller: MC1 for No. 1 master cylinder oil line; MC2 for No. 2 master cylinder oil line; FL for left front wheel cylinder oil line; FR for right front wheel cylinder oil line; RL for left rear wheel cylinder oil line; RR for right rear wheel cylinder oil line.)

CAUTION: No power supply to the ABS or abnormal interruptions in power supply can cause the ABS/EBD warning light to come on long without fault codes.

Troubleshooting recommendations: check the corresponding components for the fault phenomenon and carry out troubleshooting.

Repair of occasional faults:

Transient poor contact problems may occur in electrical circuits and at places of input and output signals, leading to occasional faults. Sometimes the cause of the fault disappears on its own, so it is not easy to find out what the problem is. When an occasional fault is encountered, you can simulate the fault as follows to check whether the fault is reproduced.

Possible cause	Fault simulation	Remarks
When vibration may be the primary cause	Gently shake the ABS ECU connector up and down, left and right Gently shake the ABS harness up and down, left and right Gently shake the sensor up and down, left and right Gently shake other moving parts (e.g., wheel bearings)	If there is a kink in the wiring harness or if it breaks because it is pulled too tightly, the part must be replaced with a new one. During vehicle motion the wheel speed sensor harness will briefly show open/short circuit as the suspension system moves up and down.

		Therefore, it is important to perform a live driving test at the time of inspecting the sensor harness.
When temperature may be the primary cause	Use a hair dryer to heat parts to be potentially faulty Check for cold welding with cold spray	—
When high electrical loads may be the primary cause	Turn on all electrical switches, including headlights and windshield wipers, so that the vehicle's power supply operates at a high load.	—

If the fault is not reproduced at this time, you must wait until the next time the fault reappears to diagnose and repair it.

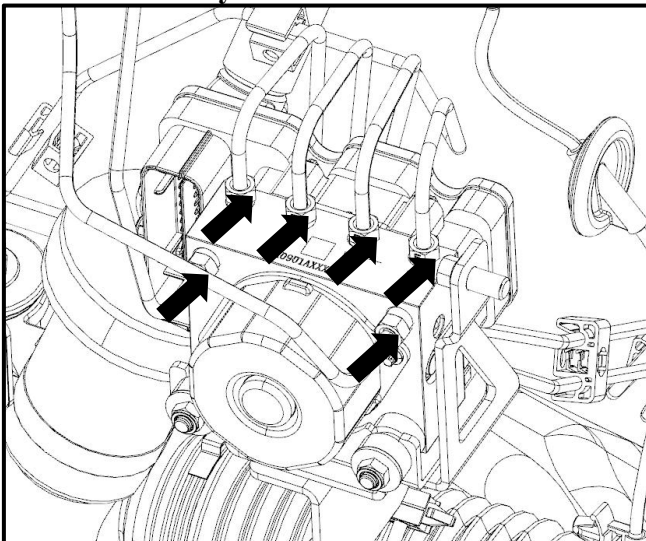
Generally, occasional faults evolve into reproducible faults that do not go away on their own.

7.8.5.6 Diagnostic step

1	Vehicles entering the garage
2	Customer problem analysis
3	Read a fault code There is a fault code → Go to step 4 No fault code → Go to step 6
4	Record the fault code, and then clear the fault code
5	Confirmation and reproduction of the fault: accelerate the vehicle to over 25km/h, simulate the fault condition and re-read the fault code. There is a fault code → Current fault code. Go to Step 7 No fault code → Historical fault code. Go to Step 8
6	Repair of no fault code faults → Go to step 9
7	Troubleshoot according to the fault code table, then go to step 9
8	Troubleshoot based on occasional fault repair, then go to step 9
9	Confirm troubleshooting and perform maintenance completion inspection
10	Prevent recurrence of faults
11	End

7.8.6 Disassembly and installation

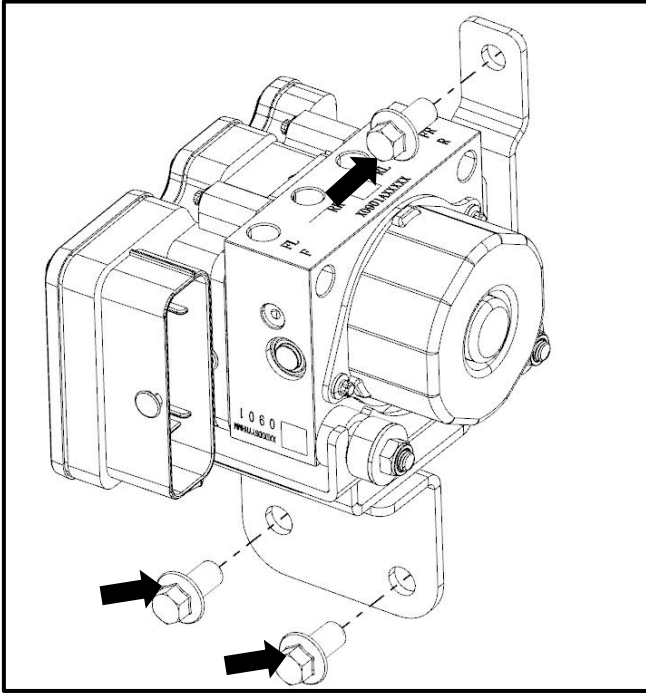
7.8.6.1 Disassembly and installation of ABS controller assembly



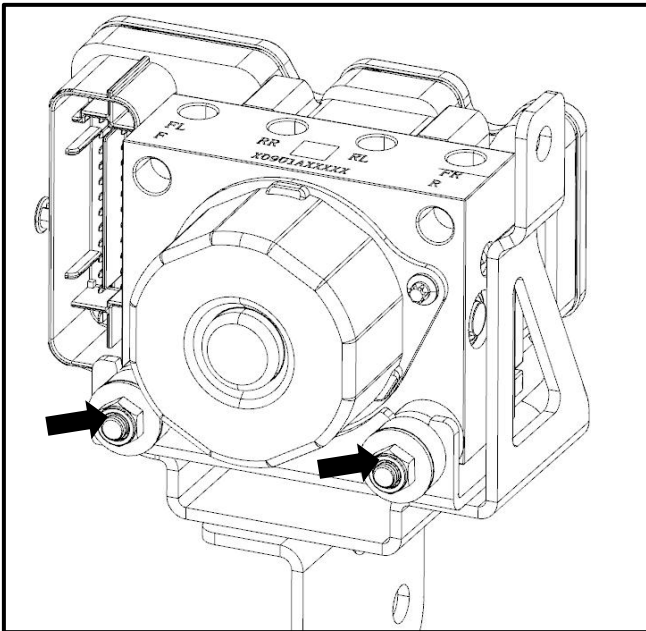
Disassembly process

1. Remove the brake hard line connected to the ABS controller.

CAUTION: Drain the brake fluid before removing the brake hard line.



2. Remove the bolts connecting the ABS bracket to the body.



3. Remove the nuts connecting the ABS controller and ABS bracket, and separate the ABS and bracket.

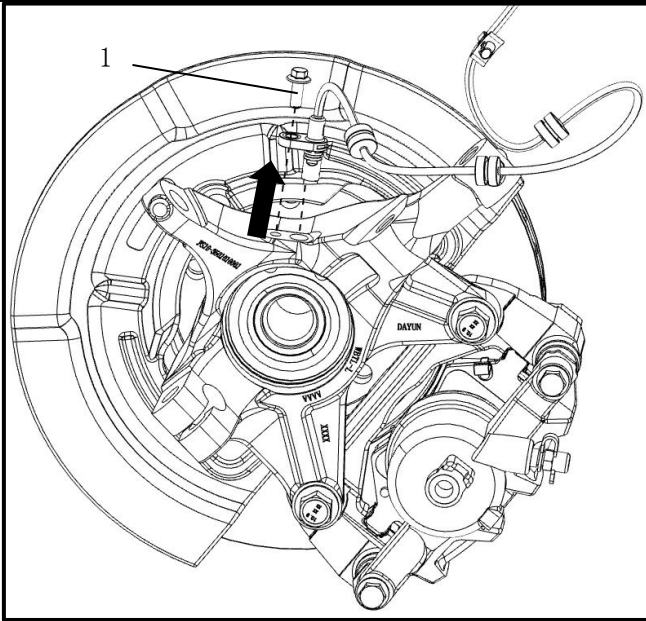
Installation process

The installation process is the reverse of removal.

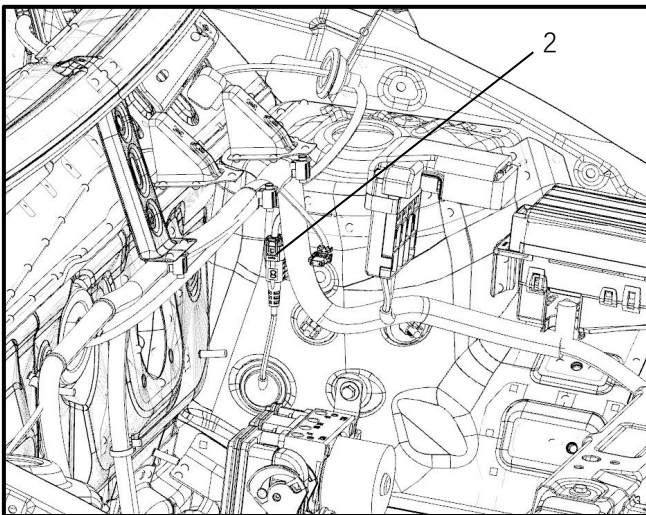
7.8.6.2 Disassembly and installation of wheel speed sensor

Disassembly process

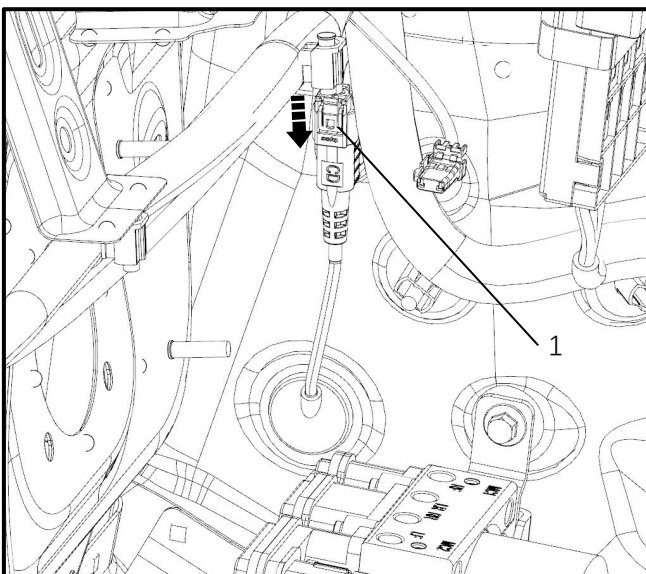
1. Use a jack to raise the wheel.
2. Please refer to 3.4.5.1 Replacement of wheels to disassemble the tire.



3. Remove the hexagonal flange face bolt 1 to pull out the wheel speed sensor head.

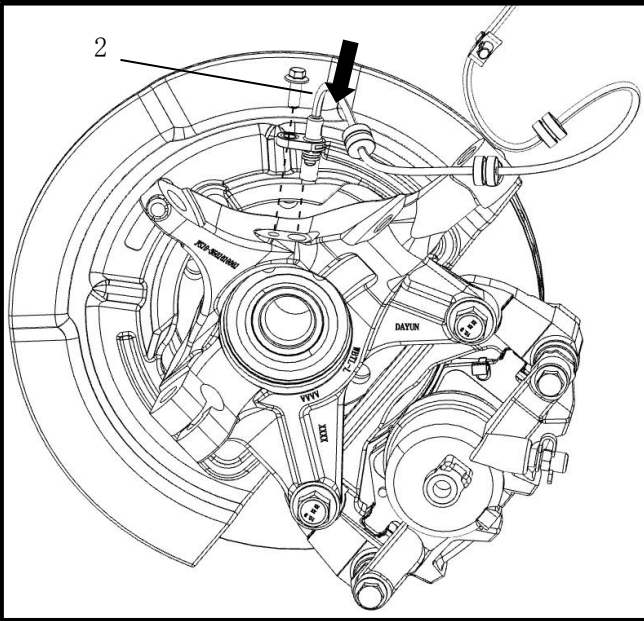


4. Unplug the connector 2 between the wheel speed sensor assembly and the front compartment wiring harness.



Installation process

1. Install connector 1 between the wheel speed sensor assembly and the front compartment wiring harness.

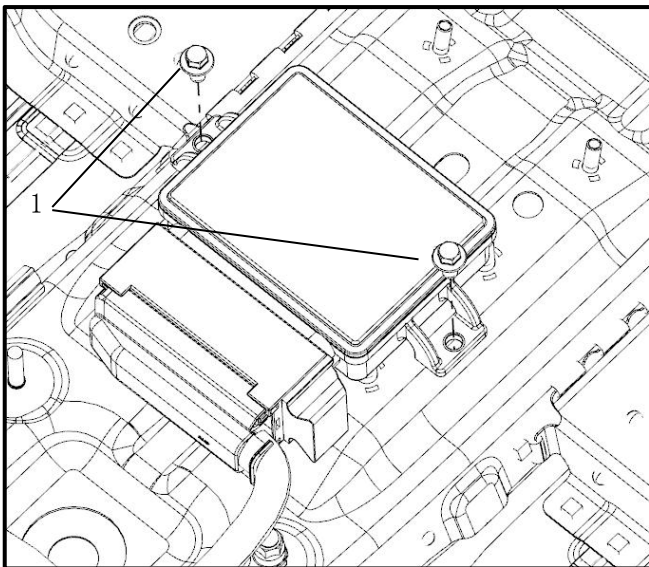


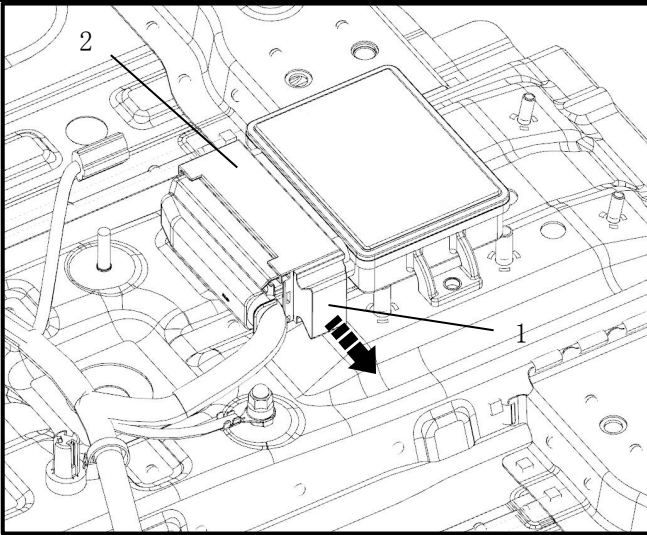
2. Install the wheel speed sensor head to the brake with a hexagonal flange face bolt 2.

7.8.6.3 Disassembly and installation of EPB controller

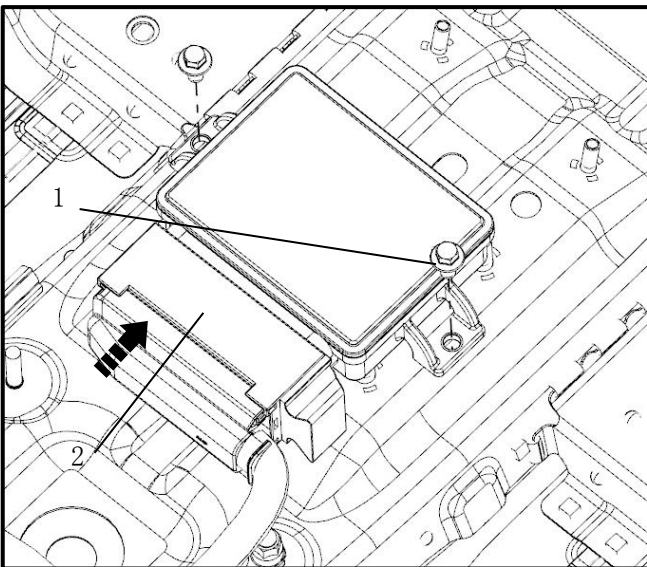
Disassembly process

1. Please refer to 13.5.3.12 Replacement of auxiliary instrument board to remove the auxiliary instrument board.
2. Remove two hexagonal flange face bolts 1
Torque: $9\pm 1\text{N.m}$





3. Pull out the latch 1 in the direction shown in the figure
4. Afterwards, pull out the connector in the direction shown in the figure
5. Remove the EPB controller



Installation process

1. Secure the EPB controller assembly to the auxiliary instrument board rear end mounting bracket assembly with two hexagonal flange face bolts 1.
2. Install the EPB controller assembly connector 2.
3. Compress the latch.

8 Steering system

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8.1 Warnings and precautions

8.1.1 Warnings and precautions

8.1.1.1 Warnings and precautions

Considerations in electric power steering troubleshooting

Caution

When two or more faults are generated, DTCs are always displayed sequentially starting with the smallest code.

Since the Diagnostic Trouble Codes (DTC) are stored in the backup memory of the control module, it is important to clear the codes in the memory after servicing, and the method of clearing is by using a diagnostic instrument.

Please refer to the fault code table and note down the displayed fault codes to treat the fault.

8.2 Electric steering column with intermediate axle assembly

8.2.1 Specifications

8.2.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Reinforcement beam between steering column and instrument board	M10	25±5
Steering column and mechanical steering gear	M8	30±5

8.2.2 Description and operation

8.2.2.1 Description and operation

The electric steering column with intermediate axle assembly provides direct steering assistance, saving energy and protecting the environment.

Warning!

Please refer to "Warning about additional protection systems" in 1.1.1.1 "Warnings and precautions".

Caution

Please refer to "Caution for steering wheel in steering limit position" in 1.1.1.1 "Warnings and precautions".

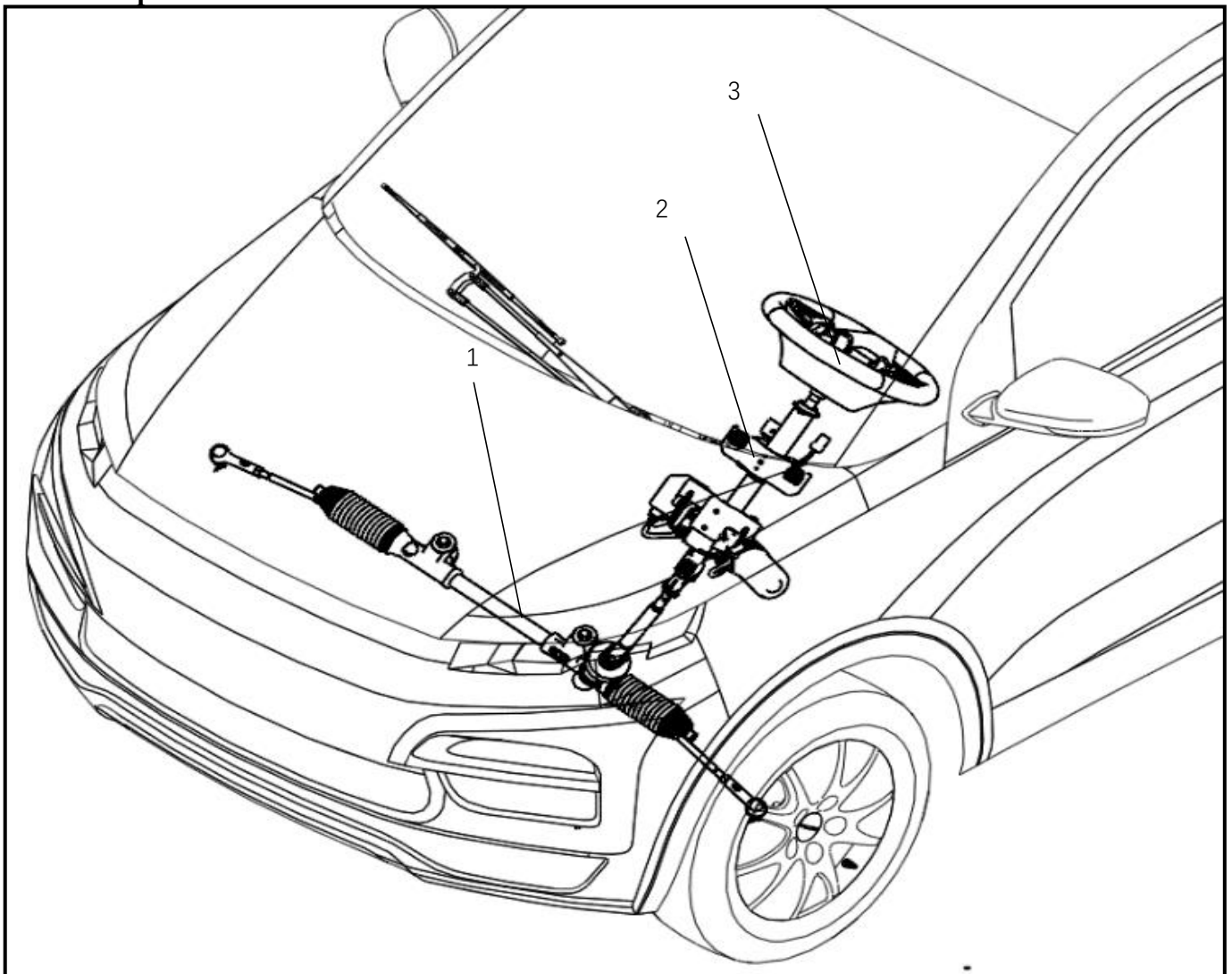
Caution

The wheels should remain in the positive forward direction before disconnecting the electric steering column with intermediate axle assembly. Do not move the front tires and wheels after disconnecting the intermediate axle assembly, as this may cause some parts to be misaligned during installation.

Before removing the electric steering column, the power supply needs to be disconnected and the plug-in needs to be disconnected.

8.2.3 Component location

8.2.3.1 Component location

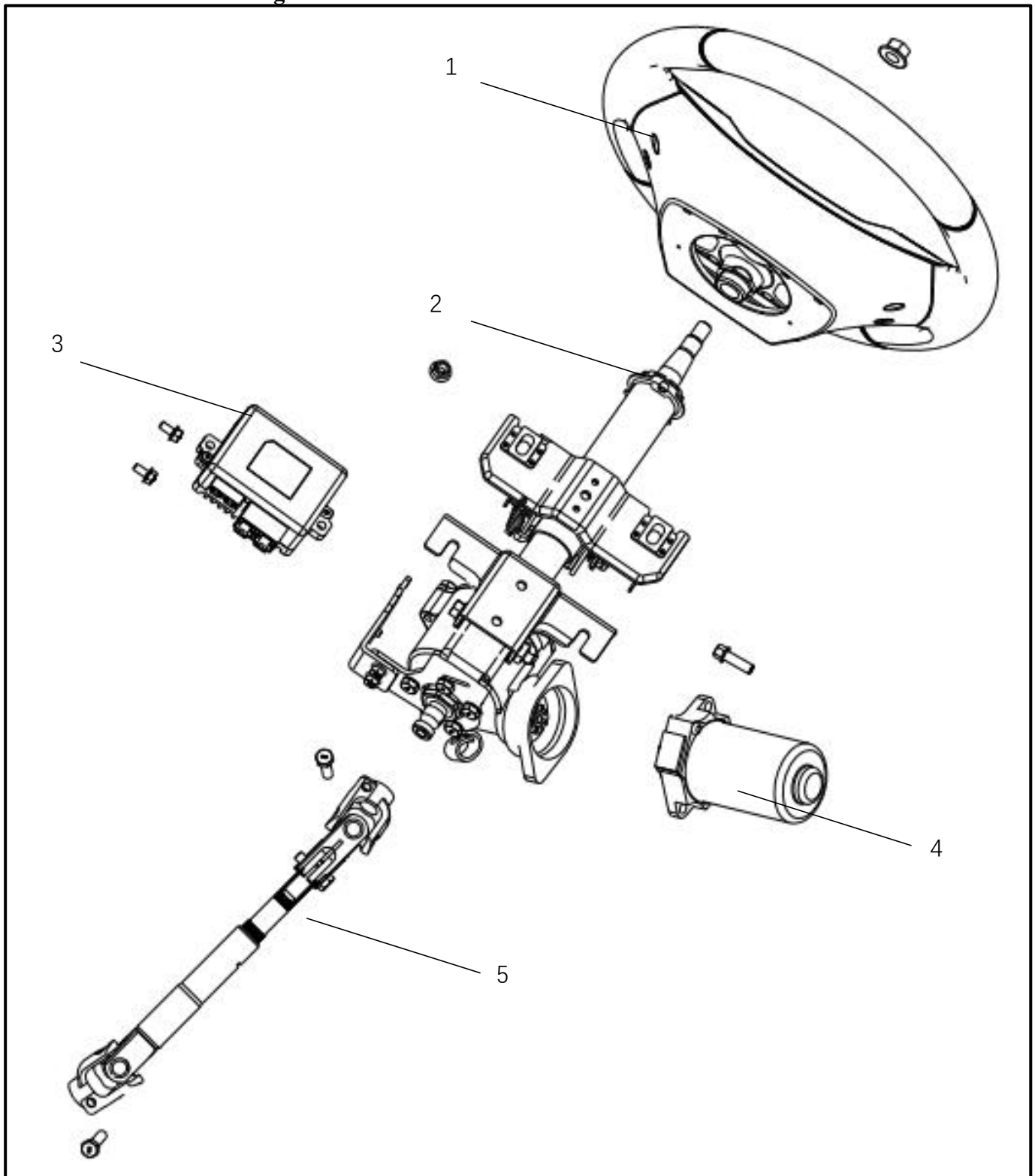


- 1. Mechanical steering gear with cross tie rod assembly
- 2. Electric steering column with intermediate axle assembly

- 3. Steering wheel assembly

8.2.4 Breakdown drawing

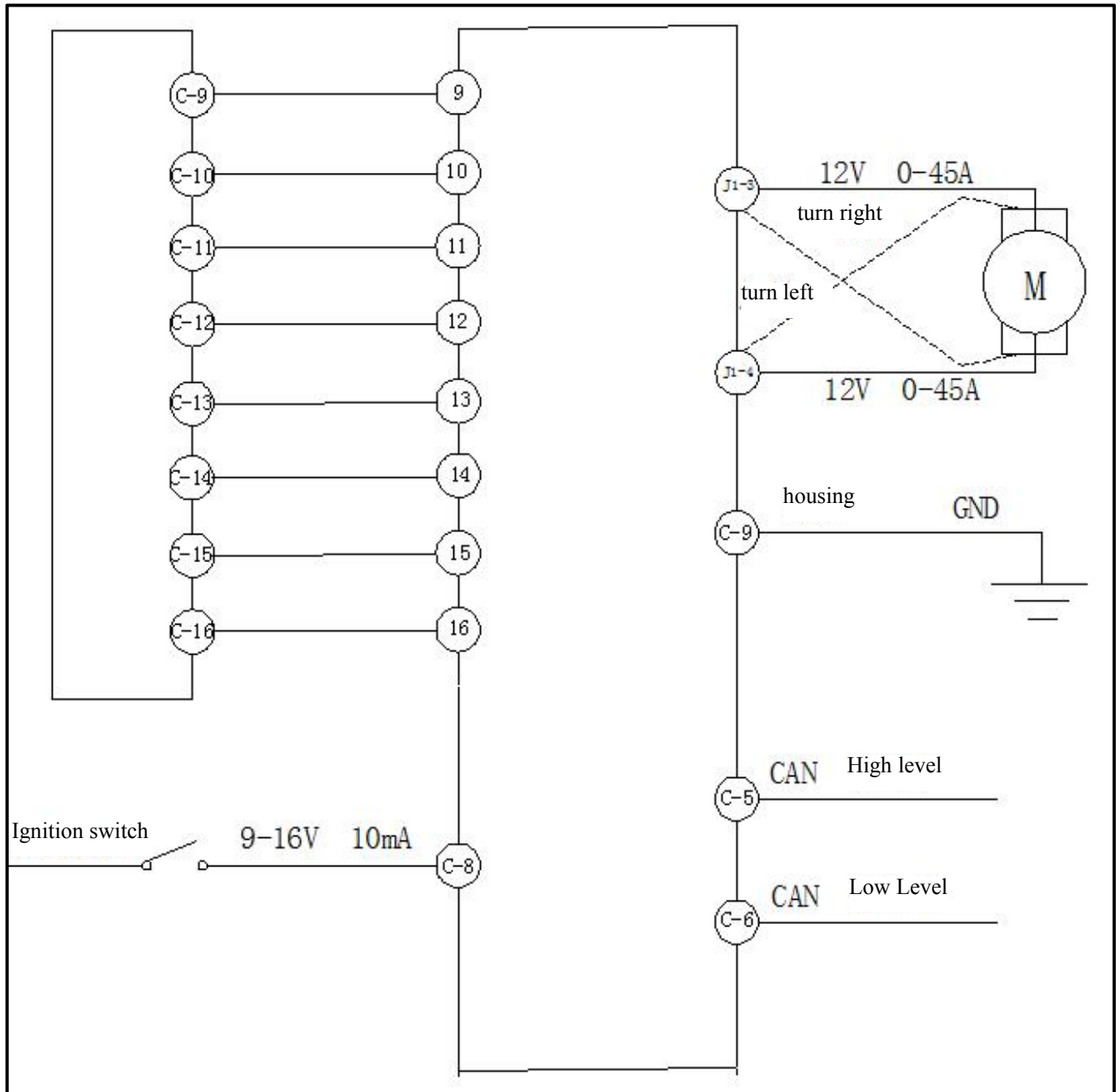
8.2.4.1 Breakdown drawing



- | | |
|----------------------------------------|-----------------------------------------------|
| 1. Steering wheel | 4. Steering column motor assembly |
| 2. Electric steering column body | 5. Steering column intermediate axle assembly |
| 3. Steering column controller assembly | |

8.2.5 Electrical diagram

8.2.5.1 Electrical diagram



8.2.6 Diagnostic information and steps

8.2.6.1 Diagnostic description

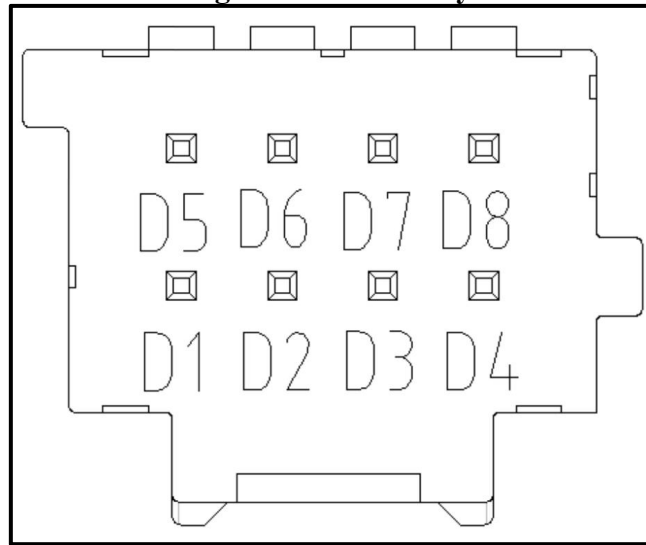
Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

8.2.6.2 Routine inspection

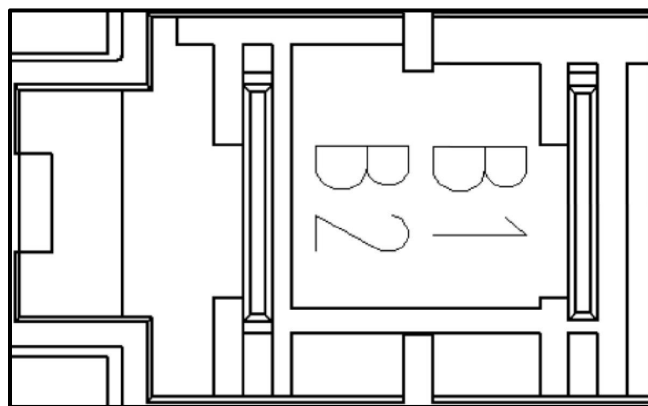
Identify the fault before repairing it. Check for normal tire pressure, visible signs of mechanical or electrical damage,

and loose nuts on the electric steering column assembly mounted to the auxiliary instrument board crossmember.

8.2.6.3 List of terminals for electric steering column assembly



Code	Port name	Port definition
CON0-1	DIGN	Diagnosis
CON0-2	SPEED	Speed
CON0-3	TACHO	Revolutions per minute
CON0-4	LAMP	Trouble light
CON0-5	CANH	CAN high
CON0-6	CANL	CAN low
CON0-7	Kline	K line
CON0-8	IG	Ignition



Code	Port name	Port definition
B1	VBAT-	Negative terminal of power supply
B2	VBAT+	Positive terminal of power supply

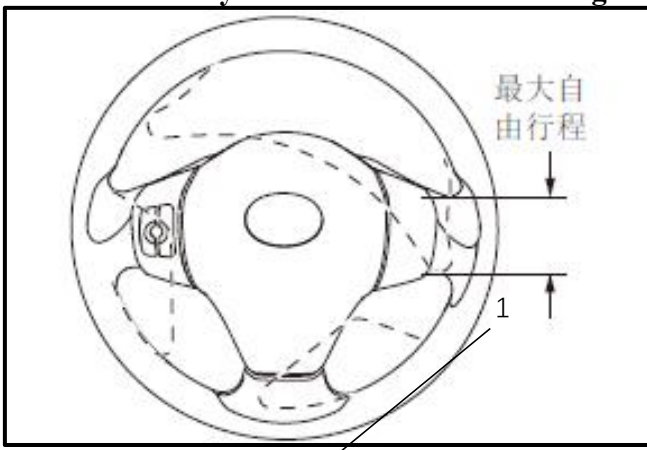
8.2.6.4 Diagnostic information list for electric steering column assembly

Fault code	Description	Fault cause analysis
561131	Main circuit fault of torque sensor	The wiring harness connector has poor contact or the sensor is abnormal

561362	Significant difference between the primary and auxiliary circuits of torque sensors	The wiring harness connector has poor contact or the sensor is abnormal
56141C	Power supply fault of torque sensor	The wiring harness connector has poor contact or the sensor is abnormal
561531	Auxiliary circuit fault of torque sensor	The wiring harness connector has poor contact or the sensor is abnormal
562131	Loss of speed signal	The speed sensor is faulty or the wiring harness is poorly connected
562231	Loss of speed signal	The speed sensor is faulty or the wiring harness is poorly connected
562462	Sudden changes in speed signals	The speed sensor is faulty or the wiring harness is poorly connected
564101	Excessive or insufficient voltage at both ends of the motor	The motor indicates an open or short circuit
564201	The actual current flowing through the motor is much higher than the calculated target current	The MOS transistor indicates a short circuit or the motor is faulty
564301	Excessive current of the motor	The MOS transistor indicates a short circuit or the motor is faulty
564501	The actual current flowing through the motor is much lower than the calculated target current	Small load of the motor
565101	Abnormal angle sensor	The angle sensor shows an open or short circuit
565271	Controller relay fault	The relay module is faulty
565316	Excessive power supply voltage	The power input or the power circuit is faulty
565417	Low power supply voltage	The power input or the power circuit is faulty
565548	Fault within the controller	The controller has detected an internal fault
C07388	EPS communication off	The CAN bus is short circuited, or the power or ground is short circuited
C12987	Loss of communication with the speed sending node	The communication with the speed sending node has faulted.

8.2.7 Disassembly and installation of electric steering column assembly

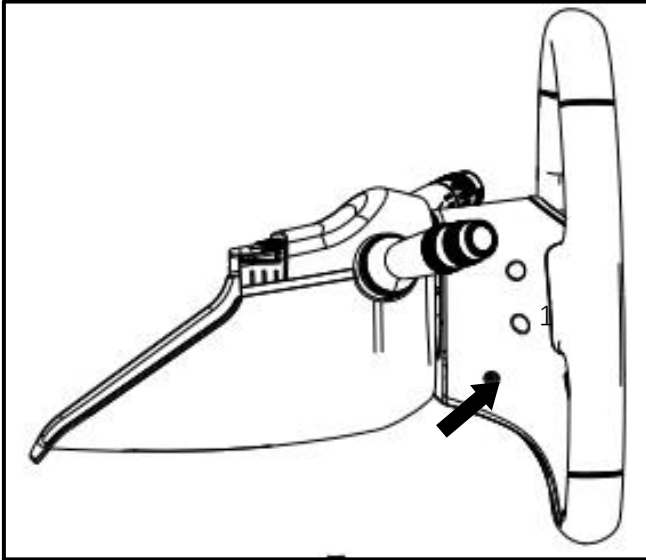
8.2.7.1 Disassembly and installation of steering wheel assembly



Inspection procedure

1. Check free stroke of the steering wheel.
 - a. Stop the vehicle so that the tires are facing forward.
 - b. Check steering wheel free stroke by turning the steering wheel clockwise and counterclockwise until resistance increases.

Maximum free travel: The maximum free rotation of the steering wheel from the center position to either the left or the right should be no more than 7.5°.



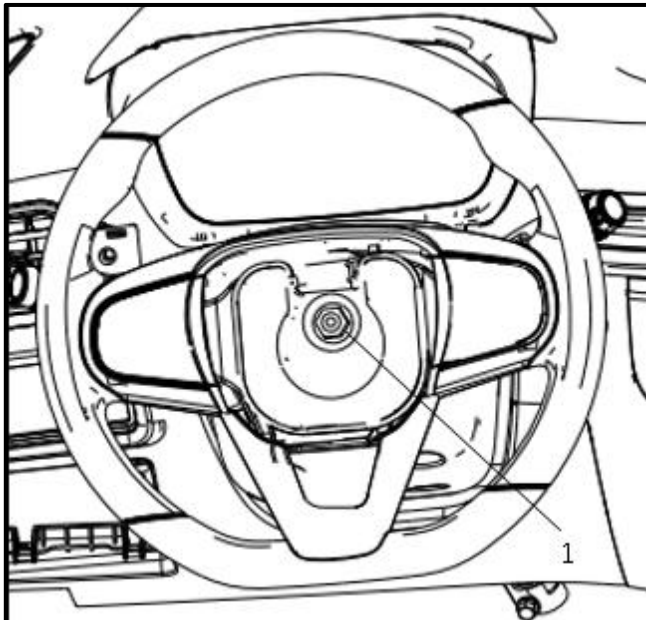
Disassembly process

1. Disconnect the negative battery terminal.

CAUTION: No other operations can be performed until after 90s.

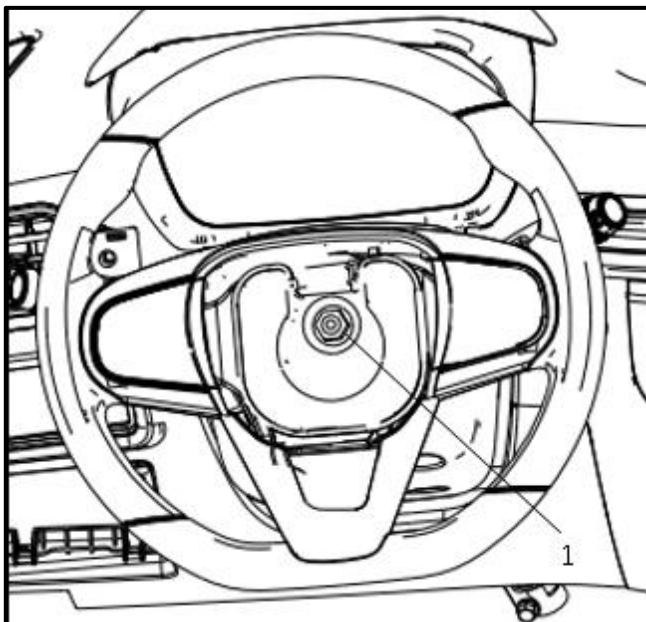
2. Keep the front wheels in the forward position.
3. The airbag of the driver should be removed.
 - a. The airbag pops out after using a one-pronged screwdriver to push into the position indicated by the arrow.
 - b. Disconnect the wiring harness.
4. Remove the steering wheel.

CAUTION: Mark the assembly well at the time of disassembling.



- a. Disconnect the harness from the corresponding gap.
- b. Remove the steering wheel lock nut, then bring the lock nut up (2 to 3) buttons.
- c. Grip the steering wheel and rock it back and forth from side to side a few times and pull it upward.
- d. Remove the lock nut 1 and the steering wheel.

CAUTION: Secure the clock spring to avoid rotation.

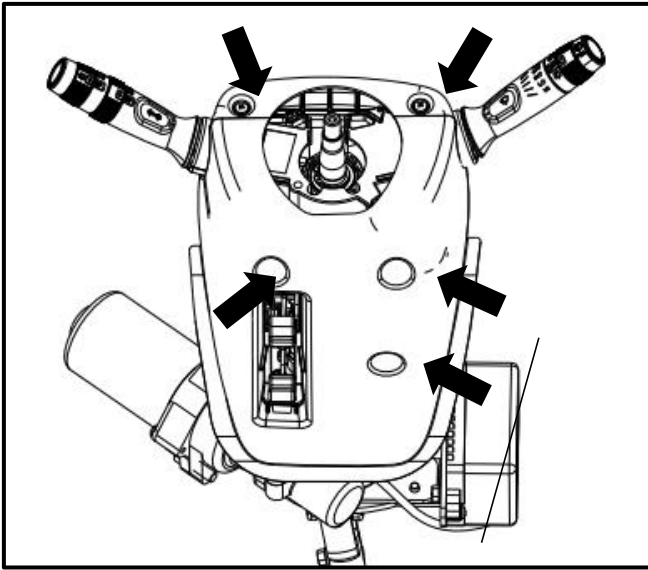


Installation process

1. Install the steering wheel.
 - a. Install the steering wheel along the axis direction against the reference mark.
 - b. Connect the harness plug-in.
 - c. Install the steering wheel lock nut 1.
2. Installation of driver airbag.
3. Connect the negative terminal of the storage battery.

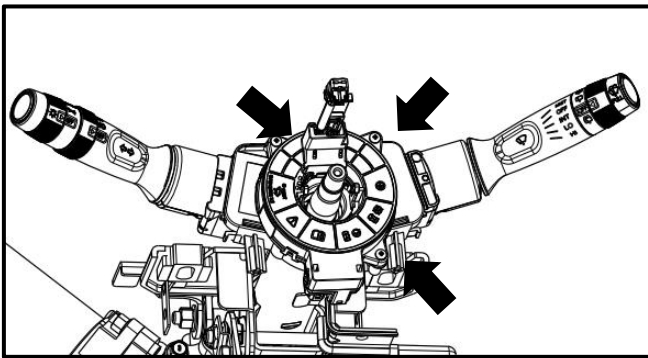
8.2.7.2 Disassembly and installation of electric steering column with intermediate axle assembly

1. Disassembly and installation of steering column

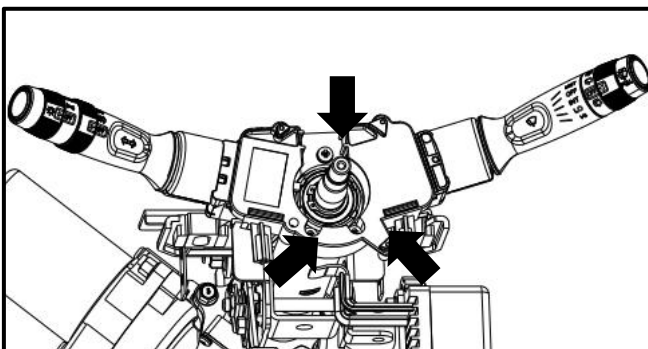


Disassembly process

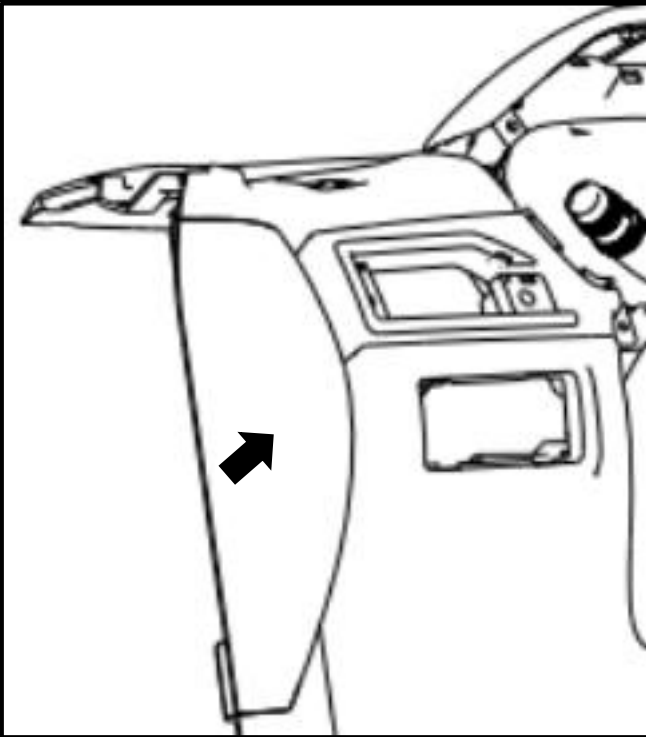
1. Disconnect the negative battery terminal.
2. Keep the front wheels in the forward position.
3. The airbag of the driver should be removed.
4. Remove the steering wheel.
5. Remove the combination switch shrouds.
 - a. Remove 5 screws.
 - b. Remove the combination switch upper shroud.
 - c. Remove the combination switch lower shroud.



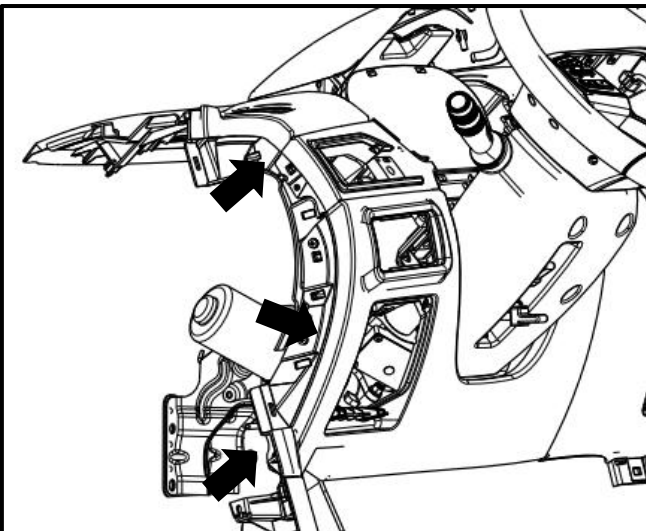
6. Remove the clock spring sub-assembly.
 - a. Disconnect the harness and remove the 3 screws.
 - b. Remove the clock spring.



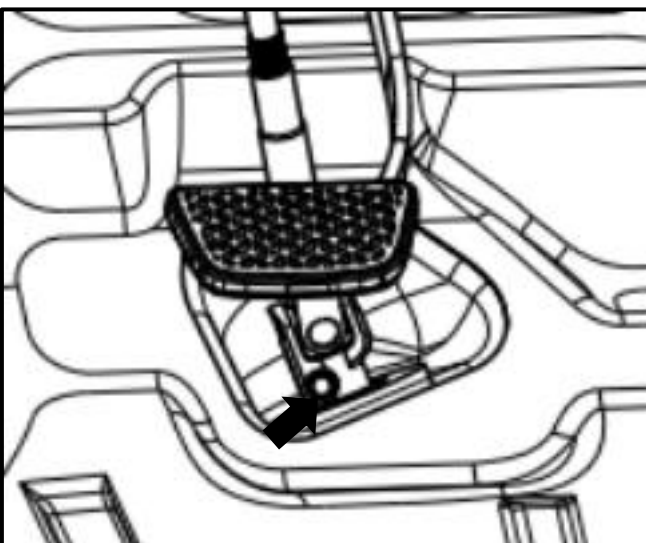
7. Remove the combination switch.
 - a. Disconnect the wiring harness from the combination switch and ignition switch.
 - b. Remove the combination switch by removing the 3 screws.



8. Remove the left side end cap assembly of the instrument board.
 - a. Remove the left side end cap body of the instrument board.
 - b. Remove the left A-pillar lower guard body.

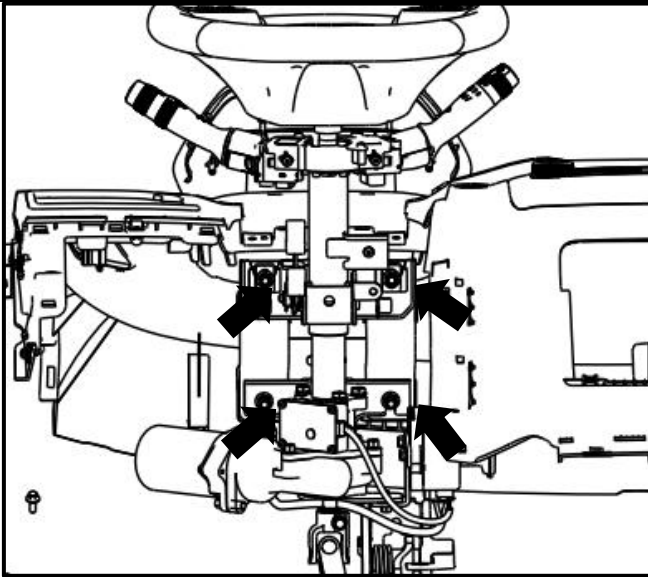


4. Remove 2 screws and a bolt, the left side end cap of the instrument board, and the lower guard.



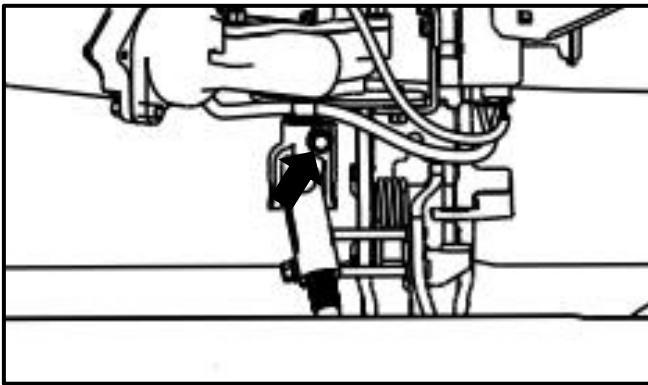
9. Separate steering linkage drive shaft
 - a. Make assembly marks on the steering linkage drive shaft and the steering gear drive shaft.
 - b. Remove 1 bolt and remove the steering linkage drive shaft by moving it downward in an axial direction.

Torque: $30 \pm 5 \text{N} \cdot \text{m}$



10. Remove the steering column with steering linkage assembly.
 - a. Disconnect the harness insert.
 - b. Remove the 4 nuts connecting the instrument reinforcement beam.

Torque: $25 \pm 5 \text{ N} \cdot \text{m}$

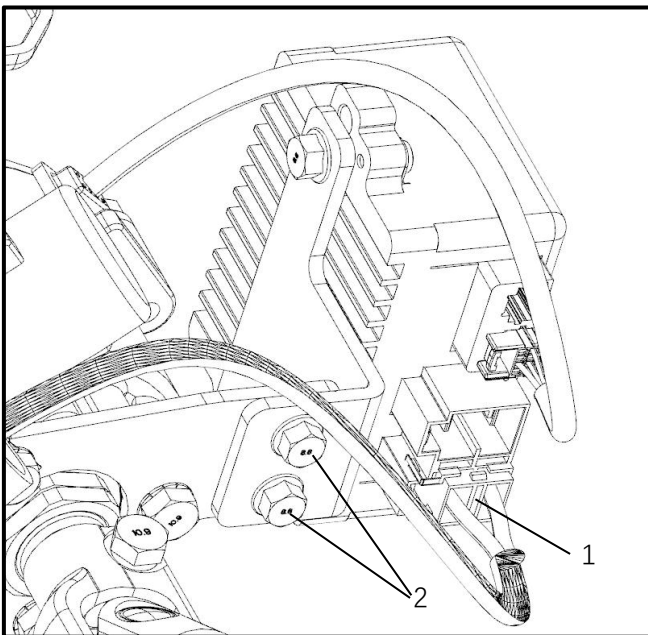


11. Remove steering linkage drive shaft
 - a. Make assembly marks on the steering linkage drive shaft and steering column.
 - b. Remove 1 bolt and remove the steering linkage drive shaft by moving it downward in an axial direction.

Installation process

The installation process is the reverse of removal.

2. Disassembly and installation of steering electronic control unit

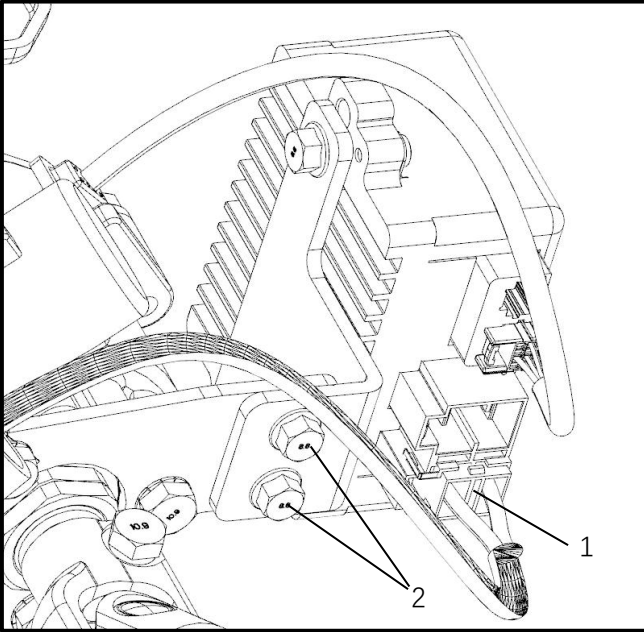


Disassembly process

1. Disconnect the negative battery terminal.
2. Remove the steering electronic control unit.
 - a. Disconnect harness connector 2.
 - b. Remove bolt 2 and the steering electronic control unit.

Installation process

1. Install the steering electronic control unit to the steering column and tighten the bolts 2.
2. Plug in connector 2.



8.3 Mechanical steering gear with cross tie rod assembly

8.3.1 Specifications

8.3.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Mounting nuts between mechanical steel gear and steering knuckle	M12	50±5
Fixed bolts between mechanical steering gear and subframe	M12	110±10

8.3.2 Description and operation

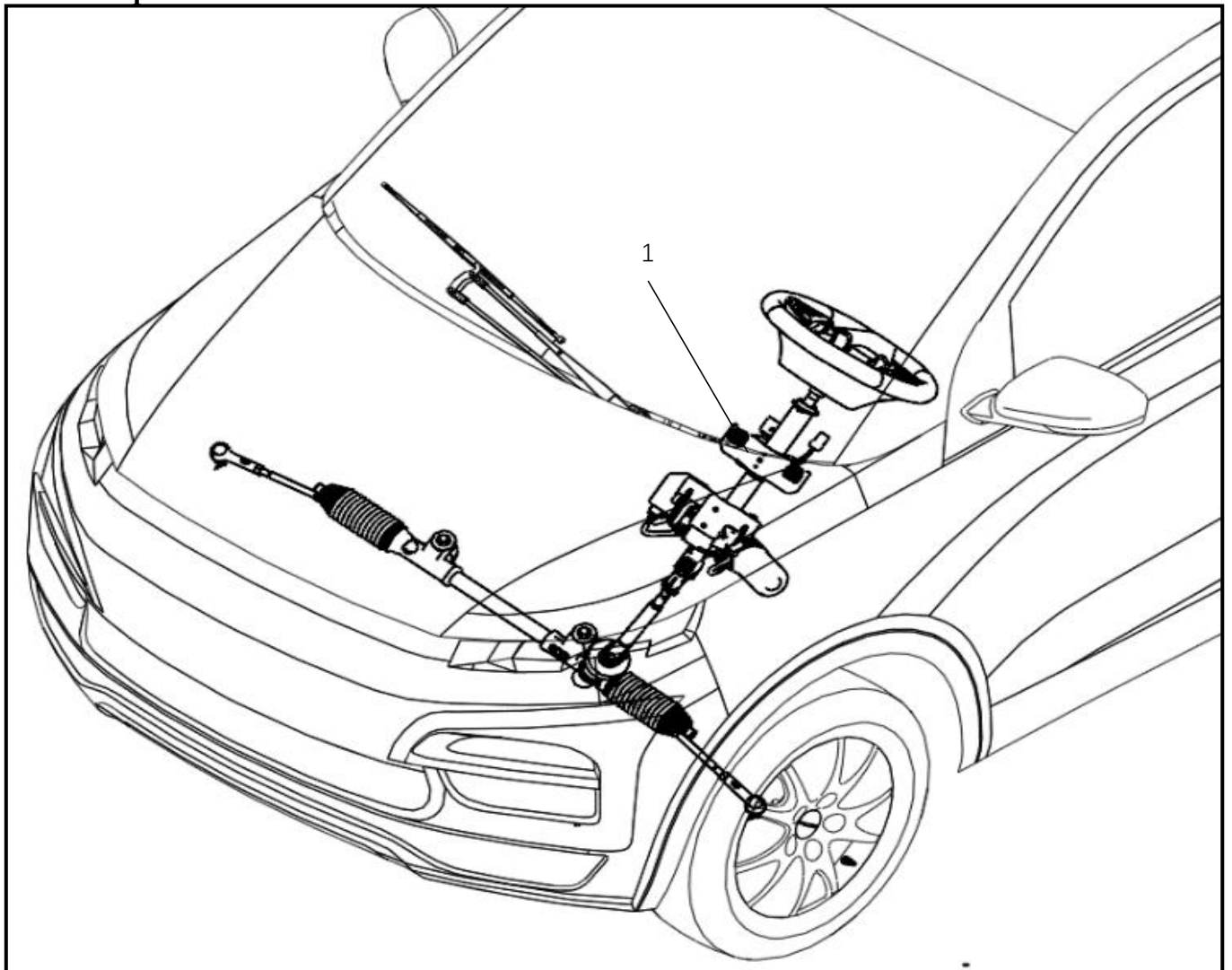
8.3.2.1 Description and operation

Caution

Wheels should remain in a positive forward direction before disconnecting the mechanical steering gear with cross tie rod assembly.

8.3.3 Component location

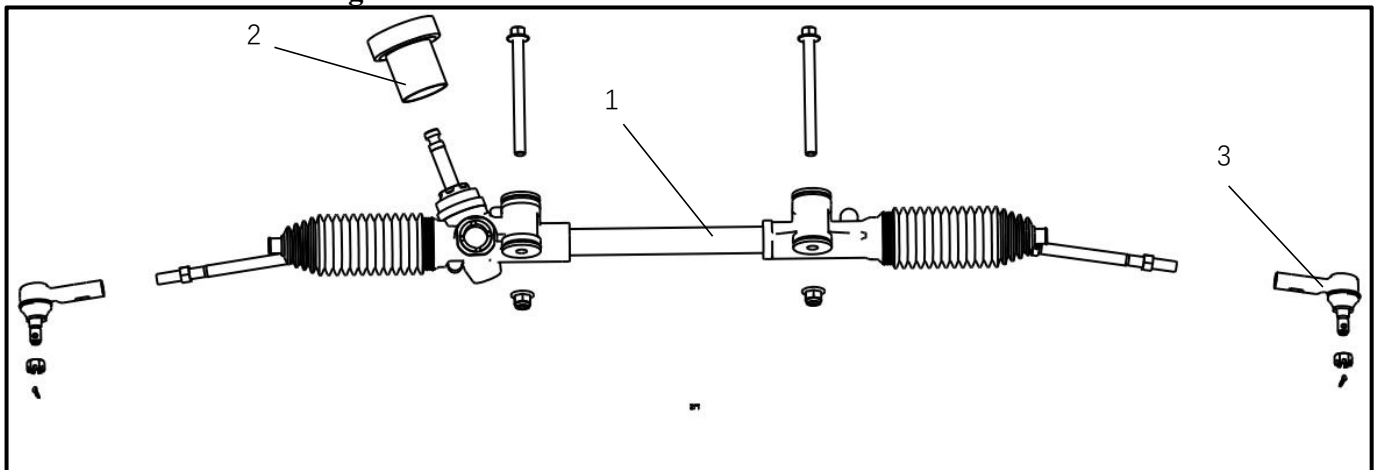
8.3.3.1 Component location



1. Electric steering column assembly

8.3.4 Breakdown drawing

8.3.4.1 Breakdown drawing

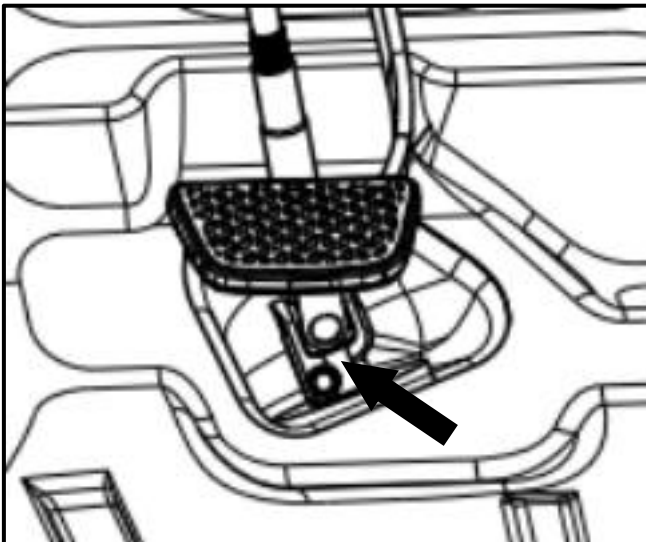


1. Steering gear body
2. Dust cover assembly

3. Steering gear outer tie rod assembly

8.3.5 Disassembly and installation

8.3.5.1 Disassembly and installation of mechanical steering gear

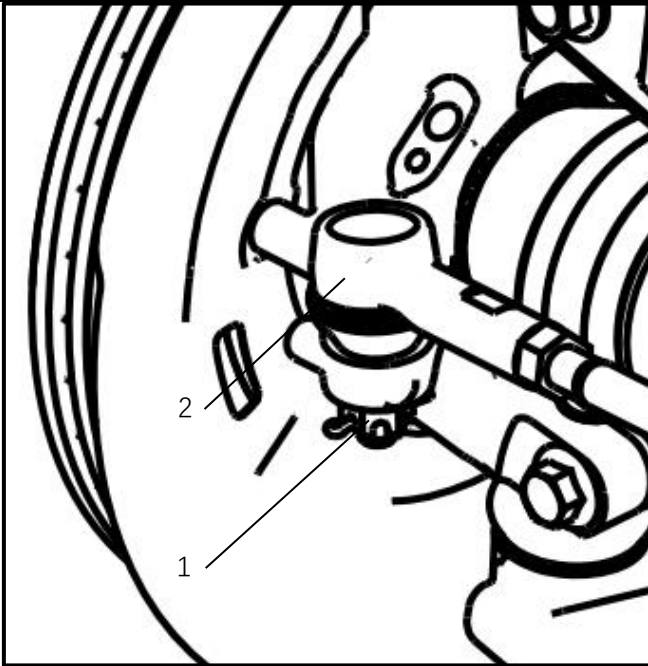


Disassembly process

1. Put the front wheels in the forward position
2. Disengage the steering linkage drive shaft assembly

CAUTION: After making assembly marks, separate the steering linkage drive shaft assembly.

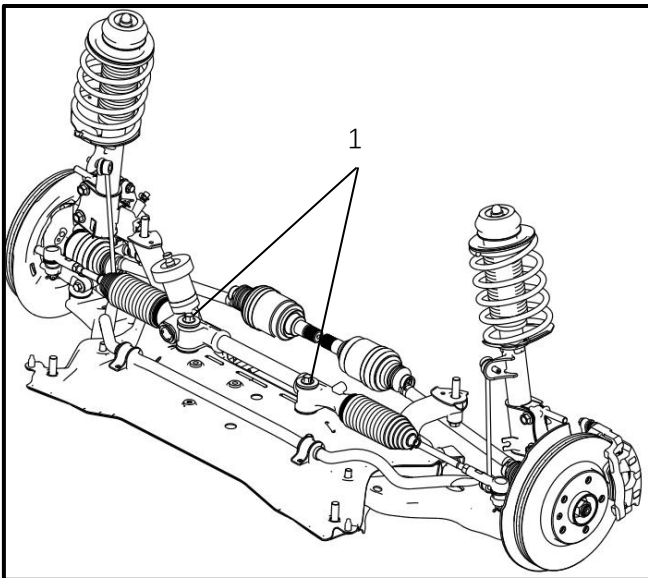
3. Lift the vehicle to a suitable position
4. Remove the underbody guard
5. To disassemble the front wheels; Please refer to 3.4.5.1 Replacement of wheels.



6. Remove the steering gear outer ball head retaining nut 1 and disconnect the steering gear outer ball head assembly 2

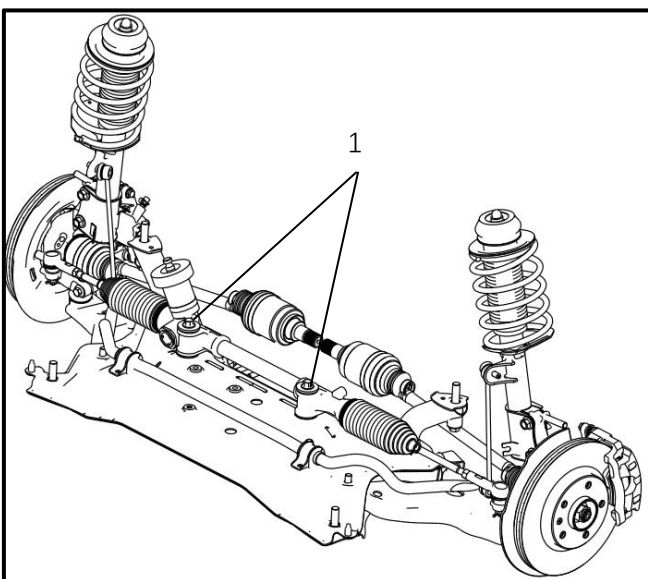
Torque: $50 \pm 5 \text{ N} \cdot \text{m}$

7. Please refer to 3.2.7.6 Replacement of the front subframe assembly to remove the subframe



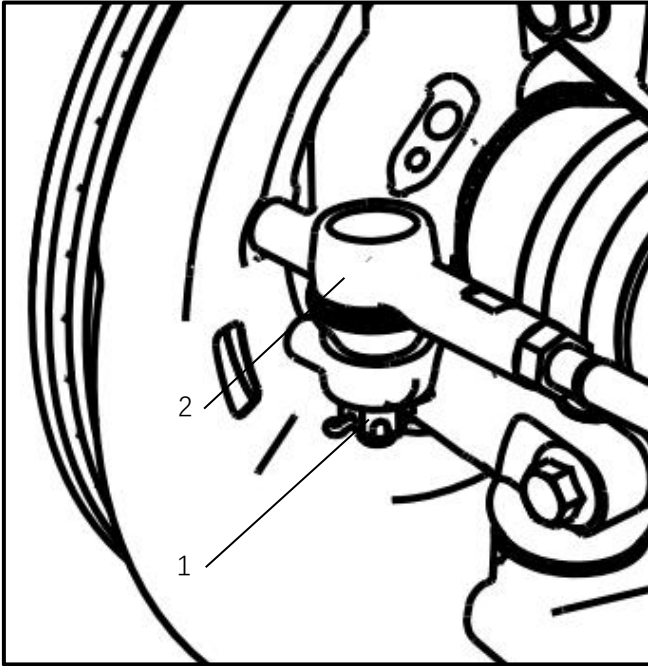
8. Remove the steering gear after removing the steering gear retaining nut 1

Torque: $110 \pm 10 \text{ N} \cdot \text{m}$

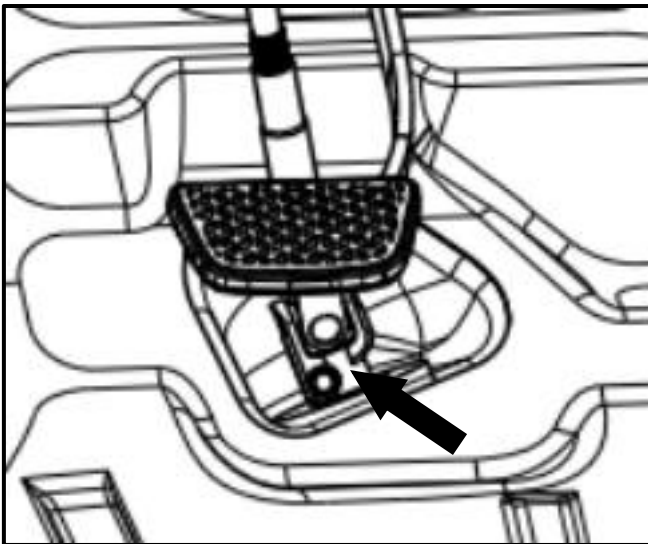


Installation process

1. Assemble the steering gear to the front subframe and tighten the bolts 1



2. Lift the vehicle to a suitable position
3. Assemble the steering gear outer ball head 2 to the steering knuckle, and tighten the nut 1



4. Assemble the steering linkage drive shaft assembly.

9 Heating, Ventilation and Air Conditioning (HVAC) system

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9.1 Warnings and precautions

9.1.1 Warnings and precautions

9.1.1.1 Warnings and precautions

Warning!

Refrigerant-related operations should be carried out in a well-ventilated environment and inhalation of air conditioning refrigerant R-134a and lubricant vapors or mist should be avoided. Contact with them can irritate the eyes, nose and throat. Work should be done in a well-ventilated area. At the time of removing R-134a from the air conditioning system,

certified maintenance equipment (R-134a regeneration equipment) that meets the requirements should be used. In the event of an unintentional discharge from the system, the work area must be ventilated before proceeding with repairs. Contact the refrigerant and lubricant manufacturer for additional information on health and safety.

Warning!

The negative terminal of the battery must be disconnected and the DC bus connector on the charger side must be disconnected before servicing the electrical system. Welding or steam cleaning operations are prohibited on or near vehicles with air conditioning lines or components.

Precautions about air conditioning refrigerant

Warning!

1. Frostbite may be caused by skin contact.
2. The instructions provided by the manufacturer must be observed. Wear appropriate goggles and protective gloves for work.

Air conditioning refrigerant - operations to be avoided

Warning!

1. The refrigerant should not be stored in sunlight or areas with heat sources.
2. When filling, do not keep the refrigerant bottles in an upright position. The valves should be kept facing downwards.
3. The refrigerant bottles should not be exposed to frost or snow.
4. The refrigerant bottles should not fall off.
5. Under no circumstances should the refrigerant be vented directly to the atmosphere.
6. Do not mix refrigerants, e.g. R134a (tetrafluoroethane) with R12 (dichlorodifluoromethane).

Precautions about air conditioning system lubricants

Warning!

It is required to use the type and grade of lubricant specified by the compressor manufacturer. Different types and grades of lubricant must not be mixed; otherwise, the compressor will be damaged. Lubricants are highly susceptible to water absorption, and the time the lubricant is in contact with air should be minimized.

Warning!

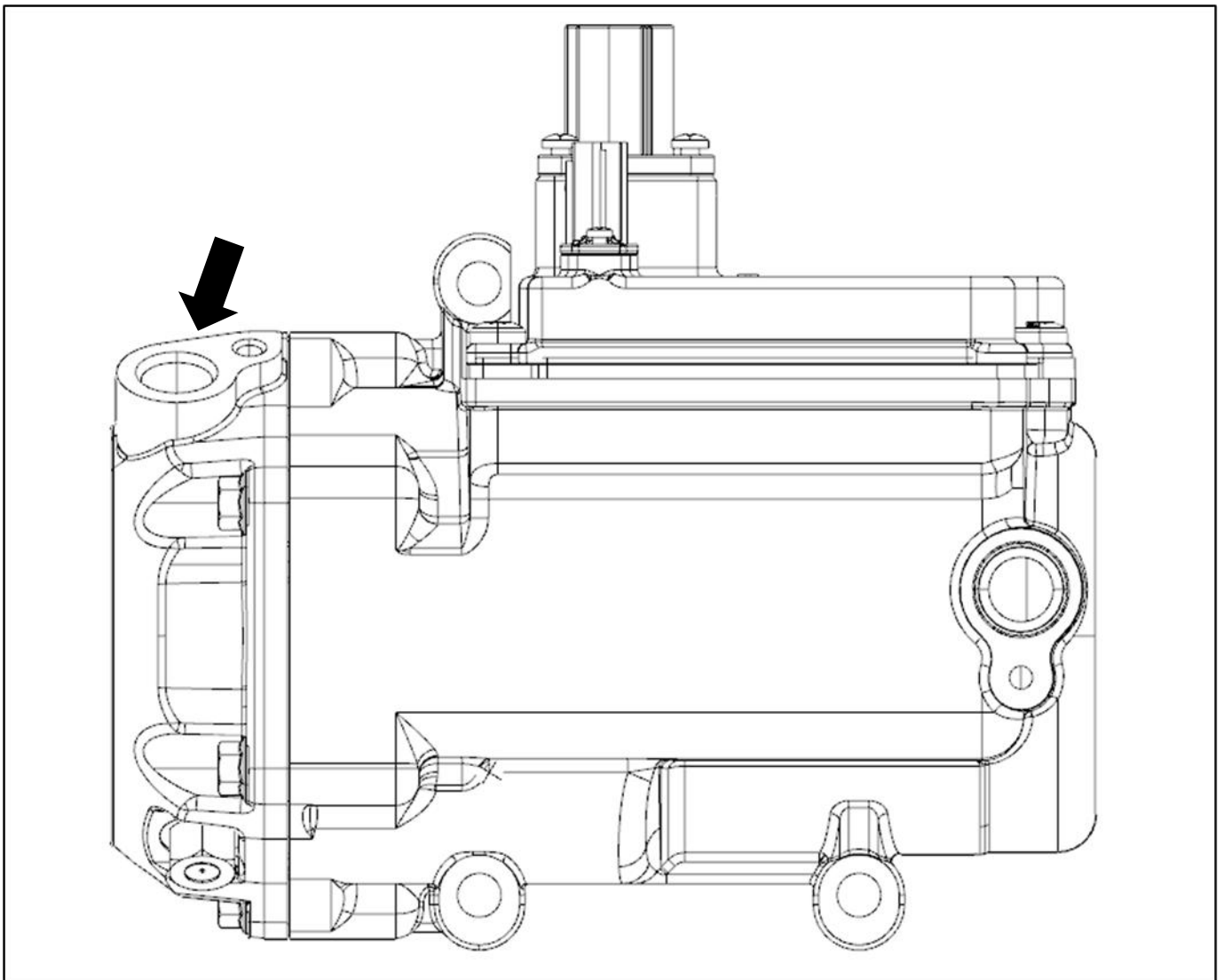
It is prohibited to use water, corrosive solvents or flammable and explosive solvents to clean the air conditioning system, and it is recommended to use cleaning agents such as R-141b and heptane.

Please strictly follow the prescribed filling amount. Note that the lubricant hinders heat exchange, and excessive filling will seriously reduce the effectiveness of air conditioning. Generally, there is no need to add lubricant, as the lubricant has been filled by the compressor manufacturer.

Lubricants are highly susceptible to water absorption, and the time the lubricant is in contact with air should be minimized.

The quality of the lubricant in the pipeline should be checked before refilling. If serious blackening or carbon particle precipitation is found, the whole air conditioning system should be thoroughly cleaned and all lubricants should be replaced.

The lubricant should be filled from the compressor discharge port before evacuating (see below).



9.2 Air conditioning system

9.2.1 Specifications

9.2.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Electric compressor fixing bolt	Q218B08110F62	22±2
Compressor bracket fixing bolt	Q1851045TF61	65±5
Compressor bracket fixing bolt	Q1851085TF61	65±5
Compressor bracket retaining nut	Q32310T13F61	65±5
Air conditioning unit fixing gasket	Q402B06F36	Just tighten it
Air conditioning unit fixing bolt	Q32006F36	5±1
Air conditioning pipeline adapter fixing bolt	Q1840640F36	9±2
Air conditioning pipeline clamp fixing bolt	Q1840616F36	9±2
Condenser and air conditioning pipeline adapter fixing bolt	Q1840620F36	9±2
Air conditioning pipeline pressure plate fixing bolt	Q1840625F36	9±2
Outdoor temperature sensor fixing screw	Q220B4213F36	Just tighten it

9.2.1.2 Refrigeration system parameters

Parts	Project	parameter
Compressor	Type	Electric scroll compressor
	Model	27CC
	Electromagnetic clutch power consumption (W)	None
	High voltage range (V)	220-420
	Low voltage range (V)	9~16
	Insulation resistance (Ω)	> 100M
	Low voltage module current (A)	≤1
	High voltage module current (A)	≤20
	Speed range (rpm)	1000~5000
	Pressure relief valve pressure (MPa)	3.5~4.1
Air blower	Maximum air volume (m ³ /h)	520
	Fan color	White
	Direction of rotation	CCW
	Load speed (r/min)	3500±200
	Maximum power (W)	210
	Operating temperature range (°C)	-40~75
Heater	Heating temperature range (°C)	-40~95
	High voltage module voltage range V	220-420
	Heating power (W)	2500±5%
Evaporator core	Type	Parallel flow
	Material	4045/3003
	Cooling capacity (W)	3.5
	Air flow rate (m ³ /h)	360
	Inlet air temperature (°C)	27±0.5
	Expansion valve inlet subcooling degree (°C)	5±1
	Size L×W×T (mm)	195×195×40
Condenser core	Type	Parallel flow
	Inlet pressure (MPa)	1.47±1
	Superheat degree (°C)	25±1
	Subcooling degree (°C)	5±1
	Inlet temperature (°C)	35±0.5
	Inlet wind speed (m/s)	4.5±0.1
	Heat exchange capacity (kw)	8
Refrigerant	Type	R134a(HFC-134a)
	Filling volume (g)	370±10

9.2.1.3 System capacity

Mode	parameter	Efficacy
HVAC cooling	HVAC modes: full cooling/face blowing/internal circulation	Cooling capacity $\geq 3.5\text{kW}$
	Air dry bulb temperature $27\pm 1^\circ\text{C}$	
	Air wet bulb humidity 19.5°C	
	Expansion valve inlet pressure 1.55MPa	
	Expansion valve outlet pressure 0.2MPa	
	Blower voltage 13.5V	
HVAC heating	Air dry bulb temperature 20°C	Heating capacity $\geq 2.5\text{kW}$
	Air wet bulb humidity 15°C	
	Blower voltage 13.5V	
	Control status of the assembly air door: maximum heating, foot blowing	

9.2.2 Description and operation

1. Compressor

The compressor type is electric scroll type. The compressor controller is integrated with the compressor, through the rotation of the motor itself to drive the scroll disk compression, complete the refrigerant inhalation and discharge, to provide power for the refrigeration cycle.

2. Condenser and receiver-drier

The high-temperature and high-pressure refrigerant vapor from the air conditioning compressor flows into the condenser. The condenser is made of aluminum tubes and cooling fins that can perform rapid heat transfer. The cooling fins condense high-temperature and high-pressure refrigerant vapor into a medium temperature and high-pressure liquid through heat dissipation.

The receiver-drier is located on the right side of the condenser and is welded to the condenser. The internal structure of the receiver-drier is designed to ensure that the gas-liquid refrigerant mixture of medium temperature and high pressure enters, while the liquid refrigerant coming out of the receiver-drier is of medium temperature and high pressure. The receiver-drier has desiccant inside that adsorbs moisture from the refrigeration system, and the desiccant cannot be reused. When leakage occurs due to perforation, damage to the sealing area, or when outside air has been in the system for a significant period, the receiver-drier core cannot be repaired but only replaced.

3. Indoor/outdoor temperature sensors

Outdoor and indoor temperature sensors affect the automatic control of the air temperature in the vehicle: these sensors are temperature-sensitive thermal elements, and the resistance of the sensor corresponds inversely to the temperature.

Outside temperature sensors are located in the front grille area under the front bumper of the vehicle and is used by the air conditioning control module to obtain information about the temperature of the surrounding air. With such information, the air conditioning control module displays the outside temperature on the instrument.

4. Indoor air conditioning unit

The indoor air conditioning unit is located in the instrument board and consists of a brushless blower motor, heater core,

evaporator, expansion valve, cold and warm temperature and air direction control motors, as well as a variety of air deflector dampers and ventilation ducts.

a. Blower motor

Caution

Do not use the fan wheel of the blower motor as a support surface at the time of placing the blower motor, or touch the fan wheel to prevent damage to the fan wheel blades.

The blower consists of a permanent magnet type motor and a squirrel cage type fan. The change in rotational speed of a blower running at different speeds depends on the blower duty cycle.

b. Heater

The heater is the main component of the heater system. The heater core is located in the air conditioning unit and is a high-pressure component. When the heater is working, the air near the heater will be heated up quickly, and the hot air will be blown into the passenger compartment through the blower to raise the temperature of the passenger compartment.

c. Evaporator and expansion valve

The evaporator is located on the left side of the air conditioning unit. When the air conditioning unit is installed in the vehicle, it needs to be disassembled to remove and install the evaporator and expansion valve. The refrigerant line to the evaporator must be completely drained during disassembly. At the time of servicing, the evaporator with separate refrigerant lines must already be installed. The expansion valve is connected to the evaporator and installed at one end of the evaporator, which is located at the inlet of the evaporator. One side of the expansion valve is connected to the inlet and exhaust pipes of the air-conditioning compressor, and the other side is connected to the inlet and exhaust pipes of the evaporator, which throttles high-pressure liquid coolant within the liquid pipeline, so that the coolant flows to the evaporator as a low-pressure liquid.

The expansion valve has its position changed from large to small according to the lower air-conditioning pressure limit and the upper air-conditioning pressure limit. The evaporator cools and dehumidifies the air before it enters the passenger compartment. The coolant in the evaporator evaporates to absorb heat from the airflow through the evaporator. When the heat in 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 flowing out.

The evaporator is equipped with a temperature sensor to prevent it from freezing. This sensor measures the surface temperature of the radiating fin on the evaporator. If the temperature falls below approximately 0 °C, the compressor will not continue to work. If this temperature increases above 6 °C, the compressor starts working again.

d. Coolant R-134a and lubricating oil

The coolant can absorb heat, carry heat, and release heat in the air-conditioning system. R-134a coolant is used in the vehicle, which is a non-toxic, flame-retardant, transparent, colorless liquefied gas.

Prior to performing repair operations that require the opening of pipelines or components of the cooling system, it is necessary to refer to the instructions for disposal of coolant pipelines and pipe joints and for maintaining chemical stability. The R-134a system is filled with the special lubricating oil, POE synthetic coolant oil, which is easily absorbed by water

and needs to be stored in an airtight container. Only POE synthetic coolant lubricating oil should be used in the internal circulation of the R-134a air-conditioning system. Only POE synthetic coolant lubricating oil should be used for mounting threads and O-rings. The use of other lubricating oils may cause compressor or attachment fault.

Caution

It is required to use the type and grade of lubricant specified by the compressor manufacturer. Different types and grades of lubricant must not be mixed; otherwise, the compressor will be damaged. Lubricants are highly susceptible to water absorption, and the time the lubricant is in contact with air should be minimized.

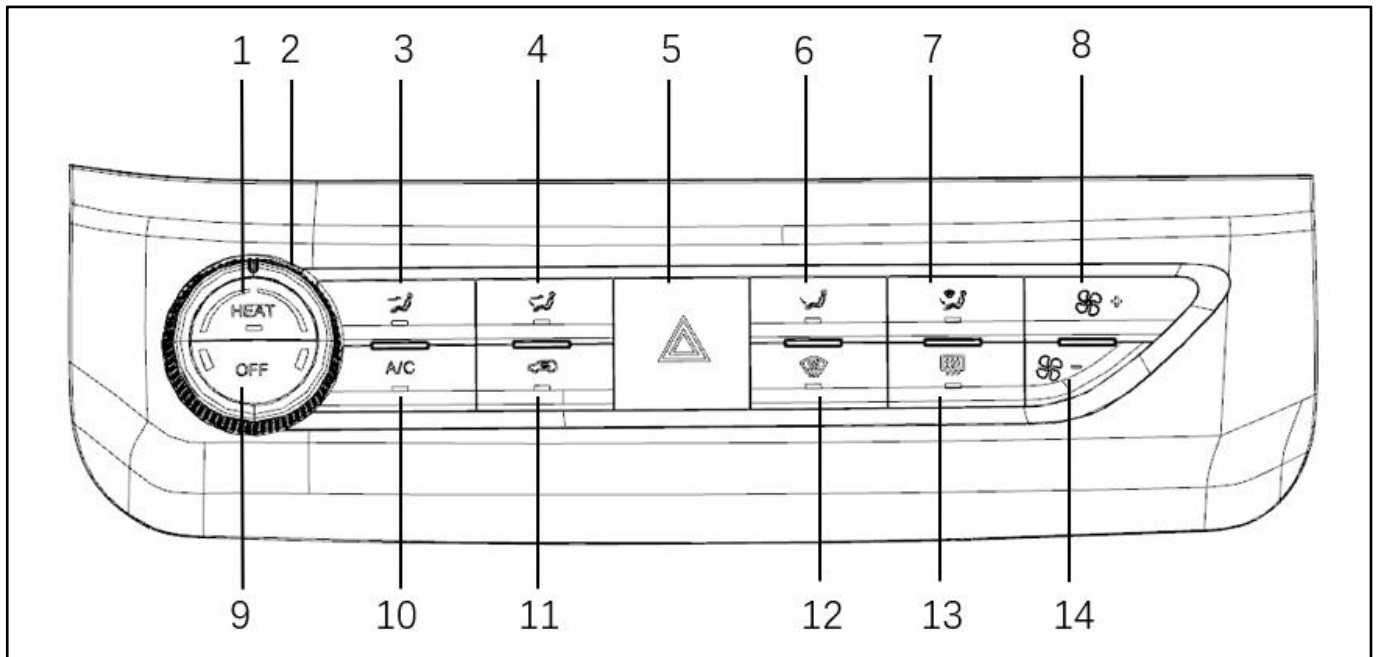
e. Air-conditioning high-pressure tube, air-conditioning low-pressure tube, air-conditioning pressure switch

The air-conditioning high-pressure tube and low-pressure tube (air-conditioning hard tube and/or hose) are used in the vehicle to connect the air-conditioning cooling system into a closed system, in which the coolant and lubricating oil flow to complete the work cycle process of the coolant. The air-conditioning hard tube consists of an aluminum tube and corresponding joints, and the air-conditioning hose consists of a rubber hose and corresponding joints.

Air-conditioning pressure switch: According to the value of coolant pressure in air-conditioning cooling cycle, the pressure switch is opened or closed to transmit the pressure signal of the air-conditioning system and realize the pressure protection for the air-conditioning system.

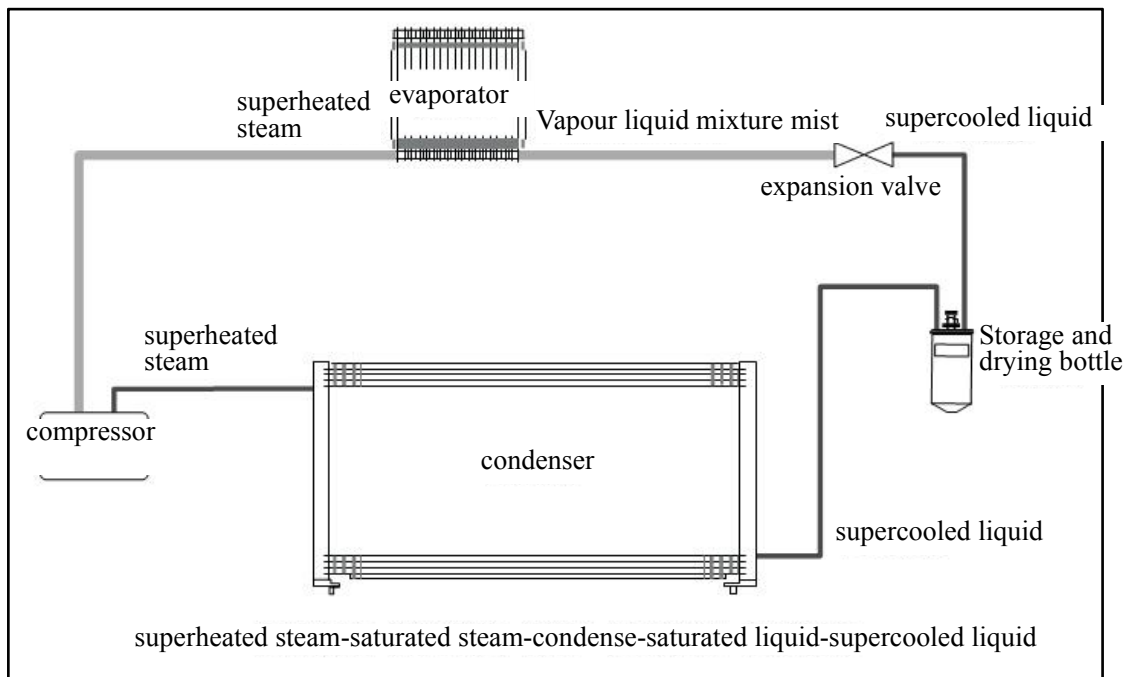
9.2.3 System operating principle

9.2.3.1 Description of air-conditioning control panel functions



- | | |
|-----------------------------------------|-------------------------------------------|
| 1. HEAT button | 8. Air volume increasing key |
| 2. Temperature Adjustment Knob | 9. Air-conditioning off key |
| 3. Face blowing mode key | 10. AC key |
| 4. Face blowing & foot blowing mode key | 11. Internal and external circulation key |
| 5. Emergency double flasher key | 12. Front windshield defrosting key |
| 6. Foot blowing mode key | 13. Heated rear windshield glass key |
| 7. Foot blowing & defrosting key | 14. Air volume reduction key |

9.2.3.2 Operating principle of cooling system



The compressor is driven by high-voltage electricity to draw gaseous coolant from the evaporator and compress it.

When the temperature of the coolant rises to the range between 83 and 110 °C, the pressure reaches 1470 kPa.

The high-pressure superheated coolant is transferred to the condenser. At this time, the heat within the coolant is carried away by the air transported to the condenser radiating fin. Because of the heat loss, the coolant is cooled, with the temperature dropping to 53-70 °C.

Under high pressure, the coolant is transferred to the liquid storage dryer which acts as a storage intermediary and filters out all water entrapped in the coolant.

The dried coolant is transported to the inlet of the expansion valve, which throttles and depressurizes the flow of the coolant into the evaporator, and the mist coolant from the expansion valve has a pressure of 200 kPa, and the temperature dropping 0-2 °C.

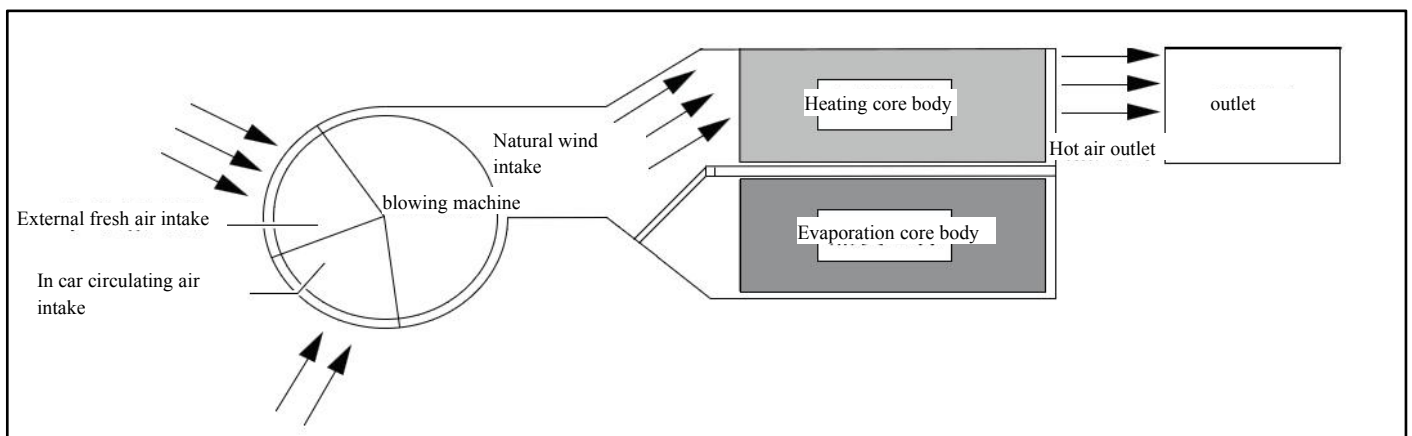
The mist coolant is heated and evaporated in the evaporator. Finally, the blower blows the air to each outlet through the surface of the evaporator box. As the evaporation of the coolant inside the evaporator absorbs heat from the air that passes through the surface of the evaporator box, the temperature of the outlet is much lower than the ambient temperature. The flow of the evaporated low-pressure coolant flows from the evaporator box to the expansion valve. At this time, the coolant has a pressure of 200 kPa, and its temperature rises to 5-8 °C.

Finally, the low-pressure refrigerant flows back to the compressor after another compression, so that the air-conditioning refrigerant completes an operating cycle.

9.2.3.3 Operating principle of heating system

The heating system consists of a blower and an electric heater (PTC).

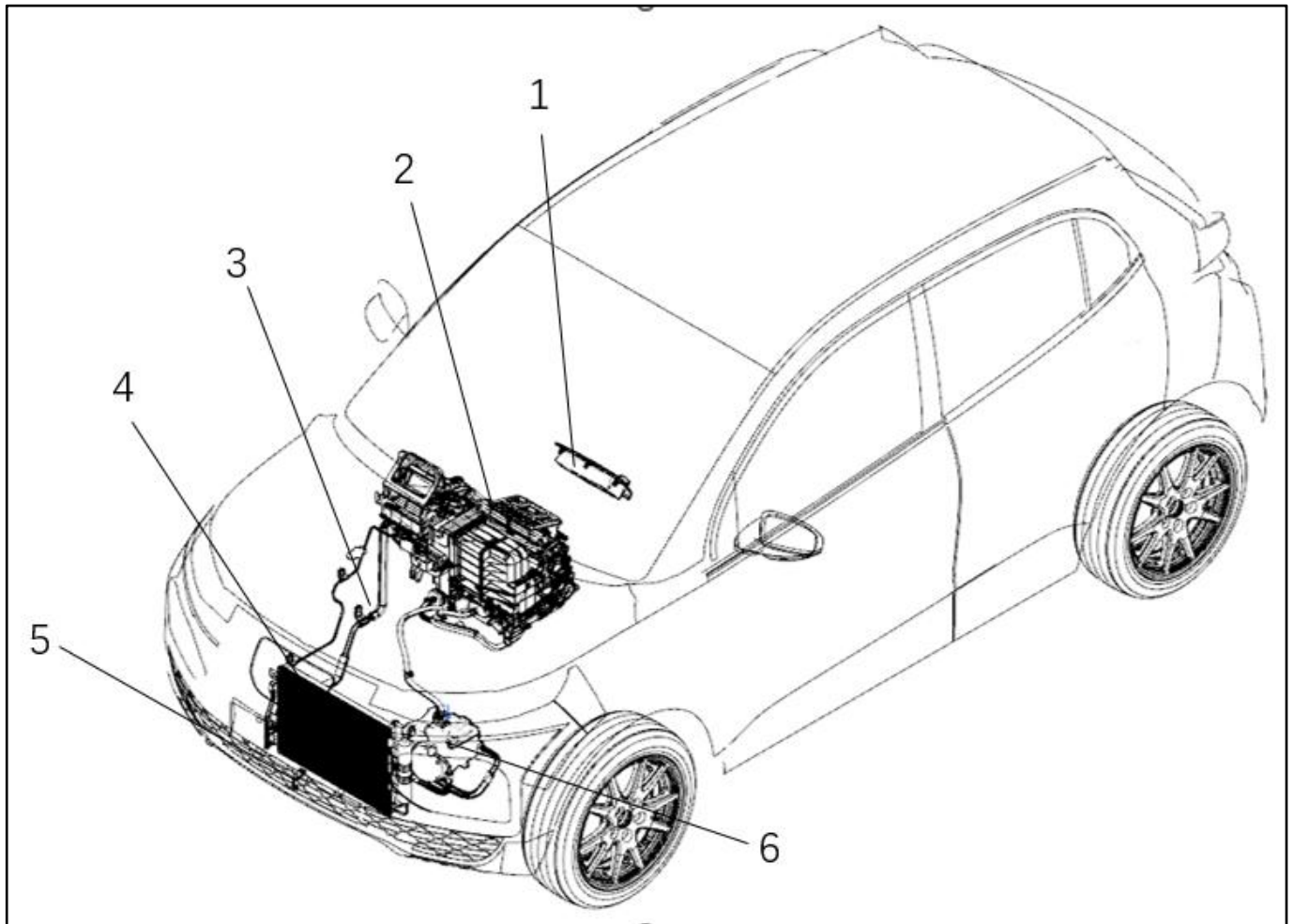
When the air-conditioning system is in the heating mode, the heater rapidly heats the air in the vicinity of the heater under the action of high-voltage electricity, and some or all of the air flow is bypassed to the heater core under the action of the blower to produce heat transfer. Any air that does not have to be heated will be mixed with the heated air before entering



the passenger compartment to obtain a correspondingly well-mixed air with suitable temperature.

9.2.4 Component location

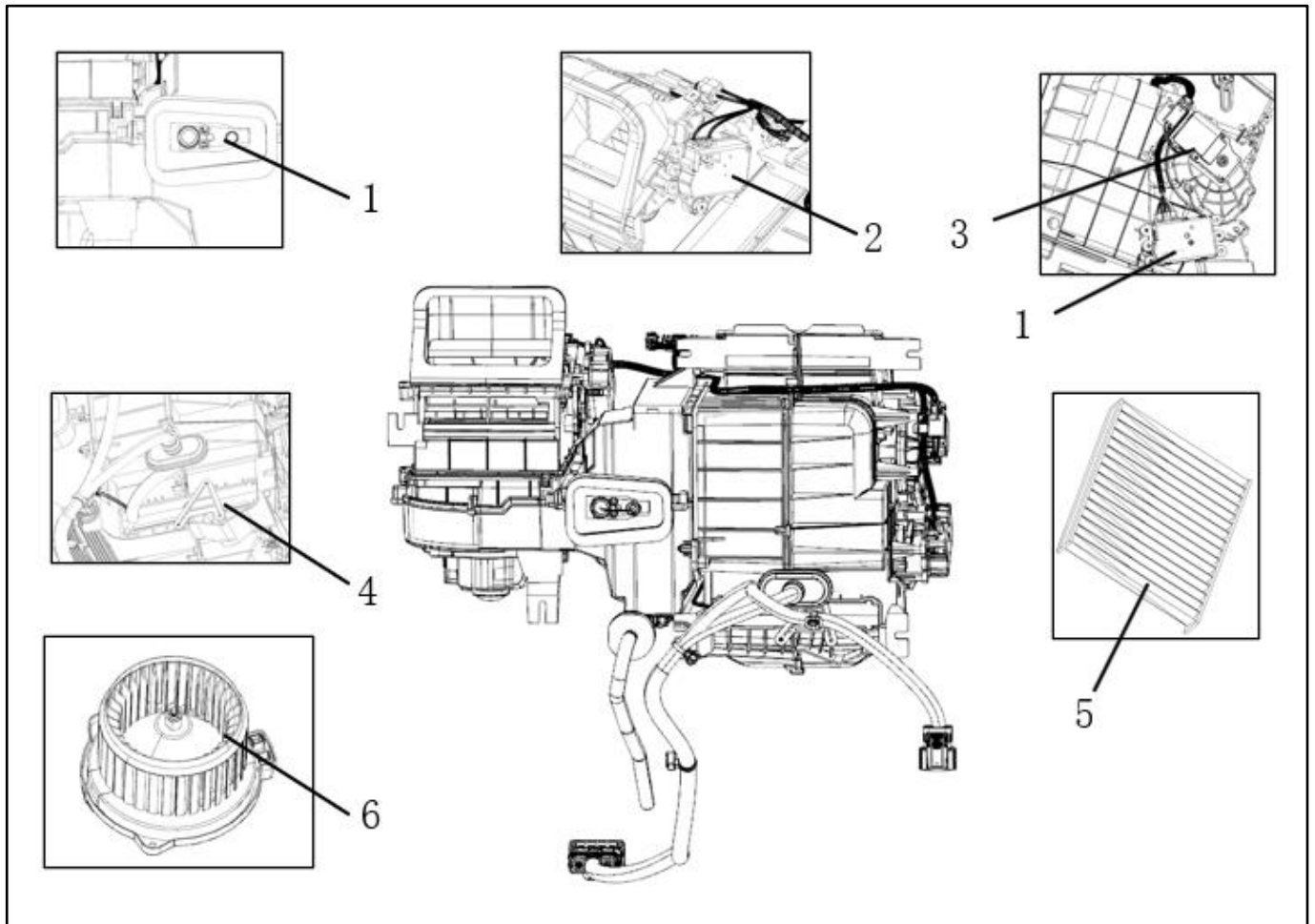
9.2.4.1 General layout diagram of components in air-conditioning system



- 1. Air-conditioning control panel
- 2. Interior air-conditioning unit
- 3. Air-conditioning pipeline

- 4. Condenser
- 5. External temperature sensor
- 6. Electric compressor

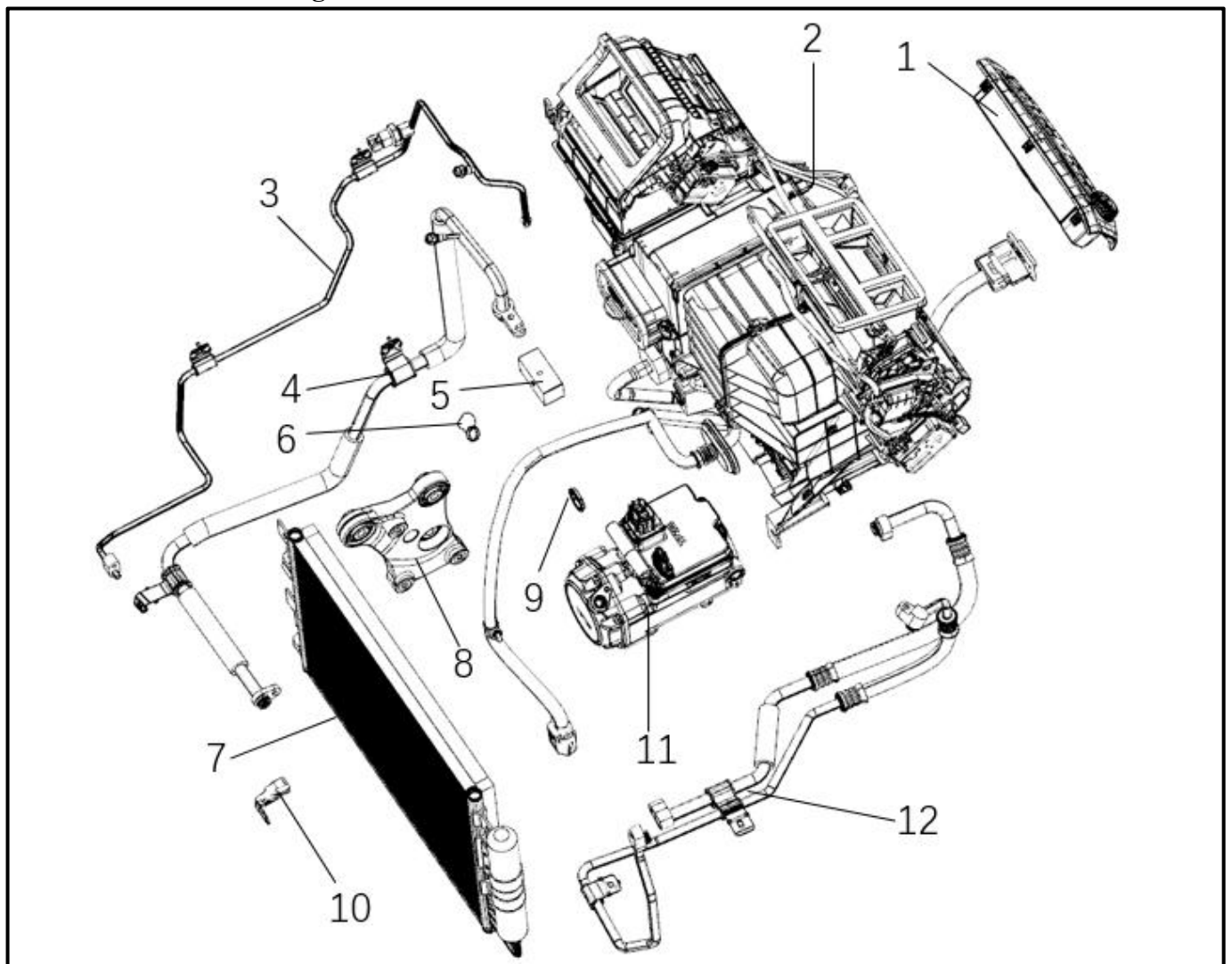
9.2.4.2 Structural location diagram of air-conditioning main unit assembly



- | | |
|-------------------------------------------------------|----------------------------|
| 1. Expansion valve | 4. Heating PTC |
| 2. Internal and external circulation regulating motor | 5. Air-conditioning filter |
| 3. Air outlet mode regulating motor | 6. Air blower |

9.2.5 Breakdown drawing

9.2.5.1 Breakdown drawing

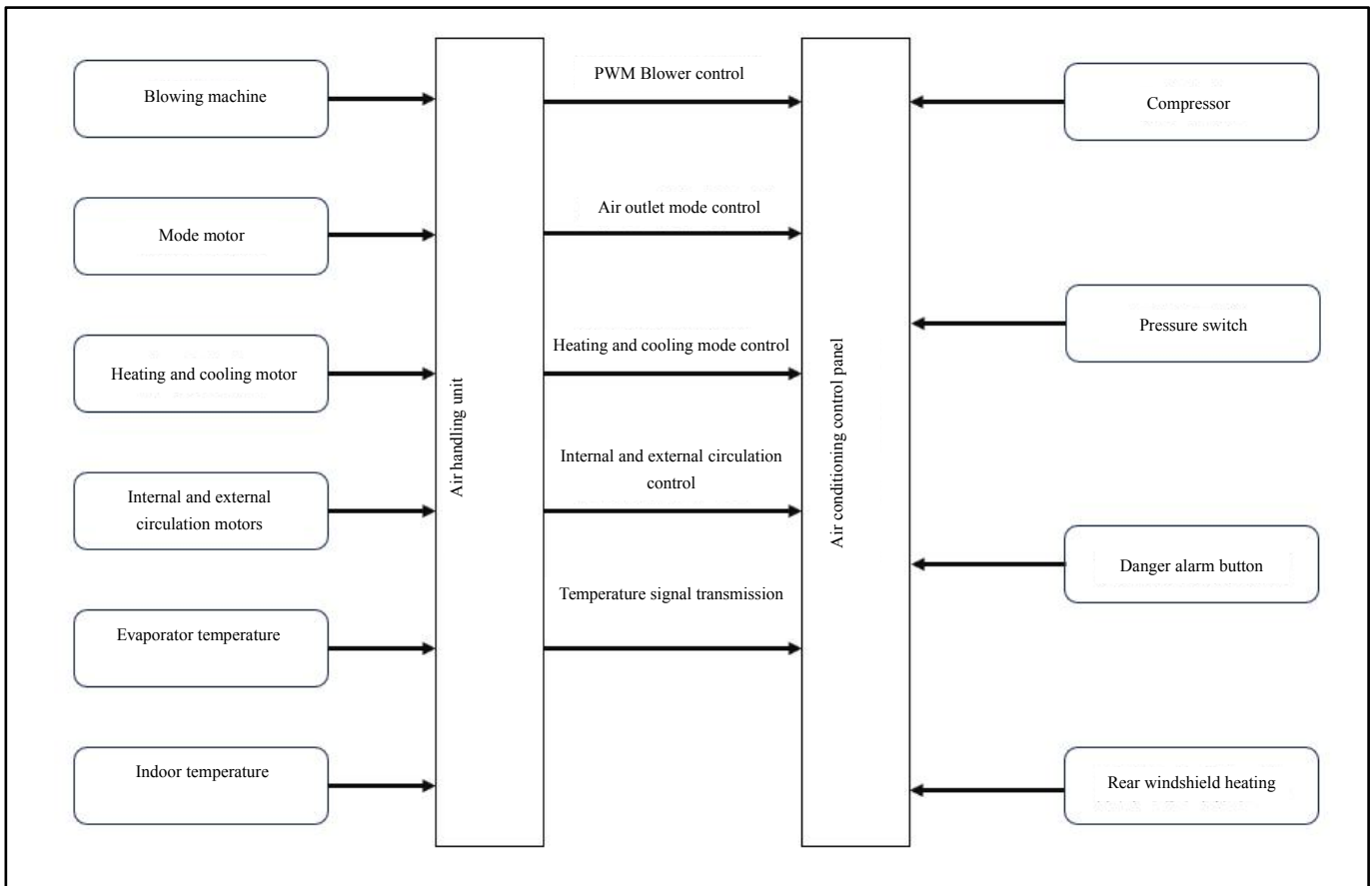


- 1. Air-conditioning control panel
- 2. Interior air-conditioning unit
- 3. High-pressure fine tube assembly
- 4. Air-conditioning low-pressure tube assembly
- 5. Air-conditioning pipe adapter
- 6. Drainage pipe fixed clip

- 7. Condenser
- 8. Compressor bracket
- 9. Sheath for wire
- 10. Outdoor Temperature Sensor
- 11. Compressor
- 12. Air-conditioning high- and low-pressure tube assemblies

9.2.6 Electrical block diagram

9.2.6.1 Electrical block diagram



9.2.7 Diagnostic information and steps

9.2.7.1 Diagnostic information

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

9.2.7.2 Visual inspection

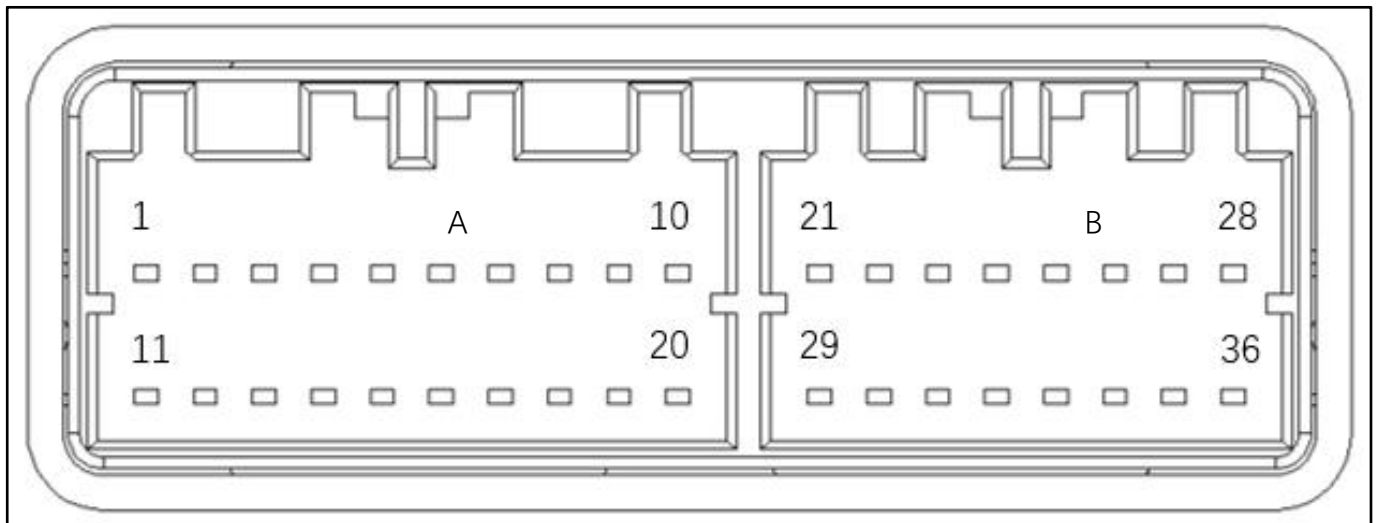
Check for aftermarket additions that may affect the performance of the air-conditioning system.

Check system components and wires easily accessible or visible for obvious damage or conditions that could cause a fault.

Check the air-conditioning system pipelines that are easily visible or can be seen for the leakage of the air-conditioning system.

9.2.7.3 List of air-conditioning system terminals

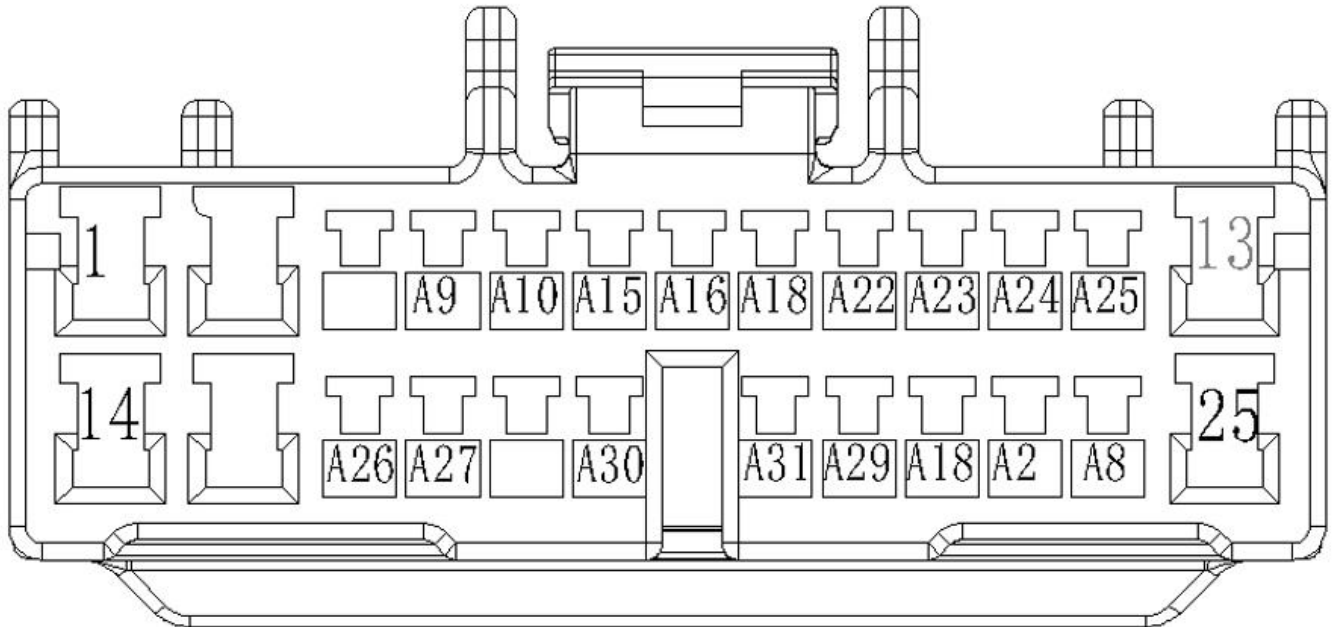
1. Electrical end connector for air-conditioning control panel



Terminal number	Color of wire	Terminal description
1	/	Power supply ground terminal
2	/	Actuator feedback power supply (+5V)
3	/	Backlight power supply (+12V)
4	/	High- and low-voltage signals
5	/	NC
6	/	Blower control ground terminal
7	/	NC
8	/	Speed-regulating module feedback
9	/	Blower speed-regulating signal
10	/	Evaporator temperature sensor
11	/	Medium-voltage signal
12	/	NC
13	/	NC
14	/	NC
15	/	Indoor Temperature Sensor
16	/	PTC heater temperature sensor
17	/	Rear defrost output signal
18	/	Signal ground terminal
19	/	Outdoor Temperature Sensor
20	/	Power supply (+12V)
21	/	NC
22	/	Mode motor+
23	/	Mode motor-
24	/	Heating and cooling motor+
25	/	Heating and cooling motor-
26	/	Internal and external circulation motor+
27	/	Internal and external circulation motor-
28	/	NC
29	/	Temperature control switch signal input
30	/	Mode motor feedback signal
31	/	Heating and cooling motor feedback signal
32	/	Hazard warning signal input

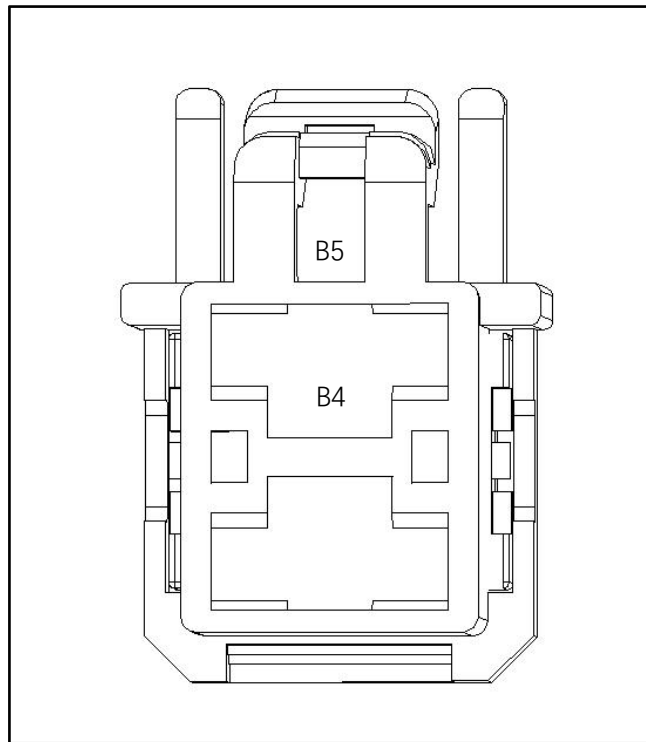
Terminal number	Color of wire	Terminal description
1	/	Power supply ground terminal
33	/	Hazard warning signal output
34	/	NC
35	/	CANL
36	/	CANH

2. Electrical end connector for air-conditioning unit



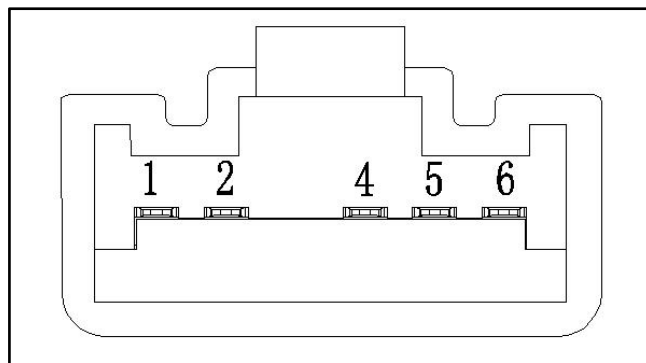
Terminal number	Color of wire	Terminal description
A9	/	Blower speed-regulating signal
A10	/	Evaporator temperature sensor
A15	/	Indoor Temperature Sensor
A16	/	PTC heater signal sensor
A18		Signal ground terminal
A22		Mode motor+
A23		Mode motor-
A24		Heating and cooling motor+
A25		Heating and cooling motor-
A26		Internal and external circulation motor+
A27		Internal and external circulation motor-
A29		Temperature control switch input signal
A30		Mode motor feedback signal
A31		Heating and cooling motor feedback signal
A2		Actuator motor power supply (+5V)
A8		Speed-regulating module feedback

3. Electrical end power connector for air-conditioning unit



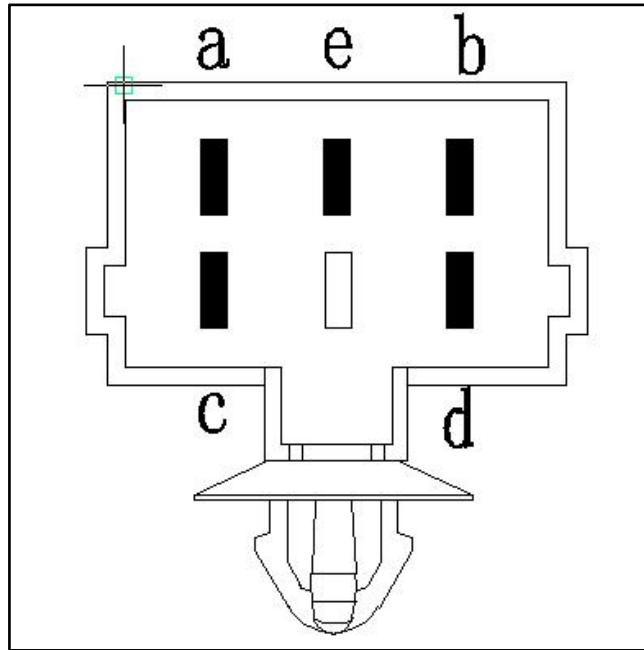
Terminal number	Color of wire	Terminal description
B5	/	Power supply+
B4	/	Power supply-

4. Heating and cooling damper actuator connector



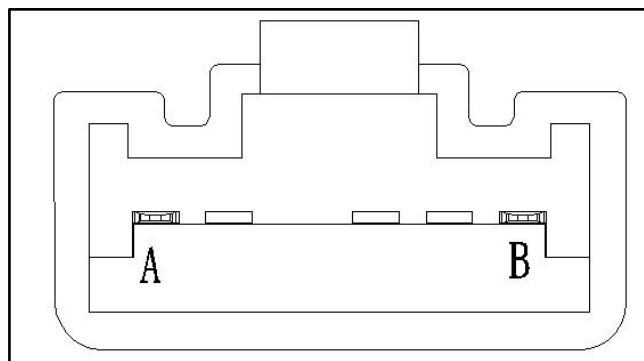
Terminal number	Color of wire	Terminal description
1	/	Stop position fully cooled when driving +
2	/	Feedback voltage
4	/	Stop position full warm when driving +
5	/	GND
6	/	+5V

5. Mode damper actuator connector



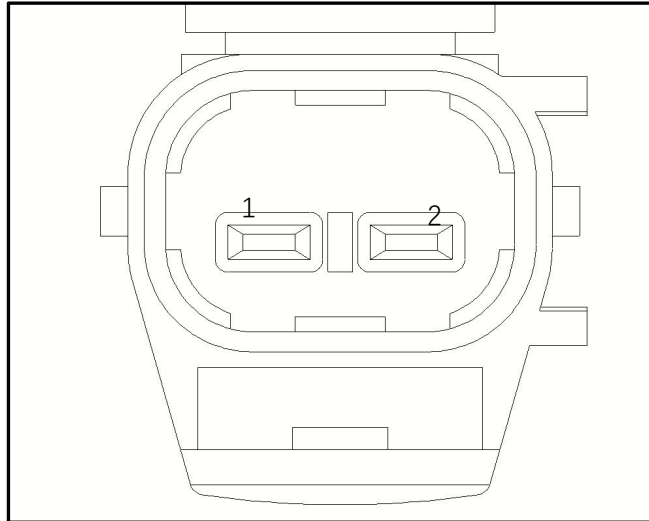
Terminal number	Color of wire	Terminal description
a	/	Actuator power supply +/-
b	/	+5V
c	/	Feedback voltage
d	/	GND
e	/	Actuator power supply +/-

6. Internal and external circulation actuator connector



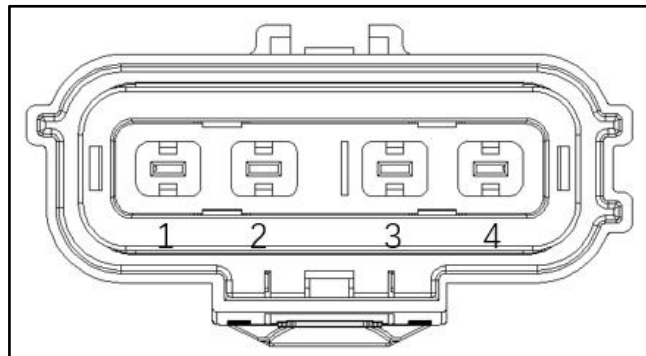
Terminal number	Color of wire	Terminal description
A	/	Actuator power supply +/-
B	/	Actuator power supply +/-

7. Outdoor temperature sensor connector



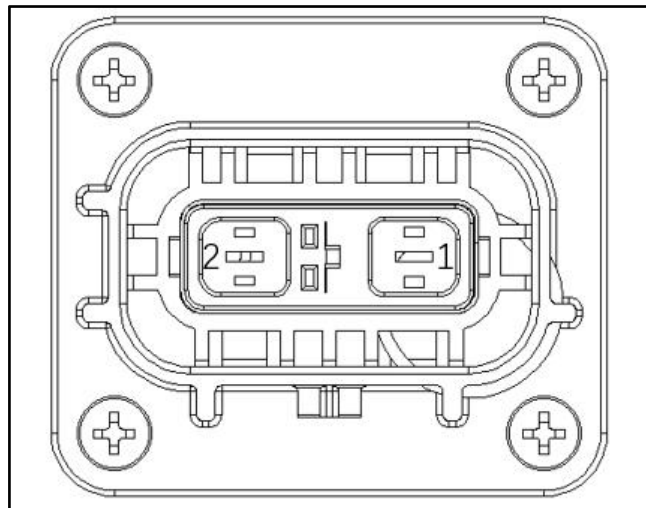
Terminal number	Color of wire	Terminal description
1	/	Power supply
2	/	GND

8. High-voltage connector for battery wiring harness end of PTC heater



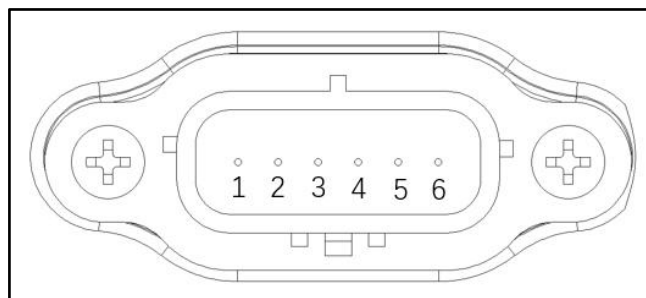
Terminal number	Color of wire	Terminal description
1	/	PTC heater power supply +
2	/	PTC heater power supply -
3	/	Power supply at compressor end +
4	/	Power supply at compressor end -

9. High-voltage connector for electrical end of compressor



Terminal number	Color of wire	Terminal description
1	/	Power supply+
2	/	Power supply-

10. Low-voltage connector for electrical end of compressor



Terminal number	Color of wire	Terminal description
1	/	CANL
2	/	CANH
3	/	Power supply-
4	/	NC
5	/	NC
6	/	Power supply+

9.2.7.4 Recovery and filling of air-conditioning coolant

The operating efficiency and service life of the air-conditioning (A/C) system depends on the chemical stability of the cooling system. When the cooling system is contaminated with foreign matters (e.g., dust, air, or moisture), the contaminants can alter the stability of the coolant and RFL46-XC coolant oil. Moreover, it also affects the relationship between pressure and temperature, reducing the working efficiency and potentially leading to internal corrosion and abnormal wear of elements. In order to ensure the chemical stability of the system, please operate as follows:

Before opening the joint, wipe off any greasy dirt at and around the joint to reduce the possibility of greasy dirt entering the system.

Immediately after the joint is disconnected, seal both ends of the joint with caps, plugs or tape to prevent the ingress of

greasy dirt, foreign matters and moisture.

Keep all tools clean and dry, including the manifold pressure gauge assembly and all replacement parts.

Use clean and dry delivery devices and containers to add RFL46-XC coolant oil, so as to ensure that the coolant oil will not be affected by the moisture as much as possible.

Operate the air-conditioning system with the interior exposed to air for as short a time as possible.

The interior of the air-conditioning system must be re-vacuumed and refilled after exposure 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 take place. Before unsealing, all parts should be at room temperature to prevent moisture in the air from condensing on the parts and getting inside the system. All parts should be resealed as soon as possible.

Procedures for venting, lubricating oil filling, draining and filling of air-conditioning system

Warning!

Please refer to "Warnings about inhalation of R-134a" in "Warnings and precautions". Additional health and safety information is available from coolant and lubricating oil manufacturers.

Warning!

Please refer to "Warnings about goggles and gloves" in "Warnings and precautions".

The filling device can complete the venting, draining and refilling procedures of the air-conditioning system in a single connection. The coolant should be filtered during recovery and draining to ensure that the coolant filled to the air-conditioning system is clean and dry.

1. It is prohibited to use an R-12 filling device to fill an R-134a system. The coolant and coolant oil of the two systems are not compatible, which should never be mixed, even in small quantities. The mixing of the residual coolant can damage the equipment.
2. It is prohibited to use reducer joints to ensure airtightness within the system.

Installation and maintenance of filling device

There are many types of filling devices. All filling devices perform a variety of tasks such as the venting, coolant recovery, system draining, addition of coolant oil in a specified amount and refilling of coolant in a specified amount of the air-conditioning system. Please refer to the instruction manual of the filling device for initial installation procedures and maintenance procedures.



Functions of control panel

The operator can control and monitor the operation process with control buttons and indicator lights on the filling device. Please refer to the instruction manual of the filling device for details. The manual should include the following:

1. Main power switch: The main power switch supplies power to the control panel.
2. Display screen: The display screen shows the programmed time required for vacuumizing and the weight of coolant to be refilled. Please refer to the manufacturer's instruction manual for detailed programming information.
3. Manifold pressure gauge on the low pressure side: This gauge displays the pressure on the low pressure side of the system.
4. Manifold pressure gauge on the high pressure side: This gauge displays the pressure on the high pressure side of the system.
5. Control panel: It includes control knobs that control various operating functions.
6. Valve on the low pressure side: This valve is used to connect the low pressure side of the air-conditioning system to the filling device.
7. Humidity indicator light: This indicator light shows whether the coolant is wet.
8. Valve on the high pressure side: This valve is used to connect the high pressure side of the air-conditioning system to the filling device.

Coolant recovery

Caution

Only coolant tanks specifically designed for the filling device should be used. The anti-overfill mechanism of the filling device is calibrated specifically for use with this coolant tank. The tank valves for the coolant tank are made specifically for this unit.

Check the pressure gauges on the high pressure side and low pressure side on the control panel of the filling device to ensure pressure in the air-conditioning system. In case of no pressure, there is no recoverable coolant in the system.

Open the valves on the high pressure side and low pressure side.

Open the gas and liquid valves on the coolant tank.

Empty the coolant oil from the oil separator.

Close the drain valve.

Connect the filling device to a suitable power socket.

Turn on the main power switch.

Caution

It is prohibited to mix old coolant oil with new coolant oil. There may be aluminum deposits or other foreign matters mixed in with the old oil. Always use new coolant oil at the time of refilling the air-conditioning system. Properly scrap the coolant oil used.

Caution

Some air-conditioning systems have POE lubricating oil that may be recovered with the coolant. The amount of lubricating oil to be recovered is variable. Since the filling device can separate the lubricating oil from the coolant, the amount of lubricating oil to be recovered can be determined. At the time of refilling the system, an equal amount of lubricating oil should be added. Please refer to the manufacturer's instruction manual for details on how to use the filling device.

1. Start the recovery process. Please refer to the manufacturer's instruction manual for details on how to use the filling device.
2. Wait for 5 min, and then check the pressure gauge on the low pressure side on control panel. If the air-conditioning system maintains a vacuum, the recovery is completed.

Caution

If the control panel indicator light shows that the coolant tank is full and the filling device is turned off during the recovery, an empty tank should be loaded to contain the coolant needed for the subsequent steps. The use of other types of coolant tanks is prohibited.

If the pressure gauge on the low pressure side starts climbing from zero, there is still coolant in the system.

Recover the remaining coolant. Repeat this step until the system can keep a vacuum for 3 min.

Drain

The coolant tank of the filling device must contain a sufficient amount of R-134a coolant for filling. Check the amount of coolant in the tank. If the amount of coolant is less than 6 kg, new coolant should be added to the coolant tank. Please refer to the instruction manual of the filling device for details on how to add coolant.

1. Check whether hoses on the high pressure side and low pressure side are connected to the air-conditioning system by opening valves on the high pressure side and low pressure side of the filling device control panel.
2. Open the gas and liquid valves on the coolant tank.

Caution

Please refer to the manufacturer's instruction manual for details on how to use the filling device. The system must be drained before refilling with new or reclaimed coolant.

3. Start the vacuum pump and begin the drain procedure. In the recovery process, non-condensable gases (mostly air) will be automatically removed from the tank. Then you will hear a pressure relief sound.

Caution

Change the vacuum pump oil frequently. Please refer to the manufacturer's instruction manual for details on how to use the filling device.

4. Check the system for leakage. Please refer to the manufacturer's instruction manual for details on how to use the filling device.

Filling and replenishment of lubricating oil for air-conditioning system

The lubricating oil drained from the air-conditioning system during the recovery must be replenished.

1. Use a graduated bottle of lubricating oil designed for use in the R-134a system.
2. Please refer to the manufacturer's instruction manual for details on how to use the filling device to add the proper amount of lubricating oil to the system.
3. Close the valve when the required amount of oil has been injected.

Caution

Remember to cap the lubricating oil bottle tightly to prevent moisture or contaminants from entering the lubricating oil. This operation requires a certain degree of vacuum in the air-conditioning system. It is prohibited to open the lubricating oil filling valve when the air-conditioning system is under positive pressure. Otherwise, this may cause the lubricating oil to flow back through the oil bottle vent. In filling or replenishing the lubricating oil, the oil level must not be lower than the suction pipe. Otherwise, air will enter the air-conditioning system.

Fill

Pay attention to drain the air-conditioning system before filling.

1. Close the valve on the low pressure side on the control panel.
2. Close the valve on the high pressure side on the control panel.
3. Please refer to the manufacturer's instruction manual for details on how to use the filling device.
4. Fill the necessary amount of coolant in the air-conditioning, and ensure the correct unit of measurement (i.e., kilograms, kilograms, or pounds).
5. Start filling.

Successful completion of coolant filling

1. Close the valves on the high and low pressure sides on the filling device control panel. Both valves should be closed.
2. Start the vehicle and air-conditioning system.
3. Maintain stable readings in the pressure gauges on the high pressure side and on the low pressure side.

4. Compare readings to system specifications.
5. Check the evaporator outlet temperature to ensure that the air-conditioning system is operating in accordance with system specifications.
6. Keep the air-conditioning running.
7. Close the quick joint valve on the high pressure side.
8. Disconnect the hose on the high pressure side from the vehicle.
9. Open the valves on the high pressure side and low pressure side on the control panel. The system will rapidly draw coolant from both hoses through the hose on the low pressure side.
10. Close the quick joint valve on the low pressure side. Disconnect the hose on the low pressure side from the vehicle.

Unsuccessful coolant filling

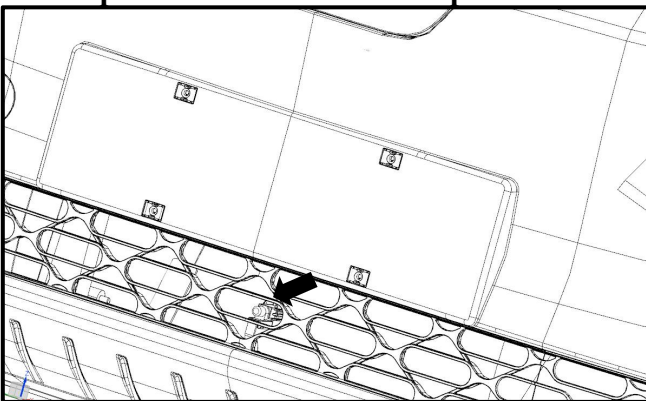
Sometimes the coolant entering the air-conditioning system does not reach the total filling amount. This situation can be explained by two reasons:

The pressure of the coolant tank of the filling device is about the same as that of the air-conditioning system, which will result in a slow filling process. Please refer to the manufacturer's instruction manual for details on how to use the filling device.

There is insufficient coolant in the coolant tank for filling. Therefore, some of the coolant that has been filled must be recovered from the vehicle, and then the air-conditioning system must be drained. The coolant tank must be refilled with coolant, and finally refilled. Please refer to the manufacturer's instruction manual for detailed instructions on how to use the filling device.

9.2.8 Disassembly and installation

9.2.8.1 Replacement of outdoor temperature sensor



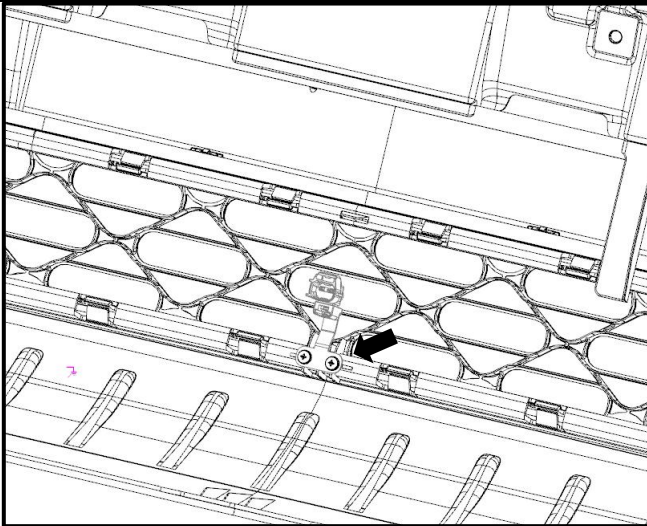
Disassembly process

1. Open the front cabin cover.
2. Disconnect the negative cable of the storage battery

Caution

Perform the disassembly after the negative terminal of the storage battery has been disconnected for 90s.

3. Disassemble the front bumper unit; Please refer to 13.2.7.7 Replacement of front bumper
4. Disassemble the outdoor temperature sensor
 - a. Disconnect the connection wire of the outdoor temperature sensor



- b. Unscrew the fixed bolts of the sensor with a cross screwdriver

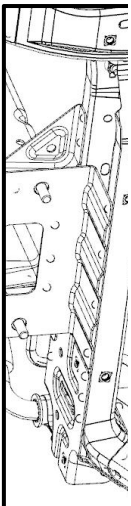
Installation process

It is opposite to the disassembly procedure

9.2.8.2 Replacement of condenser

Warning!

Please refer to “Warnings about inhalation of R-134a” in “Warnings and precautions”.



1

2

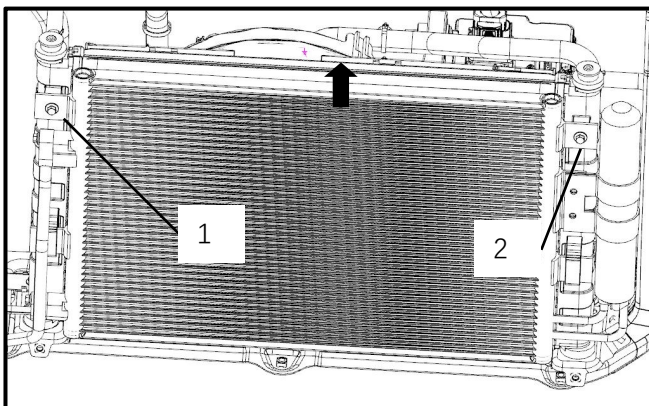
Disassembly process

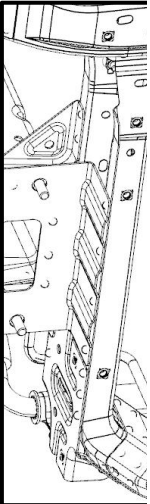
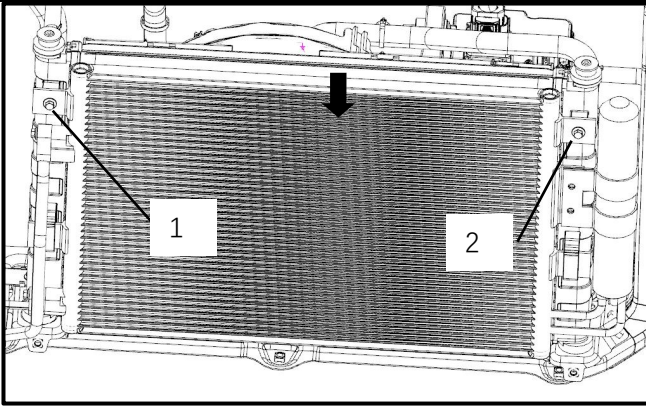
1. Open the front engine compartment cover.
2. Disconnect the negative cable of the storage battery

Caution

Perform the disassembly after the negative terminal of the storage battery has been disconnected for 90s.

3. For the coolant recovery operations; Please refer to 9.2.7.4 Recovery and filling of air-conditioning coolant
4. Disassemble the front bumper unit; Please refer to 13.2.7.7 Replacement of front bumper
5. Disassembly of the condenser
 - a. Remove the fixed bolts of the high and low pressure pipelines (at the condenser side).
 - b. Remove two fixed bolts above the condenser
 - c. Gently lift the condenser upward out of the radiator





Installation process

Caution

If a new condenser is replaced in the air-conditioning system, it is needed to add to the system 30 ml compressor lubricating oil; no compressor lubricating oil is required if only the repairing the disassembly is conducted.

1. Install the condenser
 - a. Gently place the condenser into the radiator slot
 - b. Install two fixed bolts of the condenser

Torque: (9±2) N·m

- c. Install two fixed bolts of the high and low pressure pipelines

Torque: (9±2) N·m

2. Install front bumper device
3. Fill the air-conditioning coolant
4. Connect the negative cable of the storage battery
5. Close the front engine hood

9.2.8.3 Replacement of air-conditioning pipeline

Warning!

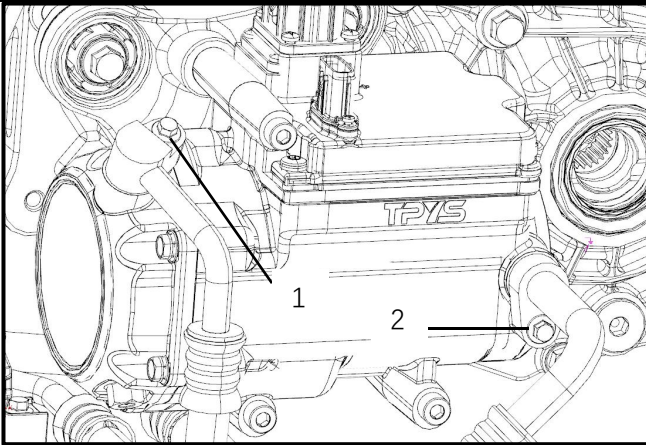
Please refer to “Warnings about inhalation of R-134a” in “Warnings and precautions”.

Disassembly process

Warning!

Please refer to “Warnings about inhalation of R-134a” in “Warnings and precautions”.

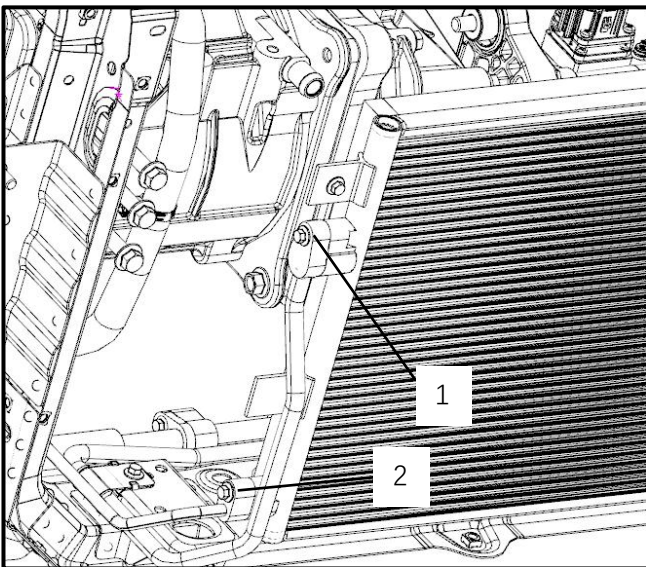
1. Open the front engine compartment cover
2. Disconnect the negative cable of the storage battery
3. For the coolant recovery operations; Please refer to 9.2.7.4 Recovery and filling of air-conditioning coolant
4. Disassemble the front bumper unit; Please refer to 13.2.7.7 Replacement of front bumper
5. Lift the vehicle to a suitable height



6. Disassemble the high and low pressure pipeline assemblies of the air-conditioning
 - a. Remove two fixed bolts connecting the high and low pressure tubes to the compressor and detach the high and low pressure tubes.

Caution

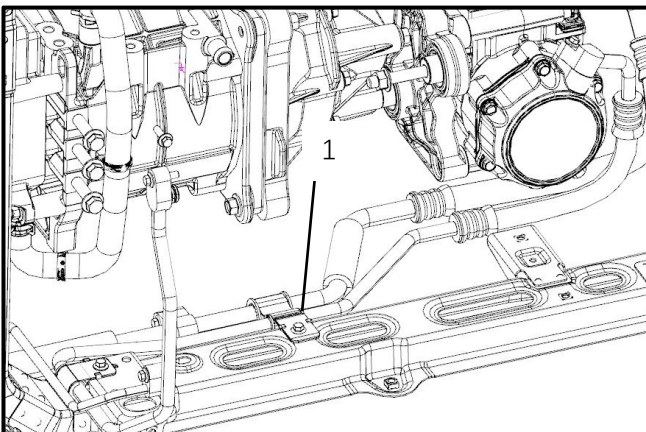
Since the sealing ring of the cooling tube is a quick-wear part, the dragging force and speed should not be too big at the time of disengaging the cooling tube.



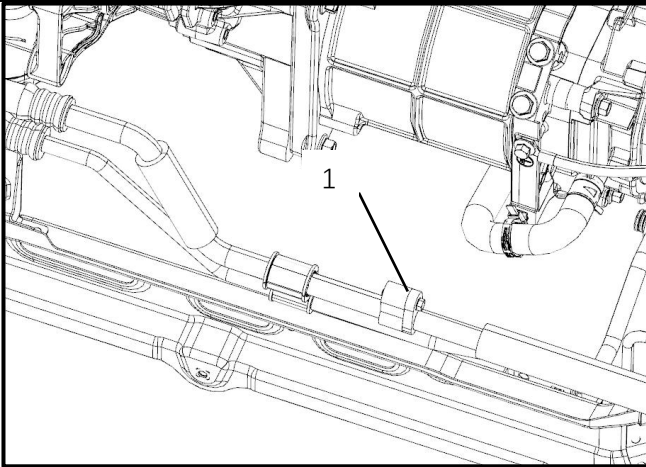
- b. Remove two fixed bolts connecting the high and low pressure pipelines of the air-conditioning to the condenser, and detach the high and low pressure pipelines

Caution

Since the sealing ring of the cooling tube is a quick-wear part, the dragging force and speed should not be too big at the time of disengaging the cooling tube.



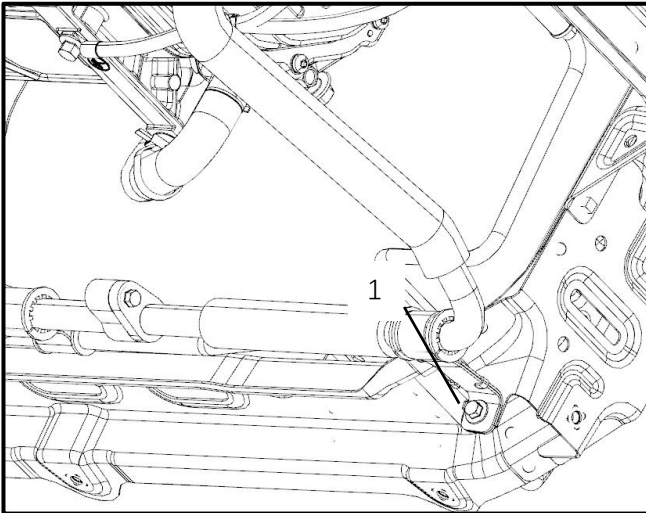
- c. Remove one fixed bolt connecting high and low pressure pipelines to water tank frame beam



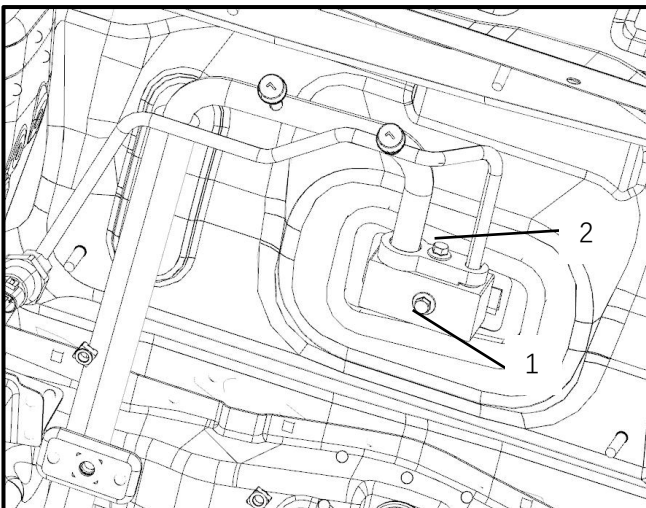
- d. Remove one fixed bolt from the connection pressure plate of the low pressure pipeline and remove the high and low pressure pipeline assemblies of the air conditioning

Caution

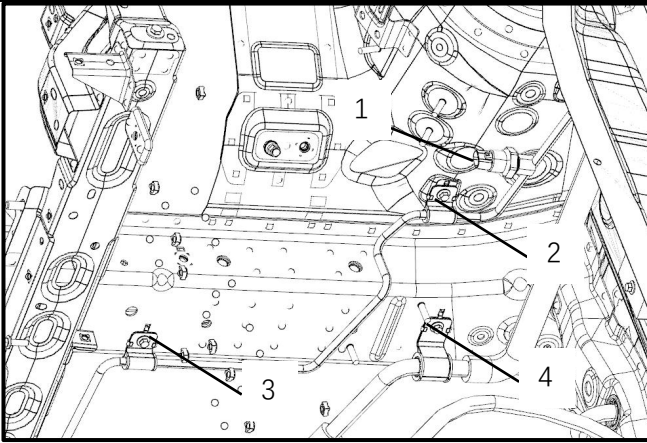
Since the sealing ring of the cooling tube is a quick-wear part, the dragging force and speed should not be too big at the time of disengaging the cooling tube.



- e. Remove one fixed bolt connecting the low pressure pipeline to the water tank cross member



- f. Remove the fixed bolt 1 connecting the air-conditioning pipe adapter to the expansion valve
- g. Remove the fixed bolt 2 connecting the high and low pressure pipelines to the air-conditioning pipe adapter, and detach the high and low pressure pipelines of the air-conditioning;



- h. Remove the three-state pressure switch sensor;
- i. Remove three fixed bolts connecting the high and low pressure pipelines to the body, and remove the high and low pressure pipelines of the air-conditioning;

Installation process

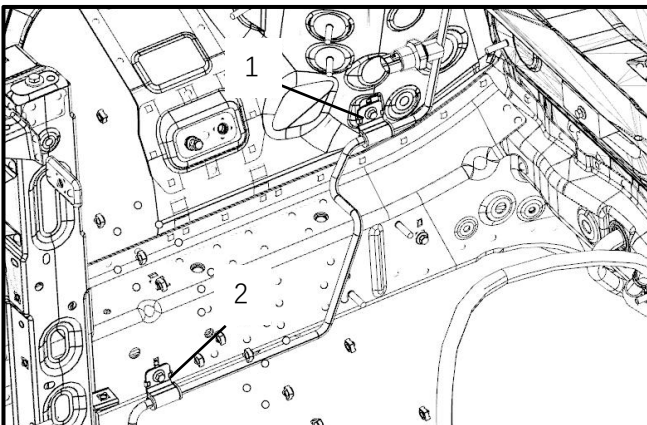
Any O-rings involved in the installation process must be replaced with new ones.

Caution

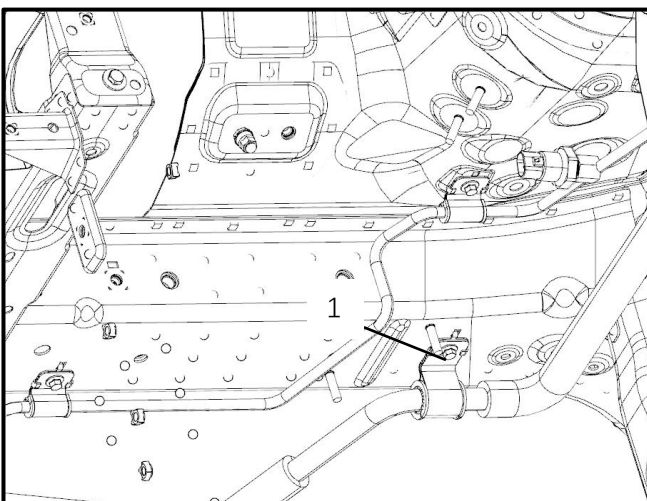
At the time of replacing pipelines in the air-conditioning system:

-If a new air suction tube for compressor is to be replaced, it is needed to add 10 ml of compressor lubricating oil to the air-conditioning system;

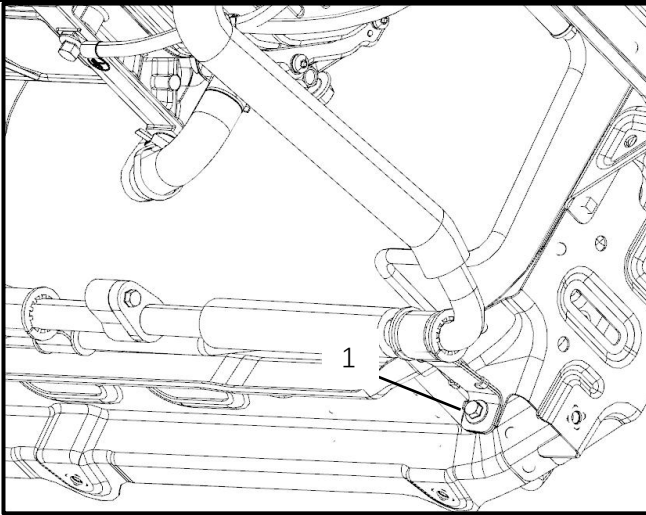
-If only other air-conditioning pipelines are to be replaced, additional compressor lubricating oil is not needed.



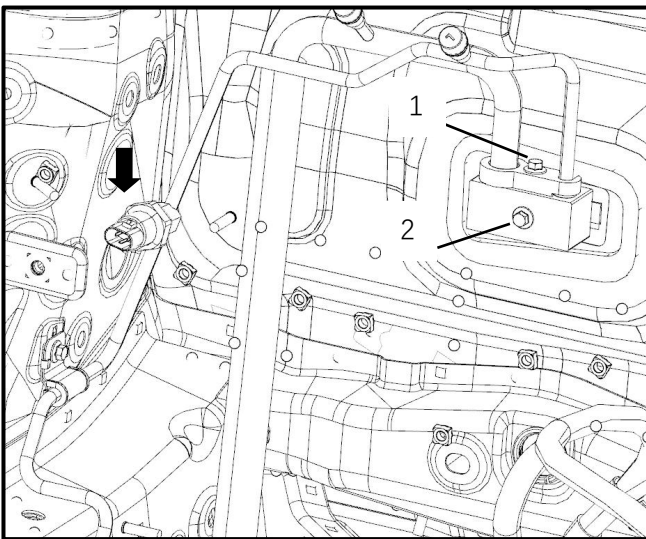
- 1. Installation of high and low pressure pipeline assemblies of the air-conditioning
 - a. Install the high pressure fine tube assembly of the air-conditioning, install and tighten two fixed bolts connecting the pipeline to the body;
Torque: (9 ± 2) N·m



- b. Install the low pressure tube assembly of the air-conditioning, install and tighten one fixed bolt connecting the pipeline to the body;
Torque: (9 ± 2) N·m



- c. Install and tighten one fixed bolt connecting the low pressure pipeline of the air-conditioning and the lower part of the water tank cross member;
Torque: (9 ± 2) N·m

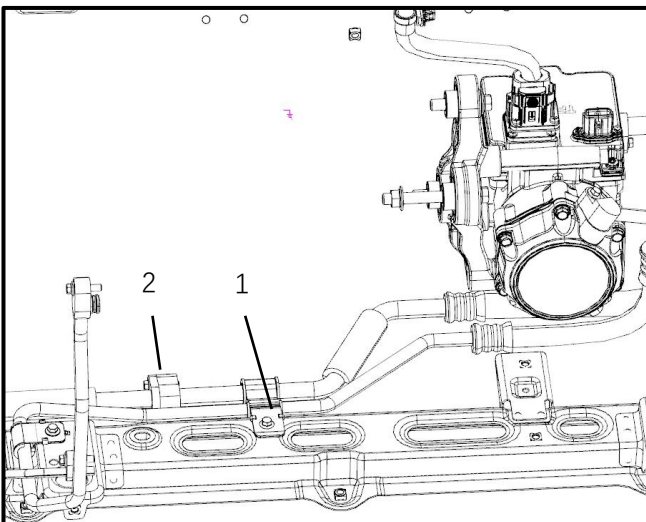


- d. Match the high and low pressure pipeline fittings of the air-conditioning to the pressure plate, and place the fittings vertically into the air-conditioning pipe adapter. Install and tighten the mounting bolt 1;
Torque: (9 ± 2) N·m
- e. Install the interface of the air-conditioning pipe adapter vertically into the expansion valve of the air-conditioning unit, install and tighten the mounting bolt 2;
Torque: (9 ± 2) N·m

Caution

In installing, make sure the joints are “flat” and “square” before using the fixed bolts.

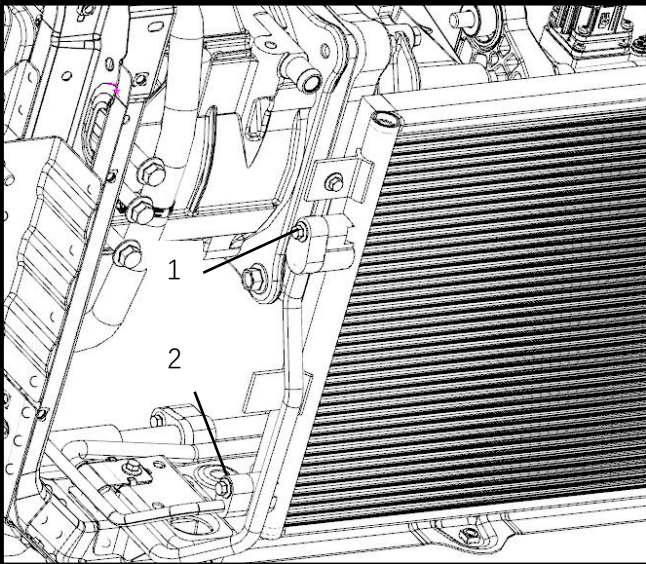
- f. Install the connector of the three-state pressure switch in place;



- g. Match the low pressure fitting for high and low pressure pipeline assemblies of the air-conditioning pipes with the pressure plate of the low pressure tube assembly, install and tighten the fixed bolt 1 connecting the high and low pressure pipeline assemblies of the air-conditioning to the water tank cross member;
Torque: (9 ± 2) N·m
- h. Install and tighten the fixed bolt 2 of the low pressure pipeline fitting;
Torque: (9 ± 2) N·m

Caution

In installing, make sure the joints are “flat” and “square” before using the fixed bolts.

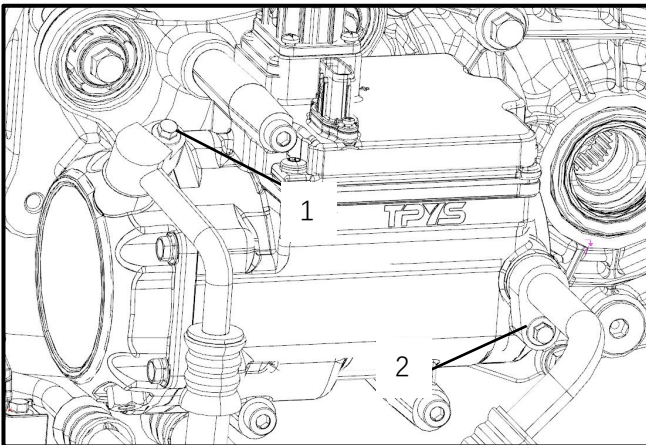


- i. Connect the pressure plates of the high and low pressure pipelines to the condenser inlet and outlet, install and tighten two fixed bolts for pressure plate;

Torque: (9 ± 2) N·m

Caution

In installing, make sure the joints are “flat” and “square” before using the fixed bolts.



- j. Connect the pressure plates of the high and low pressure pipelines to the compressor inlet and outlet ports, install and tighten two fixed bolts;

Torque: (9 ± 2) N·m

Caution

In installing, make sure the joints are “flat” and “square” before using the fixed bolts.

2. Lower the body to the proper position;
3. Install the front bumper unit;
4. Fill the air-conditioning coolant;
5. Connect the negative cable of the storage battery;
6. Close the front engine hood

9.2.8.4 Replacement of compressor

Warning!

Please refer to “Warnings about inhalation of R-134a” in “Warnings and precautions”.

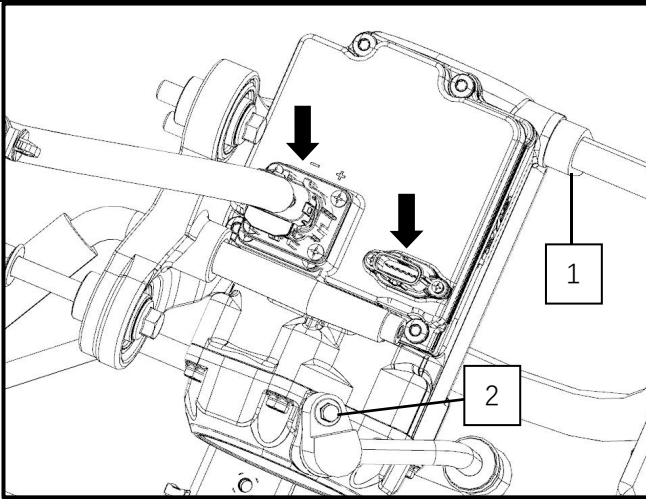
Disassembly process

1. Open the front engine compartment cover
2. Disconnect the negative cable of the storage battery

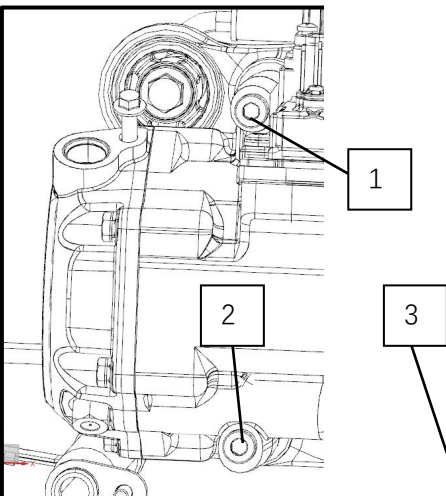
Caution

Perform the disassembly after the negative terminal of the storage battery has been disconnected for 90s.

3. For the coolant recovery operations; Please refer to 9.2.7.4 Recovery and filling of air-conditioning coolant
4. Lift the vehicle to a suitable height



5. Disassemble the compressor assembly
 - a. Unplug the high- and low-voltage connectors of the compressor
 - b. Remove two fixed bolts for the pressure plates of the high and low pressure pipelines of the compressor inlet and exhaust ports, and disengage the pressure plates of the high and low pressure pipelines;



- c. Remove three fixed bolts on the compressor side, and remove the electric compressor

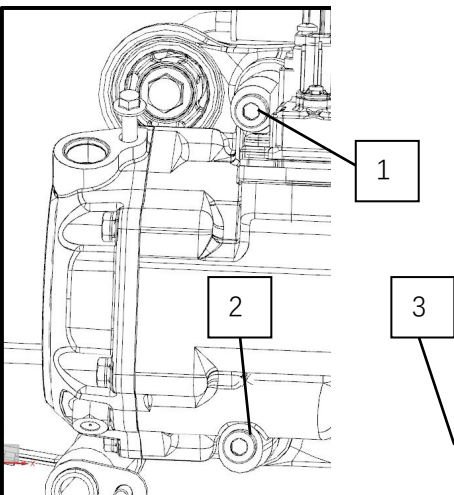
Installation process

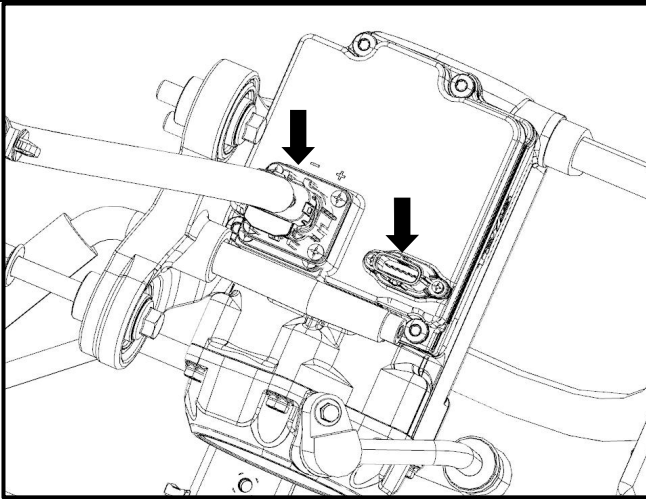
Caution

Since the compressor carries a large amount of lubricating oil (more than the amount of lubricating oil in the entire air-conditioning system) when it is supplied from the manufacturer, the lubricating oil is not needed to be replenished after a new compressor is replaced, but the proper amount of lubricating oil needs to be discharged from the compressor prior to installation before it is installed.

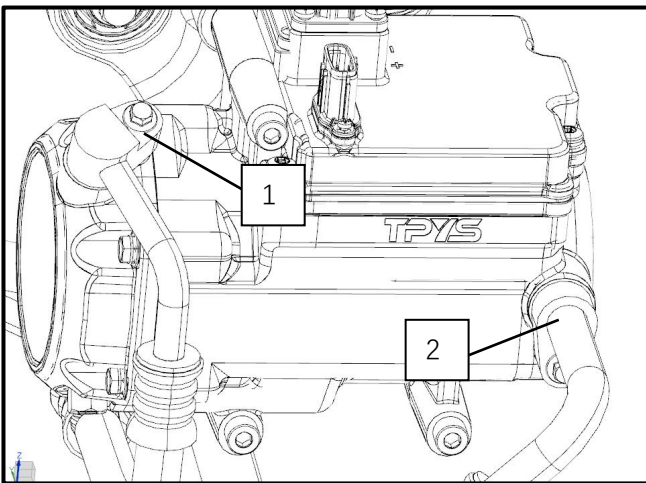
1. Installation of electric compressor assembly
 - a. Place the electric compressor, and install three fixed bolts of the electric compressor

Torque: (22 ± 2) N·m





b. Connect the high- and low-voltage wiring harness connectors for the electric compressor



c. Install the compressor inlet and exhaust pipes, install and tighten the fixed bolts for the inlet and exhaust pipes.

Torque: (9 ± 2) N·m

Caution

In installing, make sure the joints are “flat” and “square” before using the fixed bolts.

2. Lower the vehicle to a suitable height
3. Fill the coolant
4. Connect the negative cable of the storage battery
5. Close the front engine compartment cover.

9.2.8.5 Replacement of compressor bracket

Warning!

Please refer to “Warnings about inhalation of R-134a” in “Warnings and precautions”.

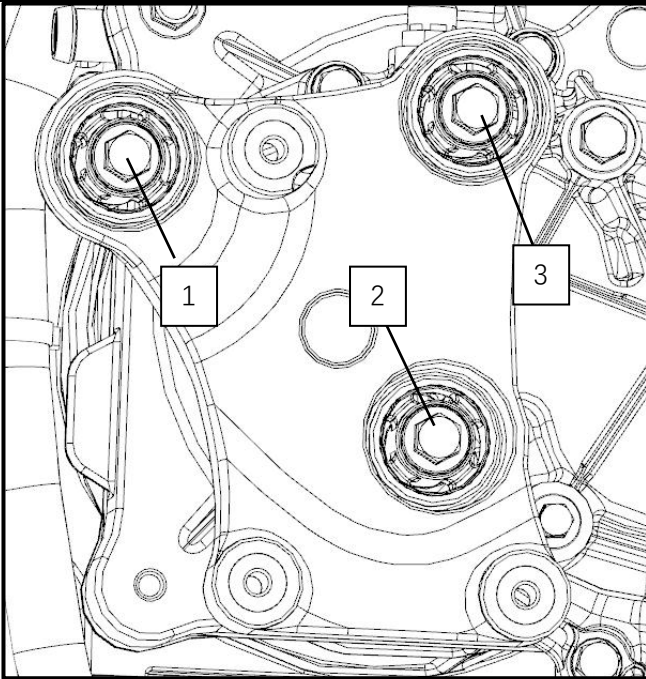
Disassembly process

1. Open the front engine compartment cover
2. Disconnect the negative battery cable;

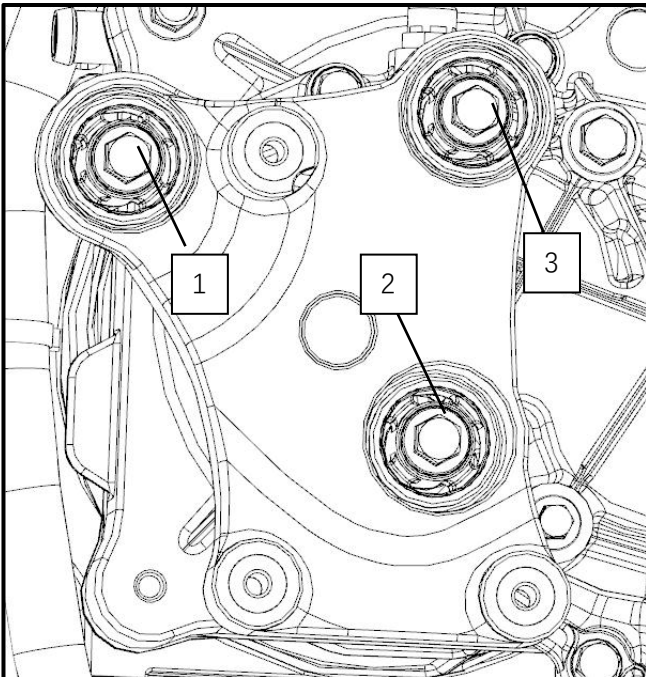
Caution

Perform the disassembly after the negative terminal of the storage battery has been disconnected for 90s.

3. For the coolant recovery operations; Please refer to 9.2.7.4 Recovery and filling of air-conditioning coolant
4. Lift the vehicle to a suitable height
5. Disassemble the electric compressor



6. Disassemble the electric compressor bracket
 - a. Remove the fixed bolts and the nut 1 of the compressor bracket;
 - b. Remove two fixed bolts of the compressor bracket, and remove the compressor bracket



Installation process

1. Installation of electric compressor bracket
 - a. Install the fixed bolts and the nut 1 of the compressor bracket;
 - b. Install the fixed bolts 2 and 3 of the compressor bracket;

Torque: (65 ± 5) N·m

2. Install the electric compressor
3. Lower the lift to a suitable height
4. Fill the coolant
5. Connect the negative cable of the storage battery
6. Close the front engine hood

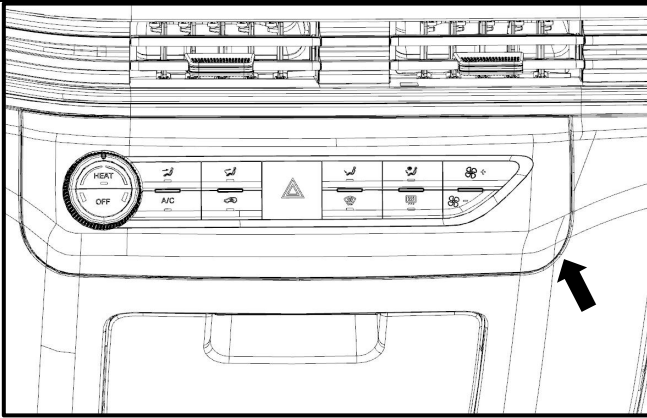
9.2.8.6 Replacement of air-conditioning control panel

Warning!

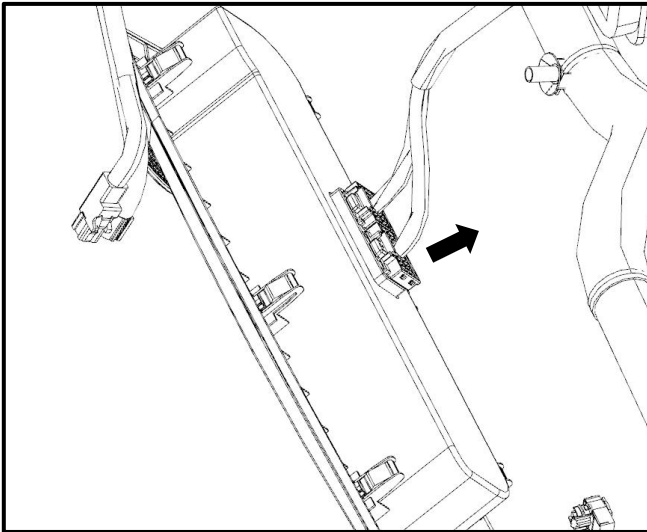
Please refer to “Warnings about disconnecting the storage battery” in “Warnings and precautions”.

Disassembly process

1. Open the front engine compartment cover
2. Disconnect the negative battery cable;



3. Disassemble the air-conditioning control panel
 - a. Disassemble the air-conditioning panel from the lower right corner with a screwdriver



- b. Disconnect the air-conditioning control panel connector, and remove the air-conditioning control panel

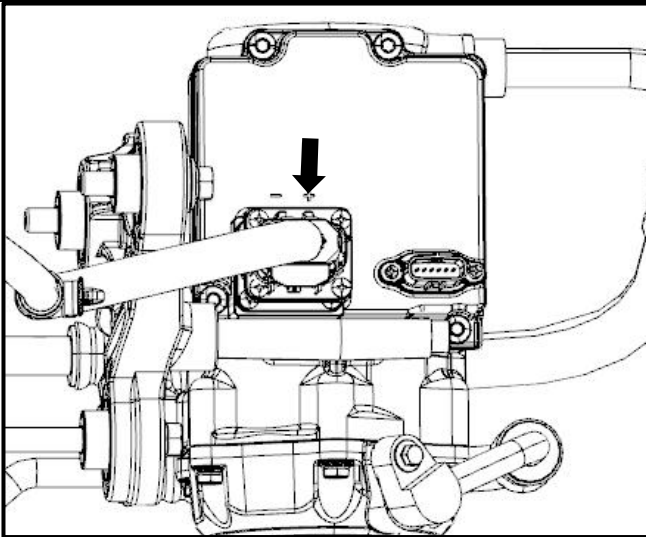
Installation process

The installation procedure is the opposite of the disassembly procedure

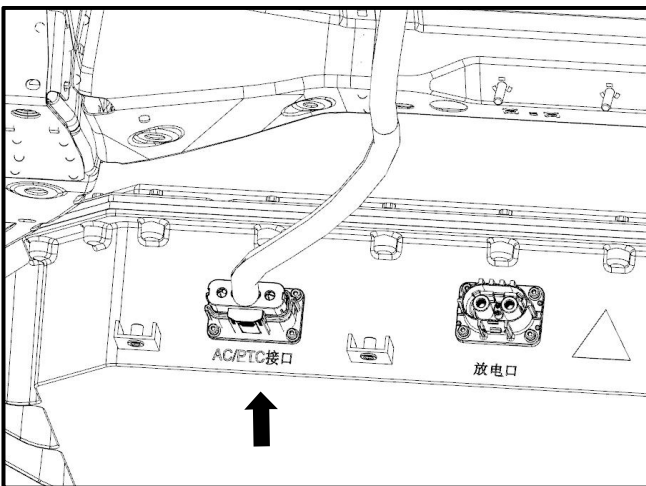
9.2.8.7 Replacement of interior air-conditioning unit

Disassembly process

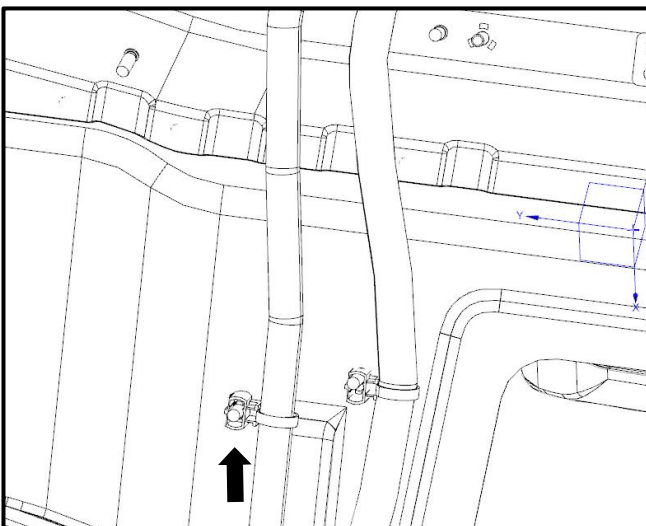
1. Open the front engine compartment cover
2. Disconnect the negative battery cable;
3. For the coolant recovery operations; Please refer to 9.2.7.4 Recovery and filling of air-conditioning coolant
4. For the disassembly of the instrument board unit; Please refer to 13.5.3 Removal of instrument board unit
5. Lift the vehicle to a suitable height



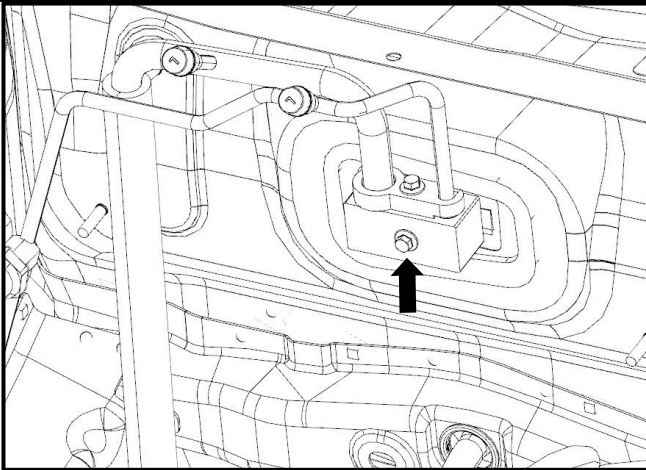
6. Disassembly of interior air-conditioning unit
- a. Disconnect the high-voltage connector coupler of the electric compressor, and remove the clips on the high-voltage cable from the fixing point



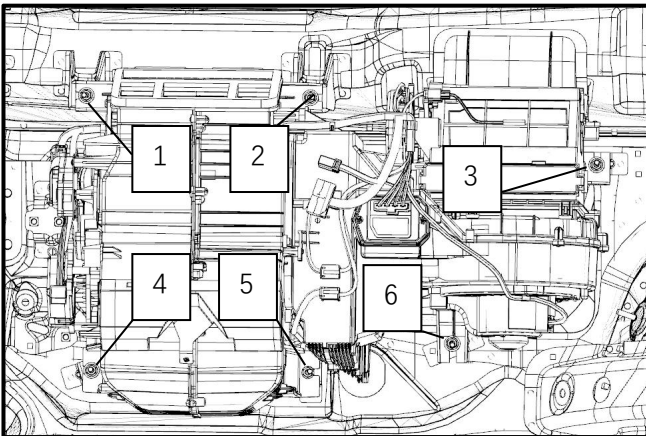
- b. Disconnect the AC/PTC connector coupler at the battery pack, and remove the clips on the high-voltage cable from the fixing point.



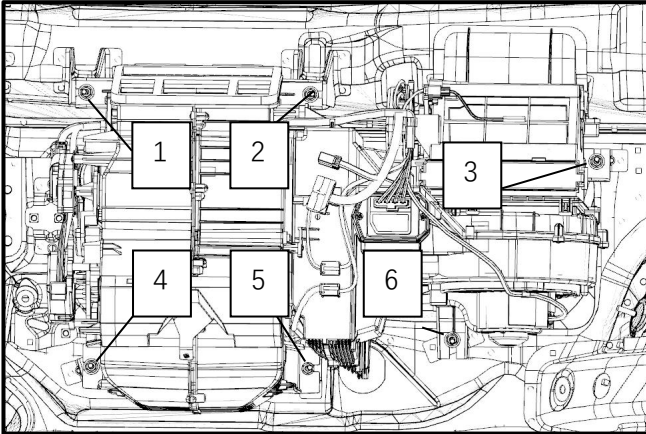
- c. Remove the fixed clips for the drain hose of the air-conditioning unit



d. Remove the fixed bolts connecting the air-conditioning pipe adapter to the expansion valve of the air-conditioning unit, and pull out the air-conditioning pipe adapter outward.



e. Remove six fixed bolts and five gaskets of the air-conditioning unit
 f. Remove the interior air-conditioning unit



Installation process

1. Installation of interior air-conditioning unit

a. Place the air-conditioning unit

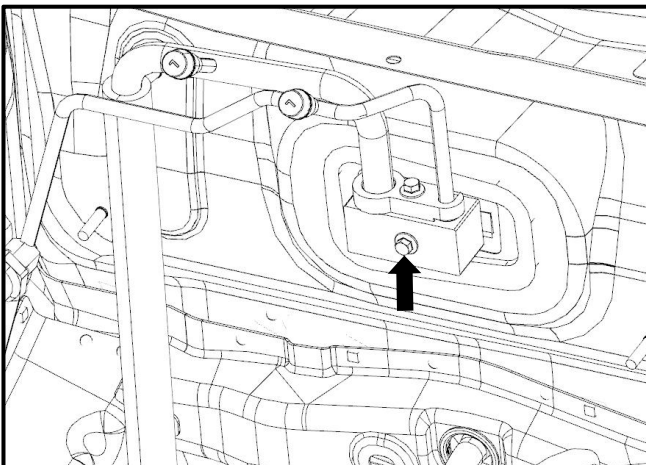
b. Install six fixed bolts and gaskets of the interior air-conditioning unit

Torque: $(5 \pm 1) \text{ N} \cdot \text{m}$

Caution

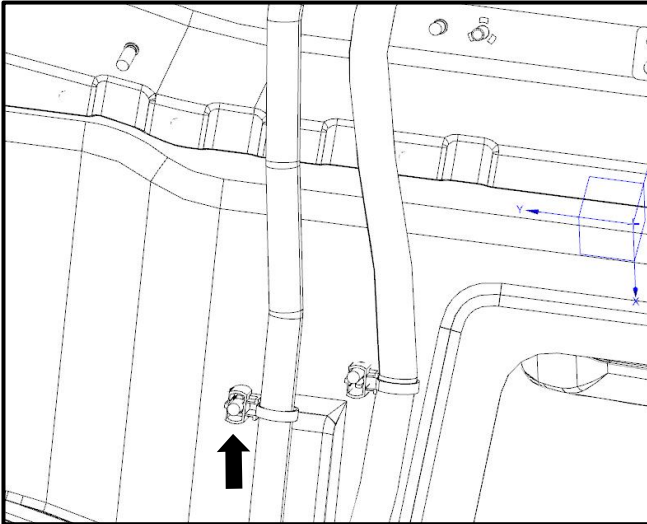
No gasket is installed for the fixed nut 6

The high-voltage cable and the drain hose should be outgoing from the hole of the front coaming board of the body at the time of placing the air-conditioning unit. The drain hose should not be bent or squeezed, so as to prevent the phenomenon of unsmooth discharge of condensate water.

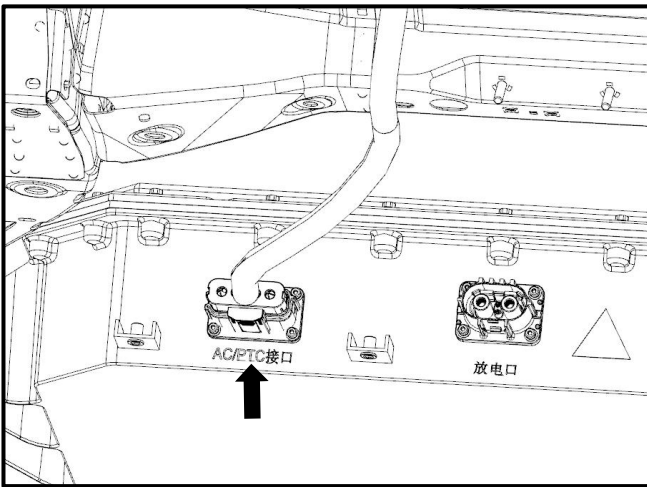


c. Place the air-conditioning pipe adapter into the expansion valve of the air-conditioning unit, and tighten the fixed bolts.

Torque: $(9 \pm 2) \text{ N} \cdot \text{m}$

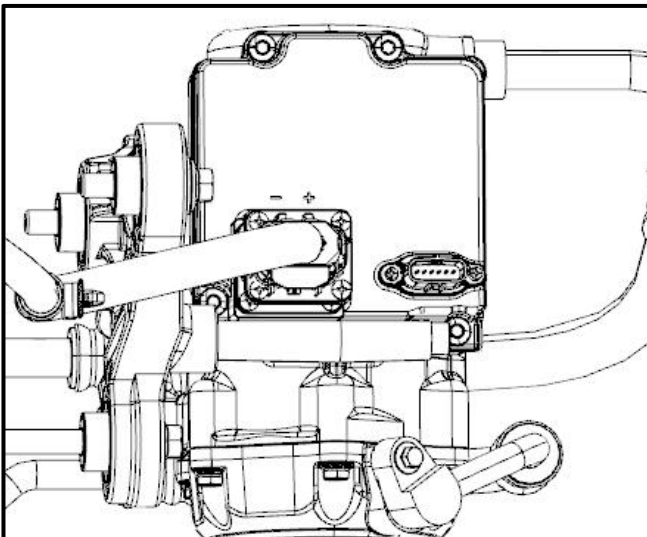


d. Secure the drain hose with drain hose clips.



e. Connect and lock the AC/PTC connector to the battery pack.

f. Install the fixing points of the high-voltage cable in place



g. Match the high-voltage connector coupler on the compressor side.

h. Install the fixing points of the high-voltage cable in place

2. Install the instrument board unit
3. Fill the coolant
4. Connect the negative cable of the storage battery
5. Close the front engine hood

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10.1 Warnings and precautions

10.1.1 Warnings and precautions

10.1.1.1 Warnings and precautions

Warnings about airbag systems

Warning!

This vehicle is equipped with an airbag system. Failure to follow proper operating procedures can result in the following situations:

- The airbag system is turned on accidentally.
- The system does not work when the airbag protection is needed.

Warning!

The following guidelines must be strictly adhered to in order to avoid such situations:

- You should refer to the View of Airbag System Components to determine whether you are performing repairing operations on the airbag system components, their surroundings, or their wiring.
- If the maintenance operations are performed on, around, or in the wiring of the airbag system components, the airbag system should be released. Please refer to “Warnings about disconnecting the storage battery” in “Warnings and precautions”.

Warnings about high temperature in the electronic control unit of the deployed airbag

Warning!

The metal surfaces of the deployed airbag system components may be hot. In order to avoid fire and personal injury:

- Before touching any metal surfaces of airbag system components, allow sufficient cooling time.
- No inflated airbag system component should be placed next to any flammable material.

Warnings about clock springs of the airbag system

Warning!

Improper installation of the clock spring assembly can damage the helical coils inside the clock spring, which may cause the coil fault to make the airbag module not function properly, further resulting in personal injury.

Warnings about scrapping safety system modules

Warning!

Non-deployed airbag modules shall not be disposed of as regular shop waste, to prevent personal injuries caused by accidental deployment of airbags. Severe disease or personal injuries may be caused by some of the substances contained in the non-deployed module if the sealed container is damaged during the scrapping process. The non-deployed airbag modules can be scrapped safely through the deployment procedure.

Warnings about taking and storing inflator module of airbag system

Warning!

During the transportation of non-deployed airbag modules:

- Never handle the airbag module by carrying wires or connectors on it.
- The airbag opening should not face you or anyone else.

Warning!

At the time of storing a non-deployed airbag, make sure that the airbag opening is not facing the surface on which the airbag modules are placed. The airbag opening should not be facing downward. It is prohibited to place any objects on the airbag modules. There should be enough space around the airbag for allowing it to deploy accidentally, otherwise it will hurt people. It is prohibited to immerse the non-deployed airbag modules in water or in contact with other liquids. It is prohibited to place a non-deployed airbag near a fire source or in a high-temperature zone to prevent the airbag from deploying accidentally and causing injury.

Warnings about handling crash sensors of the airbag system

Warning!

The crash sensor of the airbag system should not be hit or shaken. Before the crash sensor is powered on, the crash sensor should be securely fastened. Personal injuries may be caused by accidental denotation or non-denotation of the airbag system if failure to follow proper installation procedures.

10.2 Airbag system

10.2.1 Specifications

10.2.1.1 Fastener specifications

Fastener name	Specifications	Metric (N·M)
Fasteners for airbag ACU controller	M6X12	10±1
Fasteners for co-driver airbag and airbag frame	ST4.8X16	2±0.5
Fasteners for co-driver airbag and tube beam	M6X16	10±1

10.2.2 Description and operation

10.2.2.1 Description and operation

Caution

The airbag system is not a substitute for the seat belt function. Failure to fasten a seat belt may result in serious personal injury when the airbag detonates. Dayun Auto reminds you to fasten your seat belt at the time of driving or riding in a car. In the event of a collision, the airbag system can provide better supplemental protection for passengers only when the seat belts are fastened.

Description of airbag system

The airbag system consists of the following components:

- Airbag warning light
- Combination instrument assembly
- Airbag electronic control unit (ACU)
- Passenger recognition sensor
- Driver airbag
- Passenger airbag
- Clock spring
- Airbag system wiring harness

The airbag system provides supplemental protection for passengers in addition to seat belts, which is a passive safety system. The airbag system has multiple inflatable protection modules located in different locations on the vehicle, including the steering wheel and instrument panel. The airbag electronic control unit controls airbag deployment when it detects sufficiently high impact of the collision. The airbag control module provides continuous diagnostic monitoring of the electrical components of the airbag system. When a circuit fault is detected, the airbag control module sets a diagnostic trouble code and turns on the airbag warning light to notify the driver.

The airbag electronic control unit receives signals from the sensors to determine the severity of the collision. When the signal value is greater than the set value in the memory, the airbag electronic control unit issues an ignition command, which deploys the corresponding inflation module of the airbag system. The frontal airbag deploys when there is a collision with sufficiently high impact.

After the airbag electronic control unit (ACU) confirms the collision signal, it will send a "collision unlocking and

power-off" signal to the bus within 20 ms, with 20 ms as a cycle and a total of 3s. When the BCM and EMS receives more than three consecutive signals, they perform the unlocking and power-off functions, respectively.

10.2.3 System operating principle

10.2.3.1 System operating principle

Airbag warning light

If a fault is detected, the airbag electronic control unit stores a diagnostic trouble code (DTC) and then commands the combination instrument to turn on the airbag warning light via the CAN-BUS serial data bus. After the vehicle is started, the ACU will constantly test the circuits. In case of any fault, the airbag electronic control unit will communicate with the combination instrument via the CAN-BUS serial data bus, and the airbag warning light will come on after 5s. In case of any fault in the airbag system, it may result in the airbag not deploying, or deploying when the crash does not reach the set severity. If the airbag warning light is on, please have it serviced as soon as possible at an authorized service station of DYNAM; the airbag indicator light will not go out until the fault is repaired.

Airbag electronic control unit (ACU)

Caution

The airbag electronic control unit (ACU) has a back-up power that allows the airbag to deploy smoothly even after the loss of storage battery voltage during the collision. The negative cable of the storage battery should be disconnected for 90s or more to discharge the back-up power before repairing the airbag system.

The airbag electronic control unit (ACU) is a microprocessor that serves as the control center for the airbag system. When the vehicle has a collision, the airbag electronic control unit compares the signals from the sensors with the values in the memory. When the signal value generated 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 airbag deploys, the airbag electronic control unit records the status of the airbag system and turn on the airbag indicator light on the combination instrument. After the vehicle is started, the airbag electronic control unit will provide continuous diagnostic monitoring of the electrical components and circuits of the airbag system. If the airbag electronic control unit detects a fault, it will store a diagnostic trouble code and turn on the airbag warning light to notify the driver of the presence of a fault.

Passenger recognition sensor

The passenger identification sensor is located inside the seat cushion of the passenger seat assembly and is used to sense the presence of a passenger in the passenger seat position; it is a voltage-variable resistance sensor that senses the pressure through a change in resistance. When a passenger is in the passenger seat position and does not fasten a seat belt, the passenger-side seat belt indicator light that is located in the control panel on the instrument goes on to inform the driver to remind the passenger to fasten his or her seat belt.

Driver airbag, passenger airbag

The driver airbag and passenger airbag modules include a housing, an inflatable airbag, an ignition trigger device, and a gas generator. When the vehicle has a frontal collision with sufficiently high impact, the airbag electronic control unit sends an ignition command to the frontal ignition circuit to deploy the airbag. At this time, electric current flows through the igniter, detonating the gas generator, which rapidly produces a large amount of gas. The gas generated by this reaction causes the airbag to inflate and expand rapidly. Once the airbag has been inflated, it rapidly deflates through the airbag deflation holes. All wiring harness connector terminals of the airbag electronic control unit (driver airbag, passenger airbag deployment circuit) have a short-circuit plate. When the connector is disconnected, the short-circuit bar will short the airbag inflator module deployment circuit to prevent the airbag from accidentally deploying at the time of repairing.

Clock spring

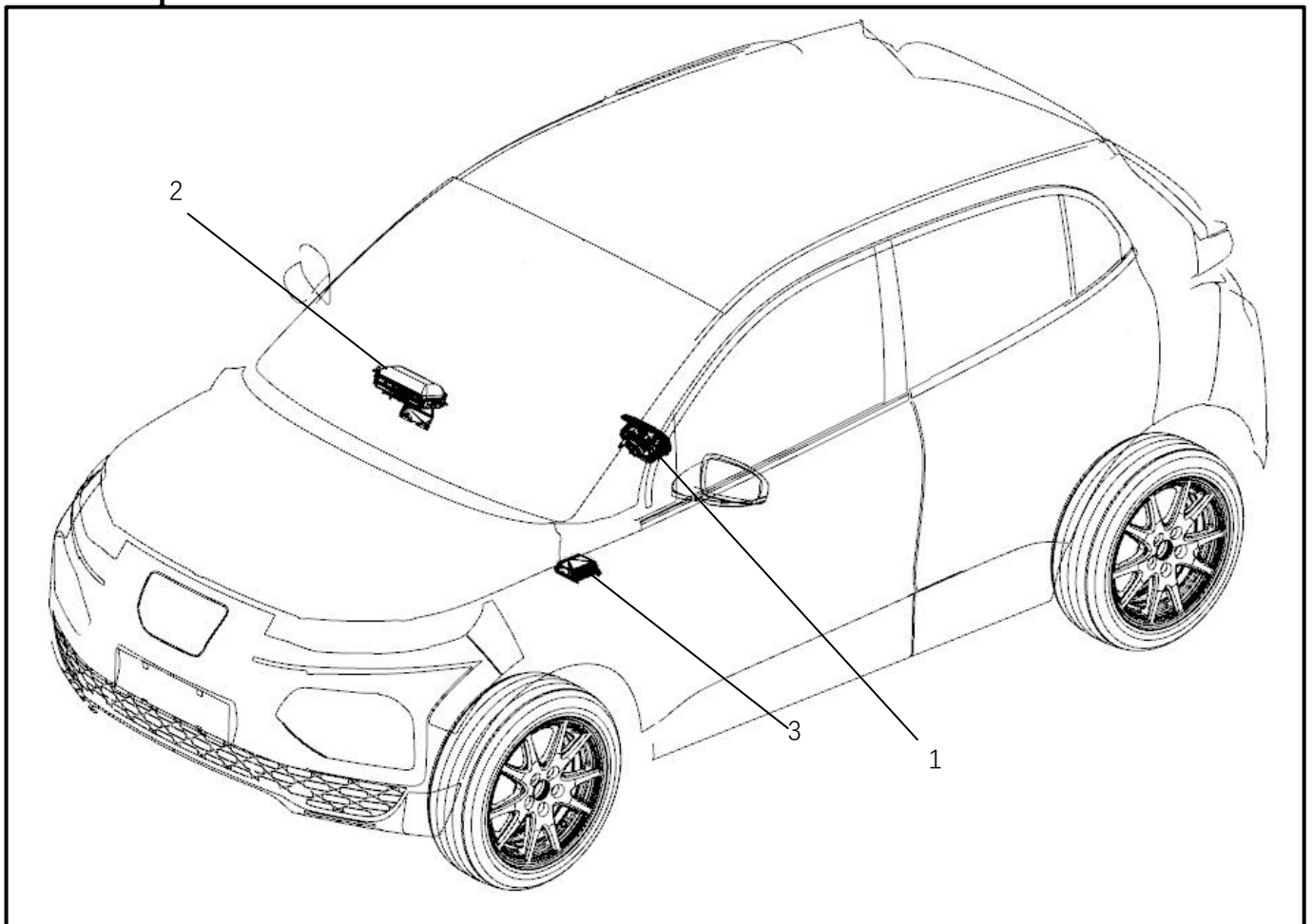
The airbag clock spring is located on the steering column and under the steering wheel. The clock spring allows for continuous electrical contact between the driver deployment circuit and the driver airbag as the steering wheel is turned. The connector for the steering wheel clock spring is equipped with a short-circuit plate that shorts the deployment circuit of the driver airbag to prevent accidental deployment at the time of repairing.

Airbag system wiring harness

The airbag system wiring harness connects the sensors, the control unit, the inflation module, the deployment circuit, and the CAN bus serial data circuits via waterproof connectors. The connector for the airbag system deployment circuit is yellow for easy identification. At the time of repairing the airbag system wiring harness, please follow the appropriate testing and wiring repair procedures in this manual.

10.2.4 Component location

10.2.4.1 Component location

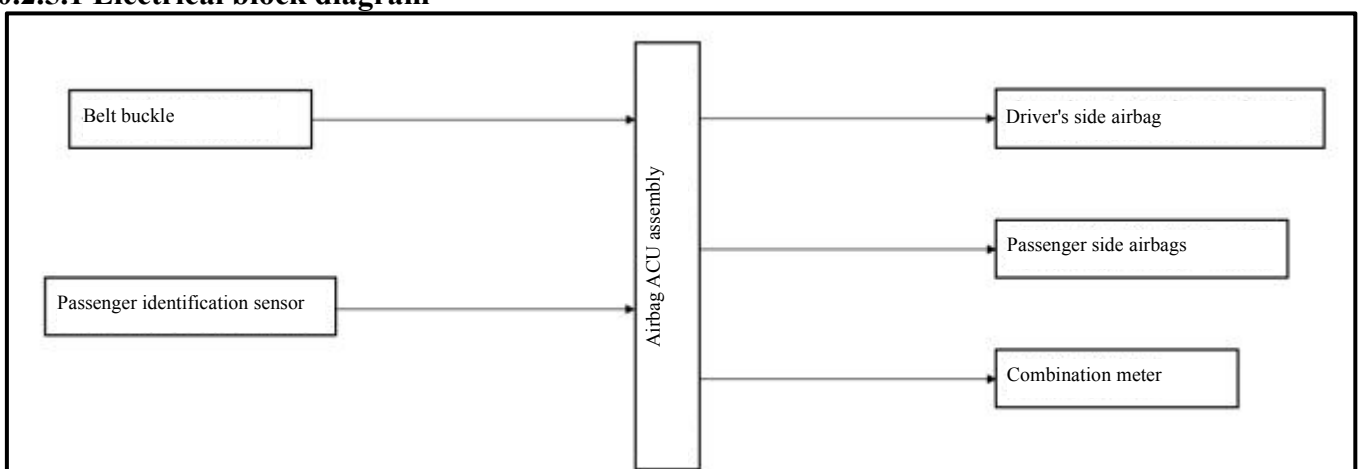


- 1. Driver airbag assembly
- 2. Co-driver airbag assembly

- 3. Airbag ACU assembly

10.2.5 Electrical schematic diagram

10.2.5.1 Electrical block diagram



10.2.6 Diagnostic information and steps

10.2.6.1 Visual inspection

-Confirmation of fault symptoms

The most difficult situation in troubleshooting is when no symptoms appear. In this case, it is necessary to thoroughly analyze the faults reported by the user and then simulate the same or similar conditions and environment as or to that when the customer's vehicle has a fault. No matter how experienced and skilled the repair personnel is, if he or she proceeds with troubleshooting without confirming the symptoms of the fault, he or she will miss something important in the repair and make a wrong guess somewhere, which will make troubleshooting impossible.

-Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

-Connector joints and pivot points for vibration are the main parts that should be thoroughly checked. The vibration method is recommended if the fault is caused by vibration.

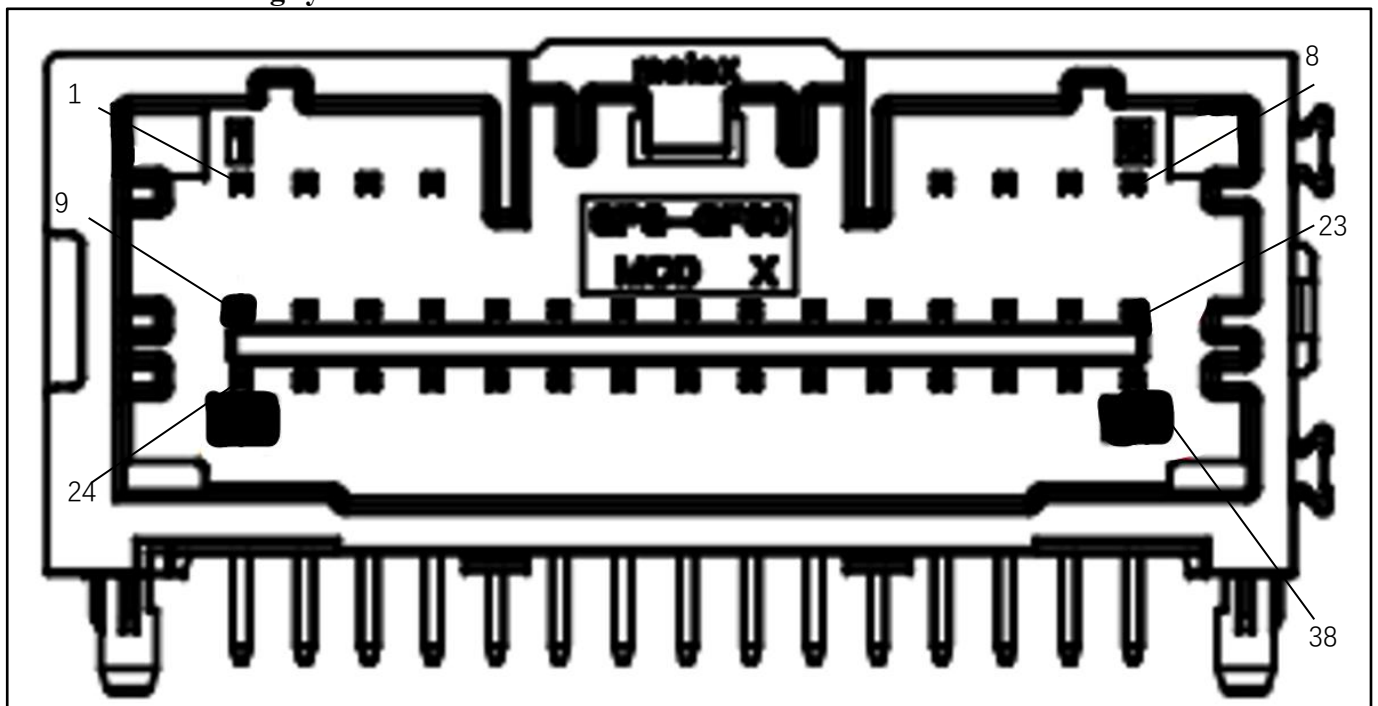
1. Gently wiggle the potentially faulty part with your finger and check for faults.
2. Gently shake the connector in both vertical and horizontal directions.
3. Gently shake the wiring harness in both vertical and horizontal directions.

10.2.7 List type of ACU diagnostic trouble code (DTC)

0x990011	Driver airbag - short circuit to ground	1. Check the wiring harness connections 2. Replace the airbag modules
0x990012	Driver airbag - short circuit to battery	1. Check the wiring harness connections 2. Replace the airbag modules
0x99001B	Driver airbag - high resistance value	1. Check the wiring harness connections 2. Replace the airbag modules
0x99001A	Driver airbag - low resistance value	1. Check the wiring harness connections 2. Replace the airbag modules
0x990111	Co-driver airbag - short circuit to ground	1. Check the wiring harness connections 2. Replace the airbag modules
0x990112	Co-driver airbag - short circuit to battery	1. Check the wiring harness connections 2. Replace the airbag modules
0x99011B	Co-driver airbag - high resistance value	1. Check the wiring harness connections 2. Replace the airbag modules
0x99011A	Co-driver airbag - low resistance value	1. Check the wiring harness connections 2. Replace the airbag modules
0x992011	Collision output 1 - short circuit to ground	1. Detect the wiring harness connections 2. Check the abutting end
0x992012	Collision output 1 - short circuit to power supply	1. Detect the wiring harness connections 2. Check the abutting end
0x993011	Airbag status indicator light - short circuit to ground	1. Detect the wiring harness connections

		<ol style="list-style-type: none"> 2. Check the abutting end 3. Check the indicator light
0x993012	Airbag status indicator light - short circuit to power supply	<ol style="list-style-type: none"> 1. Detect the wiring harness connections 2. Check the abutting end 3. Check the indicator light
0x994012	Driver seat belt buckle shorted to power supply	Detect the wiring harness connections
0x994112	Co-driver seat belt buckle shorted to power supply	Detect the wiring harness connections
0x999004	Internal fault of airbag controller	Replace the controller
0x999201	Incorrect configuration of airbag	<ol style="list-style-type: none"> 1. Reconfigure the correct ignition channel and restart the ACU. 2. Find the multi-configuration airbag modules 3. Reconfigure the correct number of SIS sensors and restart the ACU. 4. Find the multi-configuration SIS sensors
0x999800	Ignited frontal airbag	Replace the controller
0xD10017	Over Diagnostic Voltage	<ol style="list-style-type: none"> 1. Check the storage battery and fuse 2. Check the body wiring harness
0xD10016	Under Diagnostic voltage	<ol style="list-style-type: none"> 1. Check the storage battery and fuse 2. Check the body wiring harness
0xC04688	Bus-off BodyCAN	Check CAN bus
0xC10087	Missing VCU (0x3C0)	<ol style="list-style-type: none"> 1. Check CAN bus 2. Check the VCU controller
0xC14087	Missing BCM (0x302)	<ol style="list-style-type: none"> 1. Check CAN bus 2. Check the VCU controller

10.2.7.1 List of airbag system terminals



Terminal number	Terminal description
1	Collision output

2	NA
3	Driver seat belt reminder (DBK)+
4	Co-driver seat belt reminder (PBK)+
5	CAN_H
6	CAN_L
7	Ground
8	Power supply
9	NA
10	NA
11	NA
12	NA
13	NA
14	NA
15	NA
16	Positive front airbag for front driver
17	Positive front airbag for front passenger
18	NA
19	NA
20	NA
21	NA
22	NA
23	NA
24	NA
25	NA
26	NA
27	NA
28	NA
29	NA
30	NA
31	Negative front airbag for front driver
32	Negative front airbag for front passenger
33	NA
34	NA
35	NA
36	NA
37	NA
38	NA

10.2.8 No communication between diagnosis instrument and vehicle

Connect the diagnosis instrument to the data connector (OBD diagnostic interface), operate the starter switch, and the vehicle is powered up. At the time of operating the diagnosis instrument, if the display screen shows a communication error message, there is a fault in the vehicle or testing instrument.

If this testing instrument shows normal communication when it is connected to another vehicle, the DLC diagnostic interface should be checked. Please refer to the relevant content in the control system inspection for specific steps.

When communication cannot be established even after the testing instrument is connected to another vehicle, the testing instrument may be faulty. Please refer to the instruction manual of the testing instrument or consult the manufacturer.

10.2.8.1 Warning light remaining on

Caution

This repair manual is only designed for troubleshooting the driver airbag, and the diagnostic methods for other airbags are similar. Please refer to the "Warning light remaining on".

1. Diagnostic step

Step 1: Check the fuse

If the fuse is not damaged, proceed to step 2

Step 2: Clear airbag ACU faults using the diagnosis instrument. Please refer to 11.3 Use of diagnosis instrument

If the warning light remains on, proceed to step 3.

Step 3: Check the wiring harness (power supply and grounding of airbag controller module)

If the wiring harness is not damaged, proceed to step 4

Step 4: Check the conductivity of the signaling circuit between the airbag control module and the driver airbag;

In case of any fault, replace the driver airbag. Please refer to 10.2.9.2 Replacement of driver airbag. In case of no fault, proceed to step 5

Step 5: Check the wiring between the airbag control module and the combination instrument

In case of any fault, repair or replace the wiring harness. In case of no fault, proceed to step 6

Step 6: Replace the combination instrument assembly. Please refer to 12.12.6.1 Disassembly and installation of combination instrument

Step 7: Replace the airbag control module. Please refer to 10.2.9.1 Replacement of airbag electronic control unit

Step 8: The system is working properly

10.2.9 Disassembly and installation

10.2.9.1 Replacement of airbag electronic control unit

Disassembly process

Warning

Please make sure that all power supply to the vehicle is disconnected before disassembly and installation of the airbag system.

Caution

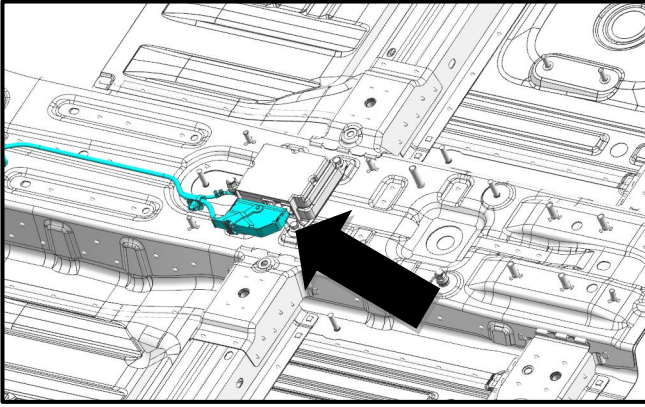
Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.

1. Open the front engine compartment cover
2. Disconnect the negative battery cable;
3. Disassemble the instrument board assembly;

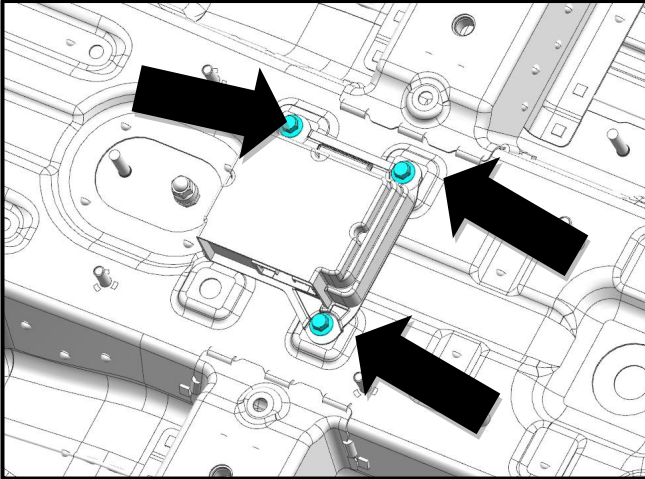
Please refer to 13.5.3.8 Replacement of instrument board

4. Disassemble the airbag electronic control unit

- a. Disconnect the connecting wiring harness of the controller



- b. Remove three fixed bolts of the airbag electronic control unit
- c. Take down the airbag electronic control unit



Installation process

Warning

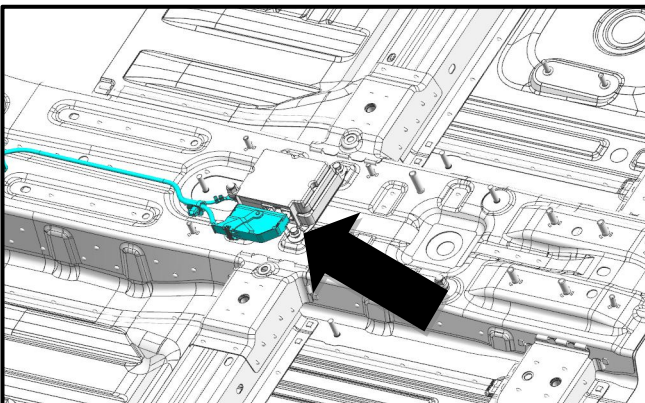
Please make sure that all power supply to the vehicle is disconnected before disassembly and installation of the airbag system.

Caution

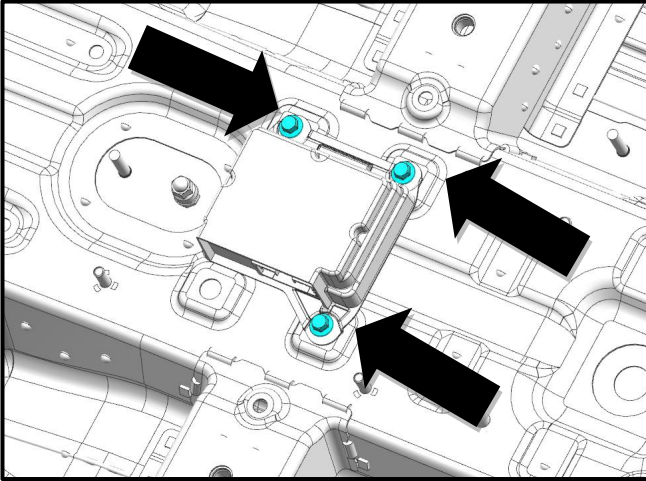
Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.

1. Installation of airbag electronic control unit

- a. Connect the wiring harness connector of the airbag electronic control unit



b. Install three fixed bolts of the control unit



2. Install the instrument board assembly;
3. Connect the negative cable of the storage battery
4. Close the front engine hood

10.2.9.2 Replacement of driver airbag

Disassembly process

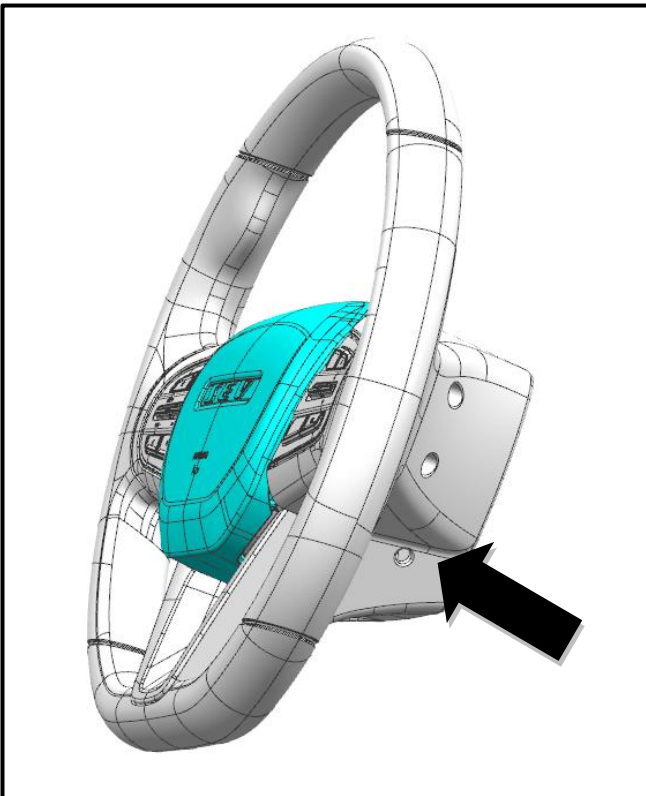
Warning

Please make sure that all power supply to the vehicle is disconnected before disassembly and installation of the airbag system.

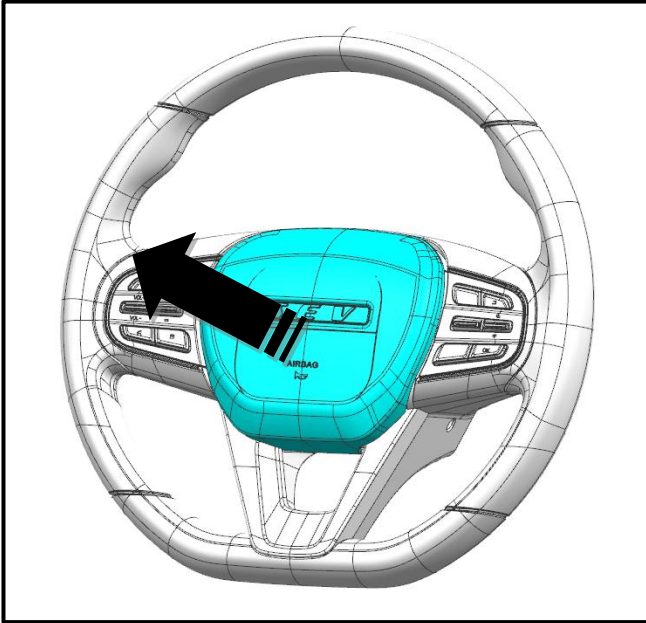
Caution

Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.

1. Open the front engine compartment cover
2. Disconnect the negative battery cable;
3. Disassemble the driver airbag
 - a. Thread a suitable tool into the two small holes in the lower shroud, and press the tool inward to feel the spring wire topping up while simultaneously breaking the DAB upward by hands.

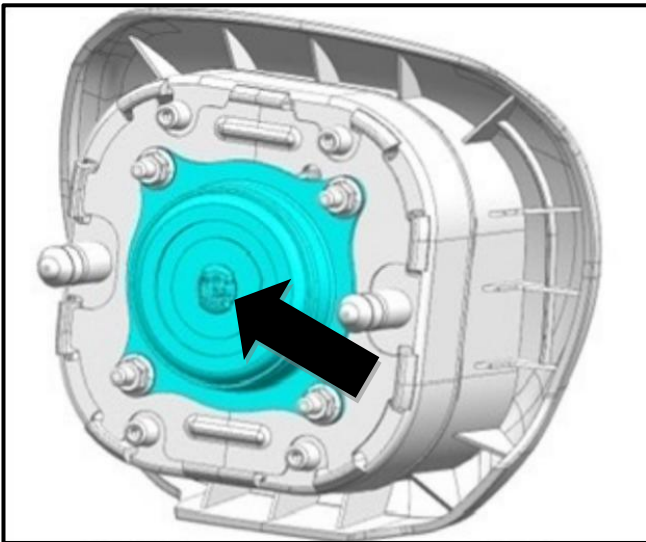


b. After that, gently pull the driver airbag upwards with both hands.



c. Disconnect the wiring harness connector on the back of the driver airbag.

d. Remove the driver airbag.



Installation process

Warning

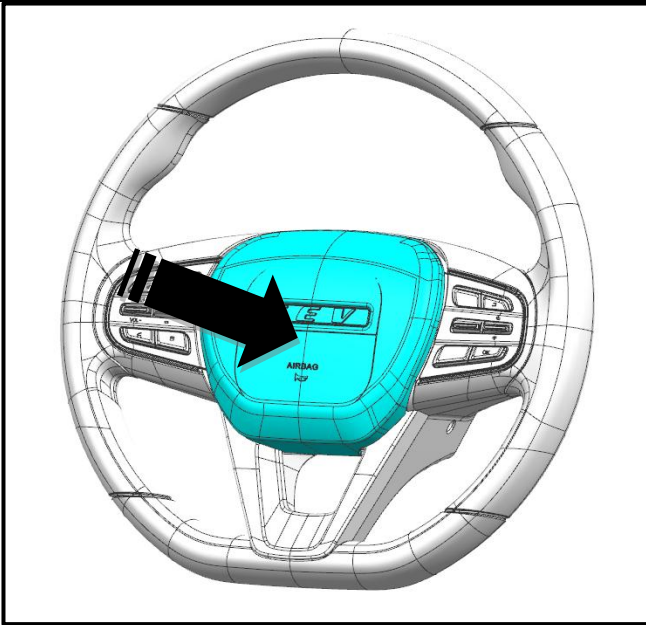
Please make sure that all power supply to the vehicle is disconnected before disassembly and installation of the airbag system.

Caution

Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.

1. Installation of driver airbag

a. Connect the wiring harness connector of the driver airbag.



b. Install the driver airbag, and press it down hard enough to hear the sound of spring wire being caught.

2. Connect the negative cable of the storage battery
3. Close the front engine hood

10.2.9.3 Replacement of passenger airbag

Disassembly process

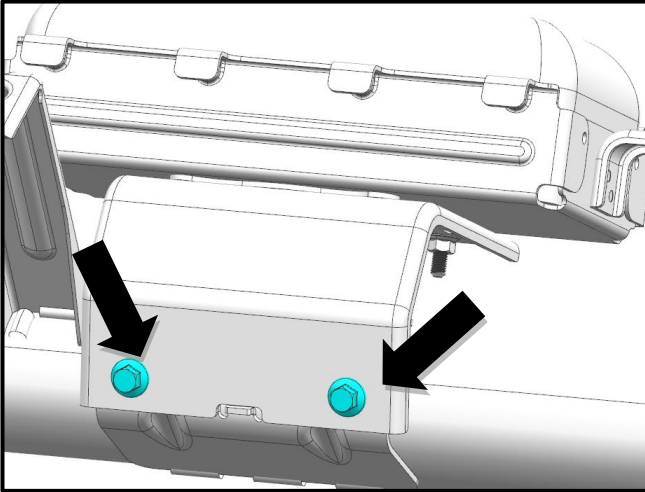
Warning

Please make sure that all power supply to the vehicle is disconnected before disassembly and installation of the airbag system.

Caution

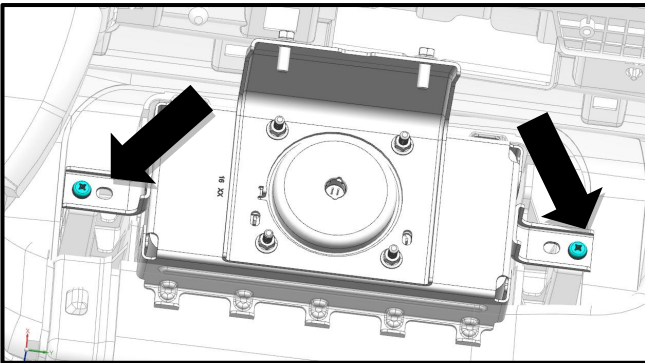
Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.

1. Disassemble the left kneeboard of the instrument board. Please refer to 13.5.3.1 Replacement of left kneeboard of instrument board
2. Disassemble the glove box. Please refer to 13.5.3.4 Replacement of instrument board glove box
3. Disassemble the left side tuyere panel assembly. Please refer to 13.5.3.6 Replacement of left side vent panel of instrument board
4. Disassemble the right side tuyere panel assembly. Please refer to 13.5.3.7 Replacement of right side vent panel of instrument board
5. Disassemble the brim assembly. Please refer to 13.5.3.2 Replacement of brim assembly
6. Disassemble the instrument board steering shroud. Please refer to 13.5.3.3 Replacement of instrument board steering shroud
7. Disassemble the upper mounting plate of the combination instrument. Please refer to 13.5.3.5 Replacement of upper mounting plate for combination instrument of instrument board
8. Disconnect the wiring harness connector of the co-driver airbag

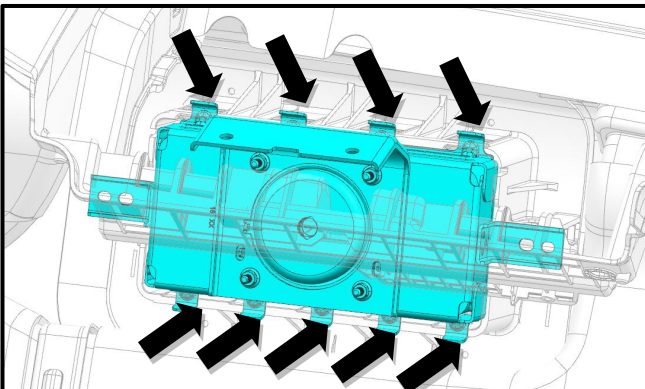


9. Remove the fixed bolts connecting the co-driver airbag to the cross member

10. Disassemble the instrument board body assembly. Please refer to 13.5.3.8 Replacement of instrument board



11. Remove the fixed bolts connecting the co-driver airbag to the airbag frame



12. Pry up the clips between the co-driver airbag and the airbag frame with a tool, and then remove the co-driver airbag

Installation process

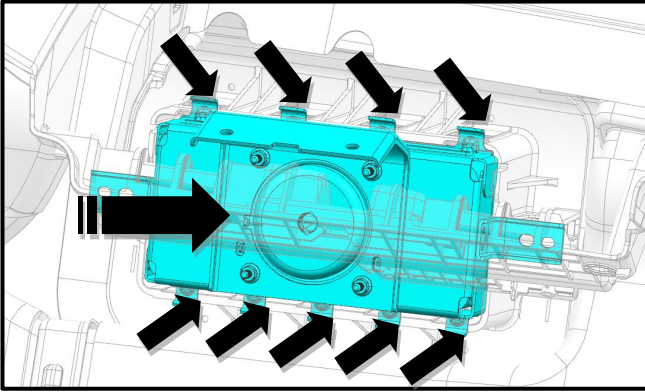
Warning

Please make sure that all power supply to the vehicle is disconnected before disassembly and installation of the airbag system.

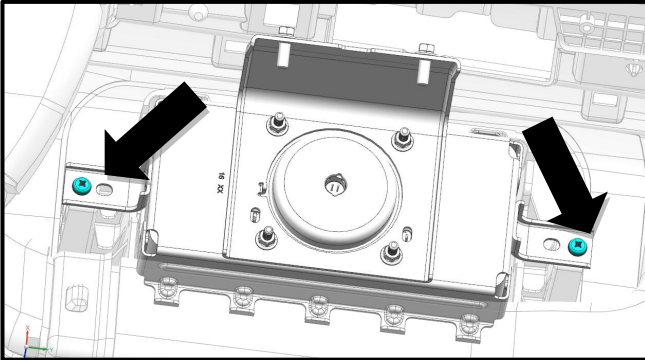
Caution

Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.

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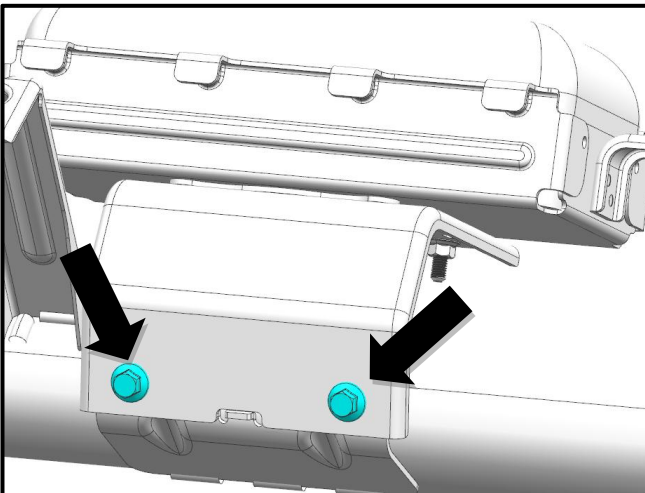


1. Place the co-driver airbag into the airbag frame, and make sure the clips clamped into place



2. Install the fixed bolts connecting the co-driver airbag to the airbag frame

3. Install the instrument board body assembly



4. Install the fixed bolts connecting the co-driver airbag to the cross member

5. Connect the wiring harness connector of the co-driver airbag

6. Install the upper mounting plate of the combination instrument

7. Install the instrument board steering shroud

8. Install the brim assembly

9. Install the right side tuyere panel assembly

10. Installing the left side tuyere panel assembly

11. Install the glove box assembly

12. Install the left kneeboard of the instrument board

10.3 Seat belt system

10.3.1 Specifications

10.3.2 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolts connecting front seat belt buckle to seat	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting front seat belt retractor to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting front seat belt guide tabs to body	M6X16	10±1
Fixed bolts connecting lower fixing points of front seat belt to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting upper fixing points of front seat belt to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting rear seat belt retractor to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting lower fixing points of rear seat belt to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting upper fixing points of rear seat belt to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting single-head buckle of rear seat belt to body	British system 7/16'-20UNF-2A	50+5
Fixed bolts connecting dual-head buckle of rear seat belt to body	British system 7/16'-20UNF-2A	50+5

10.3.3 Description and operation

10.3.3.1 Description and operation

Seat belts

The vehicle has seat belts in the front, middle and rear seats, which are the primary way to protect passengers. The seat belt can keep the passenger in the passenger compartment and gradually reduces the force of the impact in the following situations:

- Frontal impact collision
- Rear impact collision
- Side impact collision
- Rollover type collision

All vehicles are equipped with retractors with an emergency locking function. The seat belt has an automatic locking function. The locking function is activated when the seat belt is completely pulled out of the retractor in a quick pull. The locking function can prevent the seat belt from being pulled out beyond the permissible retraction position. It is recommended to secure the child seat with the self-locking function. This function can be canceled when the seat belt is fully retracted into the retractor. The seat belt is unlocked when the locking function is canceled. The seat belt can be pulled out of the retractor when the locking function is canceled. This vehicle is also equipped with an airbag system. Please refer to description and operation in "Airbag system".

Seat belt indicator light

The seat belt indicator light is located on the combination instrument to remind the customers to fasten the seat belt.

Child seat protection system

Warning!

Do not use rearward-facing child restraints on the passenger seat of this vehicle. The child seated in a rearward-facing child restraint on the passenger seat can be seriously injured when the passenger-side airbag inflates. If forward-facing child restraints apply to your child, make sure to move the front passenger seat as far back as possible before installing the child restraints. Ensure that the location of the child restraints does not conflict with any additional requirements of the manufacturer. For details; Please refer to the vehicle owner's manual and the operating guide supplied with the child restraints.

The child seat may only be used in the forward-facing riding position. The child seat should be installed and secured according to the manufacturer's guide. If the child seat has a top hoop strap, the seat needs to be secured. If a seat belt is used to secure a child seat, no passenger is allowed to sit in that seat.

10.3.4 System operating principle

10.3.4.1 System operating principle

Front seat belt system

The front seat belt system includes driver and passenger seat belt retractors, passenger identification sensor, and two front seat belt switches. The passenger recognition sensor is used to detect the presence of a passenger in the passenger seat. If detection reveals that no one is riding, extinguish the passenger seat belt warning light. Two front seat belt switches are located in the seat buckles to control the seat belt warning lights.

1. Driver seat belt warning light

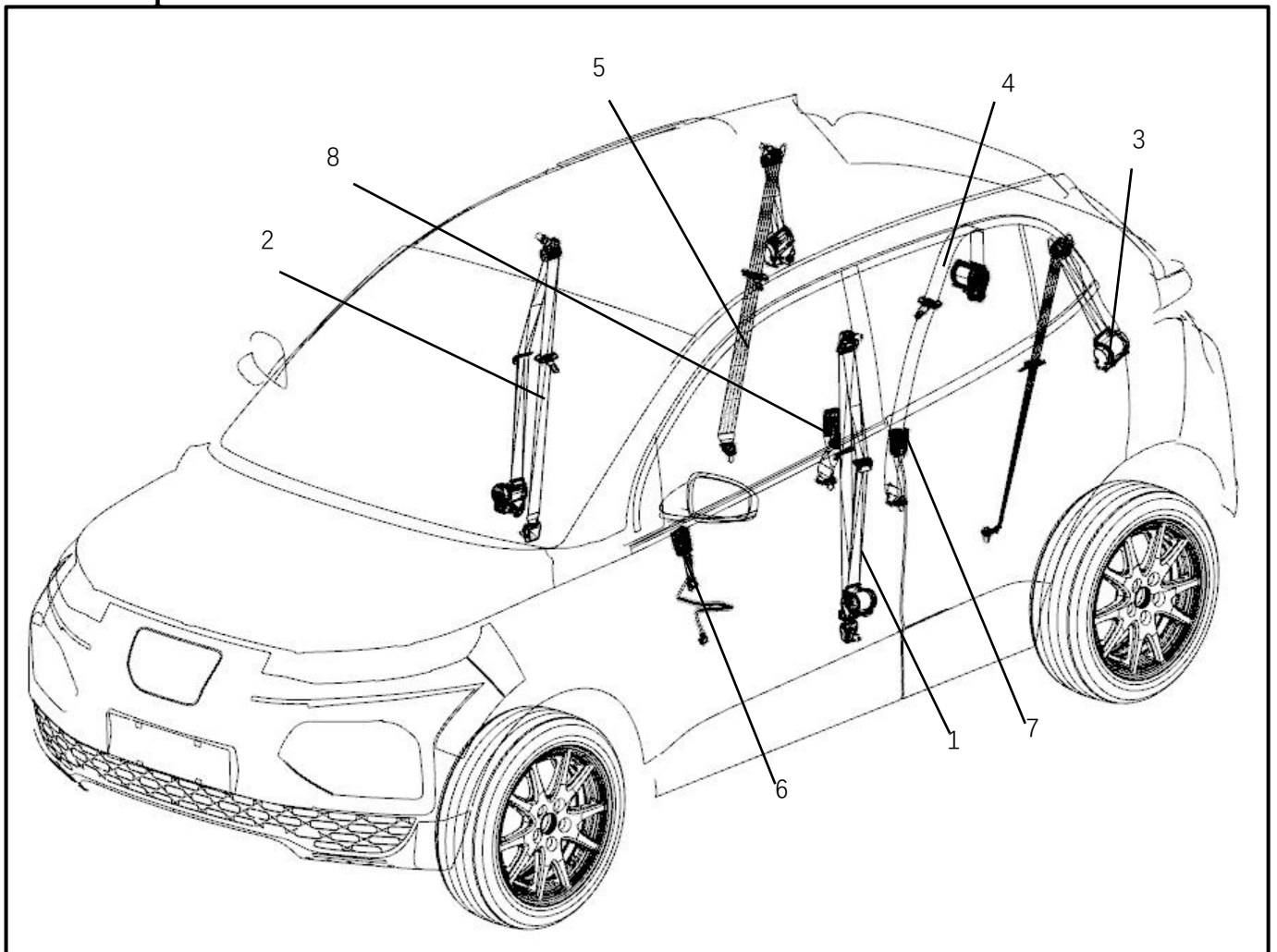
When the vehicle is powered on, and the driver does not fasten his/her seat belt, the airbag electronic control unit (ACU) detects the driver seat belt condition and sends a signal to the combination instrument assembly (CIA) via the CAN bus. The driver seat belt warning light on the combination instrument assembly goes on to remind the driver to fasten the seat belt.

2. Passenger seat belt warning light

When the vehicle is powered on, the recognition sensor detects whether the passenger seat is occupied and sends a signal to the airbag electronic control unit. The airbag electronic control unit detects the passenger seat belt condition and sends a signal to the instrument assembly. The combination instrument assembly causes the passenger seat belt warning light to illuminate.

10.3.5 Component location

10.3.5.1 Component location



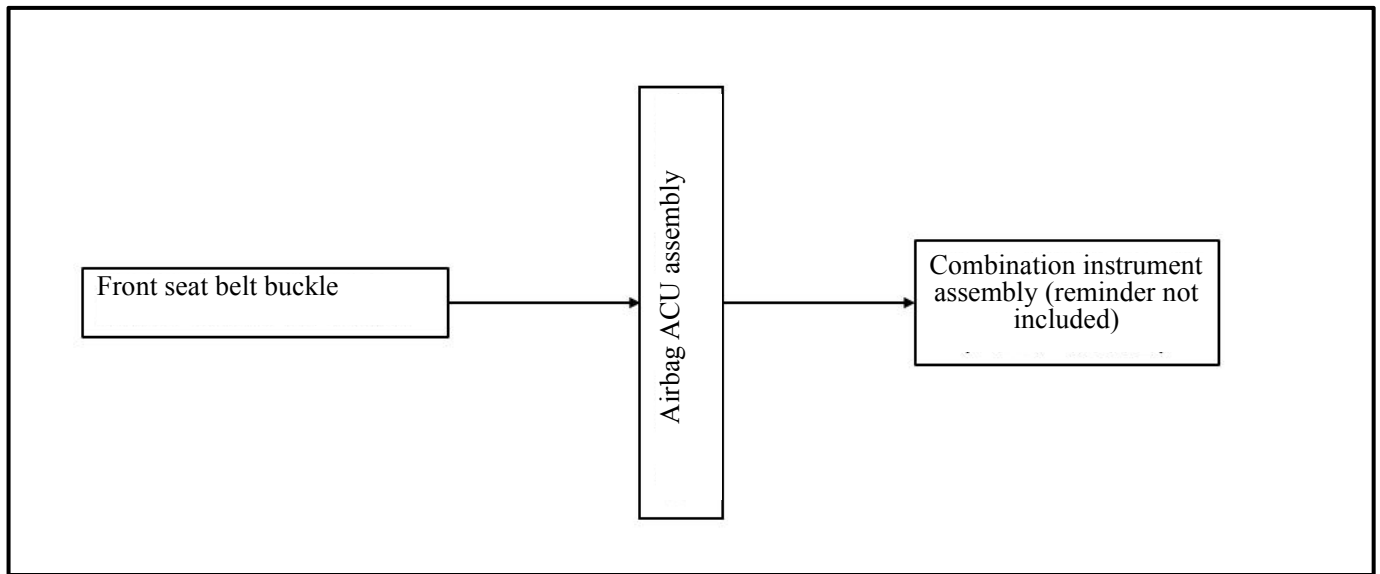
1. Left front emergency locking retractor assembly of seat belt
2. Right front seat belt retractor assembly
3. Left rear seat belt retractor assembly
4. Middle seat belt retractor assembly

5. Right rear seat belt retractor assembly
6. Front seat belt buckle assembly
7. Rear seat belt single-head buckle assembly
8. Rear seat belt dual-head buckle assembly

10.3.6 Electrical schematic diagram

10.3.6.1 Electrical block diagram

Schematic Diagram of Whole Vehicle Airbags



10.3.7 Diagnostic information and steps

10.3.7.1 Visual inspection

Confirmation of fault symptoms

The most difficult situation in troubleshooting is when no symptoms appear. In this case, it is necessary to thoroughly analyze the faults reported by the user. Then simulate the same or similar conditions and environment as or to that when the customer's vehicle has a fault. No matter how experienced and skilled the repair personnel is, if he or she proceeds with troubleshooting without confirming the symptoms of the fault, he or she will miss something important in the repair and make a wrong guess somewhere. This will make troubleshooting impossible.

Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

Connector joints and pivot points for vibration are the main parts that should be thoroughly checked. The vibration method is recommended in cases where failure may be due to vibration:

- a. Gently vibrate the potentially faulty part with your finger and check for faults.
- b. Gently shake the connector in both vertical and horizontal directions.
- c. Gently shake the wiring harness in both vertical and horizontal directions.

On-board inspection

Check the driver seat belt warning light:

- a. The vehicle is powered on.
- b. When the driver seat belt is released, check whether the driver seat belt warning light on the combination instrument flashes on and off.
- c. When the driver seat belt is tightened, check whether the driver seat belt warning light on the combination instrument is off.

Check the passenger seat belt warning light:

- a. The vehicle is powered on.
- b. If the passenger seat is occupied and the seat belt is not fastened, check whether the passenger seat belt warning light on the combination instrument flashes on and off.
- c. If the passenger seat is occupied and the seat belt is fastened, check whether the passenger seat belt warning light on the combination instrument is off.

10.3.7.2 Seat belt warning light fault

Please refer to 10.2.8.1 Warning light remaining on

10.3.8 Disassembly and installation

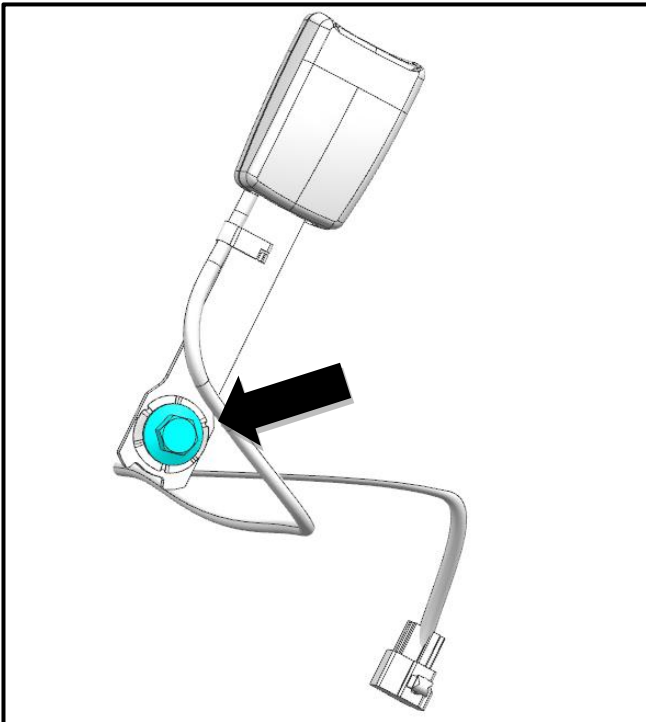
10.3.8.1 Replacement of front seat belt buckles

Disassembly process

Caution

The left and right sides are disassembled and installed in the same way.

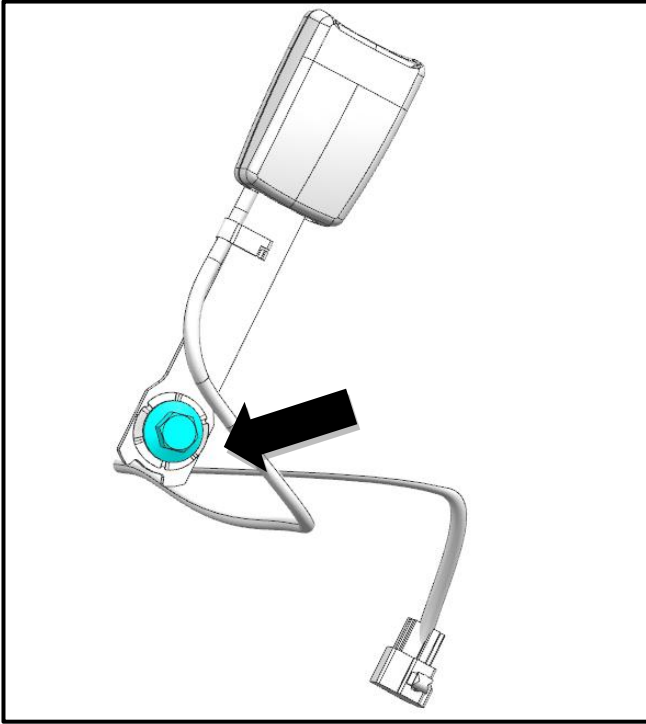
1. Disassemble the left front seat assembly. Please refer to 12.14.7.1 Replacement of front seat assembly
2. Remove the fixed bolts of the front seat belt buckle



Installation process

Caution

The left and right sides are installed in the same way.



1. Remove the fixed bolts of the front seat belt buckle
2. Install the left front seat assembly

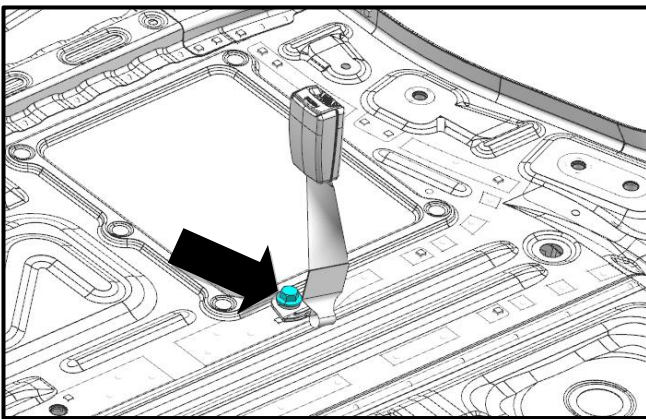
10.3.8.2 Replacement of rear single-head seat belt buckle

Disassembly process

Caution

The left and right sides are disassembled and installed in the same way.

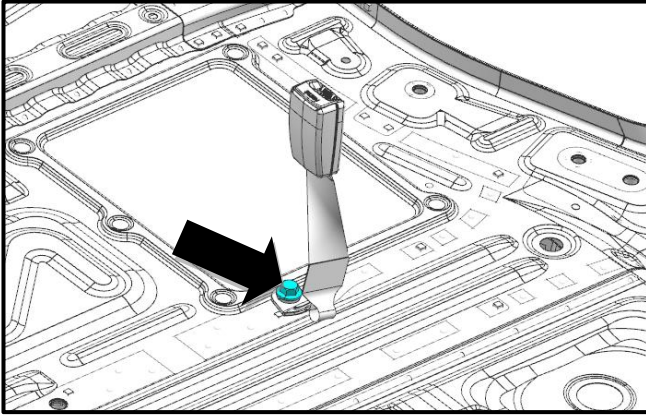
1. Disassemble the rear seat cushions. Please refer to 12.14.7.2 Replacement of rear seat cushions
2. Remove the fixed bolts of the rear single-head buckle



Installation process

Caution

The left and right sides are installed in the same way.



1. Install the fixed bolts of the rear single-head buckle
2. Install rear seat cushions

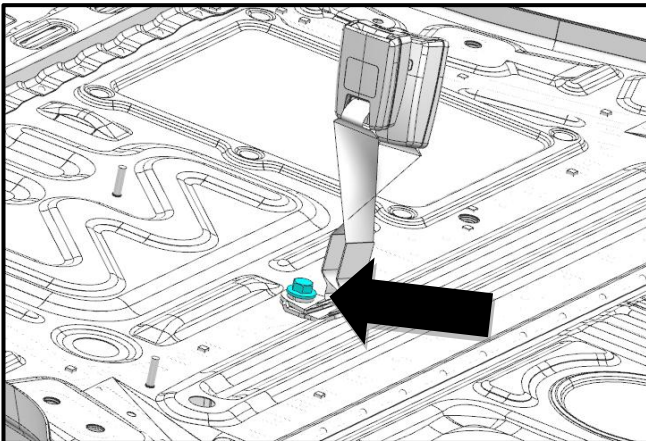
10.3.8.3 Replacement of rear dual-head seat belt buckles

Disassembly process

Caution

The left and right sides are disassembled and installed in the same way.

1. Disassemble the rear seat cushions. Please refer to 12.14.7.2 Replacement of rear seat cushions
2. Remove the fixed bolts of the rear double-head buckle

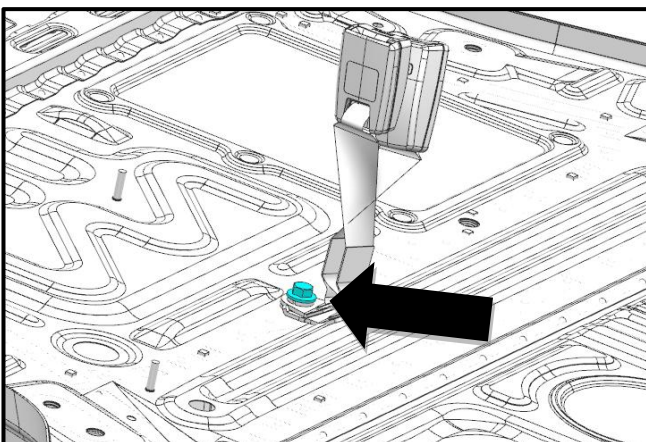


Installation process

Caution

The left and right sides are installed in the same way.

1. Install the fixed bolts of the rear double-head buckle
2. Install rear seat cushions



10.3.8.4 Replacement of front seat belt assembly

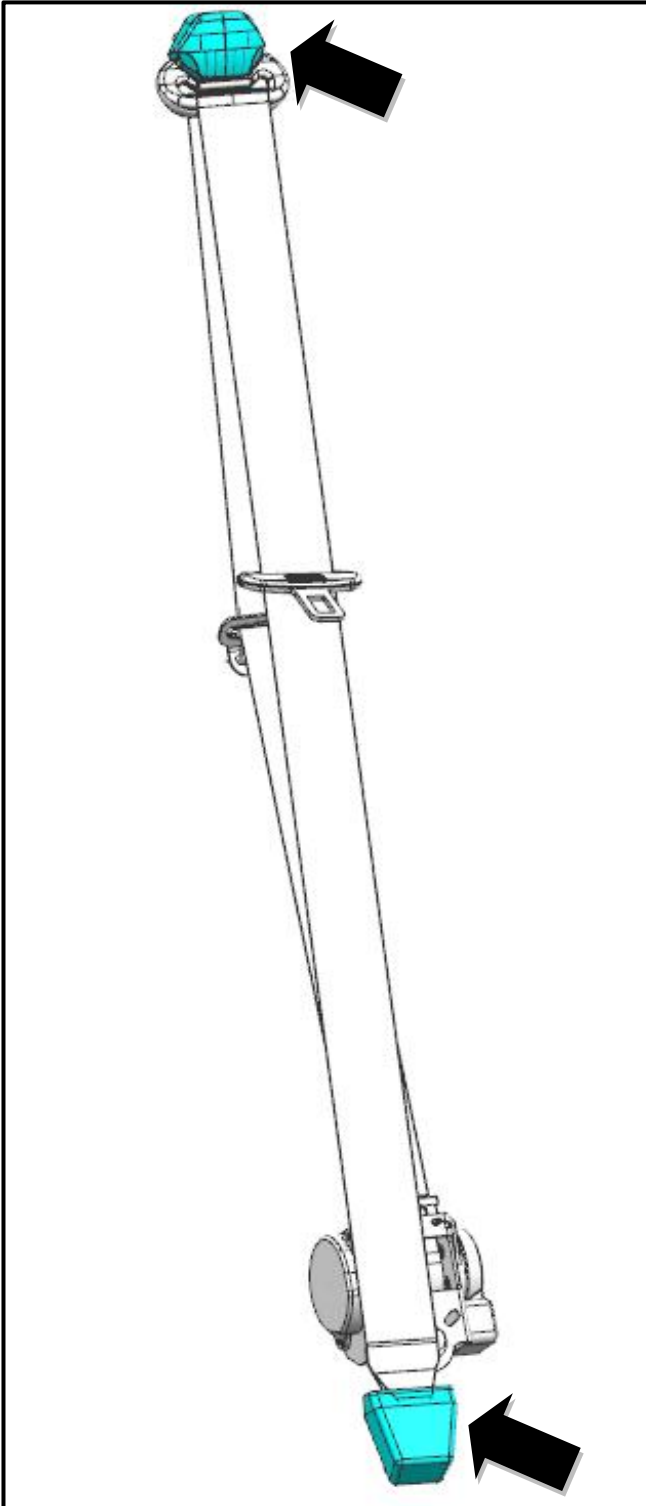
Disassembly process

Caution

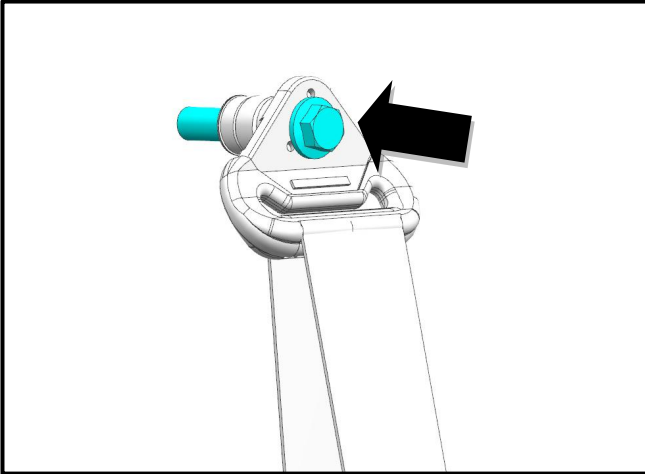
The left and right sides are disassembled and installed in the same way.

1. Disassemble the front seat assembly. Please refer to 12.14.7.1 Replacement of front seat assembly

2. Disassemble two decorative shells from the front seat belt assembly



3. Remove the bolts for the upper fixing points of the front seat belt



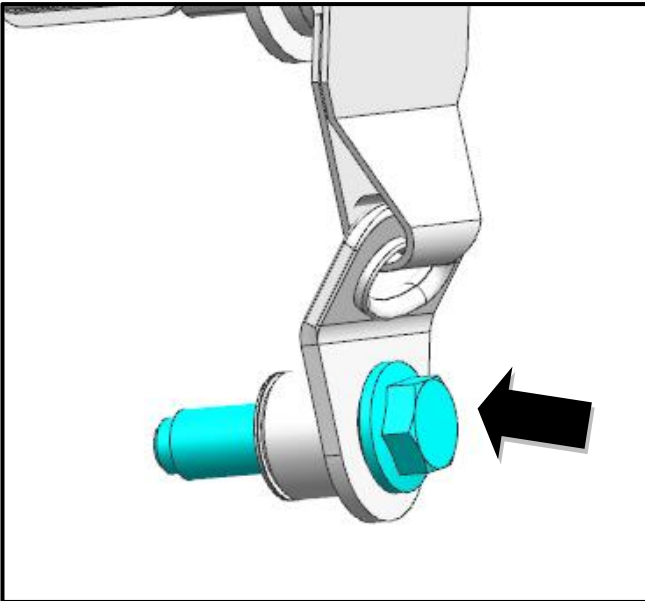
4. Remove the bolts for the lower fixing points of the front seat belt

5. Please refer to 13.6.2.9 Replacement of left front sill guard assembly to disassemble the left front sill guard assembly

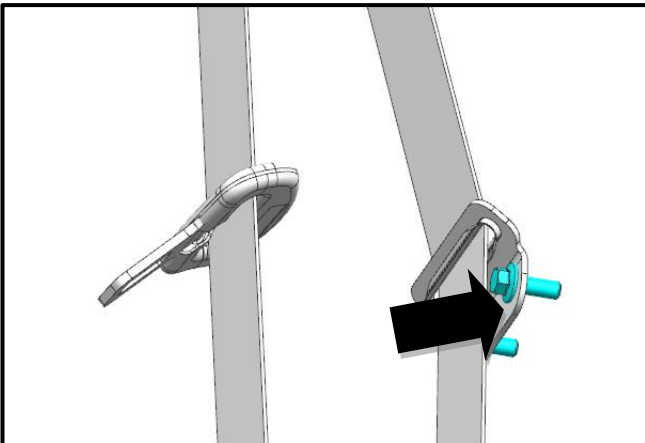
6. Please refer to 13.6.2.10 Replacement of rear door sill guard assembly to disassemble the left rear door sill guard assembly

7. Disassemble the B-pillar lower guard panel assembly. Please refer to 13.6.2.8 Replacement of B-pillar lower guard panel assembly

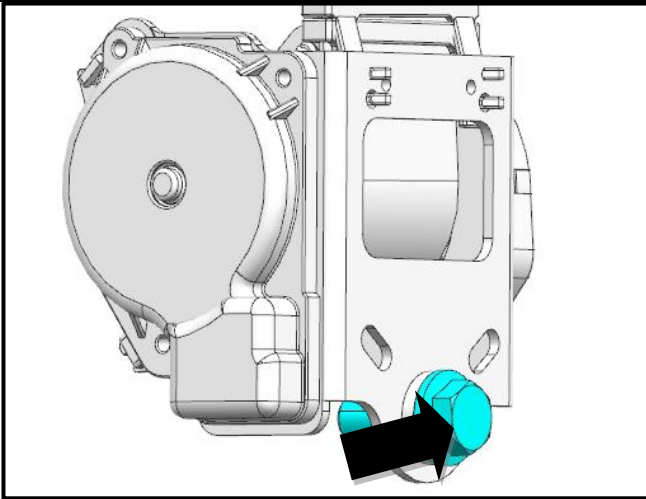
8. Disassemble the B-pillar upper guard panel assembly. Please refer to 13.6.2.7 Replacement of B-pillar lower guard panel assembly



9. Remove two fixed bolts for the seat belt guide tabs



10. Remove the fixed bolts for the front seat belt retractor assembly

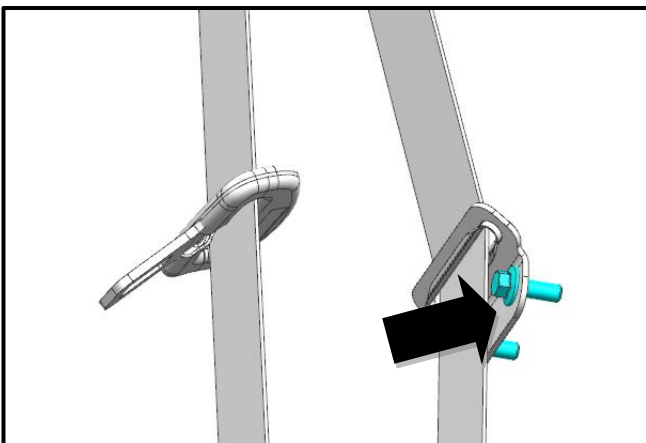
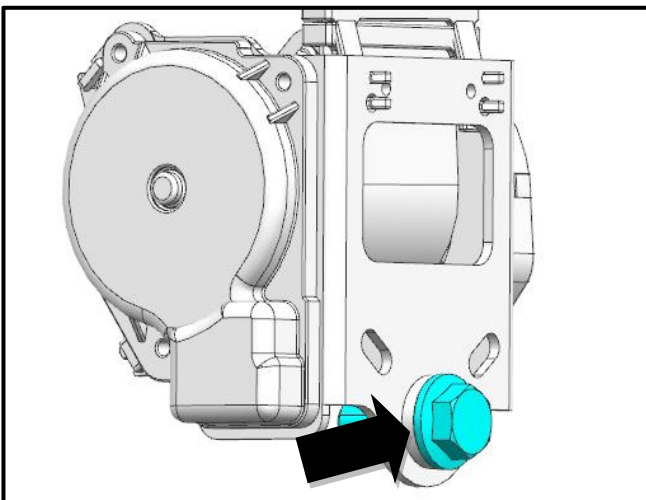


Installation process

Caution

The left and right sides are installed in the same way.

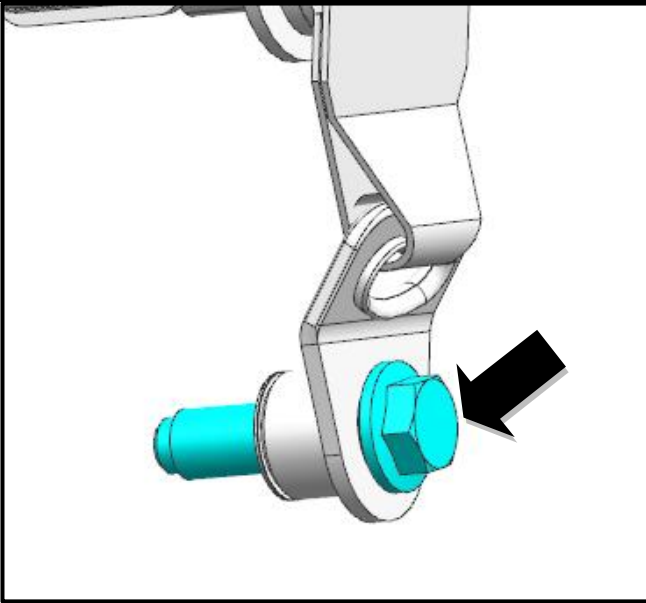
1. Install the bolts of the seat belt retractor



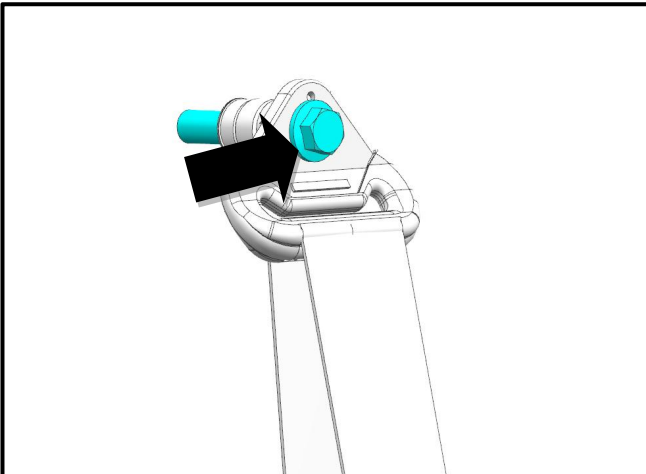
2. Install two fixed bolts for the seat belt guide tabs
3. Install the B-pillar upper guard panel assembly
4. Install the B-pillar lower guard assembly.
5. Install the left rear doorsill guard panel assembly
6. Install the left front door sill guard assembly.

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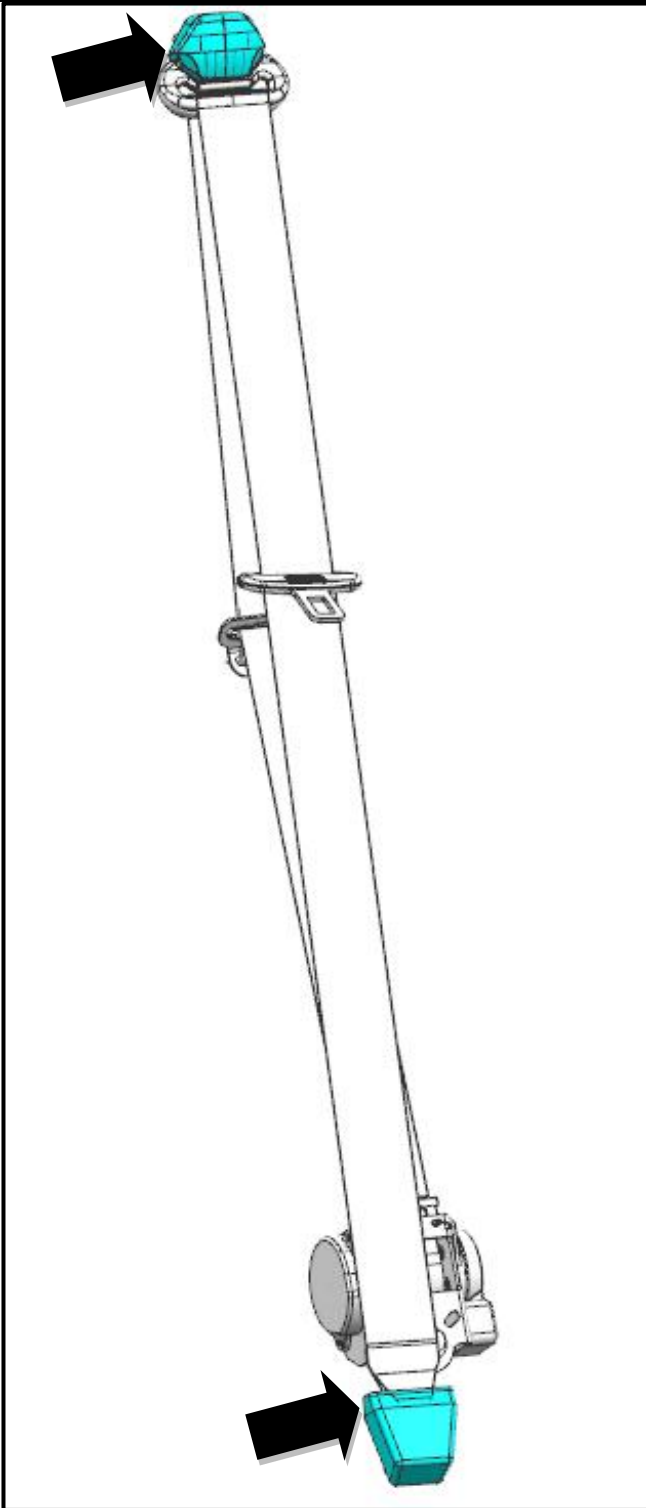
7. Install the bolts for the lower fixing points of the front seat belt



8. Install the bolts for the upper fixing points of the front seat belt



9. Install two shells for the front seat belt
10. Install the front seat assembly



10.3.8.5 Replacement of seat belt assemblies on both rear sides

Disassembly process

Caution

The retractors on both rear sides are disassembled and installed in the same way.

1. Disassemble the rear seat cushion assembly. Please refer to 12.14.7.2 Replacement of rear seat cushion
2. Please refer to 13.6.2.10 Replacement of rear door sill guard assembly to disassemble the left rear door sill guard assembly

3. Please refer to 13.6.2.13 Replacement of rear back door sill guard assembly to disassemble the rear back door sill guard assembly

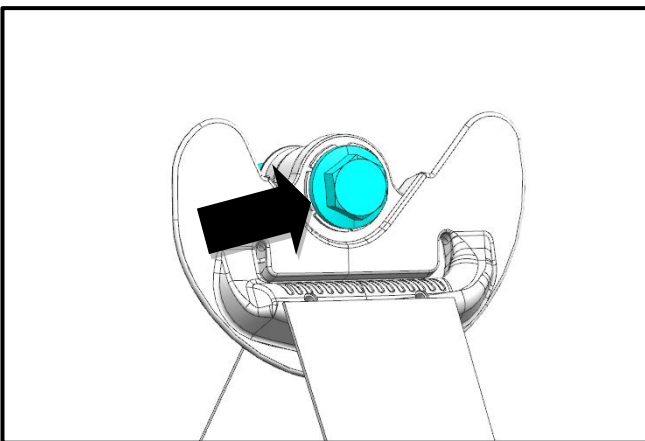
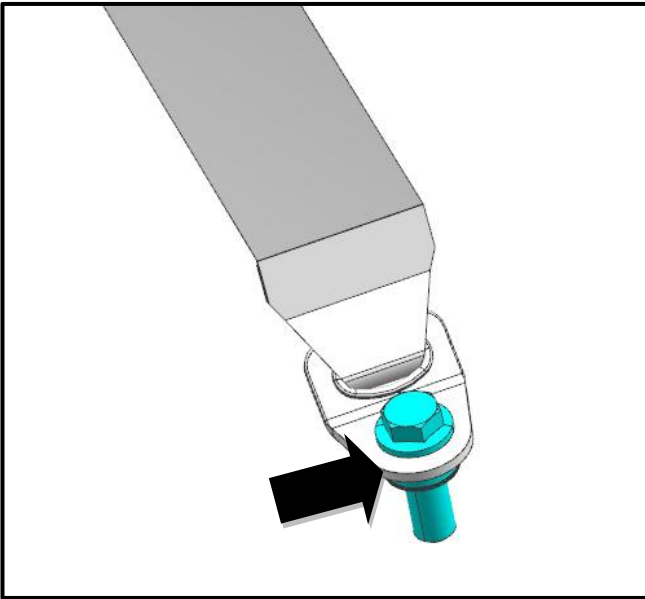
4. Disassemble the C-pillar lower guard panel assembly. Please refer to 13.6.2.12 Replacement of C-pillar lower guard panel assembly

5. Disassemble the C-pillar upper guard panel assembly. Please refer to 13.6.2.11 Replacement of C-pillar upper guard panel assembly

6. Disassemble the rear seat back assembly. Please refer to 12.14.7.3 Replacement of rear seat back

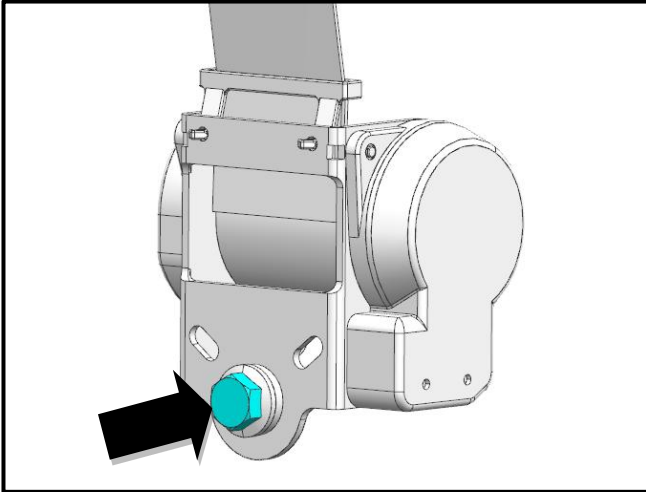
7. Disassemble the left rear seat belt assembly

a. Remove the bolts for the lower fixing points of the left rear seat belt



b. Remove the bolts for the fixing points of the guide ring of the left rear seat belt

c. Remove the fixed bolts for the left rear seat belt retractor



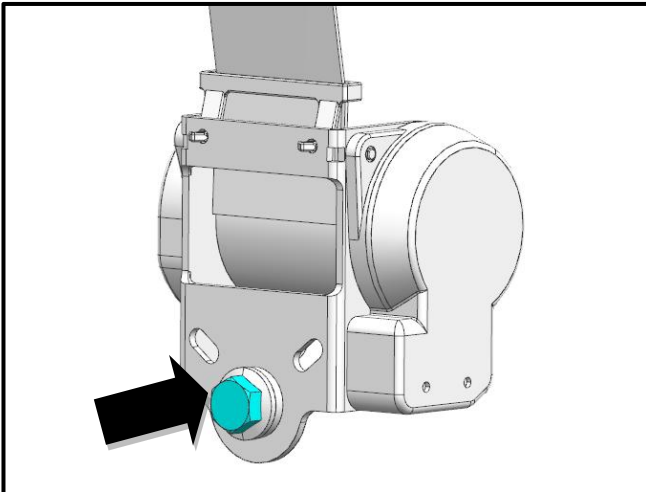
Installation process

Caution

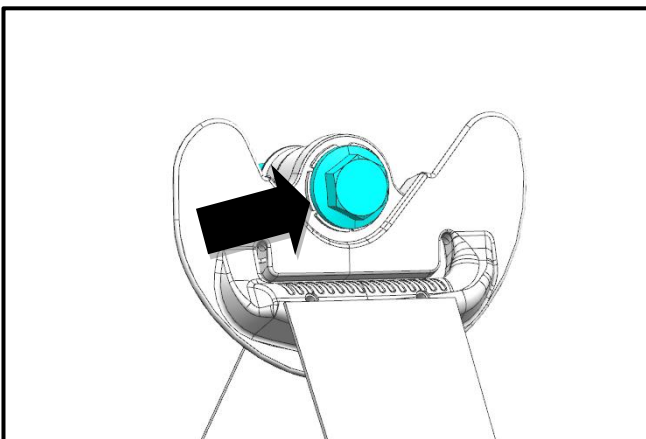
The retractors on both rear sides are installed in the same way.

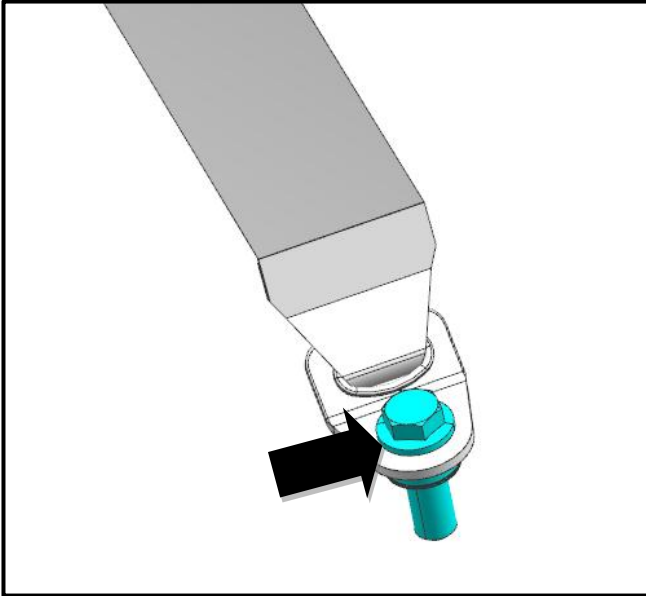
1. Install the left rear seat belt retractor assembly

a. Install the fixed bolts for the left rear seat belt retractor



b. Install the bolts for the fixing points of the guide ring of the left rear seat belt





- c. Install the bolts for the lower fixing points of the left rear seat belt
2. Install the rear seat back assembly
3. Install the left C-pillar upper guard panel assembly
4. Install the left C-pillar lower guard panel assembly
5. Install the rear back door sill guard assembly
6. Install the left rear doorsill guard panel assembly
7. Install the rear seat cushion assembly

11 Vehicle control system

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11.1 Warnings and precautions

11.1.1 Warnings and precautions

11.1.1.1 Warnings and precautions

Warnings about disconnecting the battery

Warning!

Unless otherwise stated in the operating procedures, the vehicle shall be powered off and all electrical loads shall be “OFF” before any electrical component is serviced. Moreover, if tools or equipment can easily contact the exposed energized electrical terminals, the negative cable of the battery shall be disconnected. Personal injury and/or damage to the vehicle and vehicle components may be caused by violation of these safety instructions.

Warnings about power batteries

Warning!

1. Wear insulating gloves, high-voltage insulating shoes, and helmets during the installation of connecting copper bars.
2. Before the assembly of connecting copper bars, confirm that there are no foreign matters such as heat-shrinkable sleeves (adhesive tape) on the contact surface between the connector and the pole.
3. During the placement of short-circuit prevention tooling, check whether the device is placed correctly before installing the harness.
4. To prevent short circuits, wrap the exposed copper bars not connected to the poles with insulating tape.
5. Handle the power batteries gently.
6. The water-cooled connection tubes need to be tested for airtightness after installation.
7. After assembly, test the power battery pack for air tightness.

Warning!

A set of sealed high-voltage power batteries is contained in the electric vehicle. Improperly exposed power batteries may cause a risk of intense combustion and electric shock, leading to severe injuries or deaths and environmental pollution.

Warnings about the window lift function

Warning!

The window will stop closing and drop down a distance automatically if a foreign object is sensed between the window frame and the window during the automatic closing of the window. Never use any part of the body to test the anti-pinch function.

If an object gets stuck at the moment when the car window is completely closed, the anti pinch function will not work.

Warnings about safety precautions for high-voltage risks

Warning!

When the high-voltage power is not disconnected, never touch high-voltage components with bare hands.

The high-voltage components of this vehicle include: drive control device, high-voltage power distribution device, high-voltage main cable, charging socket, power battery, drive motor, electric compressor, and high-voltage heater, etc.

After the vehicle has been driven for a period of time, the surface of the drive motor, the drive control unit, and the surface of the electric vacuum pump are at a higher temperature. If the air-conditioning is used for cooling, the surface of the electric air-conditioning compressor and the surface of the radiator are at a higher temperature. In these cases, do not touch the above components with bare hands.

Never disassemble the high-voltage electrical components in the vehicle, and unplug or disconnect the high-voltage connectors and cables in the vehicle at will, otherwise severe injuries from electric shock and vehicle damage may occur. Orange bellows are used for wrapping the high-voltage cables in the vehicle for your identification.

11.2 Vehicle control unit (VCU)

11.2.1 Specifications

11.2.1.1 Fastener specifications

Fastener name	Specifications	Quantity	Torque range (N·m)
Fixed bolts for vehicle control unit	M06×1	4	8

Caution!

Correct fasteners should be used in the correct position. The part number of the fasteners to be replaced should be correct. The maintenance procedures contain specific statements on fasteners to be replaced or requiring the use of thread locking adhesive or sealant. Unless otherwise stated, no paint, lubricant, or corrosion inhibitor should be used on fasteners or fastener attachment surfaces. The torque and clamping force of the fastener may be affected by the coatings, resulting in damage to the fastener. Use the correct tightening sequence and tightening torque to avoid damage to the parts and system when installing fasteners.

11.2.2 Description and operation

11.2.2.1 Description and operation

As the core component of the vehicle, the vehicle control unit coordinates the vehicle's battery management system, motor controller, charger controller and other control units through the CAN bus to realize the dynamics, economy and comfort of the whole vehicle.

High-voltage power-on and power-off functions:

Drive power-on: It is a power-on function under normal vehicle functions.

Drive power-off: It is a power-off function under normal vehicle functions.

Emergency power-off: It is an abnormal power-off function in case of collision fault, level 3 insulation fault.

Power-off in case of general faults: It is a faulty power-off function when there is a non-level 3 insulation fault, and non-level 3 fault of the whole vehicle.

Charging power-on: It is a power-on function at the time of charging.

Charging power-off: It is a power-off function when the charging is completed or when the charging is exited.

High-voltage power-on and power-off arbitration function: It ensures that charging power-on and power-off is prioritized over drive power-on and power-off.

Drive functions:

Gear recognition: Logical gear output can be realized according to the current vehicle speed and output torque.

Driving mode recognition: The function of switching between economy mode, NORMAL mode and sport mode can be realized under certain conditions.

Feedback torque control under gliding condition: The recovery of gliding energy is performed in the state where the brake footstep and accelerator footstep of the whole vehicle are not pressed.

Feedback torque control under braking condition: The whole vehicle performs the recovery of braking energy according to the state of the accelerator footstep and brake footstep.

Drive torque control: The torque output, arbitration, distribution and filtering is performed according to the accelerator footstep opening, gear position and current speed during normal driving.

Gear anti-theft: The gear lock signal is output to the gear shifter according to the state of the whole vehicle.

Maximum speed limit: The torque output is limited when the vehicle reaches the maximum speed set by the factory to realize speed limitation.

Creep function: In starting in gear, the whole vehicle will slowly travel to the calibrated speed.

Limp home: In case of any fault, the whole vehicle is reduced in torque and driven at limited speed.

Collision protection: The collision signals are captured from the airbag sensors, and the torque output stops when a collision occurs to cut off high-voltage power.

Vacuum pump control: The vacuum pump signals are captured and the zero torque output is controlled.

Hill-start assist function: When the whole vehicle is on a slope, it controls the whole vehicle to move forward slowly and assists in hill start.

Cruise control: It controls the vehicle to travel at a set speed according to the driver's settings.

Thermal management functions:

Drive high-pressure heat dissipation function: Under the drive state, it controls the water pump and fan to dissipate the heat of the motor, electronic control and CDU.

Charging high-pressure heat dissipation function: Under the charging state, it controls the water pump and fan to dissipate the heat of the CDU.

Air-conditioning heating function: It controls the PTC relay to realize the air-conditioning heating function.

Air-conditioning cooling function: The air-conditioning cooling enable command is given via the CAN bus.

Power anti-theft function:

It prevents the whole vehicle from being started illegally by being certified with PEPS anti-theft.

Attachment management function:

It controls the operating status of the DCDC and other related attachment.

Remaining mileage display function:

The endurance mileage is calculated by calculating the average power consumption per 100 km and the remaining battery capacity.

Troubleshooting function:

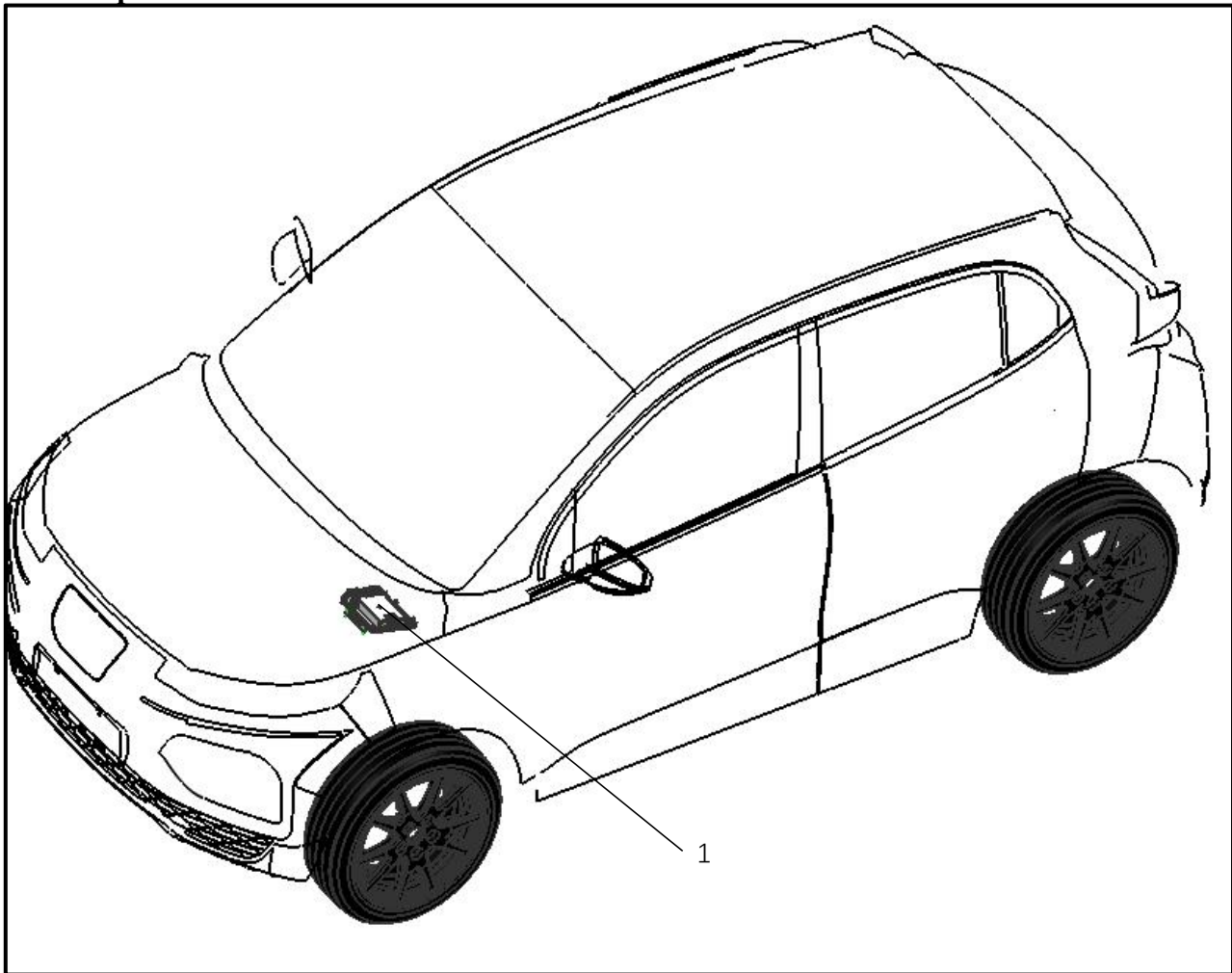
It tackles different levels of faults of the whole vehicle.

Gateway function:

The VCU has a signal forwarding function between different buses.

11.2.3 Component location

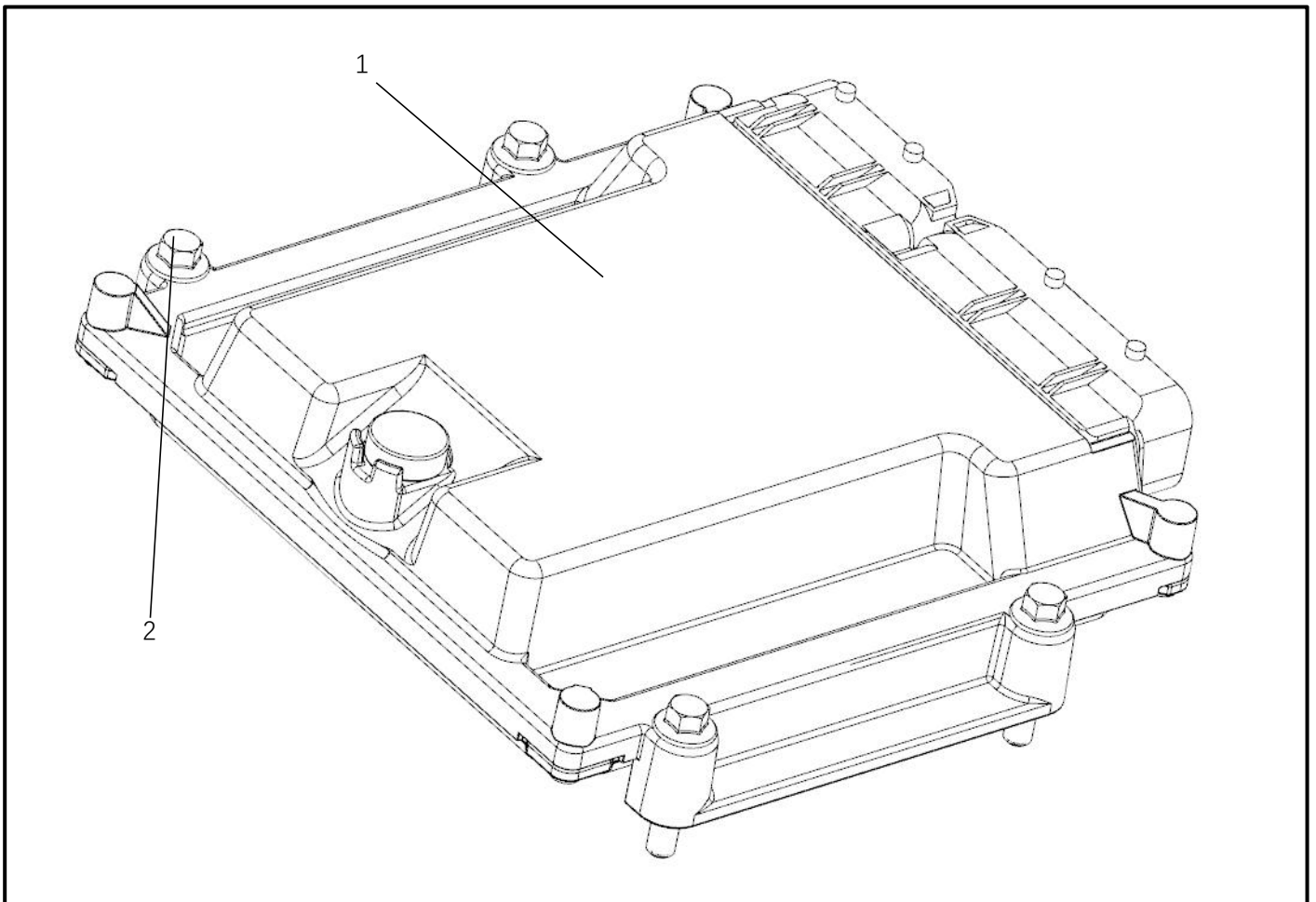
11.2.3.1 Component location



1. Vehicle control unit

11.2.4 Device sketch

11.2.4.1 Device sketch

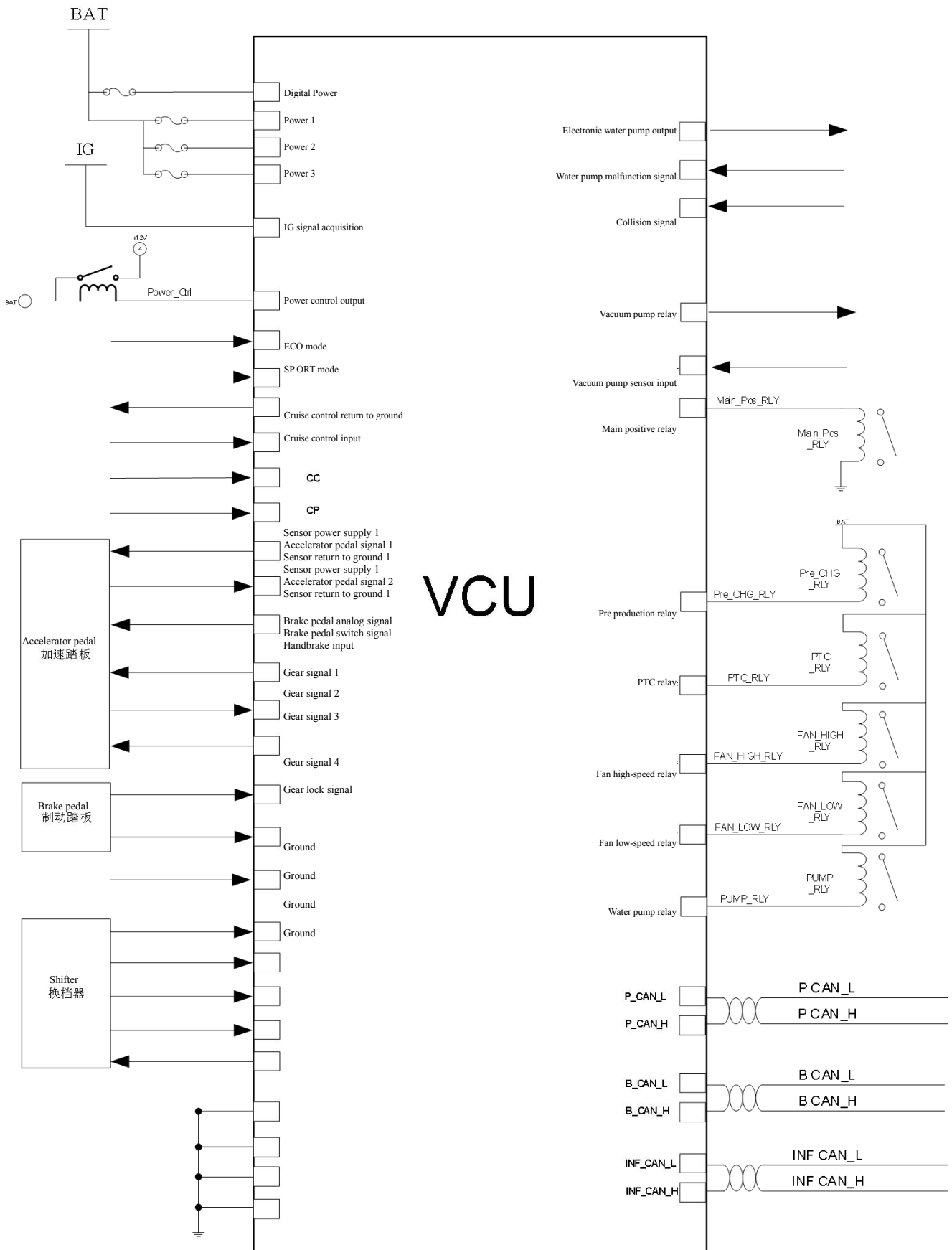


1. Vehicle control unit assembly

2. Hexagonal flange bolts

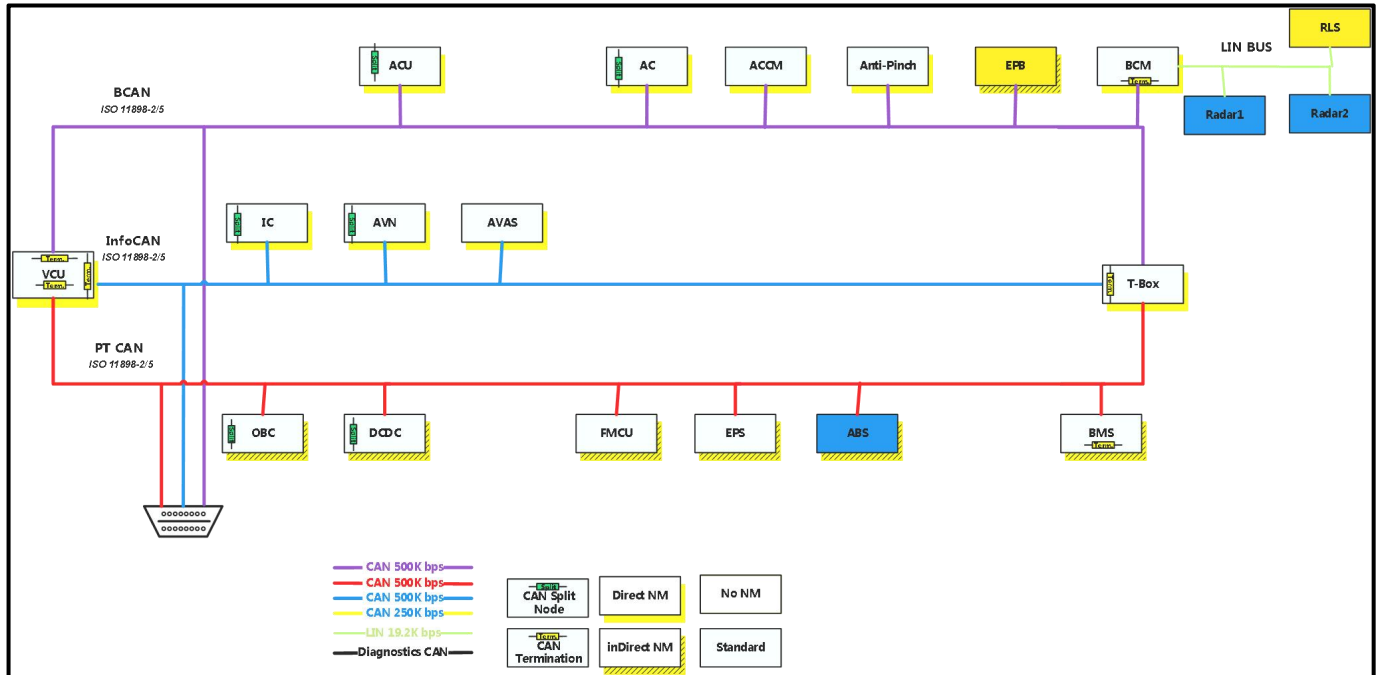
11.2.5 Electrical block diagram

11.2.5.1 Electrical block diagram



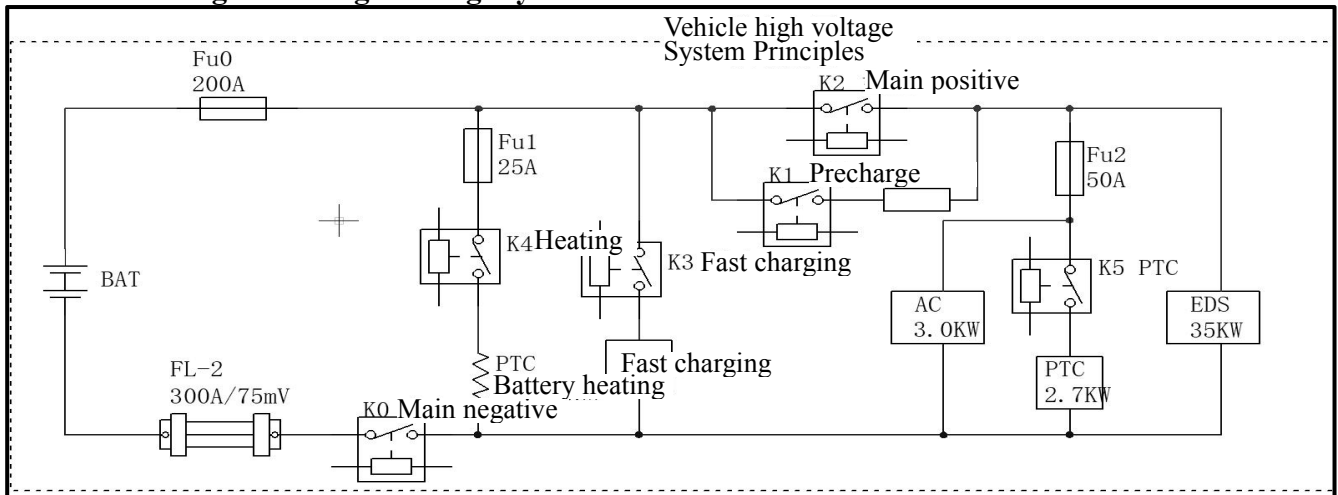
11.2.6 Network topology

11.2.6.1 Network topology



11.2.7 Block diagram of high-voltage system

11.2.7.1 Block diagram of high-voltage system



11.2.8 Diagnostic information and steps

11.2.8.1 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

11.2.9 Visual inspection

1. Check for aftermarket additions that may influence the proper operation of the VCU.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

11.2.9.1 Write controller data

S.N.	Operation
Step 1	Connect the diagnosis instrument and open the diagnostic software
Step 2	Select [Dayun New Energy]
Step 3	Select brand [Dayun Yuehu]
Step 4	Select the controller [Vehicle Control Unit (VCU)]
Step 5	Select [ECU Flashing].
Step 6	Click OK to select the corresponding model program

11.2.9.2 List Type of VCU diagnostic trouble code (DTC)

S.N.	DTC display code	Fault description	Fault recovery conditions	Possible cause	Maintenance suggestion
1	U100087	Missing BMS (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
2	U010187	Missing MCUF (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
3	U100187	Missing DCDC (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
4	U011487	Missing OBC (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
5	U012187	Missing ABS (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
6	U012887	Missing EPB (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
7	U013187	Missing EPS (ECU)	All cycle and mixed messages received from the node are received, \geq 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
8	U014087	Missing BCM (ECU)	All cycle and mixed messages received	Faulty controller or faulty wiring	Check whether the

			from the node are received, ≥ 100 ms	harness of the corresponding controller	corresponding controller is offline
9	U015587	Missing IC (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
10	U016487	Missing AC/TMS (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
11	U019987	Missing ACCM (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
12	U020087	Missing PWU (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
13	U019687	Missing AVN (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
14	U010587	Missing ACU(SRS) (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
15	U019887	Missing TBOX (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline
16	P100133	High-voltage power-on timeout fault	Complete a normal high-voltage power-on process	Faulty motor, battery, or pre-charge failure	Check the motor or battery fault codes
17	P100233	High-voltage power-off timeout fault	Complete a normal high-voltage power-off process	Speed signal not 0, torque feedback not 0, current feedback not less than 3A	Check the fault codes of the BMS and MCU
18	P101112	Throttle signal 1 overrun fault	$0.6V < AccVol < 4.8V$	Throttle signal wire 1 shorted to ground or power supply	Check the throttle analog signal wire 1
19	P101212	Throttle signal 2 overrun fault	$0.1V < AccVol < 2.5V$	Throttle signal wire 2 shorted to ground or power supply	Check the throttle analog signal wire 2
20	P101312	Throttle signal rationality fault	APP1 and APP2 synchronization is normal	Faulty throttle signal wire	Check the throttle analog signal wire
21	P101412	Brake signal 1 overrun fault	$0.1V < BrakVol < 4.8V$	Brake signal wire 1 shorted to	Check the brake analog signal

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				ground or power supply	wire 1
22	P101512	Brake signal 2 overrun fault	$0.1V < \text{BrakVol} < 2.5V$	Brake signal wire 2 shorted to ground or power supply	Check the brake analog signal wire 2
23	P102113	Main relay control open-circuit	The main relay drive wiring is connected properly	Main relay drive wiring open-circuit	Check the main relay drive wiring
24	P102111	Main relay control short-to-ground fault	The drive wiring short-to-ground of the main relay is restored to normal	Main relay drive wiring shorted to ground	Check the main relay drive wiring
25	P102213	Pre-charge relay open-circuit	The pre-charge relay drive wiring is connected properly	Pre-charge relay drive wiring open-circuit	Check the pre-charge relay drive wiring
26	P102212	Pre-charge relay short-to-power supply fault	The drive wiring short-to-power supply of the pre-charge relay is restored to normal	Pre-charge relay drive wiring shorted to power supply	Check the pre-charge relay drive wiring
27	P102313	Cooling fan low-speed relay open-circuit	The drive of the cooling fan low-speed relay is connected properly	Cooling fan low-speed relay drive wiring open-circuit	Check the cooling fan low-speed relay drive wiring
28	P102312	Cooling fan low-speed relay short-to-power supply fault	The drive wiring short-to-power supply of the cooling fan low-speed relay is restored to normal	Cooling fan low-speed relay drive wiring shorted to power supply	Check the cooling fan low-speed relay drive wiring
29	P102413	Cooling fan high-speed relay open-circuit	The drive wiring of the cooling fan high-speed relay is connected properly	Cooling fan high-speed relay drive wiring open-circuit	Check the cooling fan high-speed relay drive wiring
30	P102412	Cooling fan high-speed relay short-to-power supply fault	The drive wiring short-to-power supply of the cooling fan high-speed relay is restored to normal	Cooling fan high-speed relay drive wiring shorted to power supply	Check the cooling fan high-speed relay drive wiring
31	P102613	PTC high-voltage power supply open-circuit	The drive wiring of the PTC high-voltage power supply is connected properly	PTC high-voltage power supply drive wiring open-circuit	Check the PTC high-voltage power supply drive wiring
32	P102612	PTC high-voltage power supply short-to-power supply fault	PTC high-voltage power supply drive wiring shorted to power supply	PTC high-voltage power supply drive wiring shorted to power supply	Check the PTC high-voltage power supply drive wiring
33	P102813	Power low-voltage supply open-circuit	The drive wiring open-circuit of power low-voltage supply is connected properly	Power low-voltage supply drive wiring open-circuit	Check whether the power low-voltage supply drive wiring is restored to normal
34	P102812	Power low-voltage supply short-to-power supply fault	The drive wiring short-to-power supply of the power low-voltage supply is restored to normal	Power low-voltage supply drive wiring shorted to power supply	Check the power low-voltage supply drive wiring

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35	P102913	Water pump 1 relay open-circuit	The drive wiring of the water pump 1 relay is connected properly	Water pump 1 relay drive wiring open-circuit	Check the drive wiring of the water pump 1 relay
36	P102912	Water pump 1 relay short-to-power supply fault	The drive wiring short-to-power supply of the water pump 1 relay is restored to normal	Water pump 1 relay drive wiring shorted to power supply	Check the drive wiring of the water pump 1 relay
37	P103013	Shift knob output open-circuit	The drive wiring of the shift knob output is connected properly	Shift knob output drive wiring open-circuit	Check the drive wiring of the shift knob output
38	P103011	Shift knob output short-to-ground fault	The drive wiring short-to-ground of the shift knob output is restored to normal	Shift knob output drive wiring shorted to ground	Check the drive wiring of the shift knob output
39	P103477	Vacuum pump failure	When the system detects a vacuum degree ≥ 75 kpa (voltage greater than 3.4 V), the vacuum pump stops working and exits the safety mode	Vacuum pump failure	Check the vacuum pump wiring
40	P103577	Sensor failure	When the system detects a vacuum degree ≥ 75 kpa (voltage greater than 3.4 V), the vacuum pump stops working and exits the safety mode	Sensor failure	Check the sensor wiring
41	P103012	Minor leakage	When the system detects a vacuum degree ≥ 75 kpa (voltage greater than 3.4 V), the vacuum pump stops working and exits the safety mode	Minor leakage	Check the vacuum pump wiring
42	P103112	Gross leakage	1. The system continues to make judgment, and if it detects the drop value of primary voltage value is less than 0.1 V, it judges to cancel the alarm 2. The alarm will be canceled if the voltage value is greater than 1.7 V	Gross leakage	Check the vacuum pump wiring
43	U014587	Missing GSM (ECU)	All cycle and mixed messages received from the node are received, ≥ 100 ms	Faulty controller or faulty wiring harness of the corresponding controller	Check whether the corresponding controller is offline

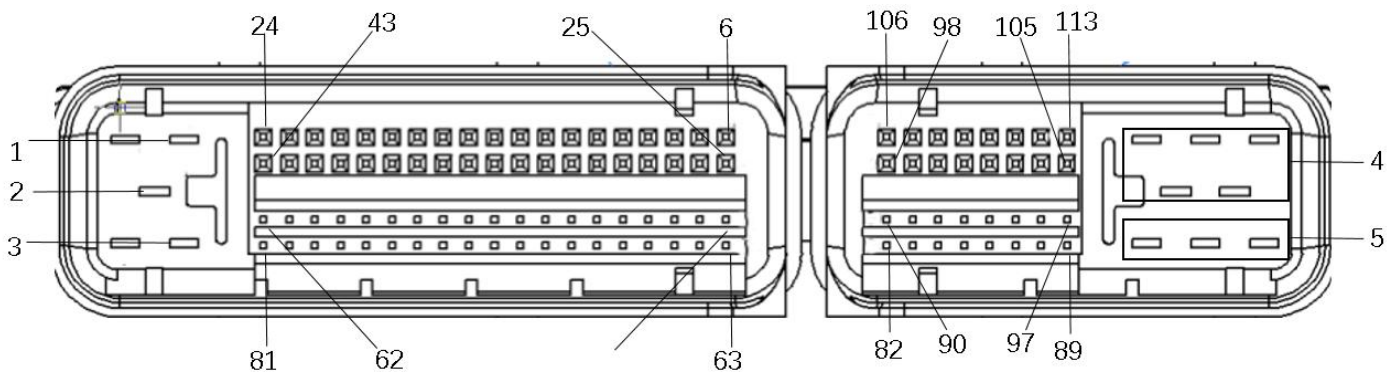
11.2.9.3 Internal VCU fault

S.N.	DTC display code	Fault description	Fault recovery conditions	Possible cause	Maintenance suggestion
1	U000188	Bus-off PTCAN	Message received AND message sent on CAN successfully	Controller CAN communication fault, or CAN wiring harness open- and short-circuit fault	Check the corresponding CAN, or troubleshoot the corresponding network controller in turn.
2	U004688	Bus-off BodyCAN	Message received AND message sent on CAN successfully	Controller CAN communication fault, or CAN wiring harness open- and short-circuit fault	Check the corresponding CAN, or troubleshoot the corresponding network controller in turn.
3	U005588	Bus-off InfoCAN	Message received AND message sent on CAN successfully	Controller CAN communication fault, or CAN wiring harness open- and short-circuit fault	Check the corresponding CAN, or troubleshoot the corresponding network controller in turn.

11.2.9.4 VCU power supply fault

S.N.	DTC display code	Fault description	Fault recovery conditions	Possible cause	Maintenance suggestion
1	U110017	Over Diagnostic Voltage	Voltage<16V, KL15 on, >=2s	DCDC fault or controller fault	Check the controller or check the supply wiring harness voltage
2	U110016	Under Diagnostic Voltage	Voltage> 9V, KL15 on, >=2s	Storage battery, DCDC fault or controller fault	Check the controller or check the supply wiring harness voltage

11.2.9.5 List of vehicle control unit terminals



S/N	Function	Rated current (A)	Signal format	I _{max} (A)	Remarks
1	Power supply ground terminal	/	VCU power supply ground terminal	2A	/
2	12V power supply	/	VCU logic power positive terminal	2A	/
3	Ignition switch	/	Ignition switch signal	3mA	Highly effective
4	Power supply ground terminal	2A	VCU power source	15A	/
5	12V power supply	2A	VCU power source ground terminal	15A	/
7	Body high-speed CANIH	/	High-speed CAN communication interface	100mA	/

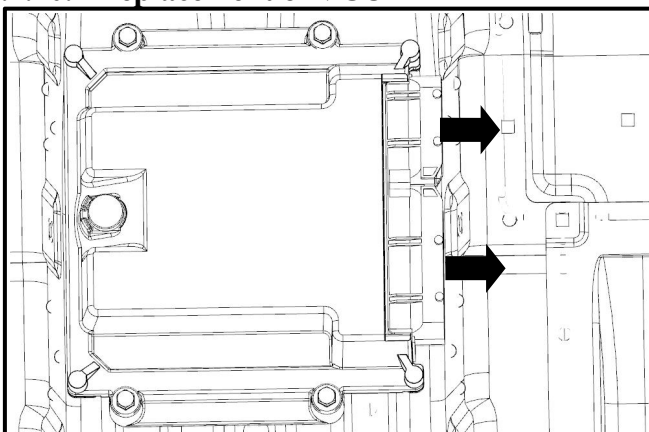
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8	Power high-speed CAN2L	/	High-speed CAN communication interface	100mA	/
9	CAN3L(info)	/	High-speed CAN communication interface	100mA	/
12	Brake footstep signal 2 input	/	AD	1.5mA	/
13	Throttle footstep signal 2 input	/	AD	1.5mA	/
16	Throttle footstep supply 2	Throttle footstep supply 2	5V/200mA sensor	/	/
	Brake footstep supply 2	Brake footstep supply 2		/	/
20	Brake switch input	2.5mA	DIG/HS	3mA	Highly effective
21	SW1 gear signal input	2.5mA	DIG/HS	3mA	Lowly effective
22	SPORT input	2.5mA	DIG/HS	3mA	Lowly effective
26	Body high-speed CAN1H	/	High-speed CAN communication interface	100mA	/
27	Power high-speed CAN2H	/	High-speed CAN communication interface	100mA	/
28	CAN3H(info)	/	High-speed CAN communication interface	100mA	/
33	Collision signal input	/	PWM	3mA	/
35	Throttle footstep supply 1	60mA	5V/100mA sensor	/	/
	Vacuum pump sensor power supply	/		/	/
40	SW1 gear signal input	2.5mA	DIG/LS	3mA	Lowly effective
49	Charger insertion signal (CC)	2.5mA	AD	/	/
50	Vacuum pump sensor signal input	/	AD	1.5mA	/
51	Throttle footstep signal 1 input	/	AD	1.5mA	/
58	SW1 gear signal input	2.5mA	DIG/LS	3mA	Lowly effective
60	ECO input	2.5mA	DIG/LS	3mA	Lowly effective
67	Cruise control signal input	3mA	AD	/	/
69	Throttle footstep signal 1 back to ground	/	AGND	/	/
	Vacuum pump sensor back to ground	/		/	/
70	Brake footstep signal 1 back to ground	/	AGND	/	/

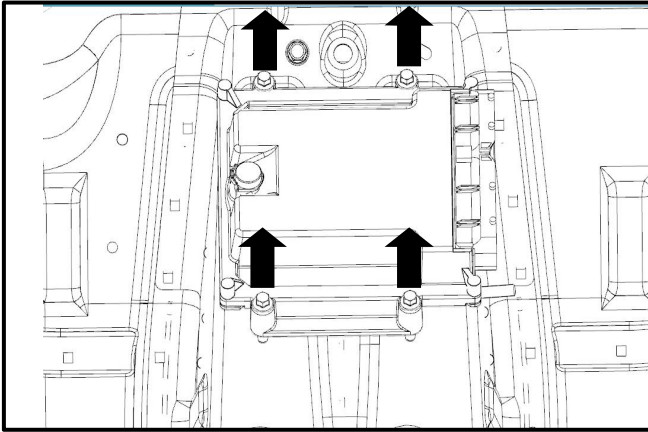
71	Charger insertion signal (CP)	3mA	PWM	/	/
72	Water pump fault signal	10mA	PWM	10mA	/
73	Throttle footstep signal 2 back to ground	/	AGND	/	/
74	Handbrake input	2.5mA	DIG/LS	3mA	Lowly effective
75	Cruise control signal back to ground	3mA	/	/	/
78	SW1 gear signal input	2.5mA	DIG/LS	3mA	Lowly effective
82	Cooling fan low-speed relay enable	150mA	Low drive	0.6A	/
85	Cooling fan high-speed relay enable	150mA	Low drive	0.6A	/
86	PTC high-voltage power supply relay enable	150mA	Low drive	0.6A	/
88	Vacuum pump relay enable	/	High drive	2A	/
90	Power low-voltage supply control	150mA	Low drive	0.6A	/
91	Water pump 1 relay enable	150mA	Low drive	0.6A	/
98	Pre-charge relay enable	/	Low drive	0.6A	/
104	Shift knob gear lock signal output	/	High drive	2A	/
105	Positive relay drive	300mA	High drive	2A	/
107	Electronic water pump PWM drive output	10mA	Low drive	0.6A	/

11.2.10 Disassembly and installation

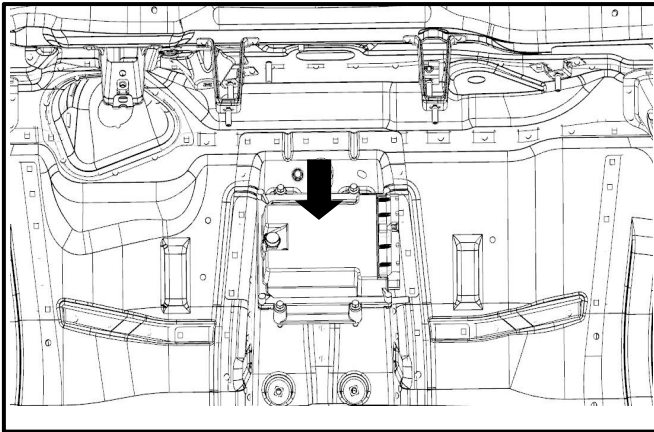
11.2.10.1 Replacement of VCU



- Disassembly steps
- Disconnect the negative terminal of the storage battery
1. Disassemble the center channel assembly.
 2. Disassemble the vehicle control unit assembly.
 3. Disconnect the vehicle control unit connector.



4. Remove four bolts (Q1840630TF62), with a tightening torque of 8N·m.
5. Remove the vehicle control unit assembly.



Installation steps

1. Plug the connector of the vehicle control unit assembly into place.
2. Use a M6 socket to install the bolts (Q1840630TF62) that secure the vehicle control unit assembly, with a tightening torque of 8N·m.

11.3 Use of diagnosis instrument

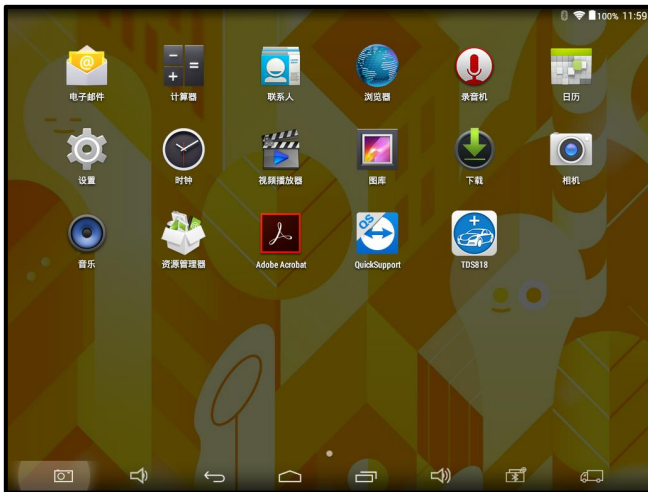
11.3.1 Operation and instructions

11.3.1.1 Operation and instructions

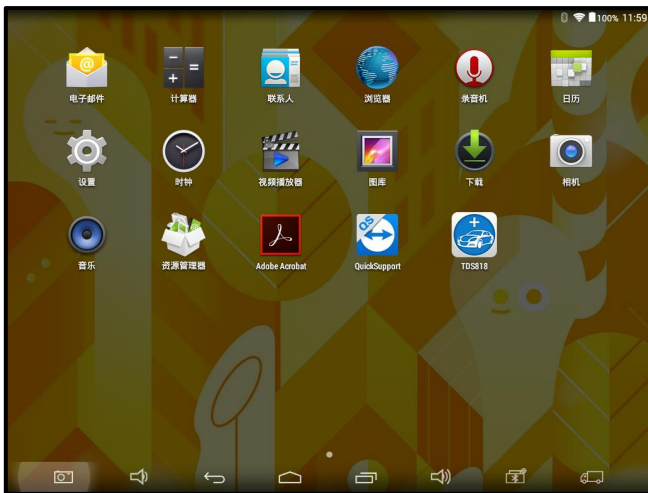
The diagnosis instrument is a special diagnostic tool, which is a special equipment customized for aftermarket. Dayun Yuehu Diagnosis instrument is based on Android operating system, which can be used in a way the same as that of cell phone based on Android system, and has operations such as clicking to open, clicking to confirm, returning and selecting.

Yuehu controller is: CAN entry system.

The diagnosis instrument is capable of reading version information, reading fault codes, clearing fault codes, configuration writing, ECU reset, and ECU flashing, etc.



1. The main interface of the diagnosis instrument has multiple software



2. Click "TDC818" to enter the model interface

4. Select "Yuehu 2023" to enter the next-level interface; take Yuehu 2022 as an example.



5. Select "VCU" to enter the next-level interface; (Note: Take VCU as an example)



6. Select "VCU" to enter the next-level interface; the functions include: version information, fault code reading, fault code clearing, data writing, ECU flashing, ECU reset, OBD reading VIN code.



7. Select "Version Information" to enter this interface.



8. Select "Read Fault Code" to enter this interface.



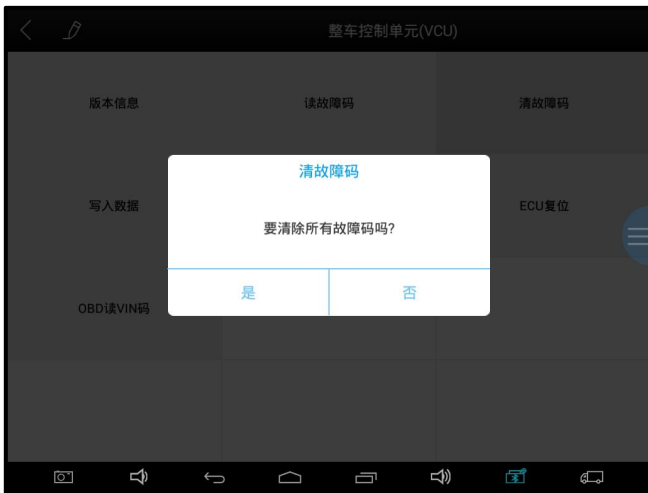
9. Select "Read Fault Code" to enter the current fault code interface.



10. Select "Global Fault Code Detail" to enter the Global Fault Code Detail interface.



11. Select "Clear Fault Code" to enter the Clear Fault Code interface; click "Yes" to clear all current faults, while click "No" to exit this interface.



12. Select "Write Data" to enter the Write Data interface, including: VIN, ECU installation date, IMMO authentication PIN code, handshake key, binding password, unbinding password, terminal key, vehicle configuration code



13. Enter the VIN code and click “Confirm Write”



14. Enter the installation date and click “Confirm Write”



15. Enter the PIN code and click “Confirm Write”



16. Enter the handshake key and click “Confirm Write”



17. Enter the binding password and click “Confirm Write”



18. Enter the unbinding password and click “Confirm Write”



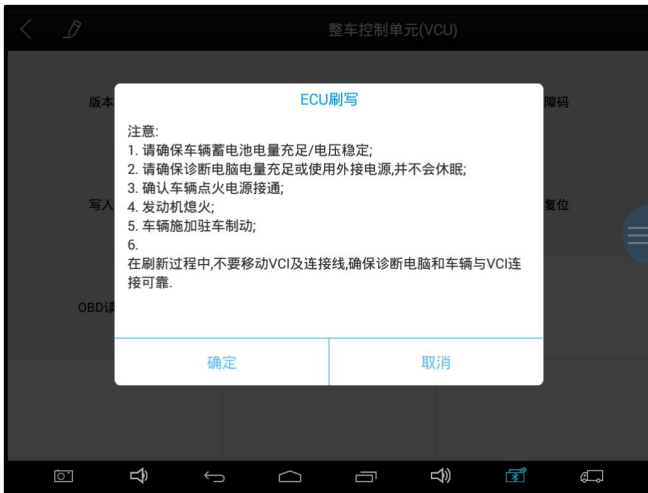
19. Enter the terminal key and click “Confirm Write”



20. Select “Vehicle Configuration Code” to enter the Write Data interface, including: Elf Edition, Fashion Edition/Youth Edition.



21. Select "ECU Flashing" to enter the Writing and Flashing interface; pay attention to the flashing prompts. Click “OK” to go to the next step.





22. Select "ECU Flashing" to enter the Writing and Flashing interface; pay attention to the flashing prompts. Click "OK" to go to the next step.



23. Select "ECU Flashing" to enter the Writing and Flashing interface; pay attention to the flashing prompts. Click "Yes" to write the date.

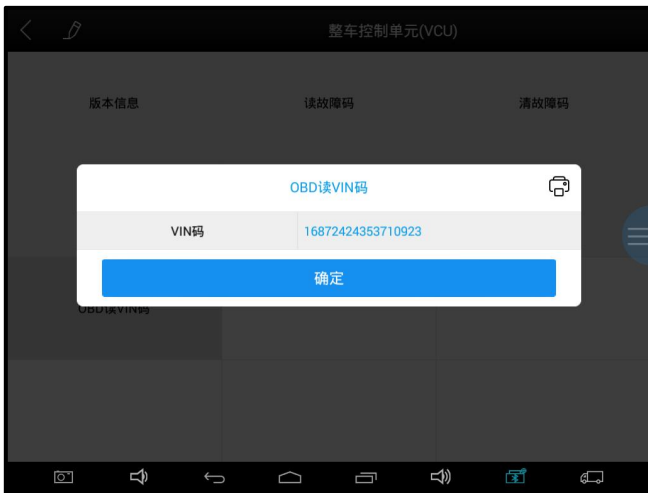


24. Select "ECU Flashing" to enter the Writing and Flashing interface; enter the Select Flashing Package interface.

25. Select “ECU Reset” to enter the Reset interface, including: hardware reset, software reset.



26. Select “OBD Reading VIN Code” to enter the Reading VIN Code interface;



12 Body electrics

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12.1 Lighting system

12.1.1 Specifications

12.1.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Combination headlight assembly, daytime light assembly, and body sheet metal attachment bolts	M6	3.5~6
Tapping screws connecting front top light assembly to body sheet metal	M4	3.5~6
Nuts connecting rear back door lamp assembly to body sheet metal	M6	3.5~6
Bolts for connecting combination rear light assembly to body sheet metal	M6	3.5~6
Automatic screws connecting rear fog lamp, high brake lamp and plastic parts	M5	3

12.1.2 Description and operation

12.1.2.1 Description and operation

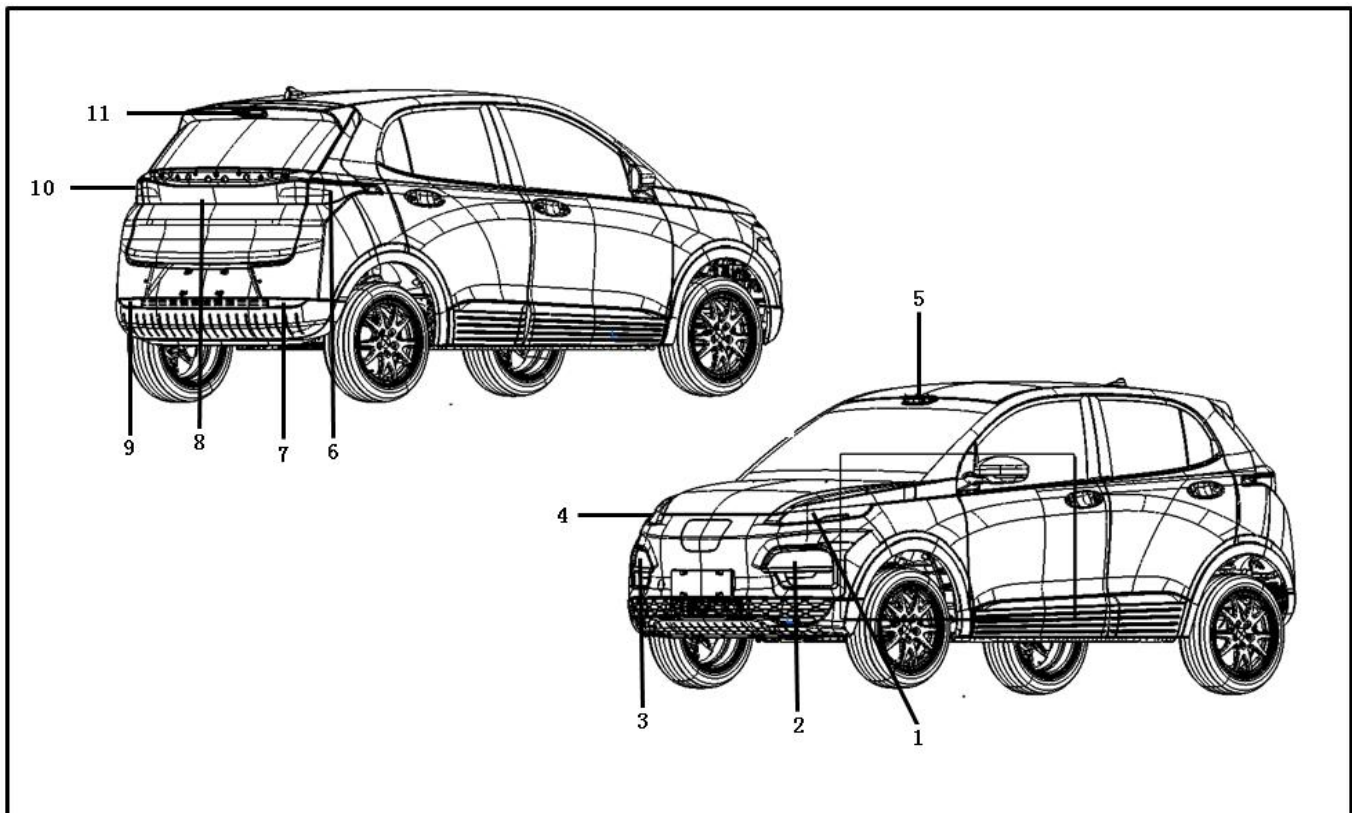
The vehicle lighting system enables the vehicle users or road participants to recognize vehicles more clearly and provides a safe driving environment.

Turning the lights on or off should be subject to the correct operation. The repair should be performed with the ignition switch always in the off position at the time of disconnecting the storage battery.

12.1.3 Component location

12.1.3.1 Component location

Yuehu VIP model

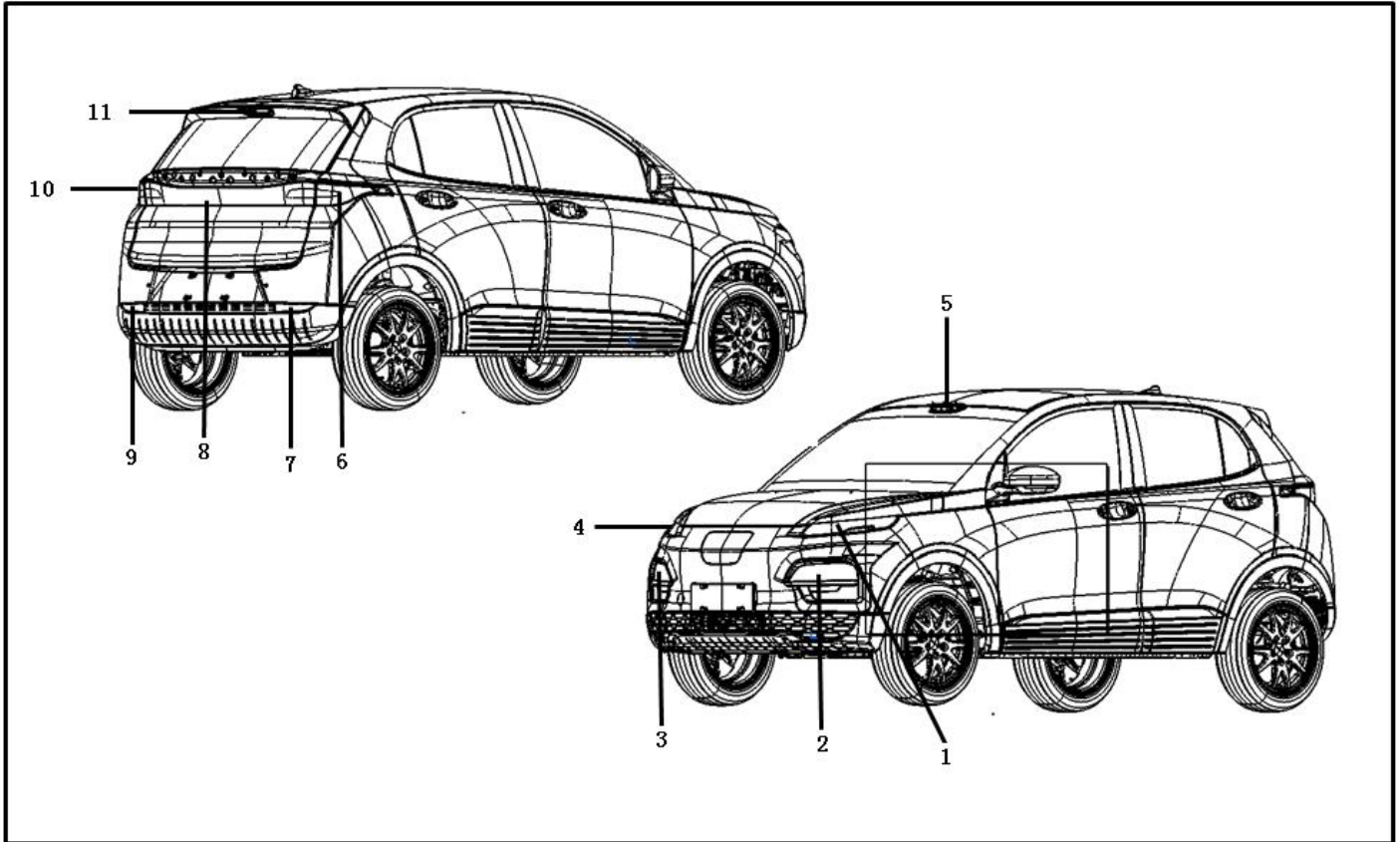


Yuehu VIP model

6. Right combination rear lamp assembly

- | | |
|-----------------------------------------|-----------------------------------------|
| 1. Left daytime running light assembly | 7. Left rear fog light assembly |
| 2. Left combination headlight assembly | 8. Back door lamp assembly |
| 3. Right combination headlight assembly | 9. Right rear fog lamp assembly |
| 4. Right daytime driving lamp assembly | 10. Left combination rear lamp assembly |
| 5. Front top light assembly | 11. High brake lamp assembly |

Yuehu standard model



Yuehu standard model

- | | |
|--------------------------------------------|-----------------------------------------|
| 1. Left combination headlight assembly II | 6. Right combination rear lamp assembly |
| 2. Left combination headlight assembly I | 7. Rear fog light |
| 3. Right combination headlight assembly I | 8. Reversing lights |
| 4. Right combination headlight assembly II | 9. Left combination rear lamp assembly |
| 5. Front top light assembly | 10. High brake lamp assembly |

12.1.3.2 Diagnostic information and steps

12.1.3.3 Routine inspection of Yuehu VIP Edition

Front combination lamp and rear position lamp

Symptoms	Suspicious location
The "low beam" does not come on (one side).	1. LED module 2. Wiring harness
The "low beams" do not come on (all).	1. Vehicle control unit 2. Combination switch assembly 3. LED module 4. Wiring harness
The "high beams" do not come on (one side).	1. LED module 2. Wiring harness
The "high beams" do not come on (all).	1. Vehicle control unit 2. Combination switch assembly 3. LED module 4. Wiring harness

The light of the front combination lamp is dim.	1. LED module 2. Wiring harness
Only one rear position lamp comes on.	1. LED module 2. Wiring harness
All three rear position lamps do not come on (The front position lamps come on normally).	1. LED module 2. Wiring harness
All three rear position lamps do not come on (The front position lamps do not come on).	1. Vehicle control unit 2. Left combination switch assembly 3. LED module 4. Wiring harness

Front fog lamp

Symptoms	Suspicious location
All fog lamps do not come on.	1. Vehicle control unit
	2. Fog lamp switch assembly
	3. Bulbs 4. Wiring harness
The fog lamps are on continuously.	1. Fog lamp switch assembly 2. Wiring harness
The fog lamp does not come on (one side).	1. Bulbs 2. Wiring harness

Turn signal lamp and hazard warning system

Symptoms	Suspicious location
The "hazard warning lights" and "turn signal lamps" do not come on.	1. Vehicle control unit 2. Air-conditioning control panel 3. LED module 4. Wiring harness
The hazard warning lights do not come on (The turn signal lamps come on normally).	1. Air-conditioning control panel 2. Wiring harness
The turn signal lamps do not come on (The hazard warning lights come on normally).	1. Vehicle control unit 2. LED module 3. Wiring harness
The turn signal lamp in one direction does not come on.	1. Turn signal lamp switch 2. Vehicle control unit 3. LED module 4. Wiring harness
Only one turn signal lamp comes on.	1. LED module 2. Wiring harness

Brake lamp system

Symptoms	Suspicious location
Both brake lamps do not come on.	1. Vehicle control unit 2. Brake lamp switch assembly 3. Wiring harness
The brake lamp comes on continuously.	1. Brake lamp switch assembly 2. Wiring harness
The brake lamp does not come on (one side).	1. LED module 2. Wiring harness

Reversing light system

Symptoms	Suspicious location
The reversing lights do not come on.	1. Bulbs 2. Vehicle control unit 3. Reversing light switch assembly 4. Wiring harness
The reversing lights come on continuously.	1. Reversing light switch assembly 2. Wiring harness

12.1.3.4 Yuehu standard model

Front combination lamp and rear position lamp

Symptoms	Suspicious location
The "low beam" does not come on (one side).	1. Halogen bulb 2. Wiring harness
The "low beams" do not come on (all).	1. Vehicle control unit 2. Combination switch assembly 3. Halogen bulb 4. Wiring harness
The "high beams" do not come on (one side).	1. Halogen bulb 2. Wiring harness
The "high beams" do not come on (all).	1. Vehicle control unit 2. Combination switch assembly 3. Halogen bulb 4. Wiring harness
The light of the front combination lamp is dim.	1. Halogen bulb 2. Wiring harness
Only one rear position lamp comes on.	1. LED module 2. Wiring harness
All three rear position lamps do not come on (The front position lamps come on normally).	1. LED module 2. Wiring harness
All three rear position lamps do not come on (The front position lamps do not come on).	1. Vehicle control unit 2. Left combination switch assembly 3. LED module 4. Wiring harness

Turn signal lamp and hazard warning system

Symptoms	Suspicious location
The "hazard warning lights" and "turn signal lamps" do not come on.	1. Vehicle control unit 2. Air-conditioning control panel 3. Front LED module, rear halogen bulb 4. Wiring harness
The hazard warning lights do not come on (The turn signal lamps come on normally).	1. Air-conditioning control panel 2. Wiring harness
The turn signal lamps do not come on (The hazard warning lights come on normally).	1. Vehicle control unit 2. Front LED module, rear halogen bulb 3. Wiring harness
The turn signal lamp in one direction does not come on.	1. Turn signal lamp switch 2. Vehicle control unit 3. Front LED module, rear halogen bulb 4. Wiring harness
Only one turn signal lamp comes on.	1. Front LED module, rear halogen bulb 2. Wiring harness

Brake lamp system

Symptoms	Suspicious location
Both brake lamps do not come on.	1. Vehicle control unit 2. Brake lamp switch assembly 3. Wiring harness
The brake lamp comes on continuously.	1. Brake lamp switch assembly 2. Wiring harness
The brake lamp does not come on (one side).	1. LED module 2. Wiring harness

Reversing light system

Symptoms	Suspicious location
The reversing lights do not come on.	1. Bulbs 2. Vehicle control unit 3. Reversing light switch assembly 4. Wiring harness
The reversing lights come on continuously.	1. Reversing light switch assembly 2. Wiring harness

12.1.3.5 Diagnostic description

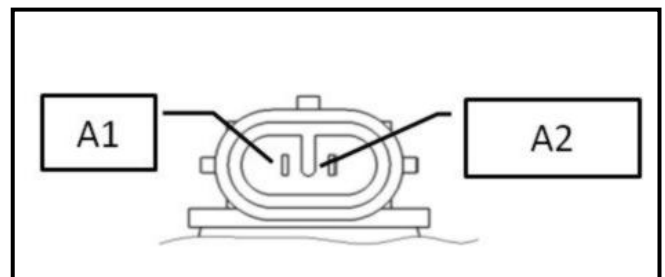
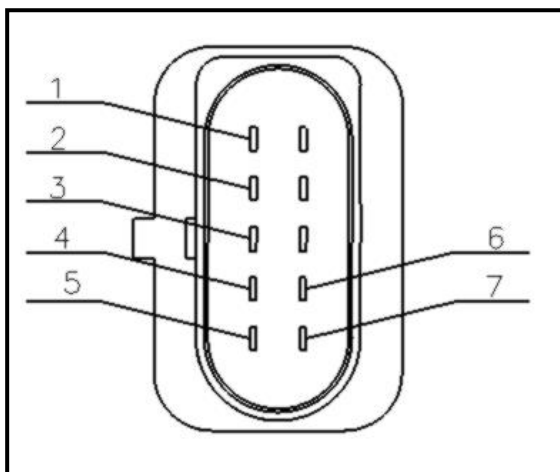
Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.1.3.6 Routine inspection

Identify the fault before repairing it. Check whether the light switches are turned on and off properly, whether the fixtures have obvious signs of mechanical or electrical damage, and whether the fixed bolts are loose. Always place the ignition switch in the Off position and disconnect the storage battery at the time of replacing and repairing.

12.1.3.7 Definition of lighting system pins for Yuehu VIP model

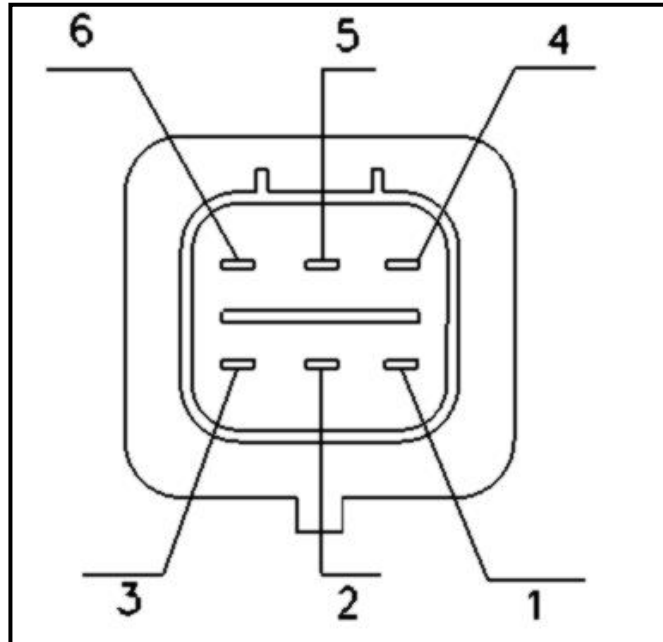
Combination headlight assembly



Pin No.	Function
1	Positive terminal of dimmer motor
2	Dimming motor signal
3	Negative terminal of dimmer motor

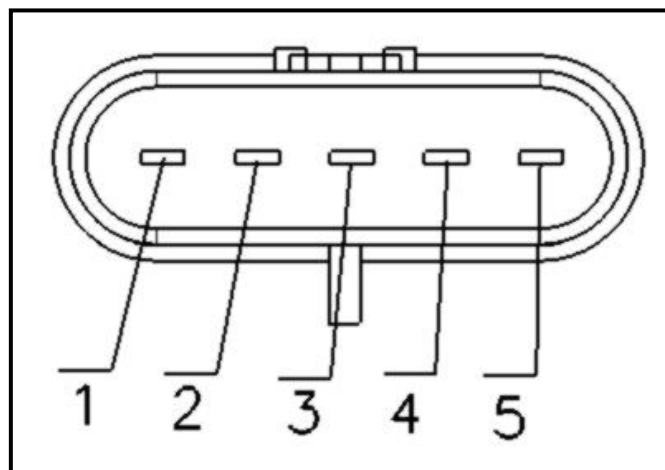
4	Negative terminal of low beam
5	Negative terminal of high beam
6	Positive terminal of low beam
7	Positive terminal of high beam
A1	Positive terminal of fog lamp
A2	Negative terminal of fog lamp

Daytime driving lamp assembly



Pin No.	Function
1	Negative terminal of turn signal lamp
2	LIN
3	Positive terminal of turn signal lamp
4	Positive terminal of position lamp
5	Negative terminal of daytime driving lamp/position lamp
6	Positive pole of daytime running light

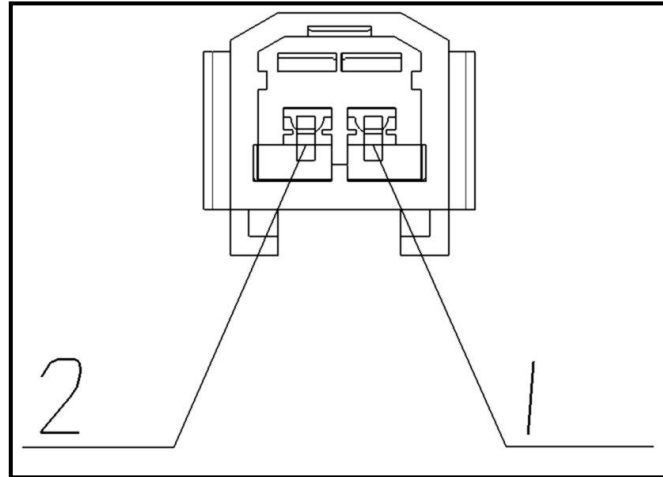
Combination rear light assembly



Pin No.	Function
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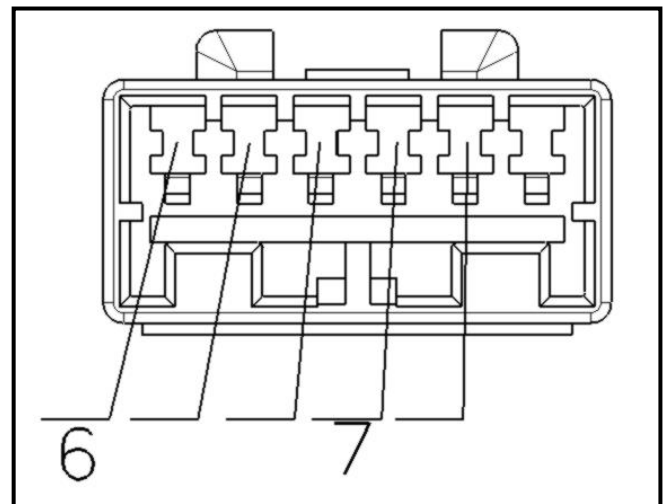
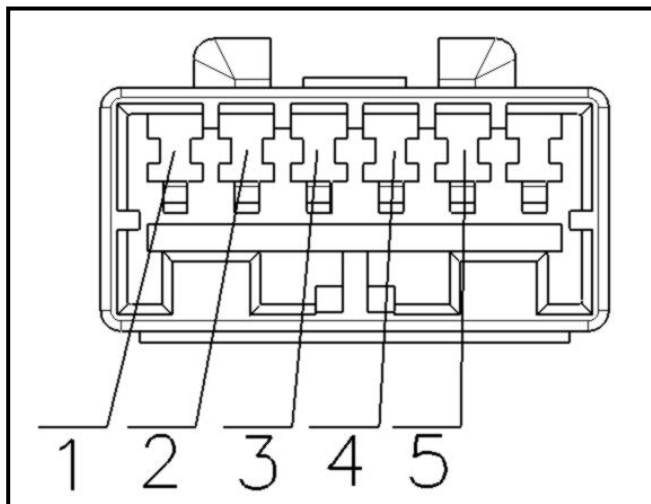
1	Negative
2	Positive terminal of brake lamp
3	Positive terminal of position lamp
4	Positive terminal of turn signal lamp
5	LIN

High brake lamp assembly



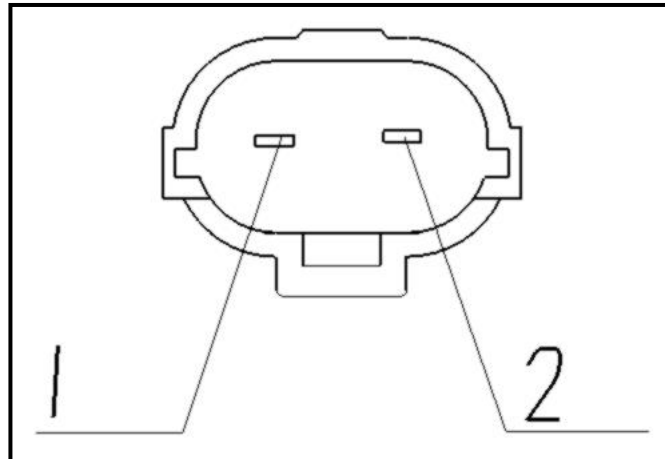
Pin No.	Function
1	Negative
2	Positive

Back door lamp assembly



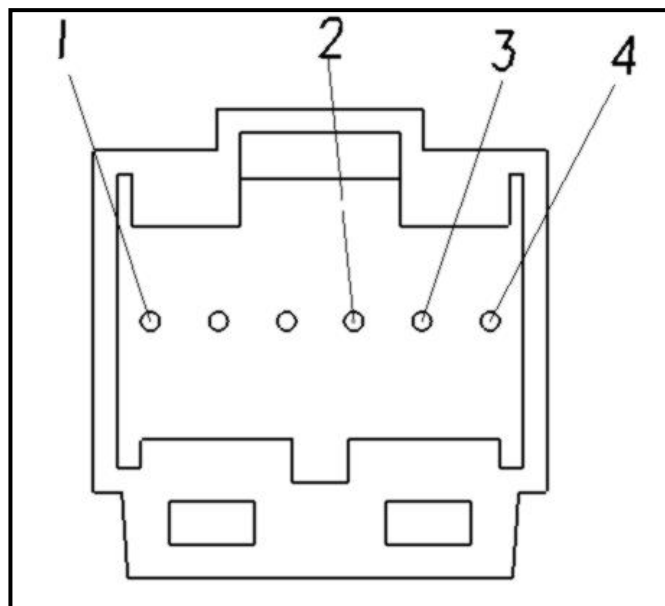
Pin No.	Function
1	Positive terminal of reversing light
2	Positive terminal of position lamp
3	Positive terminal of brake lamp
4	Negative
5	LIN
6	Positive terminal of reversing light
7	Negative

Rear fog lamp assembly



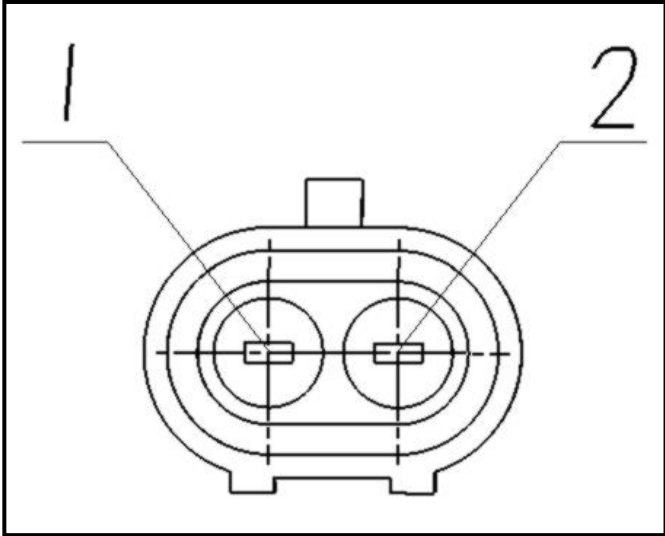
Pin No.	Function
1	Positive
2	Negative

Front Ceiling Light



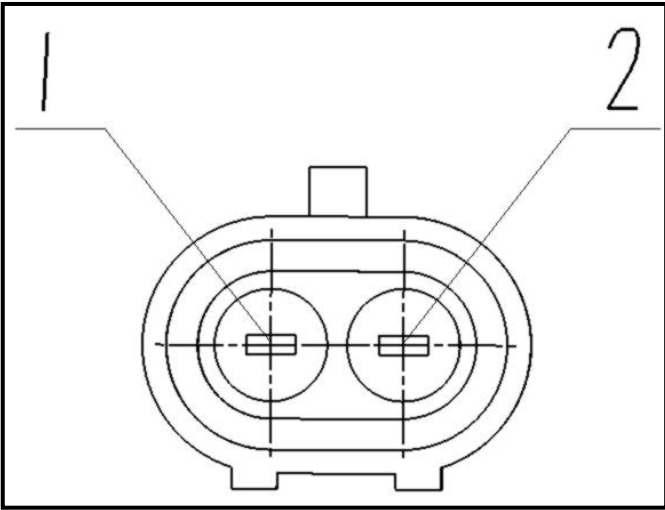
Pin No.	Function
1	Positive terminal of door control
2	Positive terminal of reading lamp
3	Negative
4	Positive terminal of ambient light

License plate light



Pin No.	Function
1	Positive
2	Negative

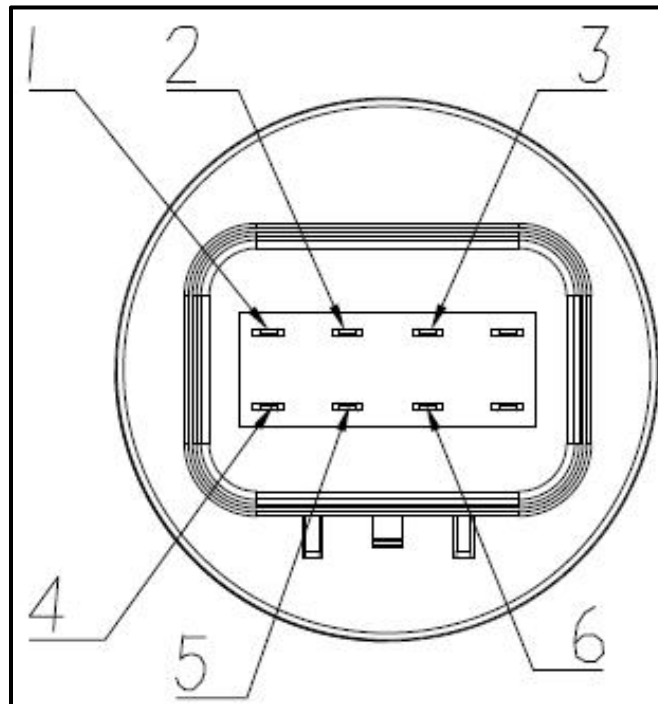
Luggage box lighting lamp



Pin No.	Function
1	Positive
2	Negative

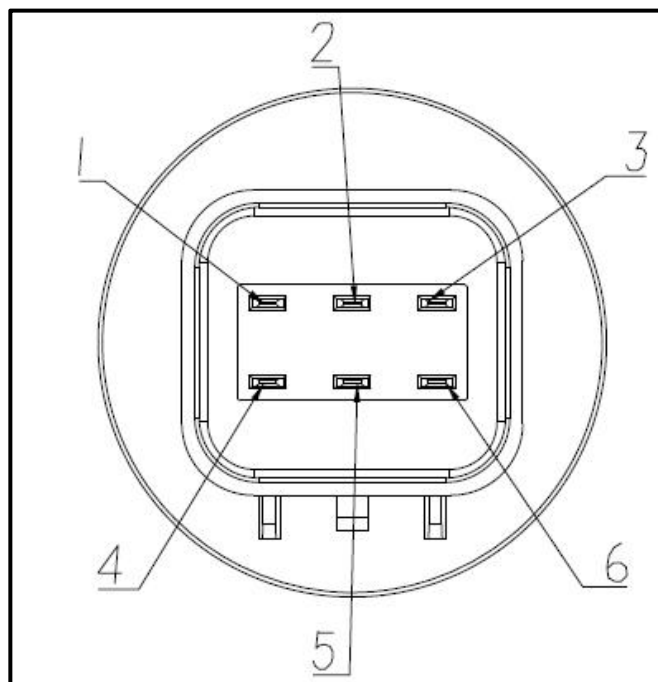
12.1.3.8 Definition of lighting system pins for Yuehu standard model

Combination headlight assembly I



Pin No.	Function
1	Positive terminal of dimmer motor
2	Dimming motor signal
3	Negative terminal of dimmer motor
4	Positive pole of high beam light
5	Positive pole of low beam light
6	Negative pole of high and low beam light

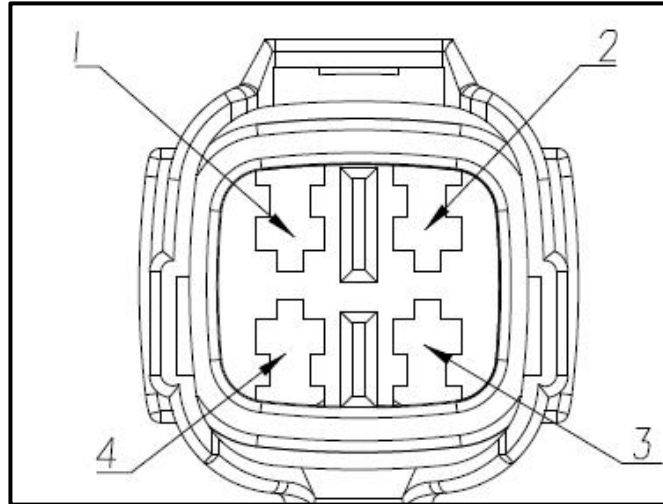
Combination headlight assembly II



Pin No.	Function
1	Negative terminal of turn signal lamp

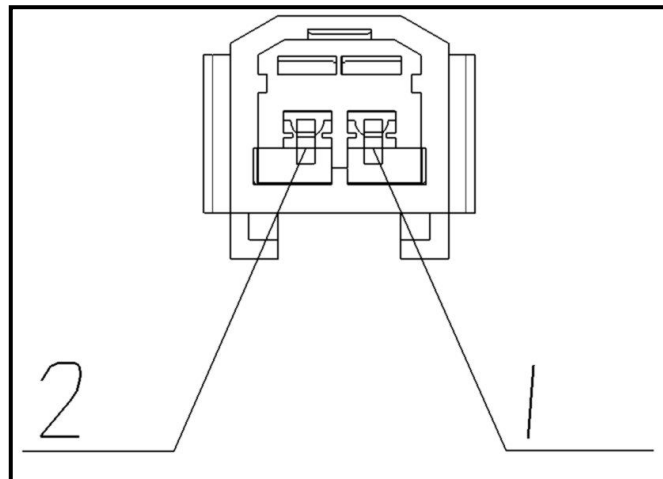
2	Turn signal feedback (LIN)
3	Positive terminal of turn signal lamp
4	Positive terminal of position lamp
5	Negative pole of position light/daytime running light
6	Positive pole of daytime running light (reserved)

Combination rear light assembly



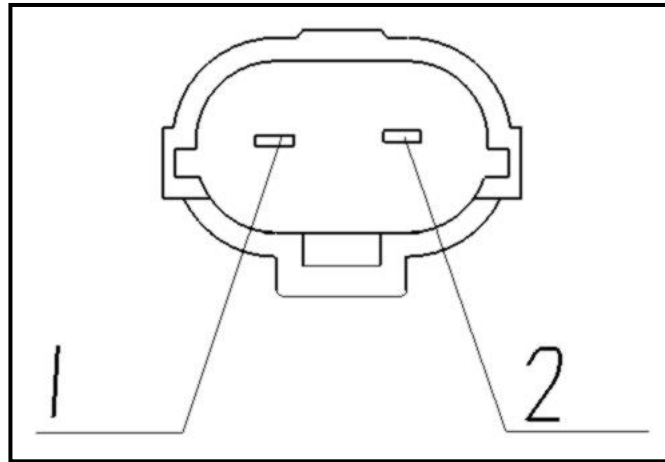
Pin No.	Function
1	Positive terminal of brake lamp
2	Positive terminal of position lamp
3	Earth wire
4	Positive terminal of turn signal lamp

High brake lamp assembly



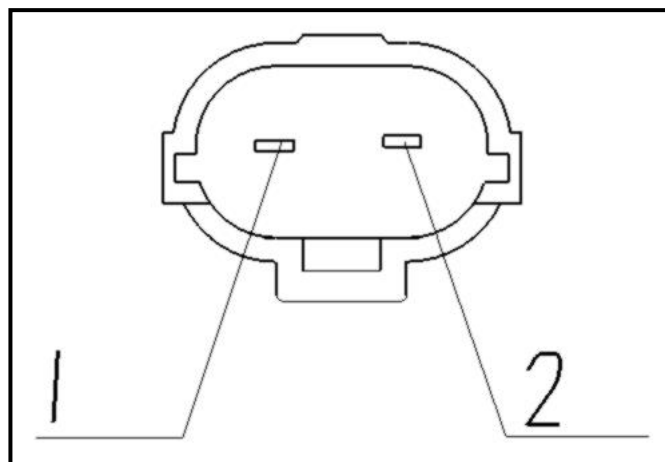
Pin No.	Function
1	Negative
2	Positive

Rear fog light



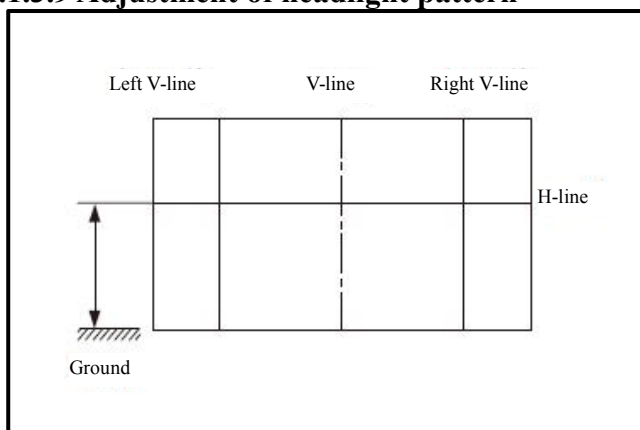
Pin No.	Function
1	Positive
2	Negative

Reversing lights



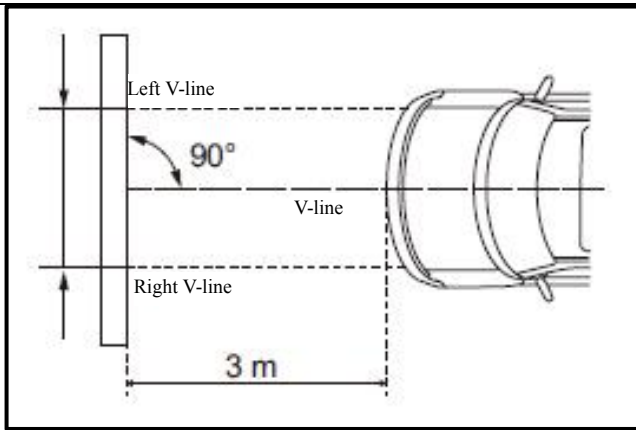
Pin No.	Function
1	Positive
2	Negative

12.1.3.9 Adjustment of headlight pattern



Front combination light

1. Prepare the vehicle according to the following conditions
 - a. Check and confirm that the body parts around the front combination lights are not damaged or deformed.
 - b. The tire pressure is within the specified range.
 - c. The vehicle is parked on a level road.
 - d. A person of average weight (68kg) sits in the main driver's seat.
 - e. Bounce the vehicle up and down to stabilize the suspension to its normal position.



2. Prepare a piece of thick white paper (to draw the baseline)

Remark: Make the paper stand up vertically against the wall.

Different baselines are used for “near-light inspections” and “far-light inspections”.

- a. V line (vehicle center position): Draw a vertical line along the center of the paper to align with the center of the vehicle.
- b. H line (front combination light height): Draw a horizontal line on the paper at the same height above the ground as the center mark of the low beam light.
- c. Left V line and right V line (center position of left and right front combination lamp) are in the same position as the optical center of the low beam left and right vertical lines.

Remark: Perform the same procedure at the time of adjusting the high beam.

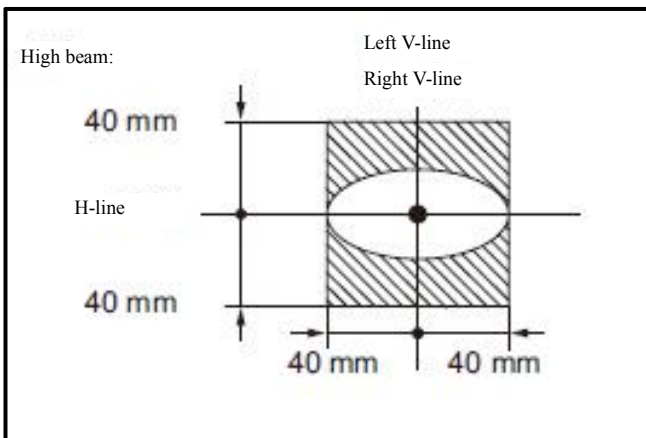
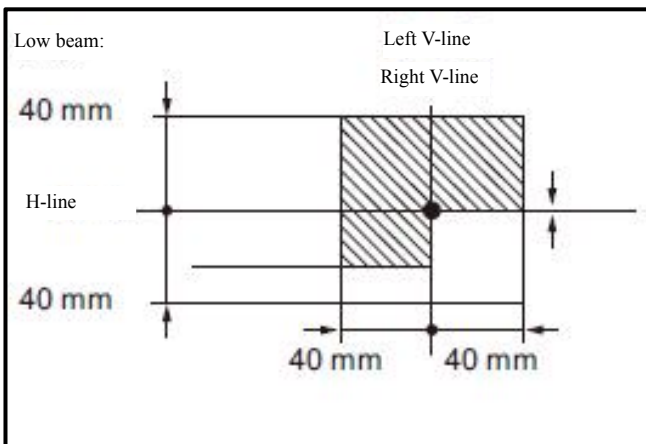
3. Check the front combination light near light alignment

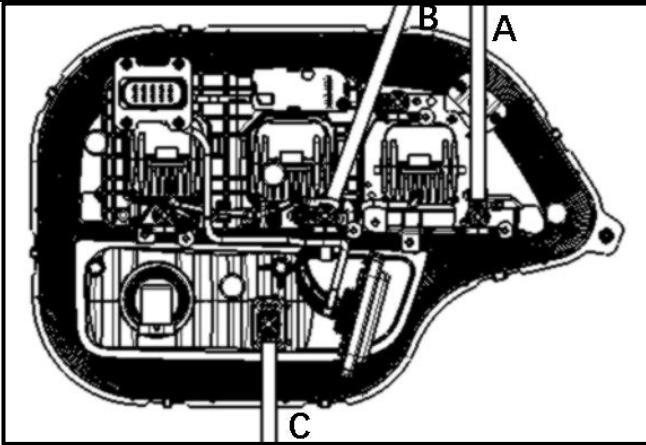
- a. Align the position of the paper and the vehicle.
 - (2) Make the distance between the front combination light and the paper 3m, place the paper on the wall and make the height of H line the same as the center mark.
 - (3) Align the center of the vehicle with the center of the V-line of the paper and make sure the paper forms a 90-degree angle with the V-line.

- b. The vehicle is powered on.

c. Turn on the front combination light and check and confirm that the alignment light is within the specified values as shown in the figure.

Remark: Check whether the same procedure is performed during high beam.





4. Adjust the alignment in vertical reverse
Turn the alignment screw "A" with a screwdriver to adjust the combination headlight low beam light alignment to the specified range.

Turn the alignment screw "B" with a screwdriver to adjust the combination headlight low beam light alignment to the specified range.

Remark: The optical axis moves downward when the screwdriver is turned clockwise, and moves upward when the screwdriver is turned counterclockwise.

Front fog lamp

5. Adjust the alignment in vertical reverse
Turn the screwdriver "C" to adjust the fog light beam in the vertical direction.

Remark: Turn clockwise to move the beam downward, and turn counterclockwise to move the beam upward.

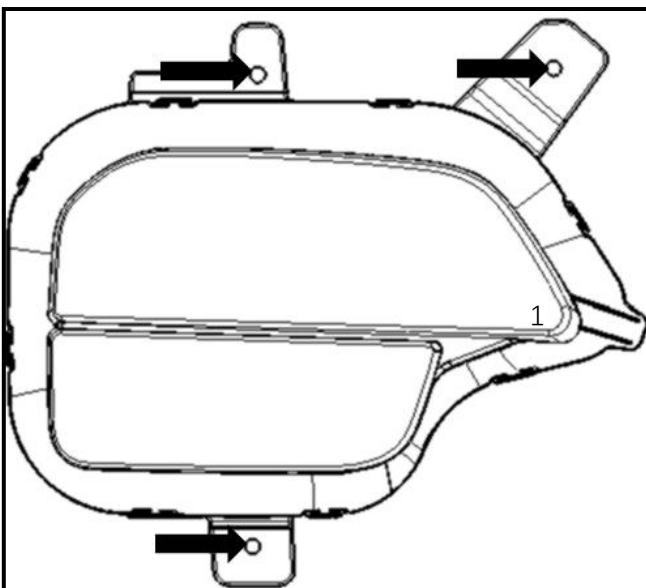
12.1.4 Disassembly and installation

12.1.4.1 Disassembly and installation of lighting system for Yuehu VIP model

Caution:

- Always place the ignition switch in the OFF position at the time of disconnecting the battery.
- During the replace and repair of the lamp, it is prohibited to use chemical solvents or strong cleaners to scrub the entire lampshade to avoid damage to the lampshade.
- It is forbidden to touch the glass part of the bulb directly with your hands at the time of replacing the bulb.
- Always use bulbs with the same power at the time of replacing bulbs.

Disassembly and installation of combination headlight assembly and bulbs



Combination headlight assembly

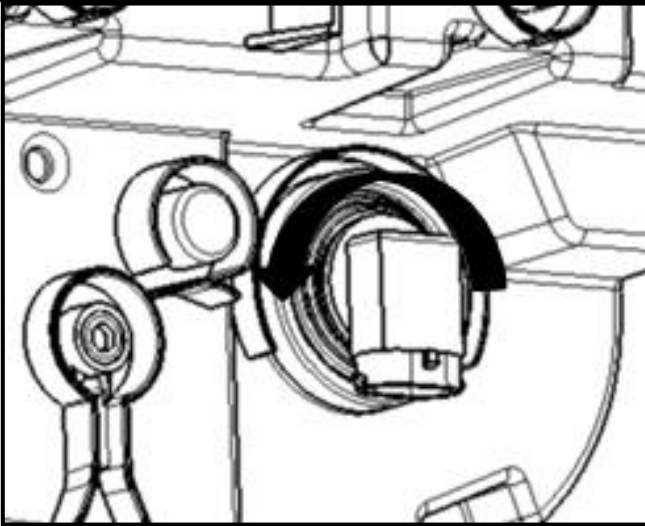
Disassembly process

Remark: Taking the left combination front light assembly as an example, the disassembly and installation of the right combination front light assembly is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Disassemble grille decorative panels
3. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.
 - a. Remove 3 bolts.
 - b. Disconnect the left combination headlight harness v connector.
 - c. Remove the left front combination light assembly.

Installation process

Installation is performed in the reverse order of disassembly.



Front fog light bulb
Disassembly process

Remark: Taking the left front fog light bulb as an example, the disassembly and installation of the right front fog light bulb is in the same order.

1. Disassemble the combination headlight assembly (integrated fog light function)

2. Replace the front fog light bulbs

CAUTION: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

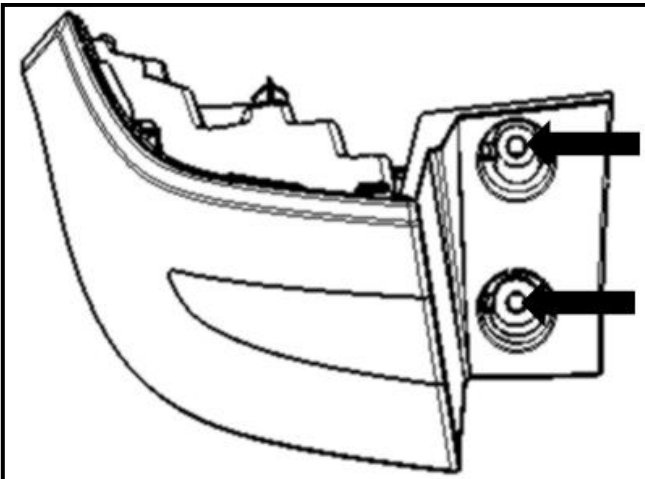
a. Remove the left front fog light bulb by turning the bulb base with bulb counterclockwise.

b. Replace the left front fog light bulb.

Installation process

Install in reverse order of disassembly

Disassembly and installation of combination rear lights and back door lights



Combination rear light assembly

Disassembly process

Remark: Taking the left combination rear light assembly as an example, the disassembly and installation of the right combination rear light assembly is in the same order.

1. Disconnect the negative terminal of the storage battery

2. Open the luggage compartment

3. Disassemble the left combination rear light assembly

a. Remove 2 bolt covers.

b. Remove 2 bolts. Torque 5N;

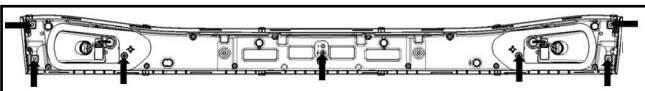
c. Disconnect the left combination headlight harness connector

d. Remove the left front combination light assembly.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of back door light



Back door lamp assembly

1. Disconnect the negative terminal of the storage battery

2. Open the luggage compartment

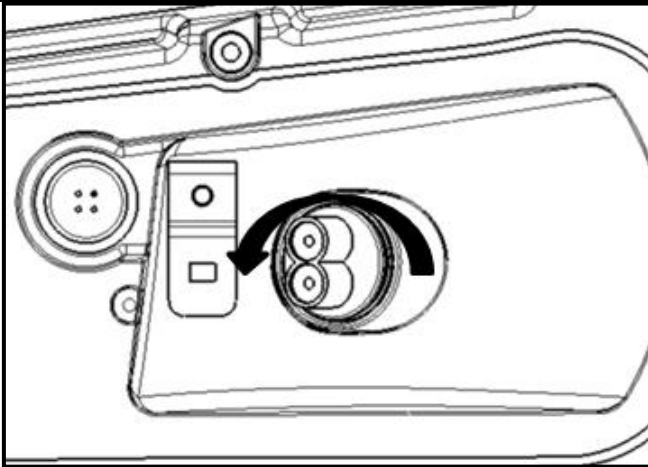
3. Disassemble the back door light service port on the inner guard of the luggage compartment

4. Disassemble the back door light assembly

a. Remove 7 nuts;

b. Disconnect the 2 harness connectors of the back door light;

c. Remove the back door light assembly;



Installation process
Install in reverse order of disassembly

Reversing light bulb
Disassembly process

Remark: Taking the left reversing light bulb as an example, the disassembly and installation of the right reversing light bulb is in the same order.

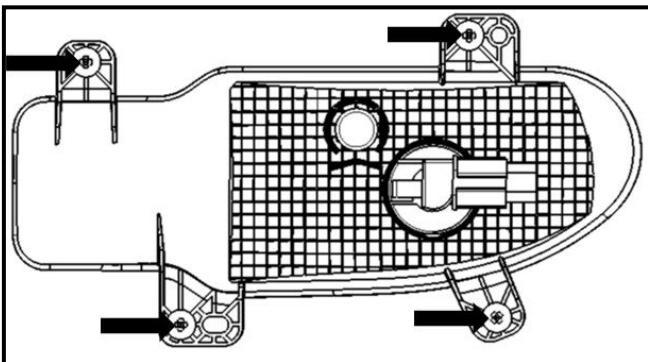
1. Disassemble the back door light assembly
2. Replace the reversing light bulb

CAUTION: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

- a. Remove the reversing light bulb by turning the bulb base with bulb counterclockwise.
- b. Replace the left reversing light bulb.

Installation procedure:
Install in reverse order of disassembly

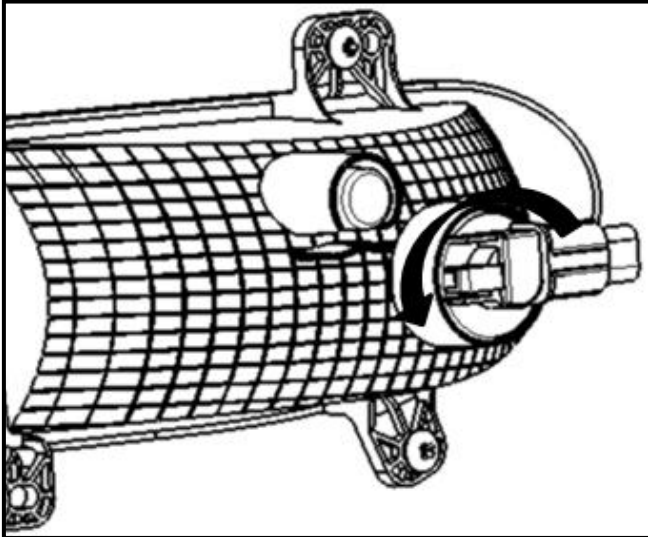
Disassembly and installation of rear fog light



Rear fog lamp assembly
Disassembly process

Remark: Taking the left rear fog light assembly as an example, the disassembly and installation of the right rear fog light is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Open the luggage compartment
3. Disassemble the rear bumper assembly; Please refer to 13.7.2.10 Replacement of rear bumper
4. Disconnect the left rear fog light harness connector
5. Disassemble the left rear fog light assembly
 - a. Remove 4 screws. Torque 2N
 - b. Remove the left rear fog light assembly



Installation process

Installation is performed in the reverse order of disassembly.

Rear fog light bulb

Disassembly process

Remark: Taking the left rear fog light bulb as an example, the disassembly and installation of the right rear fog light bulb is in the same order.

1. Disassemble the left rear fog light assembly
2. Replace the rear fog light bulb

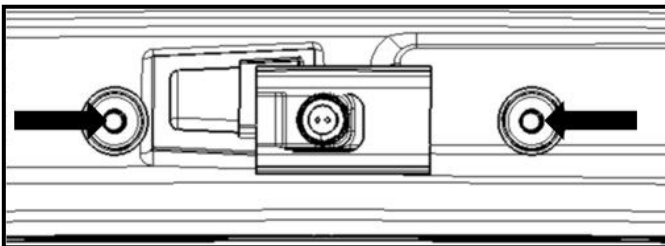
Remark: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

- a. Remove the rear fog bulb by turning the bulb base with bulb counterclockwise.
- b. Replace the left rear fog light bulb.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of high brake lights



High brake lamp assembly

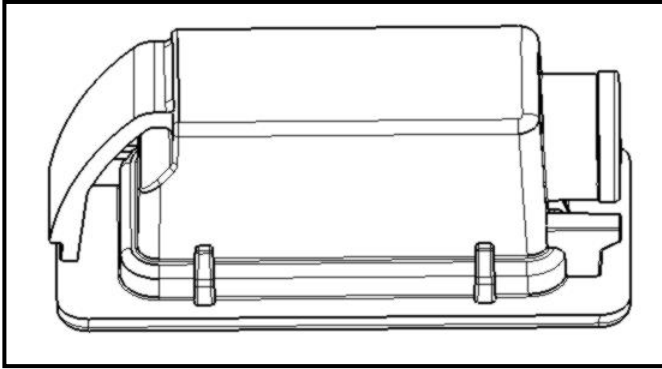
Disassembly process

1. Disconnect the negative terminal of the storage battery
2. Disassemble the spoiler assembly; Please refer to 13.7.2.11 Replacement of spoiler unit
3. Disconnect the harness connector of the high brake light
4. Disassemble the high brake light assembly
 - a. Remove 2 nuts.
 - b. Remove the high brake light assembly

Installation process

Install in reverse order of disassembly

Disassembly and installation of license plate light



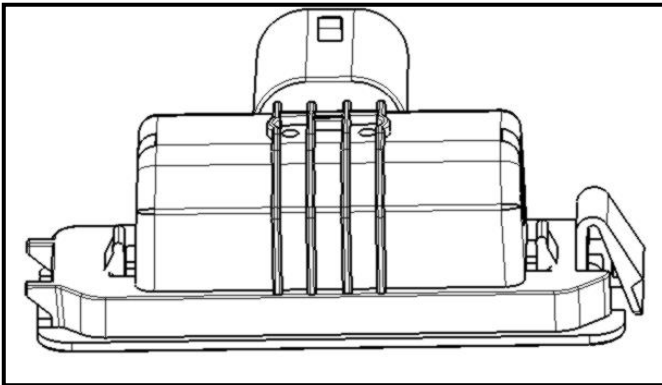
License plate light
Disassembly process

Remark: Taking the left license plate light assembly as an example, the disassembly and installation of the right license plate light is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Disassemble the back door inner trim panel assembly; Please refer to 13.7.2.12 Replacement of rear enclosure unit
3. Disassemble the left license plate light assembly
 - a. Disconnect the harness connection, pry off the jaws, and remove the license plate light.

Installation process

Installation is performed in the reverse order of disassembly.



Luggage box lighting lamp

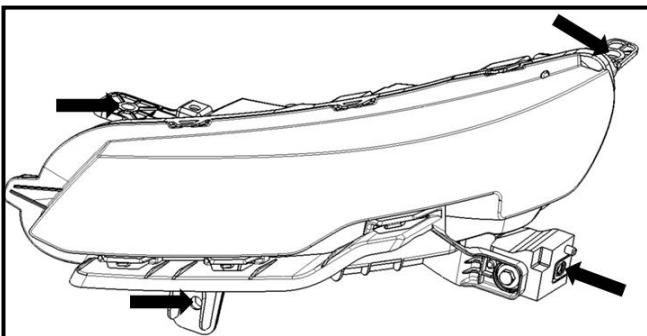
Disassembly process

1. Disconnect the negative terminal of the storage battery
2. Disassemble the luggage compartment light assembly
 - a. Pry off the jaws and remove the luggage compartment light assembly.
 - b. Disconnect the harness connection.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of daytime running light



Daytime running light assembly

Disassembly process

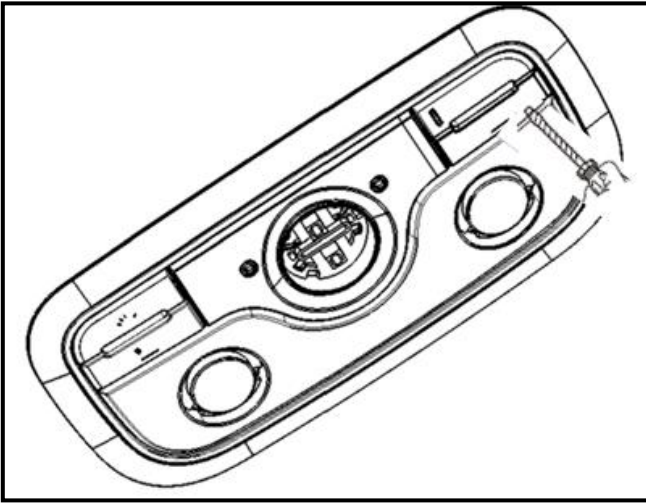
Remark: Taking the left daytime running light assembly as an example, the disassembly and installation of the right daytime running light assembly is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Disassemble grille decorative panels
3. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.
4. Disassemble the left daytime running light assembly
 - a. Remove 4 bolts. Torque 5N
 - b. Disconnect the left daytime running light harness connector.
 - c. Remove the left daytime running light assembly.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of front dome light



Front Ceiling Light Disassembly process

1. Disconnect the negative terminal of the storage battery
2. Disassemble the front dome light covers
 - a. Remove the dome light cover with a “one” screwdriver.
3. Disassemble the front dome light assembly
 - a. Remove 2 screws.
 - b. Disconnect the harness connection.

Installation process

Installation is performed in the reverse order of disassembly.

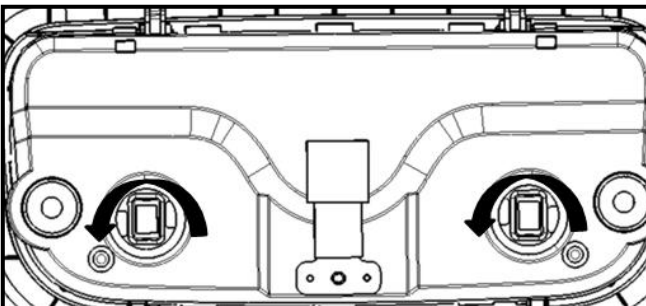
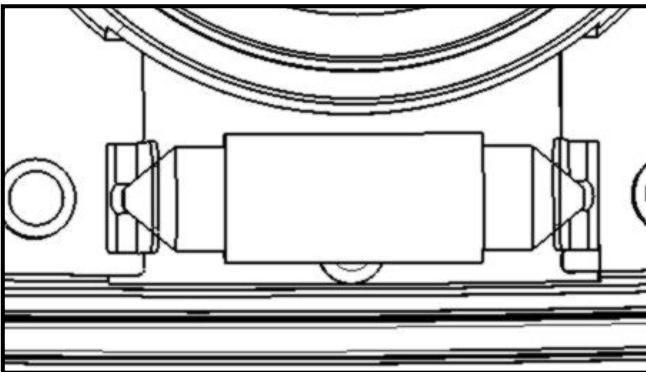
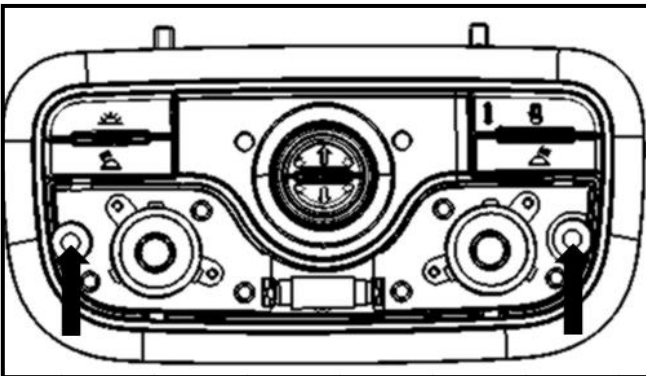
Front dome light bulb

Disassembly process

1. Disassemble the front dome light assembly
2. Disassemble the front dome light bulb

Remark: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

- a. Bulb in the center of the front dome light:
Loosen the tabs on both sides of the bulb to remove the bulb and replace it.
- b. Bulbs on both sides of the front dome light:
Remove the front dome light bulb by turning the bulb base with bulb counterclockwise.



Installation process

Installation is performed in the reverse order of disassembly.

12.1.4.2 Disassembly and installation of lighting system for Yuehu standard model

Maintenance procedures

Caution:

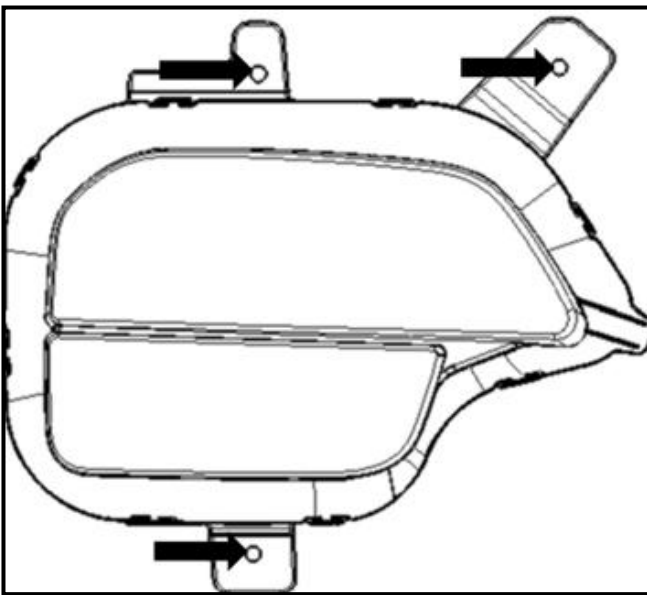
Always place the ignition switch in the OFF position at the time of disconnecting the battery.

During the replace and repair of the lamp, it is prohibited to use chemical solvents or strong cleaners to scrub the entire lampshade to avoid damage to the lampshade.

It is forbidden to touch the glass part of the bulb directly with your hands at the time of replacing the bulb.

Always use bulbs with the same power at the time of replacing bulbs.

Disassembly and installation of combination headlights



Combination headlight assembly

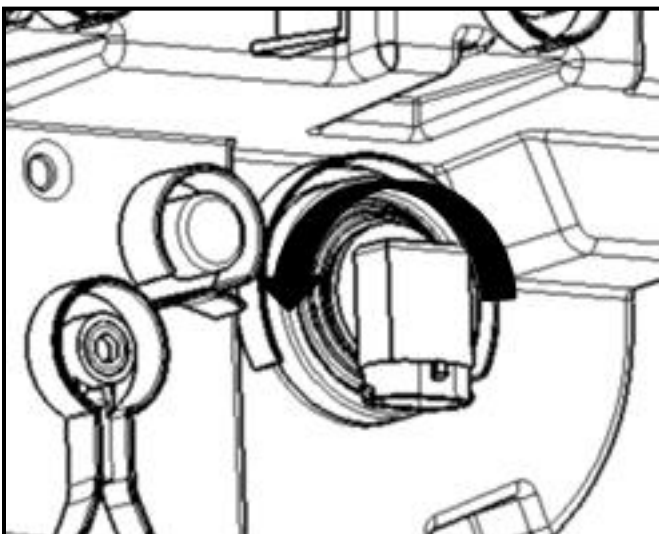
Disassembly process

Remark: Taking the left combination front light assembly as an example, the disassembly and installation of the right combination front light assembly is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Disassemble grille decorative panels
3. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.
4. Disassemble the left combination headlight assembly
 - a. Remove 3 bolts.
 - b. Disconnect the left combination headlight harness connector.
 - c. Remove the left front combination light assembly.

Installation process

Installation is performed in the reverse order of disassembly.



Front fog light bulb

Disassembly process

Remark: Taking the left front fog light bulb as an example, the disassembly and installation of the right front fog light bulb is in the same order.

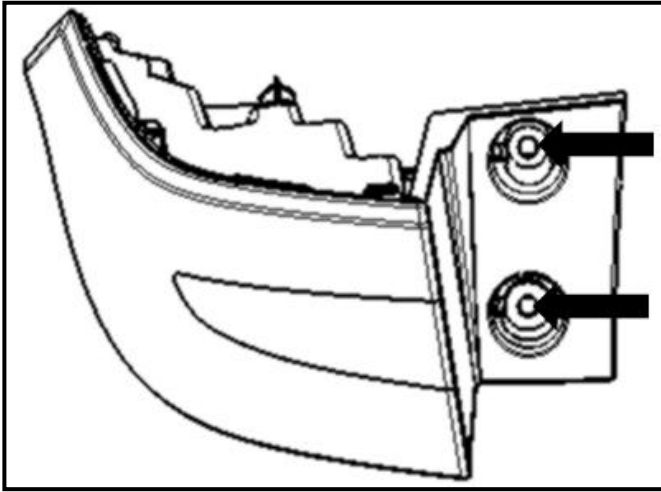
1. Disassemble the combination headlight assembly (integrated fog light function)
2. Replace the front fog light bulbs

Remark: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

- a. Remove the left front fog light bulb by turning the bulb base with bulb counterclockwise.
- b. Replace the left front fog light bulb.

Installation: Installation is performed in the reverse order of disassembly

Disassembly and installation of combination rear lights



Combination rear light assembly

Disassembly process

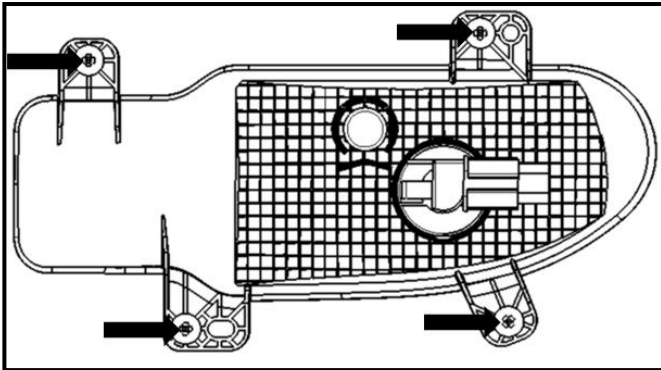
Remark: Taking the left combination rear light assembly as an example, the disassembly and installation of the right combination rear light assembly is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Open the luggage compartment
3. Disassemble the left combination rear light assembly
 - a. Remove 2 bolt covers.
 - b. Remove 2 bolts. Torque 5N
 - c. Disconnect the left combination headlight harness connector
 - d. Remove the left front combination light assembly.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of rear fog light

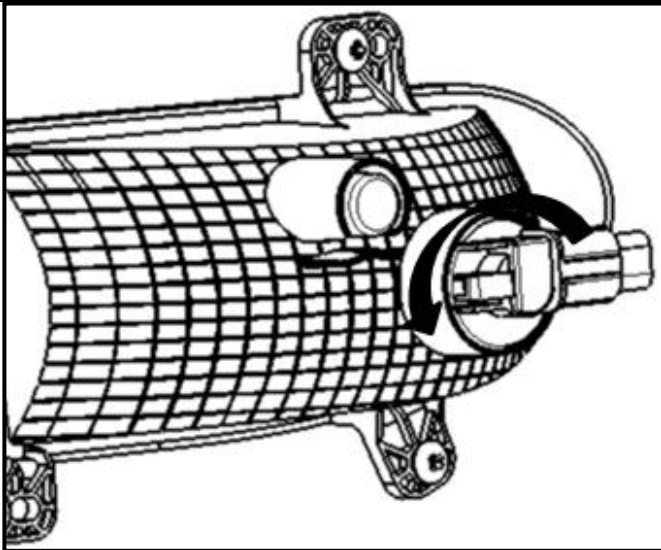


Rear fog lamp assembly

Disassembly process

Remark: Taking the left rear fog light assembly as an example, the disassembly and installation of the right rear fog light is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Open the luggage compartment
3. Disassemble the rear bumper assembly; Please refer to 13.7.2.10 Replacement of rear bumper
4. Disconnect the left rear fog light harness connector
5. Disassemble the left rear fog light assembly
 - a. Remove 4 screws.
 - b. Remove the left rear fog light assembly



Installation process
Installation is performed in the reverse order of disassembly.

Rear fog light bulb
Disassembly process

Remark: Taking the left rear fog light bulb as an example, the disassembly and installation of the right rear fog light bulb is in the same order.

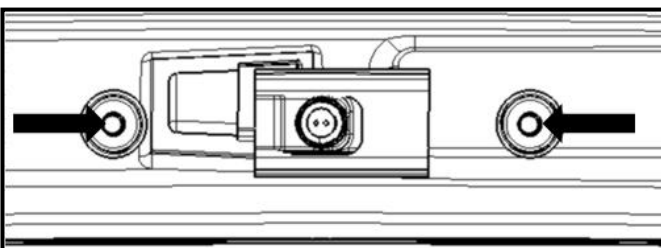
1. Disassemble the left rear fog light assembly
2. Replace the rear fog light bulb

Remark: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

- a. Remove the rear fog bulb by turning the bulb base with bulb counterclockwise.
- b. Replace the left rear fog light bulb.

Installation process
Install in reverse order of disassembly

Disassembly and installation of high brake lights



High brake lamp assembly

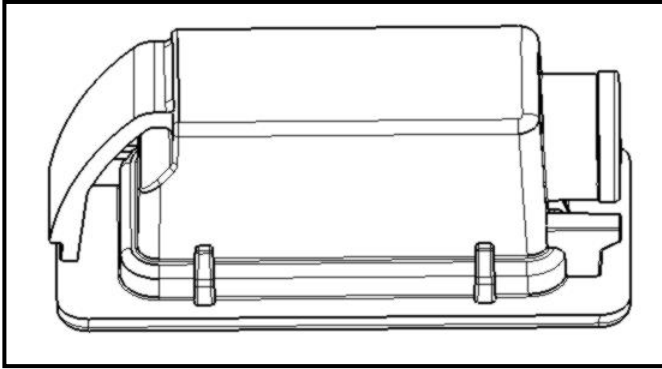
Disassembly process

1. Disconnect the negative terminal of the storage battery
2. Disassemble the spoiler assembly; Please refer to 13.7.2.11 Replacement of spoiler unit
3. Disconnect the harness connector of the high brake light
4. Disassemble the high brake light assembly
 - a. Remove 2 nuts.
 - b. Remove the high brake light assembly

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of license plate light



License plate light
Disassembly process

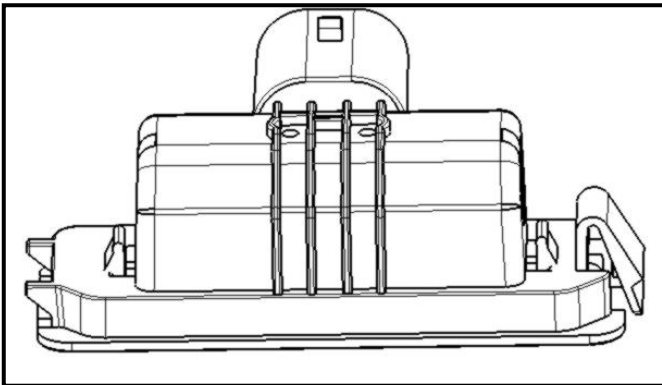
Remark: Taking the left license plate light assembly as an example, the disassembly and installation of the right license plate light is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Disassemble the back door inner trim panel assembly; Please refer to 13.7.2.12 Replacement of rear enclosure unit
3. Disassemble the left license plate light assembly
 - a. Disconnect the harness connection, pry off the jaws, and remove the license plate light.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of luggage compartment lights



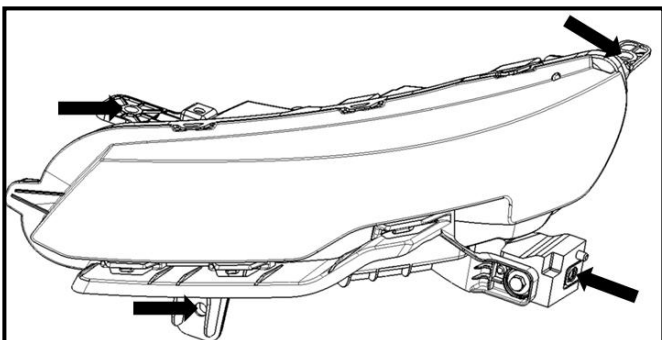
Luggage box lighting lamp
Disassembly process

1. Disconnect the negative terminal of the storage battery
2. Disassemble the luggage compartment light assembly
 - a. Pry off the jaws and remove the luggage compartment light assembly.
 - b. Disconnect the harness connection.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of daytime running light



Daytime running light assembly
Disassembly process

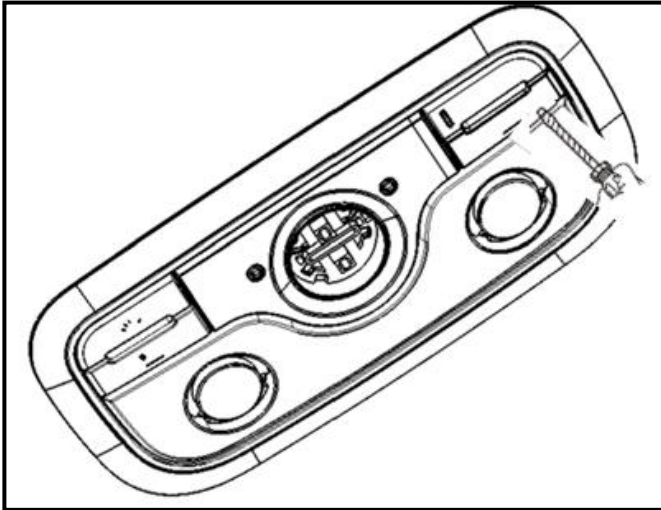
Remark: Taking the left daytime running light assembly as an example, the disassembly and installation of the right daytime running light assembly is in the same order.

1. Disconnect the negative terminal of the storage battery
2. Disassemble grille decorative panels
3. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.
4. Disassemble the left daytime running light assembly
 - a. Remove 4 bolts.
 - b. Disconnect the left daytime running light harness connector.
 - c. Remove the left daytime running light assembly.

Installation process

Installation is performed in the reverse order of disassembly.

Disassembly and installation of front dome light



Front Ceiling Light

Disassembly process

1. Disconnect the negative terminal of the storage battery
2. Disassemble the front dome light covers
 - a. Remove the dome light cover with a “one” screwdriver.
3. Disassemble the front dome light assembly
 - a. Remove the 2 screws with a torque of 2N;
 - b. Disconnect the harness connection.

Installation process

Installation is performed in the reverse order of disassembly.

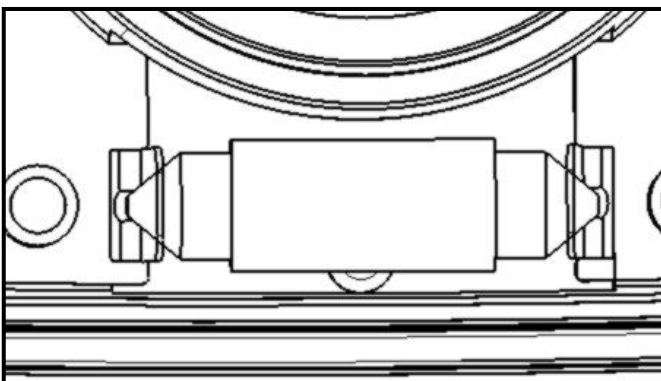
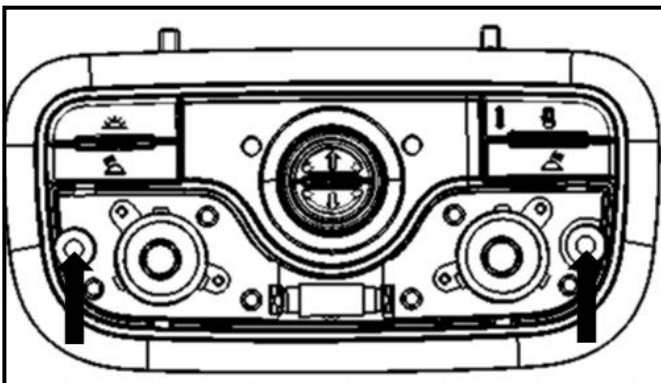
Front dome light bulb

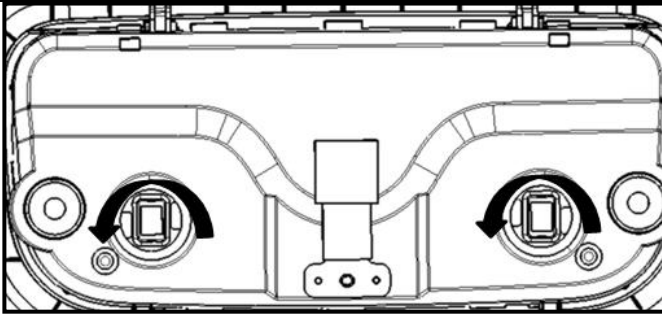
Disassembly process

1. Disassemble the front dome light assembly
2. Disassemble the front dome light bulb

Remark: Clean gloves must be worn during the installation of the bulb to prevent the bulb glass housing from becoming dirty and affecting bulb life.

- a. Bulb in the center of the front dome light:
Loosen the tabs on both sides of the bulb to remove the bulb and replace it.
- b. Bulbs on both sides of the front dome light:
Remove the front dome light bulb by turning the bulb base with bulb counterclockwise.





Installation process
Installation is performed in the reverse order of
disassembly.

12.2 Wiper/cleaning system

12.2.1 Specifications

12.2.1.1 Wiper fastener specifications

Fastener name	Rules and regulations	Torque range (N·m)
Wiper motor and sheet metal bracket fixed bolts	M6	18±2
Wiper arm and wiper motor fixed nut	M8	9±2

12.2.1.2 Washer fastener specifications

Fastener name	Rules and regulations	Torque range (N·m)
Wash pot and sheet metal bracket fixed bolts	M6	5±2

12.2.2 Description and operation

12.2.2.1 Front wiper system

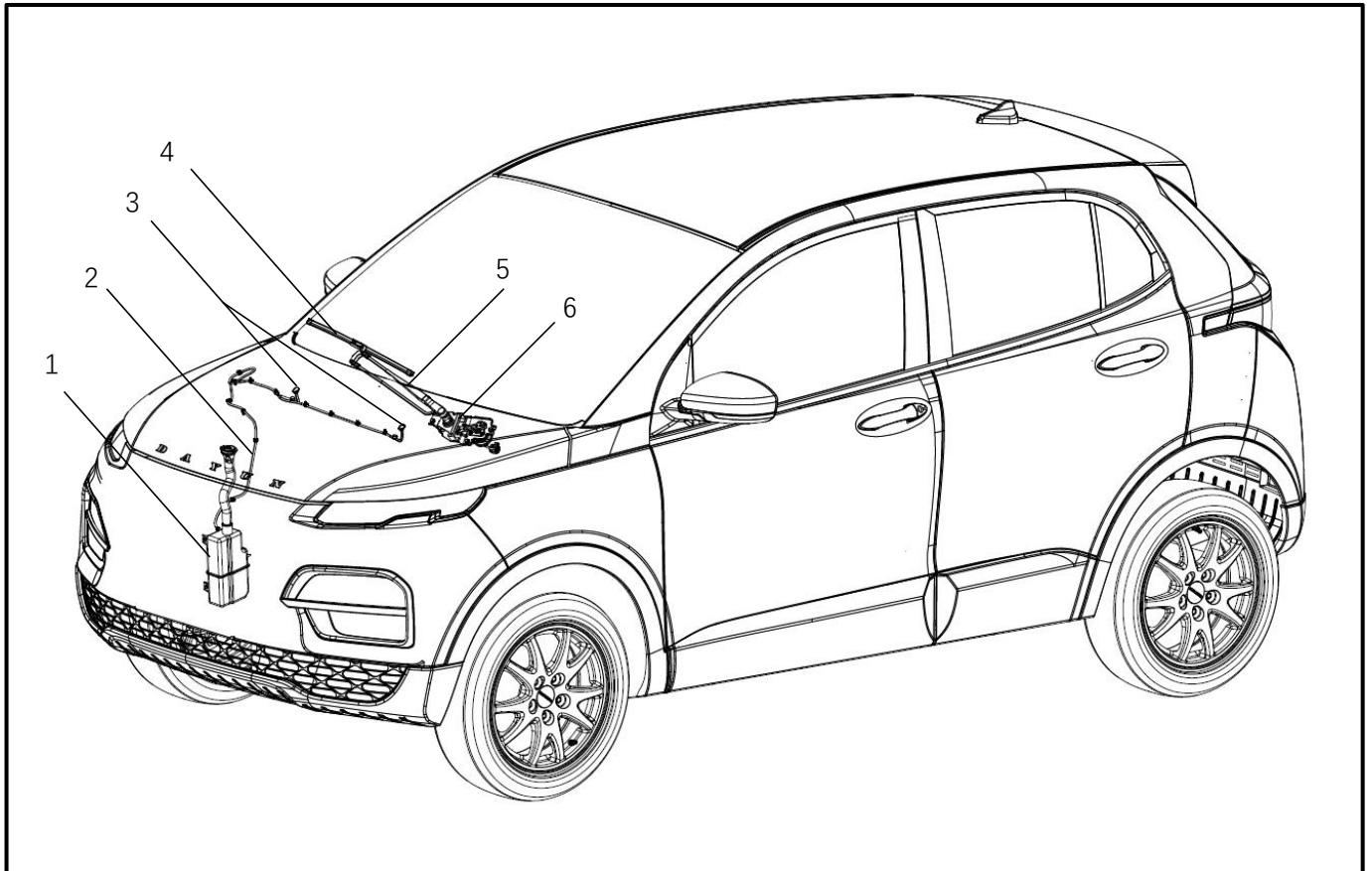
The windshield washer system realizes the washing function by connecting to the windshield washer motor, which transports the washing liquid through the washing hose to the nozzle and ejects the washing liquid from the nozzle position. By adjusting the wiper combination switch gears, the high speed, low speed, pointing and automatic gears of the wiper motor are switched on respectively to realize the different speeds of wiper scraping.

12.2.2.2 Front windshield washing system

The wiper is connected to the high/low speed gears of the wiper motor through the combination switch handle gear, respectively. After the motor is energized the rotary motion of the motor is converted into the rocking motion of the output shaft at the wiper arm mounting through the linkage mechanism to realize the rocking wiper of the wiper arm.

By operating the washing stop on the combination switch, the windshield washer system realizes the washing function by connecting to the windshield washer motor, which transports the washing liquid through the washing hose to the nozzle and ejects the washing liquid from the nozzle position.

12.2.3 Component location

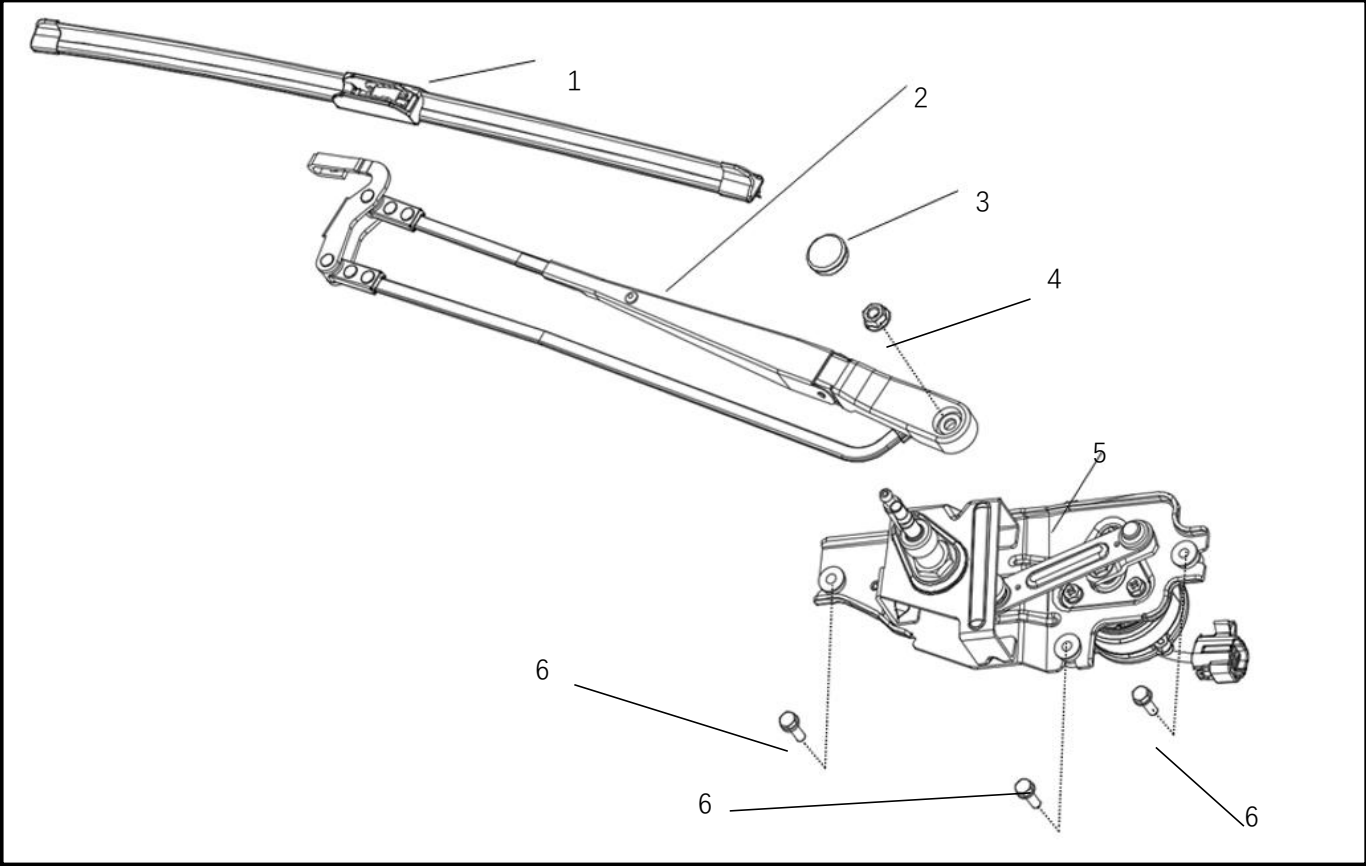


- 1. Washing reservoir
- 2. Washing hose
- 3. Front nozzle

- 4. Front wiper blade
- 5. Front wiper arm
- 6. Front wiper motor

12.2.4 Breakdown drawing

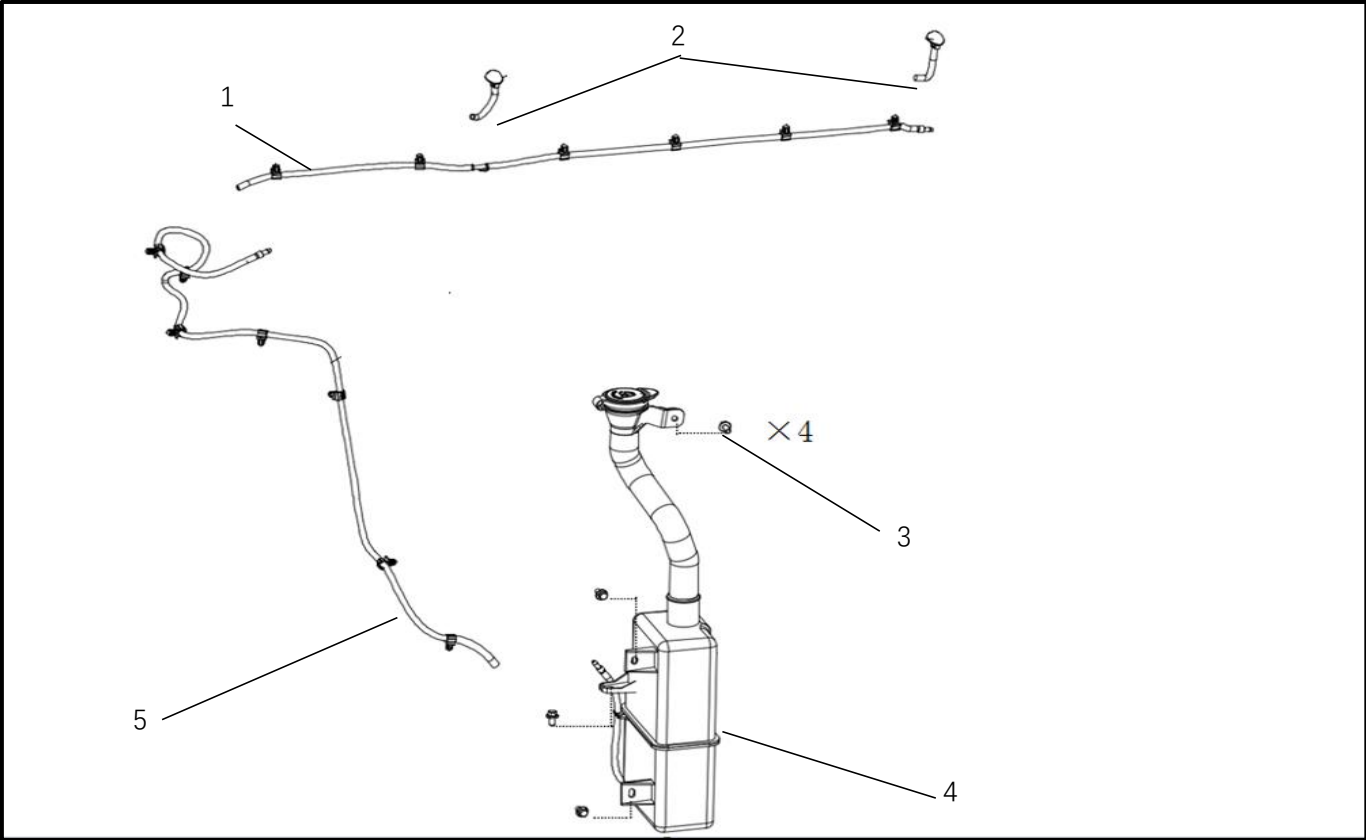
Front wiper system



- 1. Front wiper blade
- 2. Front wiper arm
- 3. Wiper nut cover

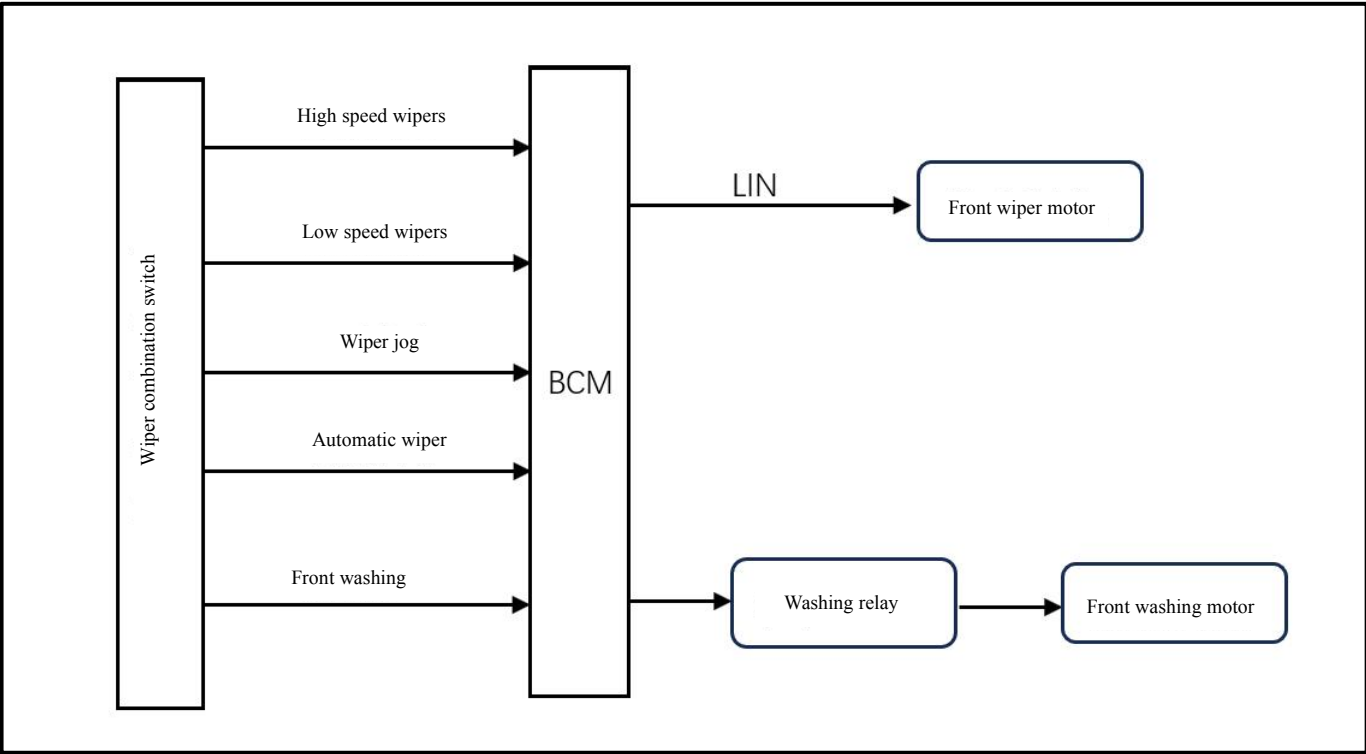
- 4. Wiper arm fixed nut
- 5. Motor of the wiper
- 6. Wiper motor fixed bolts

Front washing system



- 1. Front washing hose II
- 2. Front nozzle
- 3. Washing fixed nuts (4 in total)
- 4. Washing reservoir
- 5. Front washing hose I

12.2.5 Electrical block diagram



12.2.6 Diagnostic information and steps

12.2.6.1 Diagnostic description

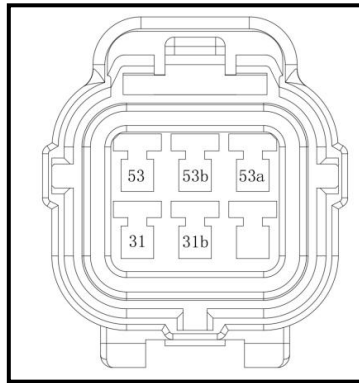
Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.2.6.2 Visual inspection

- Check for aftermarket additions that may affect the operation of the front windshield wiper/washer system.
- Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.
- Check whether the washing liquid level in the washing liquid reservoir is correct.

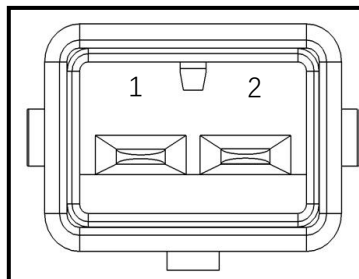
12.2.6.3 Terminal List of Wiper and Cleaner System

1. Front wiper motor connector



S.N.	Name	Connection terminal definition
53	Lo	Low speed
53b	HI	High speed
53a	/	/
31	GND	Grounding
31b	Reposition	Reposition

2. Washing motor connector



S.N.	Name	Connection terminal definition
1	-	Grounding
2	+	Power supply

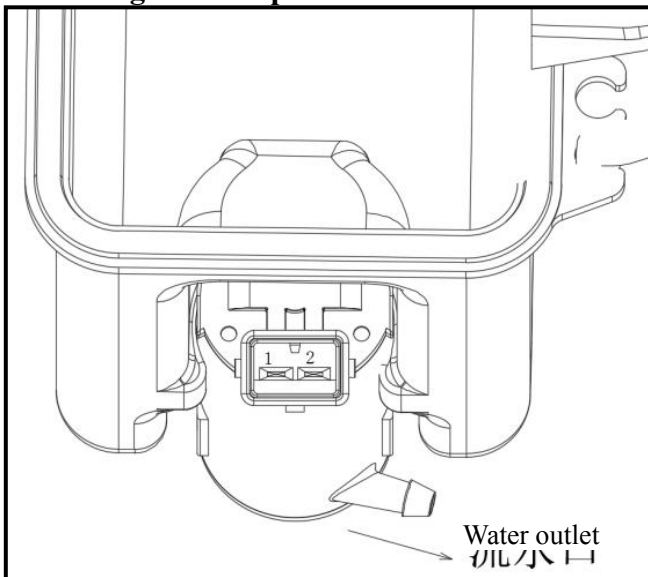
12.2.6.4 Failure Symptom Table

The following table is used to determine the cause of the failure. If necessary, follow the steps listed on the following

pages to check, repair, or replace parts.

Symptoms	Suspicious location
Front wiper not working	WIPER fuses
	Windshield wiper switch assembly
	Front wiper motor assembly
	Wiring harness
Front wiper not working in LO or HI position	Windshield wiper switch assembly
	Front wiper motor assembly
	Wiring harness
Front wiper not working in INT position	Windshield wiper switch assembly
	Front wiper motor assembly
	Wiring harness
Front washer motor not working	WIPER fuses
	Windshield wiper switch assembly
	Washing motor
	Wiring harness
Cleaning fluid not flowing	Washer hose and nozzle
The wiper blade cannot be reset or is in the wrong position when the wiper switch is placed in the OFF position. The wiper blades are in contact with body	Front wiper motor assembly (wiper arm and blade assembly location)

12.2.6.5 Diagnostic step



Washing motors and pumps
Check the operation of the front side windshield washer motor

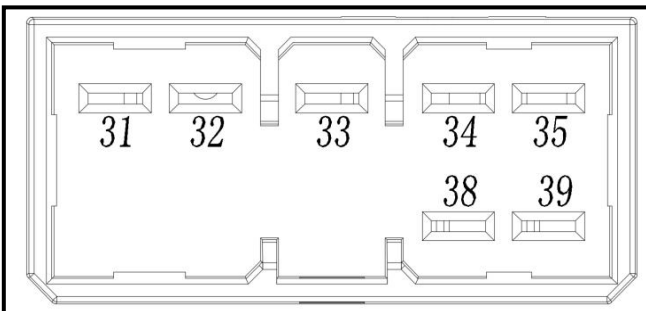
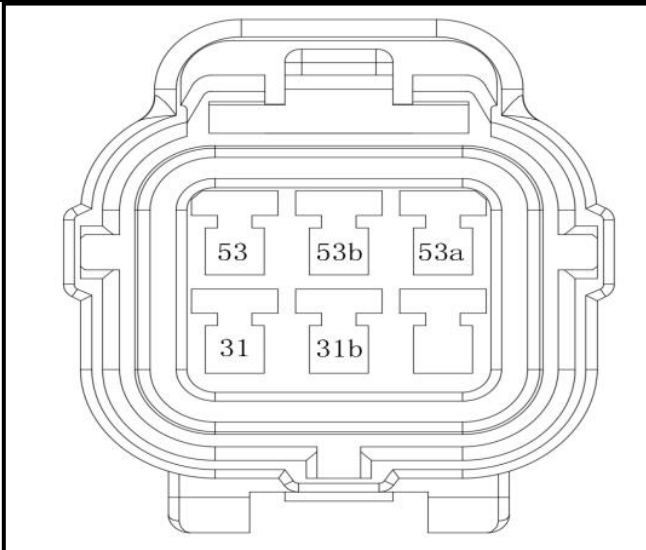
1. Fill the washer tank with washing liquid.

Remarks:

This operation shall be completed by the windshield washer motor mounted on the washer tank.

2. Connect the positive (+) battery lead to windshield washer motor terminal 2 and connect the negative (-) battery lead to terminal 1. Check whether the washing liquid is not coming out of the washer tank.

Standard: Washing liquid is coming out of the washer tank. If it does not flow then the motor needs to be replaced.



Windshield wiper motor assembly

1. LO work inspection

Connect the positive cable of the storage battery to terminal 53 of the connector and the negative cable of the storage battery to terminal 31 to check and confirm that the motor works at low speed (LO).

2. HI work inspection

Connect the positive cable of the storage battery to terminal 53 of the connector and the negative cable of the storage battery to terminal 31 to check and confirm that the motor works at high speed (HI).

3. Automatic stop works inspection

a. Connect the positive cable of the storage battery to terminal 53 of the connector and the negative cable of the storage battery to terminal 31 to check. When the motor is running at low speed (LO), the terminal 53 is disconnected to stop the wiper motor at any position other than the automatic stop position.

b. Connect the terminal 53a to the positive battery cable and connect terminals 53 and 31b to bring the motor back into operation at low speed.

Combination switch inspection

1. Wiper Combination Switch Assembly

Remarks:

- The picture on the left shows the front view of the wiper combination switch assembly connector.

a. Conductivity inspection

(1) Measure the resistance according to the values in the table below.

Front wiper switch

Switch position	Tester	Prescribed state
MIST	33-34、35-31	Less than 1Ω
OFF	31-35	Less than 1Ω
LO	31-33	Less than 1Ω
HI	32-34	Less than 1Ω

Front windshield washer

Switch position	Tester	Prescribed state
OFF	38-39	10kΩ or greater
ON	38-39	Less than 1Ω

b. Intermittent work inspection

(2) Connect the positive terminal of the voltmeter to terminal 33 of the connector, and connect the negative terminal of the voltmeter to terminal 34.

(3) Connect the positive cable of the storage battery to terminal 33 of the connector and the negative cable of the storage battery to terminal 34 to check.

(4) Place the wiper switch in the INT position.

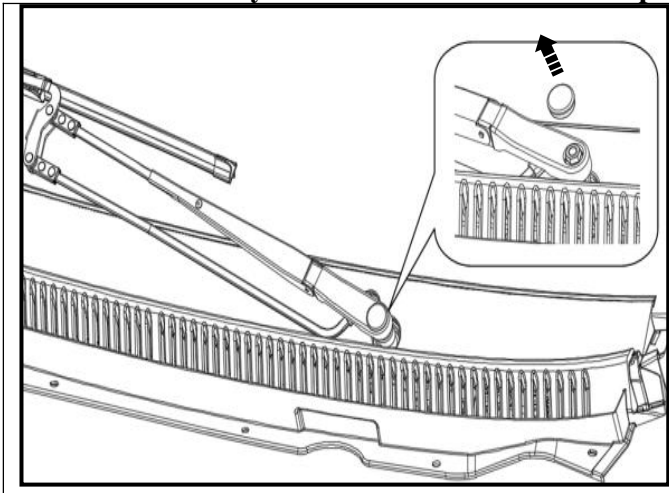
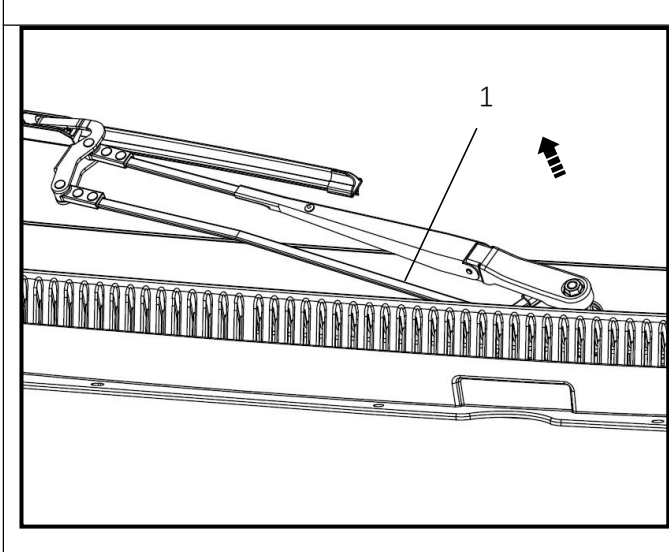
(5) Connect the positive cable of the storage battery

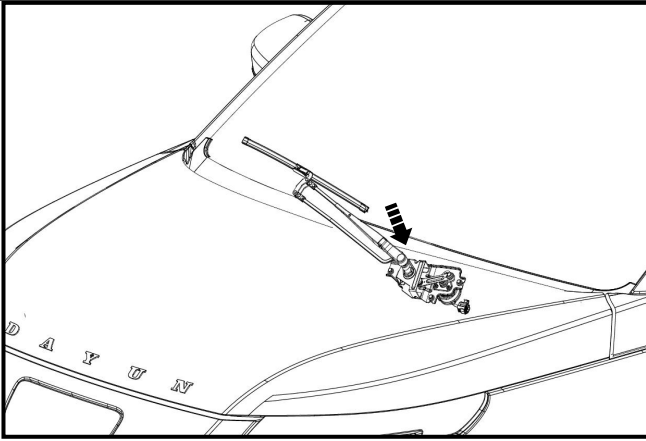
33 of the connector for 5s.

- (6) Connect the negative cable of the storage battery to terminal 34 of the connector. Operate intermittent wiper relay and check voltage between terminals 33 and 34.
- c. Work inspection (front windshield washing)
 - (1) Turn off the wiper switch.
 - (2) Connect the positive cable of the storage battery to terminal 38 of the connector and the negative cable of the storage battery to terminal 39 to check.
 - (3) Connect the positive terminal of the voltmeter to terminal 38 of the connector, and connect the negative terminal of the voltmeter to terminal 39.
 - (4) Turn the cleaner switch on and off and check the voltage between terminals 38 and 39.

12.2.7 Disassembly and installation

12.2.7.1 Disassembly and installation of front wiper arms

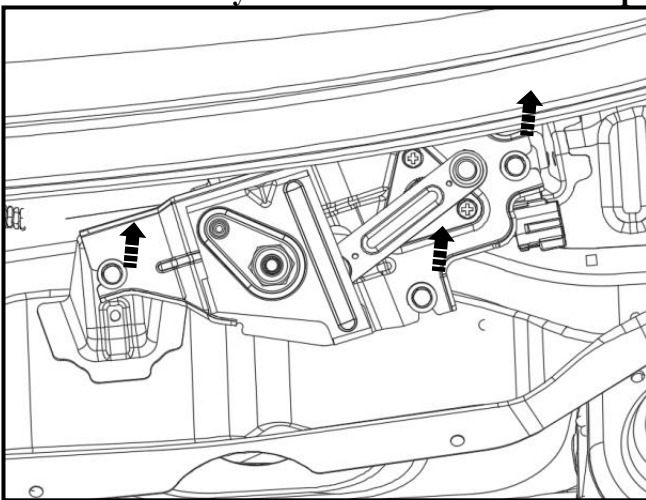
	<p>Disassembly process</p> <p>Caution Stop the wiper arm in its initial position and de-energize the vehicle before disassembly. Do not remove the wiper blades before removing the wiper arms.</p> <ol style="list-style-type: none"> 1. Disassemble front wiper arm bolt cover
	<ol style="list-style-type: none"> 2. Remove the front wiper arm assembly by removing the wiper arm fixed nut. <p>Caution This vehicle has a single wiper arm, and the secondary wiper arm 1 needs to be disassembled from the output shaft first at the time of removing it.</p>



Installation process

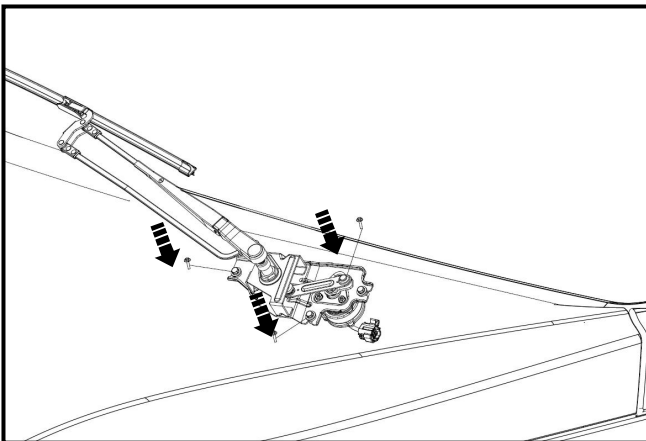
1. Place the wiper arm (with the wiper blade dispensed) on the wiper output shaft and then position the wiper blade at the black edge of the glass;
2. Tighten the wiper arm fixed nut (Q32010F62) with M10 tool with a tightening torque of $18 \pm 2 \text{ N} \cdot \text{m}$.

12.2.7.2 Disassembly and installation of front wiper motor



Disassembly process

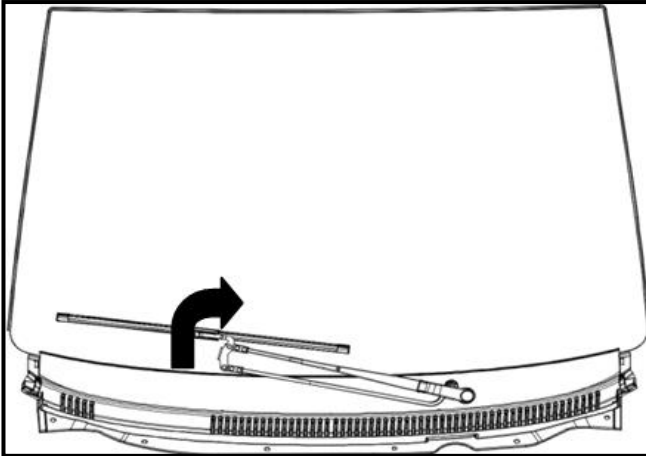
1. Open the hood and remove the lower trim panel of the front windshield with a ratchet plate hand and socket and one screwdriver respectively; Please refer to 13.7.2.3 Replacement of lower trim panel of front windshield;
2. Remove the front wiper arm;
3. Remove the fixed nut 1 fixing the front wiper motor in place with an M6 tool and disconnect the wiper motor from the connector at the harness end. Then, take off the motor assembly.



Installation process

1. Open the hood and place the front wiper motor and bracket assembly on top of the sheet metal bracket in the front engine compartment water trough and align the mounting holes;
2. Secure the hexagon head bolts and flat washer assemblies (Q140B0630F62L) and the wiper motor to the front cabin wiper sheet metal bracket locations using the M6 tool with a tightening torque of $8 \pm 1 \text{ N} \cdot \text{m}$

12.2.7.3 Disassembly and installation of wiper blades



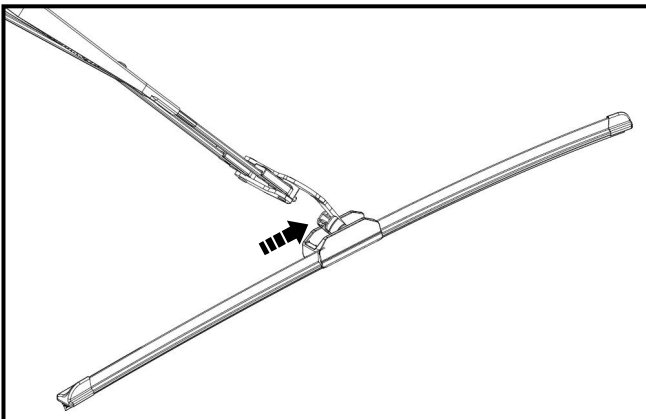
Disassembly process

Caution:

If the wiper blade is frozen to the windshield, do not use the wiper until the ice has melted and the blade is free, or damage will occur to the wiper motor.

This is a single wiper arm, the wiper arm lifts at an angle of about 10 degrees, please do not use excessive force when lifting.

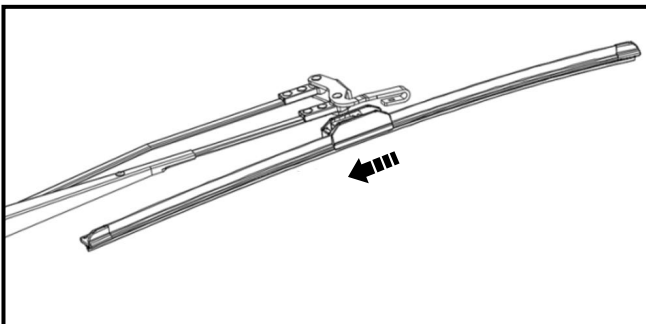
1. Lift the wiper arm from the upper glass of the windshield.



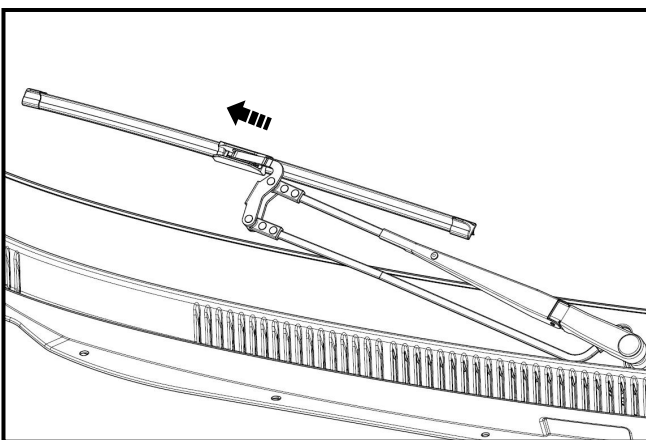
2. Remove the wiper blade assembly from the wiper arm

a. Rotate the wiper blade for about 40°.

b. Press and hold the grip to push the blade forward.



3. After pushing to the bottom, rotate the wiper blade to the horizontal position and continue to push the wiper blade back.

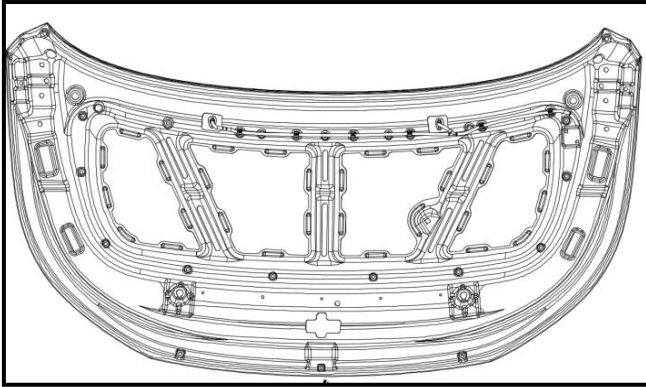


Installation process

1. Lift the wiper arm from the upper glass of the windshield.

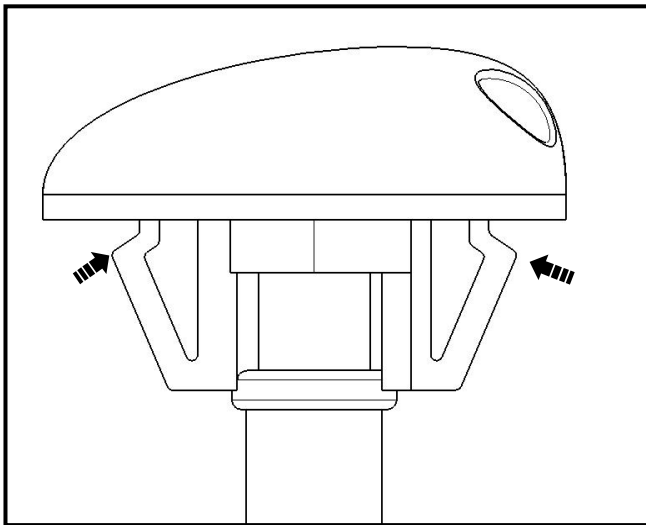
2. Place the wiper blade at the curved hook at the end of the wiper arm, and push the wiper blade in the direction of the arrow. After hearing the “click” sound, the installation of the wiper blade is completed.

12.2.7.4 Disassembly of the front washing nozzle



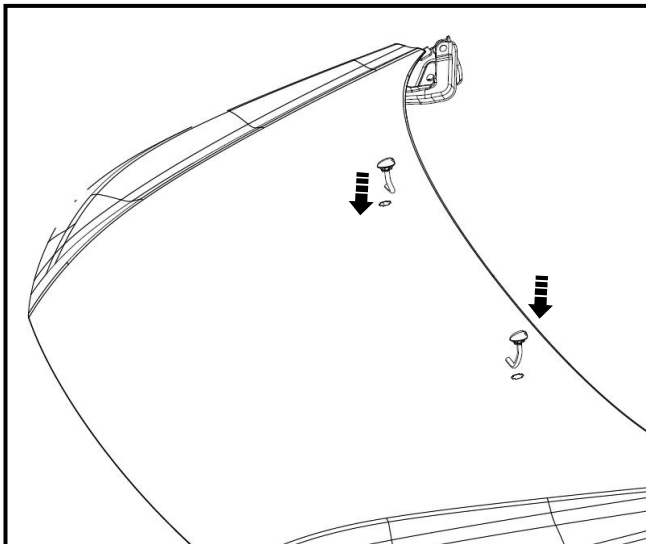
Disassembly process

1. Open the hood and support it with a support bar.
2. Disconnect the nozzle from the water hose fitting.



3. Disassemble washer nozzle

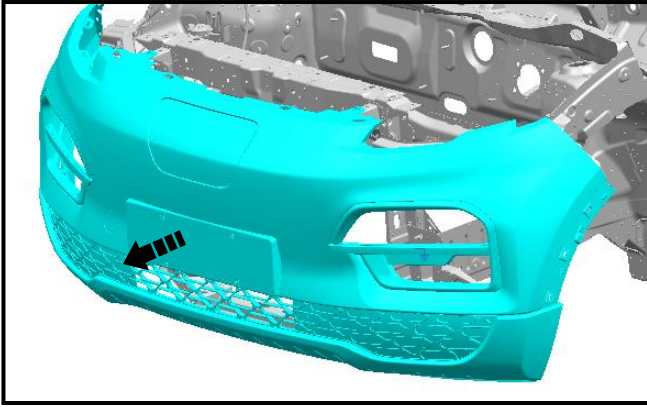
- (a) Disconnect washer hose
- (b) Use a small screwdriver to press on the nozzle catch structure or pinch the nozzle catch structure with your fingers and then the nozzle catch structure contracts to remove the nozzle from the cover.



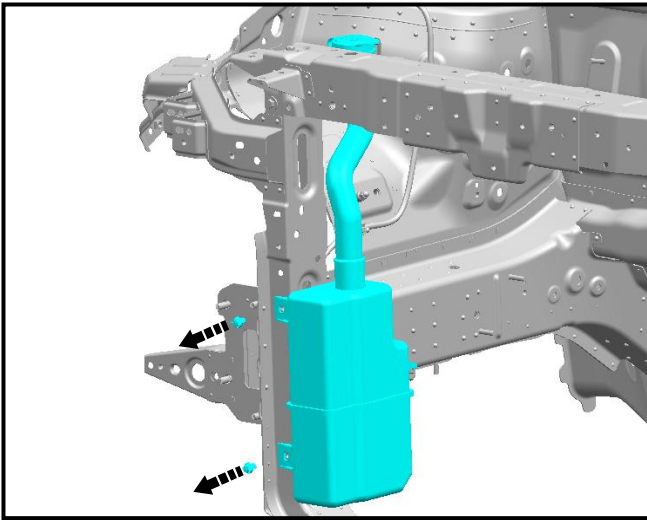
Installation process

1. Close the hood;
2. Place the nozzle in the engine compartment sheet metal nozzle mounting holes and snap the nozzle to the sheet metal by pressing with the amount.

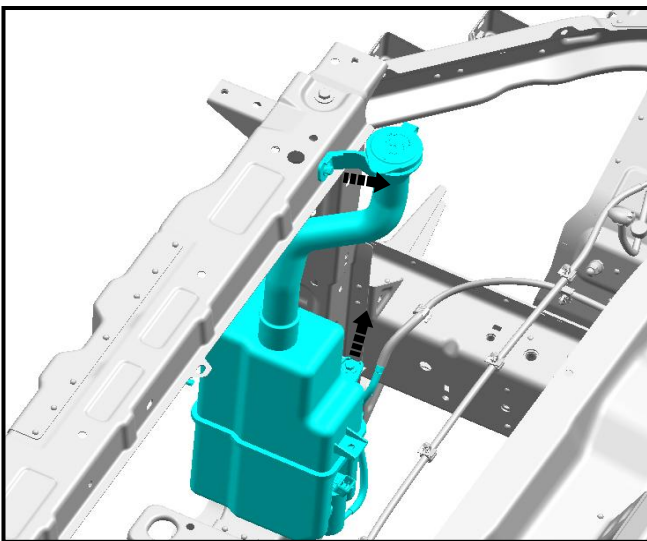
12.2.7.5 Disassembly of windshield washer reservoir



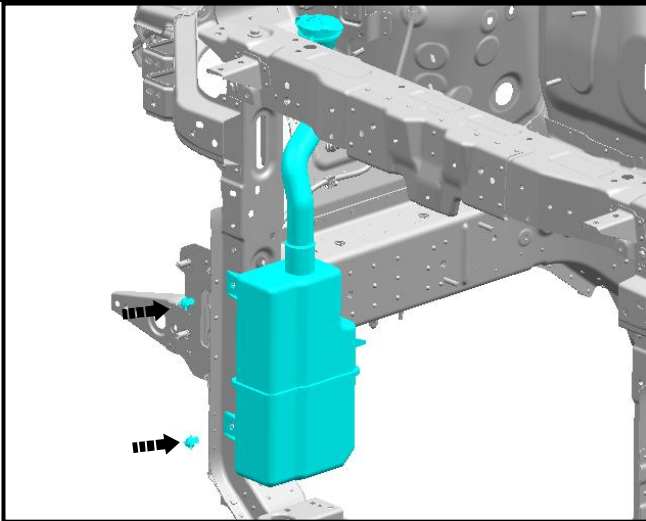
- Disassembly process
1. Disconnect the negative battery terminal.
 2. Empty the washing liquid in the windshield washer reservoir.
 3. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.



4. Removing the two bolts securing it to the front of the jug using an M6 tool.



5. Disassemble the wash pot by removing the two bolts securing it to the rear of the jug using an M6 tool.



Installation process

1. Place the wash pot on the sheet metal and align the mounting holes;
2. Secure the washer reservoir assembly to the right front sheet metal bracket using the M6 tool with a tightening torque of 3-5N·m;
3. Fit the bumper to the body sheet metal; Please refer to 13.7.2.7 Replacement of front bumper.

12.3 Horn

12.3.1 Specifications

Fastener specifications

Fastener name	Rules and regulations	Torque range (N·m)
Tweeter and sheet metal bracket fixed bolts	M8	9±2

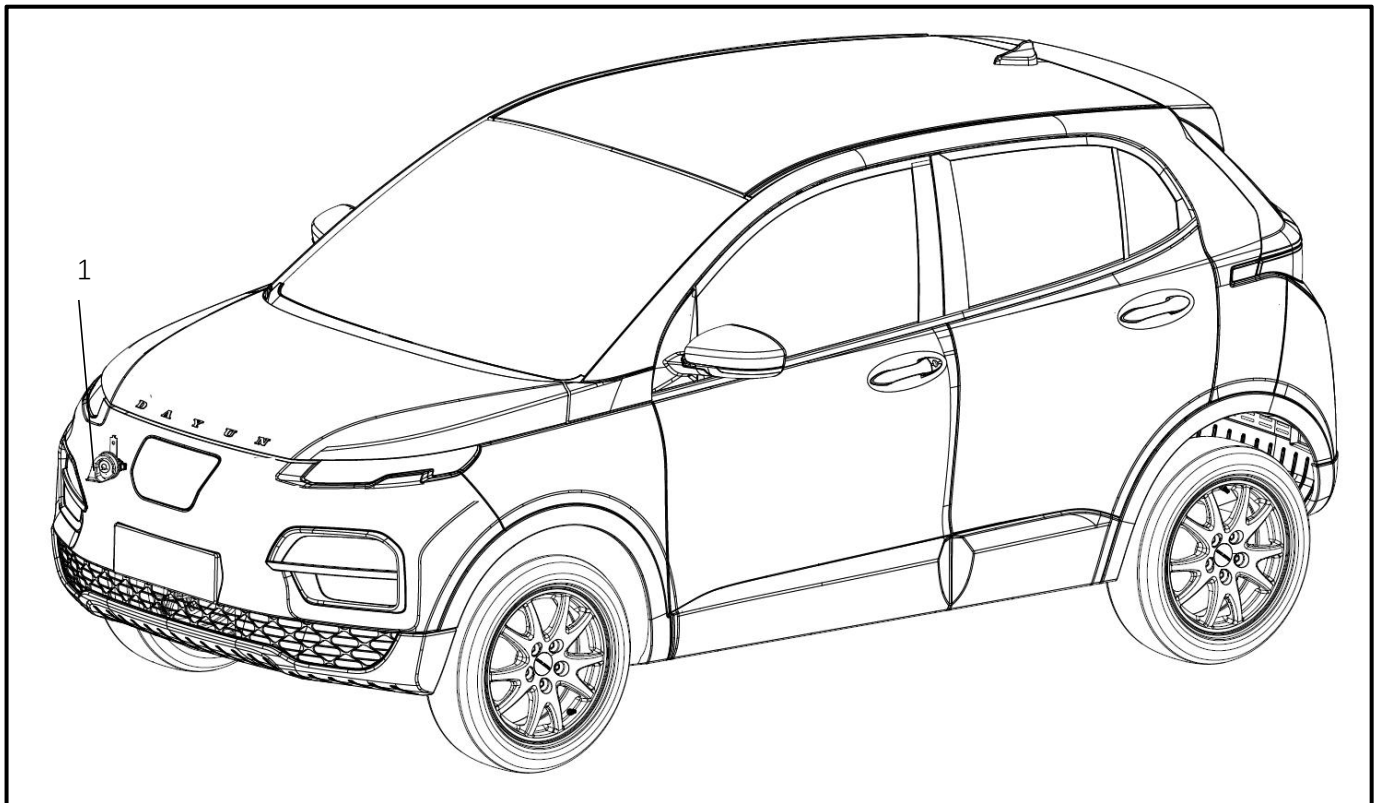
12.3.2 Description and operation

The horn works by pressing the horn button area horn on the steering wheel.

Caution

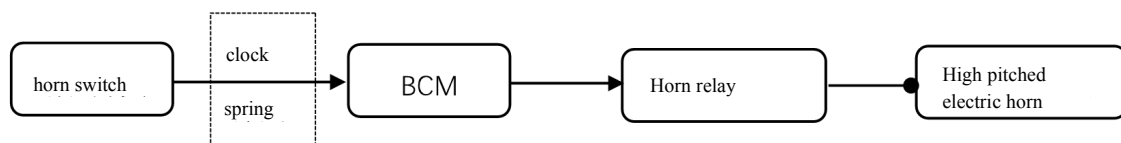
Do not press or pound the cover plate vigorously at the time of using the speaker to avoid accidents.

12.3.3 Component location



1. High-pitch electrical horn

12.3.4 Electrical block diagram



12.3.5 Diagnostic information and steps

12.3.5.1 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

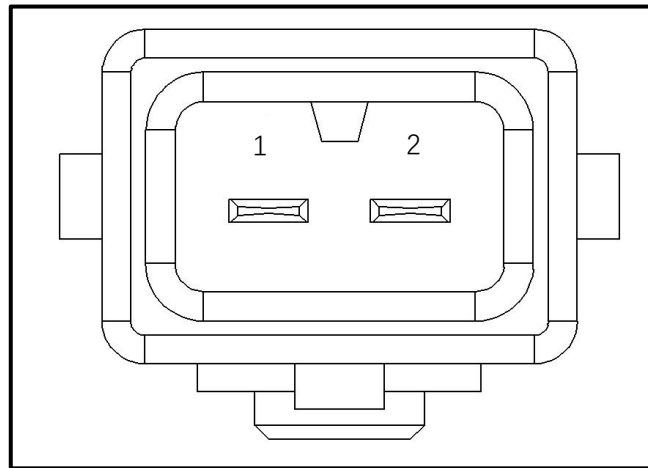
12.3.5.2 Visual inspection

1. Check for aftermarket additions that may affect horn operation.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

12.3.5.3 Horn contact point inspection

When the horn intermittently does not work or the steering wheel side of the press horn switch fails, it is likely that the contact of the horn switch is poor. At this time, the switch contact of the horn under the driver’s airbag should be adjusted.

12.3.5.4 Tweeter Terminal List



S.N.	Name	Connection terminal definition
1	Power supply	+
2	Grounding	-

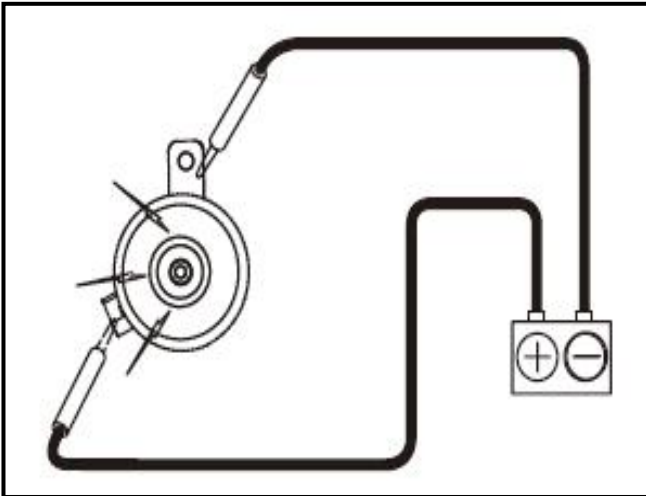
12.3.5.5 Diagnostic step

1. Failure Symptom Table

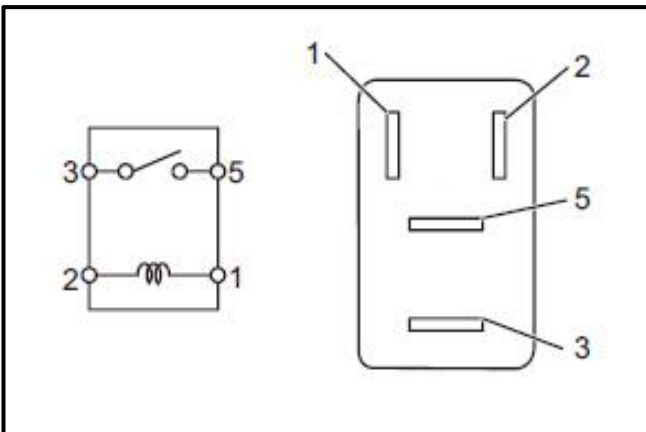
The following table is used to determine the cause of the failure. If necessary, follow the steps listed on the following pages to check, repair, or replace parts.

Symptoms	Suspicious location
Horn work	Horn button switch
	Tweeter assembly
	Fuse
	Relay
	Relay

2. Diagnostic step



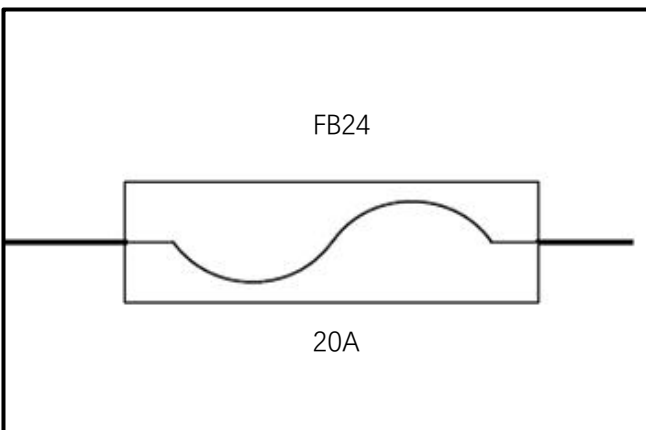
1. Check the tweeter assembly
 a. Apply the battery voltage to the horn and check the operation of the electric horn. Connect the positive terminal of the battery to terminal 1 and the negative terminal of the battery to the electric horn. If the electric horn does not sound, replace the electric horn assembly.



2. Check the tweeter relay assembly
 a. Remove the electric horn relay from the front unit fuse box.

Tester connection	Prescribed state
3-5	10kΩ or greater
	Less than 1Ω (when battery voltage is applied to terminals 1 and 2)

1. Check the resistance of electric horn relay.
 If the results meet the requirements, replace the relay assembly.



3. Check tweeter fuse

Measurement condition	Prescribed state
Check whether the fuse FB24 is blown.	Fuse blown

If the results meet the requirements, replace the insurance.

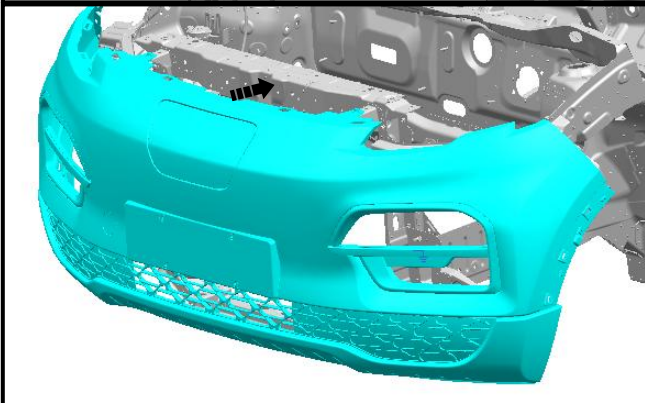
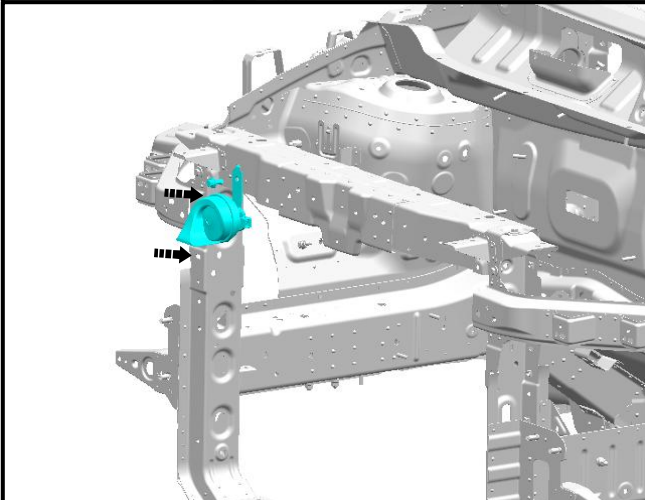
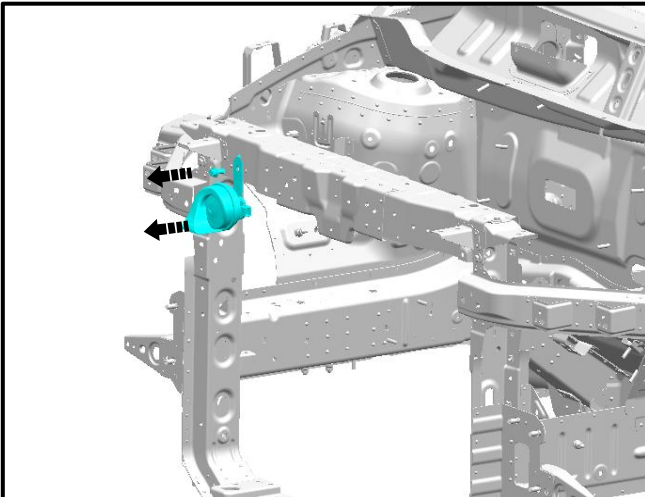
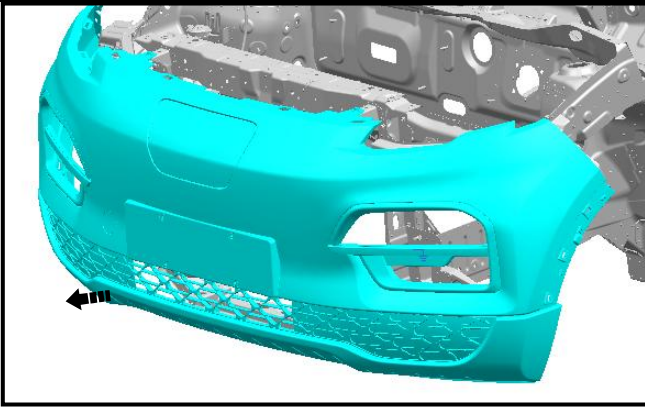
4. Check the tweeter harness

Check the electric horn connection harness for conduction. If not conducting, replace or repair harness

12.3.6 Disassembly and installation

Disassembly process

1. Disconnect the negative battery terminal when the vehicle is powered down; Please refer to 13.7.2.7 Replacement of front bumper.



2. Unscrew the woofer standard with a ratchet wrench and M8 socket;
3. Disconnect the horn connector and take off the horn.

Installation process

1. Use a ratchet wrench and M8 socket to secure the woofer and the hexagonal head bolt and flat washer assembly (Q146B0825F62) at the left position of the front-end module with a tightening torque of 7 to 11 N·m;
2. Plug in the electric horn connector well;

3. Assemble the front bumper to the front compartment sheet metal; Please refer to 17.2.7 Replacement of front bumper.

12.4 Automotive Vehicle Alert Sound System

12.4.1 Fastener specifications

Fastener name	Rules and regulations	Torque range (N·m)
Automotive vehicle alert sound controller and sheet metal bracket fixed bolts	M8	9±2

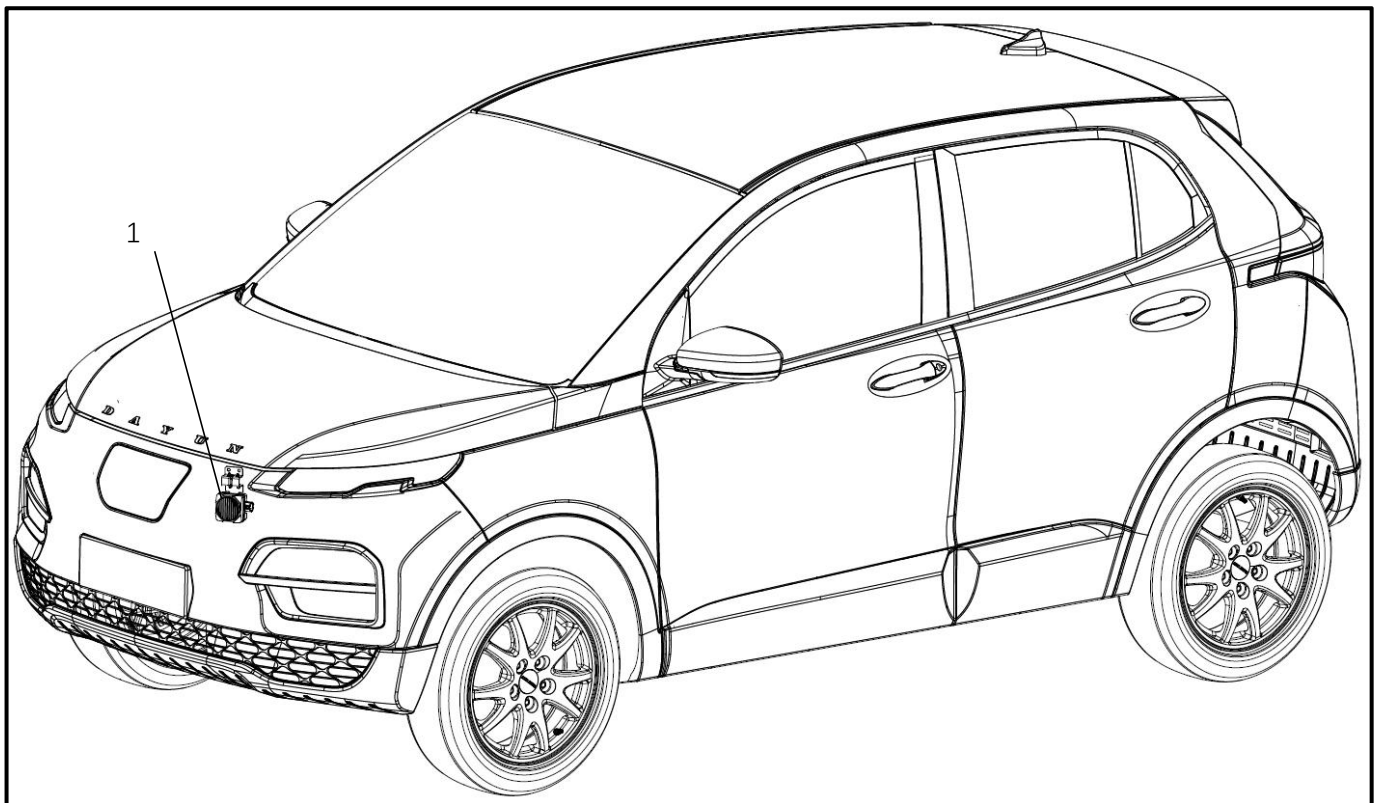
12.4.2 Description and operation

The Automotive Vehicle Alert Sound System (AVAS) means that when the vehicle is traveling at a low speed, an alert sound will be emitted to alert the surrounding road users, such as pedestrians and vehicles.

12.4.3 System operating principle

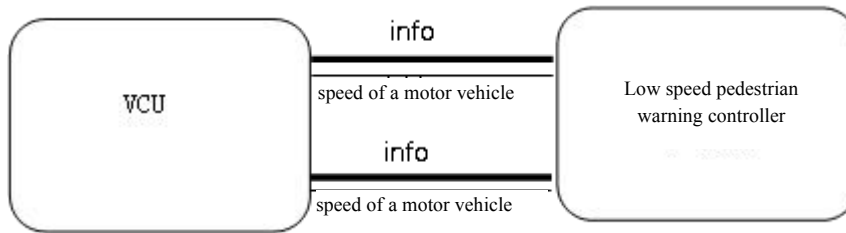
When the vehicle is READY, the gear is in D, and the vehicle speed is greater than 0, the automotive vehicle alert sound controller will sound an alarm to warn those around the vehicle. The alarm sound changes with the speed: when the speed is equal to 20km/h, the alarm sound reaches the maximum value, when the speed is more than 25km/h, the alarm sound stops; the sound sounds when the speed is lower than 25km/h during deceleration; when the gear is located in the R gear and the speed is greater than 0, the automotive vehicle alert sound controller produces the warning sound with fixed frequency and sound pressure.

12.4.4 Component location



1. Low-speed pedestrian warning controller

12.4.5 Electrical block diagram



12.4.6 Diagnostic information and steps

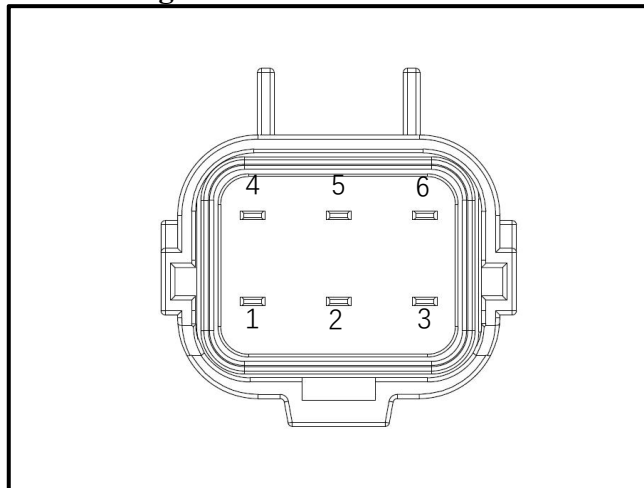
12.4.6.1 Diagnostic description

Please refer to the system’s operating principles and be familiar with the system’s functions and operation before starting the system diagnosis, which will help to determine the correct troubleshooting steps in the event of a malfunction.

12.4.6.2 Visual inspection

1. Check for aftermarket additions that may affect low-speed pedestrian warning.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

12.4.6.3 Low-speed Pedestrian Warning Terminal List



S.N.	Name	Connection terminal definition
1	CAN_H	CAN_H
2	Positive terminal of power supply	PWR
3	/	N/A
4	CAN_L	CAN_L
5	Negative terminal of power supply	GND
6	/	N/A

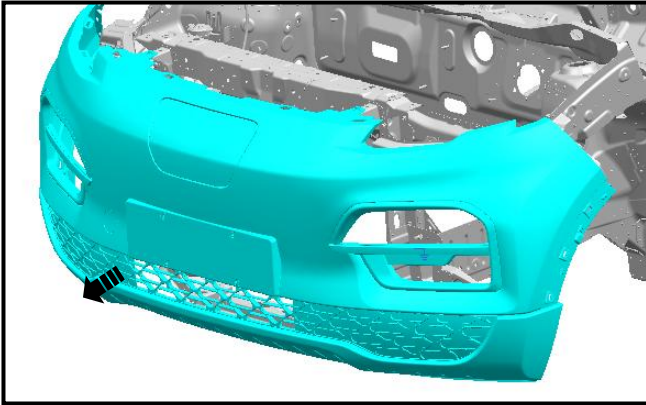
12.4.6.4 Diagnostic step

The following table is used to determine the cause of the failure. If necessary, follow the steps listed on the following pages to check, repair, or replace parts.

Fault phenomenon	Reason for failure	Troubleshooting
No sound from the speakers.	Vehicle 12V circuit undervoltage	Replacement of batteries
	Short circuit of harness	Confirm whether the fuse is not blown and check the wiring

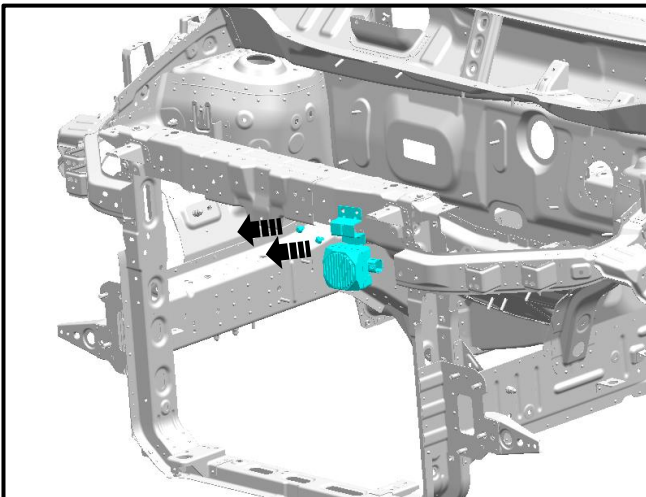
	Loose connector	Determine whether the connector is firmly connected
	Controller failure	Replace the controller
Noisy	Signal interference	Check for sources of interference around the vehicle

12.4.7 Disassembly and installation



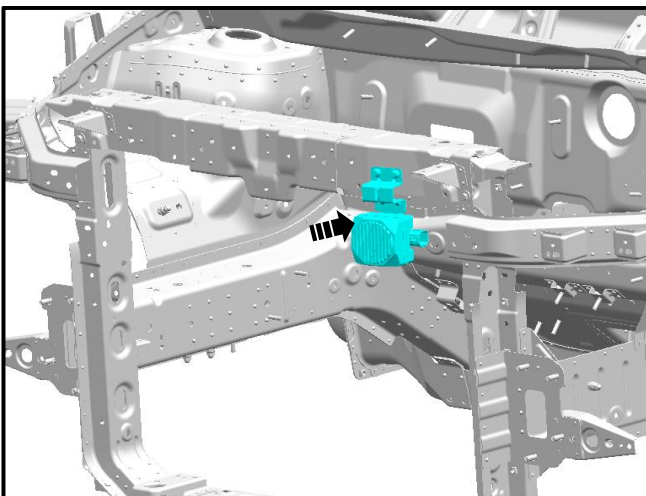
Disassembly process

1. Disconnect the negative battery terminal when the vehicle is powered down, and disassemble the front bumper. Please refer to 13.7.2.7 Replacement of front bumper;



2. Unscrew the pedestrian warning fixed bolts using a ratchet wrench and M6 socket;

3. Disconnect the connector and take off the pedestrian warning controller.



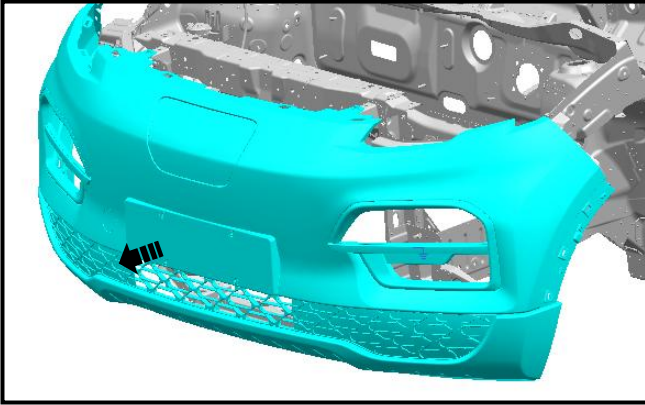
Installation process

1. Secure the pedestrian warning and hexagonal head bolts and flat washer assemblies (Q1840612F62) to the front end frame beam position using a ratchet wrench and M6 socket with a tightening torque of 8 ± 1 N·m;

2. Connect the harness connector to the pedestrian warning device;

Yuehu Maintenance Manual

3. Assemble the front bumper to the front compartment sheet metal; Please refer to 17.2.7 Replacement of front bumper.



12.5 Parking assistance

12.5.1 Specifications

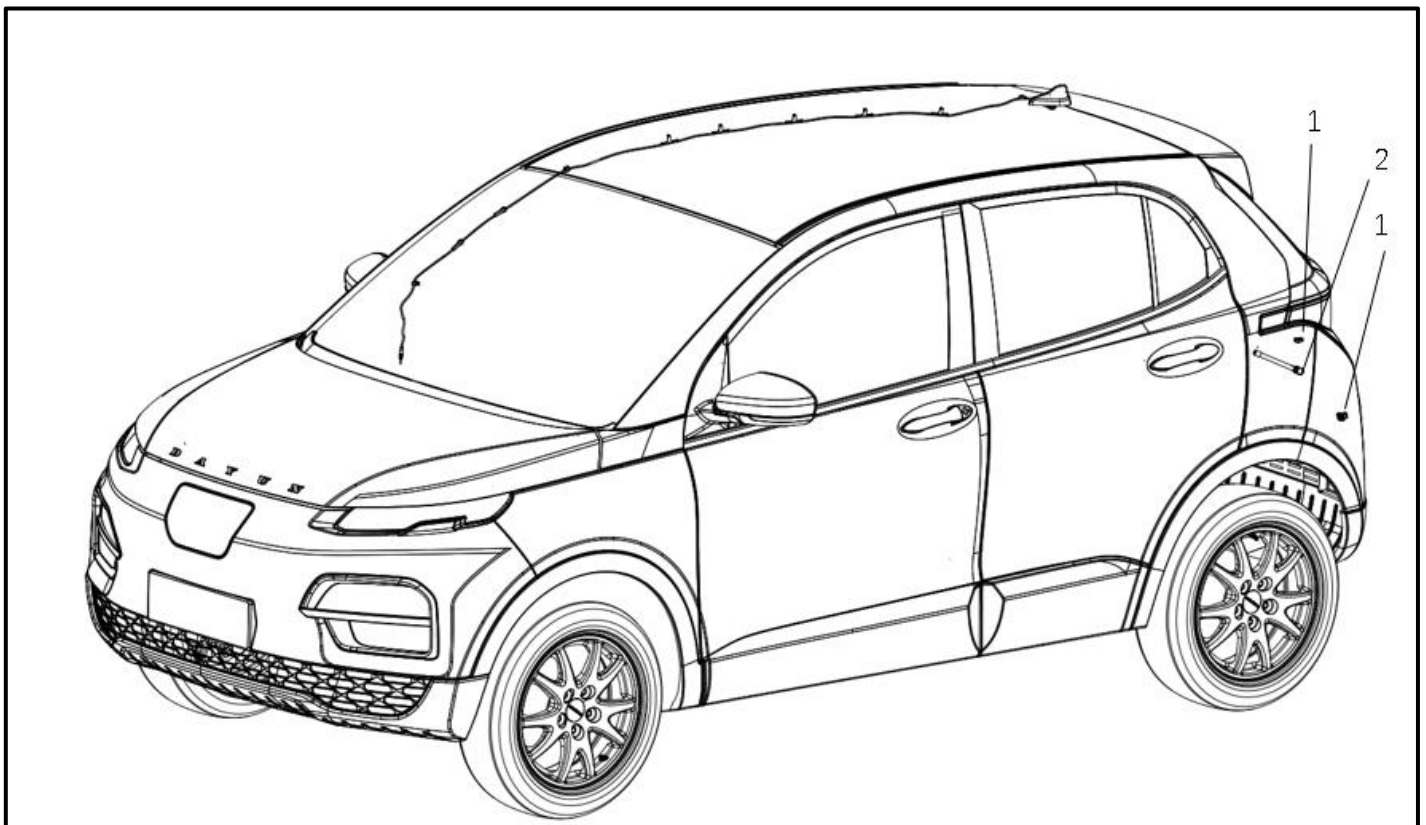
12.5.1.1 Specification fasteners

Fastener name	Specifications	Torque range (N·m)
Fixed nut at rear camera and upper fixed cover plate	M6	3.5~6

12.5.2 Operation and Description

Parking assistance system: Two radar sensors in the front and back of the body can detect the distance between the vehicle and its surroundings. The distance between the vehicle and its surroundings will be displayed on the big screen in reverse gear, which is reflected in red, yellow, and green, corresponding to distances of 0.5m, 1m and 1.5m or less, and sharp warning sounds will be issued simultaneously. Moreover, three increasingly urgent warning sounds also correspond to the above distances respectively. When the vehicle is in the R gear, the radar camera and the central control display screen will show the rear view of the vehicle, which can be used for the driver of the vehicle to clearly see the rear view.

12.5.3 Component location



1. Radar sensor

2. Radar camera

12.5.4 Diagnostic information and steps

12.5.4.1 Routine inspection

Identify the fault before repairing it. Check whether the radar in the two positions react normally - the vehicle is electrically connected with the R gear, - and approach the two radars one by one. See whether the large screen display and

Symptoms	Suspicious location
No view on big screen after reversing in R gear	1. Camera damage 2. Central control unit dose not read data 3. Wiring harness
No display on the big screen after switching gears	1. VCU control failure 2. Display does not read signal 3. Wiring harness
Splash screen of reversing vision	1. Moisture and internal circuit damage to the reversing camera 2. Splash screen of display screen 3. Wiring harness

sound alarm are all three sections normal, and check whether the reverse gear can be opened to see the rear view of the vehicle at the time of reversing gear.

Reversing camera

Radar sensor

Symptoms	Suspicious location
No radar alarm when in reverse gear.	1. Radar malfunction 2. The central control main machine can't be read 3. Wiring harness
Continuous radar alarm when no object is in reverse gear.	1. Radar blocked 2. Radar signals continuously transmitted 3. Wiring harness

12.5.4.2 Diagnostic description

Caution:

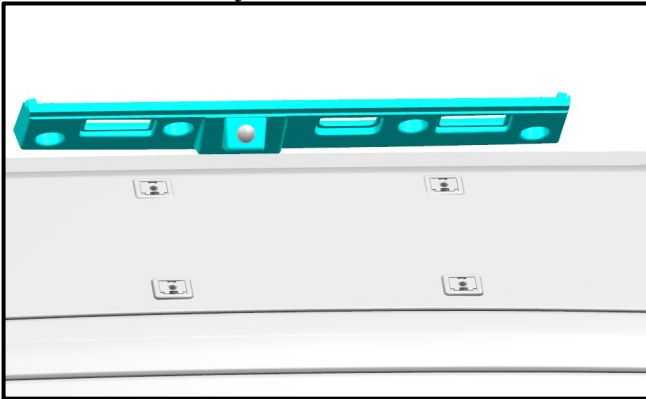
Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.5.4.3 Parking assistance system pin definitions

S.N.	Name	Connection terminal definition
1	VCC	+12V
2	LIN (Data)	Communication between probes
3	ID	Position recognition
4	GND	Power supply ground terminal

12.5.5 Disassembly and installation of parking assistance system

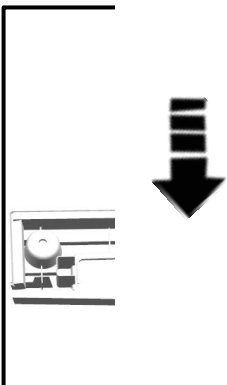
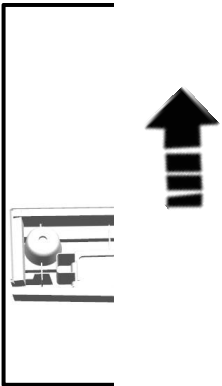
12.5.5.1 Disassembly and installation of cameras



Disassembly procedure:

1. Open the back door;
2. Remove the lower trim panel on the back door; Please refer to 13.7.2.11.1 Replacement of rear peripheral unit for replacement;

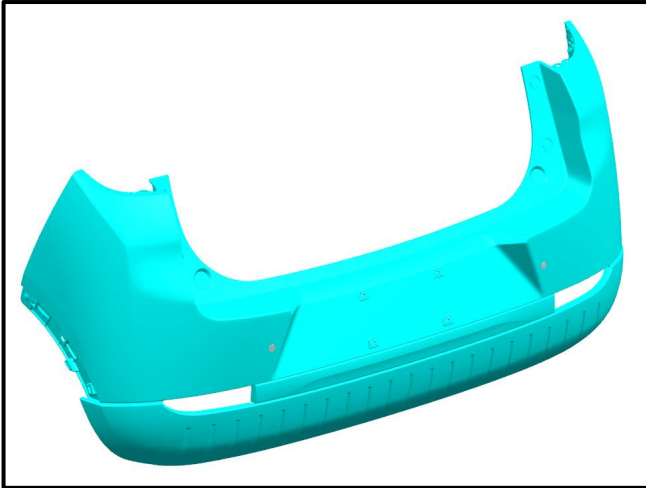
3. Remove 2 fixing screws of the camera with a tool;
4. Take off the camera;



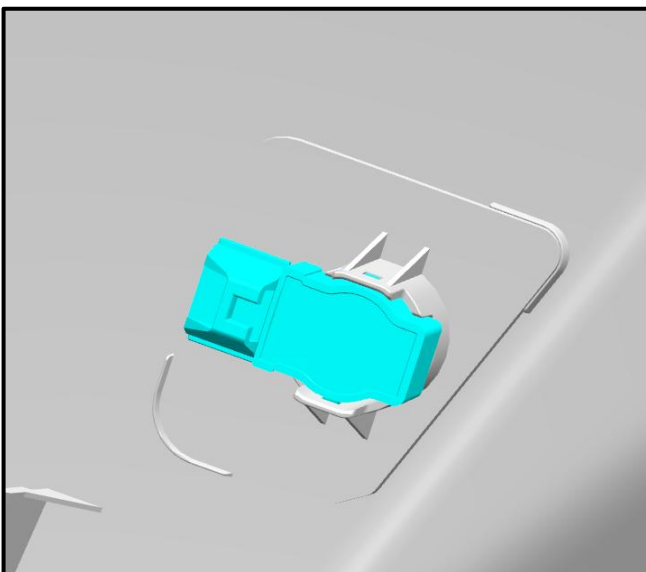
Installation procedure:

1. Start by attaching the camera to the lower trim panel on the back door;
2. Use the tool to install the trim panel on the back door; Please refer to 13.7.2.11.1 Replacement of rear peripheral unit for replacement;
3. Close the back door.

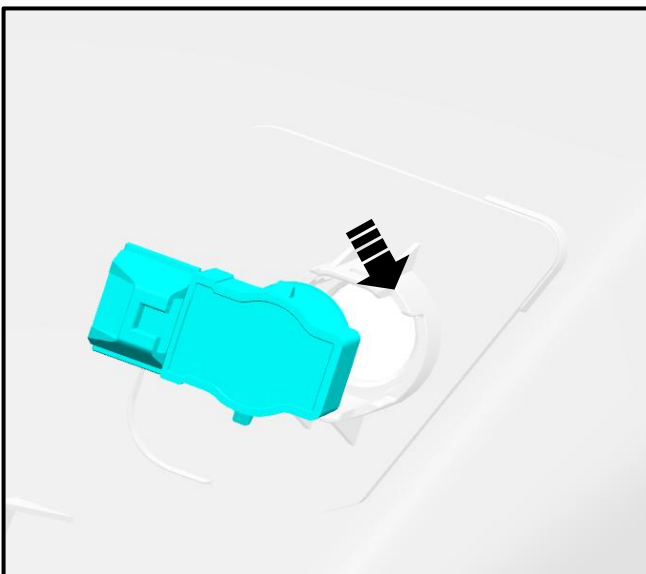
12.5.5.2 Disassembly and installation of radar sensors



Disassembly procedure:
1. Remove the rear bumper; Please refer to 13.7.2.10 Replacement of rear bumper;



2. Remove the radar connector cable and remove the radar.



Installation procedure:
1. Connect the radar connector;
2. Embed the radar in the rear bumper location;
3. Put the rear bumper back on; Please refer to 13.7.2.10 Replacement of rear bumper.

12.6 Combination switch with clock spring

12.6.1 Specifications

Fastener specifications

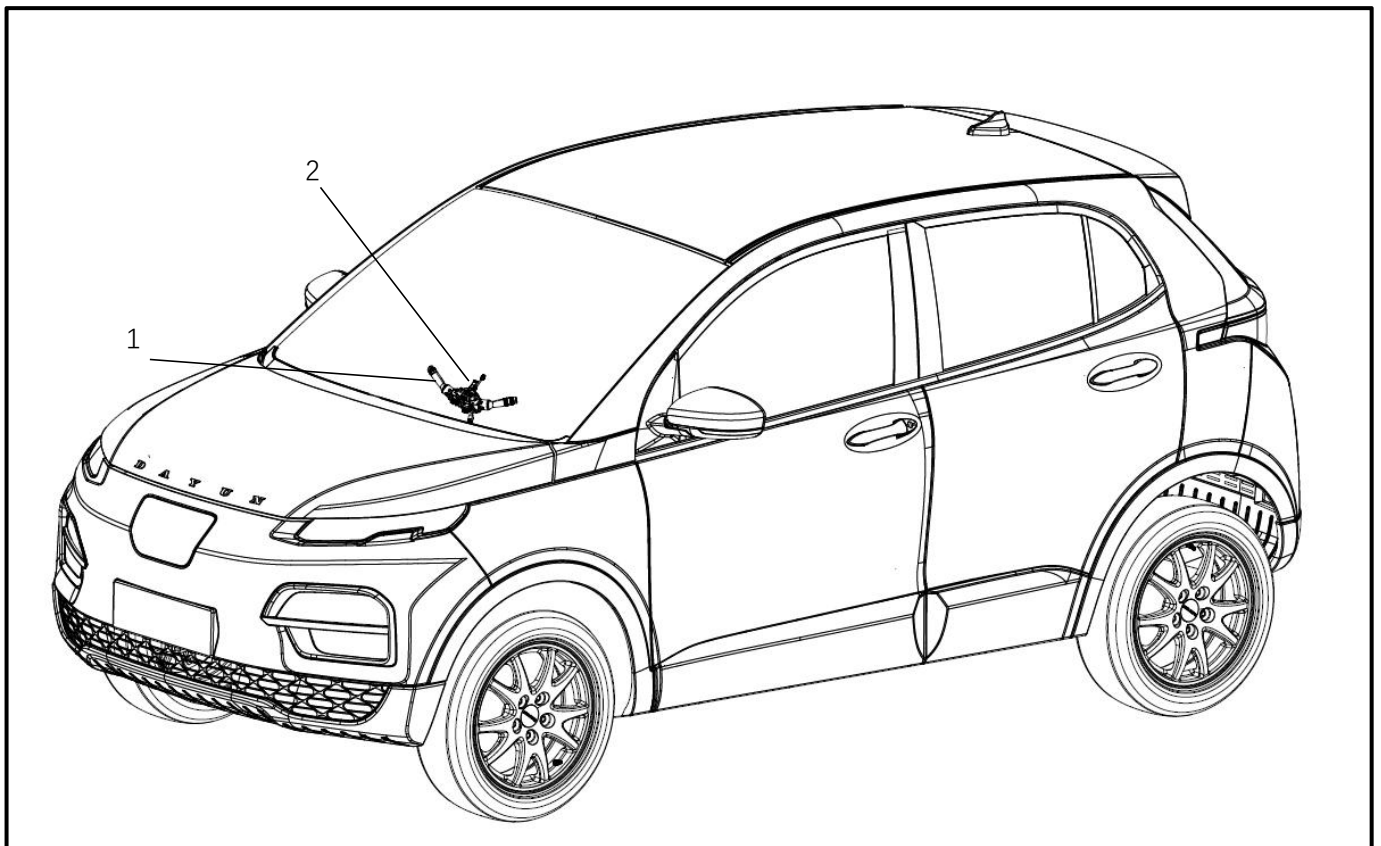
Fastener name	Rules and regulations	Torque range (N·m)
Combination switch and steering column mounting screws	M5	3.5-5.5
Clock spring and combination switch set screw	M2.9	1-1.5

12.6.2 Operation and Description

The left side of the combination switch is the light switch, which mainly controls the position lamp, high and low beams, left and right turn signal lamps, front and rear fog lamps functions; the right side is the wiper switch, which mainly controls the front wiper on/off/wiper speed. The combination switch functions are hardwired to the body control module.

The clock spring is mounted on top of the combination switch, and the connector connects one end to the harness end and the other end to the steering wheel switch and horn switch.

12.6.3 Component location



1. Combination switch

2. Clock spring

12.6.4 Electrical block diagram

1. Light control switch of combination switch

terminal	13	12	11	14	15	16	17
overtake	○—○	○—○					
lower beam	○—○						
high beam	○—○						
LEFT					○—○		
↕						×—×	
N							
↕					×—×		
TURN RIGHT						○—○	

terminal	21	22	23	24	25	26
OFF						
☞☜	○—○			○—○		
☞☜☞☜	○—○	○—○		○—○		
OFF						
☞☜			○—○		○—○	
☞☜			○—○		○—○	○—○

Light control switch of combination switch

2. Combination switch wiper control switch

terminal	30	31	33	34	32	38	39
MIST	○—○		○—○				
OFF	○—○						
INT	○—○		○—○				
LO		○—○					
HI			○—○	○—○			
OFF							
ON						○—○	

Combination switch wiper control switch

12.6.5 Diagnostic information and steps

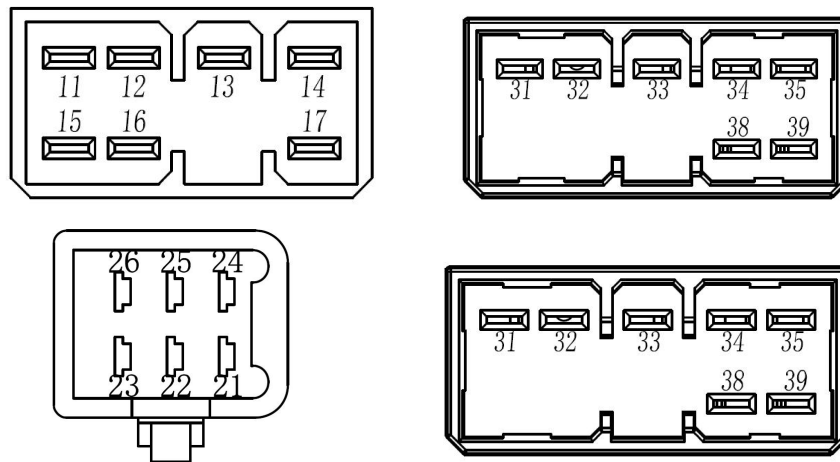
12.6.5.1 Diagnostic description

Please refer to the Description and operation. Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.6.5.2 Visual inspection

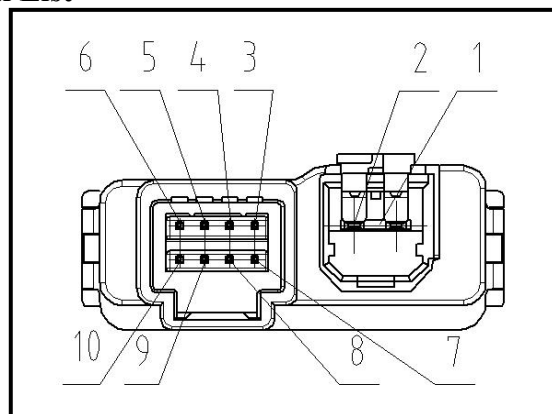
1. Check for aftermarket additions that may affect the function of the switch.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.
3. Check and repair poor contact or disconnection faults at the power supply or ground circuit before replacing.

12.6.5.3 Combination Switch Terminal List



S.N.	Name	Connection terminal definition
11	High beam	High beam-
12	Low beam	Low beam light-
13	High/low beam light power supply	High/low beam light power supply
14	Overtaking power supply	Overtaking power supply
15	Left turn	Left turn-
16	Steering power supply	Steering power supply
17	Right turn	Right turn-
21	Lighting power supply	Lighting power supply
22	Headlamp	Headlamp
23	Fog lamp power supply	Fog lamp power supply
24	Low light	Low light-
25	Front fog lamp	Front fog light-
26	Rear fog light	Rear fog light power supply
31	Low speed	Low speed-
32	High speed	High speed-
33	Wiper power supply	Wiper power supply
34	Intermittence	Intermittent input
35	Reset	Tap input
38	Front washing power supply	Front washing power supply
39	Front washing	Front washing -

12.6.5.4 Clock Spring Terminal List



S.N.	Name	Connection terminal definition
1	Airbag+	Airbag+

2	Airbag-	Airbag-
3	Horn	Horn power supply
4	Backlighting+	Backlighting+
5	Backlighting-	Backlighting-
6	Instrumentation - / Multimedia -	Instrumentation - / Multimedia -
7	Instrumentation+	Instrumentation+
8	multi-media+	multi-media+
9	Cruise-	Cruise-
10	Cruise+	Cruise+

12.6.5.5 Diagnostic step

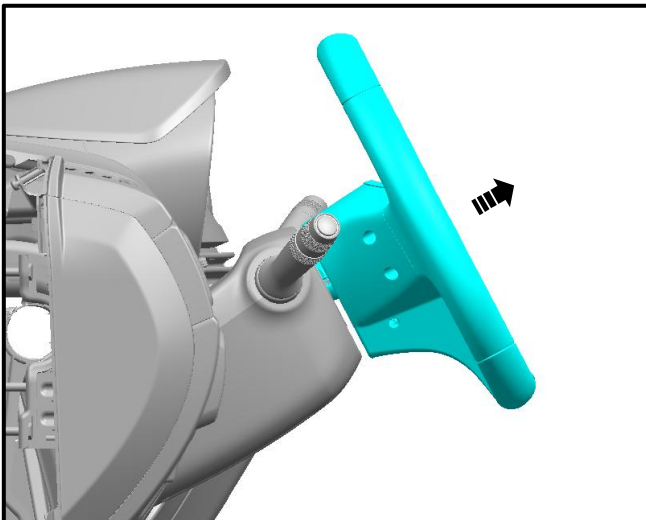
1. Combination switch diagnostics

Please refer to the electrical block diagram and switch interface information, and use the multimeter to detect the on block or resistance block. If it does not conduct or the resistance value is greater than 10kΩ or more, it is judged that the switch is damaged and needs to be replaced with a new switch.

2. Clock spring diagnostics

Please refer to the electrical block diagram and the clock spring interface information, and use the multimeter to detect the on block or resistance block. If it does not conduct or the resistance value is greater than 10kΩ or more, it is judged that the clock spring is damaged and needs to be replaced with a new switch.

12.6.6 Disassembly and installation

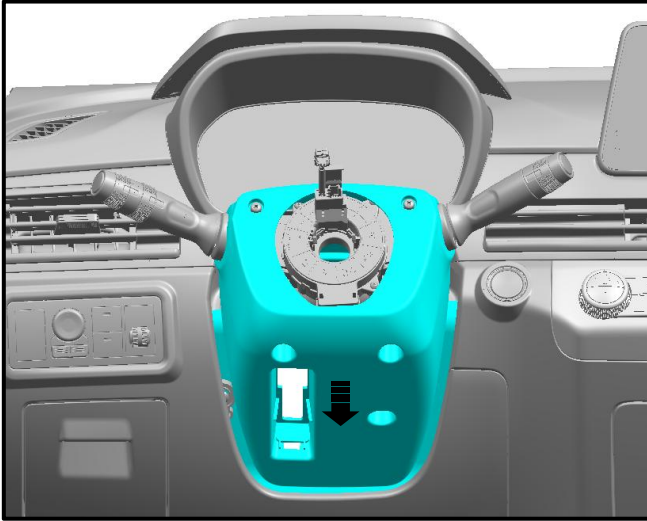


Disassembly process

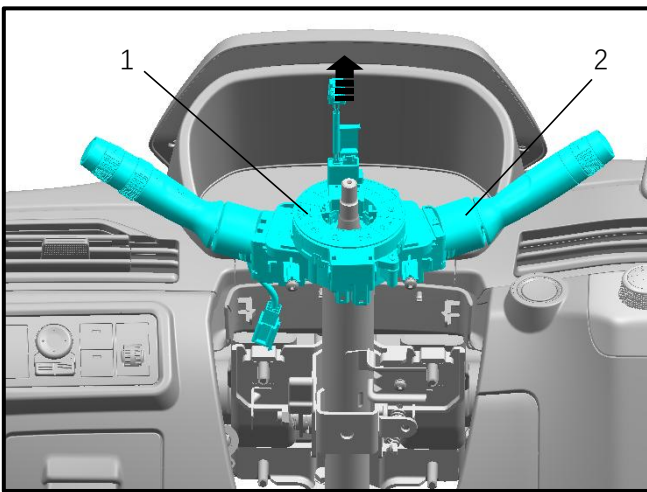
1. Power down the vehicle, and disconnect the negative of the storage battery;
2. Disassemble the driver's airbag and steering wheel

Please refer to 10.2.9.2 Replacement of driver's airbag

Please refer to 8.2.7.1 Disassembly and installation of steering wheel assembly

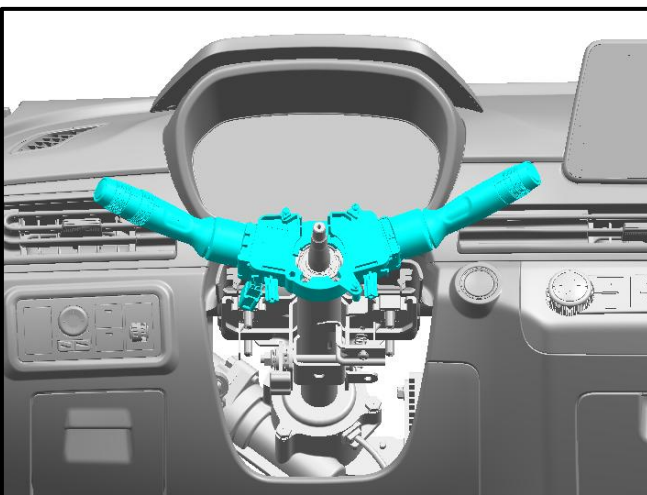


3. Remove the steering column shield;
Please refer to 13.5.3.3 Replacement of instrument board steering shield



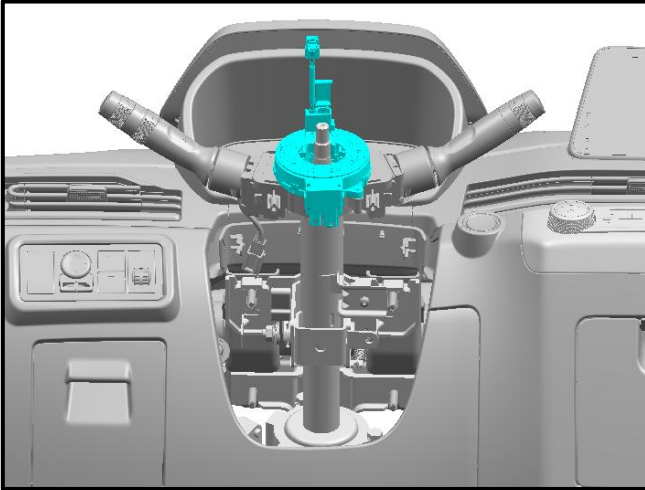
4. Disassemble the upper screw fixing the clock spring with a cross screwdriver, unplug the clock spring connector, and take off the clock spring;

5. Disassemble the screws fixing the combination switch in turn with a cross screwdriver, unplug the combination switch connector, and remove the combination switch;



Installation process

1. Place the combination switch on the steering column and correspond to the hole in the column;
2. Use Q230B0516 bolts for mounting and fixing in sequence, and tighten them with a torque of $4\pm 0.5\text{N}\cdot\text{m}$;
3. Match up the combination switch connectors.



4. Place the clock spring (serial number 3) to the corresponding position of the combination switch;
5. Mount sequentially with Q2732913 self-tapping screws and tighten with $1.3\pm 0.2\text{N}\cdot\text{m}$ torque;
6. Match up the clock spring connector;
7. Install steering shield, steering wheel, and air bag.
Please refer to 13.5.3.3 Replacement of instrument board steering shield
Please refer to 10.2.9.2 Replacement of driver's airbag
Please refer to 8.2.7.1 Disassembly and installation of steering wheel assembly

12.7 Minor switch

12.7.1 Specifications

Fastener specifications

Fastener name	Rules and regulations	Torque range (N·m)
EPB switch and shift panel fixing screws	M2.9	0.8±0.1

12.7.2 Operation and Description

Minor switches include the glass lift switch (1 on the main driver's side and 3 on the passenger's side), one-touch starting switch, lower left switch cluster on the instrument board, back door microswitch, brake light switch, EPB switch, and 12V backup power supply.

The main driver's glass lift switch controls four-door glass lifting and center unlocking.

The one-touch starting switch controls the power on and off of the vehicle.

The lower left switch group of the instrument controls the adjustment of the exterior rearview mirrors, the height adjustment of the headlights, and the switching of driving modes.

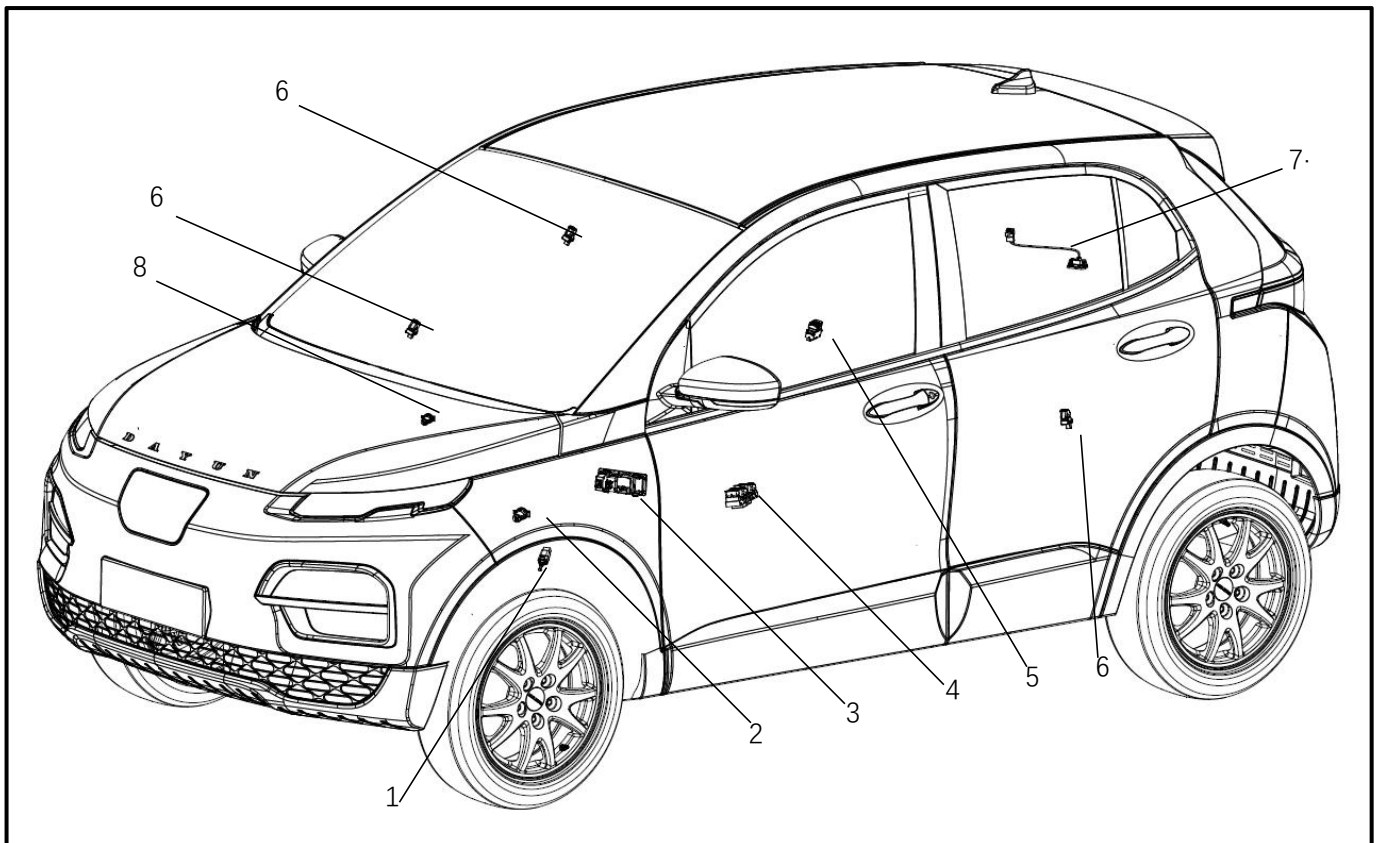
The back door microswitch controls the unlocking of the back door.

The brake light switch controls the illumination and extinguishing of the brake lights.

The EPB switch controls the park and release of the vehicle.

12V backup power supply interface, mainly for external power supply to provide a reserved interface.

12.7.3 Component location

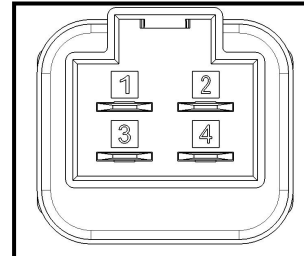
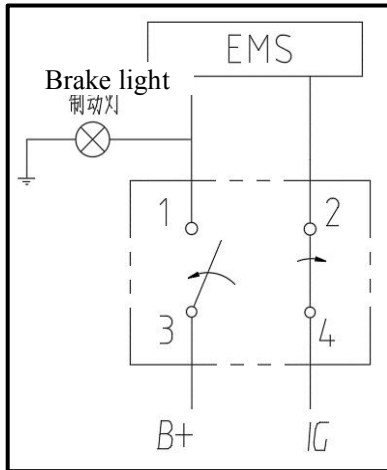


1. Brake Light Switch
2. 12V backup power supply
3. Lower left switch cluster on the instrument board
4. Driver's side glass lift switch

5. EPB switch
6. Occupant side glass lift switch
7. Back door microswitch
8. One-touch starting switch

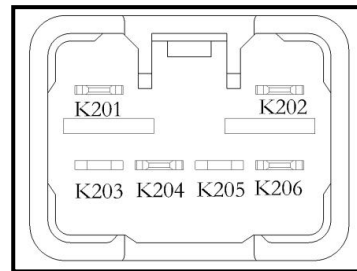
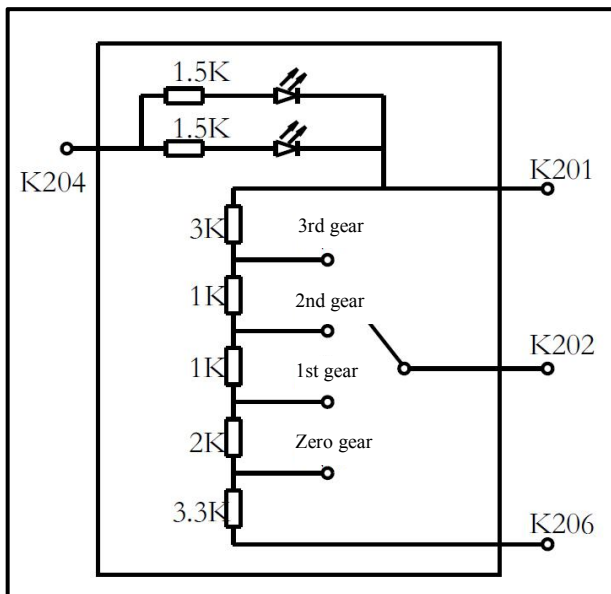
12.7.4 Electrical Block Diagram and Terminal List

1. Brake Light Switch

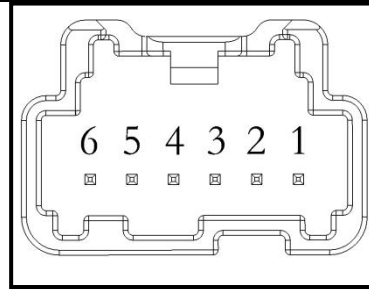
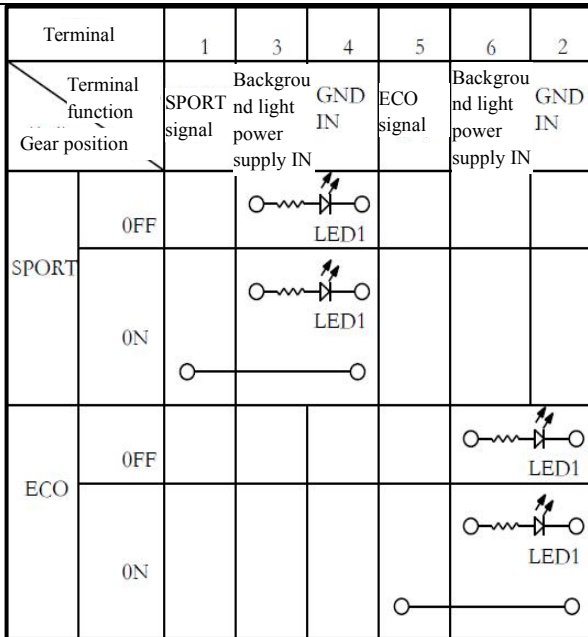


Pin No.	Function
1	Connect the brake light
2	ECU
3	Positive terminal of power supply
4	IGN power supply

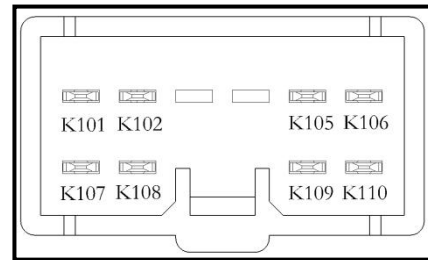
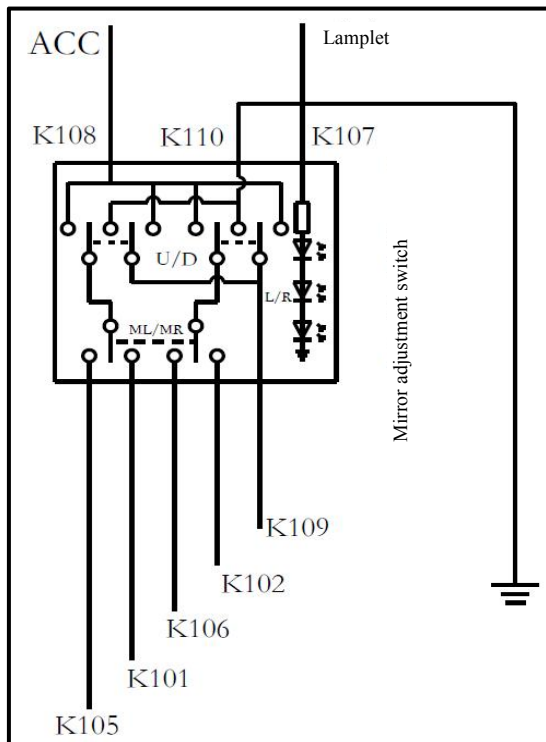
2. Lower left switch cluster on the instrument board



Pin No.	Function
K201	Ground
K202	Output
K203	Air
K204	Small light power supply
K205	Air
K206	Low beam light power supply

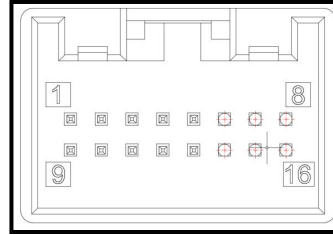
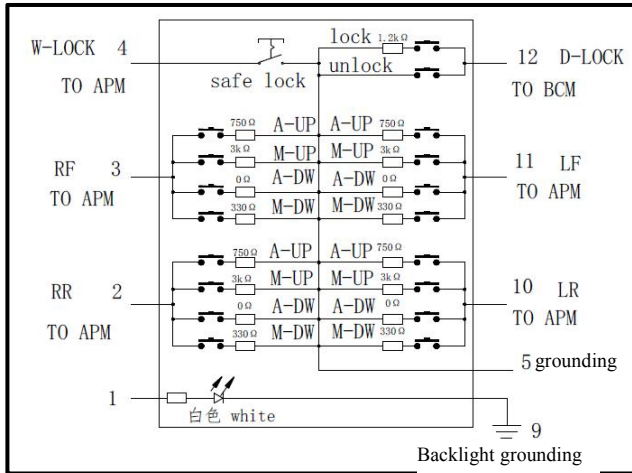


Pin No.	Function
K301	ECO Backlight Power Supply
K302	ECO signal
K303	SPORT ground
K304	SPORT Backlight Power Supply
K305	ECO ground
K306	SPORT signal



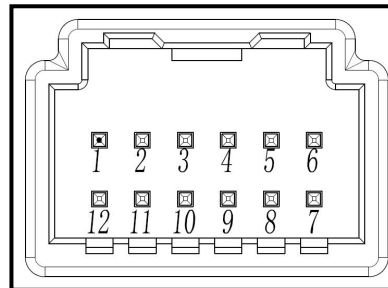
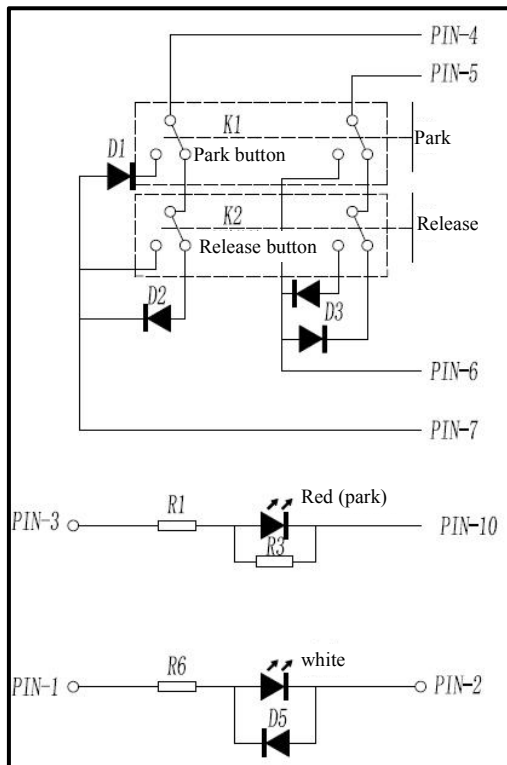
Pin No.	Function
K101	Right X motor
K102	Right Y motor
K103	Air
K104	Air
K105	Left Y motor
K106	Left X motor
K107	Small light power supply
K108	Power supply
K109	Motor common cable
K110	Ground

3. Driver's side glass lift switch



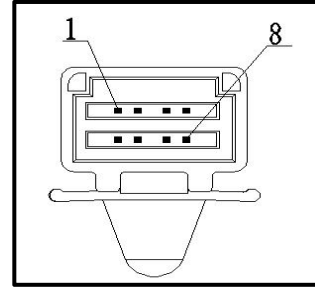
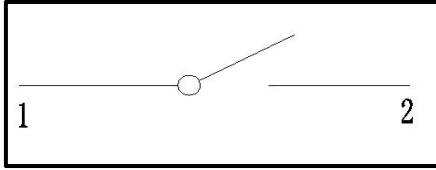
Pin No.	Function
1	Backlight signal input
2	Right rear lift signal input
3	Right front lift signal input
4	Door and window locks
5	Signal ground terminal
6	Reserved
7	Reserved
8	Reserved
9	Backlight
10	Left rear lift signal input
11	Left front lift signal input
12	Central locking
13	Reserved
14	Reserved
15	Reserved
16	Reserved

4. EPB switch



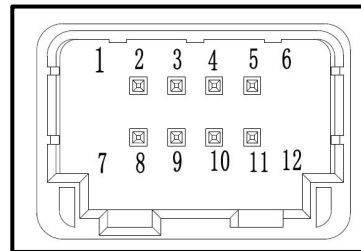
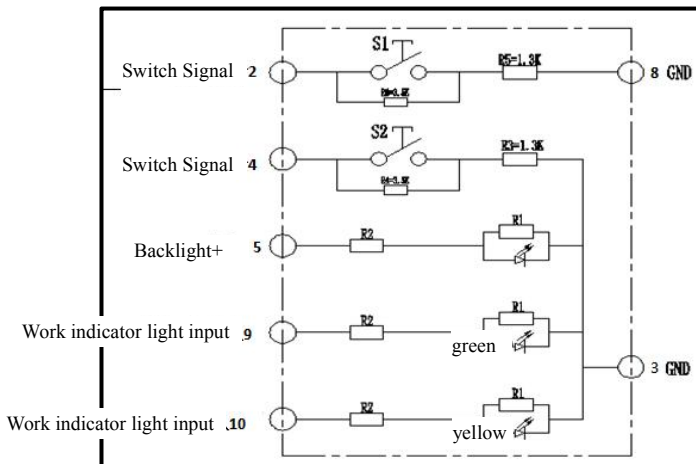
Pin No.	Function
1	Backlight input
2	Grounding
3	Work indicator input
4	Park input releasing
5	Park output
6	Park input
7	Park output releasing
8	Air
9	Air
10	Park work light output
11	Air
12	Air

5. Back door microswitch



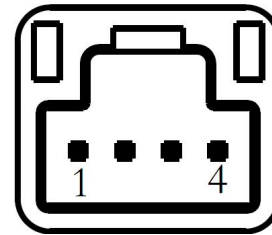
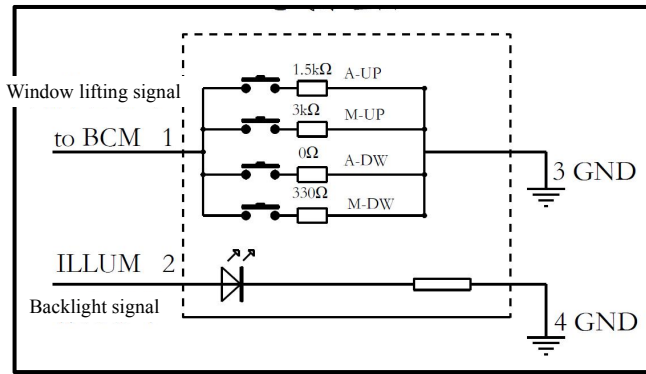
Pin No.	Function
1	/
2	/
3	/
4	/
5	Electronic
6	Ground
7	/
8	/

6. One-touch starting switch



Pin No.	Function
1	Air
2	Switch signal
3	GND
4	Switch signal
5	Backlight power supply
6	Air
7	Air
8	GND
9	Work indicator power supply
10	Work indicator power supply
11	Air
12	Air

7. Occupant side glass lift switch



Pin No.	Function
1	Window lift signal
2	Backlight signal
3	Signal ground terminal
4	Backlight

12.7.5 Diagnostic information and steps

12.7.5.1 Diagnostic description

12.7.2 Description and Operation section. Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.7.5.2 Visual inspection

1. Check for aftermarket additions that may affect the function of the switch.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.
3. Check and repair poor contact or disconnection faults at the power supply or ground circuit before replacing.

12.7.5.3 Diagnostic step

Please refer to 12.7.4 Electrical block diagram and switch interface information, and use the multimeter to detect the on block or resistance block. If it does not conduct or the resistance value is greater than 10kΩ or more, it is judged that the switch is damaged and needs to be replaced with a new switch.

12.7.6 Disassembly and installation

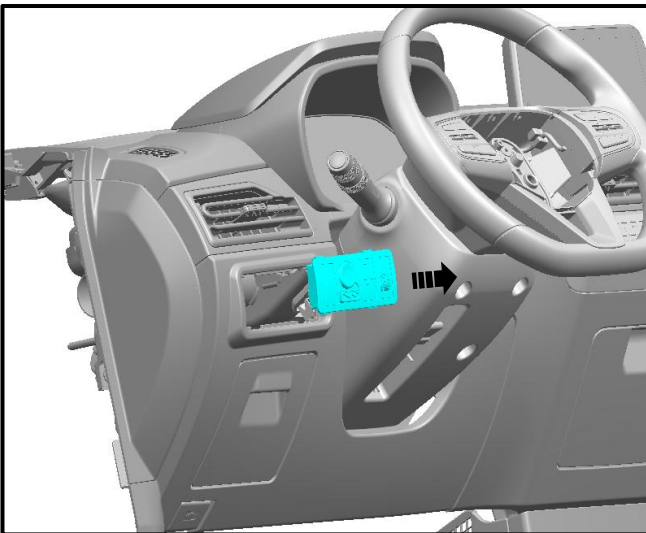
12.7.6.1 Lower left switch group of the instrument



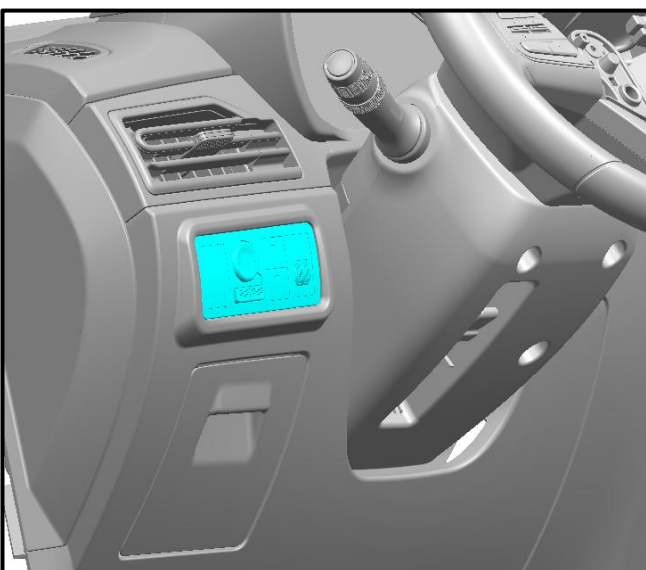
Disassembly process

1. Disassemble the left lower guard body;
2. Use a screwdriver or other tool to remove the body of the left lower guard of the left lower switch of the instrument board;

Please refer to 13.5.3.1 Replacement of the left side knee pads of the instrument board



3. Disconnect the switch harness connector on the lower left side of the instrument board and remove the switch.



Installation process

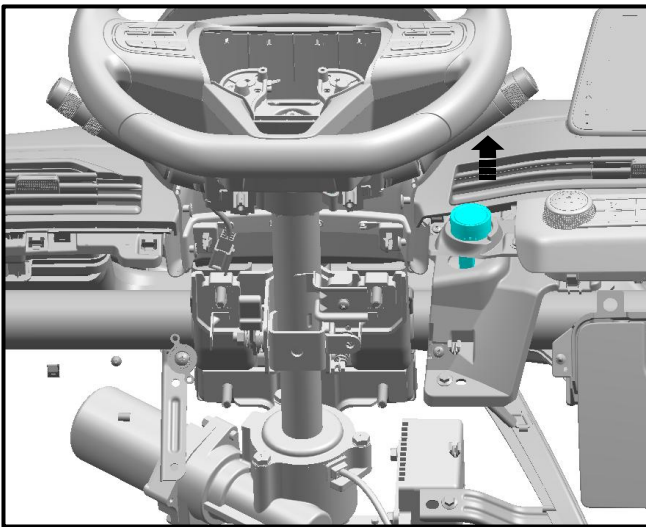
1. Connect the switch to the instrument harness connector;
2. Attach the switch card to the lower left guard body;
3. Assemble the guard and switch to the dash.

12.7.6.2 Disassembly of the one-touch starting switch

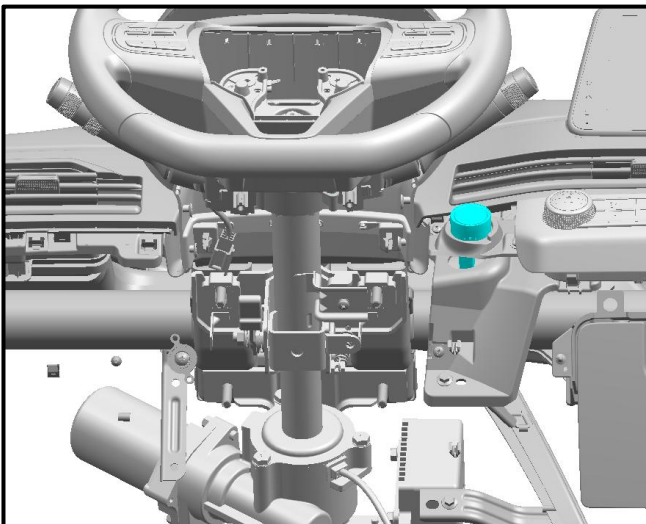


Disassembly process

1. Use a screwdriver to remove the left lower guard body and glove compartment panel;
Please refer to 13.5.3.1 Replacement of the left side knee pads of the instrument board
2. Remove the steering column shield with a screwdriver;
Please refer to 13.5.3.3 Replacement of dashboard steering cover



3. Remove the one-touch starting switch with a one-piece screwdriver or other disassembly tool;
4. Unplug the one-touch starting switch harness connector.



Installation process

1. Align the switch with the switch mounting holes on the dash and install it in the direction of the arrow;
2. Match up the harness connectors;



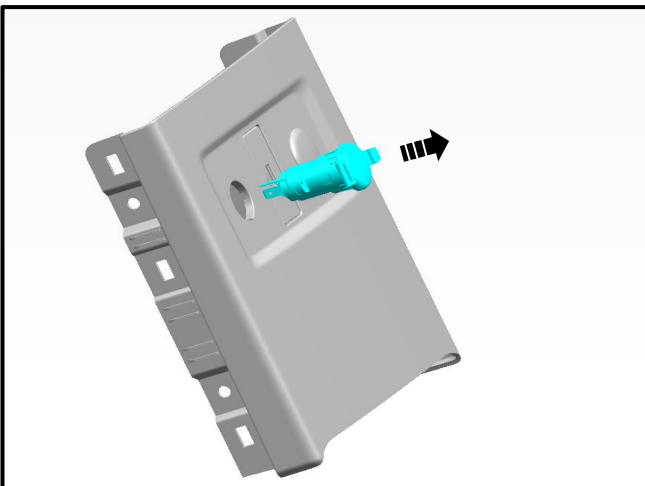
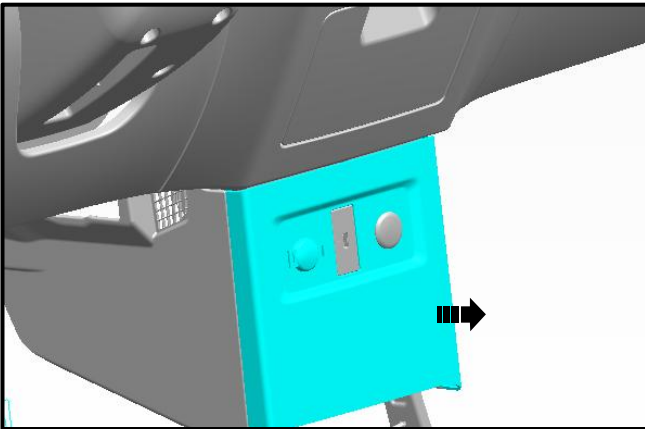
3. Assemble the left lower guard body and glove compartment panel to the instrument board

12.7.6.3 Disassembly and installation of 12V backup power supply

Disassembly process

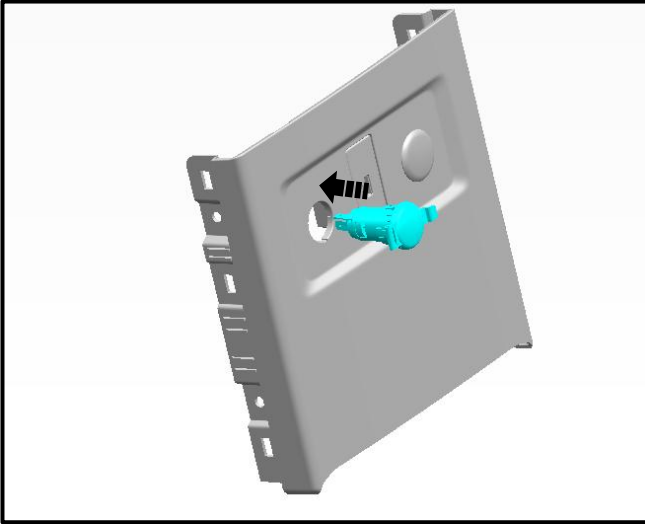
1. Disconnect the negative battery terminal.
2. Remove the central lower guard of the instrument board

Please refer to 13.5.3.8 Replacement of instrument boards



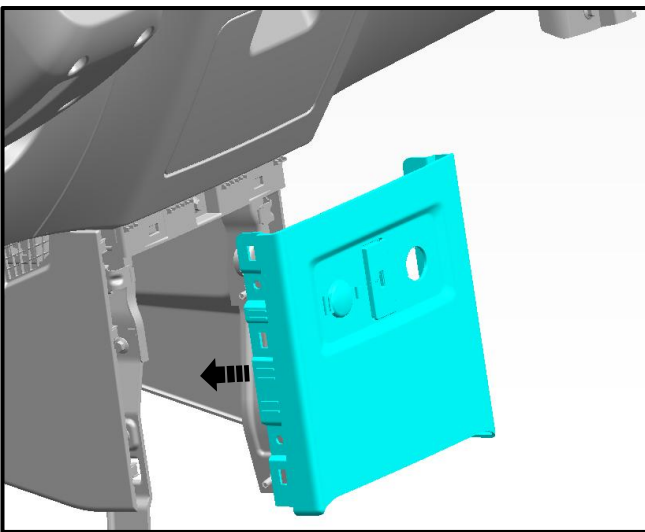
3. Unplug the 12V backup power supply harness connector;

4. Remove the 12V backup power supply.



Installation process

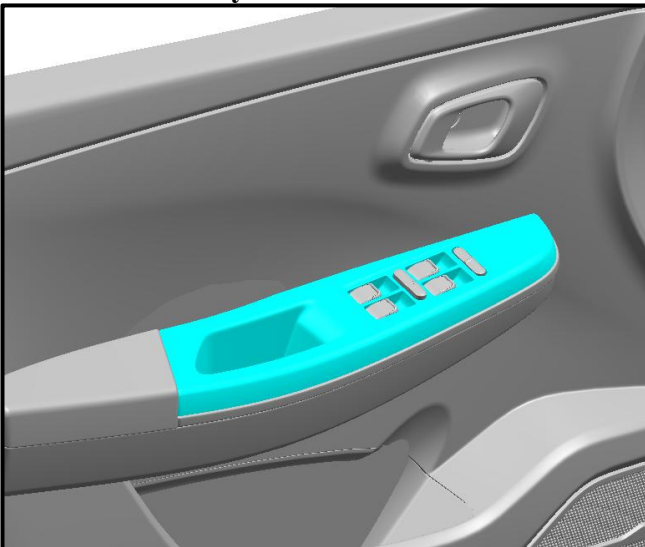
1. Install the 12V backup power supply to the lower center guard body of the instrument board in the direction of the arrow;
2. Match up the harness connectors;



3. Assemble the lower center guard body of the instrument board to the instrument panel.

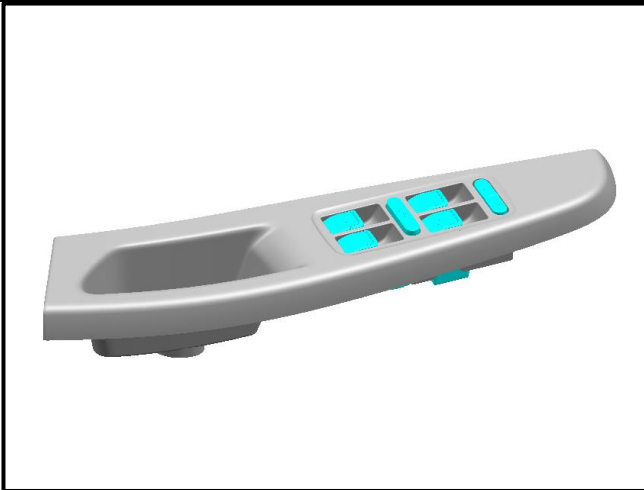
Please refer to 13.5.3.8 Replacement of instrument boards

12.7.6.4 Disassembly and installation of driver's side glass lift switch



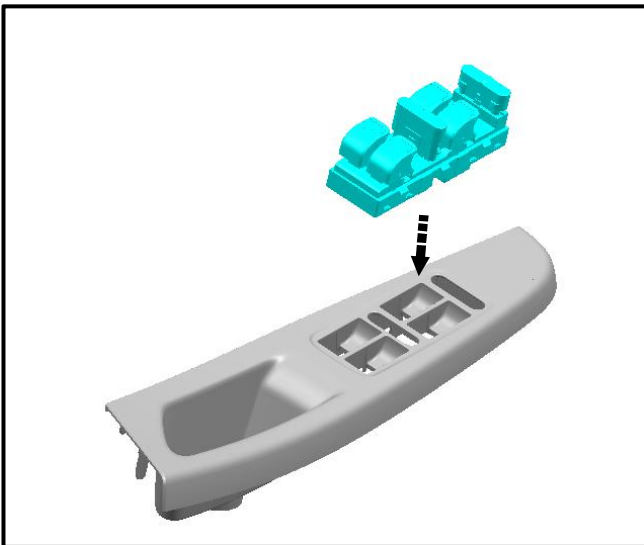
Disassembly process

1. Disconnect the negative battery terminal.
2. Remove the screw stopper of the panel with a one-pronged screwdriver to see the screws, and then use a screwdriver to remove the screws;



3. Remove the panel and switch assembly, and unplug the switch harness connector by hand. Take off the switch panel assembly; Please refer to 13.6.2.1 Replacement of front door guard assembly;

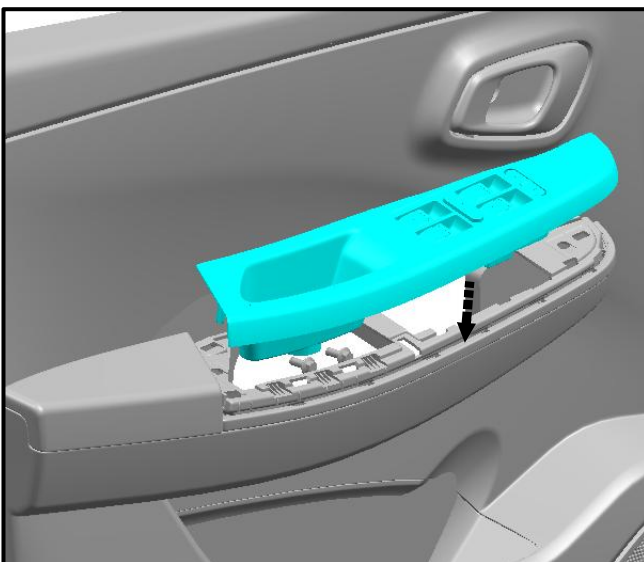
4. Pry off the switch snap-in structure using a one-pronged screwdriver, and separate the switch from the switch panel.



Installation process

1. Assemble the driver's side switch on the panel;

Note: Check whether the assembly is in place at the time of assembling;



2. Match up the switch connectors and install the switch panel on the door guard. Please refer to 13.6.2.1 Replacement of front door guard assembly;

3. Then fix the panel on the switch sheet metal bracket;

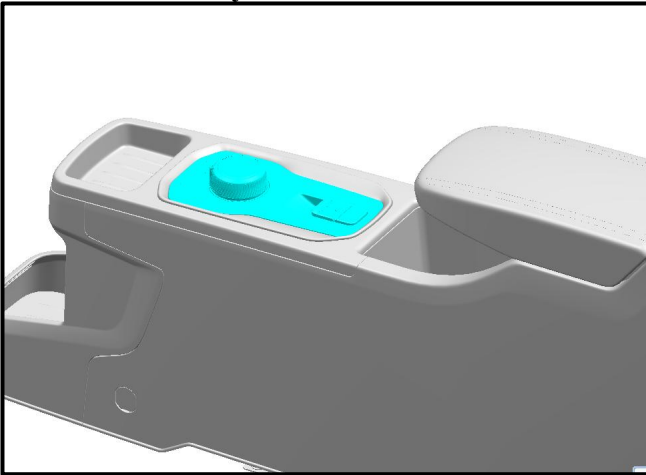
4. Assemble the screw stopper at the screw (masking the screw).

12.7.6.5 Disassembly and installation of passenger side glass lift switch

Caution

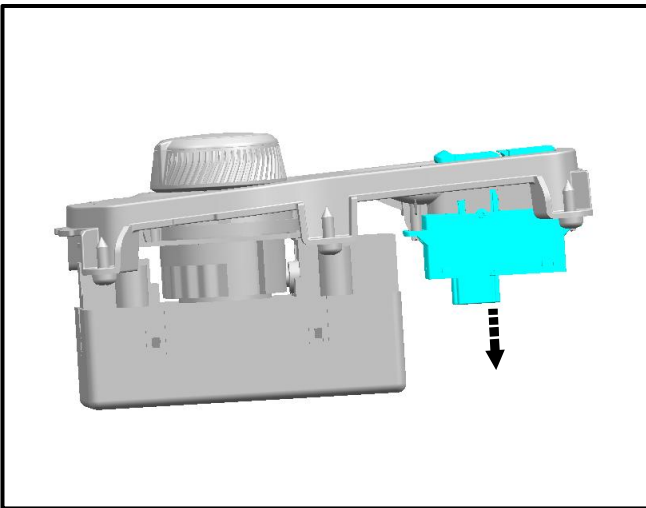
Disassembly and installation of passenger side switch is the same as the driver's side glass lift switch.

12.7.6.6 Disassembly and installation of EPB switch

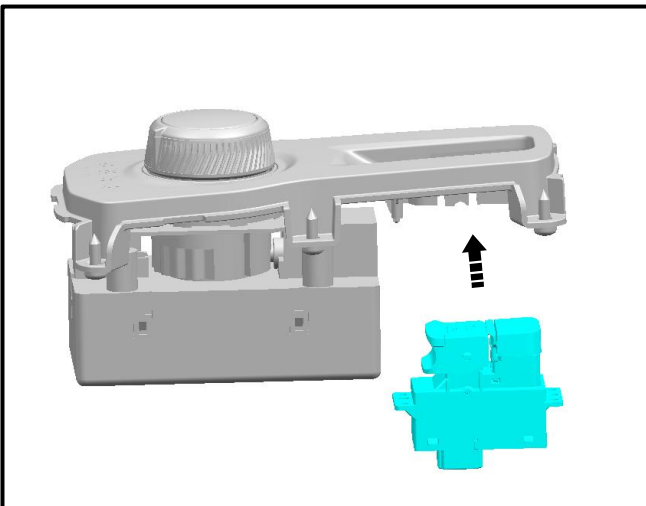


Disassembly process

1. Disconnect the negative battery terminal.
2. Disassemble the shift panel on the auxiliary instrument;
Please refer to 6.2.7 Disassembly and installation of the shift system

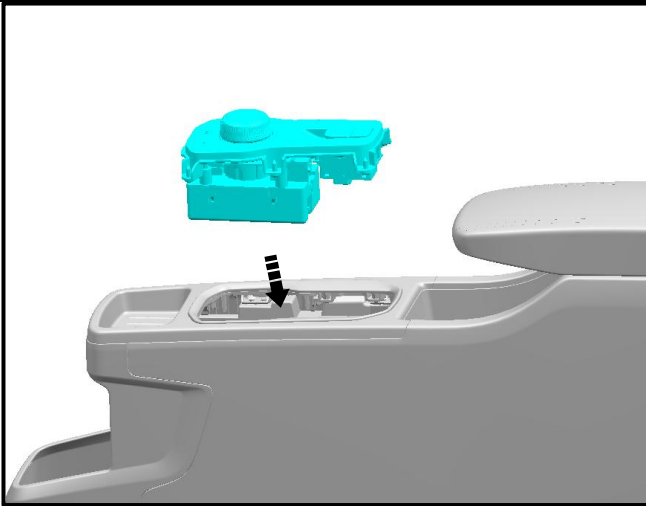


3. Separate the switch from the wiring harness end connector;
4. Remove the shift panel and disassemble the EPB switch.



Installation process

1. Secure the EPB switch to the shift panel;

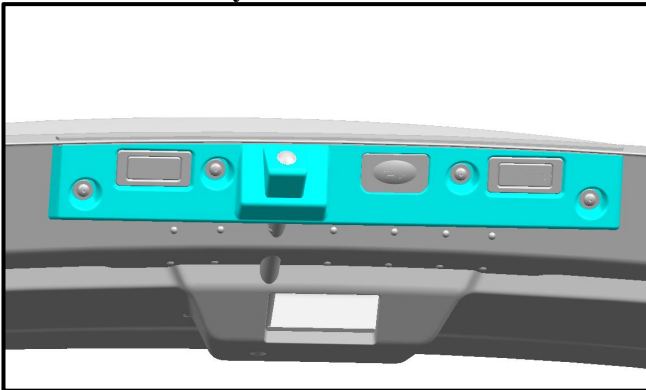


2. Plug in the switch terminal wiring harness connector;

3. Install the shift panel on the auxiliary instrument board.

Please refer to 6.2.7 Disassembly and installation of the shift system

12.7.6.7 Disassembly and installation of back door microswitch

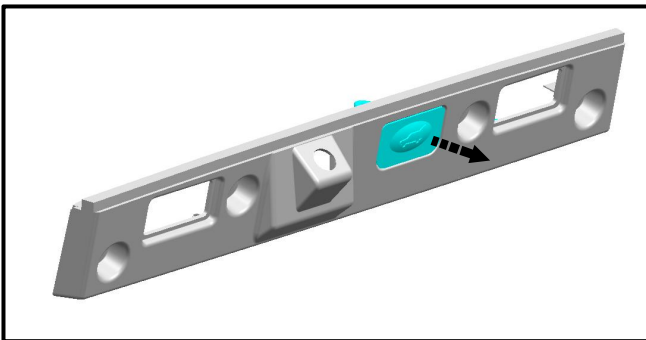


Disassembly process

1. Disconnect the negative battery terminal.

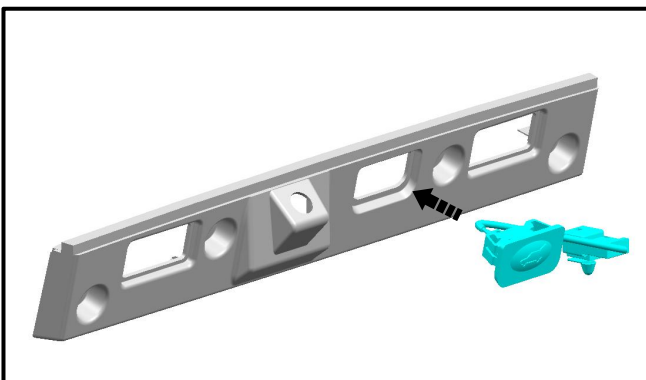
2. Open the back door and remove the lower trim panel of the back door with a tool;

Please refer to 13.7.2.11.1 Replacement of rear peripheral devices



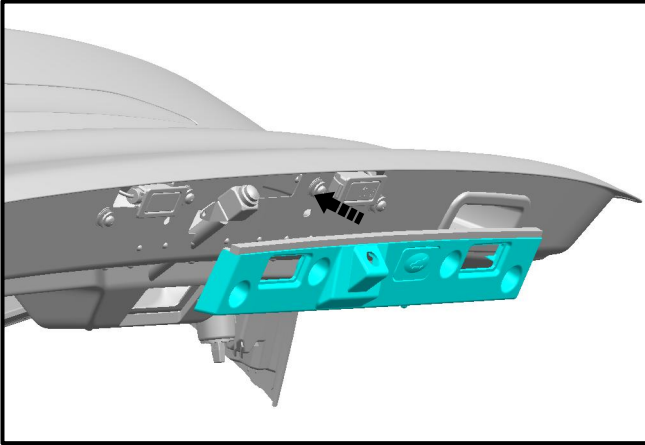
3. Unplug the wiring harness connector of the back door microswitch;

4. Remove the back door microswitch from the trim panel of the back door with a tool.



Installation process

1. Assemble the back door microswitch to the lower trim panel of the back door;



2. Assemble the lower trim panel of the back door together with the switch to the back door sheet metal. Please refer to 13.7.2.11.1 Replacement of rear peripheral devices .

12.8 Body control modules and remote immobilizer systems

12.8.1 Specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolts for body control module and body control module bracket	Q32006F36	4-6
Fixed bolts for window anti-pinch module and window anti-pinch module bracket	Q32006F36	4-6
Fixed screws for low-frequency antenna and skeleton of auxiliary instrument board	Q2733513F36	0.25-0.45

12.8.2 Description and operation

12.8.2.1 Body immobilizer system

1. System Introduction

The body immobilizer system is a secondary vehicle alarm device, equipped with an alarm system that is triggered in the event of a forced entry. This system works in conjunction with the central door locking system. Radio frequency interference or running out of battery power can both disable the system.

The body immobilizer system is composed of the following major components:

Body control module (BCM), smart remote control module body, low-frequency antenna, window anti-pinch module.

Warning:

Please do not modify or add other devices to the body immobilizer system.

2. Alarm method

Horn sounds while turn signals flash.

3. Immobilizer system activation.

The vehicle will enter a state before it is fully armed after a delay of 15s when it is successfully locked by a valid smart key (or a valid authorization). In the preset arming state, the alarm will not be triggered even if the input signal is detected, and it will exit the preset arming state and enter the disarming state. If the turn signal flashes once and the horn sounds once, the vehicle will enter the arming state, and the anti-theft function will be turned on.

4. Immobilizer system inactivation

When the vehicle is successfully unlocked by a valid smart key (or a valid authorization) under the body arming state, the turn signal flashes twice, the vehicle will enter the disarming state, and the body anti-theft function will be turned off.

5. Alarm triggering conditions

In a fortified state, the following actions will trigger an alarm:

Open any door, trunk lid or front hatch without a valid smart key (or without a valid authorization); open the door with a mechanical key or via the inside opening switch and emergency switch clasp.

6. Alarm Release Method

After triggering the anti-theft alarm, the alarm can be disarmed by:

When the power mode is in OFF mode, the anti-theft alarm status can be terminated with the help of the unlock button, lock button, and back door unlock button on the key. Bring a valid smart key (or valid authorization) to start the vehicle.

12.8.2.2 One-touch start function

Whether the power supply is in OFF/ACC/ON, the gear is in P/N, step on the brake, press the one-touch start switch, the vehicle will complete the high-voltage rise, and the power supply will be switched to Ready.

12.8.2.3 Door lock system control function

1. Lock

The vehicle is powered off and all doors (including back door) are closed. After RKE locking signal is received, BCM will perform locking. After the vehicle is locked successfully, the BCM will drive the left and right turn signals and position lights for illumination in sequence and rhythmic headlamp illumination (if equipped with sequential illumination function).

2. Unlock

The vehicle is powered off and the BCM will perform the unlocking after RKE unlocking signal is received. After the unlocking is successful, the BCM will drive the left and right turn signals and position lights for illumination in sequence and rhythmic headlamp illumination (if equipped with sequential illumination function).

3. Vehicle pinpoint

When the vehicle is powered off, it is in the arming or preset arming state. Long press the lock button on the key for 5S, BCM will drive the left/right turn signals to light up, the left/right turn signals on the instrument will flash, and the horn will beep.

4. Back Door Unlocking

When the main driver is in lock state, press the back door unlock button on the smart key, BCM reacts for a period, if the back door microswitch is pressed during the waiting time, BCM will perform the back door unlocking; if it receives the remote lock command, it will be timed off. When the main driver is in unlocked state, BCM will not be timed. Press the back door microswitch to perform the unlocking operation.

5. Unlocking by central control

When the vehicle is in the preset arming or disarming state, press the central control unlock switch, BCM will drive the door lock motors of the four doors and the charging port cover to perform the unlocking of the four doors and the charging port cover.

6. Locking by central control

The vehicle will be in a high voltage state when it is powered on, the main driver door lock will be unlocked, all the doors will be closed, and the vehicle speed will reach 20km/h. Then BCM will drive locking motor of the four doors and the charging port cover to lock the four doors and the charging port cover.

7. Unlocking/locking by mechanical key

Unlock/lock action will be performed after the signal of unlock/lock by mechanical key is received by the hardware.

8. Vehicle Speed Locking

The vehicle will be in a high voltage state when it is powered on, the main driver door lock will be unlocked, all the

doors will be closed, and the vehicle speed will reach 20km/h. Then BCM will drive locking motor of the four doors and the charging port cover to lock the four doors and the charging port cover.

9. Automatic arming of door lock

When the vehicle id power off, all doors are closed, the central control unlocking, locking switch will not change, and the vehicle is in the preset arming, arming and alarming states

When the BCM is unlocked, the BCM will perform a lockout after 30s if the system power, four-door, and back door statuses remain unchanged for 30s.

10. Unlocking upon stalling

When the vehicle is powered on, the door lock on the driver's side will be in the closed state, the ignition switch will be switched from the ON position to the ACC/OFF position, the vehicle will stall, and then, BCM will perform unlocking of the four doors.

11. Collision Unlocking

When the vehicle is powered on, the BCM will perform unlocking after detecting the collision signal. The BCM will drive the left/right turn signal, left/right turn signal and the hazard warning background light on the instrument to flash until the hazard warning light switch is triggered; and the BCM will illuminate the left brake light, the right brake light, and the high brake light until the brake light switch is triggered.

12.8.2.4 Lighting system control function

1. Automatic lighting

When the power mode is in ON state and the combination switch is in the AUTO position, the front and rear combination lamps will illuminate the position lights and low beams in response to the request from the light sensor if the light sensor sends a request to illuminate.

When the power mode is in ON state and the combination switch is in the AUTO position, the front and rear combination lamps will turn off the position lights and the low beams in response to the request from the light sensor if the light sensor sends a request to turn them off.

2. Top light

When the dome light is in press the door control switch and the power supply is in OFF/ACC position, the dome light will be illuminated and delayed for a period after any one of the four doors is opened. If any one of the doors is opened within the delay time, the dome light and reading light delay will be re-timed.

When the power supply is in the OFF/ACC position, the vehicle changes from other states to a state where the doors are all closed, and the top lights and reading lights are already lit, then the dome lights and reading lights will go out after a delayed period of time.

The power supply is in OFF/ACC position, the vehicle changes from other states to the state of all doors closed, and the dome lights and reading lights are in the off state, then the dome lights and reading lights will be lit and go out after a delayed period of time.

When the power supply is in the ON/READY position, the dome light and reading light will come on after any door is opened.

When the power supply is in the ON/READY position and the vehicle changes from other states to the state where the doors are all closed, the dome light and reading light will go out.

3. Backlight

when the position light switch of the vehicle is active and the position light is lit, the backlight will be illuminated.

4. Trunk light

When you open the back door, the trunk light will be illuminated; when you close the back door, the trunk light will be turned off.

5. Low beam

When the ignition switch is placed in the ON/Ready position and the position light switch is active, the BCM will light up the low beam when the low beam switch is connected and light off the low beam when the low beam switch is disconnected.

6. High beam

When the ignition switch is placed in the ON/Ready position and the low beams are lit up, the BCM will light up the high beams and the high beam indicators on the instrument when the high beam switch is disconnected; when the high beam is light on, and the pre-conditions are not satisfied or the high beam switch is disconnected, the BCM will light off the high beams and the high beam indicator on the instrument.

7. Passing light

When the passing light is output, if the passing light switch is disconnected, the BCM will light off the high beam as well as the high beams indicators on the instrument.

8. Front fog light (if front fog lights are provided)

When the ignition switch is in ON position and the position light and license plate light are activated, the BCM will illuminate the front fog lights and also the front fog light indicator on the instrument after the front fog light switch is connected.

When the front fog lights are illuminated, the BCM will light up the front fog lights and also the front fog light indicator on the instrument after the front fog light switch is disconnected.

When front fog lights are illuminated and the power mode is not satisfied, the BCM will light off the front fog lights and also the front fog light indicator on the instrument.

When the front fog lights are on, the BCM will light off the front fog lights and also the front fog light indicator on the instrument after the position light or license plate light output is disconnected.

9. Auxiliary turn signal

Place the ignition switch in ON position, activate the position lights and low beams, and switch on the turn signals at a speed less than 40km/h, the front fog lights on the corresponding side will be illuminated.

Connect the left turn signal switch to illuminate the front fog lights on the left side.

When the right turn signal switch is connected to illuminate the right front fog light.

10. Rear fog light

When the ignition switch is placed in ON position, the position lights are activated, and the low beam or high beam or the front fog lights are activated, the BCM will light up the rear fog lights and also the rear fog light indicator on the instrument after connecting the rear fog light switch; the BCM will light off the rear fog lights and also the rear fog light indicator on the instrument when disconnecting the rear fog light switch.

When the rear fog lights are illuminated and the position light output is disconnected, the BCM will light off the rear fog lights and the rear fog light indicator on the instrument.

When the rear fog lights are on and the power supply is switched from ON to ACC or OFF, the BCM will light off the rear fog light and the rear fog light indicator on the instrument.

11. Turn signal

When the ignition switch is in ON/Ready position and the left/right turn signal switch is connected, the BCM will drive the left/right turn signals to flash until the left/right turn signal switch is disconnected or the power mode is switched to ACC/OFF;

Place the ignition switch in ON/Ready position and turn on the left/right turn signal switch if there is an abnormality in either the left or right turn signals. Then the BCM will drive the left/right turn signals to flash rapidly until the left/right turn signal switch is disconnected or the power mode is switched to ACC/OFF.

12. Position light

If daytime running lights are provided, the daytime running lights and position lights will be illuminated simultaneously with a brightness displayed according to the brightness of the daytime running lights when the position light switch is connected.

If daytime running lights are not provided, the position lights will be illuminated when the position light switch is connected.

13. Turn signal

Connect left turn signal switch briefly, if the left turn signal illuminates 3 times, either front or rear turn signal is damaged; if the turn signal illuminates 6 times, it's normal.

Connect right turn signal switch briefly, if the right turn signal illuminates 3 times, either front or rear turn signal is damaged; if the turn signal illuminates 6 times, its normal.

14. Hazard warning light

Press the hazard warning lights switch, the BCM will actuate the left/right turn signals and the hazard warning backlights to flash if the hazard warning function is not activated, or the BCM will turn off the left/right turn signals and the hazard warning backlights if the hazard warning function is activated.

15. Brake light

When brake switch is on, the BCM will illuminate the brake light.

When the brake light is illuminated, the BCM will light off the brake light when the brake light switch is disconnected.

The BCM will illuminate the brake light when receiving the steep hill descent signal.

16. Emergency brake light

When the ignition switch is placed in ON position and the vehicle speed is greater than 50km/h, the BCM will drive the left/right turn signal to flash and illuminate when a signal for activating the emergency brake light is received.

Daytime running lights (if daytime running lights are available)

When the ignition switch is placed in ON position, the turn signals are not illuminated, and the position lights are not activated, the BCM will illuminate the daytime running lights after the vehicle is Ready to run. When the daytime running lights are illuminated, the ignition switch is placed in OFF/ACC position, or the position lights are activated., the BCM will light off the daytime running lights.

17. Guide Me Home

When the ignition switch is switched from ON to OFF for a period, short press the Flash switch, the Guide Me Home function will be activated, which will illuminate the low beams, the left position lights and the right position lights, with the selection and setting of illumination time available via the central control panel.

12.8.2.5 Wiper system control function

1. Front wiper

Front wipers are equipped with low speed, high speed, spot action, intermittent action, and off functions.

When the ignition switch is in ON position and the low-speed switch of front wiper is connected, the front wipers will operate at low speed.

When the ignition switch is placed in ON position and the high-speed switch of front wiper is connected, the front wipers will operate at high speed (the left and right front doors should be closed).

When the ignition switch is in ON position and the spot action switch of front wiper is connected, the front wipers will operate one cycle at low speed.

When the front wipers are activated (low speed, high speed, spot action), the front wipers will operate at low speed until they stop if the front wiper switch is placed in OFF.

When the wiper fails to return to its position for a long time, the BCM will determine that a blockage has occurred and will stop driving the wiper motor.

2. Front washing

When the ignition switch is placed in ON position and the front washing switch is connected, (the BCM will automatically disconnect the drive if the front washing switch is connected for more than 20s) the BCM will drive the front washing motor to operate. The BCM will operate the front wipers at low speed while the front washing motor is operating.

12.8.2.6 Window control function

1. General functions

When the power supply of the vehicle is in ON position, the power windows can be operated.

Manual rise: Operate the glass rise switch, the corresponding glass will rise correspondingly, and release the switch,

the rising will stop.

Manual descent: Operate the glass descent switch to enter the manual descent mode and release the switch to stop descent.

Auto down: Operating the glass down switch for $50\text{ms} < T < 300\text{ms}$ and entering the auto down module, the glass will be lowered to the bottom automatically.

Auto rise: Operate the glass rise switch $50\text{ms} < T < 300\text{ms}$, enter the auto rise module to rise the glass to the maximum automatically.

The glass rise and descent switch is equipped with a delay function, i.e., the glass rise and descent switch can still work if the driver's door or the passenger's door is not opened within 60 seconds after the key leaving the ON position; the glass rise and descent function will be immediately disabled once either of the two front doors is opened within the delayed 60 seconds.

2. Self-learning function

After disconnecting the power every time, each window position memory must be set one by one. During the setting process, there is no anti pinch function, and it is important to note that there are no obstacles within the window range. The setting steps are as follows:

- a. Place the ignition switch in ON position.
- b. Rise the glass continuously to top blocking for turning for 2 seconds by manual operation.
- c. Release the switch.
- d. Then descend the glass continuously to bottom blocking for turning for 2 seconds by manual operation.
- e. Release the switch.
- f. Rise the glass continuously until the window is completely closed by manual operation.
- g. Open the windows and try to close them automatically.
- h. If the window cannot close automatically, repeat the above steps to set it.

3. Remote control of rise and descent

Place the vehicle power in OFF position, close all the doors, and press the remote control lock button, the vehicle will enter the setup state and the window glass of the four doors will rise automatically. Press the lock button and unlock button again during the automatic window glass descent process, the window glass will stop rising. The anti-pinch alarm will be triggered when anti-pinch is triggered when the window is raised remotely.

4. Remote control of window descent

Place the vehicle power in OFF position, close all the doors, and long press the remote control unlock button for 1.5S, the window glass of the four doors will descend automatically. Press the lock button and unlock button again during the automatic window glass descent process, the window glass will stop rising.

12.8.2.7 Anti-pinch function

After the anti-pinch system is formatted, the anti-pinch function will be activated if resistance is encountered in the

anti-pinch area when the window is in manual rise, automatic rise or remote rise mode. The maximum anti-pinch force permitted by the system is not greater than 100N, while the glass will be returned a certain distance.

12.8.2.8 Monitoring system

With the tire pressure monitoring system (TPMS), tire pressure and temperature can be monitored in real time and timely alarms will be provided in the event of tire abnormality. the tire pressure fault lamp will light up and the instrument will indicate the corresponding tire pressure fault when the pressure value of any of the four wheels is lower or higher than the tire pressure alarm limit and the system is in operation.

12.8.2.9 Remote key function

1. Custom key functions

One-touch vehicle pinpoint: Lights or lights + siren via the key;

2. Remote unlock function

When the vehicle is not in READY state, press the button briefly to unlock the vehicle. After unlocking, the turn signals on both sides of the vehicle will flash twice and the lights will be flash in sequence to indicate the success of unlocking.

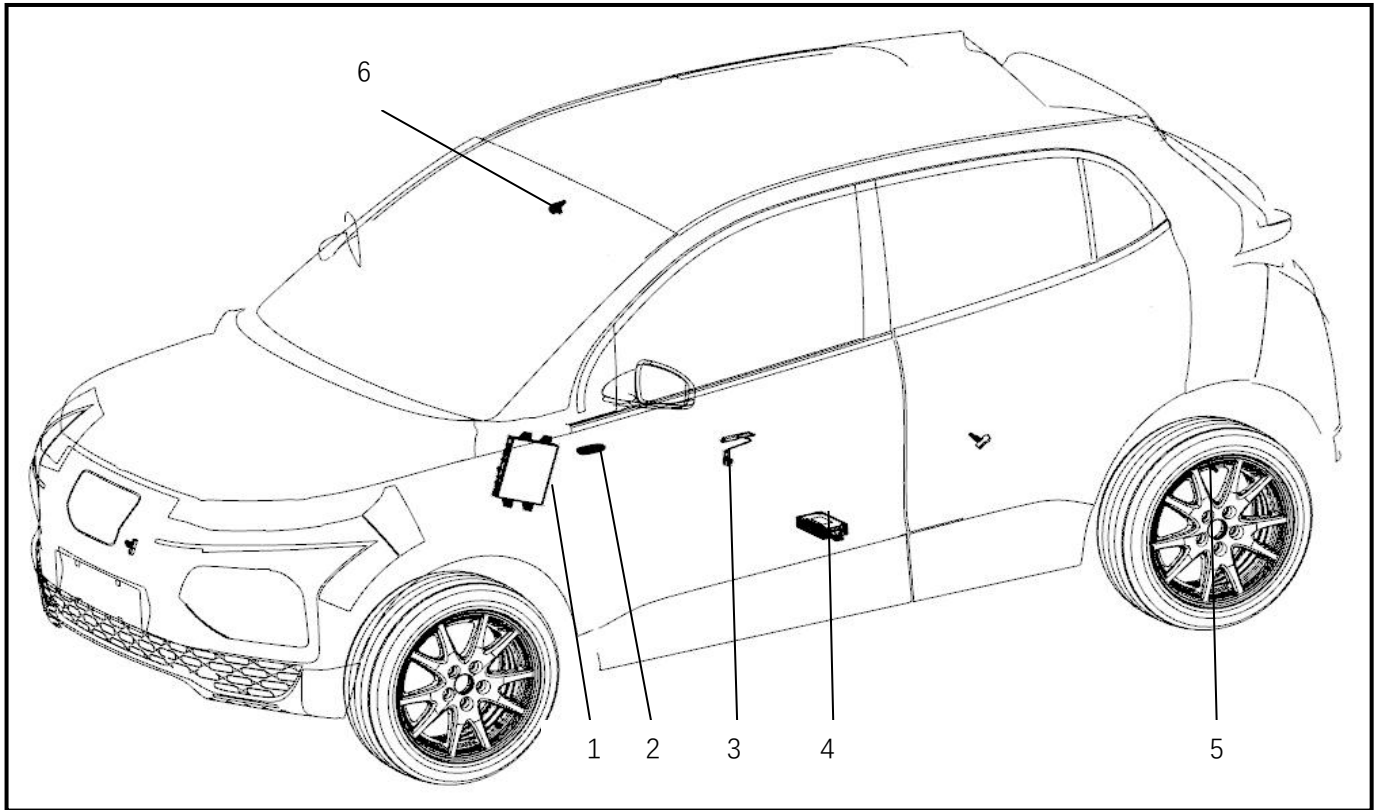
3. Remote lock function

When the vehicle is not in READY state, press the button briefly to lock the vehicle after closing all the doors (including the front cover and trunk). After locking the vehicle, the turn signals on both sides of the vehicle will flash once, the lights will flash in sequence, and the horn will sound once to indicate the success of lock.

4. Remote trunk opening function

When the vehicle is not in READY state and the trunk is closed, press and hold the button to open the trunk lock.

12.8.3 Component location

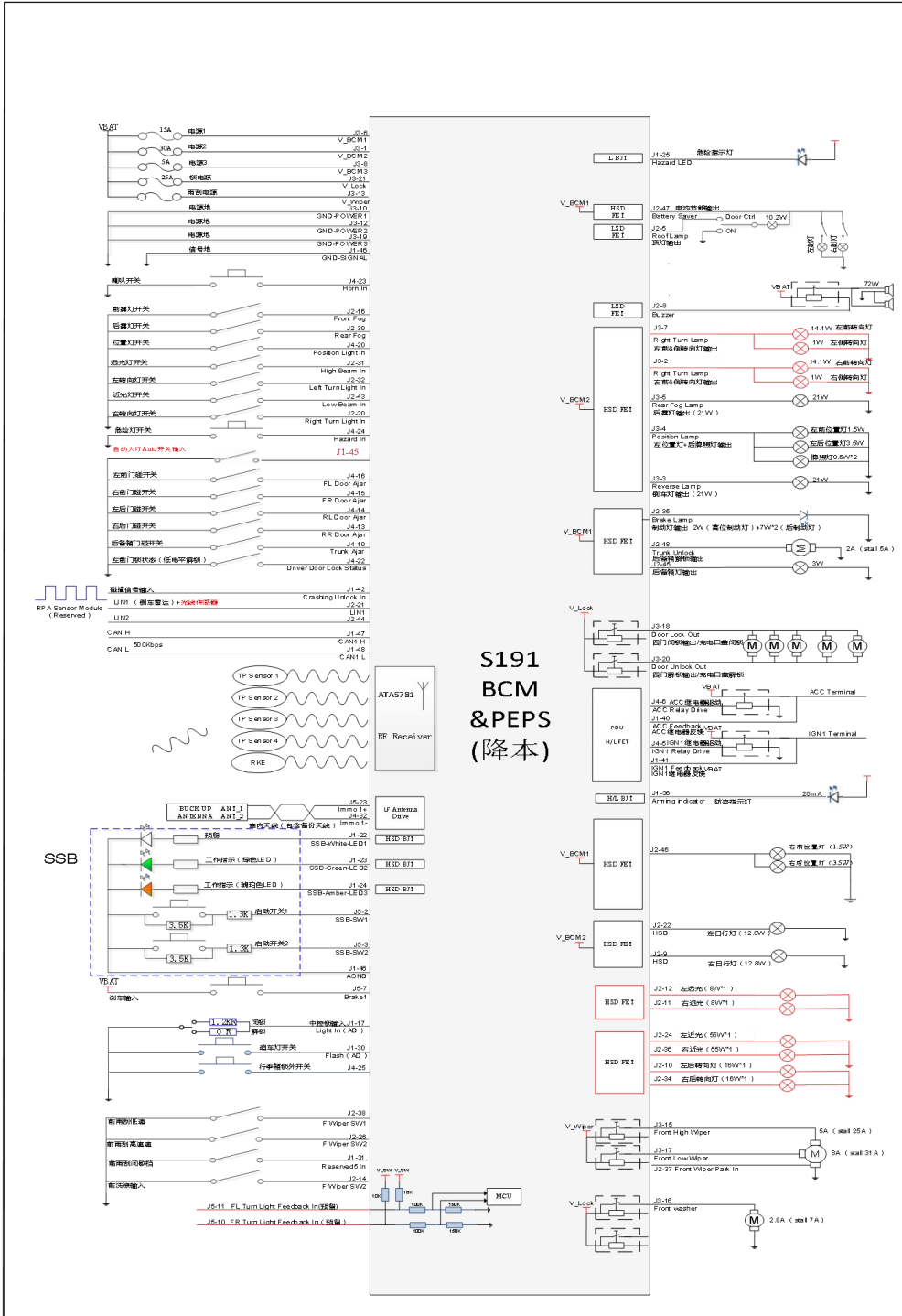


- | | |
|-------------------------------------------|------------------------------------------|
| 1. Body control module | 4. Window anti-pinch module (1 in total) |
| 2. Smart remote-control body (2 in total) | 5. Tire pressure sensors (4 in total) |
| 3. Low-frequency antenna (1 in total) | 6. Light sensor |

12.8.4 Electrical schematic

12.8.4.1 Body Control Module Diagram

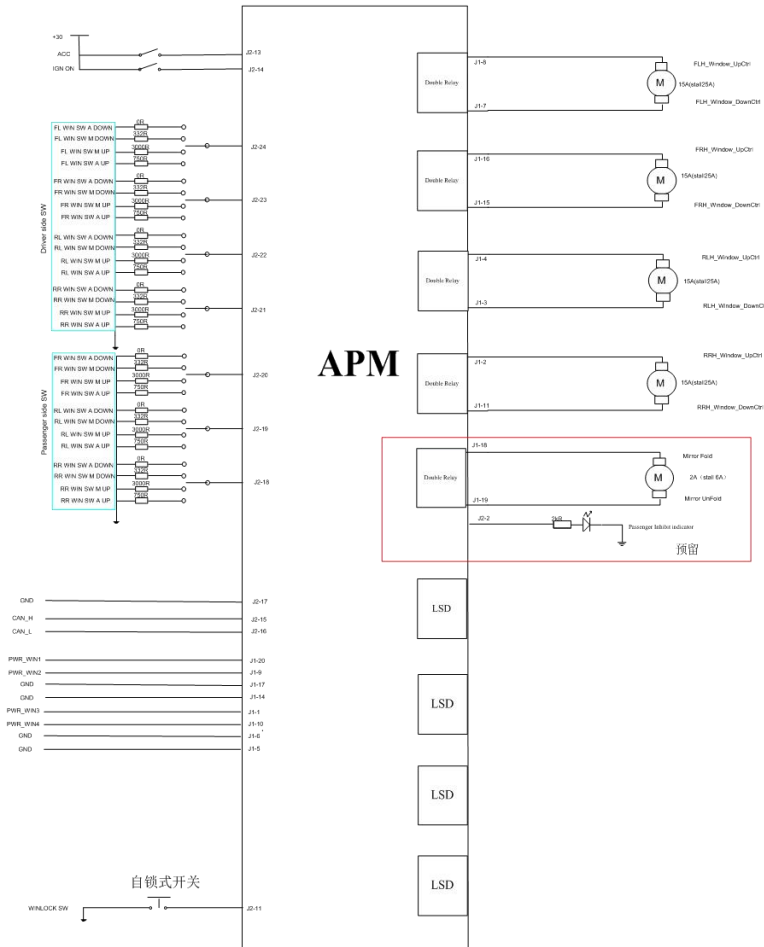
Yuehu standard model



DATE	REV	REVISION RECORD	AUTH
12/27/2021 (初版释放)	V01	<ol style="list-style-type: none"> 1. 左转向灯J3-7改为左前&侧转向灯J3-7; 2. 右转向灯J2-2改为右前&侧转向灯J3-2; 3. 新增J2-10为左后转向灯; 4. 新增J2-34为右后转向灯; 5. 左前雾灯J2-15改为右近光; 6. 右前雾灯J2-11改为右近光; 7. 删除J2-23雾灯; 8. 新增J2-34为右近光灯; 9. 新增J2-36为右近光灯; 10. 删除J2-43雾灯; 11. 转向灯功率修改; 12. 后雾灯功率修改; 13. 倒车灯功率修改; 14. 制动灯功率修改; 15. 后备箱灯功率修改; 16. 左/右位置灯功率修改; 17. 左/右转向灯功率修改; 18. 左/右后转向灯功率修改; 	
9/29/2022	V02	<ol style="list-style-type: none"> 1. J1-36 防盗指示灯明确为BCM内低有效; 2. J5-10和J5-11变更为预留; 3. 增加自动大灯的Auto开关信号输入 J4-25 4. LBJ1 J2-21 上增加光敏传感器 	
5/6/2023	V03	<ol style="list-style-type: none"> 1. 变更自动大灯的Auto开关信号输入 J4-25 	
S212 BCM&PEPS Block Diagram			
Version		01	
Author	Check	Approve	Customer

12.8.4.2 Anti-Pinch Module Diagram

Anti-Pinch Module Diagram



DATE	REV	REVISION RECORD	AUTH

Version		
编制	审核	批准

12.8.5 Diagnostic information and steps

12.8.5.1 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.8.5.2 Visual inspection

1. Check for aftermarket add-ons that may interfere with the proper operation of the body immobilizer system.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

12.8.5.3 Data list

1. List of data on body control module

Name of display parameters on diagnosis instrument in Chinese	Chinese names of subfunction parameters	Display value on diagnosis instrument
Data identifier of ECU serial number	/	/
No. of spare parts by vehicle manufacturer	/	/
Identifier of system supplier	/	/
Identifier of fingerprint data	/	/
VIN		
Identifier of ECU manufacturing date data		
Version No. of ECU software	/	/
Version No. of ECU hardware	/	/
Workshop code/ serial No. of tester	/	/
Identifier of ECU installation date data	/	/

2. List of data on anti-pinch module

Name of display parameters on diagnosis instrument in Chinese	Chinese names of subfunction parameters	Display value on diagnosis instrument
Data identifier of ECU serial number	/	/
No. of spare parts by vehicle manufacturer	/	/
Identifier of system supplier	/	/
Identifier of fingerprint data	/	/
VIN		
Identifier of ECU manufacturing date data		
Version No. of ECU software	/	/
Version No. of ECU hardware	/	/
Workshop code/ serial No. of tester	/	/
Identifier of ECU installation date data	/	/

12.8.5.4 Write controller data

Diagnostic step:

1. Enter the diagnostic interface of the diagnosis instrument
2. Select corresponding model
3. Select Body Control Module (BCM)/Window Anti-Pinch Module (APM)

4. Select Special Functions
5. Operate reading and writing of VIN, writing of identifier of ECU installation date data, BCM writing of secret key, etc.
6. Diagnostic instrument prompts for successful writing
7. Return to Body Control Module (BCM)/Window Anti-Pinch Module (APM)
8. Select Reading Version Information
9. Verify that the VIN, identifier of ECU installation date data, BCM ESK writing status, and writing of secret key are correct.
10. Exit the diagnostic interface of the diagnosis instrument

12.8.5.5 Control module reset

Diagnostic step:

1. Enter the diagnostic interface of the diagnosis instrument
2. Select corresponding model
3. Select Body Control Module (BCM)/Window Anti-Pinch Module (APM)
4. Select ECU Reset
5. Operate Hardware Reset/Software Reset
6. Diagnostic instrument prompts for successful reset
7. Exit the diagnostic interface of the diagnosis instrument

12.8.5.6 Replace the controller

1. Diagnostic step:

2. Enter the diagnostic interface of the diagnosis instrument
3. Select corresponding model
4. Select Body Control (BCM)
5. Select Configuration Writing
6. Operate Configuration Writing _Network Configuration Word to select corresponding vehicle configuration
7. Operation Configuration Writing _Function Configuration to select corresponding vehicle configuration
8. Select Special Functions
9. Operate Reading/Writing of VIN to write the VIN code of corresponding vehicle
10. Operate Secret Key Writing to write converted secret key
11. Operate Key Learning
12. Operate Tire Pressure Learning
13. Operate One-Touch Glass Rise And Descent Learning

12.8.5.7 Replace the controller

1. Diagnostic step:
2. Enter the diagnostic interface of the diagnosis instrument
3. Select corresponding model
4. Select Body Control Module (BCM)
5. Select Reading Version Information
6. 确认四个胎压传感器 ID
7. Select Special Functions
8. If the tire pressure ID is not 00 00 00 00, select "Delete Tire Pressure Senso". After deletion, enter c" Tire Pressure Learning".
9. If the tire pressure ID is 00 00 00 00, select" Tire Pressure Learning"
10. Diagnostic instrument sends tire learning commands for the appropriate side
11. Place the tire pressure trigger close to the tire valve on the corresponding side and press the activation button to start learning
12. Wait 2s, diagnosis instrument sends learning result - learning success/learning failure
13. Return to the diagnostics interface of Body Control Module (BCM)
14. Select Reading Version Information
15. Verify that the ID of the four tire pressure sensors are successfully displayed
16. Exit the diagnostic interface of the diagnosis instrument

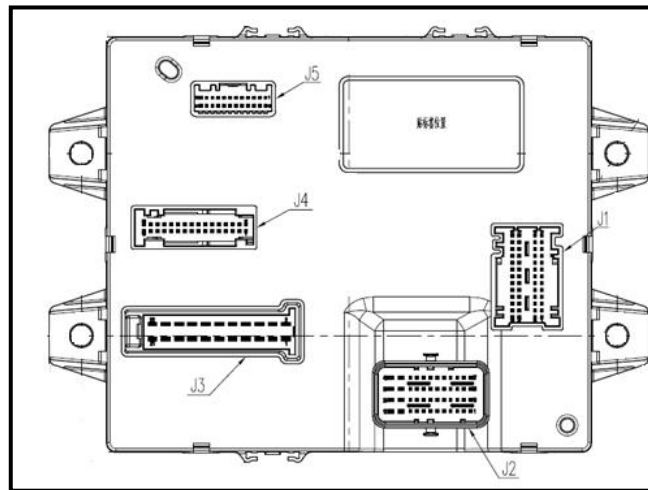
12.8.5.8 Key learning

Diagnostic step:

1. Enter the diagnostic interface of the diagnosis instrument
2. Select corresponding model
3. Select Body Control Module (BCM)
4. Select Special Functions
5. Enter "Key Learning"
6. The diagnosis instrument prompts whether to delete all keys, select Yes to enter the key learning process
7. The diagnosis instrument prompts whether to continue learning or not, choose Continue Learning the Key
8. Place the key at the key marking in the armrest box (near the low-frequency antenna)
9. Diagnostic instrument starts key learning
10. Wait for 2s, it will prompt key learning success, whether to learn the second key
11. If "No" is selected, the key learning process will be ended and the diagnosis instrument interface will be exited.
12. If "Yes" is selected, the above steps will be repeated and the two keys will be learned successfully.
13. Exit the diagnostic interface of the diagnosis instrument

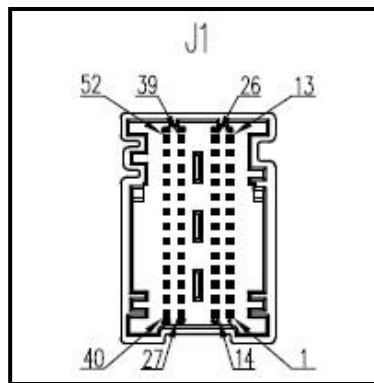
12.8.5.9 Terminal list of computer integrated system

Terminal list of body control module



Information on connector of body control module

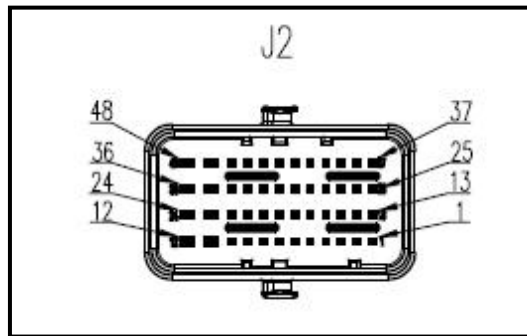
Connector J1 of body control module



Pin	Function	Pin	Function
J1-1	Reserved	J1-27	Reserved
J1-2	Reserved	J1-28	IGN2 relay feedback (reserved)
J1-3	Reserved	J1-29	Reserved
J1-4	Rear defrosts (reserved)	J1-30	Passing light switch
J1-5	Reserved	J1-31	Spot action and intermittent action of front wiper
J1-6	Reserved	J1-32	Reserved
J1-7	Reserved	J1-33	Reserved
J1-8	Reserved	J1-34	Reserved
J1-9	Reserved	J1-35	Reserved
J1-10	Reserved	J1-36	Anti-theft indicator light
J1-11	Reserved	J1-37	Reserved
J1-12	Reserved	J1-38	Reserved
J1-13	Reserved	J1-39	LIN3 (reserved)
J1-14	Reserved	J1-40	ACC Feedback
J1-15	Door contact switch of charging port (reserved)	J1-41	IGN1 Feedback
J1-16	Reserved	J1-42	Collision signal input
J1-17	Central control lock input	J1-43	Reserved
J1-18	Reserved	J1-44	Reserved

J1-19	Reserved	J1-45	Automatic headlight switch input
J1-20	Reserved	J1-46	GND
J1-21	Reserved	J1-47	CAN H
J1-22	Reserved	J1-48	CAN L
J1-23	Operating indication (green LED)	J1-49	CAN2 H (reserved)
J1-24	Operating indication (amber LED)	J1-50	CAN2 L(reserved)
J1-25	Hazard indication lights	J1-51	CAN3 H (reserved)
J1-26	Reserved	J1-52	CAN3 L(reserved)

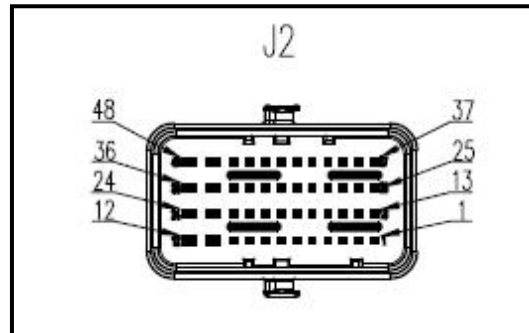
Connector J2 of body control module (VIP version)



Pin	Function	Pin	Function
J2-1	Reserved	J2-25	Reserved
J2-2	Reserved	J2-26	High-speed input of front wiper
J2-3	Reserved	J2-27	Rear defrost switch (reserved)
J2-4	Reserved	J2-28	Reserved
J2-5	Dome light output	J2-29	Reserved
J2-6	Reserved	J2-30	Reserved
J2-7	Reserved	J2-31	High beam switch
J2-8	Horn output	J2-32	Left turn signal switch
J2-9	Right daytime running light (9W)	J2-33	Low beam output (21W)
J2-10	Reserved	J2-34	Reserved
J2-11	Left front fog light, axillary left turn signal (35W)	J2-35	Brake light output (10W)
J2-12	Right front fog light, auxiliary right turn signal (35W)	J2-36	Reserved
J2-13	Reserved	J2-37	Front wiper PARK
J2-14	Front washing input	J2-38	Low-speed input of front wiper
J2-15	Reserved	J2-39	Rear fog light switch
J2-16	Front fog light switch	J2-40	Reserved
J2-17	Reversing light switch (reserved)	J2-41	Reserved
J2-18	Reserved	J2-42	Reserved
J2-19	Reserved	J2-43	Low beam switch
J2-20	Right turn signal switch	J2-44	LIN2
J2-21	LIN1 (car reversing aid radar)	J2-45	Trunk light output
J2-22	Left daytime running light (9W)	J2-46	Right position + backlight (white LED)
J2-23	High beam output (21W)	J2-47	Battery power saving output

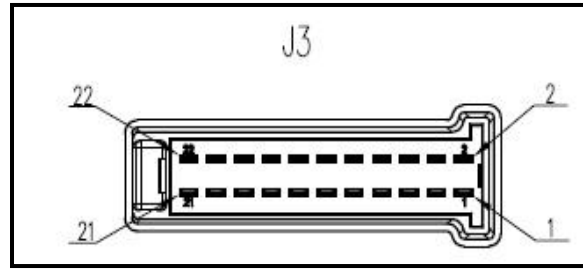
J2-24	Reserved	J2-48	Trunk unlock output
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Connector J2 of body control module (standard)



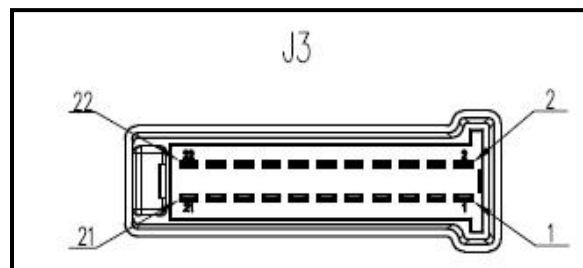
Pin	Function	Pin	Function
J2-1	Reserved	J2-25	Reserved
J2-2	Reserved	J2-26	High-speed input of front wiper
J2-3	Reserved	J2-27	Rear defrost switch (reserved)
J2-4	Reserved	J2-28	Reserved
J2-5	Dome light output	J2-29	Reserved
J2-6	Reserved	J2-30	Reserved
J2-7	Reserved	J2-31	High beam switch
J2-8	Horn output	J2-32	Left turn signal switch
J2-9	Right daytime running light (9W)	J2-33	Reserved
J2-10	Left rear turn signal (16W)	J2-34	Right rear turn signal output (16W)
J2-11	Right high beam output (8W)	J2-35	Brake light output (16W)
J2-12	Left high beam output (8W)	J2-36	Right low beam output (55W)
J2-13	Reserved	J2-37	Front wiper PARK
J2-14	Front washing input	J2-38	Low-speed input of front wiper
J2-15	Reserved	J2-39	Rear fog light switch
J2-16	Front fog light switch	J2-40	Reserved
J2-17	Reversing light switch (reserved)	J2-41	Reserved
J2-18	Reserved	J2-42	Reserved
J2-19	Reserved	J2-43	Low beam switch
J2-20	Right turn signal switch	J2-44	LIN2
J2-21	LIN1 (car reversing aid radar)	J2-45	Trunk light output
J2-22	Left daytime running light (12.8W)	J2-46	Right position + backlight (white LED)
J2-23	Reserved	J2-47	Reserved
J2-24	Left low beam output (55W)	J2-48	High-speed input of front wiper

Connector J2 of body control module (VIP version)



Pin	Function	Pin	Function
J3-1	Power supply 2	J3-12	Power supply ground terminal
J3-2	Right turn signal output (32W)	J3-13	Wiper power supply
J3-3	Reversing light output (21W*2)	J3-14	Reserved
J3-4	Left position light + rear license plate light output	J3-15	High-speed output of front wiper
J3-5	Rear fog light output (21W*2)	J3-16	Front wiper washing
J3-6	Power supply 1	J3-17	Low-speed output of front wiper
J3-7	Left turn signal output (32W)	J3-18	Lock output of the four doors
J3-8	Power supply 3	J3-19	Power supply ground terminal
J3-9	Reserved	J3-20	Unlock output of the four doors
J3-10	Power supply ground terminal	J3-21	Lock power supply
J3-11	Reserved	J3-22	Reserved

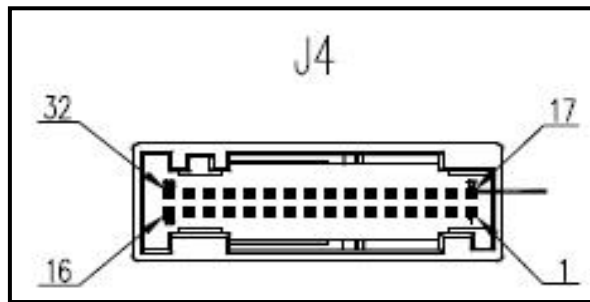
Connector J2 of body control module (standard)



Pin	Function	Pin	Function
J3-1	Power supply 2	J3-12	Power supply ground terminal
J3-2	Right front & side turn signal output (14.1W+1W)	J3-13	Wiper power supply
J3-3	Reversing light output (21W)	J3-14	Reserved
J3-4	Left front position light + left rear position light + rear licence plate light output	J3-15	High-speed output of front wiper

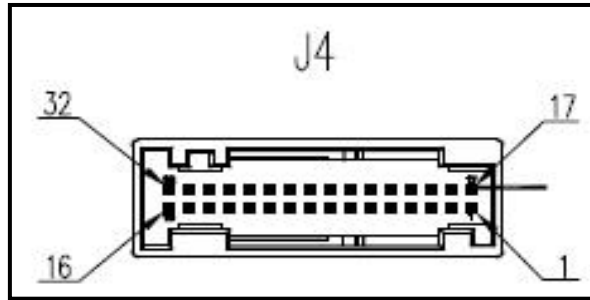
	(1.5W+3.5W+0.5W*2)		
J3-5	Rear fog light output (21W)	J3-16	Front wiper washing
J3-6	Power supply 1	J3-17	Low-speed output of front wiper
J3-7	Left front & side turn signal output (14.1W+1W)	J3-18	Lock output of the four doors
J3-8	Power supply 3	J3-19	Power supply ground terminal
J3-9	Reserved	J3-20	Unlock output of the four doors
J3-10	Power supply ground terminal	J3-21	Lock power supply
J3-11	Reserved	J3-22	Reserved

Connector J2 of body control module (VIP version)



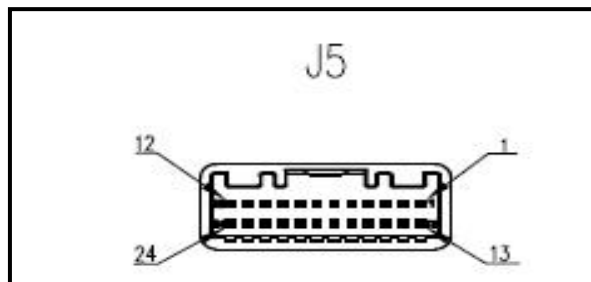
Pin	Function	Pin	Function
J4-1	Reserved	J4-17	Reserved
J4-2	GN2 relay drive (reserved)	J4-18	Reserved
J4-3	Reserved	J4-19	Reserved
J4-4	Reserved	J4-20	Position light switch
J4-5	IGN1 relay driver	J4-21	Reserved
J4-6	ACC relay driver	J4-22	Status of left front door lock (low level unlock)
J4-7	Reserved	J4-23	Horn switch
J4-8	Reserved	J4-24	Hazard light switch
J4-9	Reserved	J4-25	Outward opening switch of trunk
J4-10	Door contact switch of trunk	J4-26	Antenna (reserved)
J4-11	Front hood contact switch (reserved)	J4-27	Antenna (reserved)
J4-12	Reserved	J4-28	Antenna (reserved)
J4-13	Right rear door contact switch	J4-29	Antenna (reserved)
J4-14	Left rear door bumper switch	J4-30	Antenna (reserved)
J4-15	Right front door contact switch	J4-31	Antenna (reserved)
J4-16	Left front door bumper switch	J4-32	IMMO antenna—

Connector J2 of body control module (standard)



Pin	Function	Pin	Function
J4-1	Reserved	J4-17	Reserved
J4-2	GN2 relay drive (reserved)	J4-18	Reserved
J4-3	Reserved	J4-19	Reserved
J4-4	Reserved	J4-20	Position light switch
J4-5	IGN1 relay driver	J4-21	Reserved
J4-6	ACC relay driver	J4-22	Status of left front door lock (low level unlock)
J4-7	Reserved	J4-23	Horn switch
J4-8	Reserved	J4-24	Hazard light switch
J4-9	Reserved	J4-25	Outward opening switch of trunk
J4-10	Door contact switch of trunk	J4-26	Antenna (reserved)
J4-11	Front hood contact switch (reserved)	J4-27	Antenna (reserved)
J4-12	Reserved	J4-28	Antenna (reserved)
J4-13	Right rear door contact switch	J4-29	Antenna (reserved)
J4-14	Left rear door bumper switch	J4-30	Antenna (reserved)
J4-15	Right front door contact switch	J4-31	Antenna (reserved)
J4-16	Left front door bumper switch	J4-32	IMMO antenna—

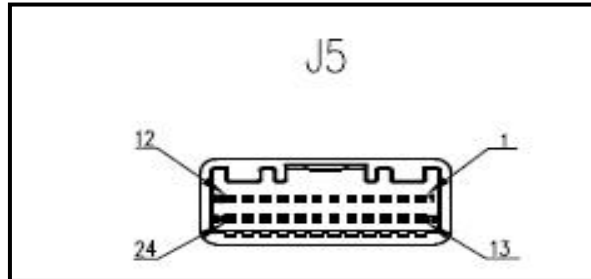
Connector J2 of body control module (VIP version)



Pin	Function	Pin	Function
J5-1	Reserved	J5-13	Antenna (reserved)
J5-2	Activation switch 1	J5-14	Antenna (reserved)
J5-3	Activation switch 2	J5-15	Antenna (reserved)
J5-4	Reserved	J5-16	Antenna (reserved)
J5-5	Reserved	J5-17	Reserved
J5-6	Reserved	J5-18	Reserved
J5-7	Brake switch	J5-19	Reserved
J5-8	Reserved	J5-20	Reserved
J5-9	Reserved	J5-21	Reserved
J5-10	Fault feedback of right front turn signal (low level)	J5-22	Reserved

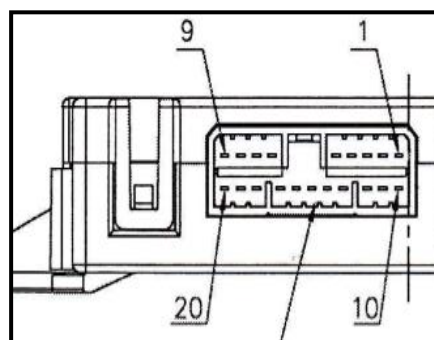
	during fault)		
J5-11	Left front turn signal fault feedback (low level on fault)	J5-23	Immo 1+
J5-12	Reserved	J5-24	Reserved

Connector J2 of body control module (VIP version)



Pin	Function	Pin	Function
J5-1	Reserved	J5-13	Antenna (reserved)
J5-2	Activation switch 1	J5-14	Antenna (reserved)
J5-3	Activation switch 2	J5-15	Antenna (reserved)
J5-4	Reserved	J5-16	Antenna (reserved)
J5-5	Reserved	J5-17	Reserved
J5-6	Reserved	J5-18	Reserved
J5-7	Brake switch	J5-19	Reserved
J5-8	Reserved	J5-20	Reserved
J5-9	Reserved	J5-21	Reserved
J5-10	Reserved	J5-22	Reserved
J5-11	Reserved	J5-23	Immo 1+
J5-12	Reserved	J5-24	Reserved

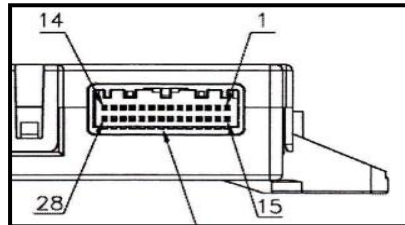
Connector J1 of window anti-pinch module



Pin	Function	Pin	Function
J1-1	Window power supply 3	J1-11	Right rear window descent
J1-2	Right rear window rise	J1-12	Reserved
J1-3	Left rear window descent	J1-13	Reserved
J1-4	Left rear window rise	J1-14	Ground
J1-5	Ground	J1-15	Right front window descent
J1-6	Ground	J1-16	Right front window rise
J1-7	Left front window descent	J1-17	Ground

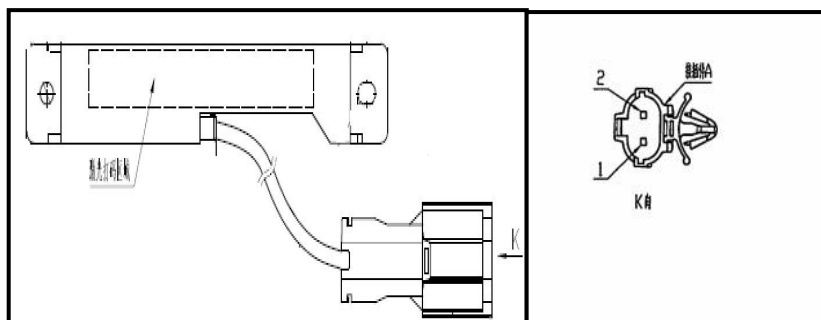
J1-8	Left front window rise	J1-18	Reserved
J1-9	Window power supply 2	J1-19	Reserved
J1-10	Window power supply 4	J1-20	Window power supply 1

Connector J1 of window anti-pinch module



Pin	Function	Pin	Function
J2-1	Reserved	J2-15	CAN H
J2-2	Reserved	J2-16	CAN L
J2-3	Reserved	J2-17	Ground
J2-4	Reserved	J2-18	Right rear window at passenger side
J2-5	Reserved	J2-19	Left rear window at passenger side
J2-6	Reserved	J2-20	Right front window at passenger side
J2-7	Reserved	J2-21	Right rear window
J2-8	Reserved	J2-22	Left rear window
J2-9	Reserved	J2-23	Right front window
J2-10	Reserved	J2-24	Left front window
J2-11	Window lock input	J2-25	Reserved
J2-12	Reserved	J2-26	Reserved
J2-13	ACC IN	J2-27	Reserved
J2-14	IGN IN	J2-28	Reserved

Connector of low-frequency antenna



Pin	Function	Pin	Function
1	Antenna+	2	Antenna-

12.8.5.10 List of type of BCM, APM diagnostic trouble codes (DTC)

1. Body control module (VIP version FS11-3609100001)

S.N.	Fault code	Fault description
1	B1000-16	Voltage in battery voltage circuit is too low
2	B1000-17	Overvoltage in battery voltage circuit
3	B1001-11	Left turn signal output short circuited to ground
4	B1001-13	load circuit-opening of left turn signal output
5	B1002-11	Right turn signal output short circuited to ground
6	B1002-13	load circuit-opening of right turn signal
7	B1003-11	Rear fog light output short circuited to ground
8	B1003-13	External load circuit-opening of rear fog light
9	B1004-11	Left position light output short circuited to ground
10	B1004-13	External load circuit-opening of left position light
11	B1005-11	Reversing light output short circuited to ground
12	B1005-13	External load circuit-opening of reversing light
13	B1006-11	Brake light output short circuited to ground
14	B1006-13	External load circuit-opening of brake light
15	B1007-11	Right position light output short circuited to ground
16	B1007-13	External load circuit-opening of right position light
17	B1008-11	High beam output short circuited to ground
18	B1008-13	External load circuit-opening of high beam
19	B1009-11	Low beam output short circuited to ground
20	B1009-13	External load circuit-opening of low beam
21	B100B-11	Left daytime running light output short circuited to ground
22	B100B-13	External load circuit-opening of left daytime running light
23	B100C-11	Right daytime running light output short circuited to ground
24	B100C-13	External load circuit-opening of right daytime running light
25	B100D-11	Left front fog light output short circuited to ground
26	B100D-13	External load circuit-opening of left front fog light
27	B100E-11	Right front fog light output short circuited to ground
28	B100E-13	External load circuit-opening of right front fog light
29	B1010-71	Burning out of low-speed relay of front wiper
30	B1011-71	Burning out of high-speed relay of front wiper
31	B1012-71	Burning out of front washing relay

2. Body control module (VIP version FS13-3609100001)

S.N.	Fault code	Fault description
1	B1000-16	Voltage in battery voltage circuit is too low
2	B1000-17	Overvoltage in battery voltage circuit
3	B1001-11	Left front turn signal output short circuited to ground
4	B1001-13	External load circuit-opening of left front turn signal
5	B1002-11	Right front turn signal output short circuited to ground
6	B1002-13	External load circuit-opening of right front turn signal
7	B1003-11	Rear fog light output short circuited to ground
8	B1003-13	External load circuit-opening of rear

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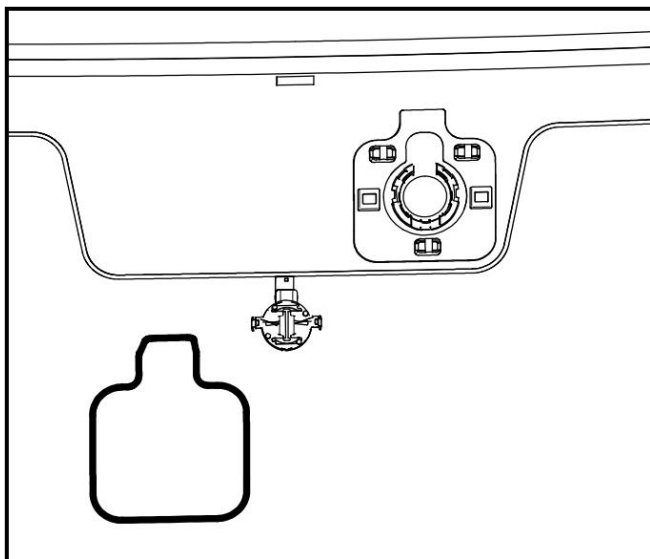
		fog light
9	B1004-11	Left position light output short circuited to ground
10	B1004-13	External load circuit-opening of left position light
11	B1005-11	Reversing light output short circuited to ground
12	B1005-13	External load circuit-opening of reversing light
13	B1006-11	Brake light output short circuited to ground
14	B1006-13	External load circuit-opening of brake light
15	B1007-11	Right position light output short circuited to ground
16	B1007-13	External load circuit-opening of right position light
17	B1008-11	Left front high beam output short circuited to ground
18	B1008-13	External load circuit-opening of left front high beam
19	B1009-11	Left front low beam output is short-circuited to ground
20	B1009-13	External load circuit-opening of left front low beam
21	B100B-11	Left daytime running light output short circuited to ground
22	B100B-13	External load circuit-opening of left daytime running light
23	B100C-11	Right daytime running light output short circuited to ground
24	B100C-13	External load circuit-opening of right daytime running light
25	B100D-11	Right front high beam output short circuited to ground
26	B100D-13	External load circuit-opening of right front high beam
27	B100E-11	Right front low beam output short circuited to ground
28	B100E-13	External load circuit-opening of right front low beam
29	B100F-11	Left rear turn signal output short circuited to ground
30	B100F-13	External load circuit-opening of left rear turn signal
31	B1010-11	Right rear turn signal output short circuited to ground
32	B1010-13	External load circuit-opening of right rear turn signal
33	B1010-71	Burning out of low-speed relay of front wiper
34	B1011-71	Burning out of high-speed relay of front wiper
35	B1012-71	Burning out of front washing relay

3. Window anti-pinch module

S.N.	Fault code	Fault description
1	B1700-13	Control circuit open for left front window rise
2	B1700-17	Sticky control circuit relay for left front window rise
3	B1701-13	Control circuit open for left front window descent
4	B1701-17	Sticky control circuit relay of left front window descent
5	B1702-13	Control circuit open for right front window rise
6	B1702-17	Sticky control circuit relay for right front window rise
7	B1703-13	Circuit open for right front window descent
8	B1703-17	Sticky circuit relay for right front window descent
9	B1704-13	Circuit open for left rear window rise
10	B1704-17	Sticky circuit relay for left rear window rise
11	B1705-13	Circuit open for left rear window descent
12	B1705-17	Sticky circuit relay for left rear window descent
13	B1706-13	Circuit open for right rear window rise
14	B1706-17	Sticky circuit relay for right rear window rise
15	B1707-13	Circuit open for right rear window descent
16	B1707-17	Sticky circuit relay for right rear window descent

12.8.6 Disassembly and installation

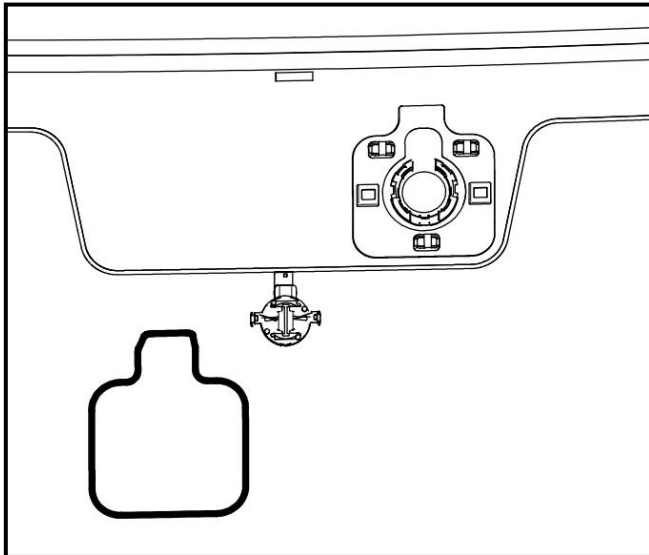
12.8.6.1 Disassembly and Installation of light sensors



Disassembly procedure:

The light sensor and the base are of snap-on construction. The light sensor cover and the base are of snap-on construction.

1. Separate the light sensor cover from the base with a flat headed screwdriver.
2. Unplug the wiring harness connector;
3. Separate the light sensor from the base with a flat headed screwdriver.

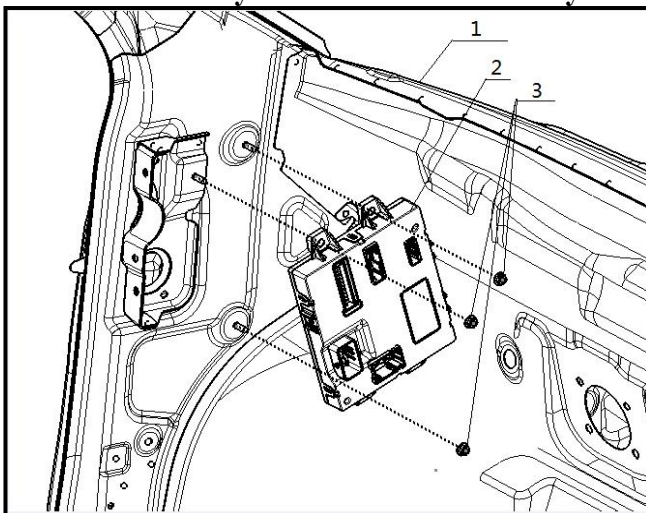


Installation procedure:

The light sensor and the base are of snap-on construction. The light sensor cover and the base are of snap-on construction.

1. Align the light sensor with the mounting base and snap it into the base;
2. Plug in the wiring harness connector;
3. Align the light sensor cover with the base and snap it into the base.

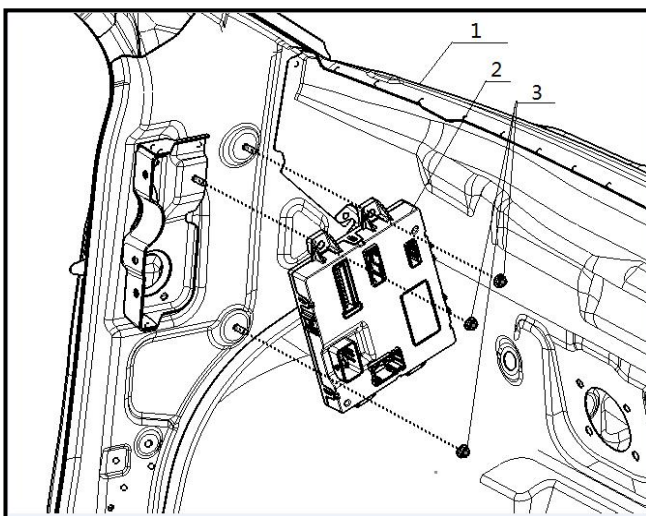
12.8.6.2 Disassembly and installation of body control module



Disassembly procedure:

Disassembly of body control module

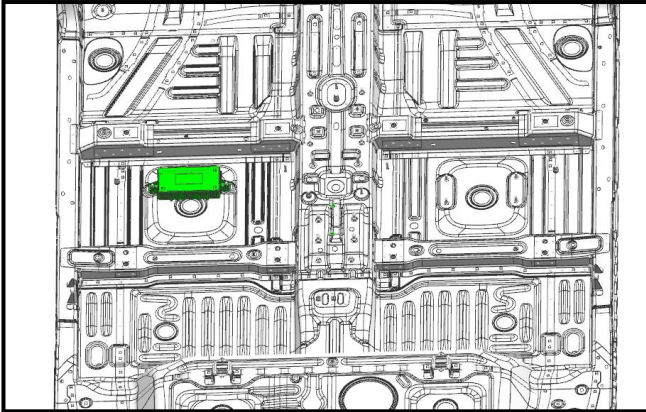
1. Open the left front door and gently remove the left front door sill guard with a flat headed screwdriver. Gently take out the left front sill tape, and gently remove the inner lower guard of left front A-pillar with a flat headed screwdriver;
2. Remove the guard of cockpit fuse box;
3. Gently unplug the 5 connectors of the body control module perpendicular to the surface of the control module;
4. Remove the 3 nuts from the body control module assembly (Q32006F36, labeled 1, 2, and 3 in the figure) and take off the body control module.



Installation procedure:

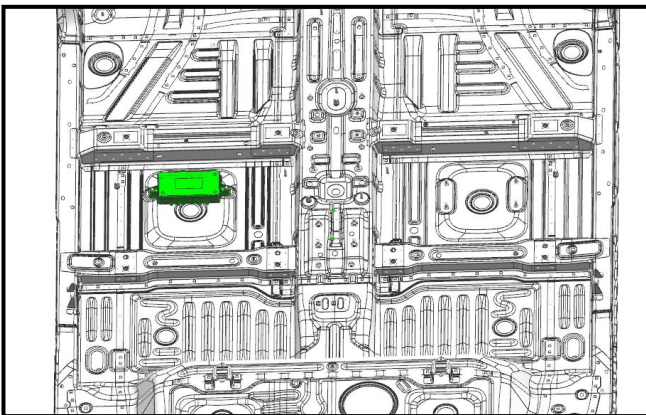
1. Install the body control module to the vehicle body in the position shown at left figure;
2. Tighten the 3 nuts (Q32006F36, labelled 1, 2, and 3 in the figure) with a M6 socket or wrench, with a tightening torque of 4-6 N·m;
3. Install the guard of cockpit fuse box in place;
4. Install the inner lower guard of left front A-pillar in place with a flat headed screwdriver; install the left front door sill tape and left front door sill guard in place;
5. Assemble the 5 connectors for the body control module in place.

12.8.6.3 Disassembly and installation of window control module



Disassembly procedure:

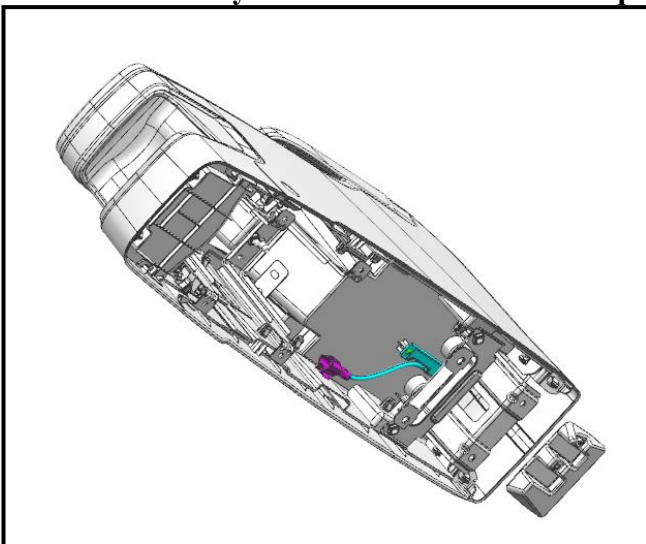
1. The main driver's seat is carried back to the end position;
2. Lift the carpet in the direction of the opening and gently disconnect the wiring harness connector of independent window anti-pinch module;
3. Remove the nut that secures the independent window anti-pinch module with a M6 socket;
4. Take out the window anti-pinch module;



Installation procedure:

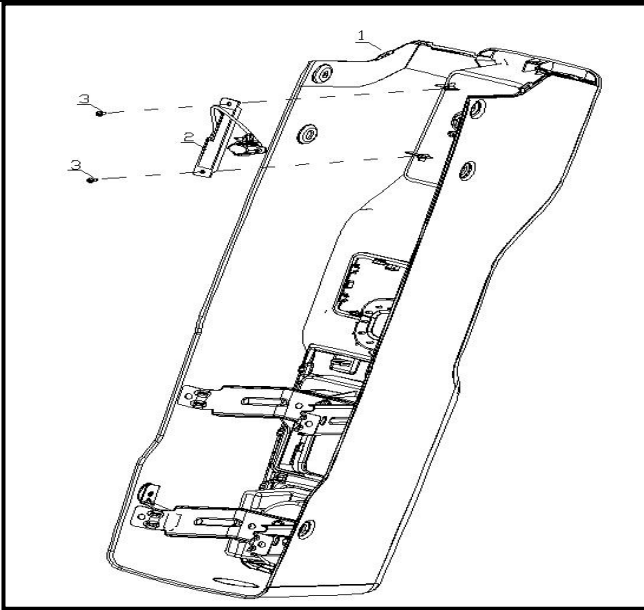
1. The main driver's seat is carried back to the end position;
2. Lift the carpet in the direction of the opening to assemble the window anti-pinch module in place;
3. Tighten the nut of the independent window anti-pinch module with a M6 socket; with a tightening torque of 4-6 N·m;
4. Gently plug in the wiring harness connector of independent window anti-pinch module.

12.8.6.4 Disassembly and installation of low-frequency antenna



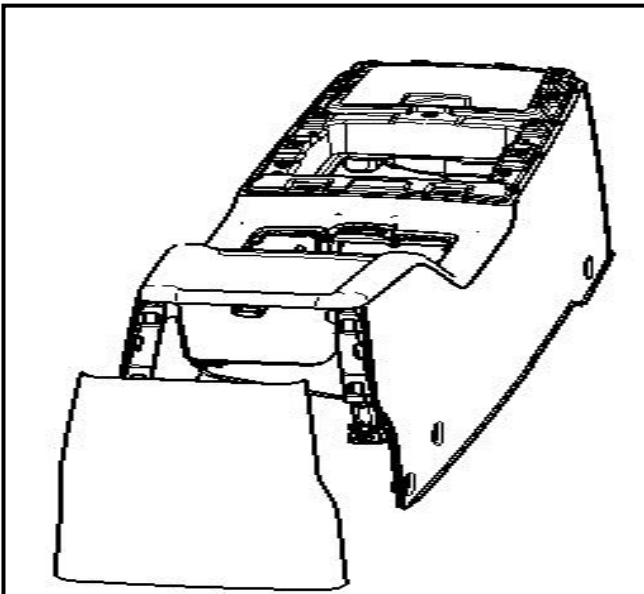
Disassembly procedure:

1. Disassemble the 2 self-tapping screws (Q2214816) and 4 fasteners (FS10-5306603001) that secure the auxiliary instrument board with a Phillips screwdriver;
2. Remove the rear cover of the auxiliary instrument board and unplug the low-frequency antenna connector; remove the shift knob cover and handbrake cover, gently unplug the electronic shift knob insert and handbrake connector, and remove the auxiliary instrument board assembly;
3. Remove the two standard parts Q2733513F36 that hold the low-frequency antenna in place with a Phillips screwdriver and remove the low-frequency antenna.



Installation procedure:

1. Install the low-frequency antenna in a fixed position and tighten the two standard parts Q2733513F36 that hold the low-frequency antenna in place with a Phillips screwdriver. Torque: 0.25-0.45N·m
2. Plug in the low-frequency antenna connector; install the rear cover of auxiliary instrument board;
3. Install the shift knob cover and handbrake cover, install the plug-in and the handbrake connector for the electronic shift knob, and install the auxiliary instrument panel body assembly.



12.9 TBOX

12.9.1 Specifications

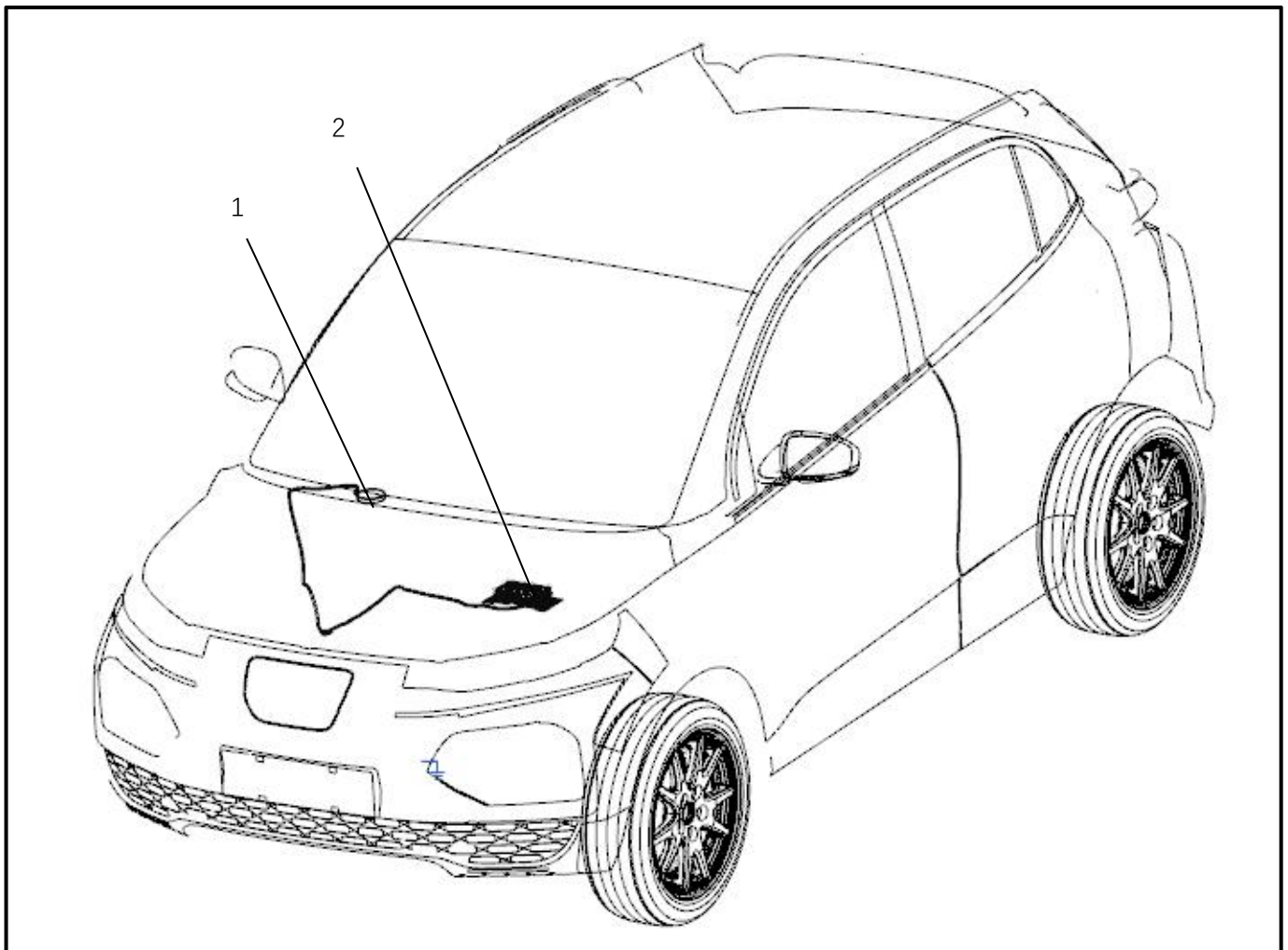
12.9.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Hexagonal flange nuts for remote control module	M6	5±2
3M adhesive tape	\	\

12.9.2 Description and operation

Telematics remote control module (T-BOX) system consists of T-BOX, GPS, 4G mobile communication antenna. The main machine communicates with the vehicle modules via the CAN bus. The main machine is connected to the backend server via the carrier's communication network. The T-BOX main machine exchanges data with the vehicle through the USB protocol.

12.9.3 Component location

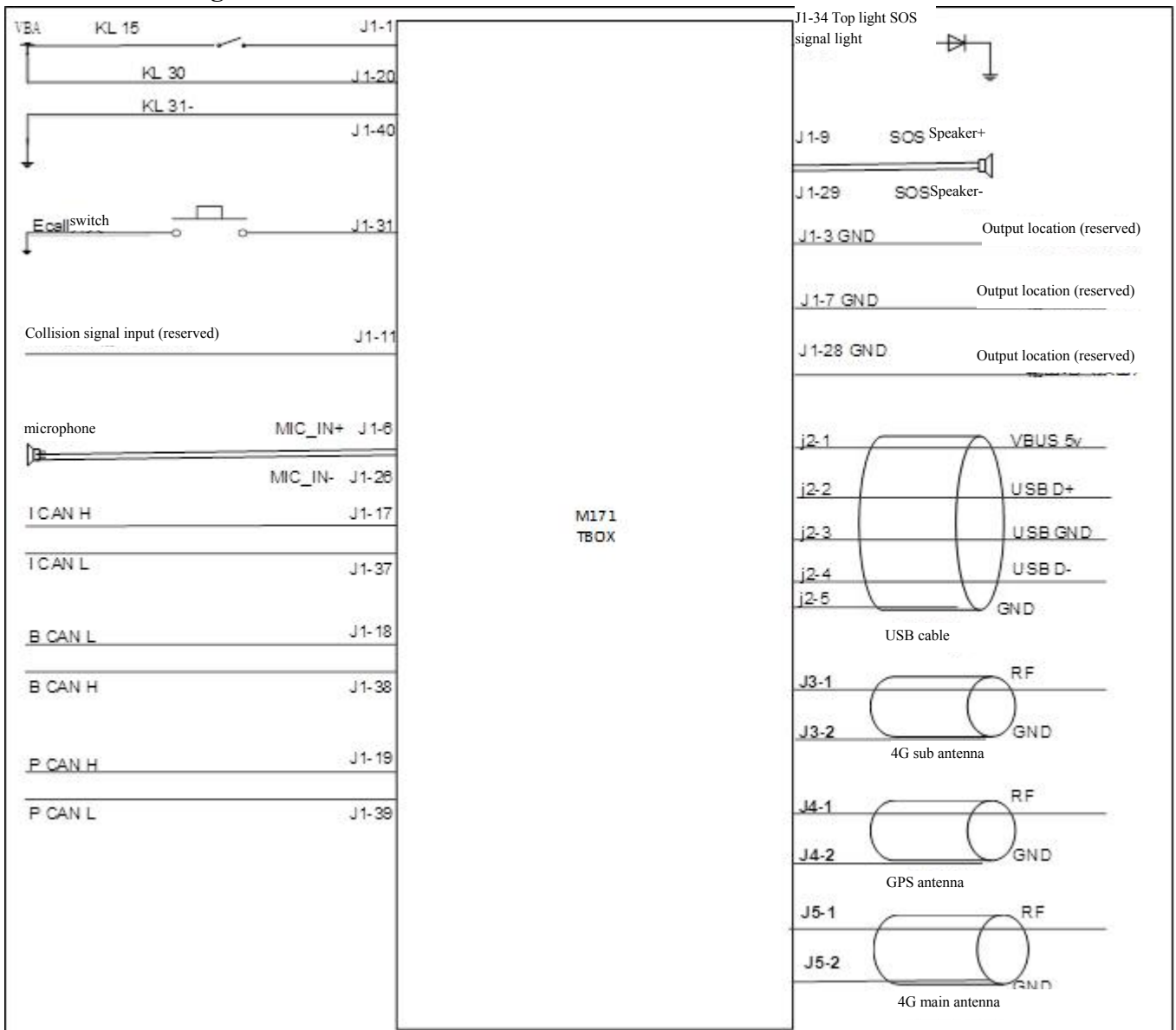


1.TBOX antenna

2. Remote control module

12.9.4 Electrical block diagram

12.9.4.1 Electrical diagram



12.9.5 Diagnostic information and steps

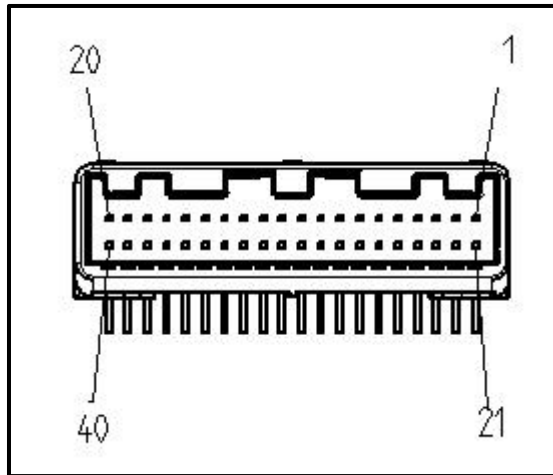
12.9.5.1 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.9.5.2 Routine inspection

1. Check for aftermarket add-ons that may interfere with the proper operation of the remote control system.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.

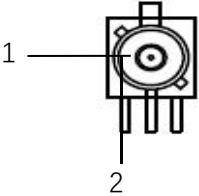
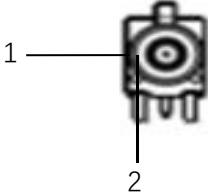
12.9.5.3 Terminal list of remote control system



Pin	Function	Pin	Function
1	KL15(ACC)	21	/
2	/	22	/
3	GND	23	/
4	/	24	/
5	/	25	/
6	MIC IN+	26	MIC IN-
7	GND	27	/
8	/	28	GND
9	Spearker+	29	Speaker-
10	/	30	/
11	SRS	31	E-CALL
12	LED_GND	32	/
13	/	33	/
14	/	34	LED1
15	/	35	/
16	/	36	/
17	CAN_H of Info	37	CAN_L of Info
18	CAN_L of Body	38	CAN_H of Body
19	CAN_H of PT	39	CAN_L of PT
20	KL30	40	Main Power Input

12.9.5.4 TBOX-antenna electrical terminal connector

USB		4G main antenna	
Pin	Function	Pin	Function
1	ABUS	1	RF
2	USB D+	2	GND
3	USB GND	\	\
4	USB D-	\	\
5	GND	\	\

			
GPS antenna		4G sub-antenna	
Pin	Function	Pin	Function
1	RF	1	RF
2	GND	2	GND

12.9.5.5 TBOX Fault Code List

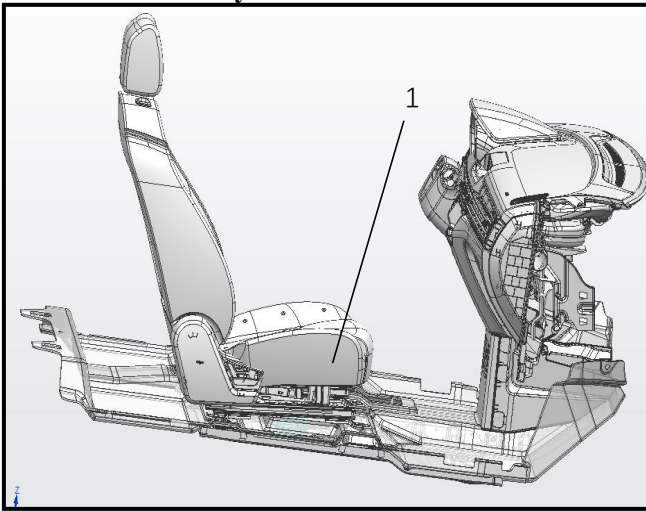
S.N.	Fault code	Fault description
1	B1C0076	SIM card is not inserted
2	B1C0113	GNSS antenna open circuit fault
3	B1C0114	Battery is abnormal
4	U110017	Over Diagnostic Voltage
5	U110016	Under Diagnostic voltage
6	U000188	Bus-off PTCAN
7	U004688	Bus-off BodyCAN
8	U005588	Bus-off InfoCAN
9	U010087	Missing VCU (ECU)
10	U100087	Missing BMS (ECU)
11	U010187	Missing MCUF (ECU)
12	U010287	Missing MCUR (ECU)
13	U100187	Missing DCDC (ECU)
14	U011487	Missing OBC (ECU)
15	U012187	Missing ABS (ECU)
16	U012287	Missing ESC/ESP (ECU)
17	U012887	Missing EPB (ECU)
18	U013187	Missing EPS (ECU)
19	U014087	Missing BCM (ECU)
20	U015587	Missing IC (ECU)
21	U016487	Missing AC/TMS (ECU)
22	U019987	Missing ACCM (ECU)
23	U020087	Missing PWU (ECU)
24	U019687	Missing AVN (ECU)
25	U100587	Missing ACU(SRS) (ECU)
26	U019887	Missing TBOX (ECU)
27	U100487	Missing PEPS/PS (ECU)
28	U100687	Missing VDR (ECU)
29	U100887	Missing MMR (ECU)
30	U100987	Missing MPC (ECU)
31	U100B87	Missing AVM (ECU)
32	U014687	Missing GW_PTCAN (ECU)
33	U014887	Missing GW_InfoCAN/TCAN (ECU)
34	U015087	Missing GW_BodyCAN (ECU)

12.9.5.6 Diagnostic step

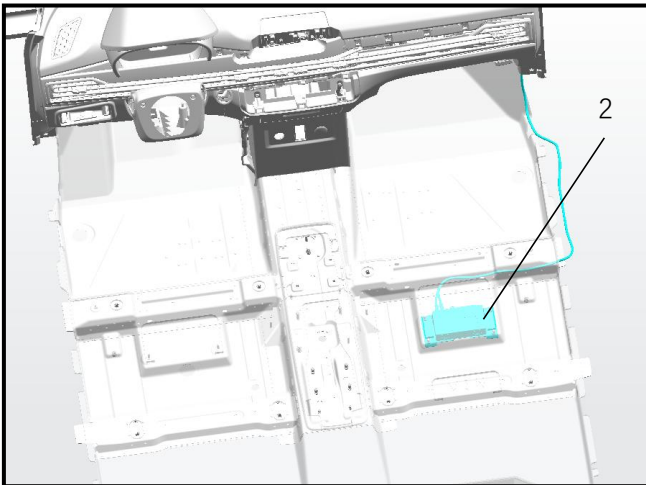
1. DTC diagnostic troubleshooting testing
2. Does the DTC fault appear
3. Please refer to the DTC fault code to confirm the fault troubleshooting and maintenance if fault occurs
4. Conduct the DTC fault diagnostic test again. If no fault occurs, complete the diagnostic maintenance. If the DTC fault occurs again, replace the TBOX

12.9.6 Disassembly and installation

12.9.6.1 Disassembly and installation of remote control module

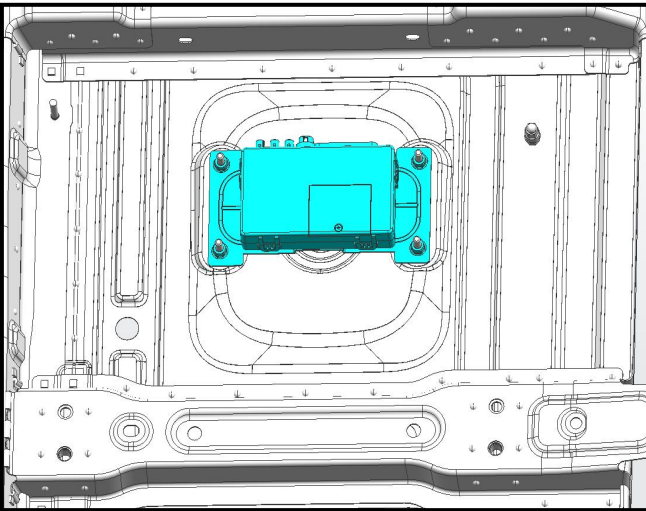
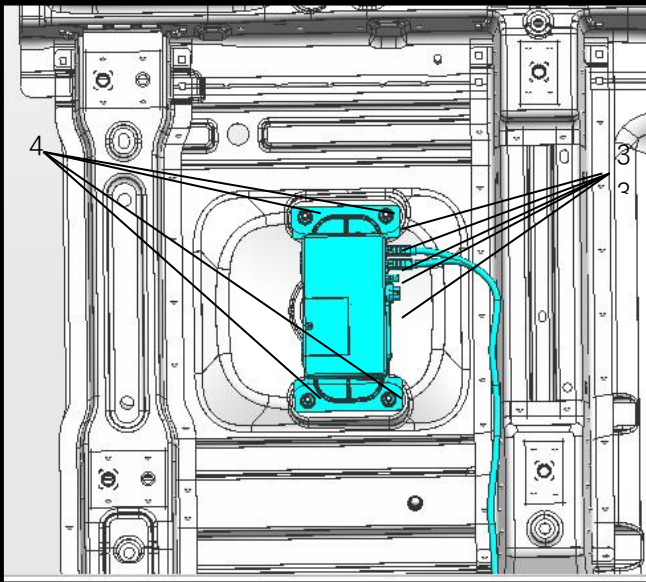


- Disassembly process
1. Move the passenger seat back to the limit (position #1 in the figure);



2. Lift the carpet in the direction show in figure (position #2 in the figure);

3. Manually remove the connector, 4G antenna, GPS antenna, and 40PIN (position #3 in the picture);
4. Remove the nut that secures the remote control module with a #10 wrench (position #4 in the figure);



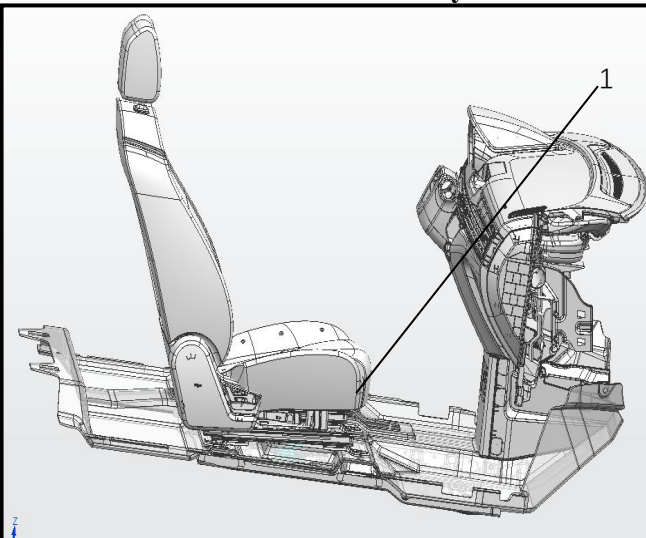
Installation procedure:

1. Ensure that the negative terminal of the battery power supply is disconnected before installation;
2. Install the nut that secures the remote control module with a #10 wrench in a tightening torque of $5\pm 2\text{N}\cdot\text{m}$. Plug and connect the 4 connectors of the remote control module into place to complete the installation.

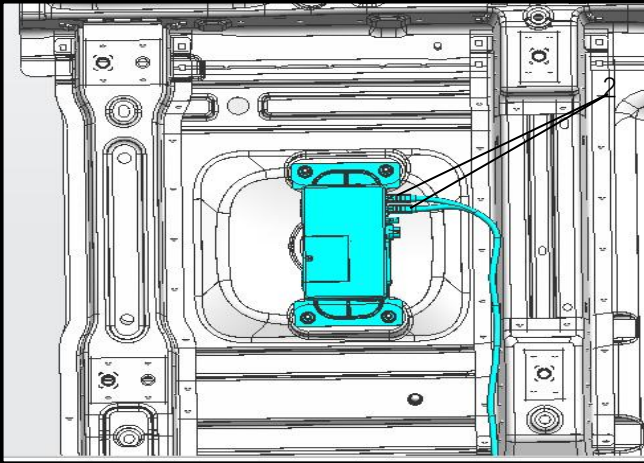
12.9.6.2 Installation and disassembly of remote control module antenna

Disassembly process

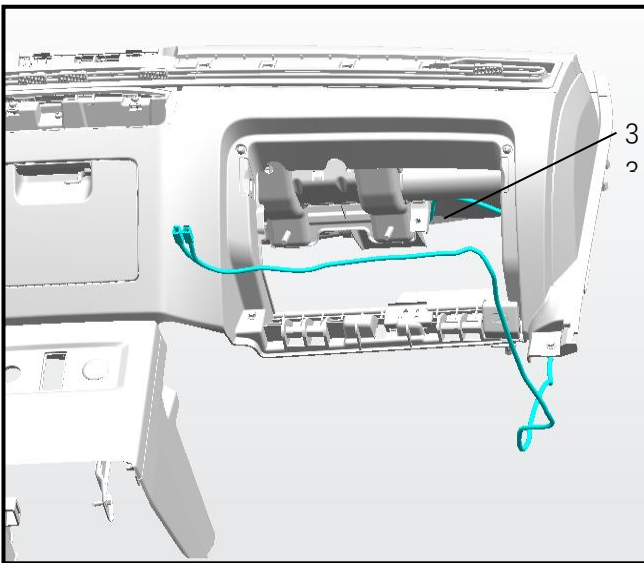
1. Move the passenger seat back to the limit (position #1 in the figure);



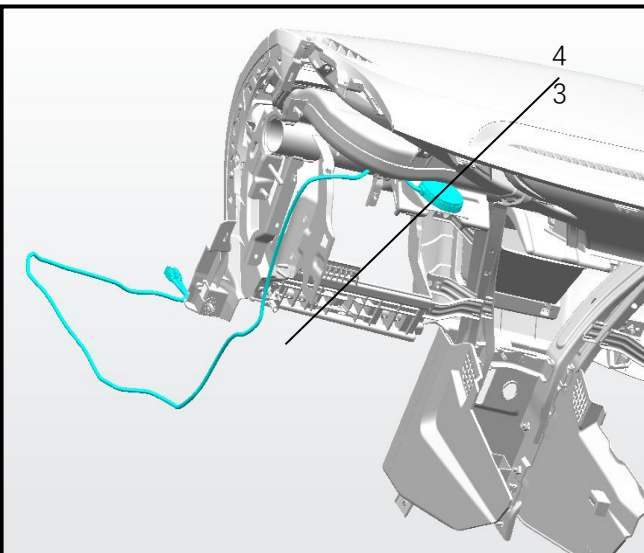
2. Manually remove the antenna insert (position #2 in the figure);



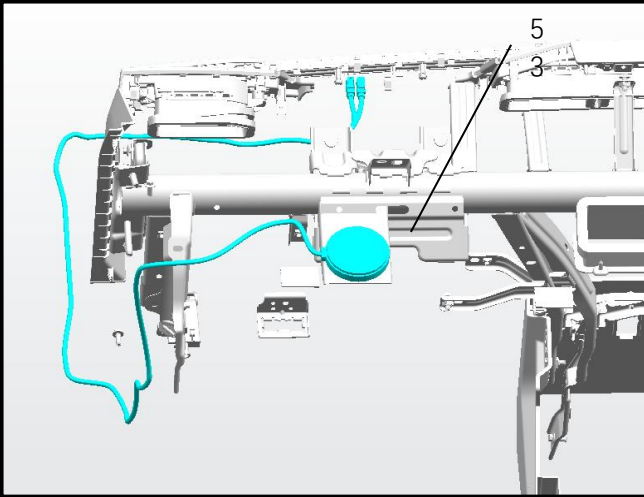
3. Remove the glove box (position #3 in the figure);



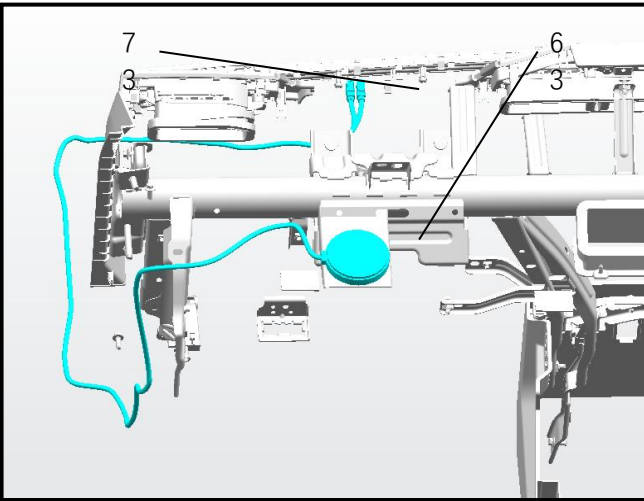
4. Remove the antenna along the fasteners (position #4 in the figure);



5. Uncover the antenna from the mounting bracket of the pipe beam;



Installation procedure:
1. Remove the 3M adhesive protective film from the lower surface of the antenna;
2. Attach the adhesive protective film to the mounting bracket of pipe beam (position #6 in the figure);
3. Install the antenna along the fasteners and install the connector (position #7 in the figure) on the remote control module to complete the installation.



12.10 Infotainment systems

12.10.1 Specifications

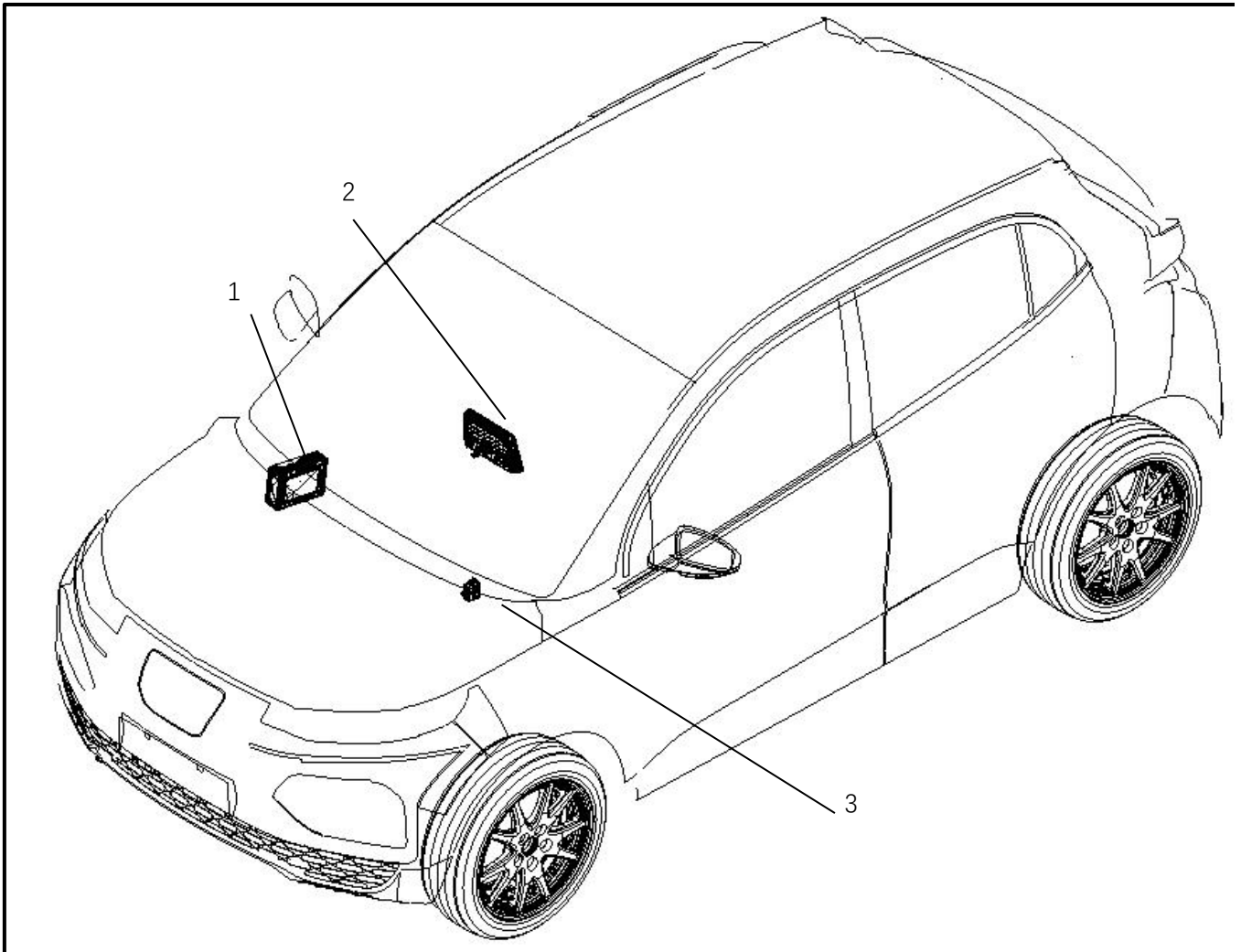
12.10.1.1 Specification fasteners

Fastener name	Specifications	Torque range (N·m)
Bolts for connecting central control display and instrument board assembly	M6	3.5~6
Nut for connection between instrument hose beam assemblies	M6	3.5~6

12.10.2 Operation and Description

Infotainment system allow easier access to the vehicle's information and entertainment by vehicle user, with built-in radio, media, Bluetooth, ability and setting functions. With the radio can the radio content of the local radio station gotten; with the media can music, video, pictures, etc. be played with the help of USB flash drive; Bluetooth can be used to transfer the data to the vehicle's Bluetooth to play music, receive phone calls, view cell phone contacts, call records and other operations after connection; in the energy interface, the current total amount of battery during charging and discharging, and the voltage and power flow of input and output can be viewed; in the setting interface, overall control of the screen, such as brightness, sound, mode, etc. are available.

12.10.3 Component location



- 1. Central control display
- 2. Central control main machine
- 3. USB panel

12.10.4 Diagnostic information and steps

12.10.4.1 Routine inspection

Identify the fault before repairing it. Check if the display screen is turned on normally and check if all functions, such as built-in radio, media, Bluetooth, abilities, and settings, are functioning properly.

Central control display/central control main machine

Symptoms	Suspicious location
Central control display doesn't light up	1. Damage to the central control main machine 2. Long press POWER to turn off the screen 3. Wiring harness
Unclear display of the central control display	1. Damage to the central control main machine 2. Damage to the central control display 3. Wiring harness
Central control screen stuttering	1. Central control touch screen not working 2. Small memory of the central control main machine 3. Wiring harness
Buttons on either side of the central control screen not working	1. Display touch fault 2. Damage to the corresponding area of the main machine 3. Wiring harness

USB panel

Symptoms	Suspicious location
Unresponsive inserting of a USB flash drive	1. USB panel damage 2. The central control main machine can't be read 3. Wiring harness 4. Insensitivity of USB flash drive port
Charge failure after plugging in the cable	1. USB panel burnout, asks for replacement 2. Wiring harness (USB panel for data port not dedicated for charging)

12.10.4.2 Diagnostic description

Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

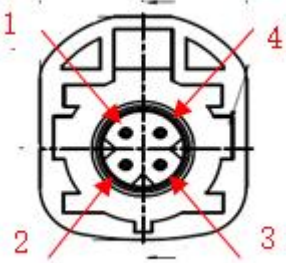
12.10.4.3 Definition of information system pin

1. 36PIN main interface definition

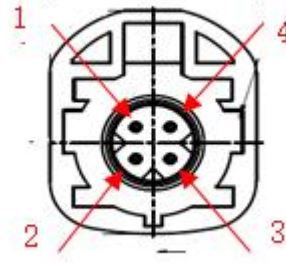
Pin Position Diagram	ISO 36PIN interface definition				
	Pin position	Function	Description	Voltage (V)	I/O Type
	A_1	NC			
	A_2	BACK	Reversing control input	12V	I
	A_3	NC			
	A_4	ACC	Ignition cable	12V	I
	A_5	BRKAE	Brake signal input		I
	A_6	ILL	Lamp activation control input	12V	I
	A_7	B	B+ power supply input	12V	I
	A_8	GND	Voltage grounding cable		I
	B_1	RR+	Right rear horn output+		O
	B_2	RR-	Right rear horn output-		O
	B_3	FR+	Right front horn output+		O
	B_4	FR-	Right front horn output-		O
	B_5	FL+	Left front horn output+		O
	B_6	FL-	Left front horn output-		O
	B_7	RL+	Left rear horn output+		O
	B_8	RL-	Left rear horn output-		O
	C_1	CAN_H	CAN bus CAN high	12V	O
	C_2	GND			I
	C_3	CAN_L	CAN bus CAN low	12V	I
	C_4	GND	Ground		O

C_5	ICT_RXD	Automated testing RX		I
C_6	ICT_TXD	Automated testing TX		O
C_7	MIC+output	TBOX MIC+output		O
C_8	MIC-output	TBOX MIC-output		O
C_9	NC			
C_10	SW_GND	On-board hardware area		I
C_11	SW_KEY	On-board hardware button		I
C_12	NC			
C_13	MIC+input	MIC signal input		O
C_14	MIC_PWR_IN	MIC power supply		O
C_15	A_GND	Audio ground		I
C_16	GND			I
C_17	GND			I
C_18	AUDIO_R_IN	T-BOX right channel input		I
C_19	AUDIO_L_IN	T-BOX left channel input		I
C_20	NC	NC		

2. Mina machine-side LVDS interface definition

Pin Position Diagram	Mina machine-side LVDS interface definition					
	Pin position	Function	Description	Voltage (V)	I/O Type	
	1	LVDS-	LVDS negative			I/O
	2	+5V	+5V power supply	5V	O	
	3	LVDS+	LVDS positive			I/O
	4	GND	Power supply GND	0V	O	
	5	Housings	Enclosure shield/grounding			

3. Mina machine-side USB interface definition

Pin Position Diagram	Mina machine-side USB interface definition					
	Pin position	Function	Description	Voltage (V)	I/O Type	
	1	DP	USB DP			I/O
	2	5V	USB 5V	5V	O	
	3	DN	USB DN			I/O
	4	GND	USB GND	0V	O	
	5	Housings	Enclosure shield/grounding			

4. Main machine-side reversing video port definition

Pin Position Diagram	Main machine-side reversing video interface definition				
	Pin position	Function	Description	Voltage (V)	I/O Type
	1	12V	Camera head power supply	12V	O
	2	CVBS_IN-	Video-		I
	3	GND	Ground		I/O
	4	NC			
	5	CVBS_IN+	Video+		I
	6	NC			
	7	NC			
	8	NC			

5. Screen-side LVDS Interface Definition

Pin Position Diagram	Screen-side LVDS interface definition				
	Pin position	Function	Description	Voltage (V)	I/O Type
	1	LVDS-	LVDS negative		I/O
	2	+5V	+5V power supply	5V	O
	3	LVDS+	LVDS positive		I/O
	4	GND	Power supply GND	0V	O
	5	Housings	Enclosure shield/grounding		

6. USB box interface definition

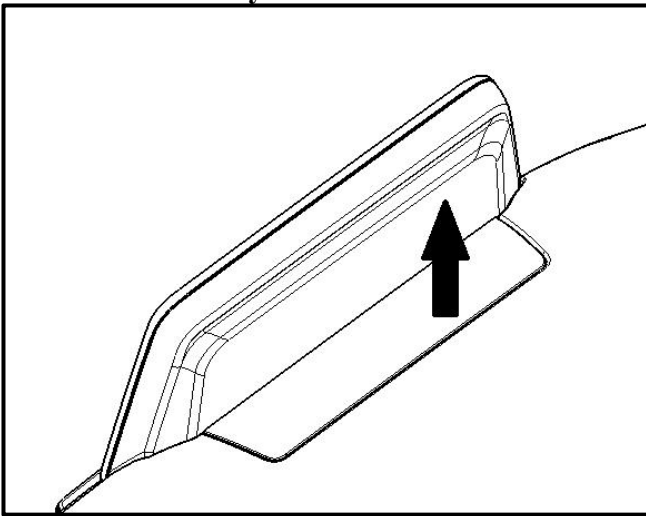
Pin Position Diagram	USB box interface definition				
	Pin position	Function	Description	Voltage (V)	I/O Type
	1	DP	USB DP		I/O
	2	5V	USB 5V	5V	O
	3	DN	USB DN		I/O
	4	GND	USB GND	0V	O
	5	Housings	Enclosure shield/grounding		

12.10.5 Disassembly and installation of infotainment system

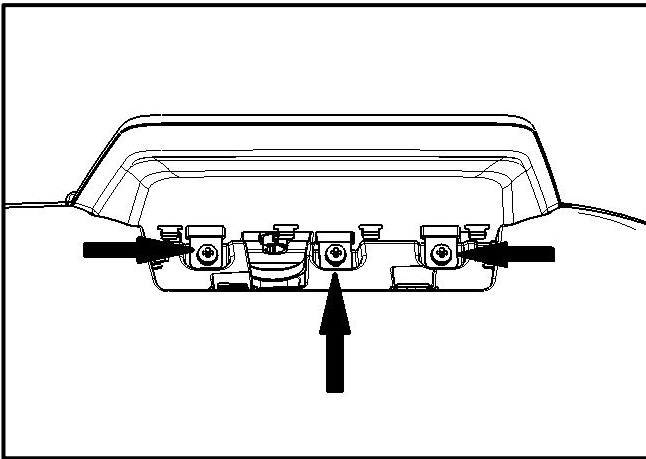
Caution

Precaution for the disassembly and installation of the central control display, central control main machine and USB panel interface: The full connection socket is provided with a hot-plugging function, any connection socket can be individually unplugged to troubleshoot the problem. (No wet hands on any of the plugs)

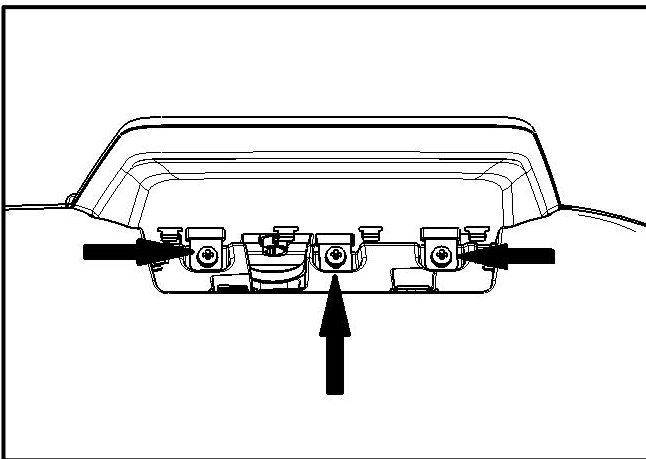
12.10.5.1 Disassembly and installation of the central control display



Disassembly procedure:
1. Disassemble the fixed base cover of the central control display;
Please refer to 13.5.3.5 Replacement of mounting plates of combination instruments on the instrument board

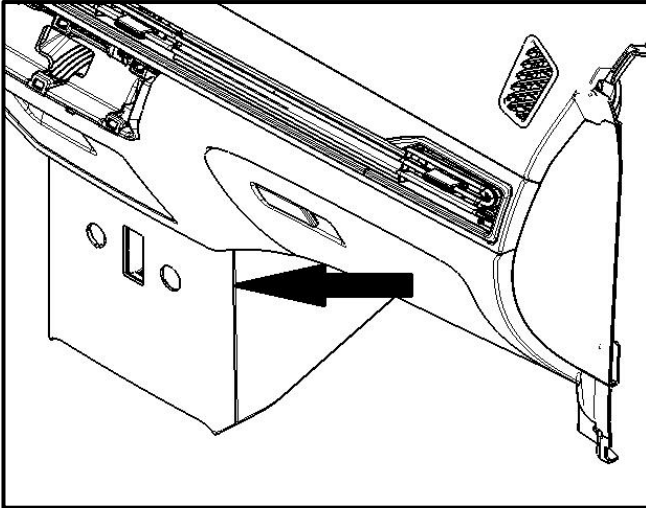


2. Remove 3 screws;
3. Remove the display;
4. Disconnect the central control display connector.

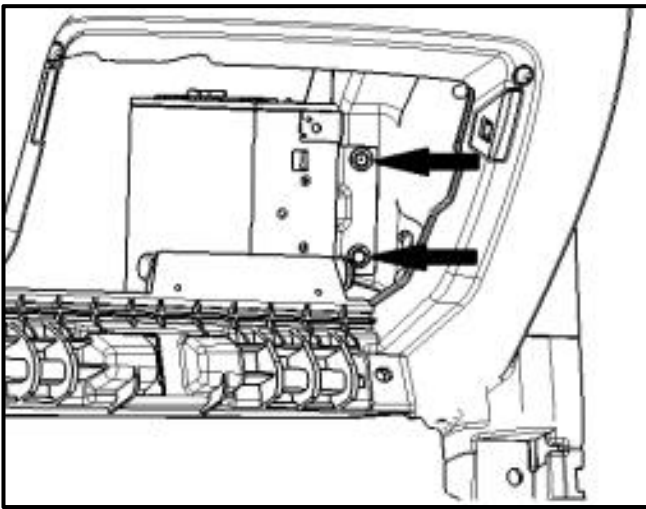


Installation procedure:
1. Connect the video cable;
2. Place the display in the interface position;
3. Screw in three screws;
4. Close the cover.
Please refer to 13.5.3.5 Replacement of mounting plates of combination instruments on the instrument board

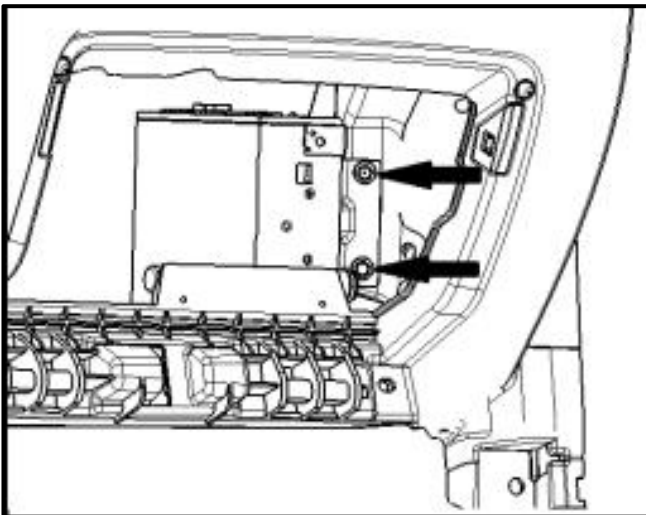
12.10.5.2 Disassembly and installation of the main machine of the central control panel



Disassembly procedure:
1. Remove the glove box;
Please refer to 13.5.3.8 Replacement of instrument boards

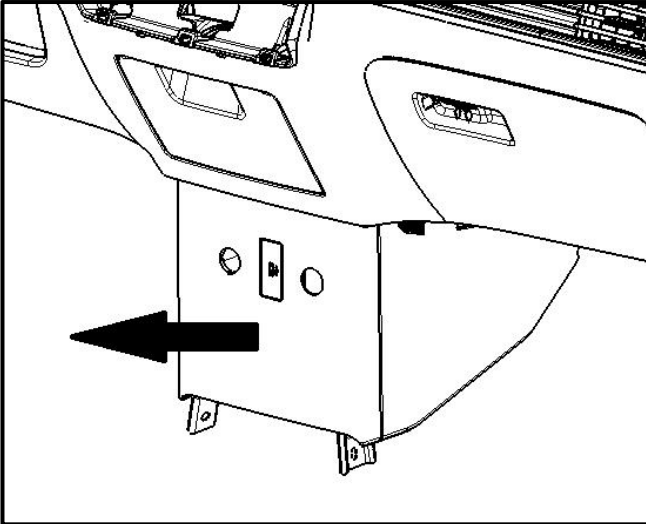


2. Remove two fixed bolts;
3. Unplug wiring harnesses one by one;
4. Remove the main machine of the central control screen.

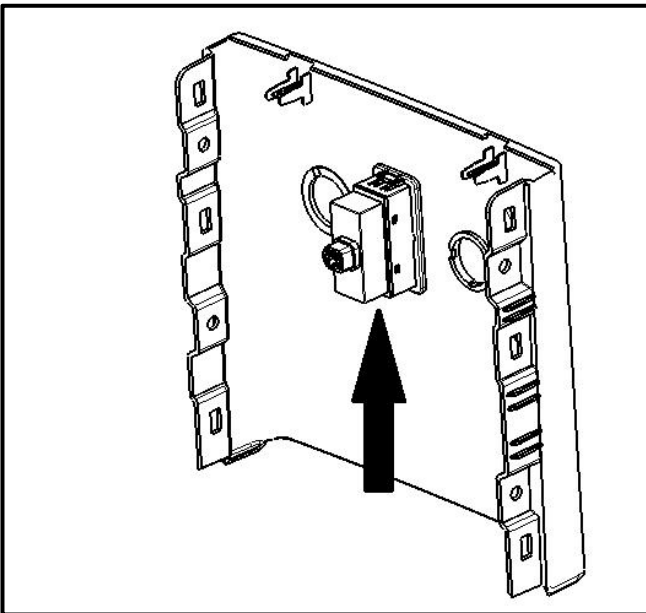


Installation procedure:
1. Connect the connectors one by one;
2. Install the main machine in the fixed position
3. Screw in two fixed screws;
4. Load the glove compartment.
Please refer to 13.5.3.8 Replacement of instrument boards

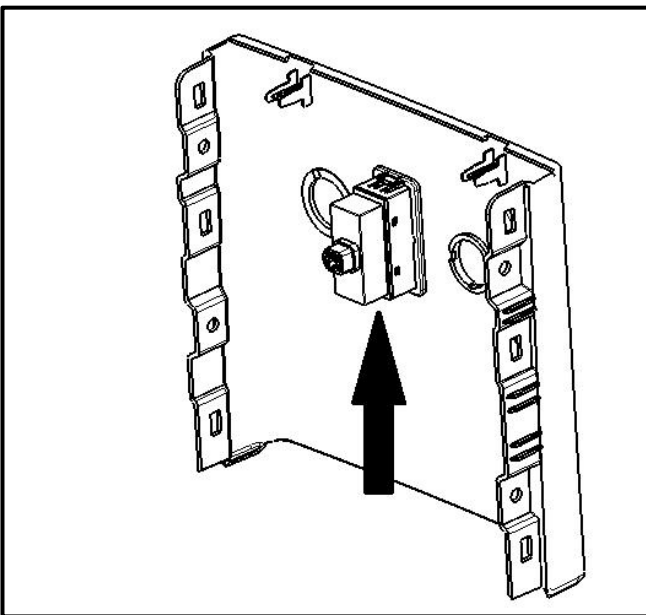
12.10.5.3 Disassembly and installation of USB



- Disassembly procedure:
1. Remove the central lower guard of the instrument board
Please refer to 13.5.3.8 Replacement of instrument boards



2. Remove the USB panel connector;
3. Disconnect the USB panel connector.



- Installation procedure:
1. Snap the USB panel back into the node;
 2. Connect the USB panel connector cable;
 3. Re-snap the guard into place.
- Please refer to 13.5.3.8 Replacement of instrument boards

12.11 Speaker devices

12.11.1 Specifications

12.11.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Cross-slotted semi-circular head tapping screw	ST4.8*16	5±1

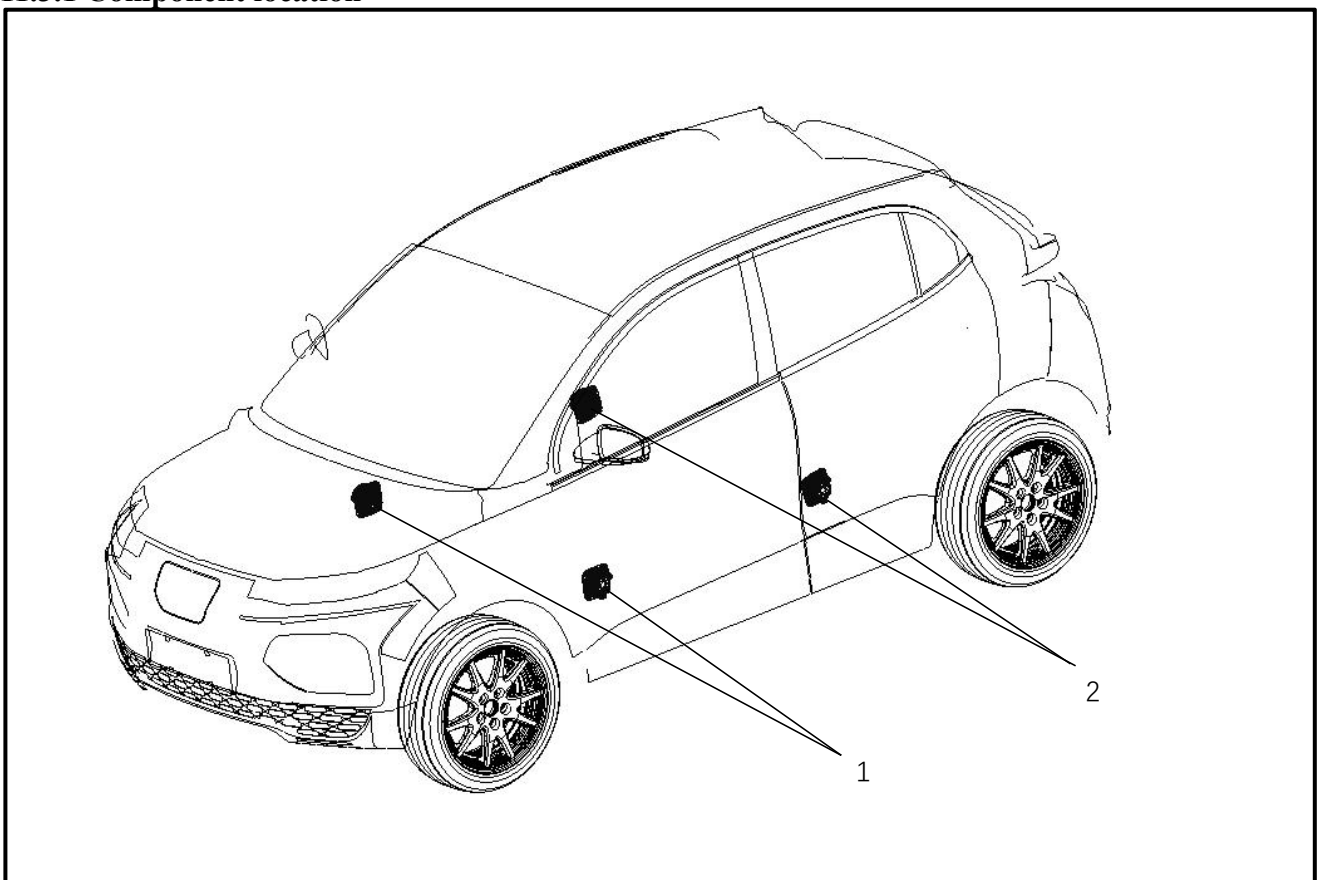
12.11.2 Description and operation

12.11.2.1 Overview

Electromagnetic conversion is applied to vibrate the speaker paper bowl to produce sound.

12.11.3 Component location

12.11.3.1 Component location



1. Low-frequency speaker

2. Full-frequency speaker

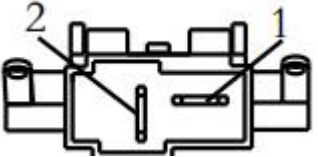
12.11.4 Diagnostic information and steps

12.11.4.1 Visual inspection

After removing the guard, check the speaker for any obvious damage, and it should be replaced in case of any damage

Speaker terminal information

Cable port definition	Pin No.	Port definition

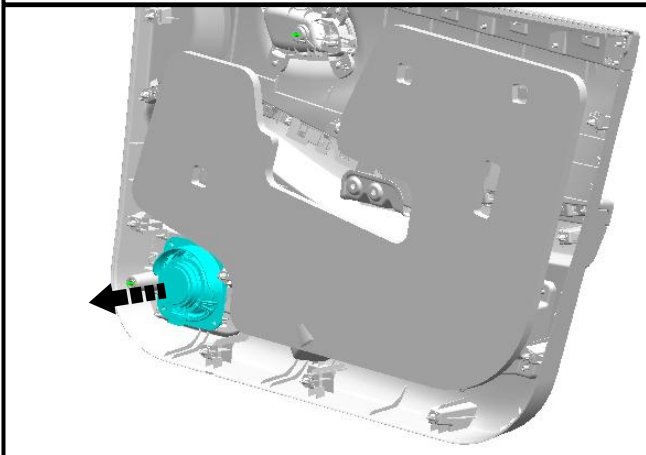
	1	Positive
	2	Negative

12.11.5 Disassembly and installation

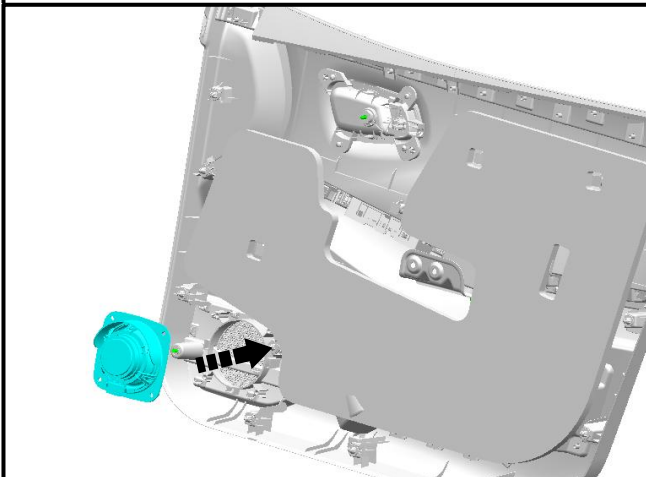
12.11.5.1 Disassembly and installation of speaker



Disassembly process
 1. Remove the guards of the four doors
 Please refer to 13.6.2.1 Replacement of front door guard assembly and 13.6.2.2 Replacement of rear door guard assembly



2. Remove the speaker with an electric tool



Installation process
 1. Place the speakers on the door guard speaker brackets;
 2. Install the speaker with an electric tool;
 3. Snap on the guards of the four doors.
 Please refer to 13.6.2.1 Replacement of front door guard assembly and 13.6.2.2 Replacement of rear door guard assembly

12.12 Combination instrument system

12.12.1 Specifications

12.12.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Cross-slotted pan head screws, spring washers and flat washers fittings	ST4.8*16	5±1

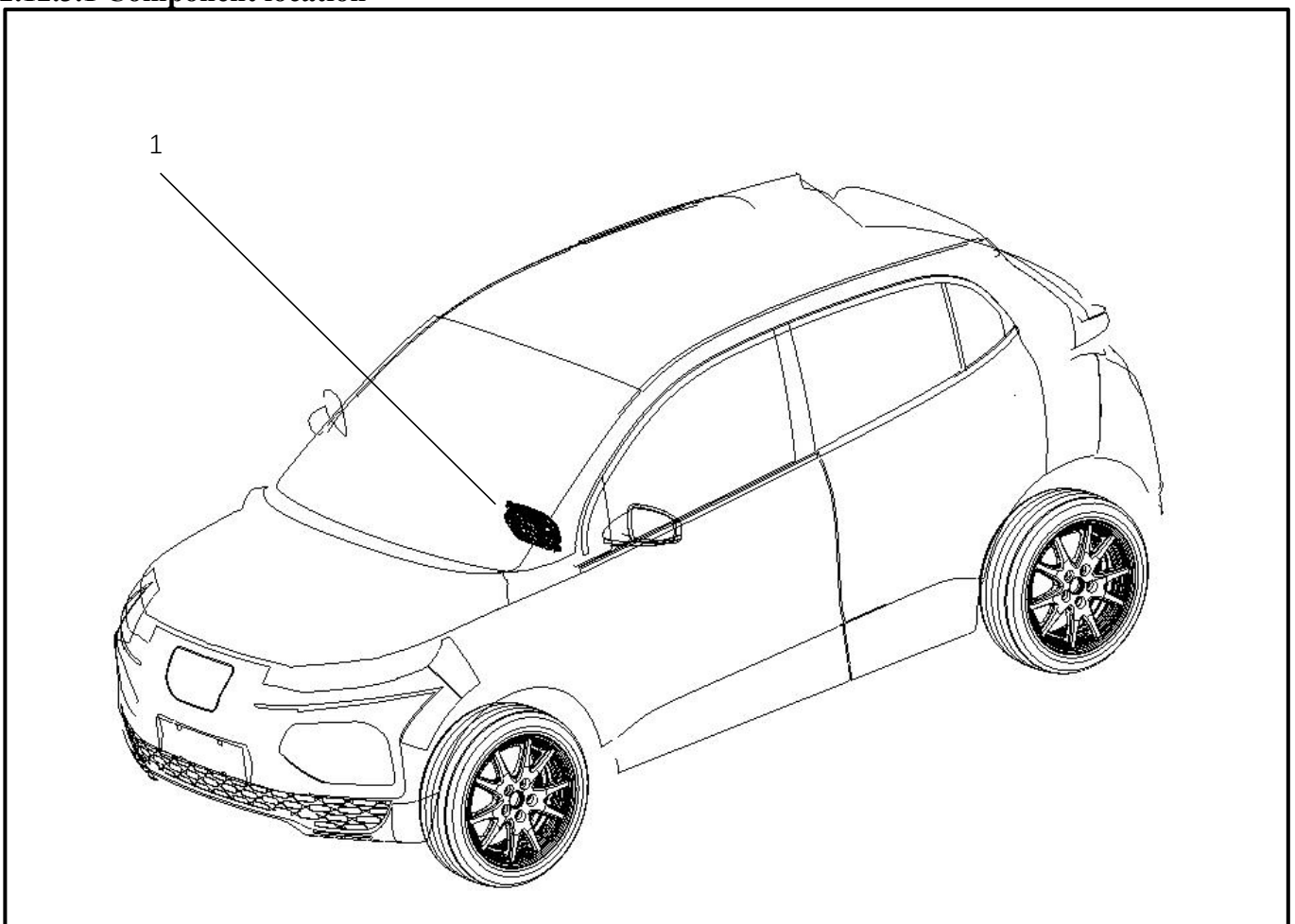
12.12.2 Description and operation

12.12.2.1 Description and operation

An alarm and display device that indicates the status of a vehicle and indicates vehicle faults

12.12.3 Component location

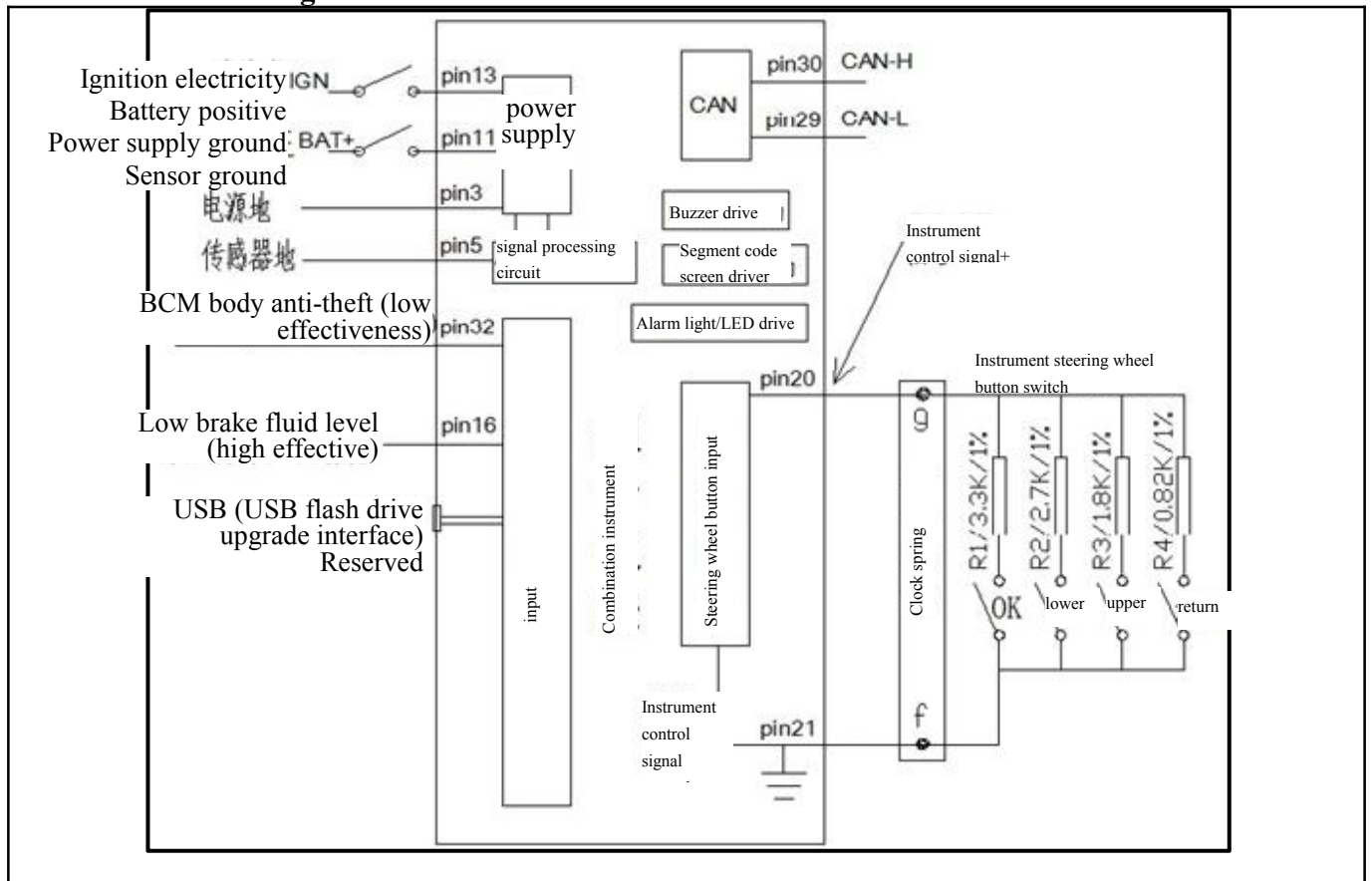
12.12.3.1 Component location



1. Combination instrument

12.12.4 Electrical block diagram

12.12.4.1 Electrical diagram



12.12.5 Diagnostic information and steps

12.12.5.1 Diagnostic description










Users must get familiar with the functionality and operation content of the system before system diagnosis. This will help determine the correct fault diagnosis steps in the event of a fault. More importantly, this will help determine whether or not the condition described by the customer is normal.

12.12.5.2 Routine inspection

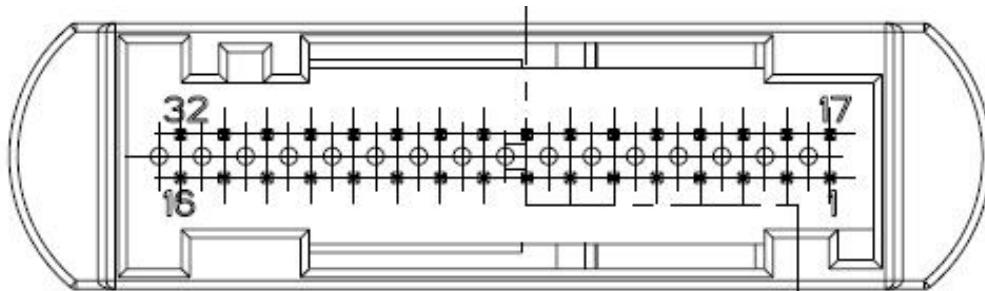
First look at which indicator light is lit, and then determine which specific control module is faulty according to the corresponding indicator light

S.N.	Functional description	Symbolic graphics	Color
1	Driving mode (normal mode)	NORMAL	Orange (color)
2	Driving mode (economic mode)	ECO	Green
3	Driving mode (sport mode)	SPORT	Red (color)
4	Vehicle is ready.	READY	Green
5	Left turn, right turn, double flashers		Green

6	Position light indication		Green
7	Low beam indicator		Green
8	High beam indicator		Blue (color)
9	Daytime running light indicator		Green
10	Front Fog Lamp Indication		Green
11	Rear Fog Lamp Indication		Yellow (color)
12	Door open alarm		Red (color)
13	Alarm for anti-theft authentication failure		Yellow (color)
14	Body anti-theft indicator		Red (color)
15	Tire pressure fault, alarm, unlearned		Yellow (color)
16	Battery charging and discharging indication		Red (color)
17	Power battery fault/Power battery insulation fault/Power battery temperature alarm		Red (color)
18	Low power charge state		Yellow (color)
19	Charging gun connection status indication/charging status indication		Red/Green
20	Heating/cooling of battery pack		Yellow/Blue
21	Motor overheating		Red (color)
22	Motor fault		Red (color)
23	Turtle light (limp indication)		Yellow (color)
24	Vehicle Fault Alarm		Red/Yellow
25	Cruise control indicator		Green, White
26	Steep hill descent indication		Green
27	EPS fault alarm		Red (color)
28	Low brake fluid level, vacuum pump fault, EBD fault		Red/Yellow
29	ABS malfunction alarm		Yellow (color)

30	Parking brake indicator		Red (color)
31	Manual release of EPB without brake alerts		Yellow (color)
32	Alarm for not fastening seat belt of driver's seat		Red (color)
33	Alarm for not fastening seat belt of passenger's seat		Red (color)
34	Airbag Malfunction Alarm		Red (color)
35	Overspeed alarm		Yellow (color)
36	Maintenance Tips		Yellow (color)
37	Power battery thermal diffusion warning (display text "battery on fire, stop and evacuate immediately")		Red (color)
38	PEPS alarm		Red/Yellow
39	Parking brake system fault		Yellow (color)

12.12.5.3 Combination instrument terminal list



Pin number	Pin description	Rated current (A) (12V, 25°C)
1		
2		
3	Negative battery terminal GND	1
4		
5	Sensor ground gnd	1.2mA
6		
7	CAN2-L (reserved)	NA
8	CAN2-H (reserved)	NA
9		
10		
11	Positive battery terminal B+	0.5
12		
13	Ignition electricity IG	1.2mA
14		
15		
16	Brake fluid level sensor	150mA
17		
18		

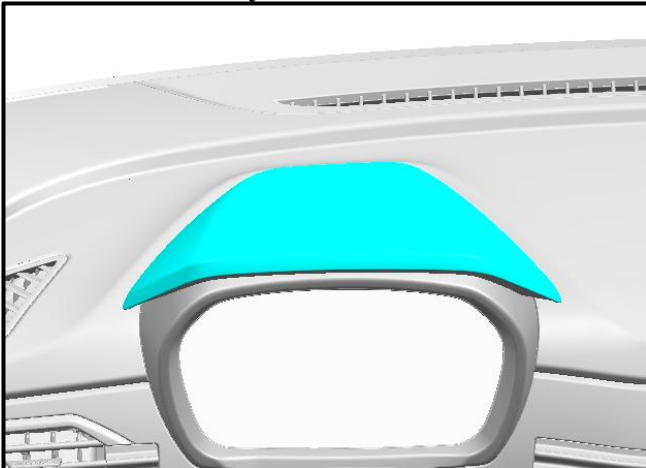
19		
20	Steering wheel buttons IN+	
21	Ground terminal of steering wheel buttons	
22		
23		
24	Reserved (active high 1)	
25	Reserved (active high 2)	
26	Reserved (active low 1)	
27	Reserved (active low 2)	
28		
29	CAN1-L	NA
30	CAN1-H	NA
31		
32	Body anti-theft indicator (BCM console)	1.2mA

12.12.5.4 Diagnostic List of Combined Instrument

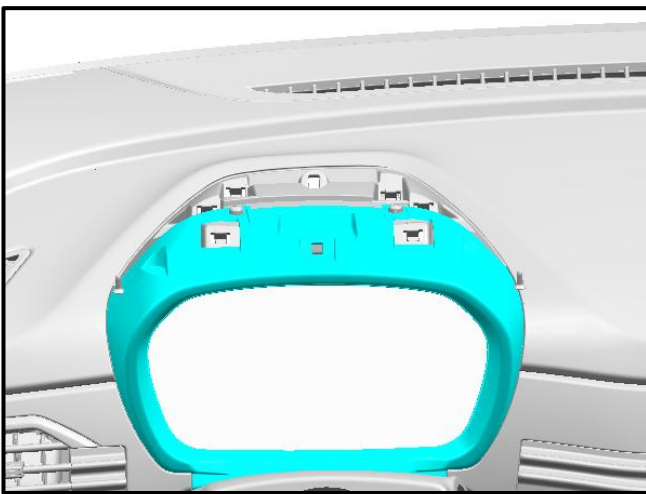
S.N.	Fault code	Fault description
1	D10017	15.5V < Voltage < 16V, KL15on, t > 500ms
2	D10016	10v > Voltage > 9.5V, KL15 on, t > 500ms
3	C05588	Message received AND message sent on CAN successfully
4	C10087	Frames from ID 0x3C0 received again
5	D00087	Frames from ID 0x251 received again
6	C10187	Frames from ID 0x101 received again
7	C10287	Frames from ID 0x111 received again
8	C12187	Frames from ID 0x226 received again
9	C14087	Frames from ID 0x302 received again
10	C16487	Frames from ID 0x395 received again
11	D00587	Frames from ID 0x385 received again
12	C19887	Frames from ID 0x61B received again
13	C14587	Frames from ID 0x190 received again
14	C12887	Frames from ID 0x85 received again

12.12.6 Disassembly and installation

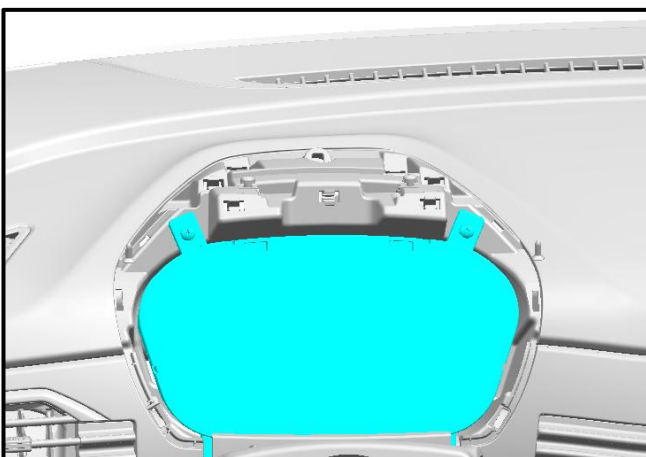
12.12.6.1 Disassembly and installation of combination instrument



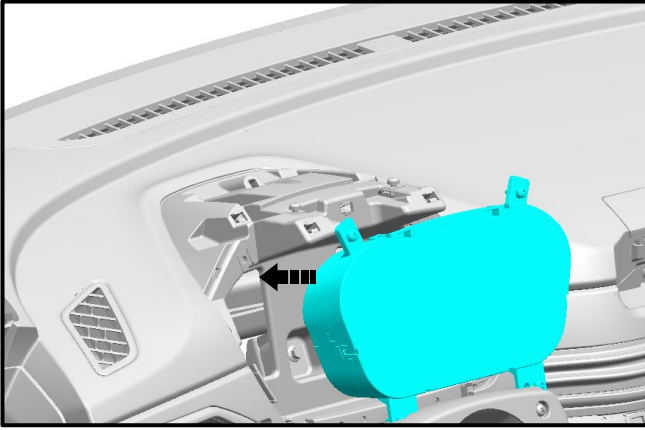
Disassembly process
1. Dismantle the brim assembly
Please refer to 13.5.3.2 Replacement of brim assembly



2. Remove the combination instrument cover assembly
Please refer to 13.5.3.3 Replacement of dashboard steering cover



3. Remove the screws with a power tool;
4. Remove the instrument.



Installation process

1. Place the instrument;
2. Tighten the screws with a power tool;
3. Install the combination instrument cover;
Please refer to 13.5.3.3 Replacement of dashboard steering cover
4. Install the brim assembly.
5. Please refer to 13.5.3.2 Replacement of brim assembly

12.13 Shark fin antenna

12.13.1 Specifications

12.13.1.1 Fastener specifications

Fastener name	Rules and regulations	Torque range (N·m)
Fixed shark fin antenna with roof sheet metal	M14	11±1

12.13.1.2FM range

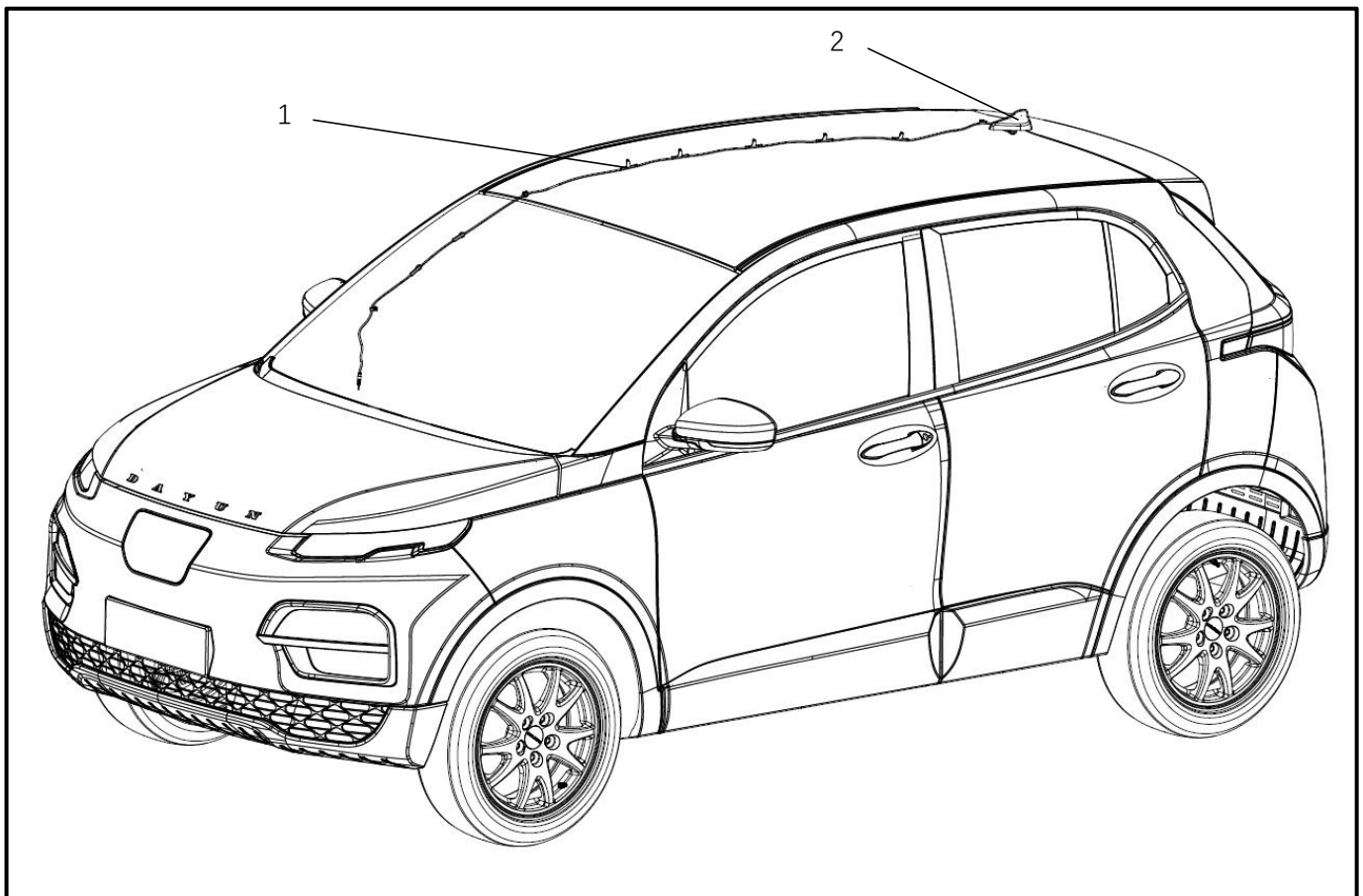
AM:522KHz~1710KHz;

AM:87.5MHz~108MHz.

12.13.1.3 Operation and Description

The shark fin antenna is connected to the center console and mainly provides radio signals to the center console.

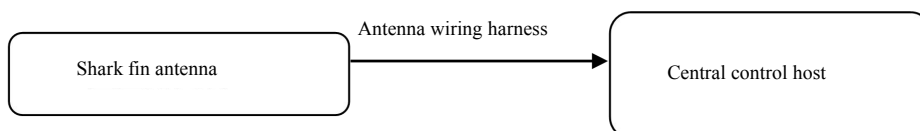
12.13.2 Component location



1. Antenna harness

2. Shark fin antenna

12.13.3 Electrical block diagram

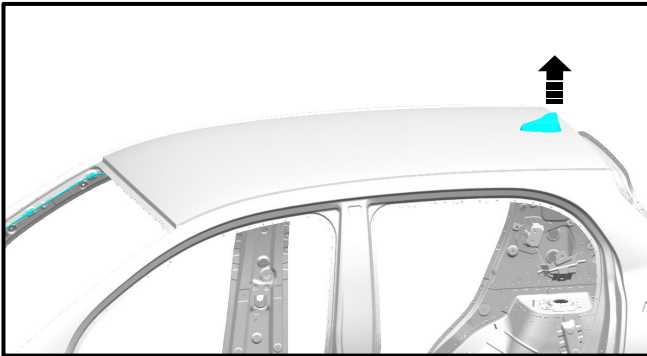


12.13.4 Diagnostic information and steps

The antenna mainly provides signals for the radio. In case of unstable signals, this order should be followed to check.

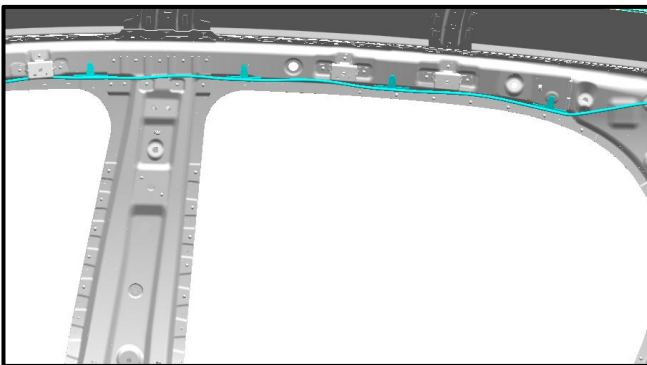
1. Confirm the presence of buildings or equipment such as high-voltage lines, train stations, TV stations, etc. in the vicinity of the vehicle.
2. Confirm whether the vehicle is placed in an underground parking lot or a confined space with weak signals.
3. Check the looseness of the connection between the shark fin antenna and the host.

12.13.5 Disassembly and installation

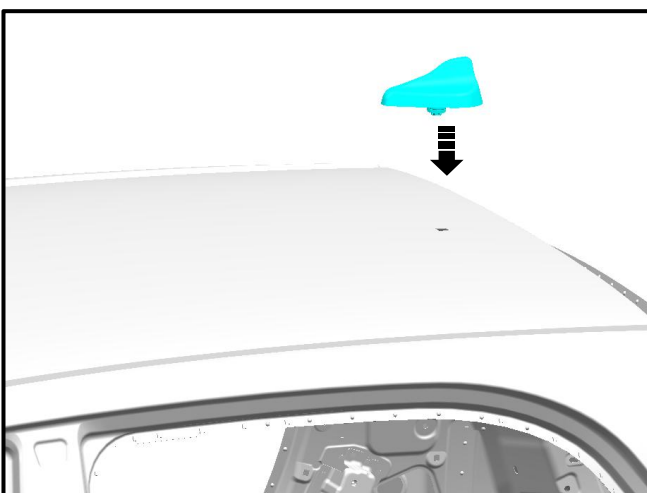


Disassembly process

1. Disconnect the negative battery terminal.
2. Remove the ceiling. Please refer to 13.6.2.16 Replacement of ceiling body assembly;
3. Remove the shark fin antenna by unscrewing the mounting nut;



4. Check the antenna wire harness clip on the side sheet metal;
5. Remove the antenna harness.

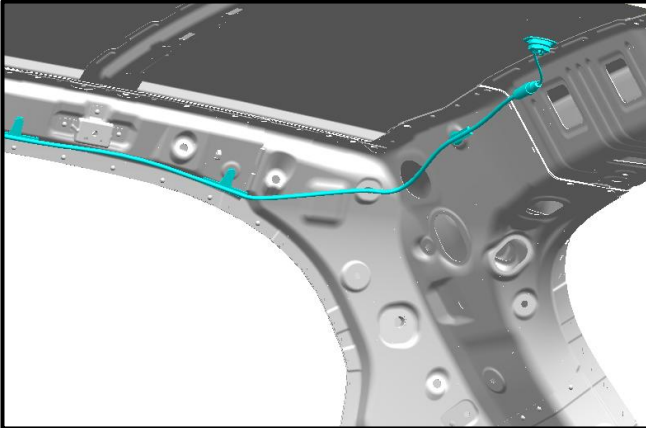


Installation process

1. First manually unscrew the antenna mounting nut, align the antenna studs with the body holes and place them in the forward direction of the vehicle;
2. Tighten the nuts with a torque of $11\pm 1\text{N}\cdot\text{m}$;

Yuehu Maintenance Manual

3. Snap the antenna harness to the side sheet metal and connector, and connect it to the shark fin antenna.



12.14 Seat

12.14.1 Specifications

12.14.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolts of front seat	M10×20	45±3
Fixed bolts for the rear seat backrest	M10×20	45±3
Fixed bolts for the lock hook of the rear seat backrest	M8×20	25±3

12.14.2 Description and operation

12.14.2.1 Overview

1. System composition

- Seat cushion
- Backrest
- Seat headrest
- Manual front and rear seat adjustment switches
- Manual seat backrest angle adjustment switch

2. Function Introduction

- The seat switch can be used to manually adjust the front, rear, and backrest angles of the seat. See the instruction manual for details on how to use the function.

12.14.3 System operating principle

12.14.3.1 System operating principle

1. Manual front and rear seat adjustment switches

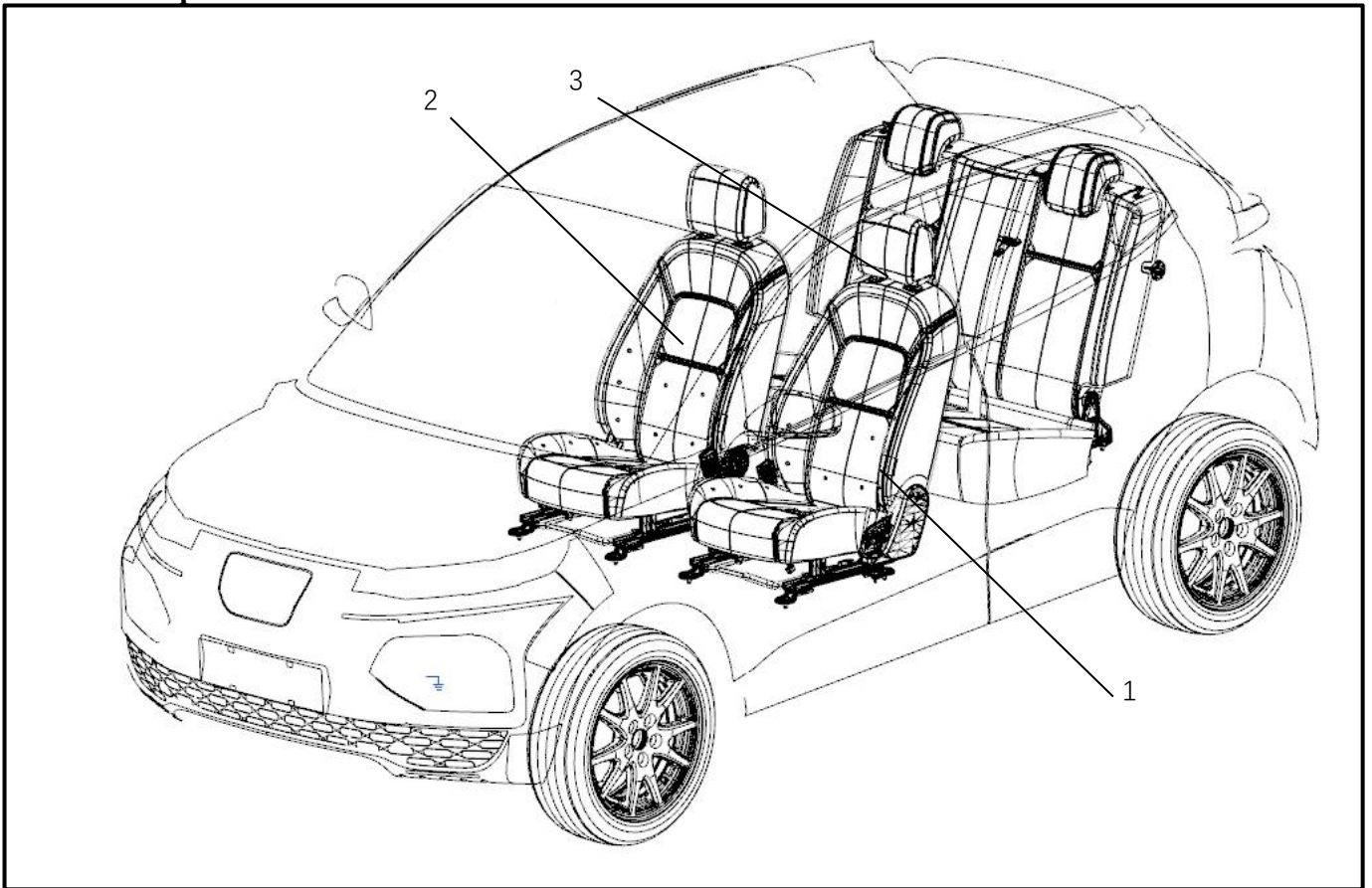
The front and rear seat adjustment switches control the locking of the seat slides, which can manually adjust the front and rear positions of the seat after unlocking, and the switch will lock after resetting.

2. Manual seat backrest adjustment switch

The front and rear seat adjustment switches control the locking of the seat backrest, which can manually adjust the angle positions of the seat backrest after unlocking, and the switch will lock after resetting.

12.14.4 Component location

12.14.4.1 Component location



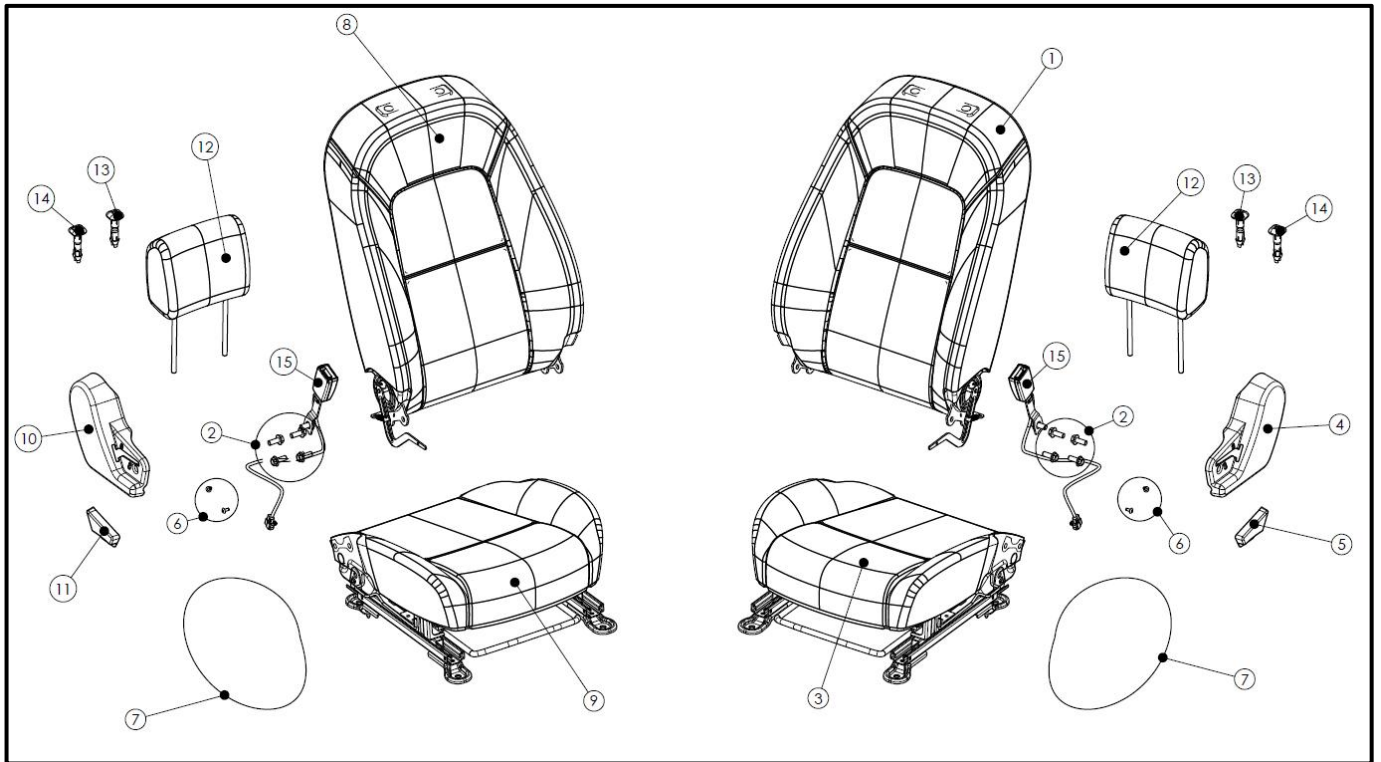
- 1. Left front seat unit
- 2. Right front seat device

- 3. Rear seat device

12.14.5 Breakdown drawing

12.14.5.1 Breakdown drawing

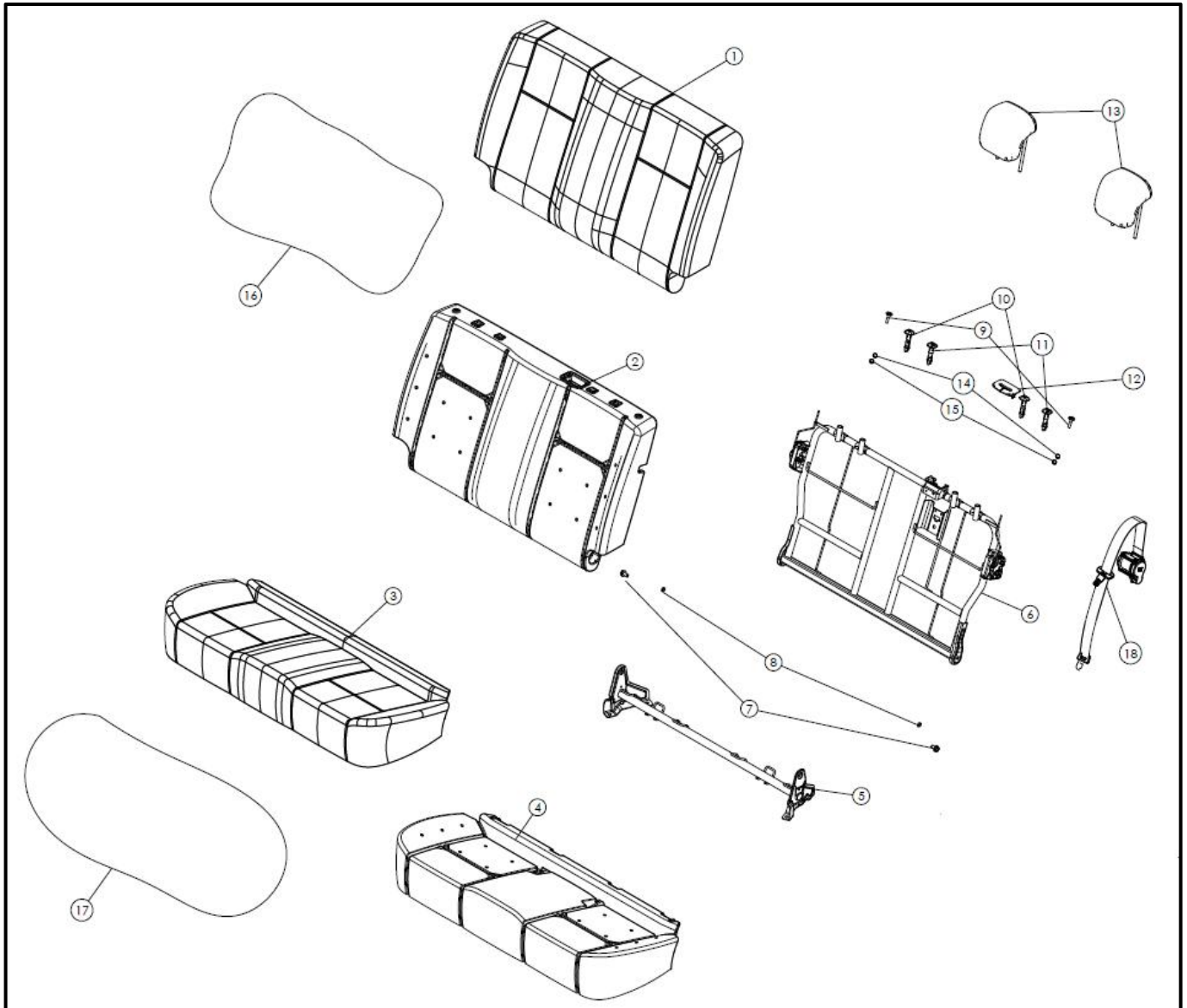
Front seats:



- 1. Backrest assembly of the driver's seat
- 2. Hexagon head flange bolts
- 3. Seat cushion assembly of the driver's seat
- 4. Left side cover of the driver's seat
- 5. Left side adjustment handle
- 6. Cross-slotted pan head tapping screw
- 7. Integral packaging bag
- 8. Backrest assembly of the passenger's seat

- 9. Seat cushion assembly of the passenger's seat
- 10. Right side cover of the passenger's seat
- 11. Right adjustment handle
- 12. Front headrest assembly
- 13. Assembly of headrest guide sleeve free end
- 14. Assembly of headrest guide sleeve locking end
- 15. Front seat belt buckle assembly

Rear seats:



1. Backrest assembly of the driver's seat
2. Hexagon head flange bolts
3. Seat cushion assembly of the driver's seat
4. Left side cover of the driver's seat
5. Left side adjustment handle
6. Cross-slotted pan head tapping screw
7. Integral packaging bag
8. Backrest assembly of the passenger's seat

9. Seat cushion assembly of the passenger's seat
10. Right side cover of the passenger's seat
11. Right adjustment handle
12. Front headrest assembly
13. Assembly of headrest guide sleeve free end
14. Assembly of headrest guide sleeve locking end
15. Front seat belt buckle assembly

12.14.6 Diagnostic information and steps

12.14.6.1 Diagnostic description

Familiarizing yourself with the function and operation of the seating system before you begin diagnosing the system will help you determine the correct troubleshooting steps to take in the event of a malfunction, and more importantly, will help you determine if the condition described by the customer is normal operation.

12.14.6.2 Visual inspection

1. Check for aftermarket add-ons that may affect the operation of the seating system.
2. Check system components easily accessible or visible for obvious damage or conditions that could cause a fault.
3. In case of failure of alarm for not fastening seat belt, any poor contact or disconnection faults at the power supply or circuit should be checked and repaired before checking.

12.14.7 Disassembly and installation

12.14.7.1 Replacement of front seat assembly

Disassembly process

Caution:

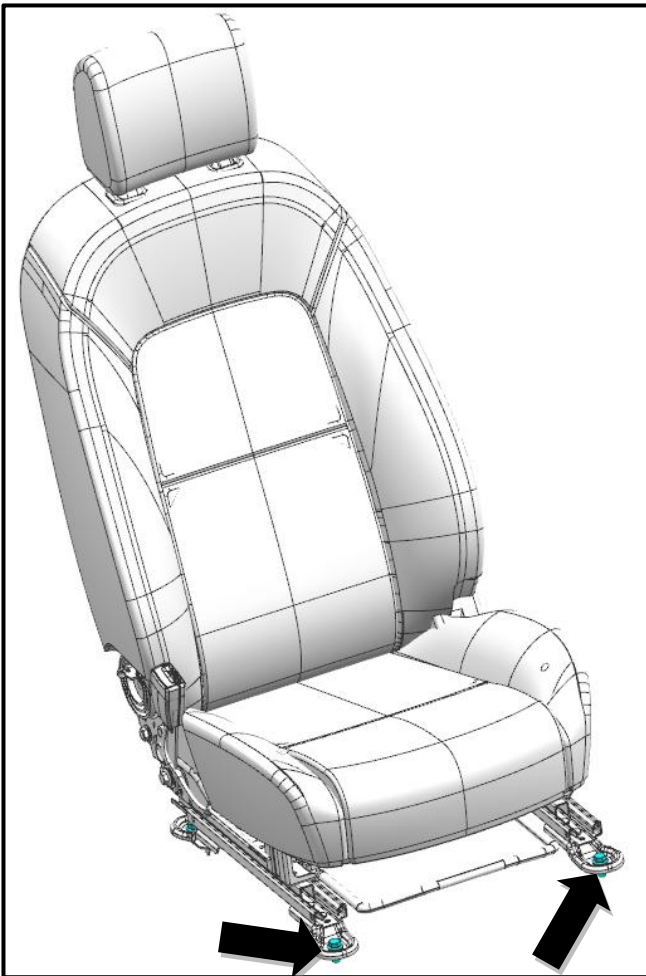
Safety should be observed during the removal, handling and installation of the seat, ensuring not to be scratched or crushed by the seats.

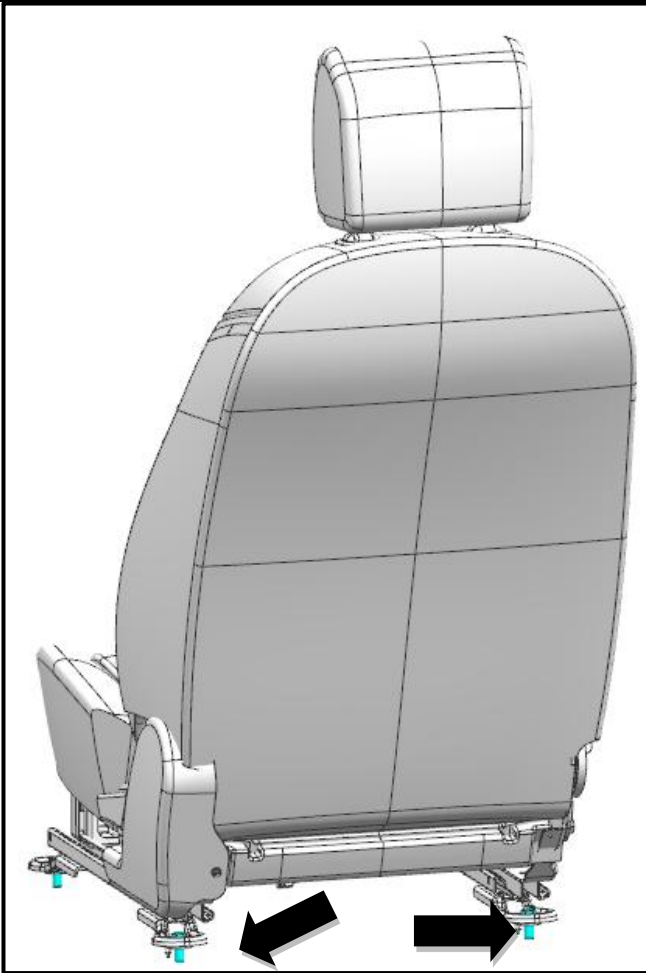
The protection of the interior parts during installation and handling should be paid attention to, and it is important not to scratch the side panels.

After installation, the tightening torque of the mounting bolts should be checked.

Please refer to the driver's seat for the removal method of the passenger's seat.

1. Remove the driver's seat
 - a. Remove the 2 front bolts.
 - b. Move the seat to the forefront.





- c. Remove the 2 rear bolts
- d. Disconnect the harness connector.
- e. Remove the driver's seat.

Installation process

Caution:

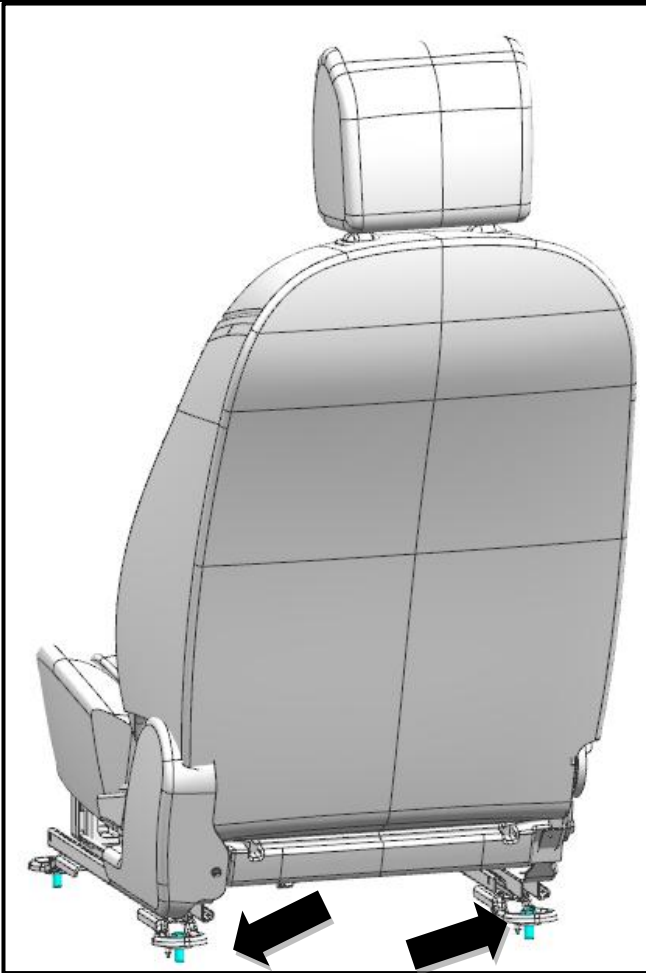
Safety should be observed during the removal, handling and installation of the seat, ensuring not to be scratched or crushed by the seats.

The protection of the interior parts during installation and handling should be paid attention to, and it is important not to scratch the side panels.

After installation, the tightening torque of the mounting bolts should be checked.

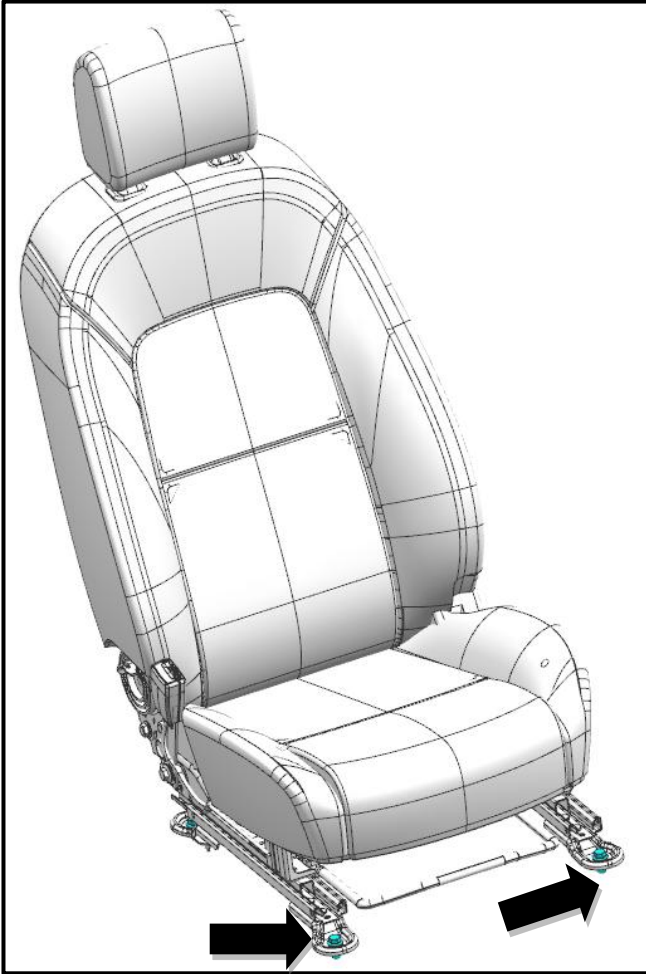
Please refer to the driver's seat for the installation method of the passenger's seat.

1. Install the driver's seat
 - a. Place the driver's seat.
 - b. Connect the harness connector.



- c. Install the 2 rear bolts.
- d. Move the seat to the rearmost end.

e. Install the 2 front bolts.



12.14.7.2 Replacement of rear seat cushion

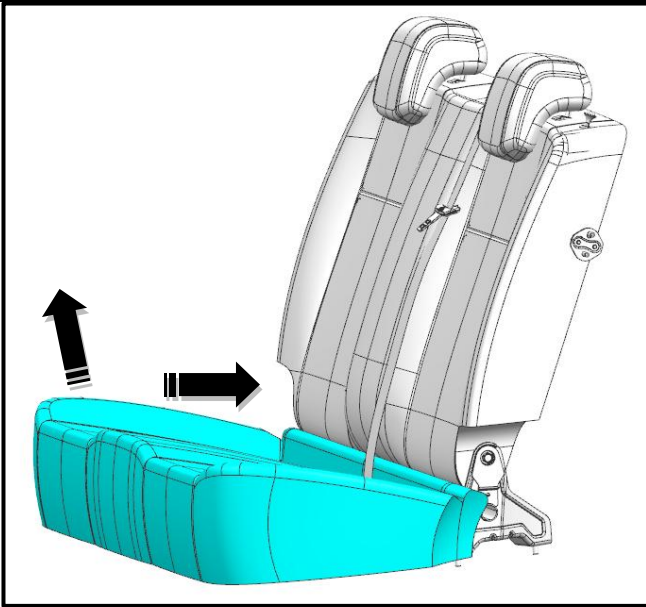
Disassembly process

Caution:

Safety should be observed during the removal, handling and installation of the seat, ensuring not to be scratched or crushed by the seats.

The protection of the interior parts during installation and handling should be paid attention to.

1. Remove the rear cushion



- a. Remove the cushion by first lifting the front end upwards to separate the two ferrules that hold the cushion to the body, then push it back to remove the cushion.
- b. Remove the rear seat cushion assembly.

Installation process

Caution:

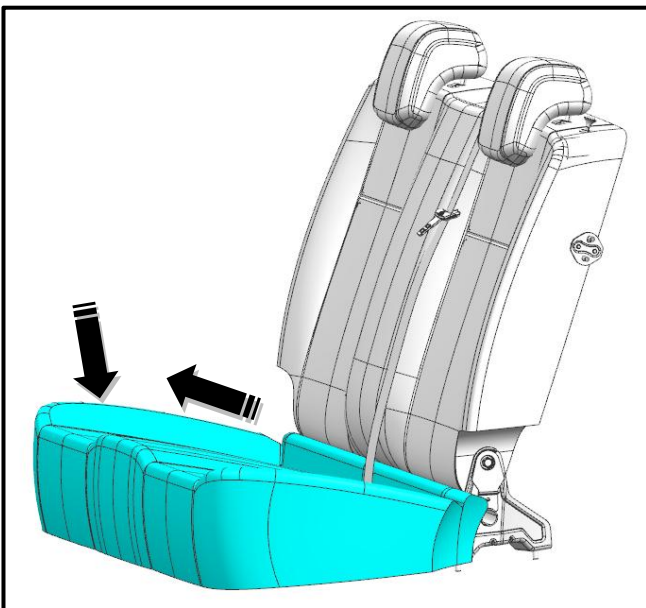
Safety should be observed during the removal, handling and installation of the seat, ensuring not to be scratched or crushed by the seats.

The protection of the interior parts during installation and handling should be paid attention to.

1. Installation of rear cushions

- a. Place the rear cushion.

- b. Pull the cushion forward, then press down on the forefront of the rear cushion to ensure that it is secured to the lower ferrule.



12.14.7.3 Replacement of rear seat backrest

Disassembly process

Caution:

Safety should be observed during the removal, handling and installation of the seat, ensuring not to be scratched or crushed by the seats.

The protection of the interior parts during installation and handling should be paid attention to.

1. Disassemble the rear seat cushions. Please refer to

12.14.7.2 Replacement of rear seat cushions

2. Please refer to 13.6.2.10 Replacement of rear door sill guard assembly to disassemble the left rear door sill guard assembly

3. Please refer to 13.6.2.13 Replacement of rear back door sill guard assembly to disassemble the rear back door sill guard assembly

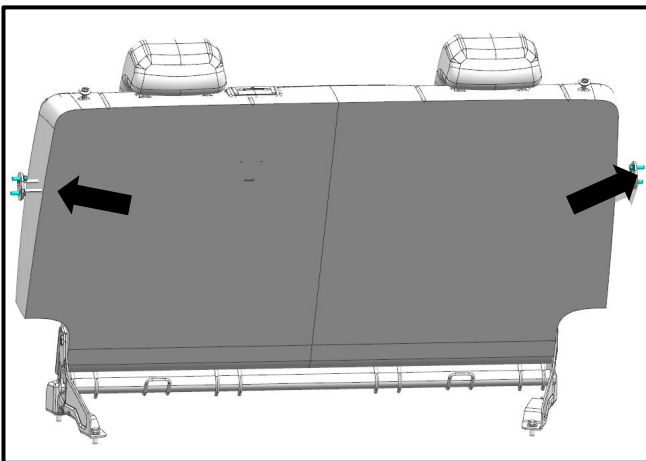
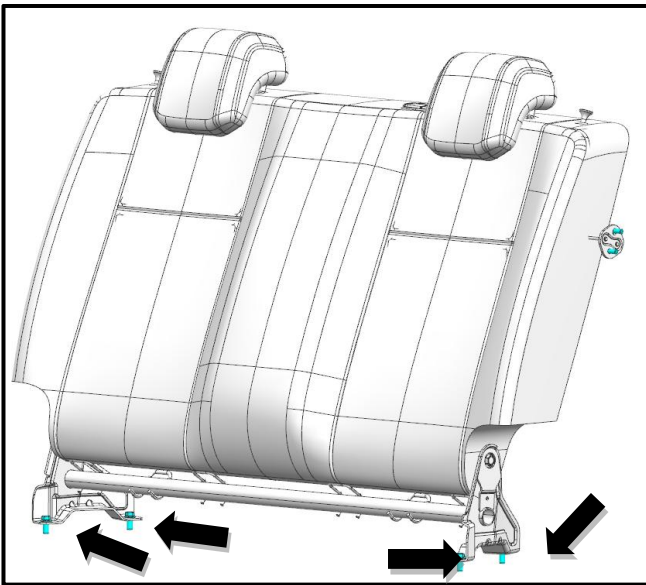
4. Disassemble the C-pillar lower guard panel assembly. Please refer to 13.6.2.12 Replacement of C-pillar lower guard panel assembly

5. Disassemble the C-pillar upper guard panel assembly. Please refer to 13.6.2.11 Replacement of C-pillar upper guard panel assembly

6. Remove the rear seat belt single head latch assembly; Please refer to 10.3.8.2 Replacement of rear seat belt single head latch

7. Remove the rear seat backrest

a. Remove the fixed bolts at the bottom of the rear backrest.



b. Remove the fixed bolts of lock hook of the rear backrest.

c. Remove the rear backrest

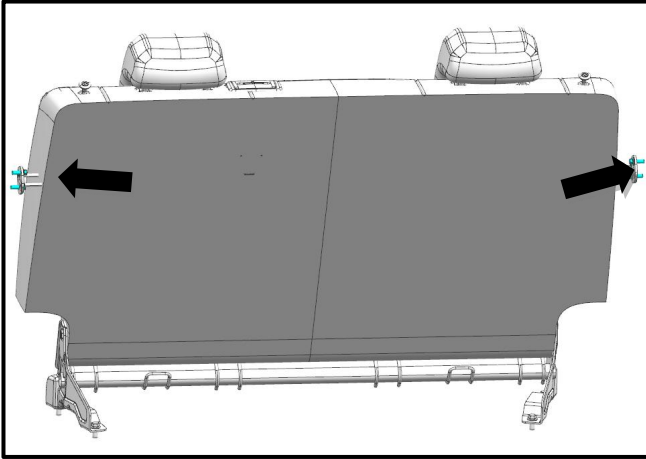
Installation process

Caution:

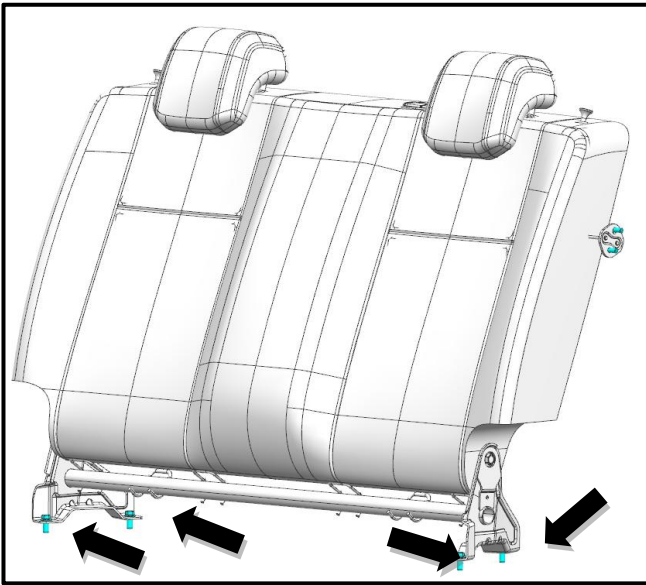
Safety should be observed during the removal, handling and installation of the seat, ensuring not to be scratched or crushed by the seats.

The protection of the interior parts during installation and handling should be paid attention to.

1. Install the rear seat backrest



a. Install the fixed bolts at the bottom of the rear backrest.



b. Install the fixed bolts of lock hook of the rear backrest.

2. Install the rear seat belt single head latch assembly, and share the same bolt as the lower center retractor mounting point

3. Install both side C-pillar upper guard panel assemblies

4. Install both side C-pillar lower guard panel assemblies

5. Install the rear back door sill guard assembly

6. Install rear door sill guard panel assemblies on both sides

7. Install rear seat cushions

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13.1 Warnings and precautions

13.1.1 Warnings and precautions

13.1.1.1 Warnings and precautions

Warnings about collision and profiling

Warning!

Dissect only in the recommended areas. Failure to do so could jeopardize the structural integrity of the vehicle and could result in personal injury in the event of a vehicle collision.

Warnings about window cracks

Warning!

If any window is cracked but still intact, protective tape should be applied to the window in a crisscross pattern to prevent further damage to the window or personal injury.

Warnings about the handling of glass and sheet metal

Warning!

For handling any type of glass or metal plate with sharp edges or burrs, approved goggles and gloves should be worn to reduce the risk of personal injury.

Warning about goggles and compressed air

Warning!

It is required to wear protective goggles when using compressed air to avoid damaging the eyes. Important notes on exterior logo removal

Caution

Plastic flat edged tools should be used for dismantling signs/nameplates to avoid damaging the paint.

Cautions for damage to the machined surface

Caution

Do not etch, scratch or damage the sealing surface. The sealing surface is the machined surface. Damage to machined surfaces can cause leaks.

Cautions for sealants

Caution

Do not allow room temperature hardening sealant to enter the threaded blind holes. If the room temperature hardening sealant enters the threaded blind hole, the fastener will have a hydraulic locking effect when tightened. Hydraulic locking of fasteners can cause damage to fasteners and/or other components. And it also prevents the fastener from getting the correct clamping force when tightening. Incorrect clamping force can prevent the

component from getting a proper seal, which can lead to leakage. Failure of fasteners to tighten properly can make components loosen or separated, leading to serious damage to vehicle.

13.2 Front end of the body

13.2.1 Replacement of front bumper cross beam assembly

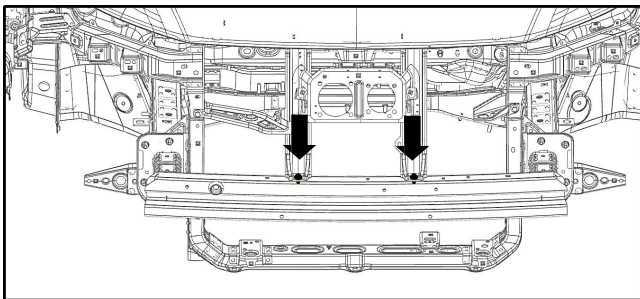
13.2.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed nuts on both sides of the front bumper cross beam	M10	32±3

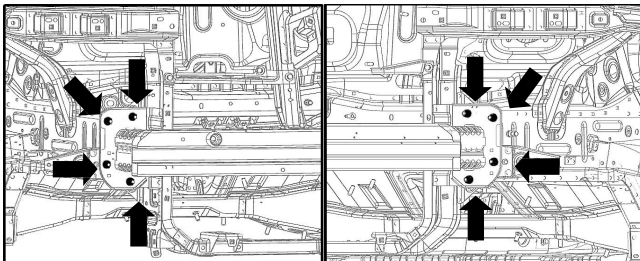
13.2.1.2 Disassembly and installation

Disassembly process

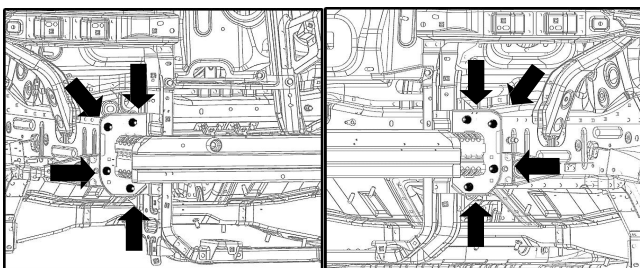
1. Open the front cabin cover.
2. Disassemble the front bumper unit; Please refer to 13.7.2.7 Replacement of front bumper
3. Remove the left combination headlamp assembly and the right combination headlamp assembly; Please refer to 12.1.4.1 Lamp system removal and installation for Yuehu VIP model
4. Remove the wire harness catch from the front bumper cross beam
5. Remove the two bolts securing the charging port mounting bracket assembly



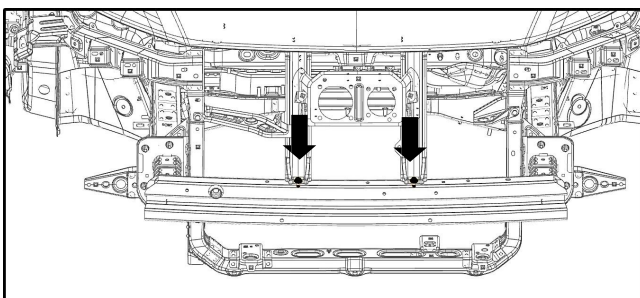
6. Remove the 8 M10 nuts from the front bumper cross beam assembly



- ##### Installation process
1. Install the 8 M10 nuts of the front bumper cross beam assembly



2. Install the two bolts securing the charging port mounting bracket assembly



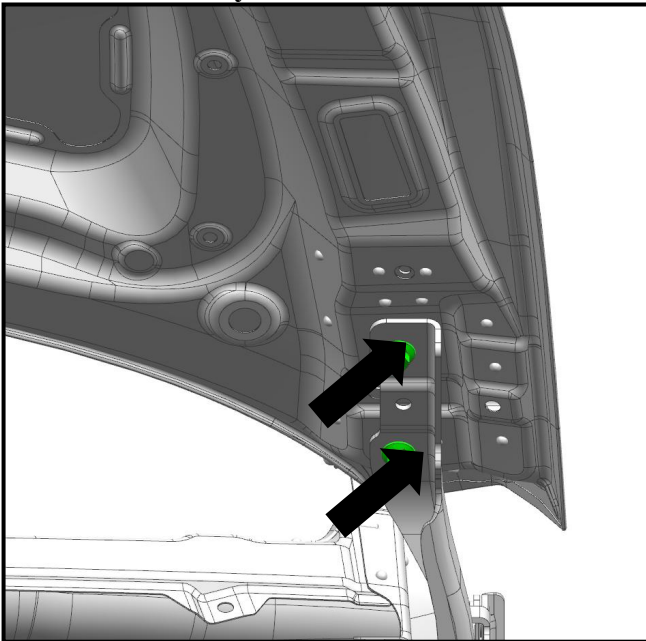
3. Installing the wire harness catch on the front bumper cross beam
4. Install left combination headlight assembly and right combination headlight assembly
5. Install front bumper device
6. Close the front cabin cover.

13.2.2 Replacement of front cabin cover and hinge

13.2.2.1 Specifications

Fastener name	Specifications	Torque range (N·m)
Hexagonal flange bolts	M8×20	25±3

13.2.2.2 Disassembly and installation

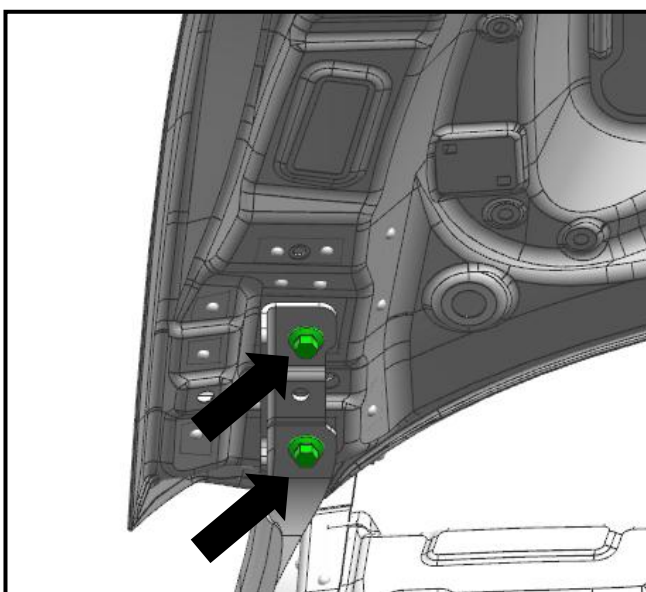


Disassembly process

1. Open the front engine compartment cover
2. Remove the heat insulation pad of front cabin cover; Please refer to 12.10.2.2 Replacement of heat insulation pad of front cabin cover;
3. Remove the support rod assembly of front cabin cover; Please refer to 12.2.3.7 Replacement of support rod assembly of front cabin cover;
4. Remove the front cabin cover assembly;
 - a. Remove the 2 fixed bolts that connect the front cabin cover to the left hinge.

Caution

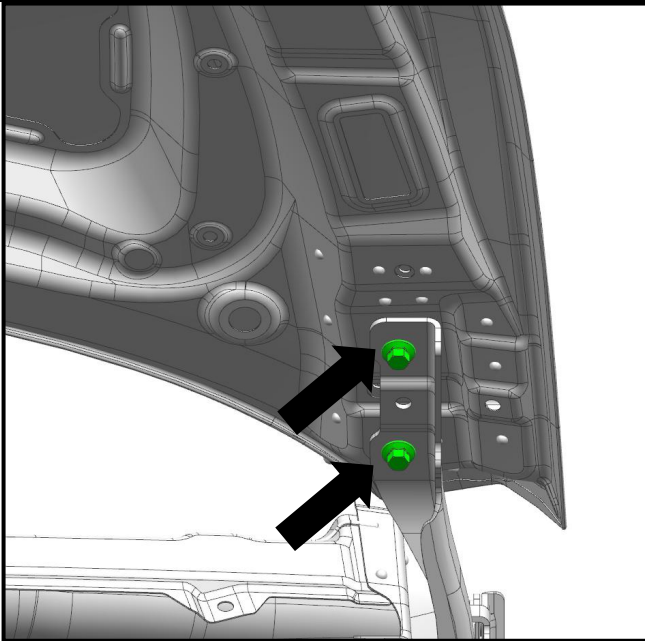
This requires two people to work together.



- b. Remove the 2 fixed bolts that connect the front cabin cover to the right hinge.

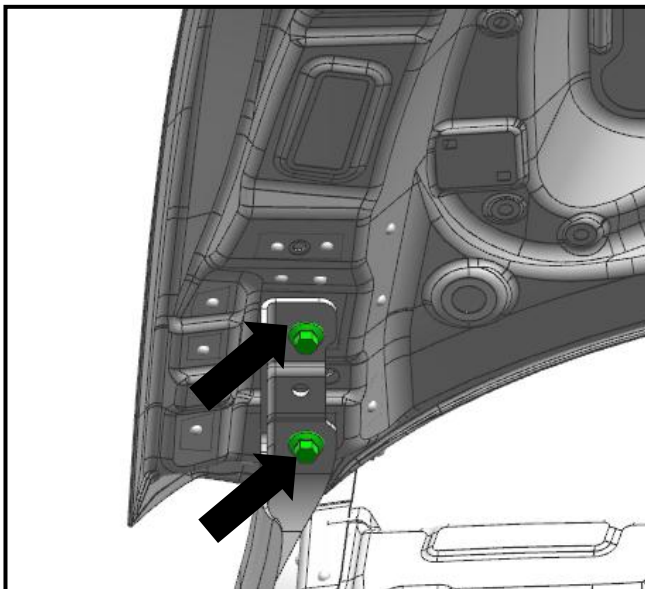
Caution

This requires two people to work together.



Installation process

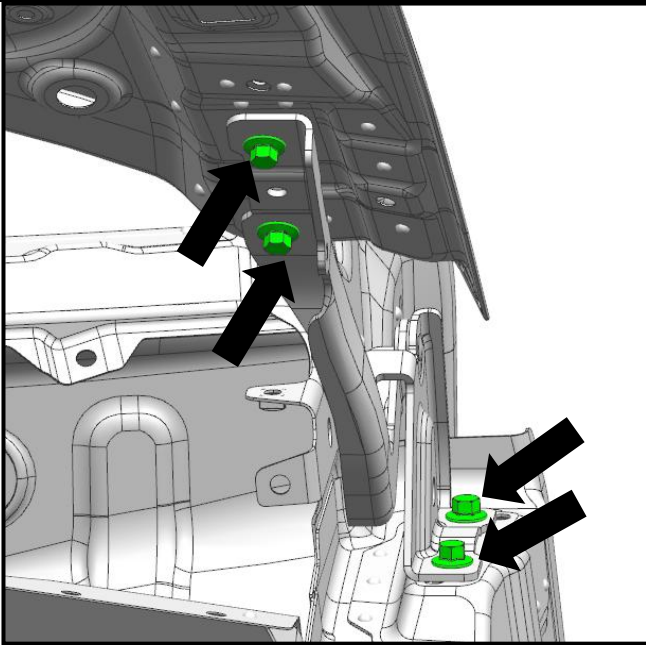
1. Install the front cabin cover assembly;
 - a. Lift up the front cabin cover assembly;
 - b. Install and tighten the 2 fixed bolts that connect the front cabin cover assembly to the left hinge, with the torque of 25N-m;



- c. Install and tighten the 2 fixed bolts that connect the front cabin cover assembly to the right hinge, with the torque of 25N-m;
2. Install the heat insulation pad of front cabin cover;
 3. Close the front engine hood.

Caution

This requires two people to work together.



Disassembly process

Caution

The method for disassembly and installation of left and right hinge are similar

1. Open the front engine compartment cover
2. Remove the fender; Please refer to 13.7.2.16

Replacement of fender

3. Remove the left hinge of front cabin cover
 - a. Remove the 2 fixed bolts 1 that connect the left hinge of front cabin cover to the front cabin cover assembly.
 - b. Remove the 2 fixed bolts that connect the left hinge of front cabin cover to the body, and remove the left hinge of front cabin cover.

Installation procedure:

1. Install the left hinge of front cabin cover
 - a. Install and tighten the 2 retaining bolts 2 connecting the left hinge of the front hood to the body.
Torque: 25N·m
 - b. Install and tighten the 2 retaining bolts connecting the left hinge of the front hood to the front hood assembly
Torque: 25N·m

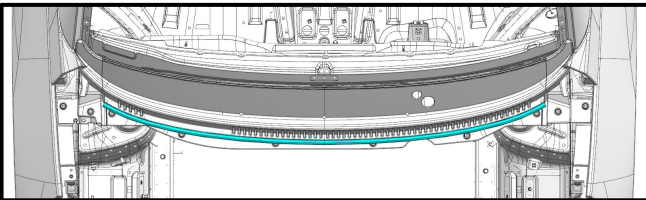
2. Install the front hood support bar assembly

3. Close the front engine hood

Caution

This requires two people to work together.

13.2.3 Disassembly and installation of rear sealing strips for the cabin



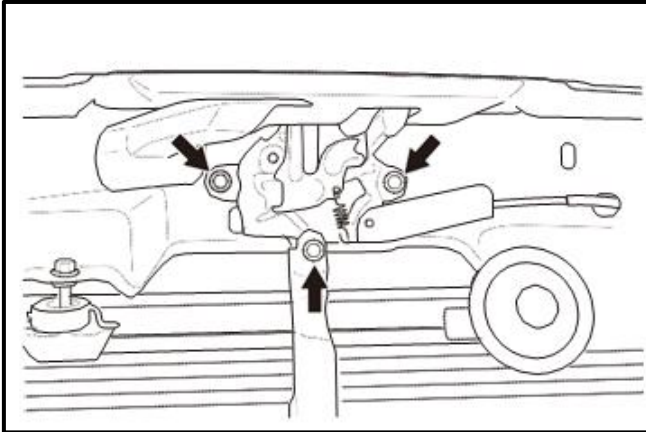
Disassembly process

1. Open the front engine compartment cover
2. Pull on the sealing strip to disengage the sealing strip from the front windshield trim panel of cabin, and disassembly is complete.

Installation process

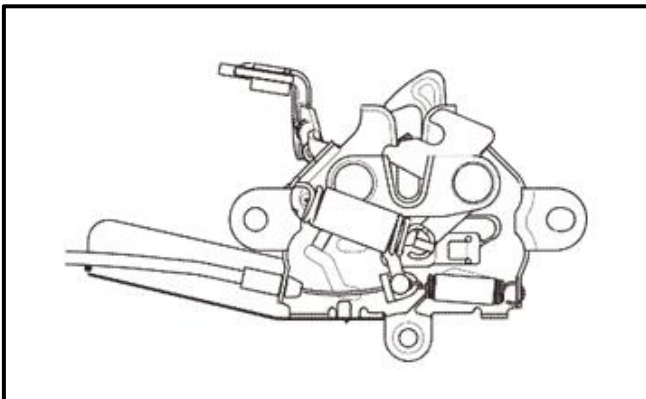
1. Open the front hood;
2. Priority is given to installing from both ends, with the ends aligned with the front windshield trim panel of the cabin, and pressing the snap-in sealing strips toward the center in sequence.

13.2.4 Replacement of hood lock

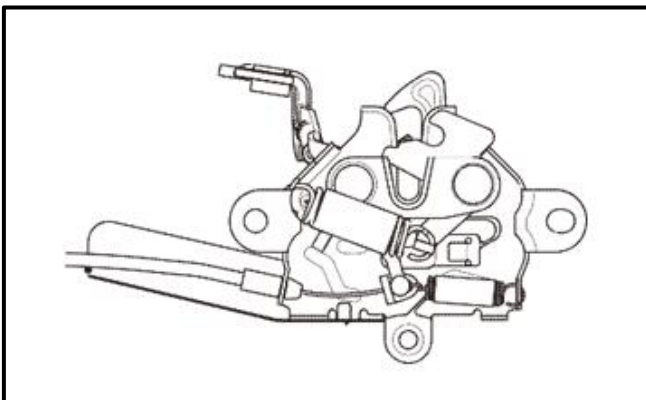


Disassembly process

1. Open the front hood;
2. Disassemble the 3 bolts at the hood lock assembly;

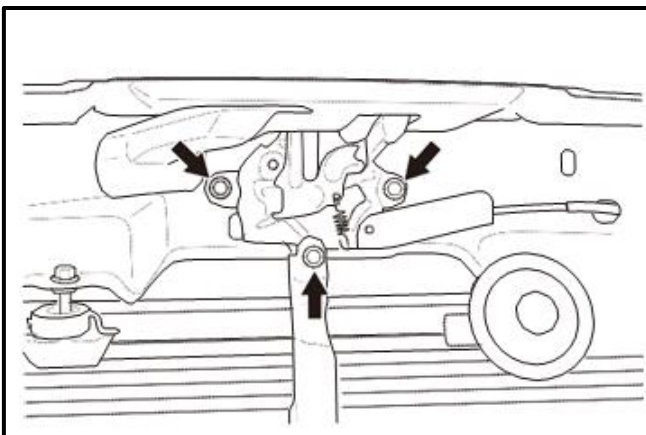


3. Separate the hood lock assembly from the hood lock stay wire;
4. Remove the hood lock assembly.



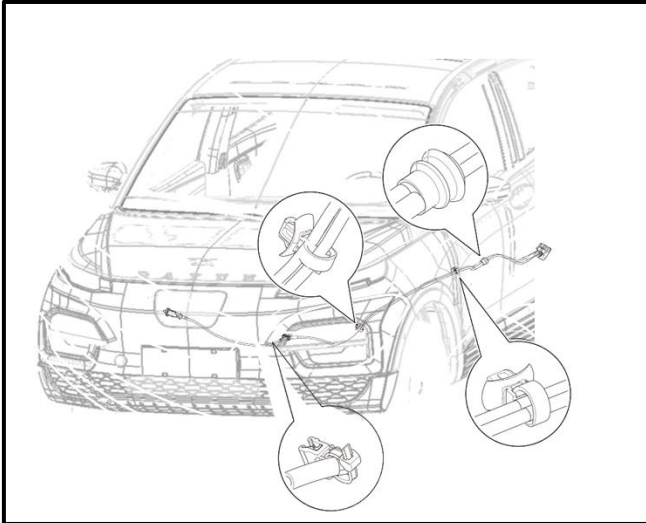
Installation process

1. Open the front hood;
2. Discrete hood lock assembly with hood stay wire;



3. Install the 3 bolts at the hood lock assembly;
4. Install the upper trim panel of the front bumper.

13.2.5 Replacement of hood lock stay wire



Disassembly process

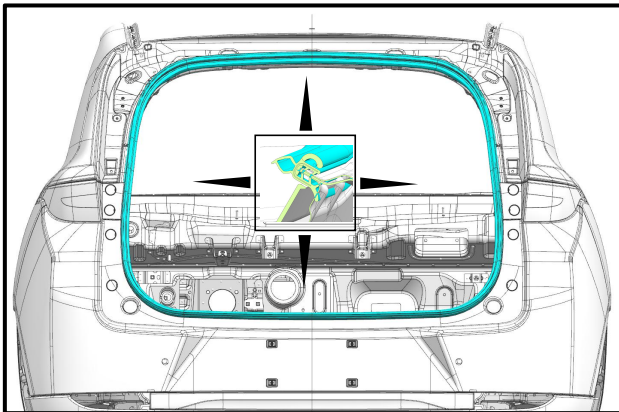
1. Open the front hood;
2. Remove the cabin grommet assembly;
3. Separate the snap handles from the stay wire;
4. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.
5. Disassemble the left combination headlight assembly; Please refer to 12.4.1.1 Disassembly and installation of lighting system for Yuehu VIP model;
6. Disassemble the left front wheel brow assembly and sponge block; Please refer to 13.7.2.8 Replacement of wheel brow;
7. Disassemble the left wing panel assembly; Please refer to 13.7.2.16 Replacement of wing panel;
8. Disassemble the hood lock assembly;
9. Separate hood lock stay wire;
10. Disassemble 4 fasteners and 1 rubber plug;
11. Remove the stay wire assembly.

Installation process

1. Split the hood stay wire ball head side from the hood lock;
2. Install the stay wire fastener in sequence;
3. Seep the other side into the body and install the rubber plug.

13.3 Rear end of body

13.3.1 Sealing strips of back door



Disassembly process

1. Open the back door;
2. Pull the sealing strip to disengage the sealing strip from the body stop, and disassembly is complete. With self-adhesive inside the sealing strip, attention should be paid to the self-adhesive sticking to the interior during the disassembly process.

Installation process

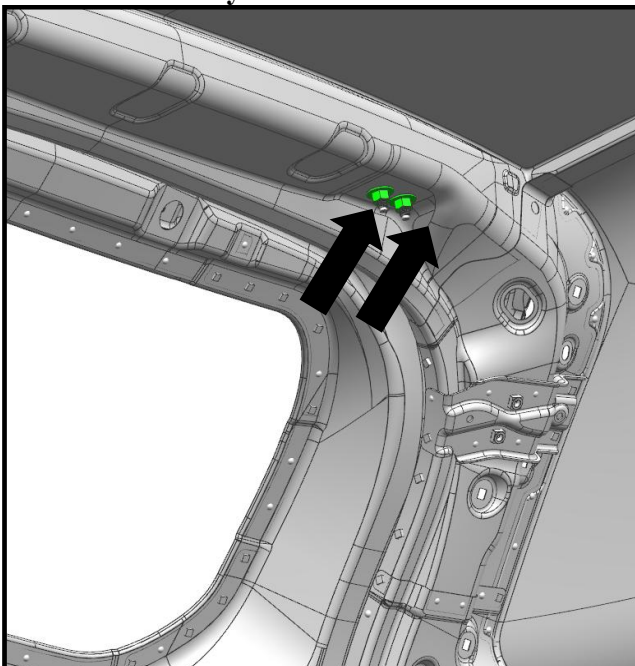
1. Open the back door;
2. Align the sealing strip line position with the back door latch hook and begin installation, with the side with the lip for the interior of the vehicle, and snap the sealing strips of back door onto the sheet metal stops in order to both sides.

13.3.2 Rear door assembly replacement

13.3.2.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Hexagonal flange bolts	M8×20	25±3
Hexagonal nut and conical elastic washer assemblies	M8	25±3

13.3.2.2 Disassembly and installation



Disassembly process

1. Disconnect the negative battery terminal.
2. Open the back door assembly
3. Disassemble the roof assembly; Please refer to 13.6.2.16 Replacement of roof assembly
4. Disassemble the back door lock assembly; Please refer to 13.3.3 Replacement of backdoor lock assembly
5. Separate back door locks and stay wires
6. Disconnect body harness connectors
7. Separate body harness and back door assembly
8. Disassemble the 2 nuts from the body skeleton assembly and the back door hinge assembly (bilateral symmetry)
9. Remove the back door with hinge assembly

Installation process

Installation is performed in the reverse order of disassembly.

13.4 Door

13.4.1 Replacement of door assembly

13.4.1.1 Specifications

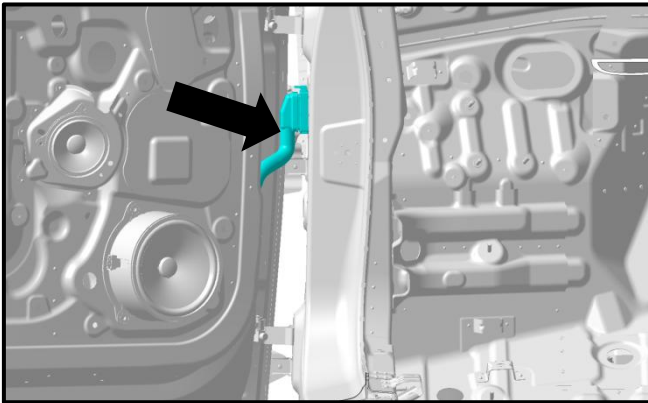
Fastener name	Specifications	Torque range (N·m)
Locking screw	M8x8	23±3
Hinges and door side bolts	M10x25	55±5
Hinges and body side bolts	M8x24	32±3

13.4.1.2 Replacement of front door and hinge

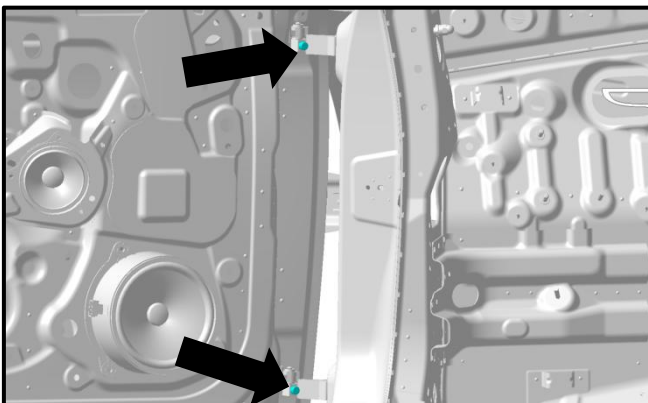
Disassembly procedure:

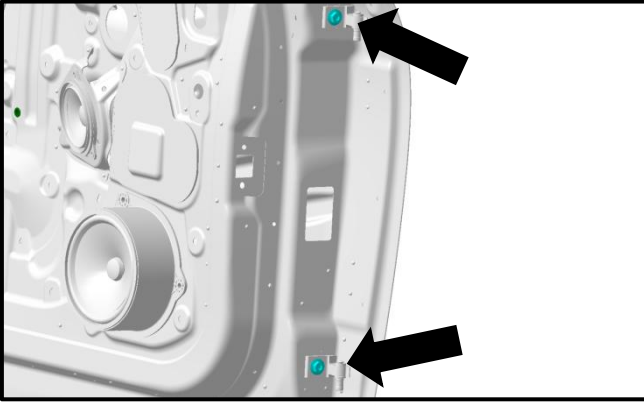
1. Open the front hood;
2. Remove the negative battery cable;
3. Disassemble the instrument panel; (Please refer to 13.5.3 Disassembly and Installation of instrument board)
4. Disassemble the door limiters; (Please refer to 13.4.7 Replacement of front and back door limiter)
5. Disassemble the A-pillar lower shield assembly; (Please refer to 13.6.2.6 Replacement of A-pillar lower shield assembly)

6. Disassemble the front door and hinges;
 - a. Dismount the door harness dust cover and disconnect the front door harness connector;
 - b. Clean the door and body hinge mounting surfaces with a rag and use a grease pencil or other marking tool to mark the hinge locations on the door surfaces and on the body surfaces;

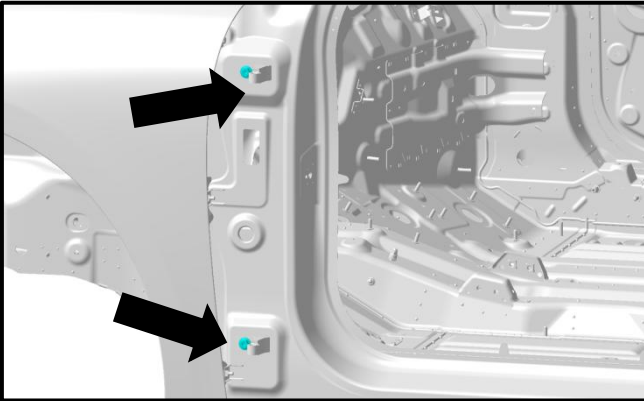


- c. Disassemble the two rubber bushings and locking screws on the hinge;
 - d. Remove the door upwards;





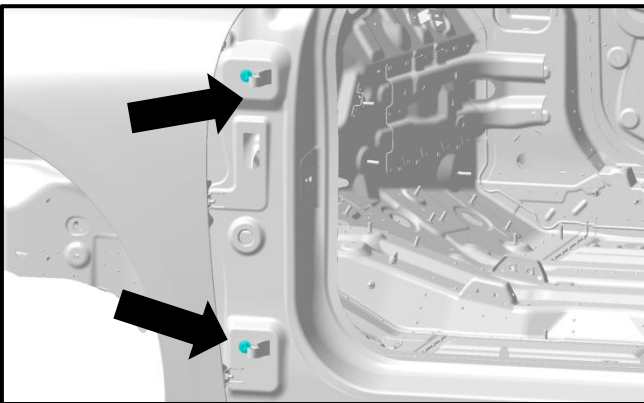
e. Disassemble the 2 fixed bolts on the door side of the upper and lower hinges;



f. Disassemble the fixed bolts on the body side of the upper and lower hinges, with 2 inside and 2 outside.

Caution

The disassembly method for the left and right doors and hinges is the same as the assembly method

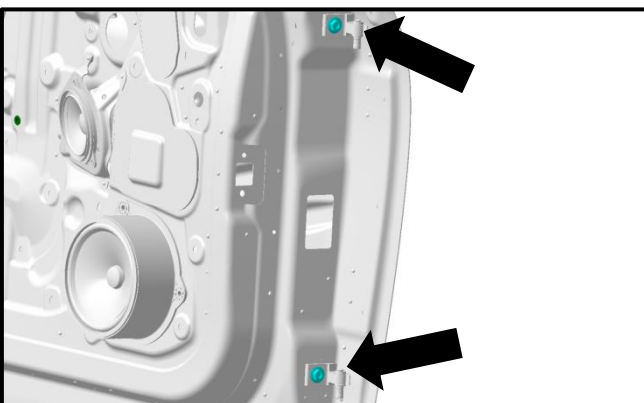


Installation procedure:

1. Install the front doors and hinges;

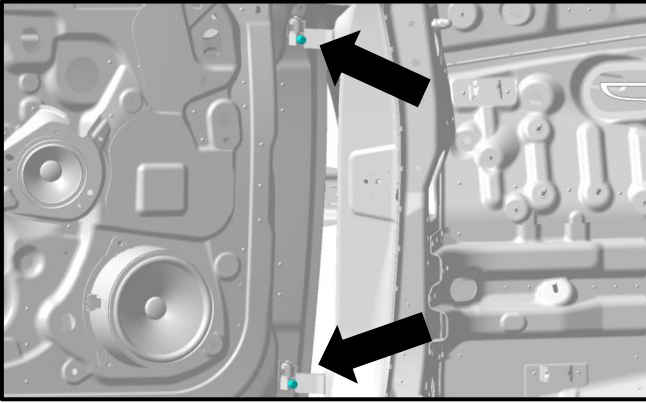
a. Fasten the upper and lower hinges of the body side to the body as marked;

Torque: $32\pm 3\text{N}\cdot\text{m}$

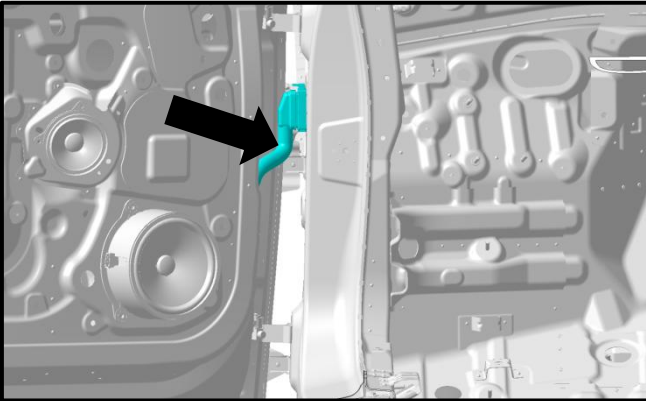


b. Fasten the upper and lower hinges of the door side to the body as marked;

Torque: $55\pm 5\text{N}\cdot\text{m}$



- c. Fit the doors into the body from top to bottom via the hinge pins;
- d. Tighten the two locking screws on the hinge;
Torque: $23\pm 3\text{N}\cdot\text{m}$
- e. Close the doors, test the door gap face differential for suitability, and adjust the gap face differential if necessary: Face differential is adjusted by the door side hinge bolts, and the gap is adjusted by the body side hinge bolts;



- f. Connect the door harness connector and fit it into the body with the dust cover installed;

2. Install the door limiters (Please refer to 13.4.7 Replacement of front and back door limiter);
3. Install the A-pillar lower shield plate; (Please refer to 13.6.2.6 Replacement of A-pillar lower shield assembly)
4. Installation of the instrument board; (Please refer to 13.5.3 Disassembly and installation of instrument panel)
5. Connect the negative cable of the storage battery
6. Close the front engine hood.

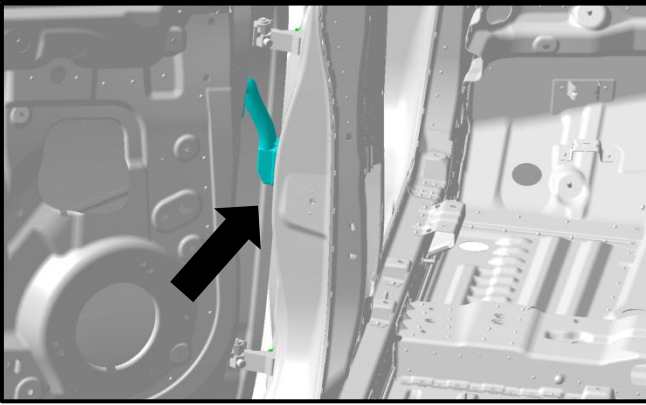
Caution

The disassembly method for the left and right doors and hinges is the same as the assembly method

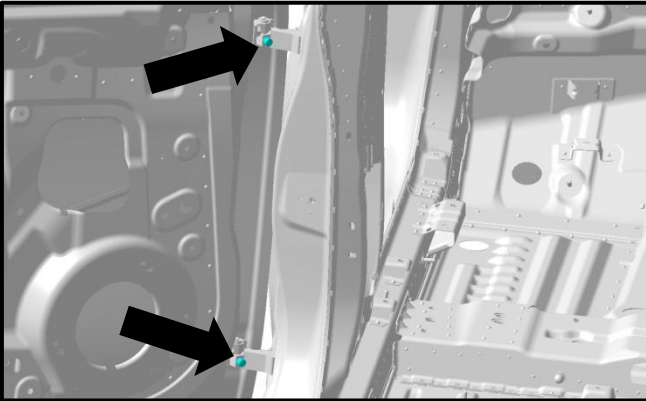
13.4.1.3 Back door and hinge replacement

Disassembly procedure:

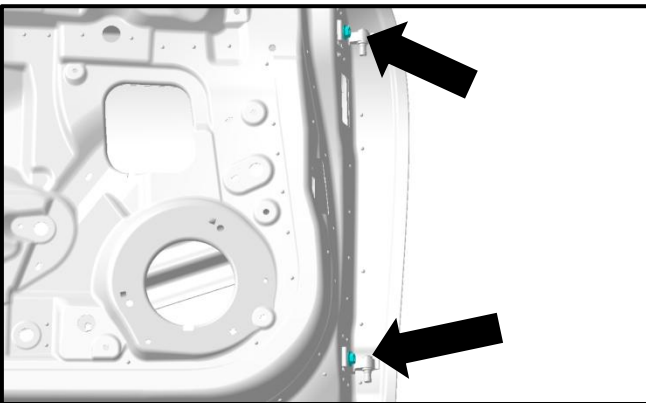
1. Open the front hood;
2. Remove the negative battery cable;
3. Disassemble the door limiters; (Please refer to 13.4.7 Replacement of front and back door limiter)
4. Disassemble the B-pillar lower shield assembly; (Please refer to 13.6.2.8 Replacement of B-pillar lower shield assembly)



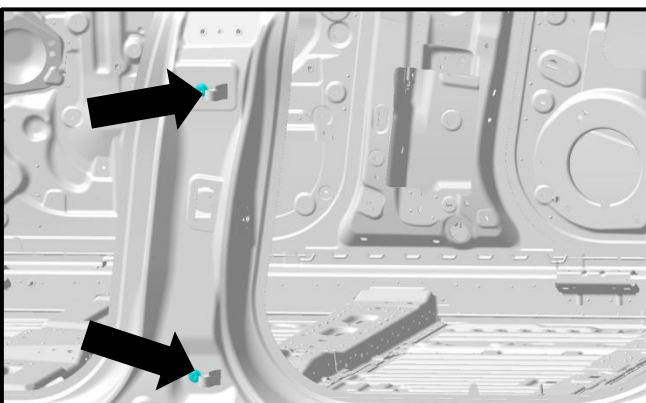
5. Disassemble the back door and hinges;
 - a. Dismount the door harness dust cover and disconnect the front door harness connector;
 - b. Clean the door and body hinge mounting surfaces with a rag and use a grease pencil or other marking tool to mark the hinge locations on the door surfaces and on the body surfaces;



- c. Disassemble the two rubber bushings and locking screws on the hinge;
 - d. Remove the door upwards;



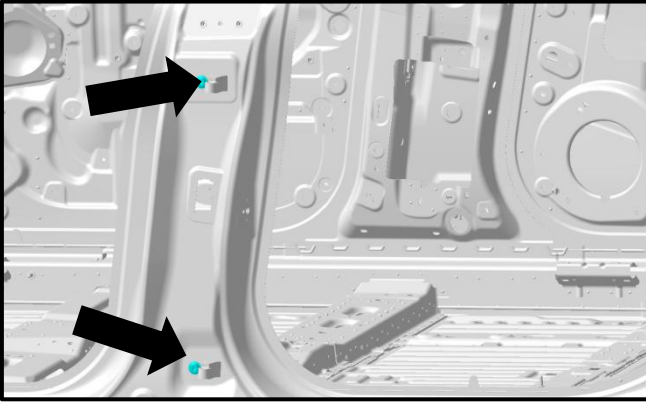
- e. Disassemble the 2 fixed bolts on the door side of the upper and lower hinges;



- f. Disassemble the fixed bolts on the body side of the upper and lower hinges, with 2 inside and 2 outside.

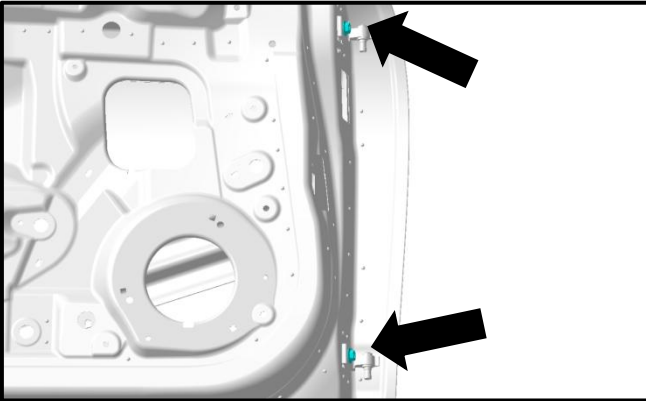
Caution

The disassembly method for the left and right doors and hinges is the same as the assembly method

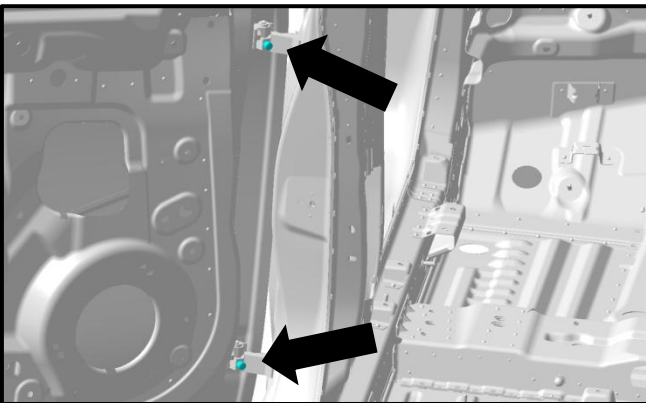


Installation procedure:

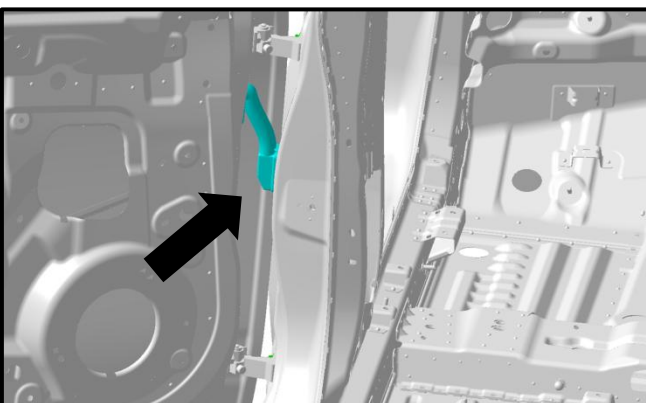
1. Install the back door and hinges;
 - a. Fasten the upper and lower hinges of the body side to the body as marked;
Torque: $32\pm 3\text{N}\cdot\text{m}$



- b. Fasten the upper and lower hinges of the door side to the body as marked;
Torque: $55\pm 5\text{N}\cdot\text{m}$



- c. Fit the doors into the body from top to bottom via the hinge pins;
 - d. Tighten the two locking screws on the hinge;
Torque: $23\pm 3\text{N}\cdot\text{m}$
 - e. Close the doors, test the door gap face differential for suitability, and adjust the gap face differential if necessary: Face differential is adjusted by the door side hinge bolts, and the gap is adjusted by the body side hinge bolts;



- f. Connect the door harness connector and fit it into the body with the dust cover installed;

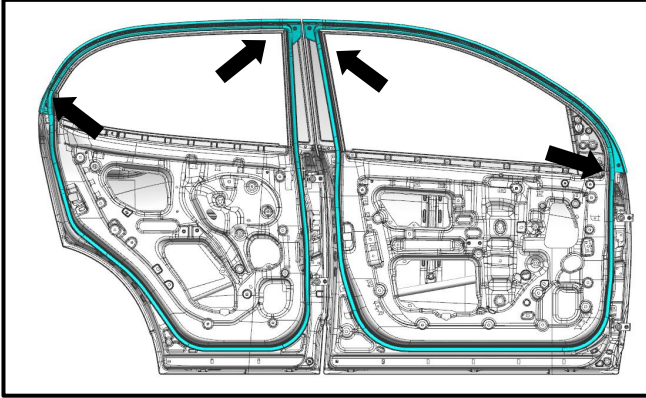
2. Install the door limiters (Please refer to 13.4.7 Replacement of front and back door limiter);
3. Install the B-pillar lower shield plate; (Please refer to 13.6.2.8 Replacement of B-pillar lower shield assembly)

4. Connect the negative cable of the storage battery
5. Close the front engine hood.

Caution

The disassembly method for the left and right doors and hinges is the same as the assembly method

13.4.2 Disassembly and installation of the door frame sealing strip



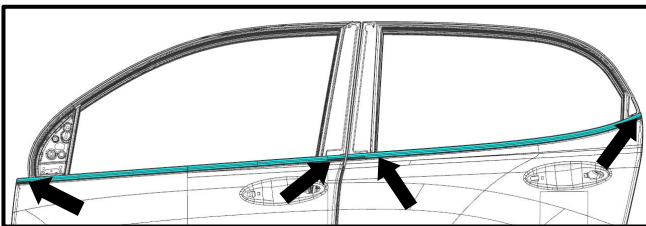
Disassembly process

1. Open the door;
2. Pull on the sealing strip to disengage the sealing strip from the sheet metal, check the sealing strip mounting location for fastener residue, if any, use a fastener driver to remove the fastener.

Installation process

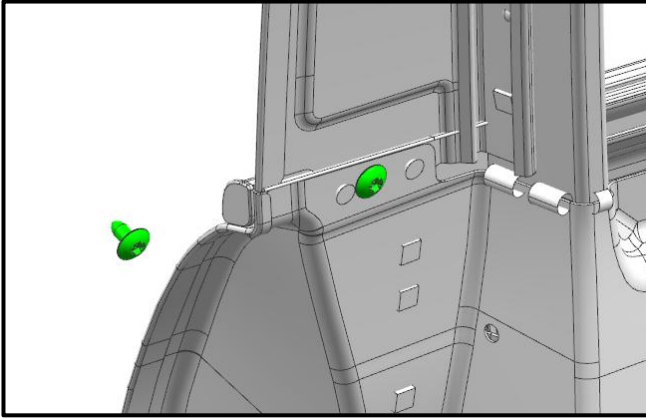
1. Open the door;
2. Snap the ends into the door sheet metal holes;
3. Remove the 3M adhesive barrier paper from the sealing strip;
4. Snap the sealing strips in sequence toward the center so that the sealing strips are set in the sheet metal opening;
5. Snap the material at the B-pillar to the sheet metal opening;
6. Snap the sealing strip fasteners on the remaining parts in turn;
7. The right side is symmetrical to the left side.

13.4.3 Disassembly and installation of exterior water stopper



Disassembly process

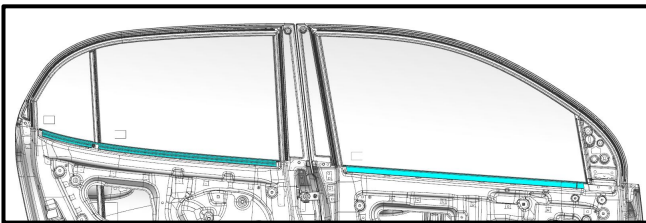
1. Open the door;
2. Remove the screws at the ends of the exterior water stopper;
3. Pull on the exterior water stopper to disengage it from the sheet metal stop.



Installation process

1. Open the door;
2. Align the B-pillar section of the exterior water stopper with the wrapped edge at the B-pillar of the outer door panel, ensuring that they are flush, and press the exterior water stopper toward the other end in turn;
3. Use a rubber mallet to lightly hit the exterior water stopper to secure the installation;
4. Use screws (Q2734295F62, cross recessed large half-round head self-tapping screws) to tighten the ends of the exterior water stopper and the installation is complete;
5. The right side is symmetrical to the left side.

13.4.4 Disassembly and installation of interior water stopper



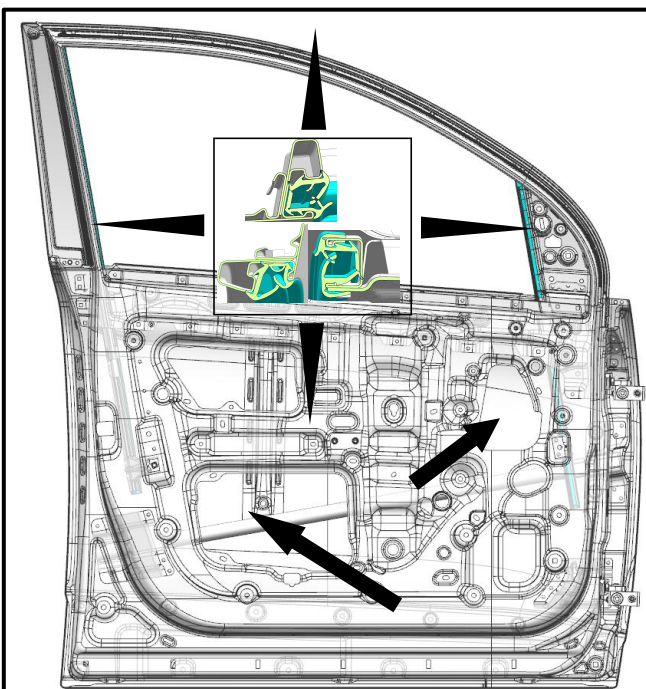
Disassembly process

1. Open the door;
2. Disassemble the door guards;
3. Pull on the interior water stopper to disengage it from the sheet metal stop.

Installation process

1. Open the door;
2. Align one end of the interior water stopper with the sheet metal at the B-pillar and press the interior water stopper in sequence to install the interior water stopper on the sheet metal stop;
3. Use a rubber mallet to lightly hit the interior water stopper to secure the installation;
4. The right side is symmetrical to the left side.

13.4.5 Disassembly and installation of front door tweed slot



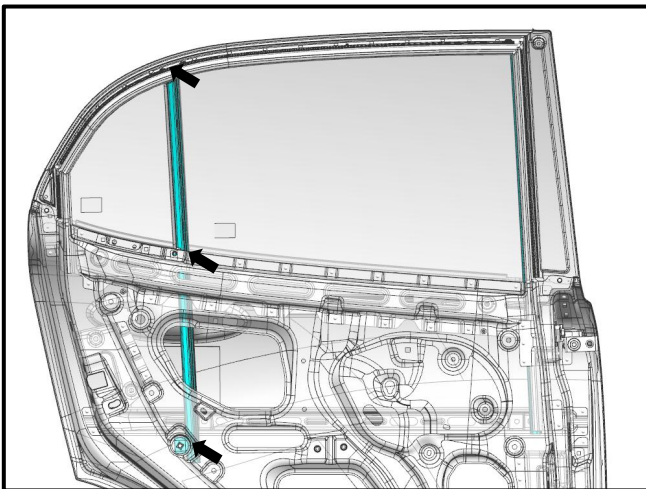
Disassembly process

1. Open the door;
2. Disassemble door guards, waterproof film, glass, mirrors;
3. Pull on the glass tweed slot to disengage it from the door guide rail.

Installation process

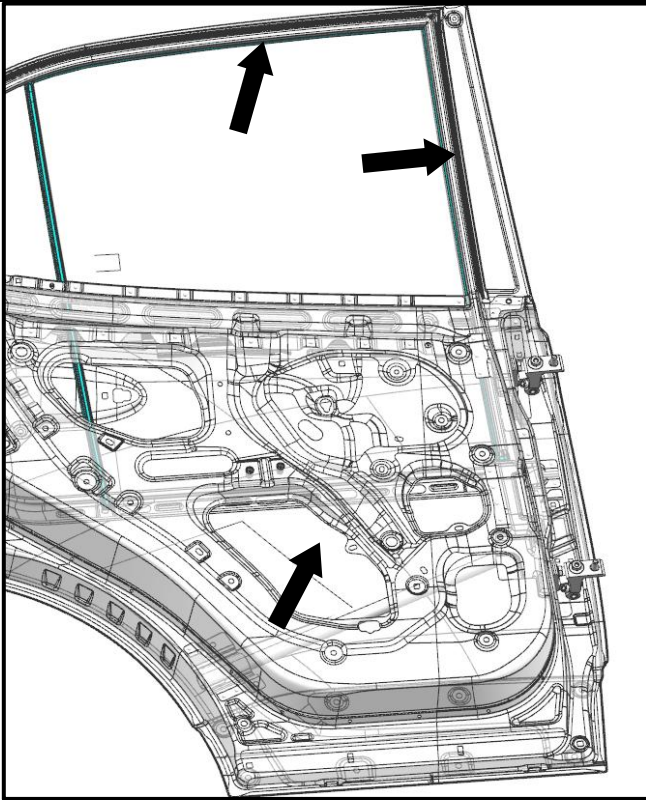
1. Open the door;
2. The front door assembly guide rail is installed;
3. Glass, lifters, door guards, and waterproof film are not installed;
4. Prioritize the installation of the window frame area by installing the front and rear corners of the tweed slots into the door window frame guide rail;
5. Install center profiles of the two corner, which snap into the guide rails by pressing;
6. In the case of installing B-pillar profiles, directly press the window frame section to clip it into the B-pillar guide rail. For the parts below the water cut, it is necessary to manually press the profiles of tweed slot into the guide rail through the inner plate opening (indicated by the arrow);
7. In the case of installing A-pillar profiles, directly press the window frame section to clip it into the A-pillar guide rail. For the parts below the water cut, it is necessary to manually press the profiles of tweed slot into the guide rail through the inner plate opening (indicated by the arrow);
8. The right side is symmetrical to the left side.

13.4.6 Back door sealing system disassembly and assembly



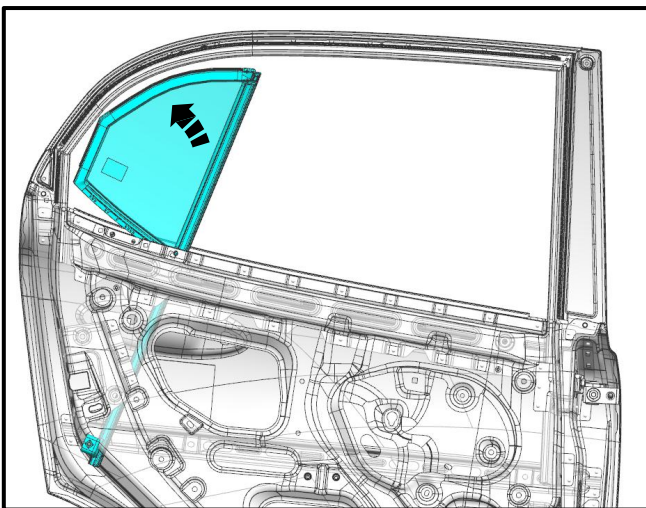
Disassembly process

1. Open the door and lower the glass to the proper position;
2. Disassemble the door guards; Please refer to 13.6.2.2 Replacement of front door guard assembly;
3. Pull on the glass tweed slot to disengage it from the door guide rail.
4. Disassemble the two screws and bolts of the back door assembly guide rail, take out the rail, and the glass tweed slot fixed on the back door;
5. Pull on the glass tweed slot fixed on the back door to separate it from the rear side window glass;
6. Remove the back door glass.

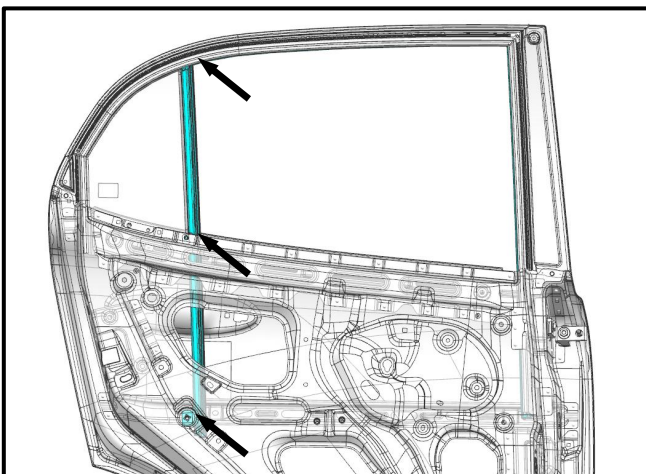


Installation process

1. Open the door and lower the lift to the proper position;
2. In the case of installing the glass tweed slot, priority should be given to installing the corner of the B-pillar of the tweed slot, ensuring that the corner fits the sheet metal. Then, it is needed to install the ROOF section material, press to connect to the sheet metal tweed slot as well as the B-pillar material window frame section, press the card to connect to the sheet metal tweed slot, and manually enter the material of the B-pillar tweed slot section of the inner door panel through the opening of the inner panel, and press to connect to the guide rail;



3. Separate the glass tweed slot fixed on the back door and the rear side window glass, and press the rear side window glass into the glass tweed slot fixed on the back door;
4. Snap the back door tweed slot end material all the way into the back door assembly rail, insert the rail diagonally into the inner and outer door panels, snap the fixed glass tweed slot into the corresponding position of the rail, place the rail into the rear edge of the back door glass, and rotate the whole to snap into the sheet metal slot;

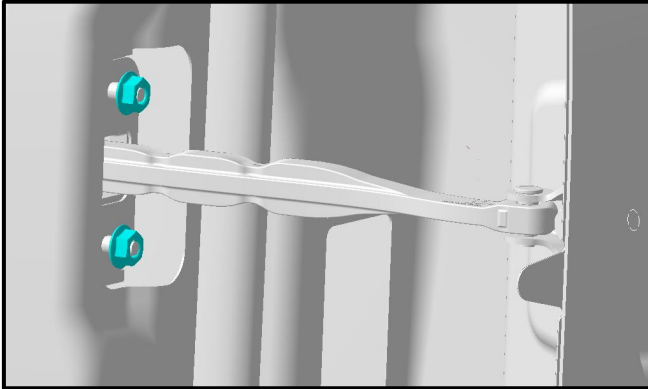


5. Tighten the three mounting points of the back door assembly rail involving the standard parts: Q2540508F36-cross recessed countersunk head screws, Q2204295F62-cross recessed pan head tapping screws and flat washer assemblies, and Q1840612F36-hexagonal flange face bolts;
6. Install the rear corner of the tweed slot to ensure that the corner fits the sheet metal;
7. The right side is symmetrical to the left side.

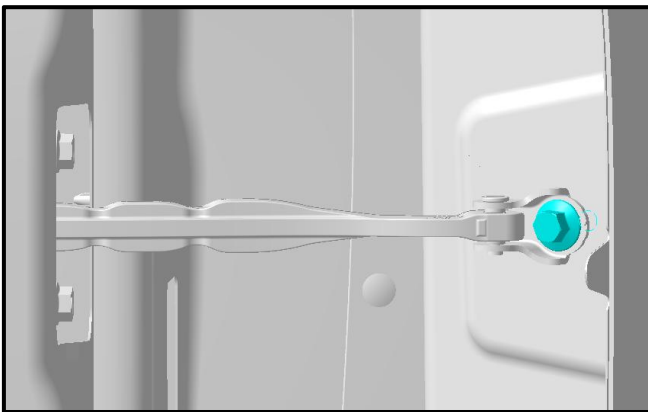
13.4.7 Replacement of front and back door limiter

Disassembly process

1. Disassemble the door guard assembly; Please refer to 13.6.2.2 Replacement of front door guard assembly;
2. Disassemble the door waterproof film; Please refer to 13.6.2.3 Replacement of front door waterproof film and 13.6.2.4 Replacement of back door waterproof film;



3. Disassemble the door limiter assembly;
 - a. Remove the 2 nuts on the side of the door;



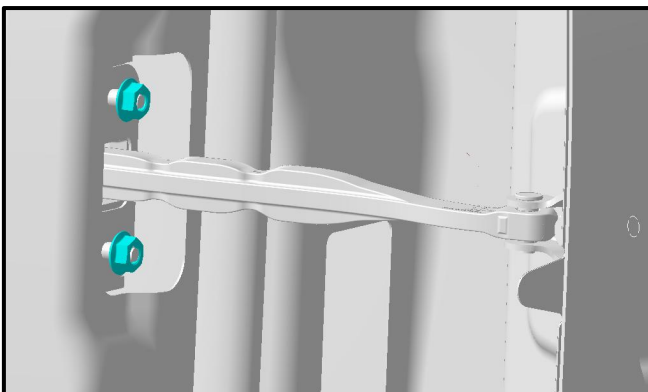
- b. Remove 1 bolt on the body side;

- c. Remove the door limiter assembly.

Caution

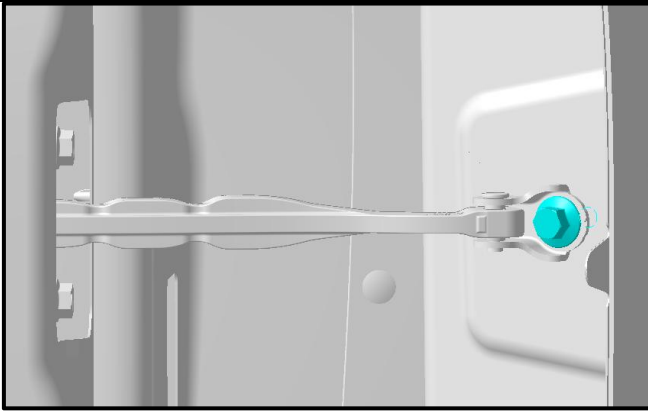
The left and right glass assemblies are disassembled in the same way, and the left side is taken as an example here.

side as an example here



Installation process

1. Install the door limiter assembly;
 - a. Install the 2 nuts on the door side;



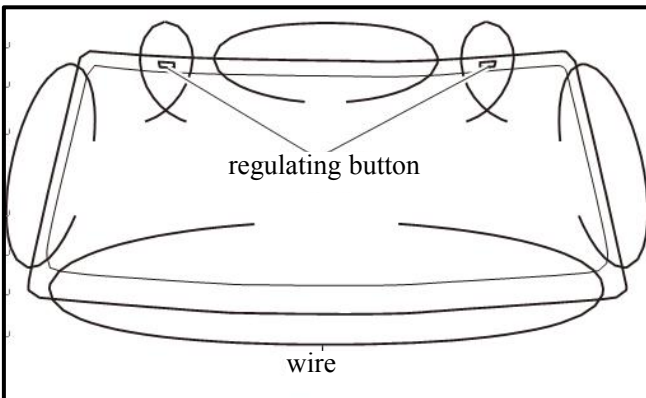
b. Install the 1 bolt on the body side;

2. Install door waterproofing film;
3. Install the door guard assembly.

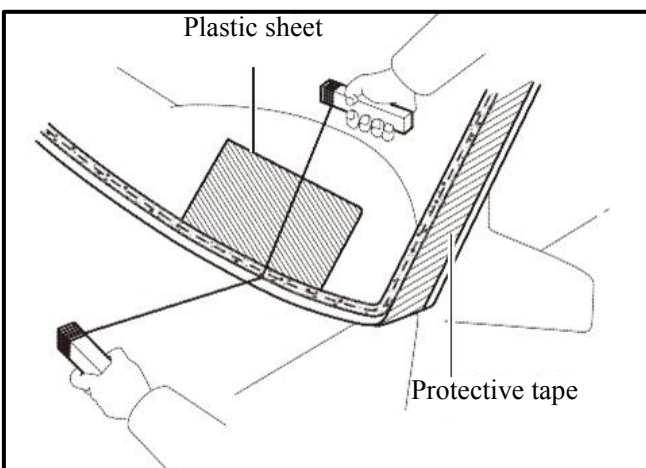
13.4.8 Replacement of front windshield

Disassembly process

1. Disconnect the negative battery terminal.
2. Disassemble the interior mirror assembly; Please refer to 13.7.2.15 Replacement of Interior Mirror;
3. Disassemble the front wiper arm; Please refer to 12.2.7.1 Disassembly and installation of front wiper arm;
4. Disassemble the lower trim panel of the front windshield; Please refer to 13.7.2.3 Replacement of lower trim panel of the front windshield;



5. Disassemble the front windshield;
 - a. Separate the locating clasp from the glass with a razor blade;
 - b. Insert steel wires between the car body and glass from the inside;



- c. Tie objects (such as wooden blocks) that can serve as handles at both ends of the steel wires;
 - d. Pull the steel wires around the glass to cut it;

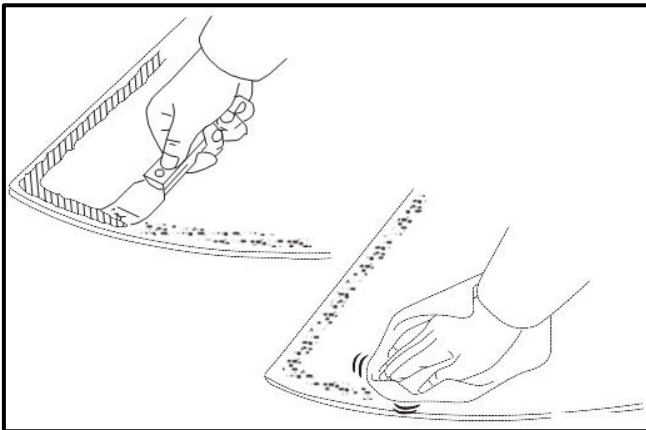
e. Use suction cups to remove the glass;

Caution

To prevent the outer surface of the body from being scratched, a layer of protective tape is applied to the outer surface.

In the case of separating the glass from the car body, attention should be paid not to damage the body paint or interior and exterior decorative parts

In the case of disassembling the glass, it is needed to place a piece of plastic between the steel wires and the instrument board to prevent scratching the instrument board



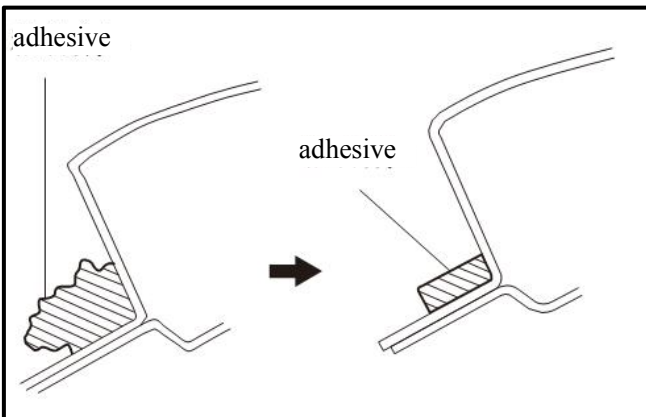
6. Clean the front windshield;
 - a. Use a squeegee to remove damaged blocks, sealing strips and adhesives stuck to the glass;
 - b. Clean the glass perimeter.

Caution

Do not touch the glass surface after cleaning

Do not damage the glass.

Clean the glass even if it is a new glass

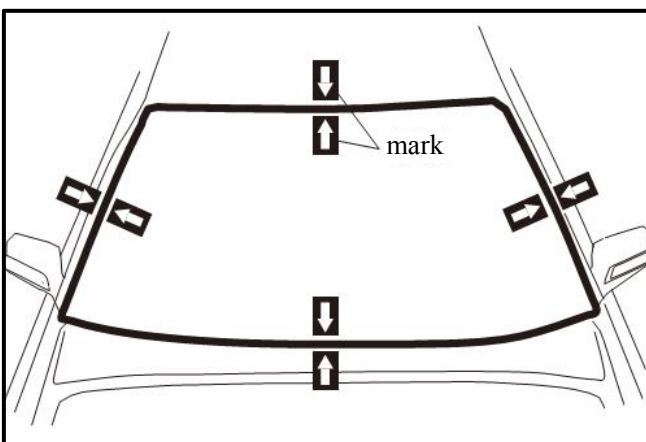


Installation process

1. Clean and trim body contact surfaces;
 - a. Remove any remaining or unnecessary adhesive from the contact surface with a knife;
 - b. Clean the body contact surfaces with a rag moistened with cleaner;

Caution

Continue to clean the body even if all the adhesive has been removed



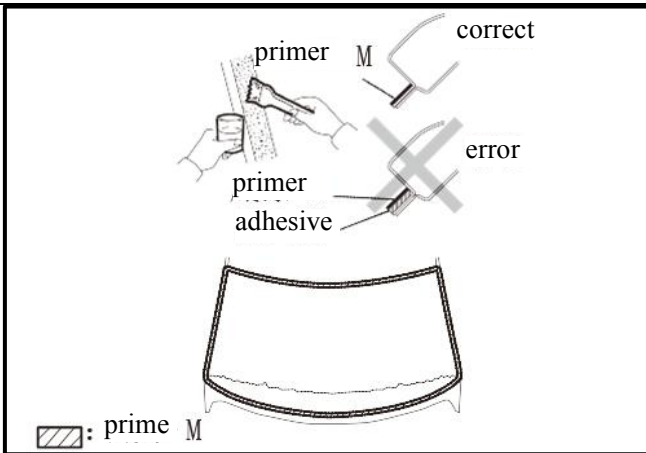
2. Locate the glass;
 - a. Use the suction cups to place the glass in the correct position;
 - b. Check and make sure that the entire contact surface of the glass edge is smooth enough;
 - c. Make reference marks between the glass and the body;

Caution

Check and verify that the locator clips are properly bonded to the glass

Check and correct the position of the reference mark in the case of reusing the glass

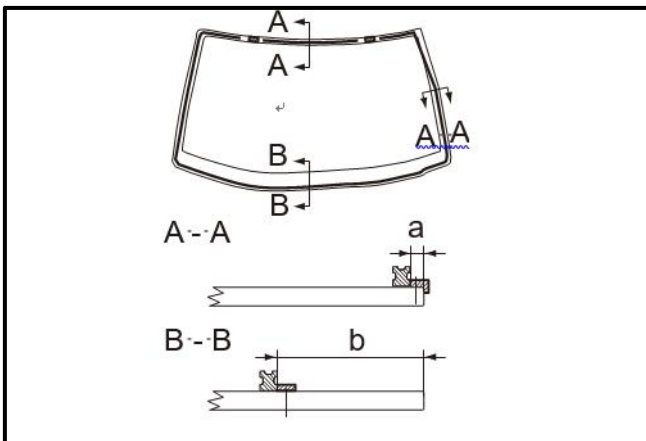
- d. Remove the glass;



3. Apply a primer M with a brush to the contact surfaces of the body sides;

Caution

Allow the primer to dry for at least 3min.
 Do not apply primer over the adhesive.



4. Apply a primer to the rear side edges of the glass and contact surfaces with a brush or sponge;

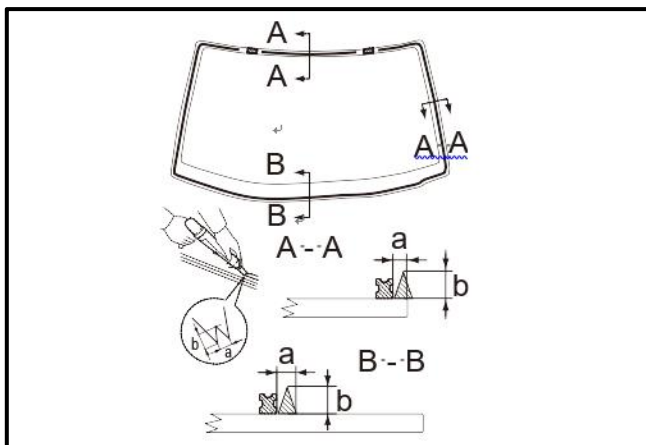
Specifications

Place	Prescribed state
a	5mm
b	27mm

Caution:

In case the primer is accidentally applied to other parts of the vehicle, wipe it off with a clean cloth before it dries.

Allow the primer to dry for at least 3min.
 Do not apply primer over the adhesive.



5. Apply adhesive to the rear side of the glass;

a. Cut off the adhesive cartridge nozzle end;

Caution

Use up all the adhesive in the time listed in the table below after cutting off the ends

Term of use

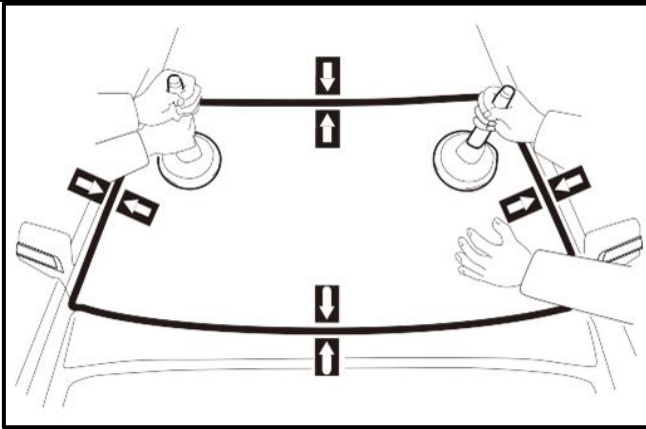
Temperature	Term of use
35°C	15min
20°C	1h40min
5°C	8h

b. Attach the adhesive cartridge to the glue gun;

c. Apply the adhesive to the glass;

Specifications

Place	Prescribed state
a	8mm
b	13mm



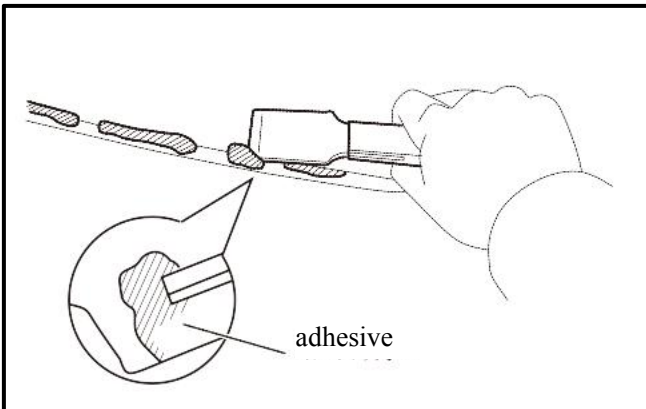
6. Install the front windshield;
 - a. Use a suction cup to place the glass to align the reference mark and press gently along the edge;
 - b. Lightly press the front surface of the glass to ensure a tight fit;

Caution:

Allow the primer to dry for at least 3min.

Check and verify that the block is properly bonded to the glass

Check the gap between the body and the glass



- c. Remove any excess or protruding adhesive with a spatula;

Caution:

Do not operate the vehicle during the hours described in the following table

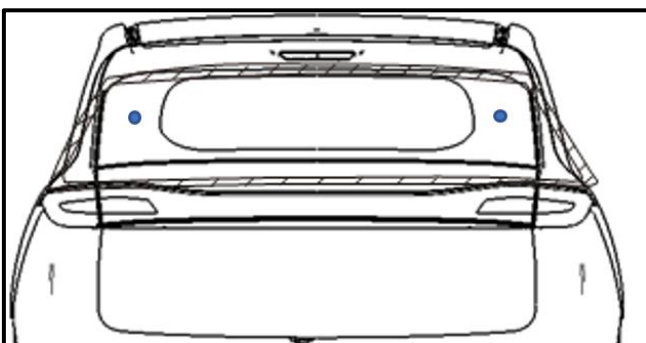
Temperature	Minimum time before traveling
35°C	1h30min
20°C	5h
5°C	24h

7. Check for leaks and repair;
 - a. After the adhesive has fully hardened, a leakage test is performed;
 - b. Seal leaks with vehicle glass sealant;
8. Install the front windshield lower trim panel;
9. Install the front wiper arm;
10. Install the inside rearview mirror assembly.

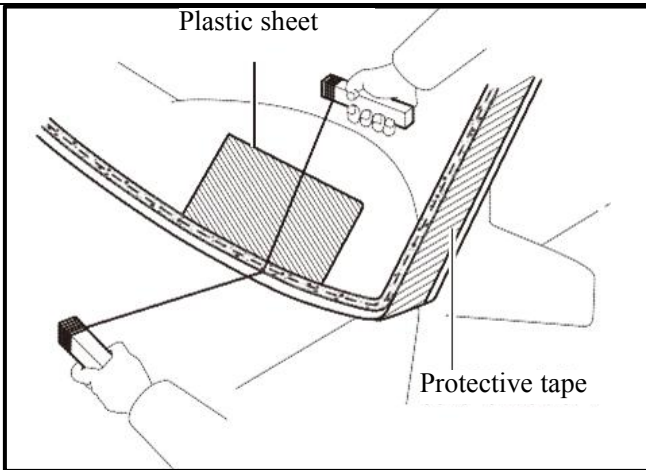
13.4.9 Replacement of rear windshield

Disassembly process

1. Disconnect the negative battery terminal.
2. Disassemble the spoiler assembly; Please refer to 13.7.2.11 Replacement of spoiler unit
3. Unplug the rear windshield electric heater harness;



4. Disassemble the rear windshield;
 - a. Use a razor blade to separate both sides of the locating clasp from the glass;

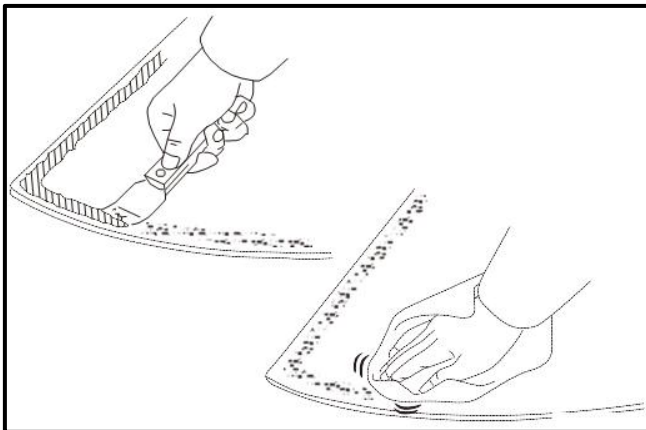


- b. Insert steel wires between the car body and glass from the inside;
- c. Tie objects (such as wooden blocks) that can serve as handles at both ends of the steel wires;
- d. Pull the steel wire along the glass edge to cut the glass;
- e. Remove the glass with a suction cup;

Caution

To prevent the outer surface of the body from being scratched, a layer of protective tape should be applied to the outer surface.

Do not damage paint and interior/exterior trim in the case of separating glass from vehicle



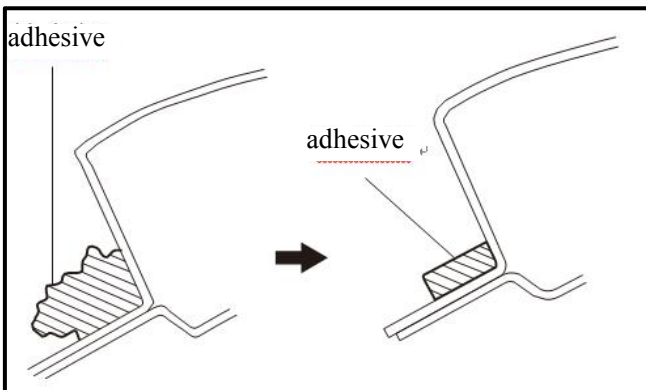
- 5. Clean the rear windshield;
 - a. Use a squeegee to remove damaged blocks, sealing strips and adhesives stuck to the glass;
 - b. Clean the glass perimeter.

Caution

Do not touch the glass surface after cleaning

Do not damage the glass.

Clean the glass even if it is a new glass

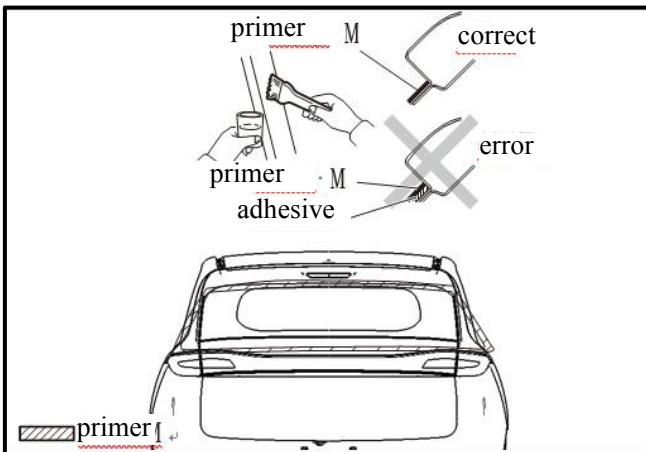


Installation process

- 1. Clean and trim body contact surfaces;
 - a. Use a knife to cut off rough and uneven adhesive on the body contact surfaces to ensure a good surface shape;
 - b. Clean the body contact surfaces with a rag moistened with cleaner;

Caution

Even if all the adhesive has been removed, the body should be cleaned



- 2. Apply primer M to the exposed areas of the body with a brush;

Caution

Allow the primer to dry for at least 3min.

Do not apply primer over adhesive

3. Apply primer to the edges and contact surfaces of the glass from the rear side with a brush or sponge;

Specifications

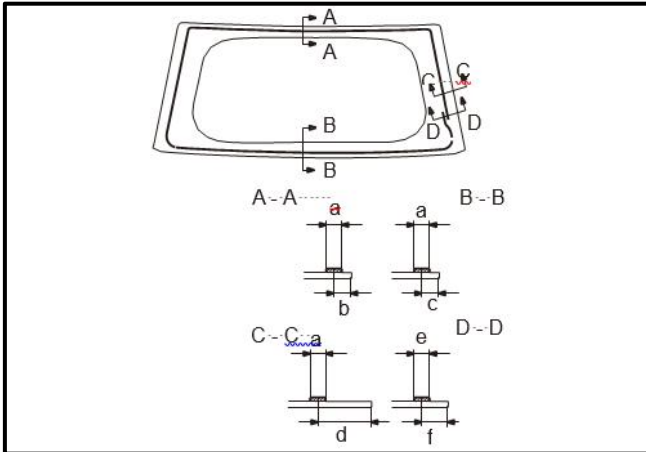
Place	Prescribed state
a	14mm
b	17mm
c	17mm
d	41mm
e	22mm
f	49mm

Caution

In case the primer is inadvertently applied to other parts of the vehicle, wipe it off with a clean rag before it dries

Allow the primer to dry for at least 3min.

Don't apply too much primer



4. Apply adhesive from the back side;

a. Cut off the adhesive cartridge nozzle end;

Caution

Use up all the adhesive in the time listed in the table below after cutting off the ends

Term of use:

Temperature	Term of use
35°C	15min
20°C	1h40min
5°C	8h

b. Attach the adhesive cartridge to the glue gun;

c. Apply the adhesive to the glass;

Specifications:

Place	Measured value
a	8mm
b	13mm
c	17mm
d	17mm
e	41mm
f	41mm

5. Install the glass to the body;

a. Secure the rear windshield to the body with tape or equivalent until the adhesive hardens;

Caution

Allow the primer to dry for at least 3min.

Check and verify that the fasteners are properly installed on the glass

Check the gap between the body and the glass

b. Lightly press the front surface of the glass to ensure a tight fit;

c. Remove any excess or protruding adhesive with a spatula;

Caution:

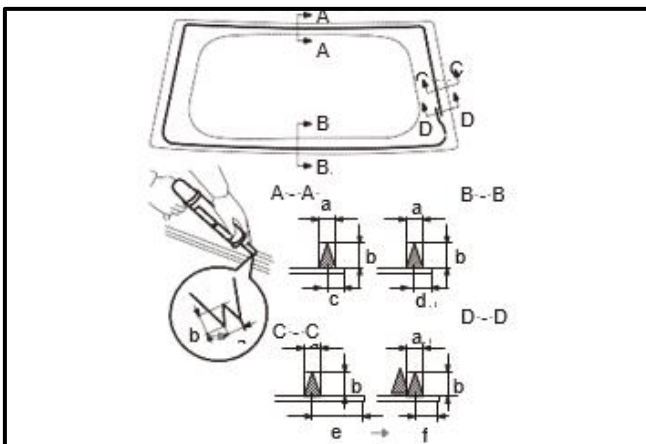
Apply adhesive to the outer edge of the glass

Do not operate the vehicle during the hours

described in the following table

Minimum time:

Temperature	Minimum time before traveling
35°C	1h30min



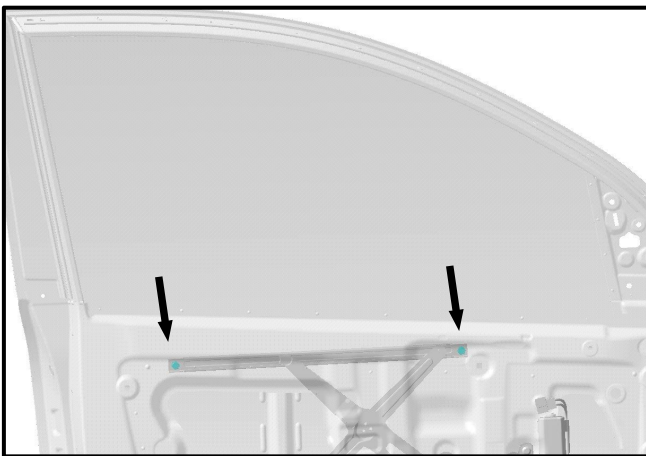
20°C	5h
5°C	24h

6. Check for leaks;
 - a. After the adhesive has fully hardened, a leakage test is performed;
 - b. Seal leaks with vehicle glass sealant;
7. Install the rear spoiler assembly;
8. Plug in the rear windshield heater harness.

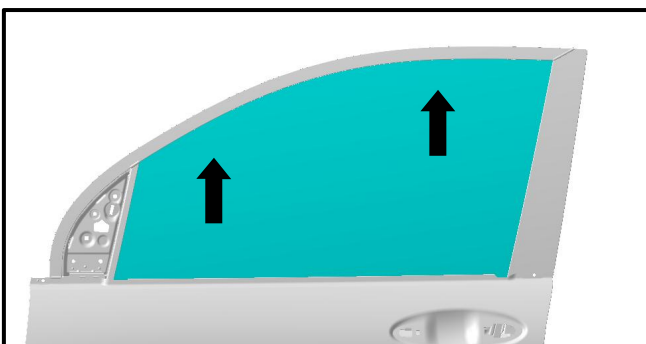
13.4.10 Replacement of front door glass assembly

Disassembly process

1. Please refer to 13.6.2.2 Replacement of front door guard panel assembly to disassemble the left front door guard panel assembly;
2. Please refer to 13.6.2.3 Replacement of front door waterproof membrane to disassemble left front door waterproof membrane;
3. Please refer to 13.7.2.14 Replacement of outside mirror to disassemble left outside mirror assembly;
4. Please refer to 13.4.3 Disassembly and installation of outer water bar to disassemble the left front door outer water bar;
5. Please refer to 13.4.4 Disassembly and installation of inner water bar to disassemble the left front door inner water bar;



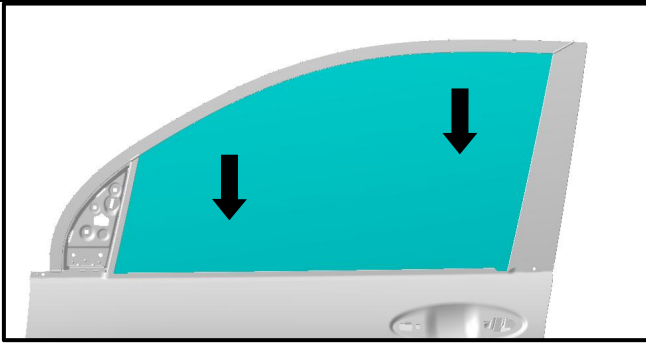
6. Disassemble the left front door glass assembly;
 - a. Connect the switch assembly of left front door window;
 - b. Adjust the left front door glass height to expose the glass mounting bolts to the access opening;
 - c. Disassemble the switch assembly of the left front door window ;
 - d. Remove the 2 bolts;



- e. Remove the left rear door glass assembly in the direction of the arrow.

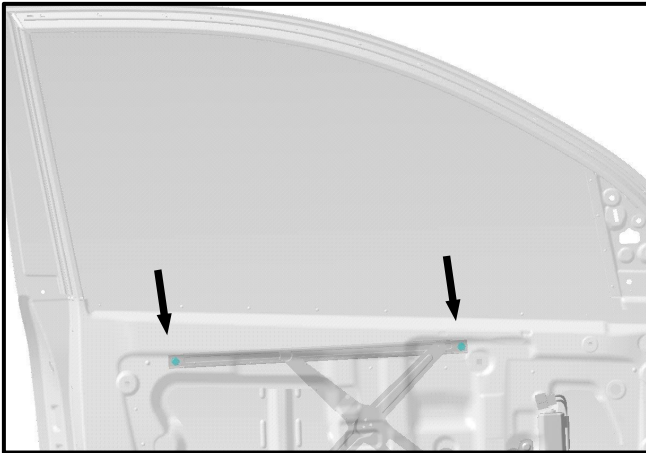
Caution

The disassembly method of left side and right side of the glass assembly is the same, taking the left side as an example here



Installation process

1. Install the left front door glass assembly;
 - a. Install the left front door glass assembly in the direction of the arrow;



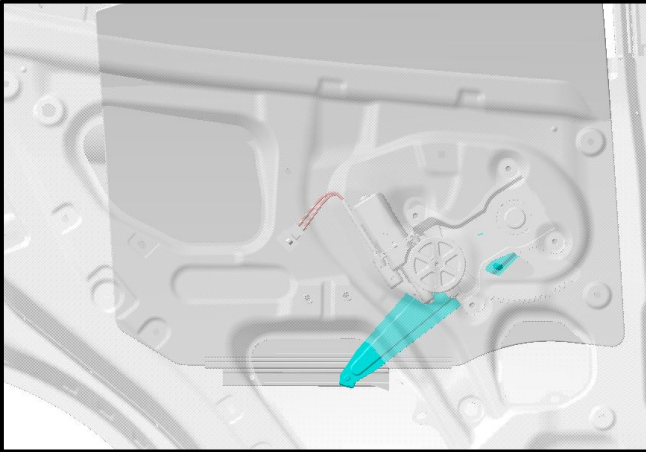
- b. Install 2 bolts.

13.4.11 Replacement of rear door glass assembly

Disassembly process

1. Please refer to 13.6.2.3 Replacement of rear door guard panel assembly to disassemble inner guard panel assembly of the left rear door;
2. Please refer to 13.6.2.4 Replacement of waterproofing membrane to disassemble the left rear door waterproofing membrane;
3. Please refer to 13.4.3 Disassembly and installation of outer water bar to disassemble the left front door outer water bar;
4. Please refer to 13.4.4 Disassembly and installation of inner water bar to disassemble the left front door inner water bar;
5. Please refer to 13.4.6 Disassembly and installation of rear door seal system to disassemble the glass guide rail assembly of the left rear door;
6. Please refer to 13.4.6 Disassembly and installation of rear door seal system to disassemble the left rear door side window glass;

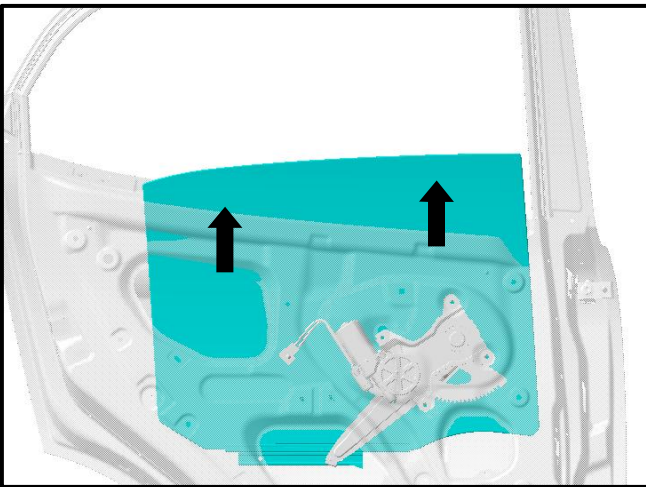
7. Disassemble the left rear door glass assembly;
 - a. Adjust the glass position so that the lower glass slide is separated from the lifter slider;



- b. Remove the left rear door glass assembly in the direction of the arrow.

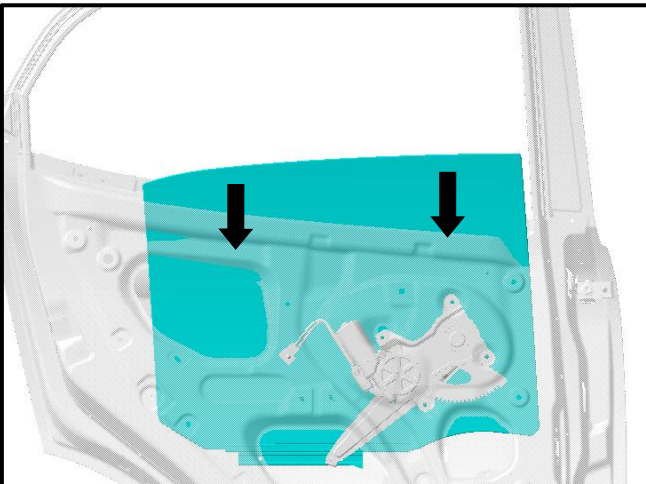
Caution

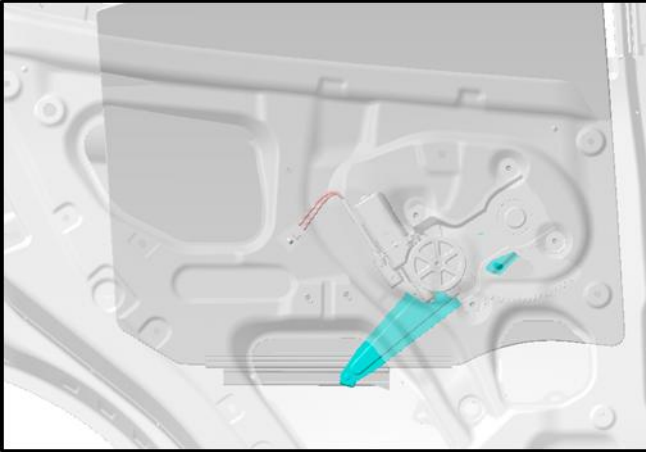
The disassembly method of left side and right side of the glass assembly is the same, taking the left side as an example here



Installation process

1. Install the left rear door glass assembly;
 - a. Install the left rear door glass assembly in the direction of the arrow;





b. Adjust the glass position so that the lower glass slide is assembled with the lifter slider;

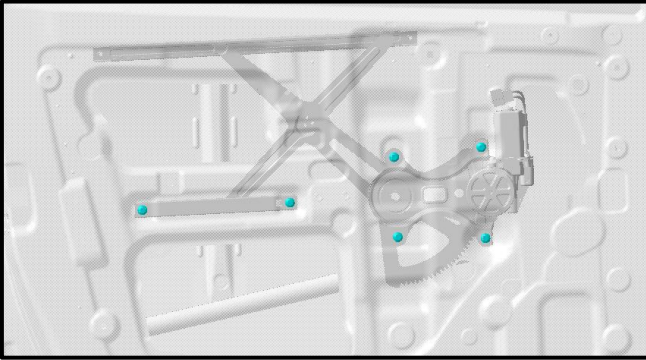
13.4.12 Replacement of front door glass lifter assembly

Disassembly process

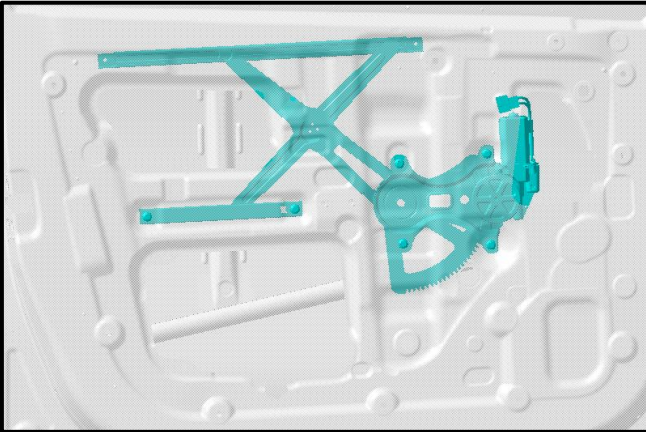
1. Please refer to 13.6.2.2 Replacement of front door guard panel assembly to disassemble the left front door guard panel assembly;
2. Please refer to 13.6.2.3 Replacement of front door waterproof membrane to disassemble left front door waterproof membrane;
3. Please refer to 13.7.2.14 Replacement of outside mirror to disassemble left outside mirror assembly;
4. Please refer to 13.4.3 Disassembly and installation of outer water bar to disassemble the left front door outer water bar;
5. Please refer to 13.4.4 Disassembly and installation of inner water bar to disassemble the left front door inner water bar;



6. Disassemble the front door glass lifter assembly;
 - a. Disconnect the harness connector;



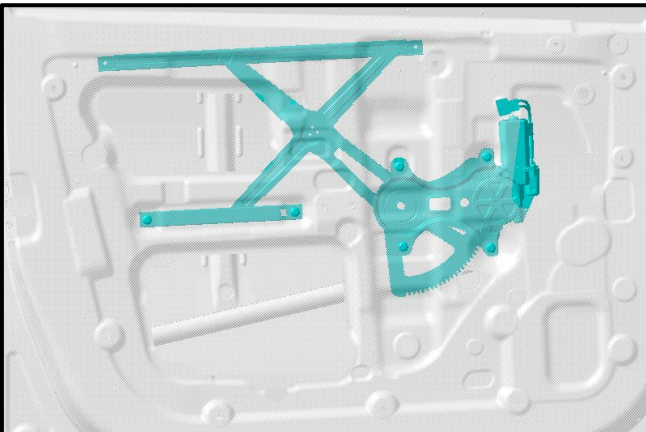
b. Remove the glass lifter assembly by removing the 6 bolts;



c. Remove the glass lifter assembly through the access opening in the direction of the arrow shown;

Caution

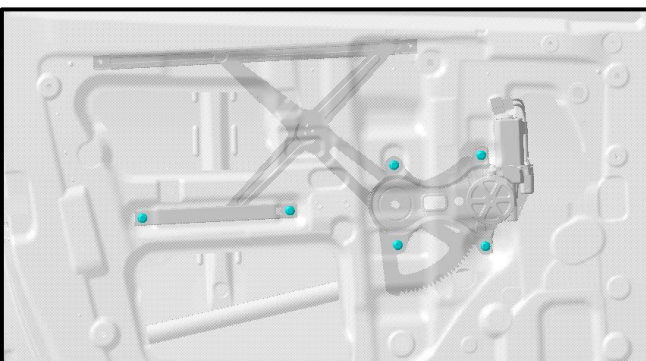
The disassembly methods for left and right glass lifter assemblies are the same. In this case, use the left side as an example.



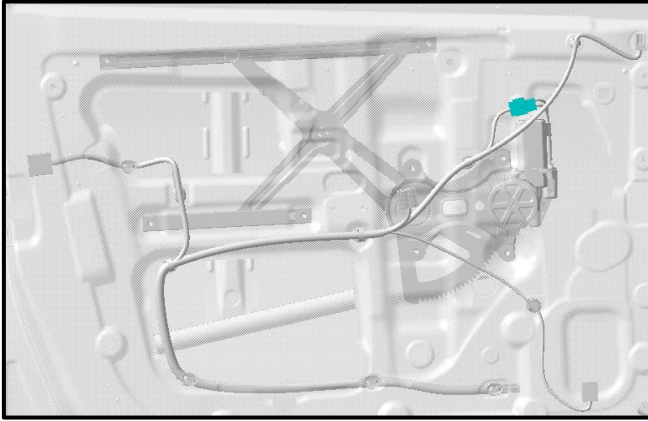
Installation process

1. Install the glass lifter assembly;

a. Install the glass lifter through the access opening in the direction of the arrow shown;



b. Install 6 bolts.



c. Install the harness connector;

13.4.13 Replacement of rear door glass lifter assembly

Disassembly process

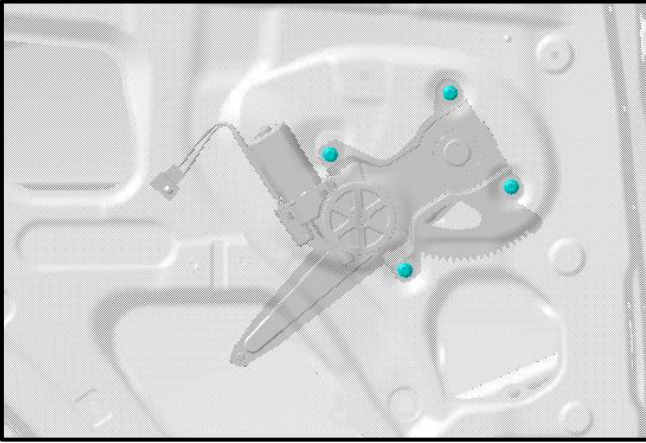
1. Please refer to 13.6.2.3 Replacement of rear door guard panel assembly to disassemble inner guard panel assembly of the left rear door;
2. Please refer to 13.6.2.4 Replacement of waterproofing membrane to disassemble the left rear door waterproofing membrane;
3. Please refer to 13.4.3 Disassembly and installation of outer water bar to disassemble the left front door outer water bar;
4. Please refer to 13.4.4 Disassembly and installation of inner water bar to disassemble the left front door inner water bar;
5. Please refer to 13.4.6 Disassembly and installation of rear door seal system to disassemble the glass guide rail assembly of the left rear door;
6. Please refer to 13.4.6 Disassembly and installation of rear door seal system to disassemble the left rear door side window glass;



7. Disassemble the rear door glass lifter assembly;
 - a. Disconnect the harness connector;

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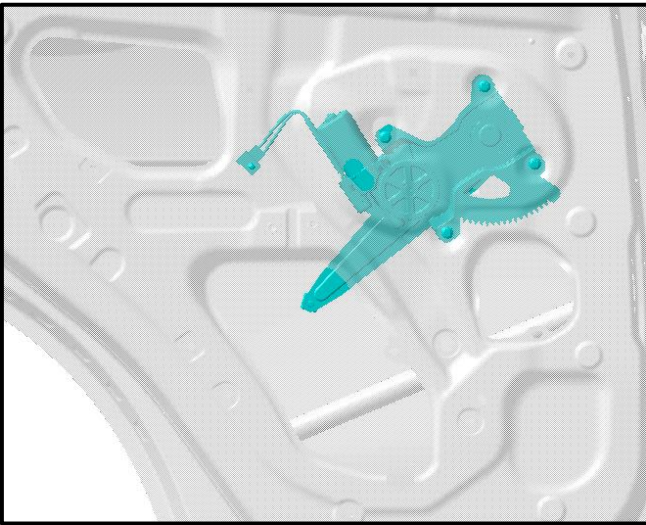
b. Remove the rear door glass lifter assembly by removing the 4 bolts;



c. Remove the glass lifter assembly through the access opening in the direction of the arrow shown;

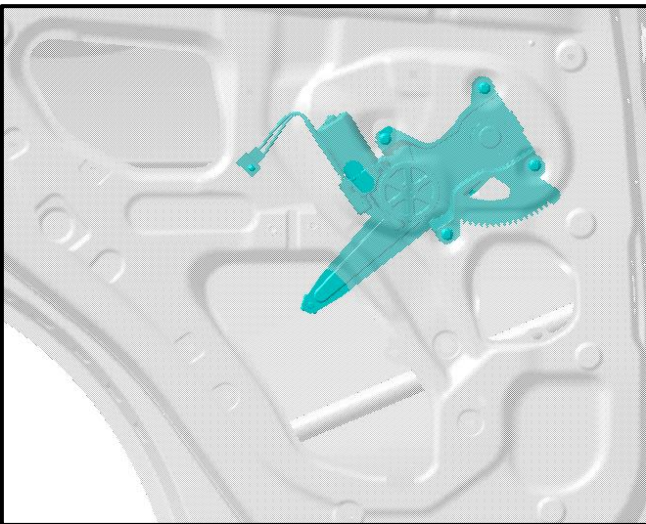
Caution

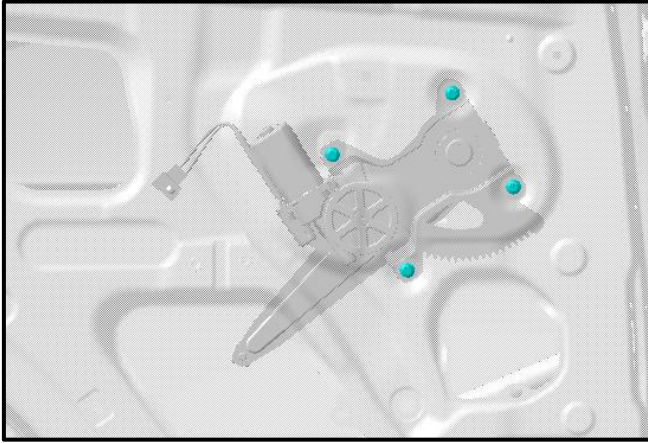
The disassembly methods for left and right glass lifter assemblies are the same. In this case, use the left side as an example.



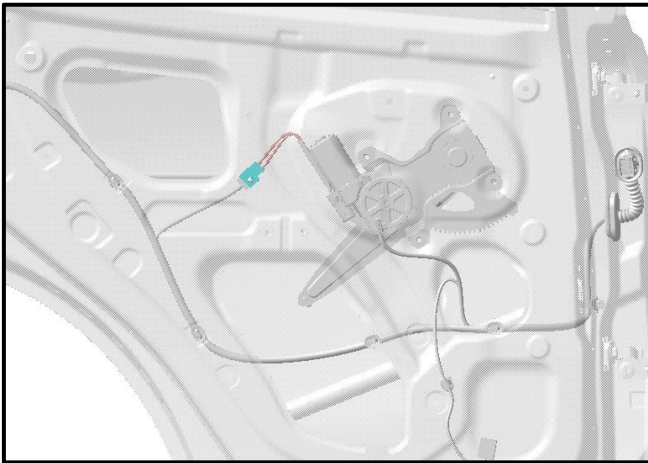
Installation process

1. Install the glass lifter assembly;
 - a. Install the glass lifter through the access opening in the direction of the arrow shown;





b. Install 4 bolts.

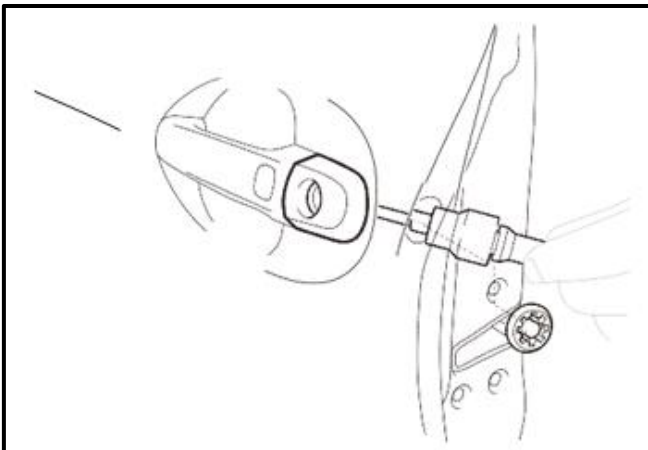


c. Install the harness connector;

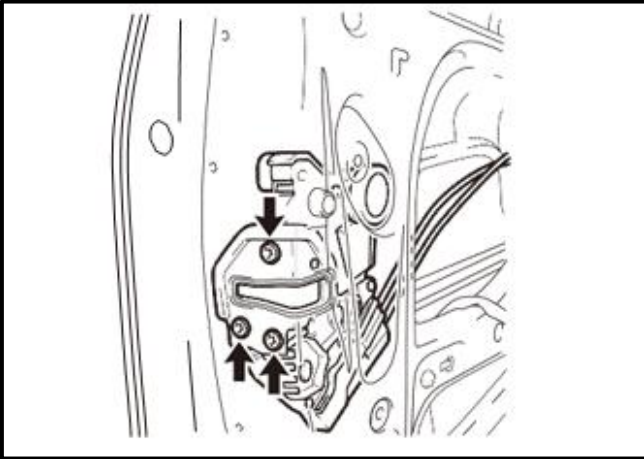
13.4.14 Left front door lock replacement

Disassembly process

1. Disconnect the negative battery terminal.
2. Please refer to 13.6.2.2 Replacement of front door guard panel assembly to disassemble the left front door guard panel assembly;
3. Please refer to 13.4.12 Replacement of front door glass lifter assembly to disassemble the front door guard panel;



4. Disassemble the lock cylinder assembly;
 - a. Remove the back cover of the handle at the service hole;
 - b. Disconnect the lock by inserting a cross screwdriver into the service hole and disassembling the fixed screw;The core tie rod is connected to the lock cylinder and then the lock cylinder assembly is removed;
Disconnect the front door lock outward opening tie rod from the front door outer handle base;



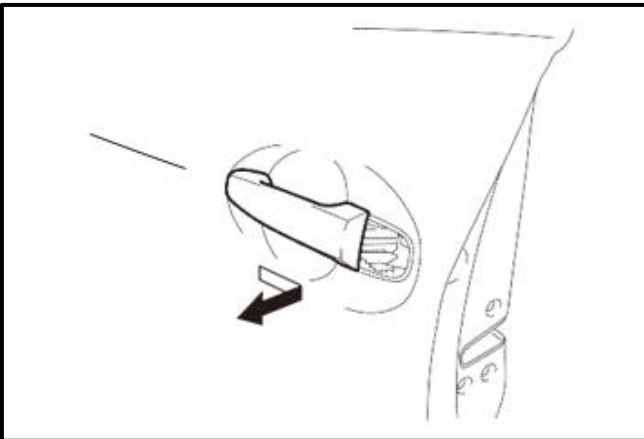
5. Disassemble the left front door lock assembly;
 - a. Disassemble the 3 fixed screws;
 - b. Separate the clips that hold the front door inward opening tie wire from the body sheet metal;
 - c. Disconnect the connecting harness and remove the left front door lock assembly through the access hole;

Caution

When removing the fixed screws, do not let the lock body fall and cause damage to the lock body

Conduct disassembly operation through access holes

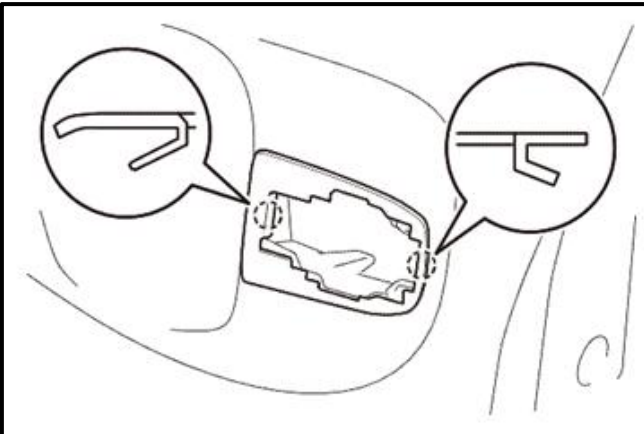
- d. Disconnect the front door inner opening tie wire from the left front door lock;
- e. Disconnect the lock cylinder tie rod and the outward opening lever from the left front door lock;



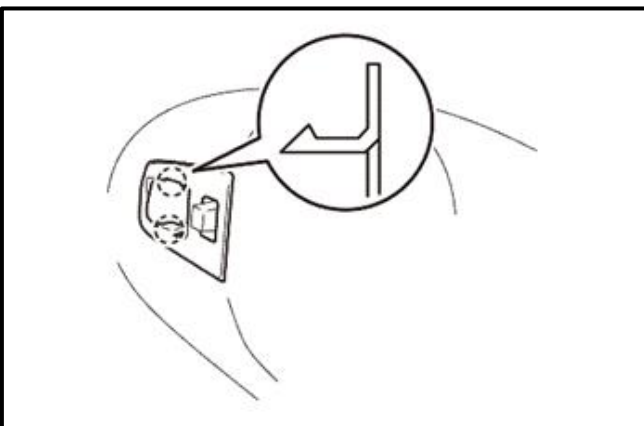
6. Disassemble the front door outside handle grip. Slide backward and then pull outward in the direction of the arrows in the figure to disassemble the front door outer handle grip;

Caution

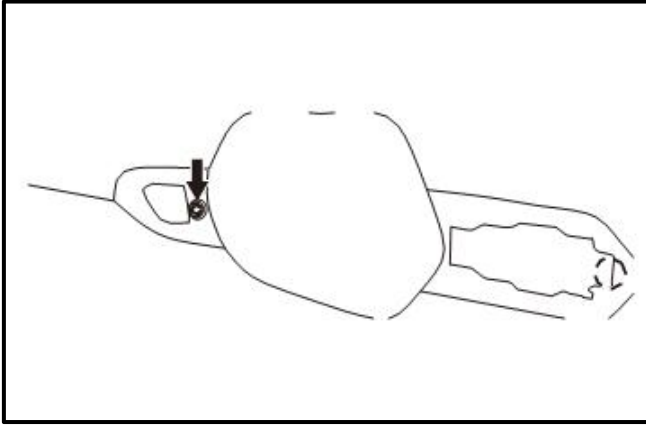
Make sure the front end comes out before pulling the handle grip out after sliding the handle grip.



7. Disassemble the rear end gasket;
 - a. Make the 2 jaws shown in the figure loose, then disassemble the gasket;



8. Disassemble the front end gasket;
 - a. Make the 2 jaws shown in the figure loose, then disassemble the gasket;



9. Disassemble the left front door outer handle base by disassembling a fixed screw with a cross screwdriver as shown in the figure, and then detaching the jaws to disassemble the outer handle base.

Caution

The left and right front door locks are disassembled in a similar way, the left side is taken as an example.

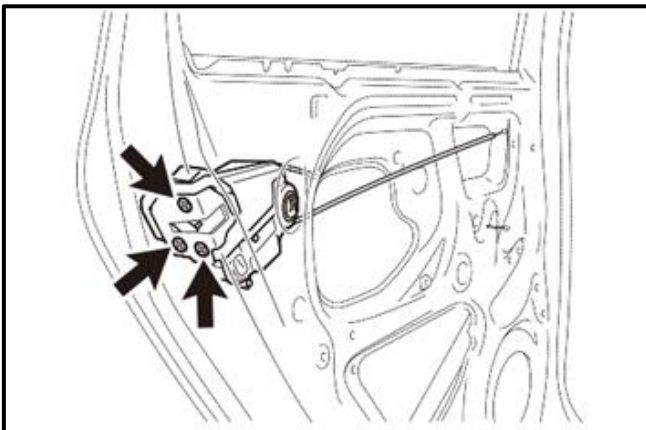
Installation process

Installation is performed in the reverse order of disassembly.

13.4.15 Replacement of left rear door lock

Disassembly process

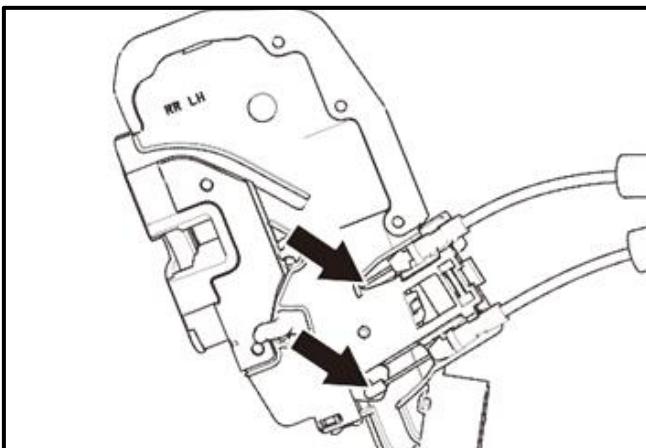
1. Disconnect the negative battery terminal.
2. Please refer to 13.6.2.3 Replacement of rear door guard panel assembly to disassemble inner guard panel assembly of the left rear door;
3. Please refer to 13.4.13 Replacement of rear door glass lifter assembly to disassemble the front door guard panel;



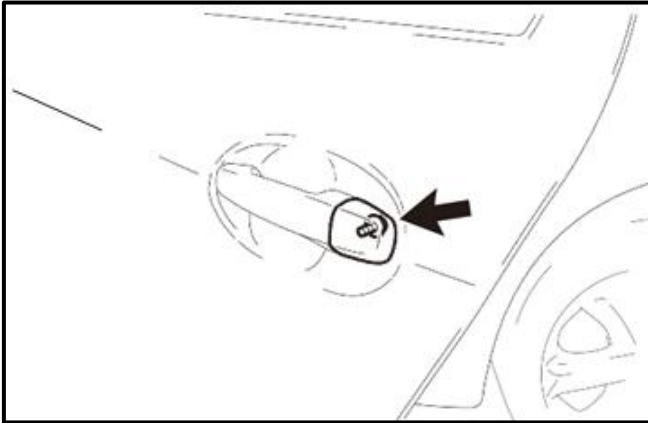
4. Disassemble the left rear door lock assembly;
 - a. Disassemble the 3 fixed screws;
 - b. Separate the clips that hold the rear door inward opening tie wire from the body sheet metal;
 - c. Disconnect the rear door lock outer opening tie rod from the rear door outer handle base;
 - d. Disconnect the connecting harness and remove the left rear door lock assembly through the access hole;

Caution

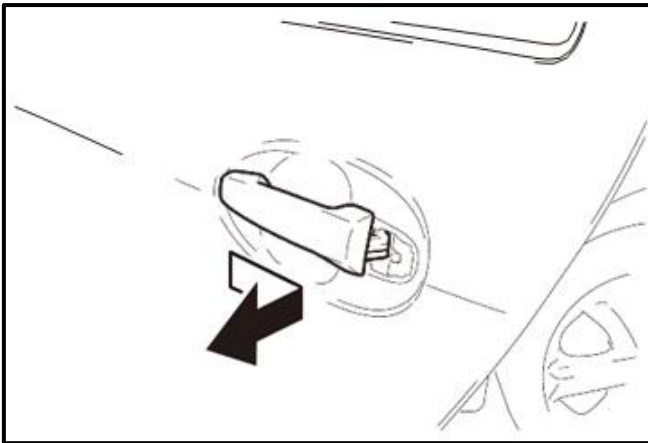
When removing the fixed screws, do not let the lock body fall and cause damage to the lock body
Conduct disassembly operation through access holes



- e. Disconnect the inner opening tie wire from the left rear door lock;
- f. Disconnect the outward opening tie rod from the left rear door lock;



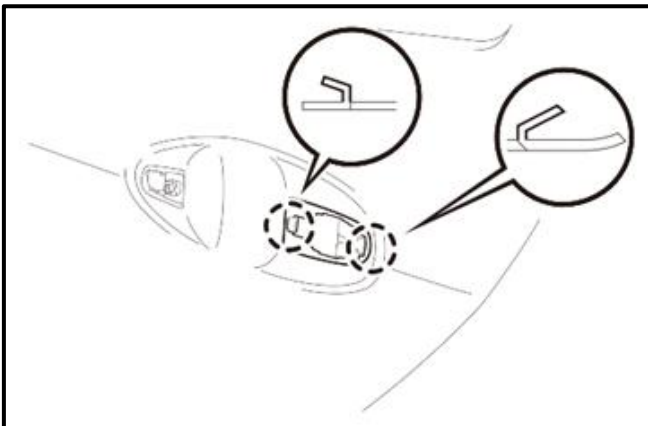
5. Disassemble the left rear door outer handle back cover;
Disassemble the fixed screws as shown in the figure, and then remove the outer handle back cover;



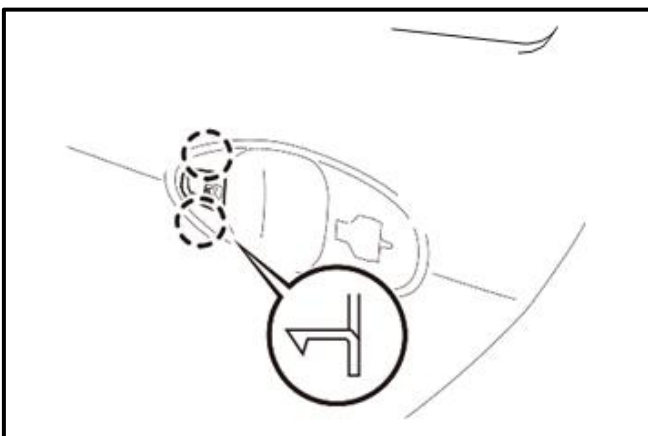
6. Disassemble the outer handle grip of rear door.
Slide the outer handle grip of rear door in the direction of the arrow in the figure and then pull it outward to disassemble the outer handle grip of rear door;

Caution

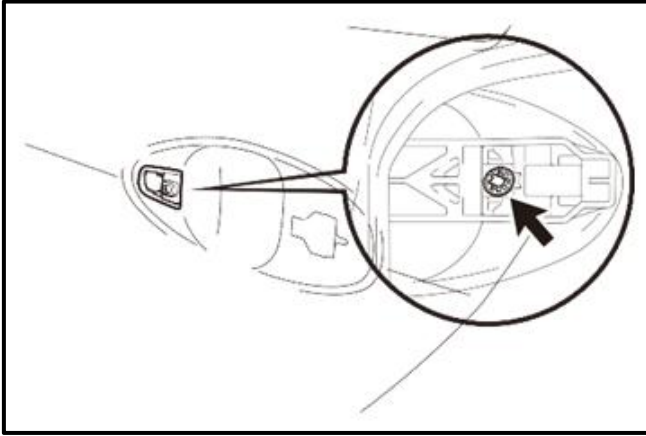
Make sure the front end comes out before pulling the handle grip out after sliding the handle grip.



7. Disassemble the rear end gasket;
Make the 2 jaws shown in the figure loose, then disassemble the gasket;



8. Disassemble the front end gasket;
Make the 2 jaws shown in the figure loose, then disassemble the gasket;



9. Disassemble the left front door outer handle base by disassembling a fixed screw with a cross screwdriver as shown in the figure, and then detaching the jaws to disassemble the outer handle base.

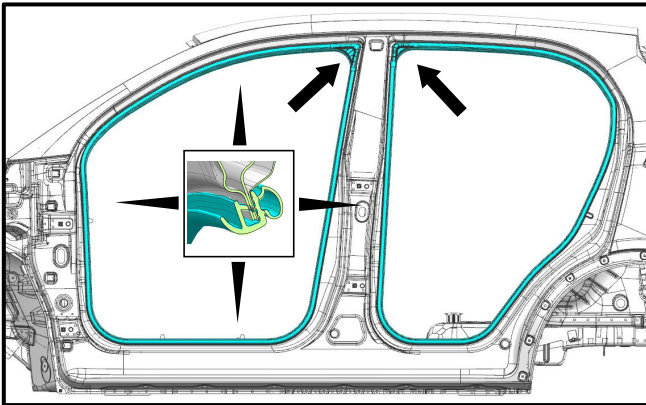
Caution

The methods for disassembling the left and right rear door locks are similar. The left side is taken as an example

Installation process

Installation is performed in the reverse order of disassembly.

13.4.16 Installation and disassembly of door opening sealing strip



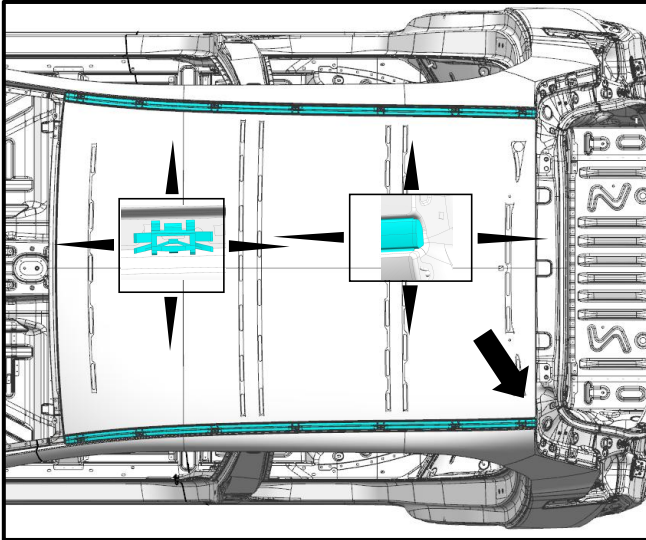
Disassembly procedure

1. Open the door;
2. Pull on the sealing strip to disengage the sealing strip from the body sheet metal stop.

Installation process

1. Open the door;
2. The prototype is distinguished from the front and back by the left and right markings on the corners;
3. Prioritize the installation of corners to ensure that the corners will fit the sheet metal in a visually pleasing manner;
4. Snap the door opening sealing strip into the sheet metal stops in sequence to each side;
5. Use a rubber mallet to tap the sealing strip in sequence to ensure that the door opening sealing strip snap into place;
5. The right side is symmetrical to the left side.

13.4.17 Installation and disassembly of top cover trim strip assembly



Disassembly process

1. Open the door;
2. From the end of the front windshield, cock the end of the top cover trim strip upward and dismantle it backward in sequence.

Installation process

1. With the rear end of the top cover trim strip flush with the rear edge of the body, press the fasteners forward in sequence to ensure that the fasteners snap onto the sheet metal tongue, and press into place when you hear a click;
2. The right side is symmetrical to the left side.

13.5 Instrument boards. Instrument and consoles

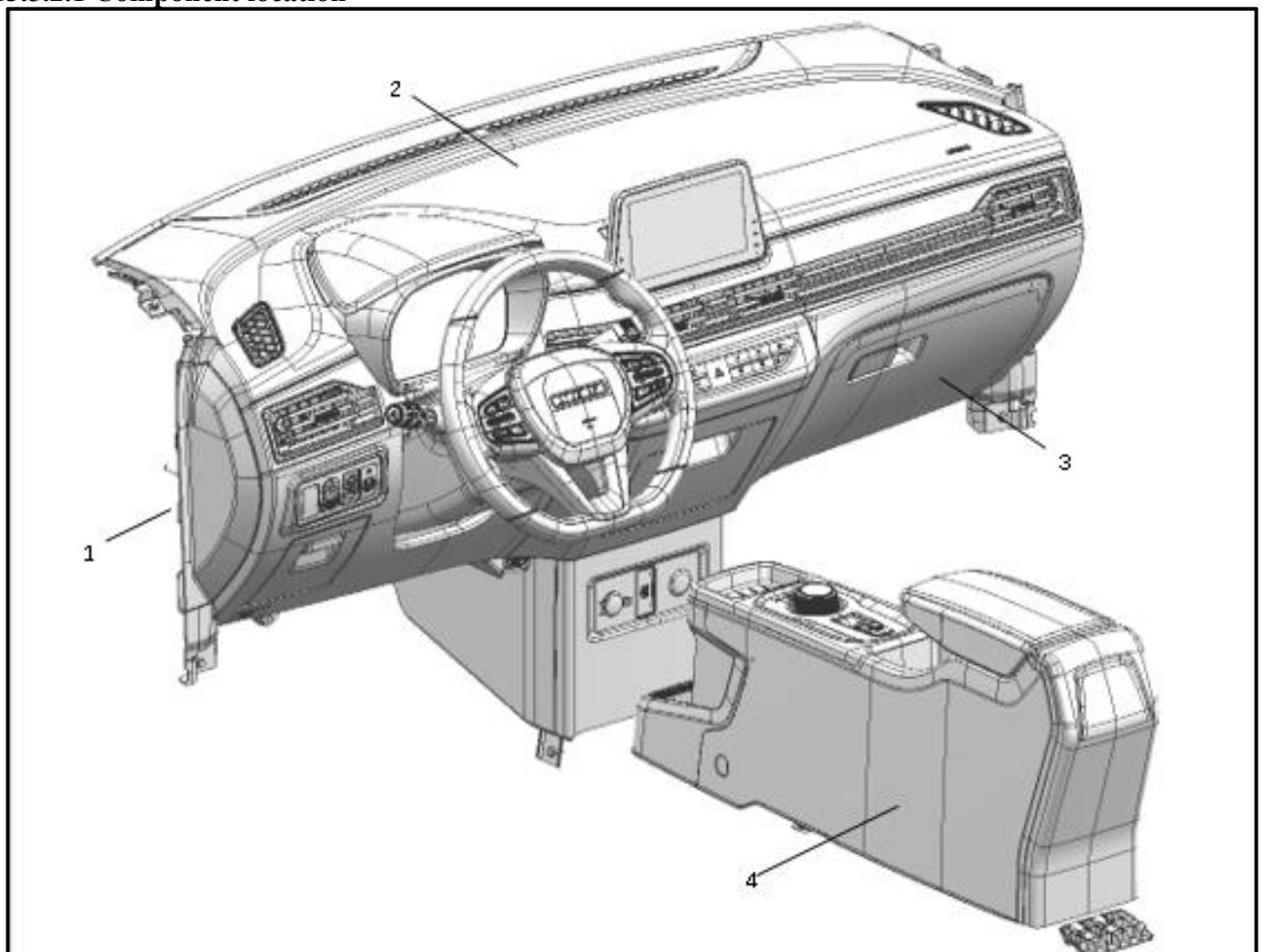
13.5.1 Specifications

13.5.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed screw for lower left guard	ST4.8x16	2±0.5
Fixed bolt of lower left guard panel	M6x16	5±1
Knee pad body on the left side and fixed bolts of cross member	M6x16	5±1
Left side air outlet fixing screw	ST4.8x16	2±0.5
Fixed screw for upper shroud on steering column	ST4.8x16	2±0.5
Fixed bolts for lower shroud on steering column and steering column	ST4.8x16	2±0.5
Fixed screw for right side air outlet	ST4.8x16	2±0.5
Fixed bolts for lower and middle guide panel	M6x16	5±1
Fixed bolts for lower body of instrument board	ST4.8x16	2±0.5
Fixed bolts for lower body of instrument board and cross member	M6x16	5±1
Fixed bolts for upper body of instrument board and cross member	M6x16	5±1
Fixed bolts for mid-channel brackets to body mid-channel sheet metal on left and right side of instrument board cross member	M6x16	5±1
Fixing bolts for the left and right sides of the instrument board cross member to the body sidewall sheet metal	M8x20	23

13.5.2 Component location

13.5.2.1 Component location



1. Instrument board cross member assembly
2. Instrument board assembly

3. Glove box assembly
4. Sub-instrument assembly

13.5.3 Disassembly and installation

13.5.3.1 Replacement of the knee pad on the left side of the instrument board

Warning!

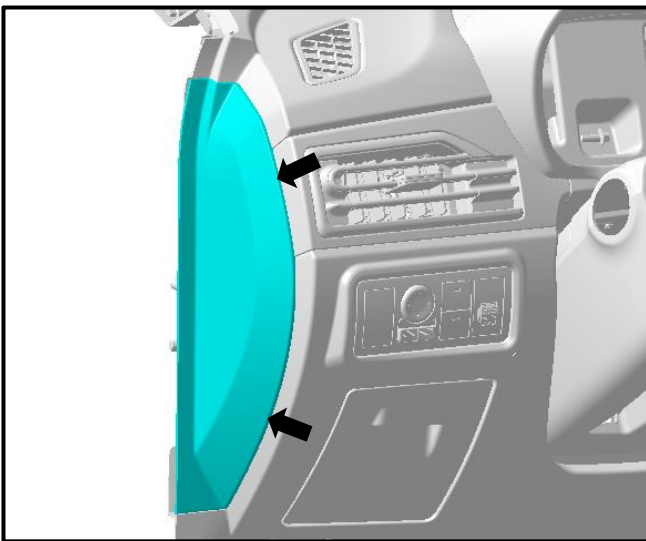
Please refer to warnings of disconnecting the storage battery

Caution

1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;

2. Avoid violent disassembly.

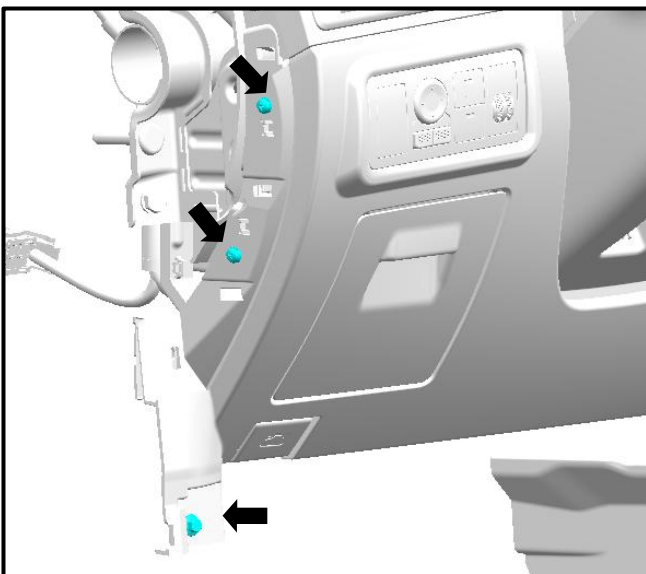
3. The left and right sides are disassembled in the same way.



Disassembly process

1. Disassemble the left side end cap body of instrument board

a. Disassemble the left side end cap body of instrument board with the appropriate tool.

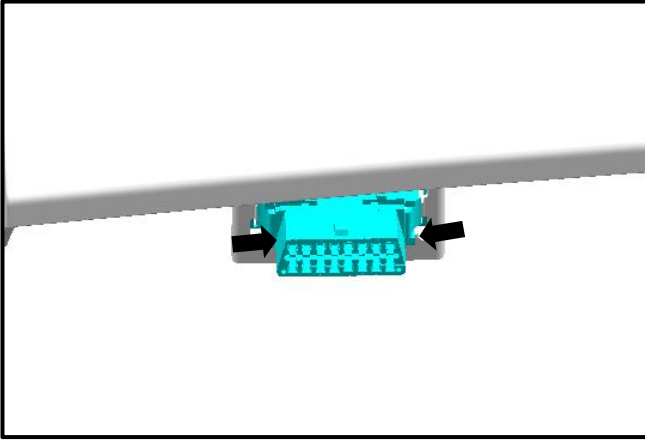


b. Disassemble the left side knee pad body and the 2 fixed screws on the side;

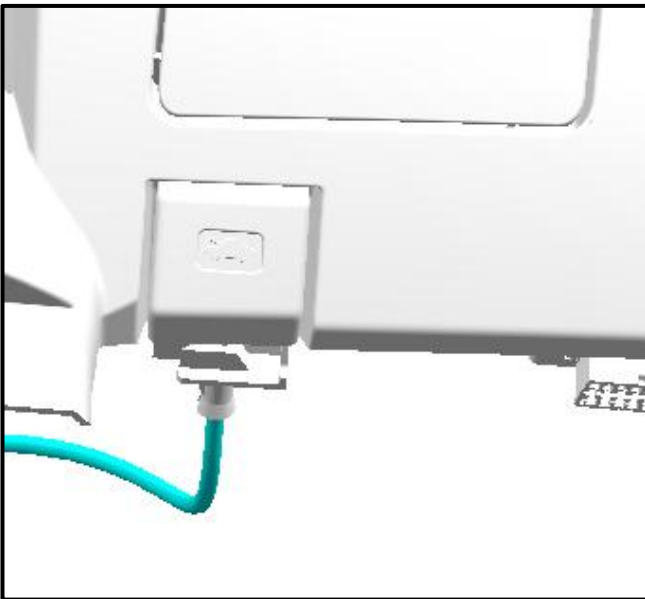
Torque: 2 N·m

c. Disassemble 1 fixed bolt on the side of the left knee pad body and disengage the left knee pad body;

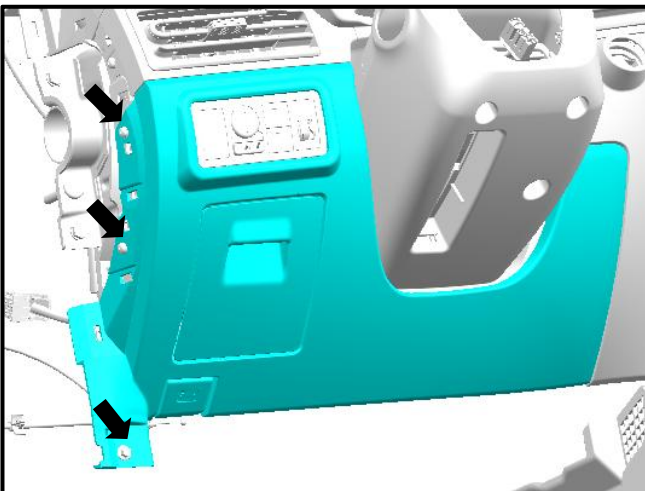
Torque: 5N·m



d. Please refer to the disassembly method of the harness OBD connector to disassemble the OBD connector.

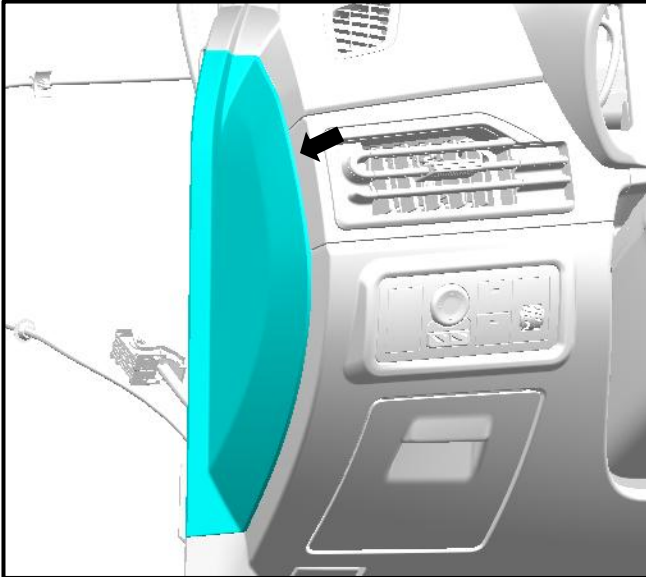


d. Please refer to the disassembly method of hood lock tie wire to disassemble the hood lock tie wire connector.



Installation process

1. Install the hood lock tie wire as well as plug in the OBD joint
2. Install the left side knee pad body
 - a. Install the left side knee pad body and install the 2 fixed screws on the side;
Torque: 2N·m
 - b. Install the 1 fixed bolt below;
Torque: 5N·m

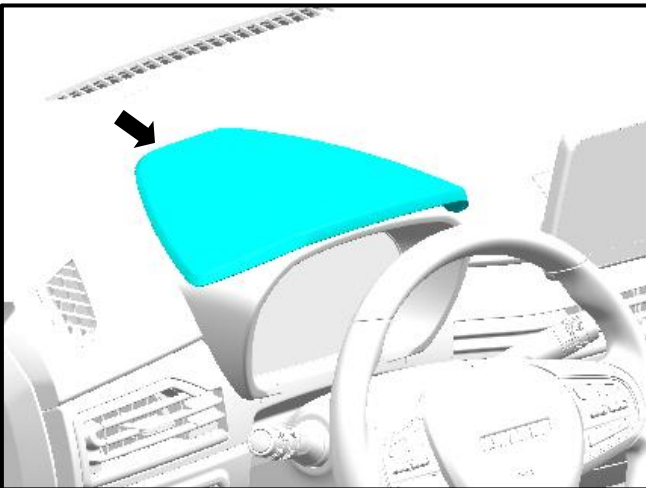


3. Install the left side end cap body of instrument board
 - a. Install the left side end cap body of instrument board.

13.5.3.2 Replacement of Brim Assembly

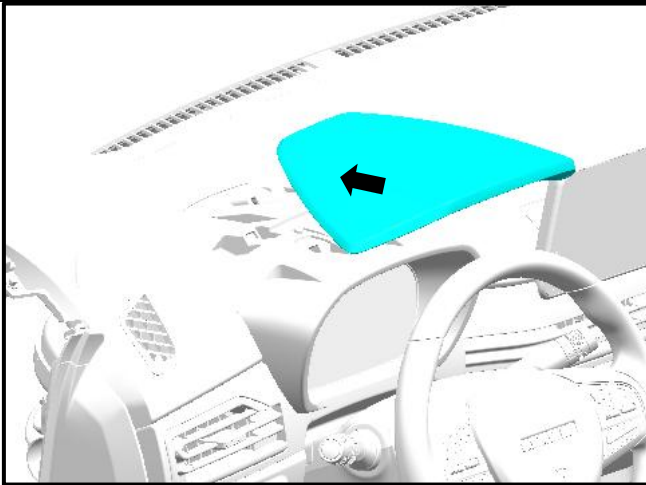
Caution

1. Please use special tools for body repair to disassemble the brim, otherwise it is easy to scratch the edge of the interior panel;
2. Do not drop the A-type clips into the instrument panel during disassembly and installation, as this may cause body rattling problems.



Disassembly process

1. Disassemble brim assembly
 - a. Disassemble the brim assembly with the appropriate tool;



Installation process

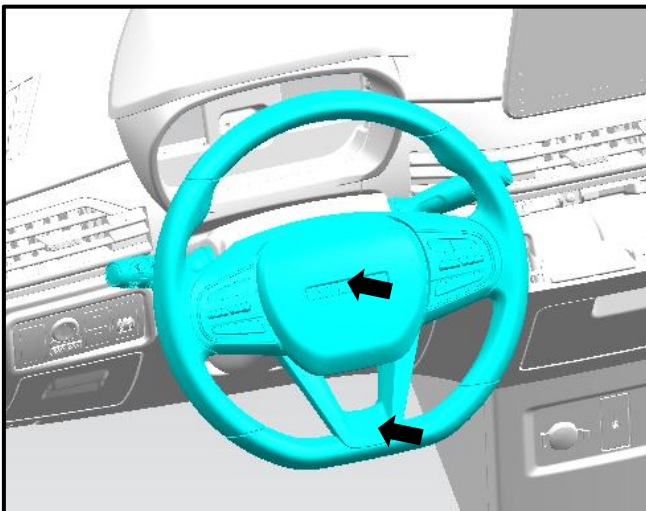
1. Install the brim assembly;

13.5.3.3 Replacement of instrument board steering shroud

Caution

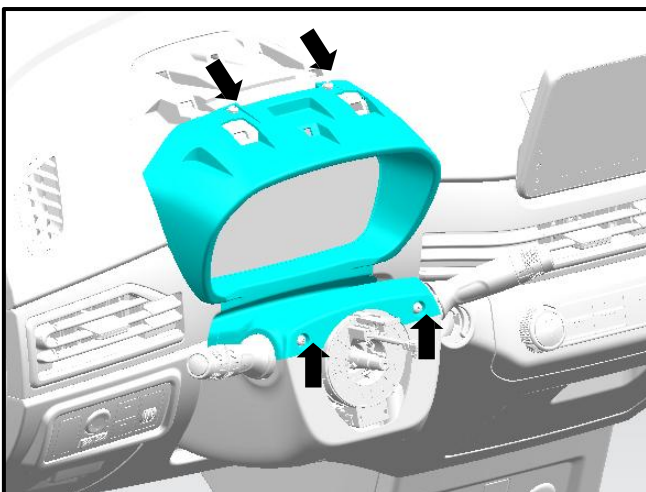
1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;

2. Avoid violent disassembly.



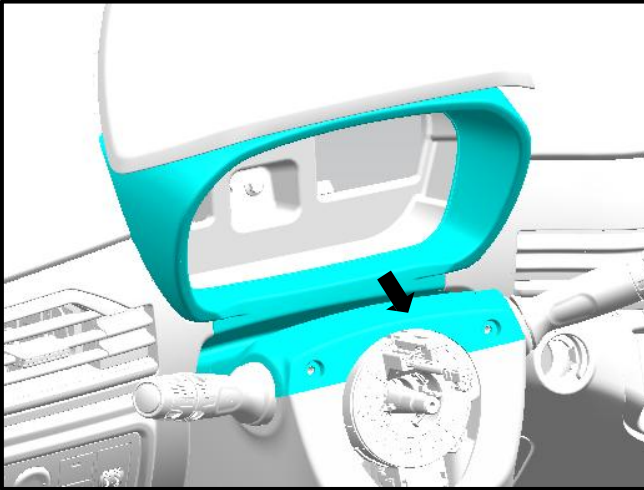
Disassembly process

1. Please refer to 10.2.9.2 Replacement of driver airbag to disassemble the driver airbag assembly
2. Please refer to 8.2.7.1 Replacement of steering wheel to disassemble the steering wheel;
3. Disassemble the brim assembly. Please refer to 13.5.3.2 Replacement of brim assembly

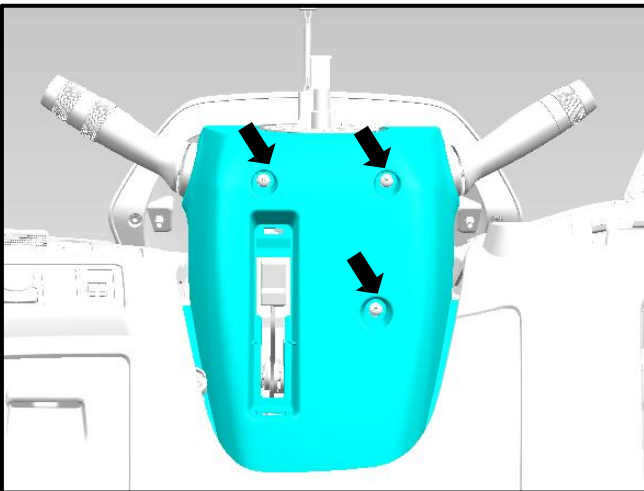


4. Remove the 4 screws from the combination instrument cover assembly;

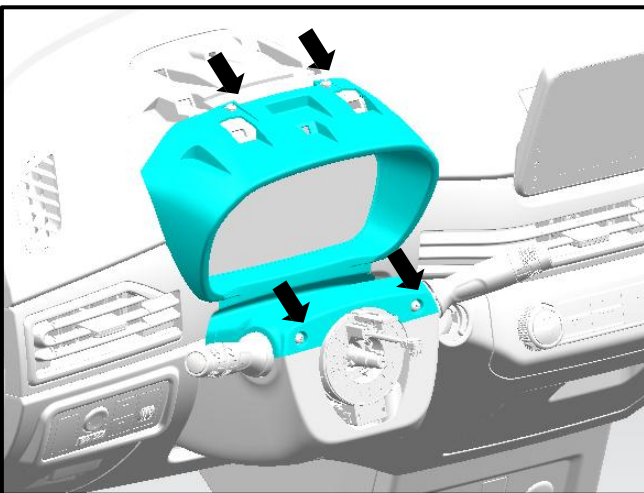
Torque: 2N·m



6. Lift the upper shroud of steering column
7. Remove the combination instrument cover assembly



8. Remove the 3 screws from lower shroud of steering column;
Torque: 2N·m



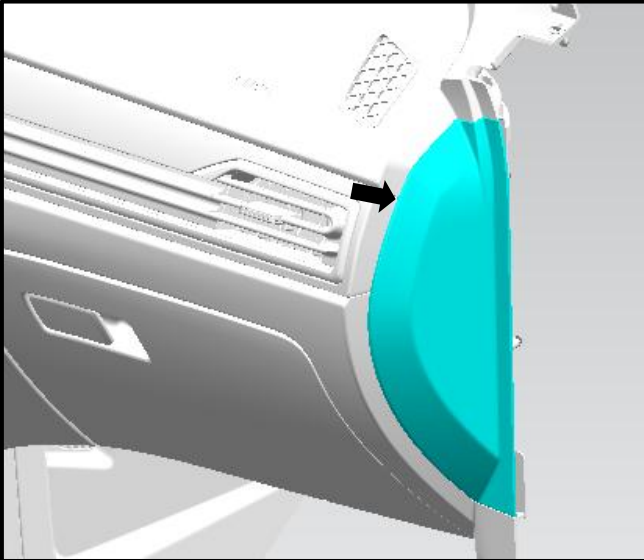
- Installation process
1. Install the lower shield of steering pillar and install the 3 fixed screws;
Torque: 2N·m
 2. Install the combination instrument cover assembly
 - a. Snap the upper and lower steering column shrouds into place.
 - b. Install the upper 4 fixed screws;
Torque: 2N·m
 3. Install the brim;
 4. Install the steering wheel;
 5. Installation of driver airbag.

13.5.3.4 Replacement of instrument board glove box

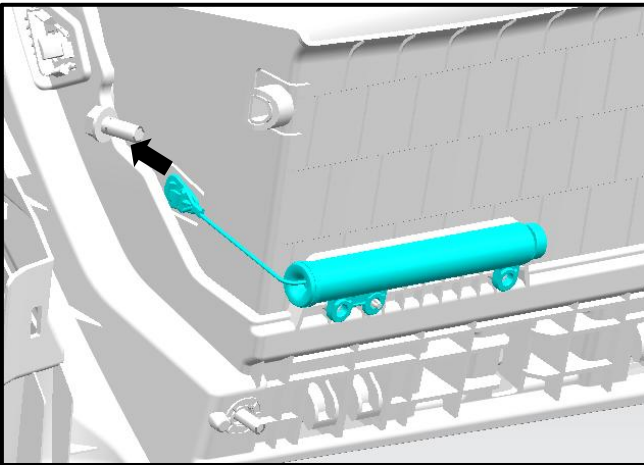
Caution

1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;

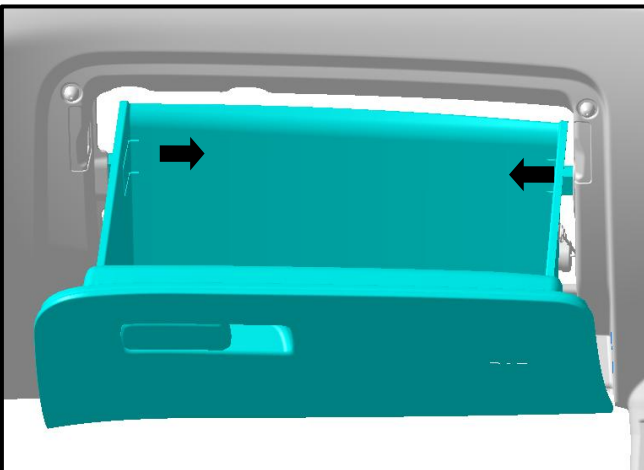
Yuehu Maintenance Manual



- Disassembly process
1. Disassemble the right side end cap body of instrument board
 - a. Disassemble the right side end cap body of instrument board with the appropriate tool.



2. Disassemble the glove box assembly
 - a. Disengage the glove box damp in the direction of the arrow;



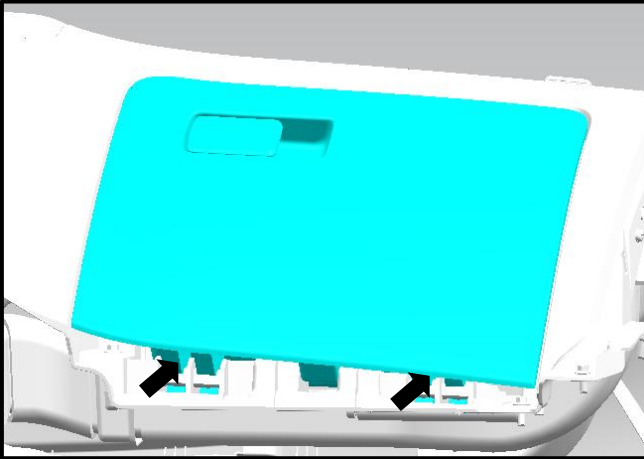
- b. For the location of glove box, flip the glove box underneath by deforming it and remove the glove box directly.

Yuehu Maintenance Manual

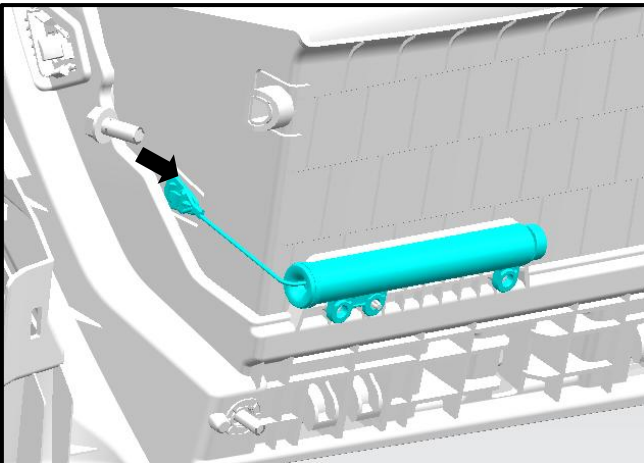
Installation process

1. Install the glove box

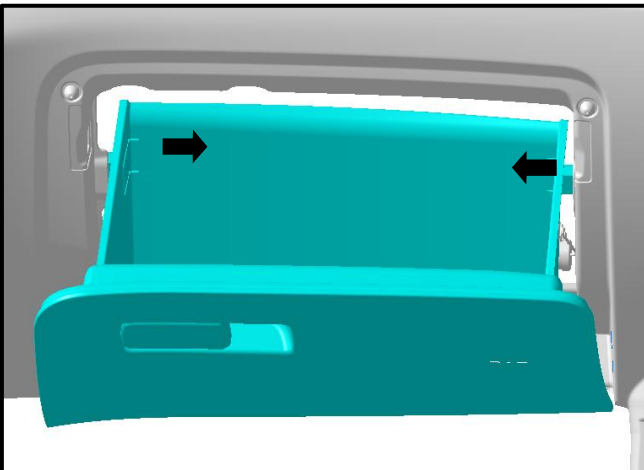
a. For installation of the glove box, directly install the glove box through the HOOK structure in the direction of the arrow;

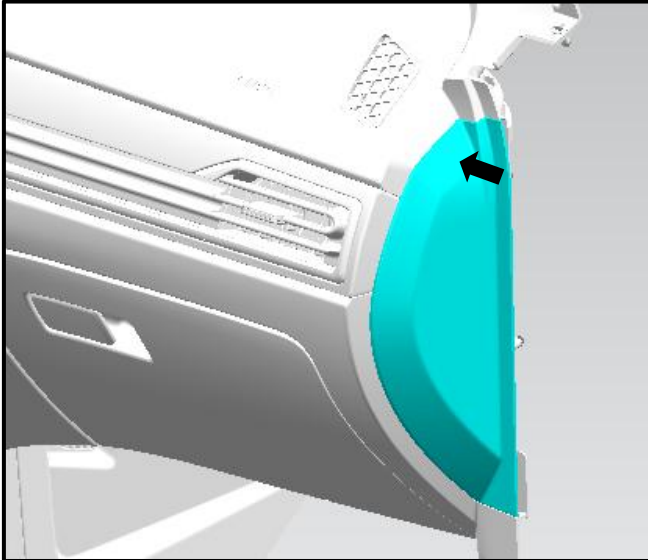


b. Install the glove box damp in the direction of the arrow;



c. Install the glove box into the interior of lower body by deformation



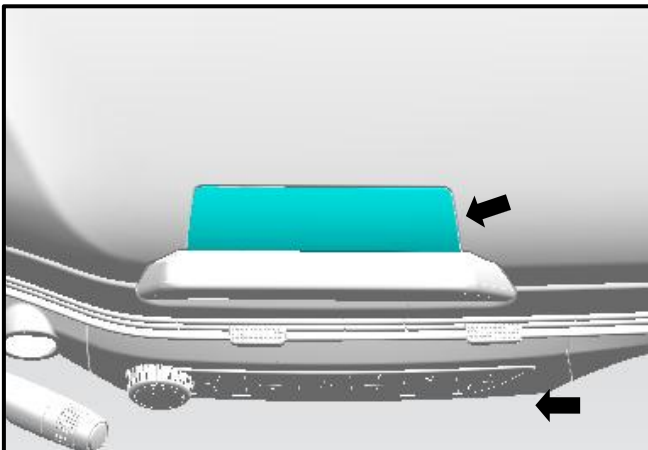


2. Install the instrument panel right side end cap body
 - a. Install the right side end cap body of instrument board.

13.5.3.5 Replacement of the fixed cover of display

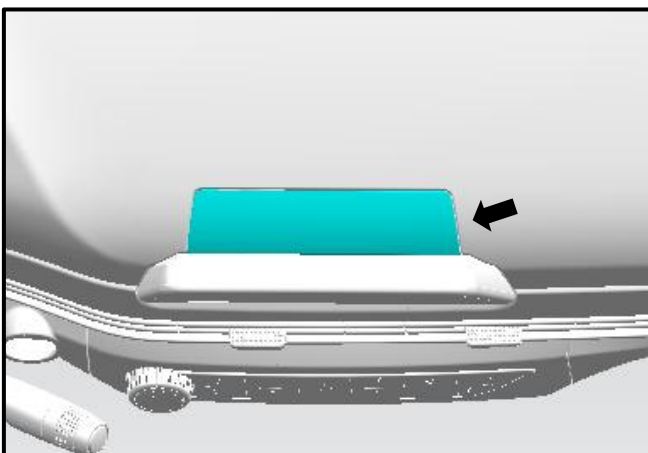
Caution

Please use special tools for body repair to remove the panel, otherwise the skin of the package will be easily scratched;



Disassembly process

1. Disassemble the fixed display cover;
 - a. Remove the combination instrument upper mounting plate with the appropriate tool.



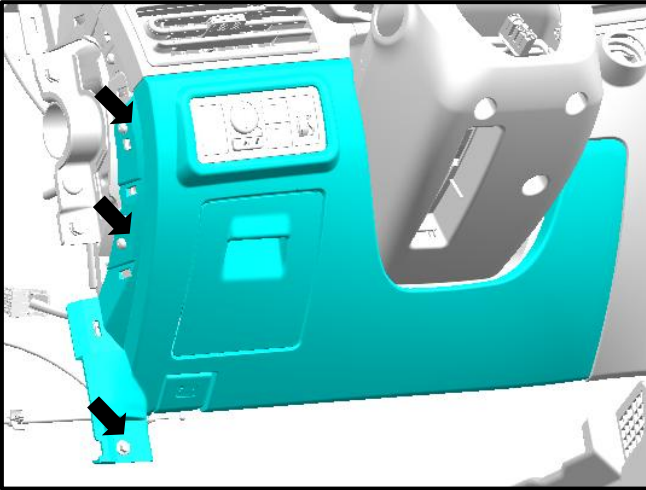
Installation process

1. Install the fixed display cover

13.5.3.6 Replacement of the left side of the instrument board air outlet panel

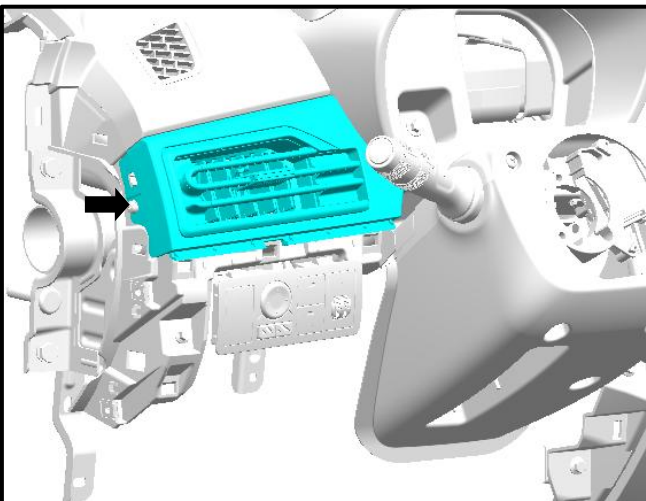
Caution

1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;
2. Do not drop the A-type clips into the instrument panel during disassembly and installation, as this may cause body rattling problems.

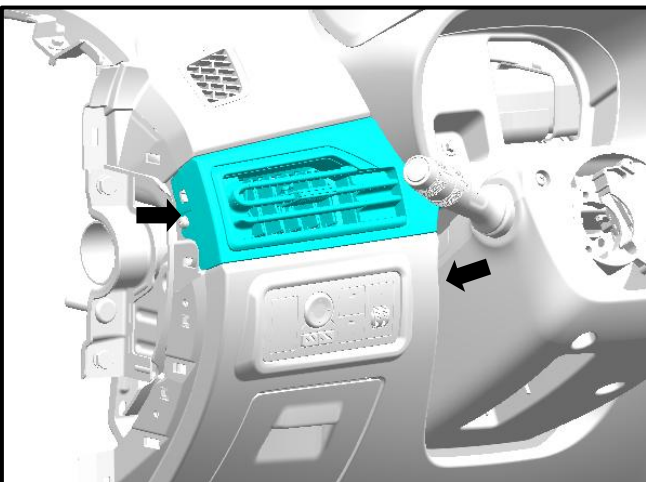


Disassembly process

1. Disassemble the left kneeboard of the instrument board. Please refer to 13.5.3.1 Replacement of left kneeboard of instrument board
2. Please refer to 13.5.3.3 Replacement of instrument board steering shroud to disassemble the steering shroud;



3. Disassemble the left side air outlet panel
 - a. Disengage the left side air outlet panel by disassembling the 1 fixed screw on the left side air outlet panel;
Torque: 2N·m



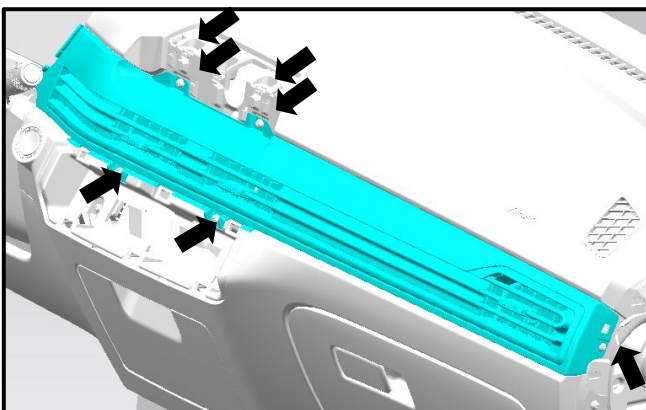
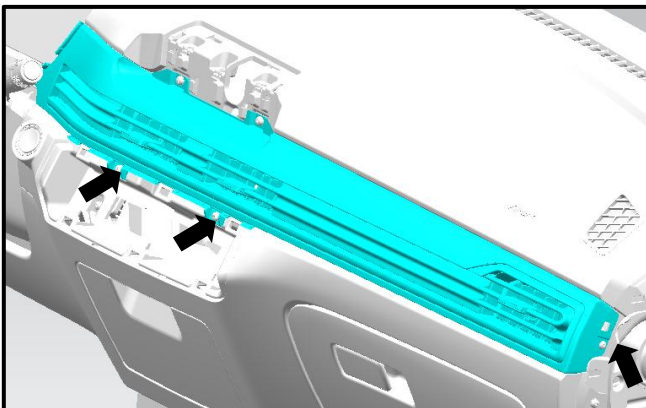
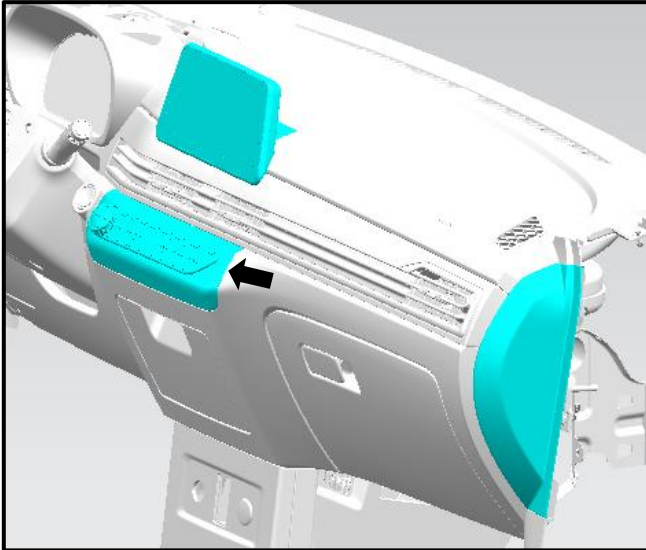
Installation process

1. Left side air outlet panel
 - a. Install the air outlet panel on the left side and install 1 fixed screw on the left side.
Torque: 2N·m
2. Please refer to 13.5.3.3 Replacement of instrument board steering shroud to install the steering shroud
3. Please refer to 13.5.3.1 Replacement of the left side knee pad of instrument board to install the left side kneeboard of instrument board;

13.5.3.7 Replacement of instrument board right side air vent panel

Caution

1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;
2. Do not drop the A-type clips into the instrument panel during disassembly and installation, as this may cause body rattling problems.



Disassembly process

1. Please refer to 13.5.3.1 Replacement of left side keen pad of instrument board to disassemble the right side end cover of the instrument board;
2. Please refer to 13.5.3.5 Fixed cover of the display to disassemble the fixed cover of the display;
3. Please refer to 12.10.5.1 Disassembly and installation of central control display to disassemble central control display;
4. Please refer to 13.5.3.3 Replacement of instrument board steering shroud to disassemble the steering shroud;
5. Please refer to 9.2.8.6 Replacement of A/C control panel to disassemble the A/C control panel;

6. Remove the right side air outlet panel assembly
 - a. Disengage the right side air outlet panel by removing the 5 fixed screws on the right side air outlet panel.

Torque: 2N·m

Installation process

1. Install the right side air outlet panel
 - a. Install the air outlet panel on the right side and install 5 fixed screws.
- Torque: 2N·m
2. Please refer to 9.2.8.6 Replacement of A/C control panel to install A/C control panel;
3. Please refer to 13.5.3.3 Replacement of instrument board steering shroud to install the steering shroud
4. Please refer to 12.10.5.1 Disassembly and installation of central control display to install central control display;
5. Please refer to 13.5.3.5 Fixed cover of the display to install fixed cover of the display
6. Please refer to 13.5.3.1 Replacement of left side keen pad of instrument board to install right side end cover of the instrument board.

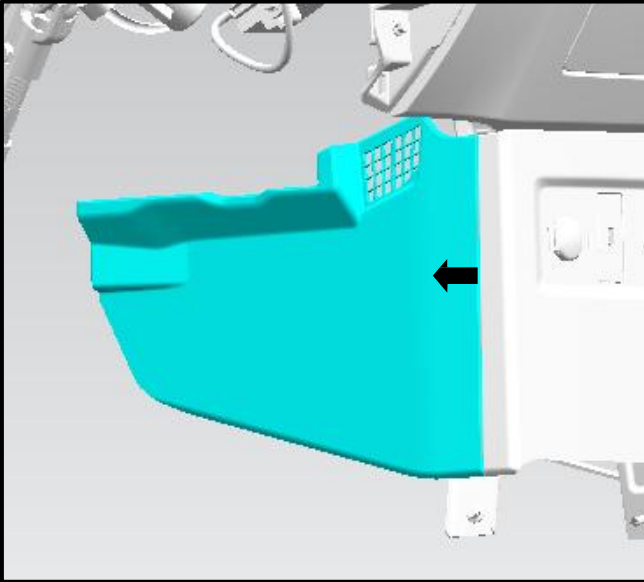
13.5.3.8 Replacement of instrument board

Caution

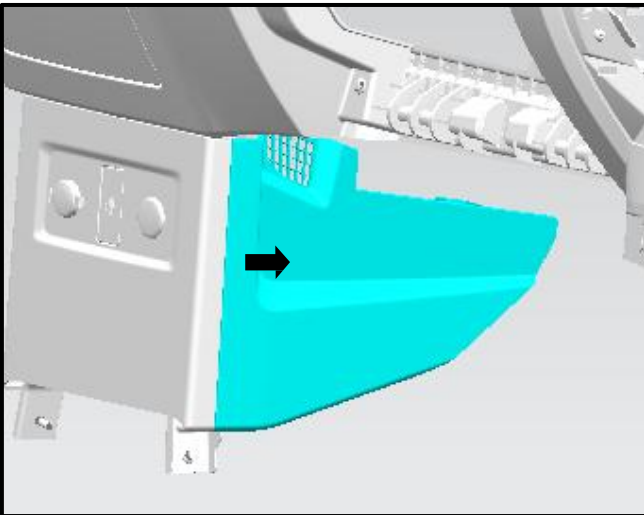
1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;
2. Do not drop the A-type clips into the instrument panel during disassembly and installation, as this may cause body rattling problems.

Disassembly procedure:

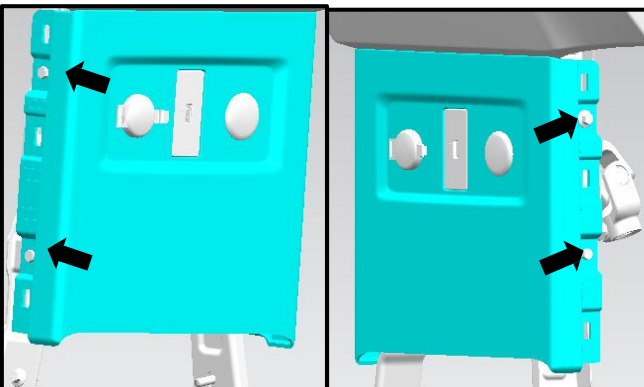
1. Disassemble the left kneeboard of the instrument board. Please refer to 12.8.3.1 Replacement of left kneeboard of instrument board
2. Please refer to 10.2.9.2 Replacement of driver airbag to disassemble the main driver airbag;
3. Please refer to 8.2.7.1 Replacement of steering wheel to disassemble the steering wheel;
4. Disassemble the brim assembly. Please refer to 13.5.3.2 Replacement of brim assembly
5. Please refer to 13.5.3.3 Replacement of steering column shroud assembly;
6. Please refer to 12.6.6 Disassembly and installation of combination switch and clock spring to disassemble the clock spring and combination switch;
7. Please refer to 13.5.3.5 Replacement of fixed cover seat of display to disassemble fixed cover of display;
8. Please refer to 12.12.6.1 Disassembly and installation of combination instrument to disassemble instrument;
9. Please refer to 13.5.3.6 Replacement of left side air outlet panel of instrument board to disassemble left side air outlet panel of instrument board;
10. Please refer to 9.2.8.6 Replacement of A/C control panel to disassemble the A/C control panel;
11. Please refer to 13.5.3.7 Replacement of right side air outlet panel of instrument board to disassemble right side air outlet panel of instrument board;
12. Please refer to 13.5.3.4 Replacement of glove box to disassemble glove box;
13. Please refer to 13.6.2.5 Replacement of upper guard of left side A pillar to disassemble the upper guard of left side A pillar;



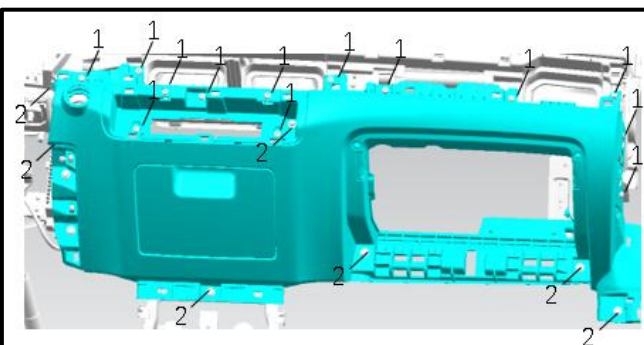
14. Disassemble the middle lower and left guard assembly of the instrument board
- Remove the middle lower and left guard assembly of the instrument board with the appropriate tool;



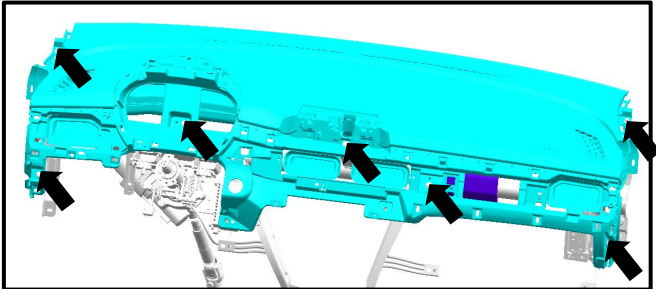
15. Disassemble the middle lower and right guard assembly of the instrument board
- Remove the middle lower and right guard assembly of the instrument board with the appropriate tool;



16. Disassemble the middle and lower guard assembly of the instrument board
- Disassemble the 4 fixed bolts from the lower and middle guard of the instrument board, and disengage the lower and middle guard assembly.
Torque: 5N·m



17. Disassemble the lower body of the instrument board
- Disassemble the 14 fixed screws 1 at the upper end of the lower body of the instrument board;
Torque: 2N·m
 - Disassemble the 7 fixed bolts 2 at the lower end of the lower body of the instrument board;
Torque: 5N·m



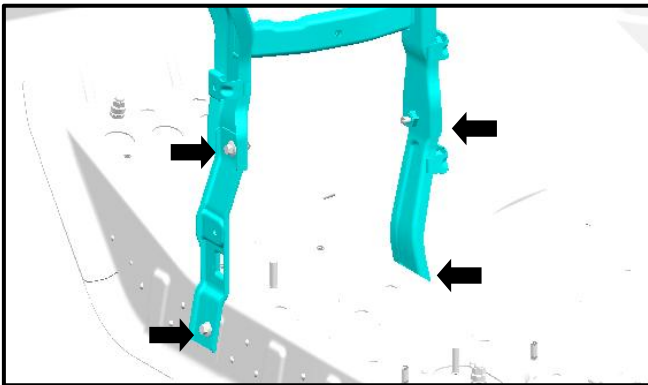
18. Disassemble the upper body of the instrument board
 - a. Disassemble the 7 fixed bolts from the body on the instrument board;
Torque: 5N·m

Installation process
Installation is performed in the reverse order of disassembly.

13.5.3.9 instrument board cross member replacement

Caution

1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;
2. Do not drop the A-type clips into the instrument panel during disassembly and installation, as this may cause body rattling problems.

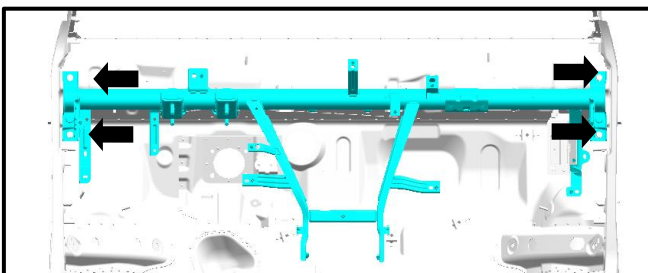
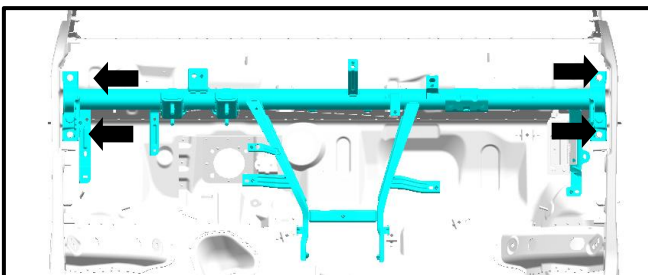


- Disassembly procedure:
1. Disassemble the instrument board assembly; Please refer to 13.5.3.8 Replacement of instrument board assembly;
 2. Disassemble the large screen host; Please refer to 12.10.5.2 Replacement of large screen host;
 3. Disassemble the instrument harness;
 4. Please refer to 8.2.7 Disassembly and Installation of electric steering column assembly to disassemble steering column;
 5. Disassemble instrument board cross member
 - a. Disassemble the 4 fixed bolts from the left and right sides mounting brackets on the front floor of the instrument board cross member and from the carbody center channel sheet metal installation;

Torque: 5N·m

- b. Disassemble the 4 fixed bolts from the left and right sides of the instrument board cross member and from carbody side wall sheet metal installation;

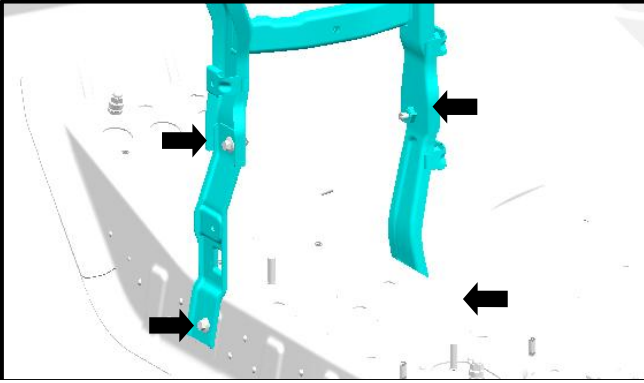
Torque: 23N·m



Installation process

1. Install instrument board cross member
 - a. Mount the instrument board cross member, and fix 4 fixed bolts on the left and right sides and the carbody side wall sheet metal installation;

Torque: 23N·m



- b. Mount the 4 fixed bolts of the left and right side mounting brackets for the front floor of the instrument board cross member and the car body center channel sheet metal installation;
Torque: 5N·m

2. Install the steering column;
3. Install the instrument harness;
4. Install the large screen host;
5. Install the instrument board assembly;

13.5.3.10 Replacement of the rear panel assembly of the auxiliary instrument board

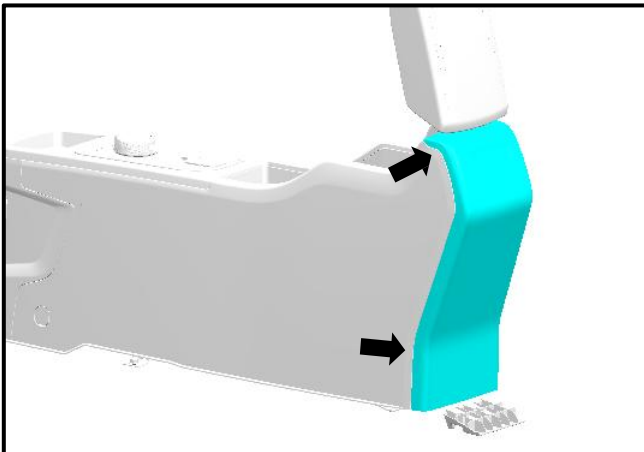
Warning!

Please refer to warnings of disconnecting the storage battery

Caution

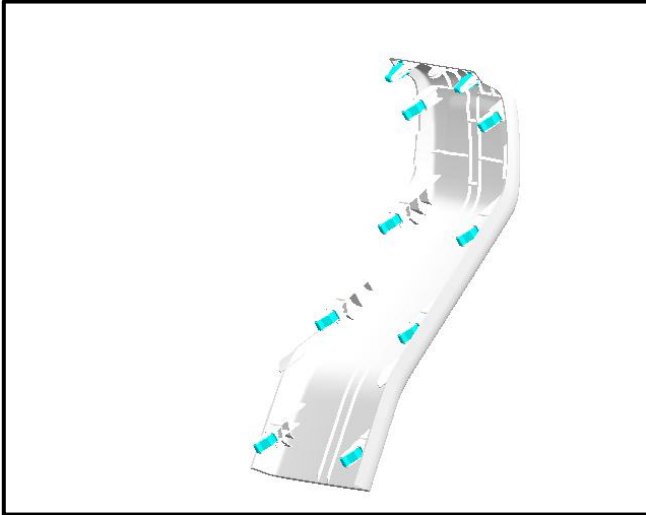
1. Please use special tools for body repair to disassemble the panels, otherwise the edges of the interior panels will be easily scratched;

2. Do not drop the A-type fasteners into the auxiliary instrument board during disassembly and installation, which may cause a rattling problem of the auxiliary instrument board.



Disassembly process

1. Disassemble the rear panel assembly of the auxiliary instrument board
 - a. Leave the auxiliary instrument board armrest open;
 - b. Disassemble the rear panel assembly of the auxiliary instrument board from the connection position of the rear panel assembly of the auxiliary instrument board and the armrest in the direction of the arrow.



Installation process

1. Install the rear panel assembly of the auxiliary instrument board
 - a. Align the 10 A-type fasteners of the rear panel assembly of the auxiliary instrument board with the snap ports on the auxiliary instrument board for clamping.

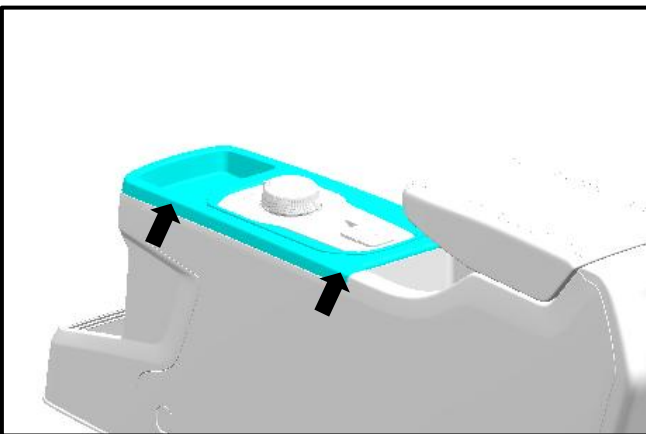
13.5.3.11 Replacement of upper panel assembly of the auxiliary instrument board

Warning!

Please refer to warnings of disconnecting the storage battery

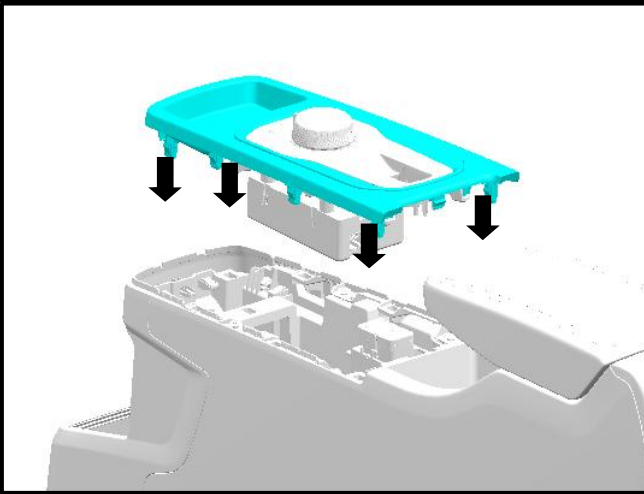
Caution

1. Please use special tools for carbody repair to disassemble the trim panels; otherwise the edges of the interior trim panels will be easily scratched.
2. Do not drop the A-type fasteners into the auxiliary instrument board during disassembly and installation, which may cause a rattling problem of the auxiliary instrument board.



Disassembly process

1. Disassemble the upper panel assembly of the auxiliary instrument board
 - a. Disassemble the upper panel assembly of the auxiliary instrument board in the direction of the arrow.
 - b. Please refer to 6.2.7 Replacement of electronic shift system to disassemble the shift knob assembly;



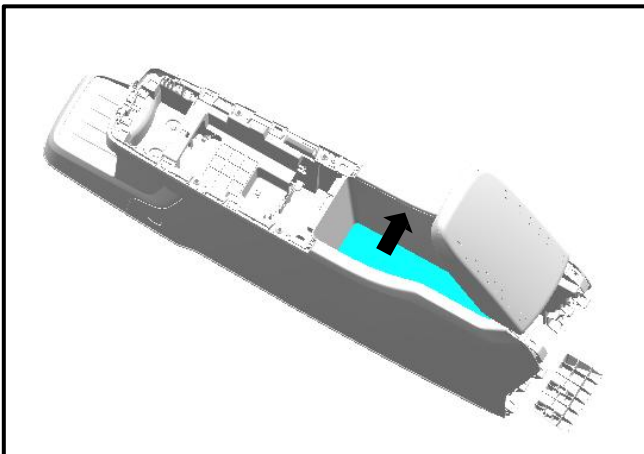
Installation process

1. Please refer to 6.2.7 Replacement of electronic shift system to install the shift knob assembly ;
2. Install the upper panel assembly of the auxiliary instrument board;
 - a. Align the 9 A-type fasteners of the upper panel assembly of the auxiliary instrument board with the snap ports on the auxiliary instrument board for clamping.

13.5.3.12 Replacement of auxiliary instrument board

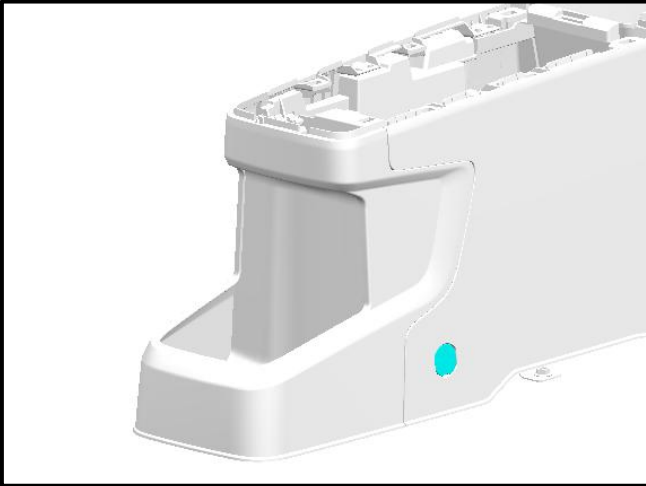
Disassembly process

1. Please refer to 13.5.3.10 Replacement of rear panel assembly of the auxiliary instrument board to disassemble rear panel assembly of the auxiliary instrument board;
2. Please refer to 13.5.3.11 Replacement of the upper panel assembly of the auxiliary instrument board to disassemble upper panel assembly of the auxiliary instrument board;
3. Please refer to 6.2.7 Replacement of electronic shift system to disassemble the shift knob assembly;
4. Disassemble the auxiliary instrument board body assembly
 - a. Open the auxiliary instrument board armrest assembly, and remove the auxiliary instrument board storage box pad;

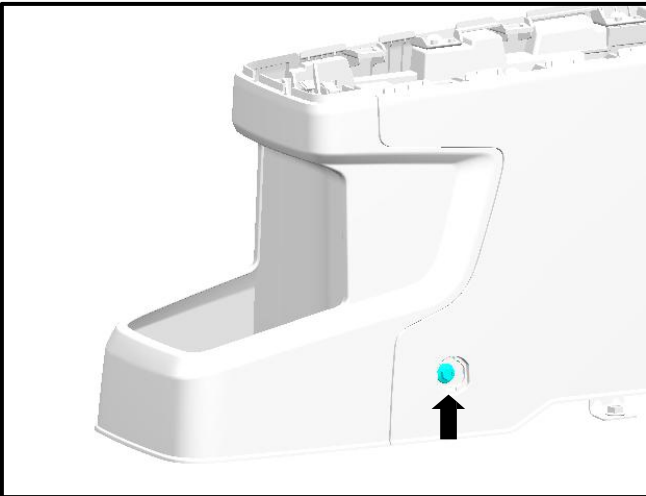


- b. Remove the auxiliary instrument board plug covers (one on each side, left and right) with the appropriate tool;

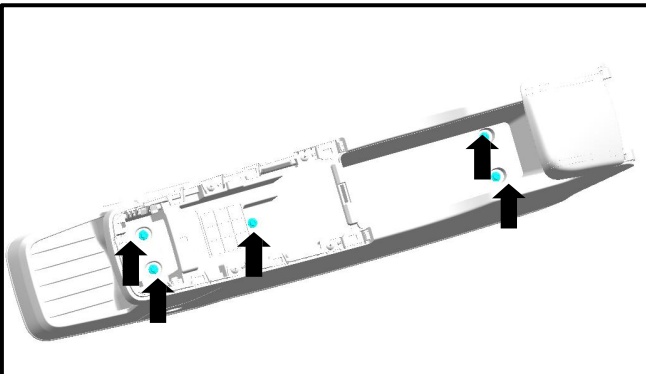




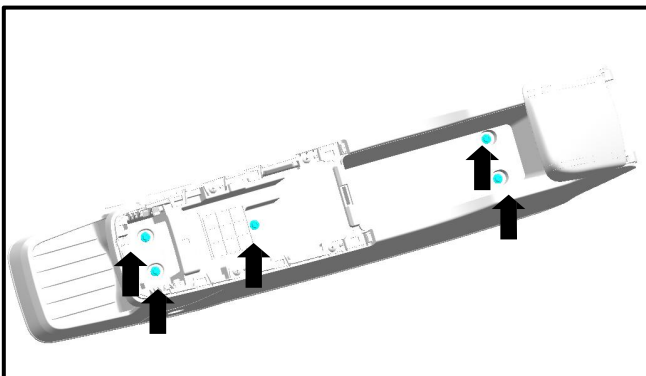
- c. Disassemble the 2 fixed bolts from the auxiliary instrument board body and the mounting bracket assembly in the front section of the auxiliary instrument;
Torque: 5N·m



- d. Disassemble the 5 fixed bolts from the auxiliary instrument board body and the mounting bracket assembly of the auxiliary instrument;
Torque: 5N·m

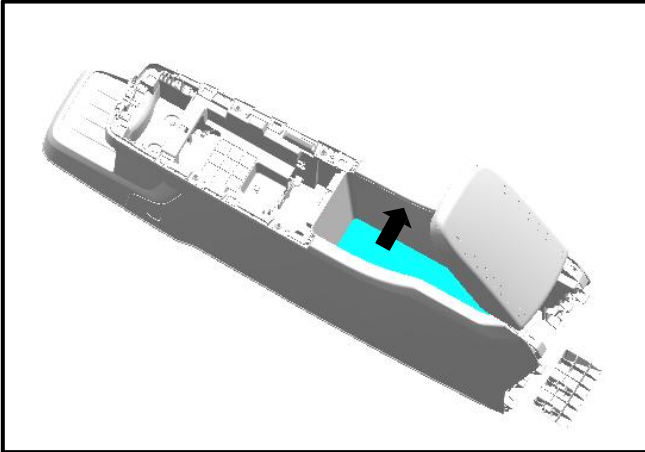


- e. Take out the auxiliary instrument board body assembly

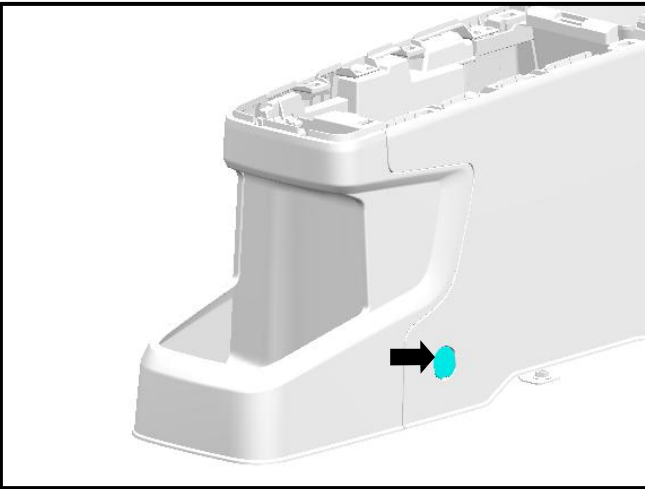


Installation process

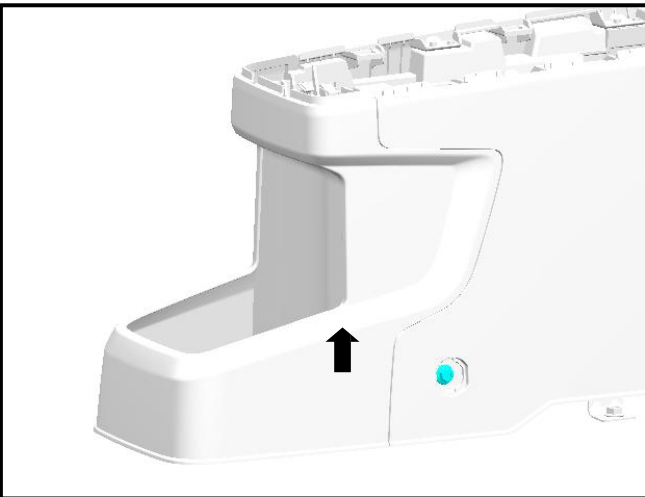
- a. Place the auxiliary instrument board body in the proper location in the center channel, and align the auxiliary instrument board body bolt mounting hole locations with the direct mounting hole locations of the auxiliary instrument board;
- b. Tighten the 5 fixed bolts of the auxiliary instrument board body assembly and the auxiliary instrument mounting bracket assembly;
Torque: 5N·m



c. Open the auxiliary instrument board armrest assembly, and put into the auxiliary instrument board storage box pad;



d. Install the auxiliary instrument board plug covers (one on each side, left and right);



e. Tighten the 2 fixed bolts of the auxiliary instrument board body assembly and the mounting bracket assembly in the front section of the auxiliary instrument board;

Torque: 5N·m

f. Install the rear panel assembly of the auxiliary instrument board

g. Install the upper panel assembly of the auxiliary instrument board;

h. Install the shift knob assembly;

13.6 Interior trim

13.6.1 Specifications

13.6.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixing screws for the left front door guard assembly	ST4.8×16	2±0.5
Fixing screws for the left rear door guard assembly	ST4.8×16	2±0.5
Fixed bolt of left front door handle box bracket	M6×16	5±1
Fixed bolt of left rear door handle box bracket	M6×16	5±1
Fixed screws of A-pillar lower guard assembly	ST4.8×16	2±0.5
Fixed screws of B-pillar lower guard assembly	ST4.8×16	2±0.5
Fixed screws of C-pillar upper guard assembly	ST4.8×16	2±0.5
Fixed screws of C-pillar lower guard assembly	ST4.8×16	2±0.5
Fixed bolts for the connection between top puller assembly and carbody side wall	M6×16	4~6
Fixed bolts for connecting the left sun visor to the front roof cross member of the vehicle body	M6×16	4~6
Fixed bolts for the connection between the right sun visor body and the front roof cross member of the carbody	M6×16	4~6
Fixed bolts for connection between sun visor hooks and the front roof cross member of the carbody	M6×16	4~6

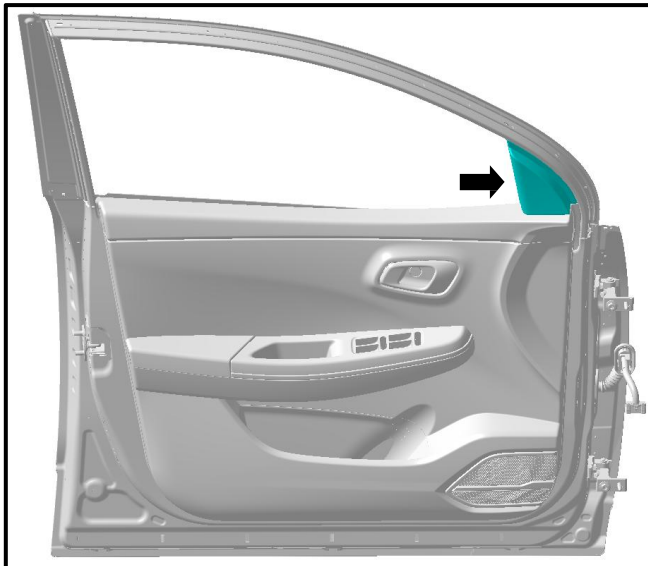
13.6.2 Disassembly and installation

13.6.2.1 Replacement of the front door guard assembly

Caution

1. The left and right sides are disassembled and installed in the same way.
2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

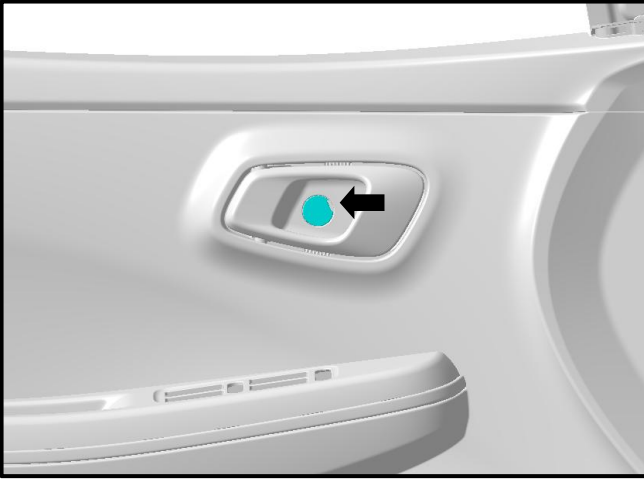
Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.



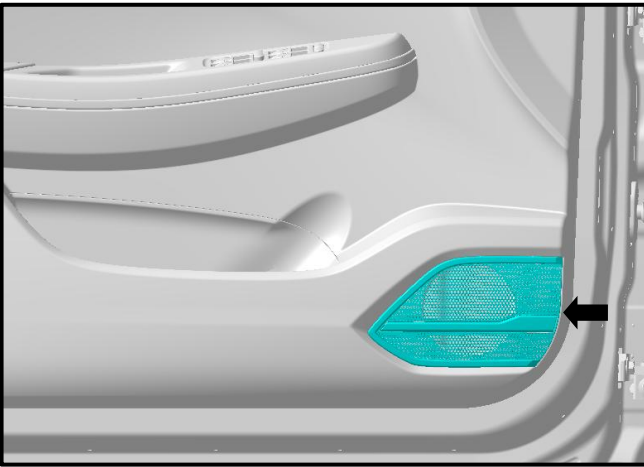
- Disassembly procedure:
1. Open the front hood;
 2. Disconnect the negative battery cable;
 3. Disassemble the left front door inner triangle panel assembly;

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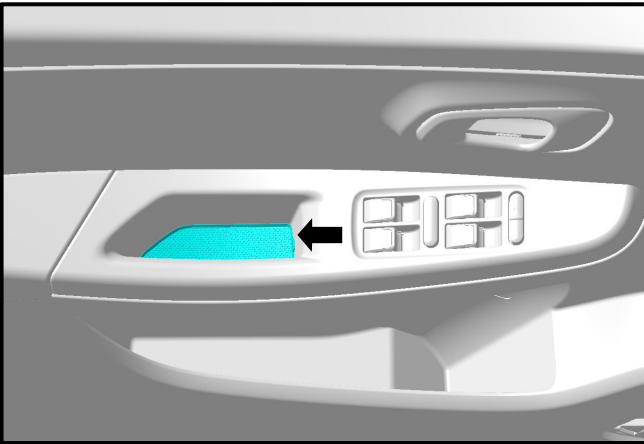
4. Disassemble the left front door inner grommet box plug cover;



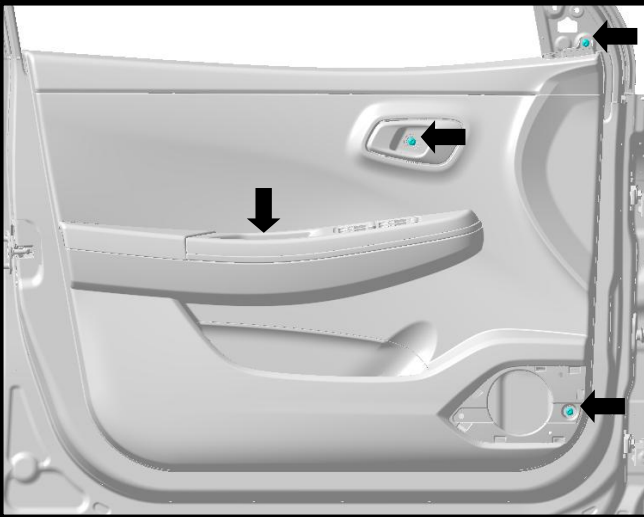
5. Disassemble the left front door speaker mask assembly;



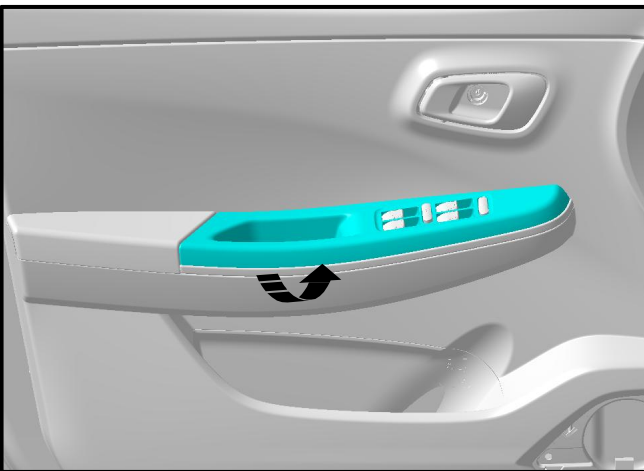
6. Remove the left front door switch panel rubber gasket;



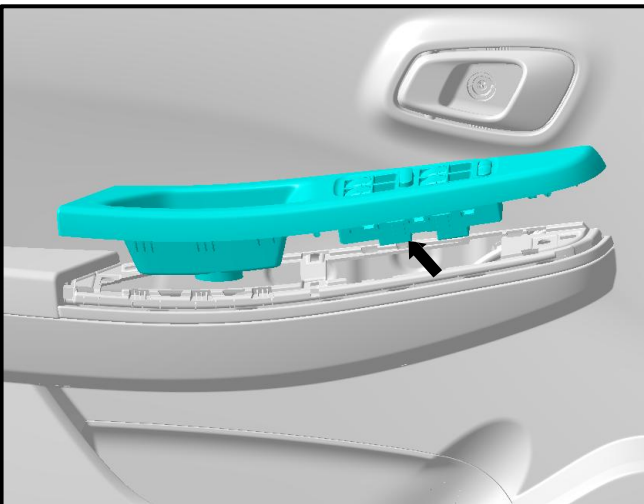
7. Disassemble the 4 fixed screws from the left front door guard assembly;



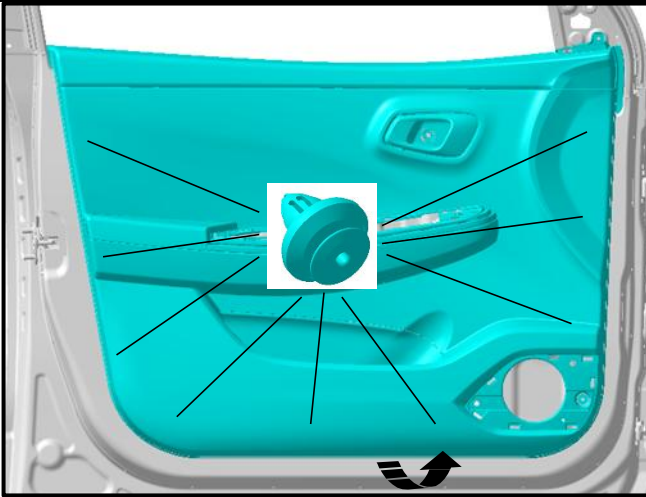
8. Separate the left front door switch panel assembly;



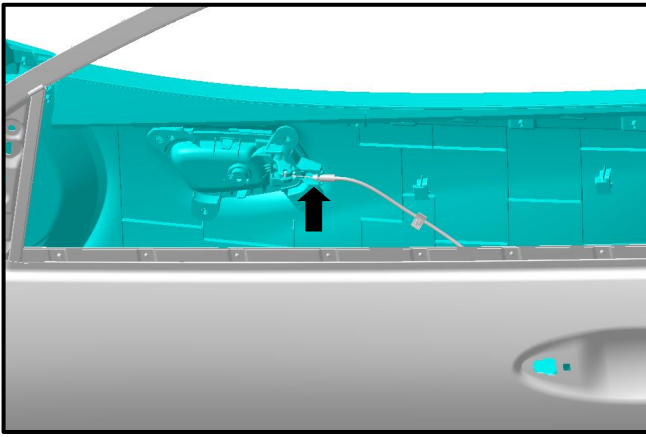
9. Disengage the driver's side glass lift switch and the left front door wiring harness assembly plug, remove the left front door switch panel assembly;



10. Disassemble the 9 plastic fasteners from the left front door guard assembly, and separate the door guard from the left front door sheet metal;

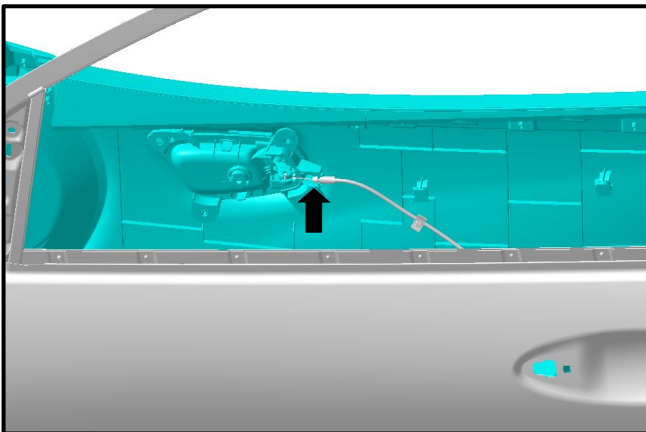


11. Disengage the mechanical inner opening pull cable of the left front door, and remove the left front door guard assembly.



Installation procedure:

1. Plug in the mechanical inner opening pull wire of the left front door, and place the left front door guard assembly on the left front door sheet metal;

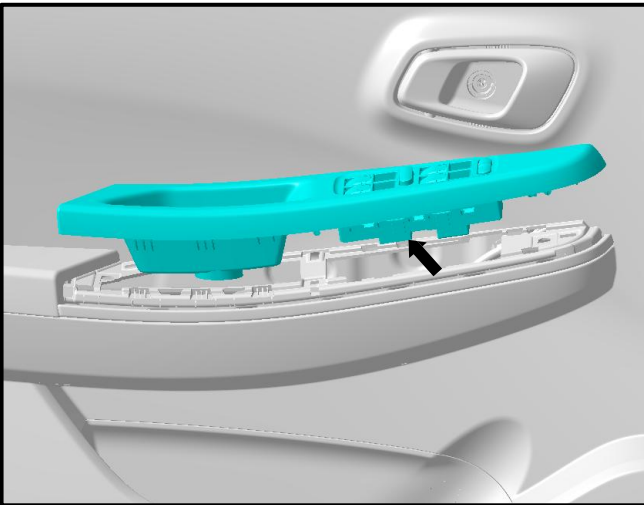


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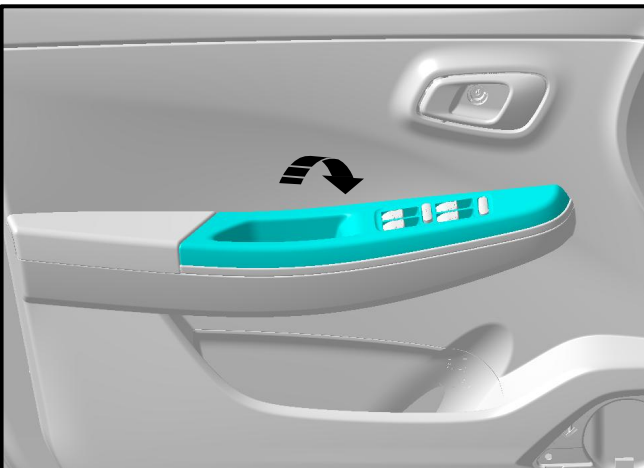
2. Align the left front door guard assembly fasteners with the mounting holes. Press down on the door guard and fasten it;



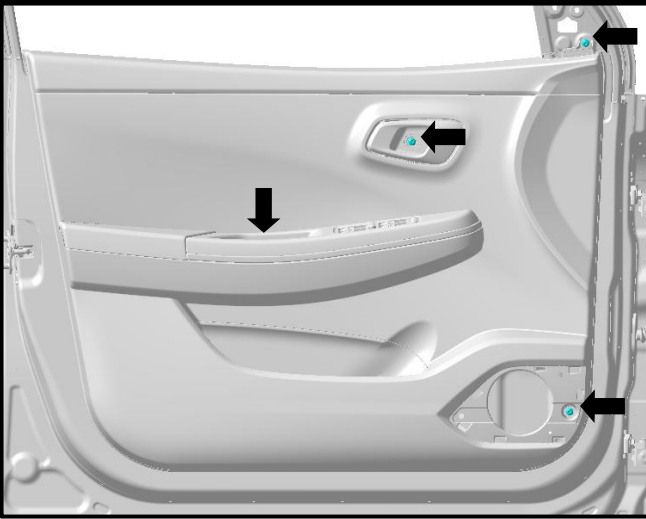
3. Plug in the driver's side glass lift switch and the left front door harness assembly plug, and place the left front door switch panel assembly on the door guard assembly;



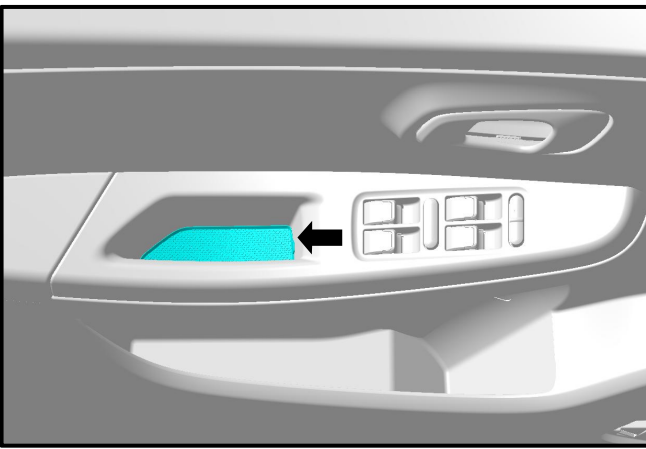
4. Install the left front door switch panel assembly;



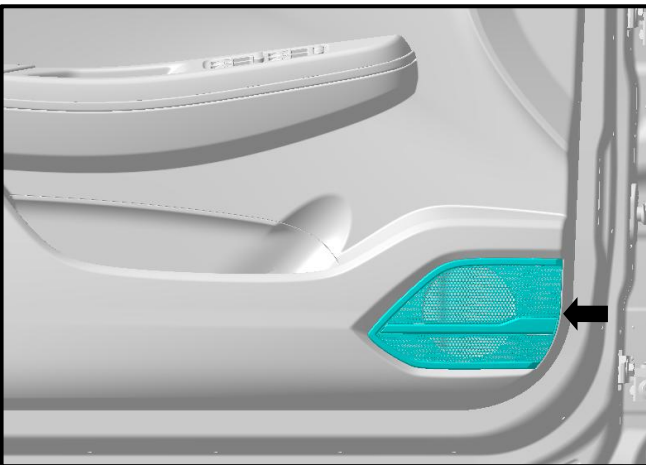
5. Install the 4 fixed screws for the left front door guard assembly;

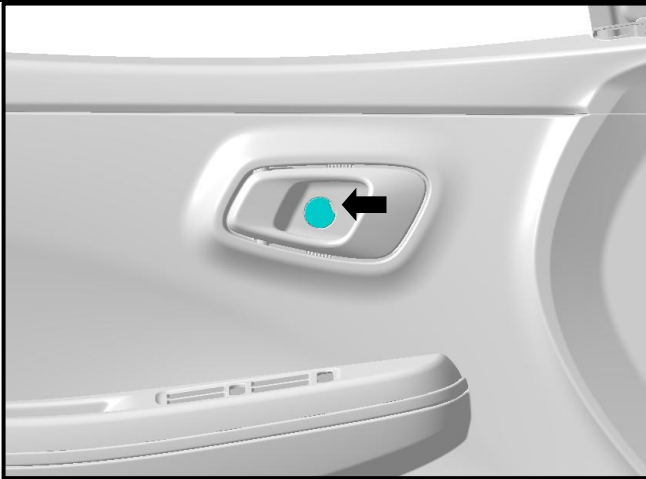


6. Install the left front door switch panel rubber gasket;

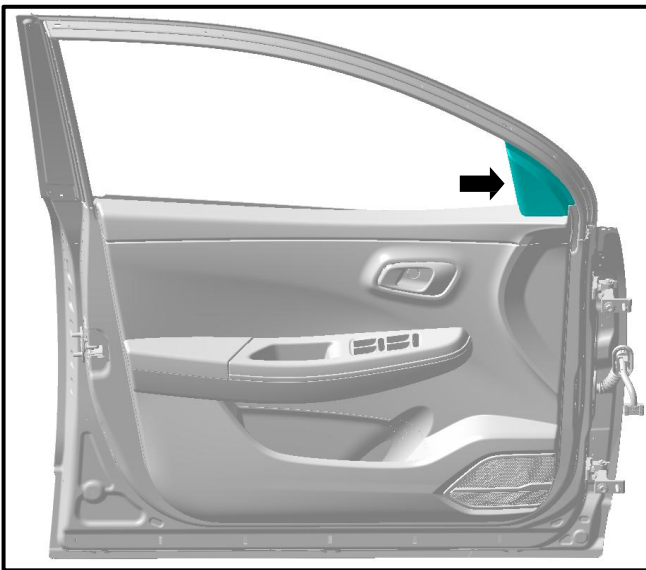


7. Install the left front door speaker mask assembly;





8. Install the left front door inner grommet box plug cover;



9. Install the left front door inner triangle panel assembly;
10. Connect the negative cable of the storage battery
11. Close the front engine hood.

13.6.2.2 Replacement of the rear door guard assembly

Caution

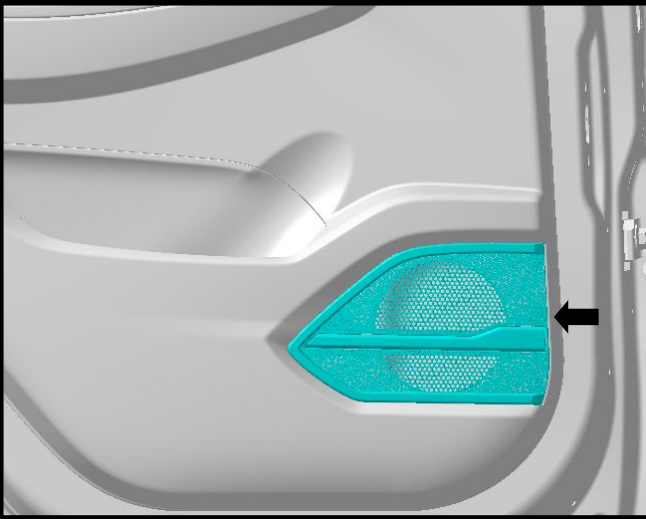
1. The left and right sides are disassembled and installed in the same way.
2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.

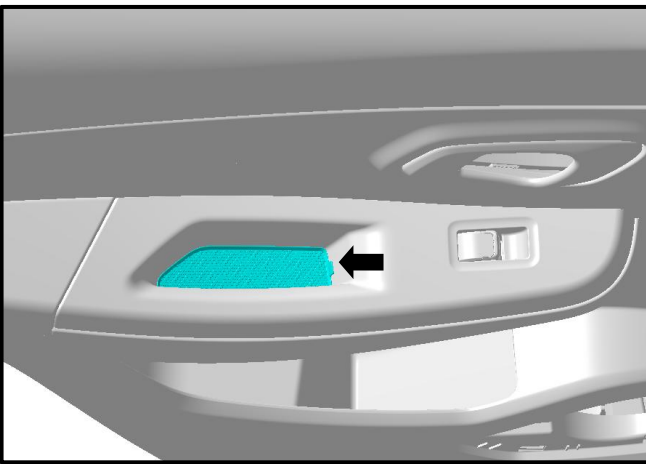


Disassembly procedure:
1. Open the front hood;
2. Disconnect the negative battery cable;
3. Disassemble the left front door inner grommet box plug cover;

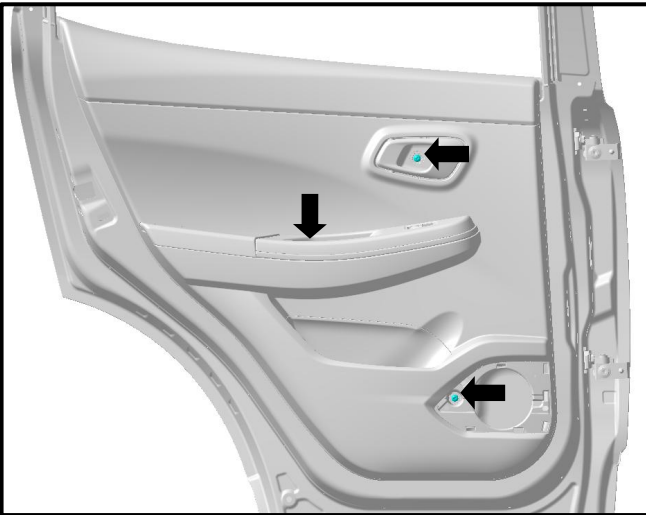
4. Disassemble the left rear door speaker mask assembly;



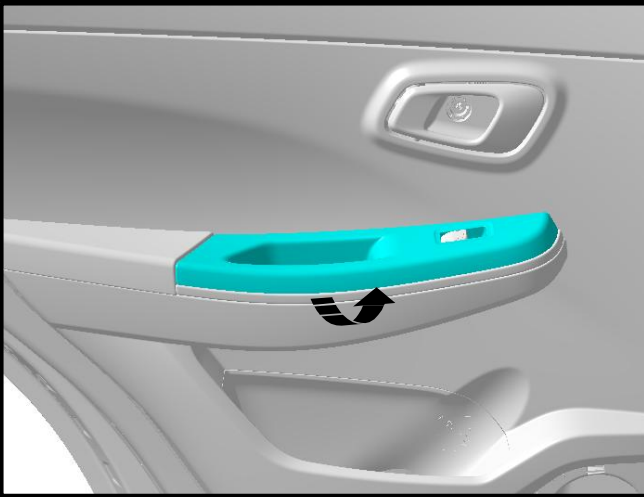
5. Remove the left rear door switch panel rubber gasket;



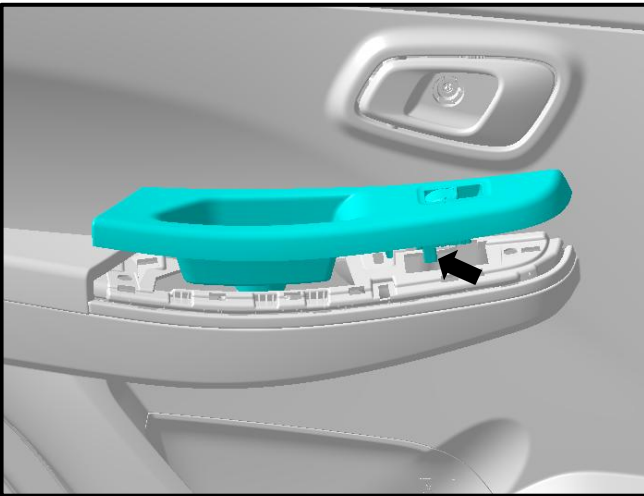
6. Disassemble the 3 fixed screws from the left rear door guard assembly;



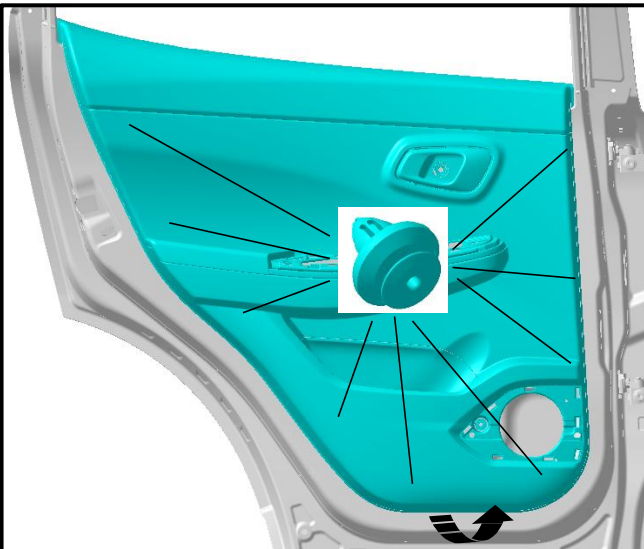
7. Separate the left rear door switch panel assembly;



8. Disengage the left rear door glass lift switch and the left rear door wiring harness assembly plug connector, and remove the left rear door switch panel assembly;

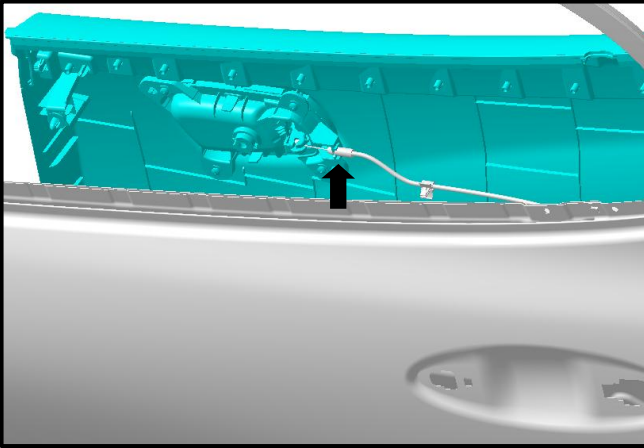


9. Disassemble the 9 plastic fasteners from the left rear door guard assembly, and separate the door guard from the left rear door sheet metal;



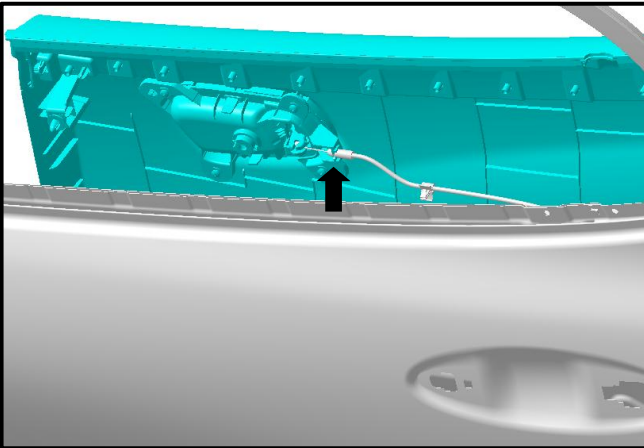
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10. Disengage the mechanical inner opening pull cable of the left rear door, and remove the left rear door guard assembly.

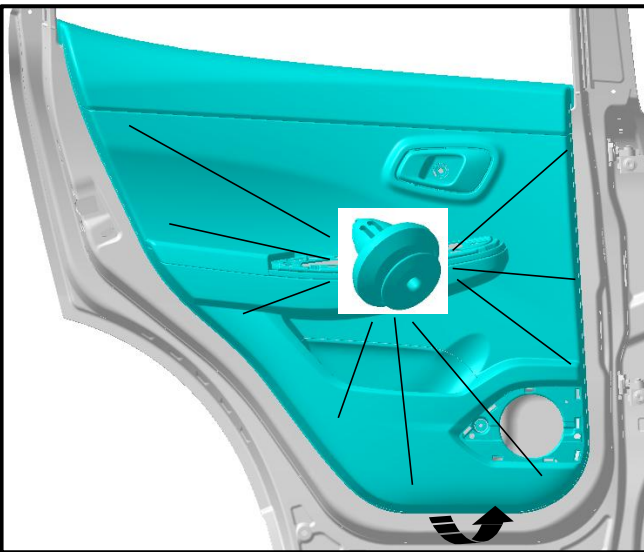


Installation procedure:

1. Plug in the mechanical inner opening pull wire of the left rear door, and place the left rear door guard assembly on the left rear door sheet metal;

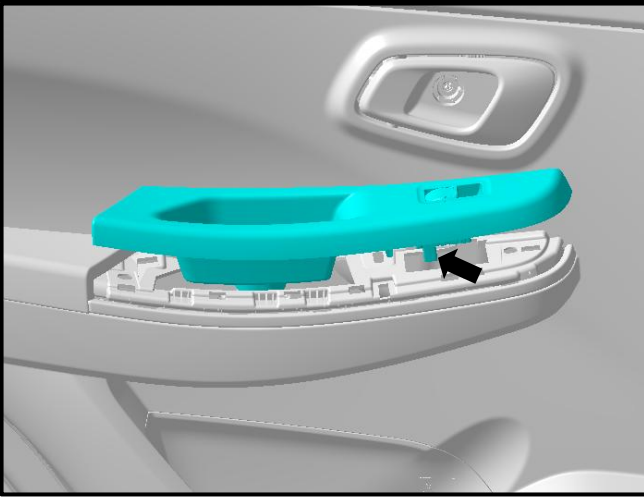


2. Align the left rear door guard assembly fasteners with the mounting holes. Press the door guard and fasten it;

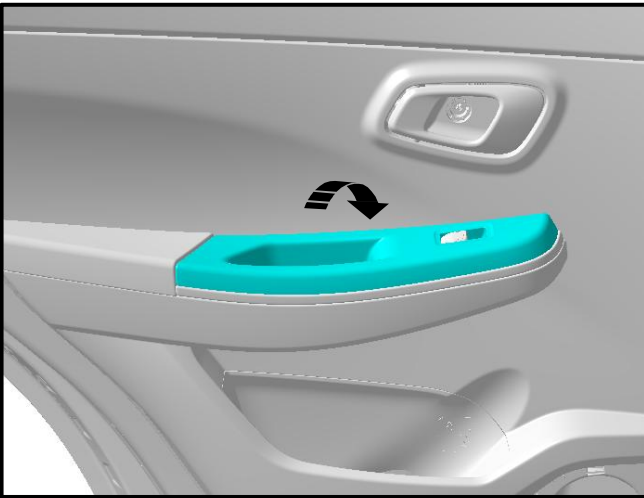


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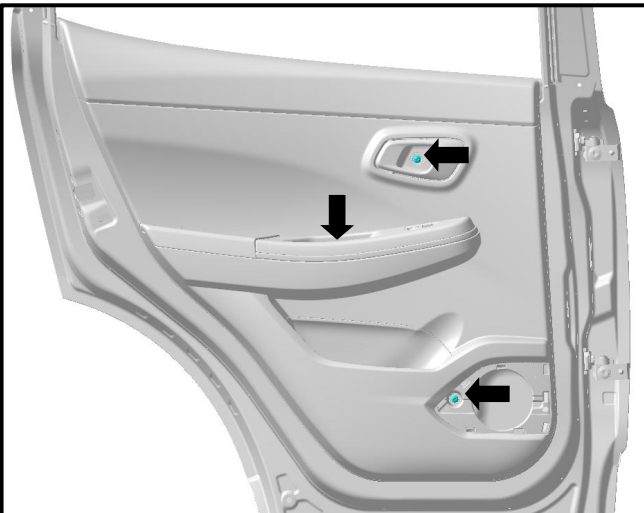
3. Plug in the left rear door glass lift switch and the left rear door harness assembly plug, and place the left rear door switch panel assembly on the door guard assembly;



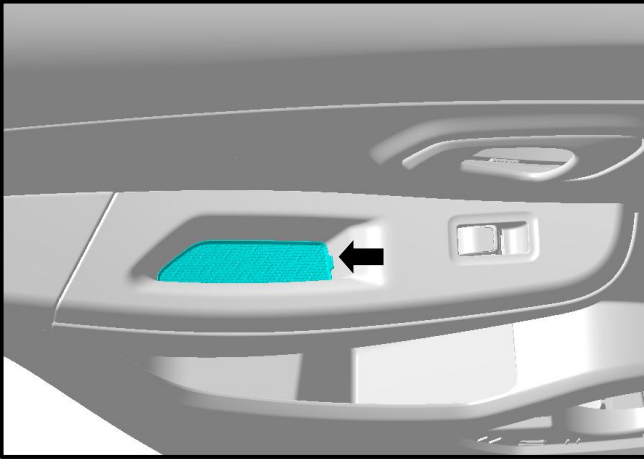
4. Install the left rear door switch panel assembly;



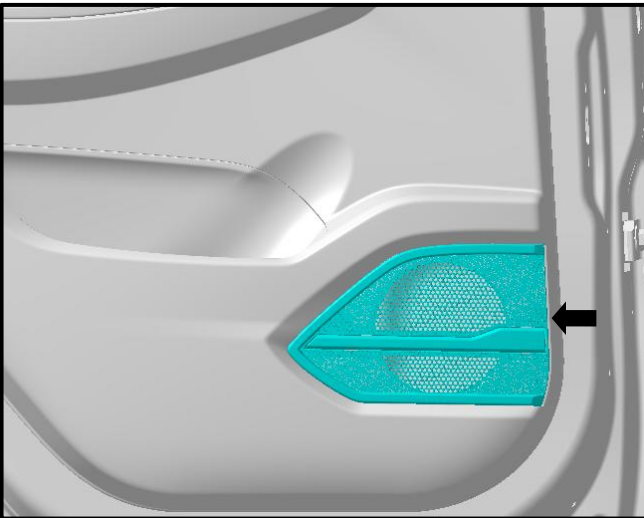
5. Install the 3 fixed screws of the left rear door guard assembly;



6. Install the left rear door switch panel rubber gasket;



7. Install the left rear door speaker mask assembly;



8. Install the left front door inner grommet box plug cover;

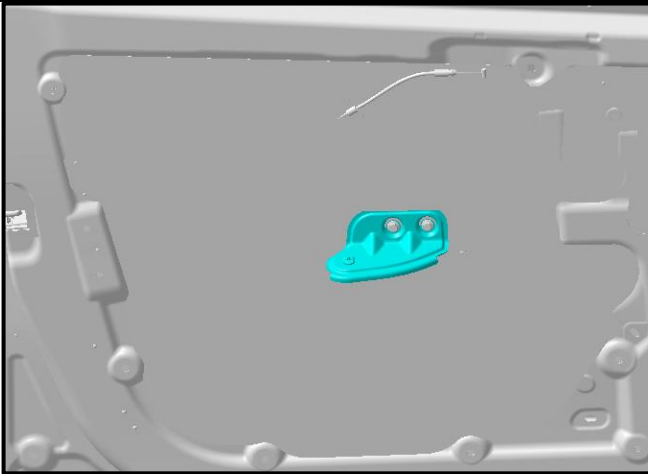


9. Connect the negative cable of the storage battery
10. Close the front engine hood.

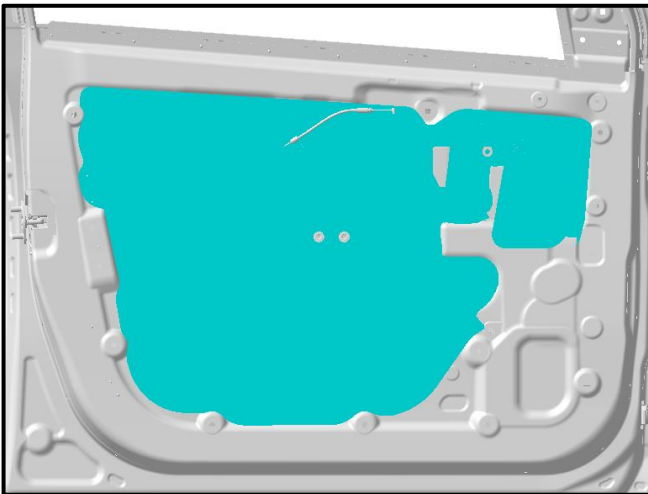
13.6.2.3 Replacement of front door waterproof membrane

Caution

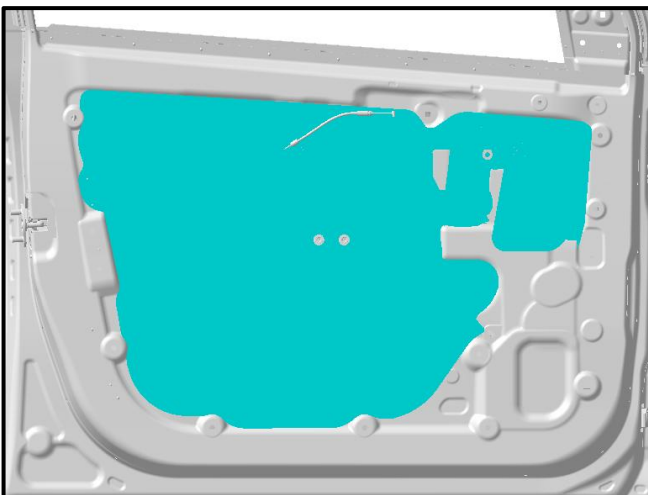
The left and right sides are disassembled and installed in the same way.



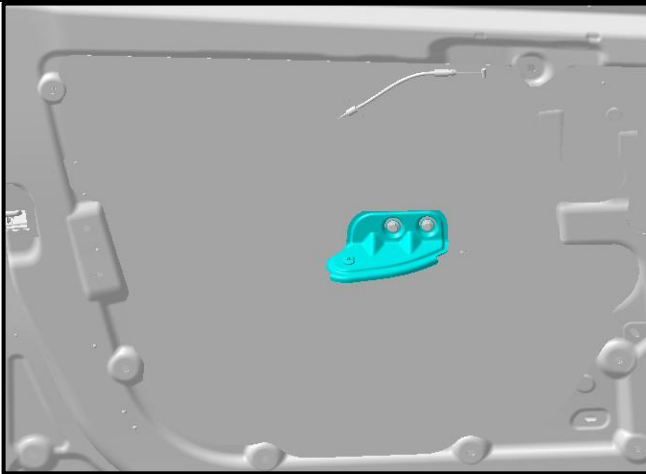
- Disassembly procedure:
1. Open the front hood;
 2. Disconnect the negative battery cable;
 3. Please refer to 13.6.2.1 Replacement of front door guard panel assembly to the left front door guard panel assembly;
 4. Disassemble the 2 fixed bolts of the front door puller box bracket, and remove the front door puller box bracket;



5. Disassemble the waterproof membrane.



- Installation procedure:
1. Installation of waterproofing membrane;

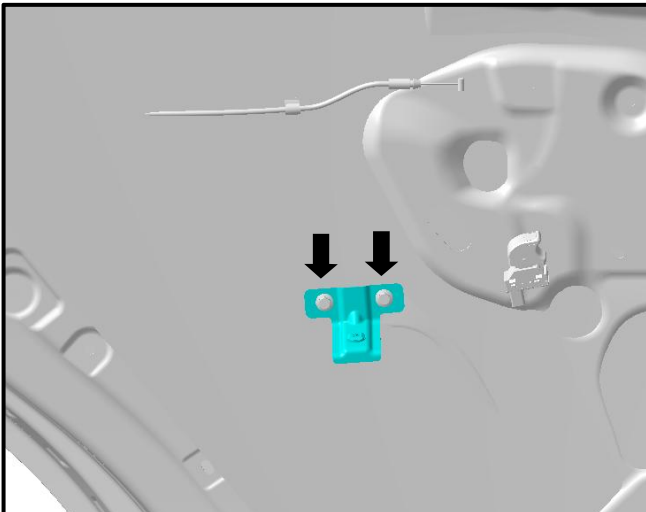


2. Place the front door puller box bracket on the front door sheet metal, and install the 2 fixed bolts;
3. Please refer to 13.6.2.1 Replacement of front door inner guard assembly to install door guard;
4. Connect the negative cable of the storage battery
5. Close the front engine hood.

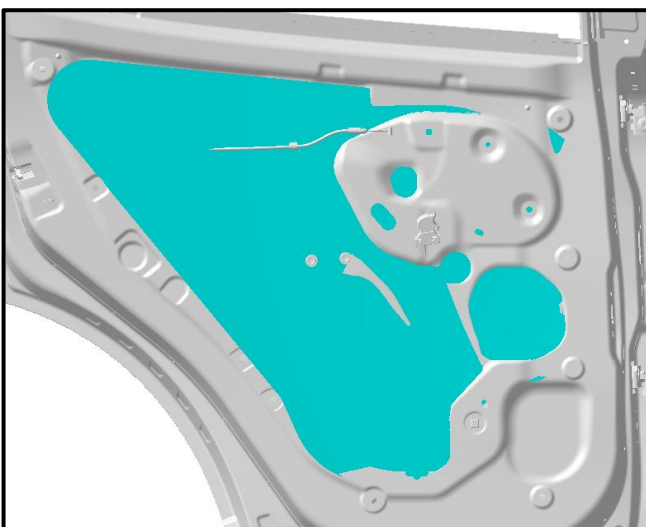
13.6.2.4 Replacement of the waterproof film of the rear door

Caution

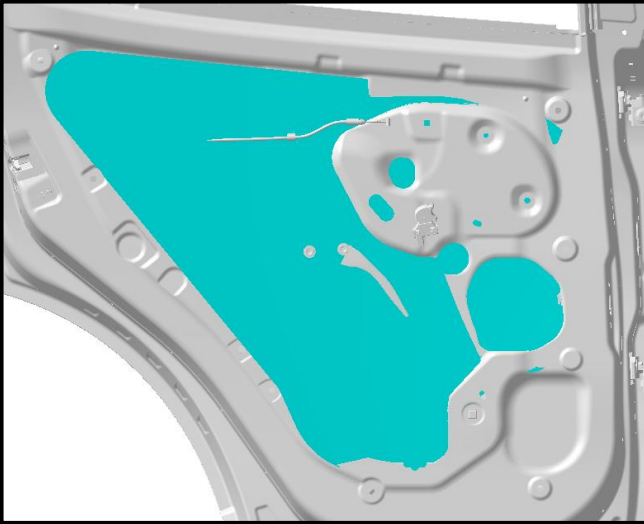
The left and right sides are disassembled and installed in the same way.



- Disassembly procedure:
1. Open the front hood;
 2. Disconnect the negative battery cable;
 3. Please refer to 13.6.2.2 Replacement of front door guard panel assembly to the rear door inner guard panel assembly;
 4. Disassemble the 2 fixed bolts from the rear door puller box bracket, and remove the rear door puller box bracket;

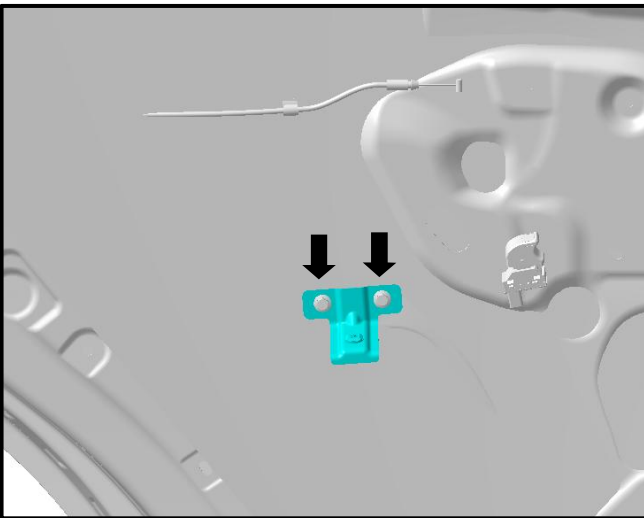


5. Disassemble the waterproof membrane.



Installation procedure:

1. Installation of waterproofing membrane;



2. Place the rear door puller box bracket on the rear door sheet metal, and install the 2 fixed bolts;

3. Please refer to 13.6.2.2 Replacement of rear door inner guard assembly to install door guard;

4. Connect the negative cable of the storage battery

5. Close the front engine hood.

13.6.2.5 Replacement of A-pillar upper guard assembly

Caution

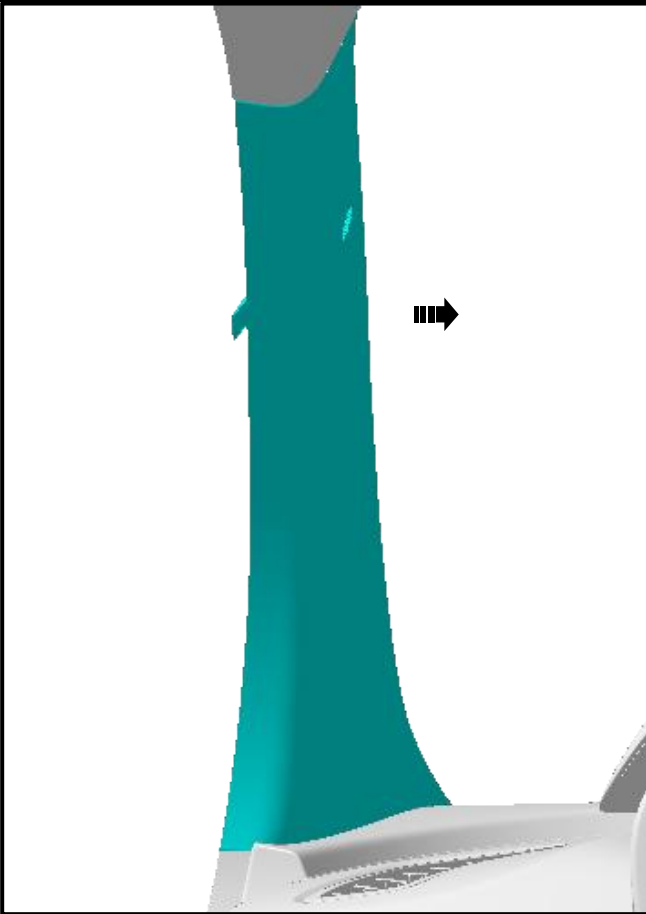
1. The left and right sides are disassembled in the same way.

2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.

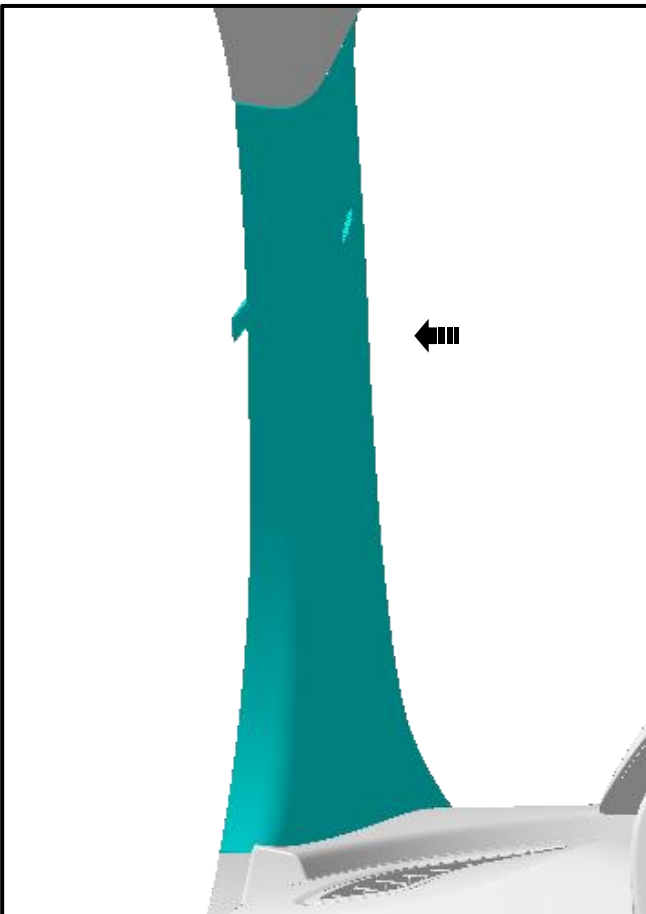
Disassembly procedure:

Pry off and remove the A-pillar upper guard with a suitable worker.



Installation procedure:

Install the lower end of the A-pillar upper guard in place first, and then install the A-pillar upper guard in the direction shown in the figure.

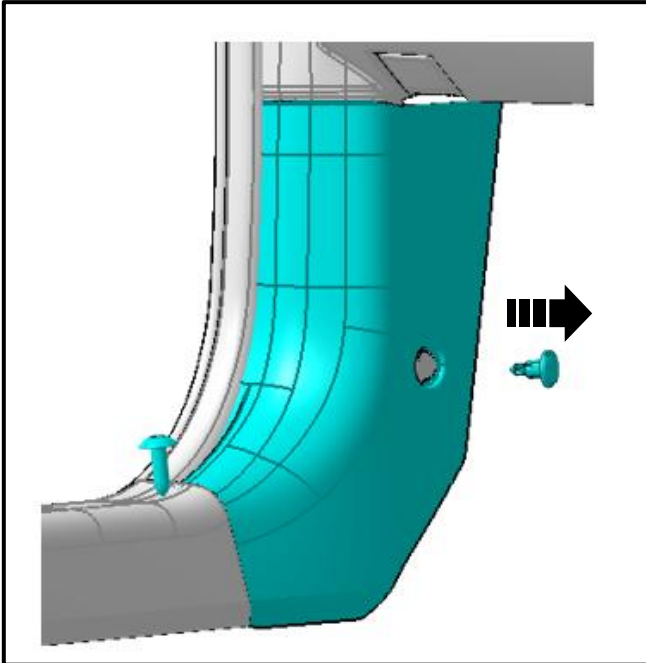


13.6.2.6 Replacement of A-pillar lower guard assembly

Caution

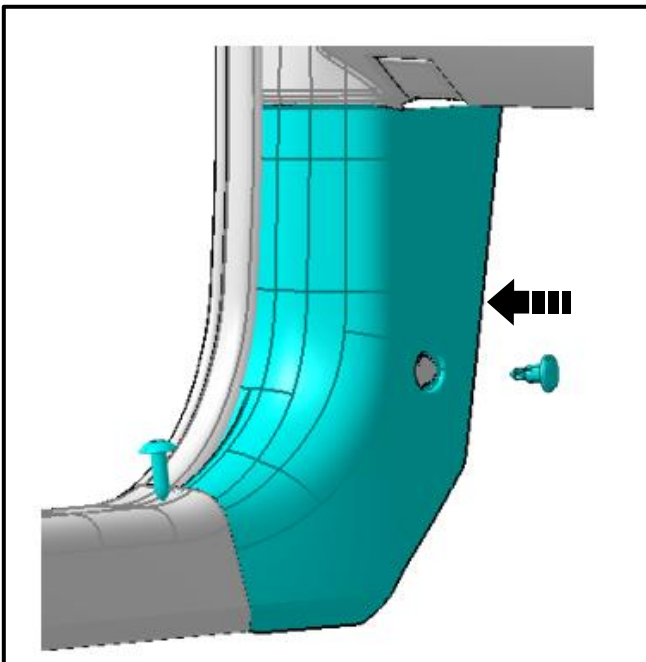
1. The left and right sides are disassembled in the same way.
2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.



Disassembly procedure:

1. Remove the left front door sill guard assembly; Please refer to the left front sill guard assembly replacement for details.
2. Remove the left front door seal; Please refer to the left front door seal replacement for details
3. Disassemble the 1 threaded snap fastener (this step is not required for the right A-pillar lower guard assembly) and 1 self-tapping nail from the A-pillar lower guard assembly with the appropriate tool.



Installation procedure:

1. Install the A-pillar lower guard assembly in the direction shown in the figure.
2. Install the two self-tapping nails and one threaded snap fastener that fix the A-pillar lower guard with the appropriate tools.
3. Install the left front door sill guard assembly.

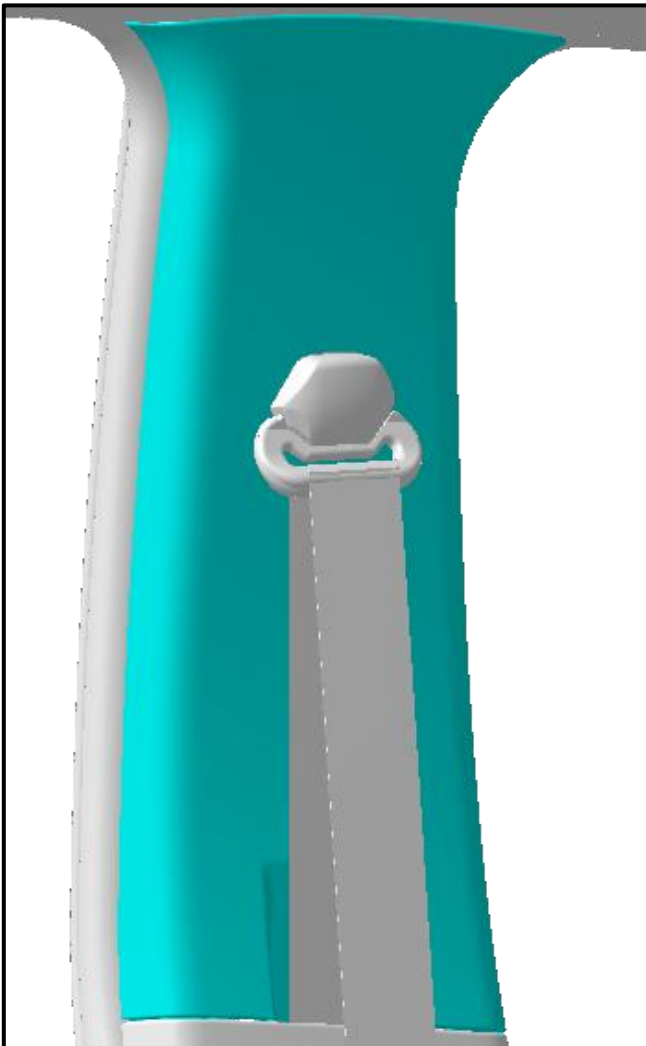
13.6.2.7 Replacement of B-pillar upper guard assembly

Caution

1. The left and right sides are disassembled in the same way.

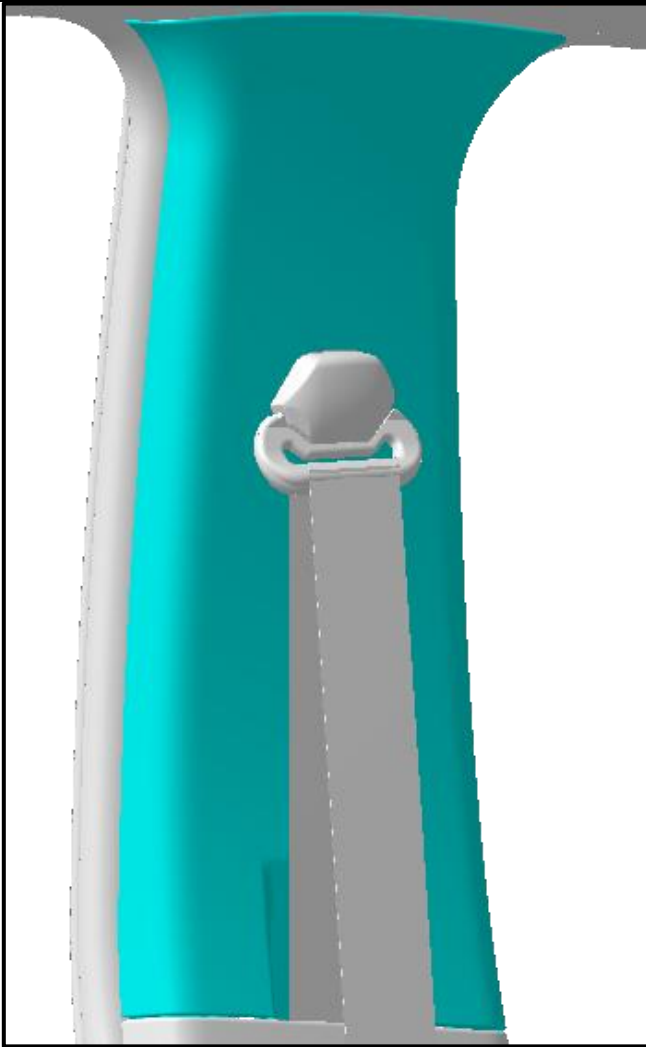
2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.



Disassembly procedure:

1. Please refer to seat belt replacement for the fixed points of B-pillar seat belt disassembly.
2. Disassemble the B-pillar lower guard assembly pieces. Replacement of B-pillar lower guard assembly.
3. Pry off and remove the B-pillar upper guard assembly with a suitable tool.



Installation procedure:

Install the B-pillar upper guard assembly in the direction shown in the figure.

Install the B-pillar lower guard assembly.

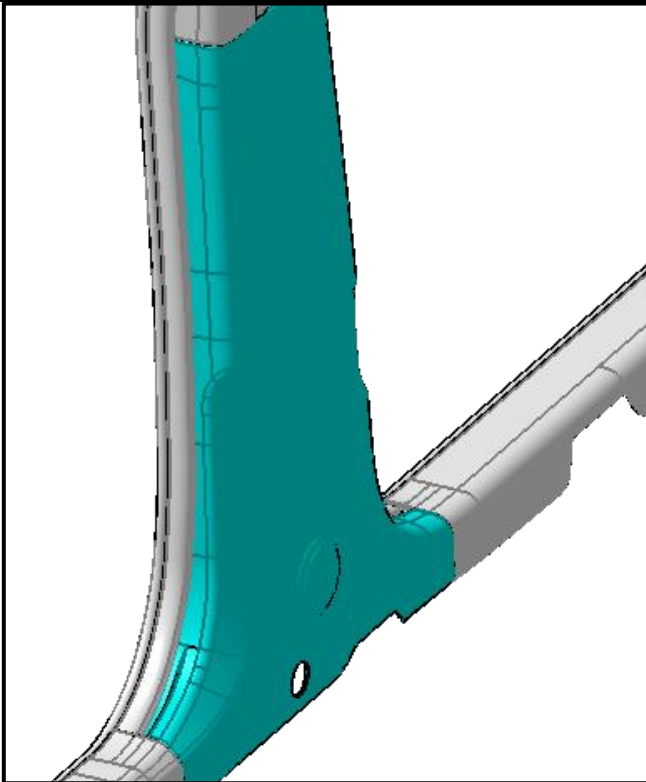
Install the upper mounting points of B-pillar seat belt.

13.6.2.8 Replacement of B-pillar lower guard assembly

Caution

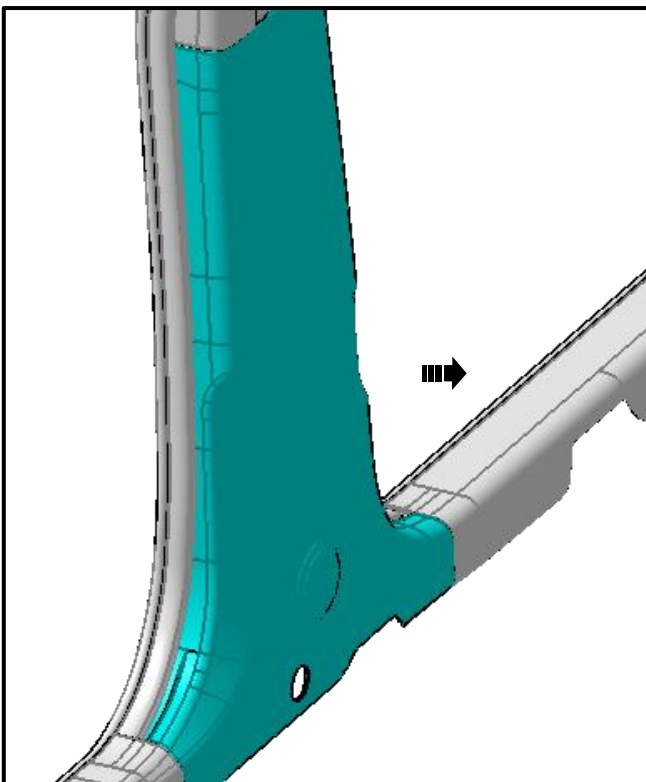
1. The left and right sides are disassembled in the same way.
2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.



Disassembly procedure:

1. Disassemble the front door sill guard assembly pieces. Replacement of front door sill guard assembly.
2. Please refer to replacement of rear door sill guard to disassemble the rear door sill guard assembly.
3. Disassemble the 2 self-tapping nails that secure the B-pillar lower guard.
4. Pry off and remove the B-pillar lower guard with a suitable tool.



Installation procedure:

1. Install the B-pillar lower guard assembly.
2. Install the 2 self-tapping nails that secure the B-pillar lower guard with the appropriate tool.
3. Install the front door sill guard assembly.
4. Install the rear door sill guard assembly.

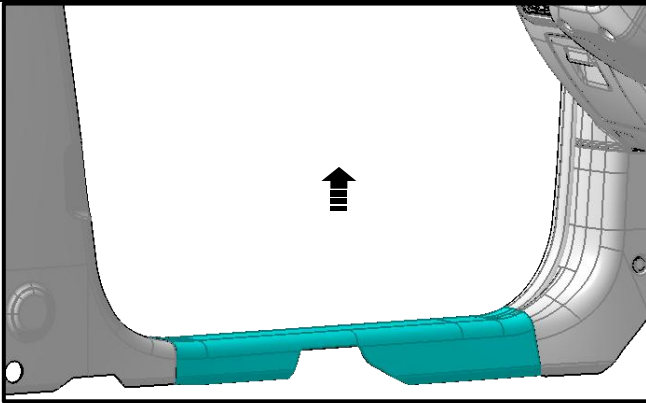
13.6.2.9 Replacement of left front door sill guard assembly

Caution

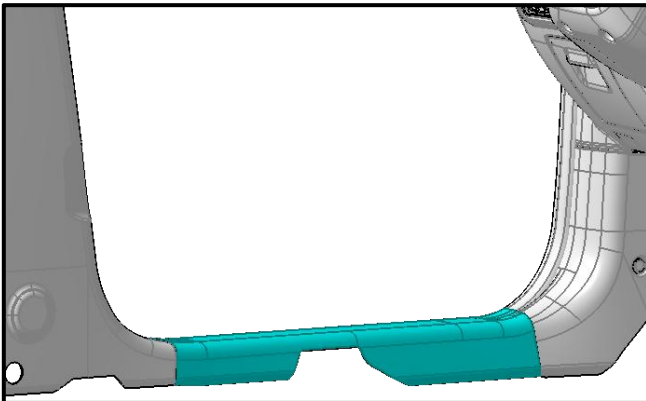
1. The left and right sides are disassembled in the same way.

2. Please use special repair tools for interior trim and wear gloves to disassemble guards inside the car door.

Otherwise, the edges of the trim and the bright stripe decorations may be easily scratched.




Disassembly procedure:
1. Pry off and remove the front door sill assembly with a suitable tool.

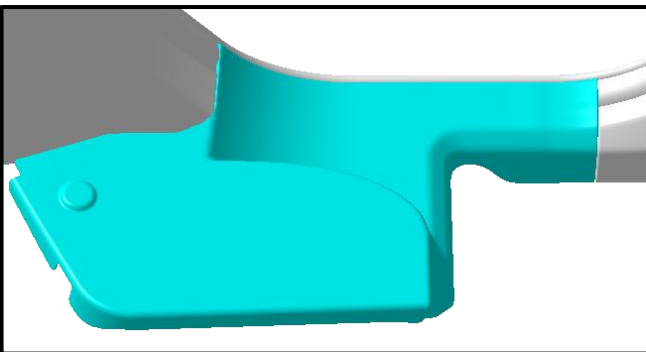


Installation procedure:
1. Install the front door sill guard assembly in the direction shown in the figure.

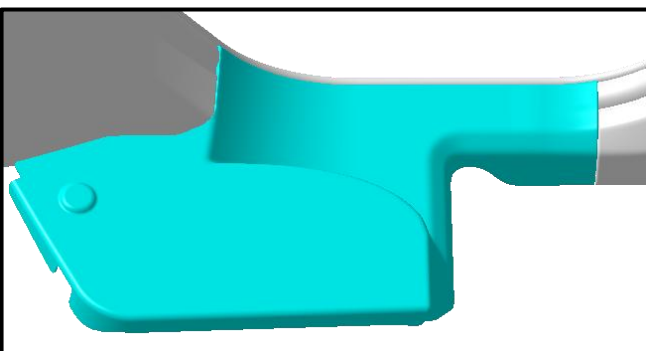
13.6.2.10 Replacement of rear door sill guard assembly

Caution

1. The left and right sides are disassembled in the same way.
2. Please disassemble the rim panels with special carbody repair tools and gloves. Otherwise, the edges of the interior trim panels will be easily scratched and soiled.



Disassembly procedure:
1. Also, pry off the rear door sill guard assembly with the proper tool.

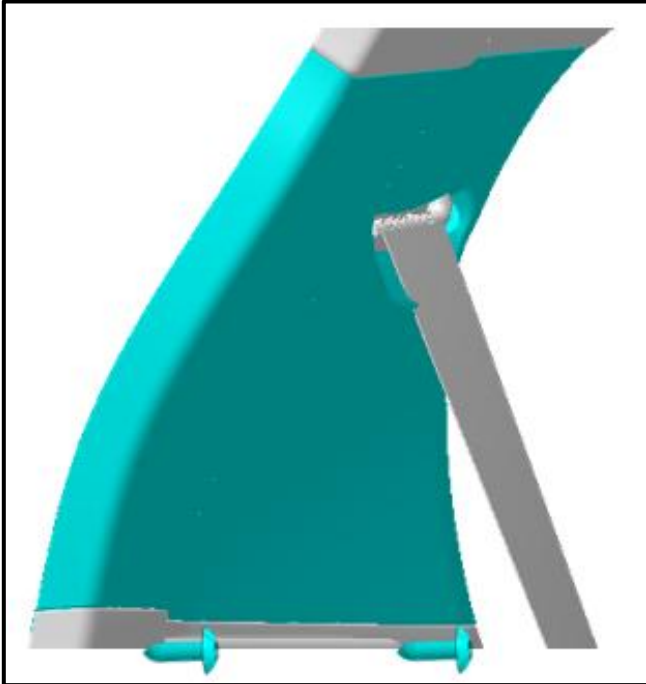


Installation procedure:
1. Install the rear door sill guard assembly.

13.6.2.11 Replacement of C-pillar upper guard assembly

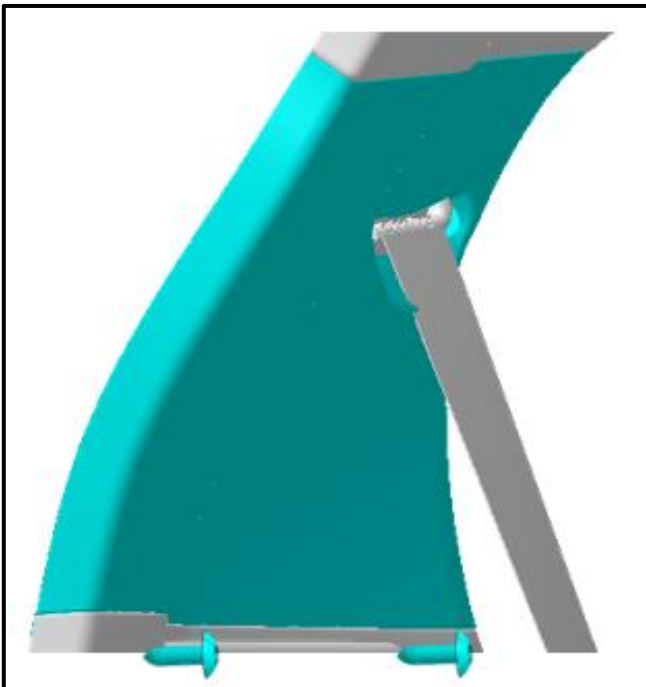
Caution

1. The left and right sides are disassembled in the same way.
2. Please disassemble the trim panels with special carbody repair tools and gloves. Otherwise, the edges of the interior trim panels will be easily scratched and soiled.



Disassembly procedure:

1. Disassemble the C-pillar lower guard assembly pieces and the replacement of C-pillar lower guard assembly.
2. Disassemble the 2 self-tapping nails that secure the C-pillar upper guard assembly with the appropriate tool.
3. Pry off and remove the C-pillar upper guard assembly with a suitable tool.



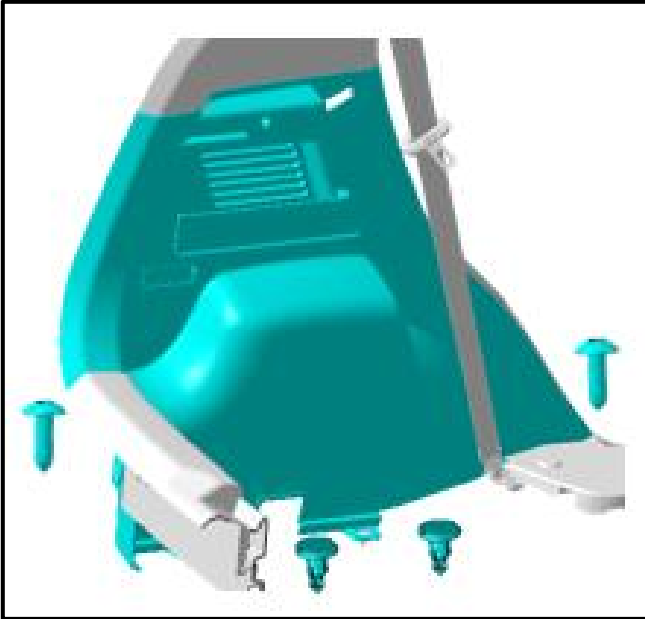
Installation procedure:

1. Install the left C-pillar upper guard panel assembly
2. Install the 2 self-tapping nails that secure the C-pillar upper guard assembly with the appropriate tool.
3. Install the C-pillar lower guard assembly.

13.6.2.12 Replacement of C-pillar lower guard assembly

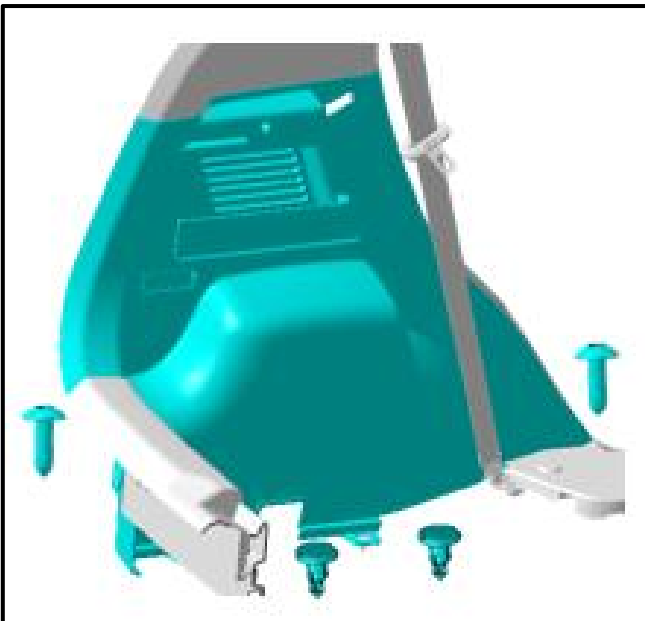
Caution

1. The left and right sides are disassembled in the same way.
2. Please disassemble the trim panels with special carbody repair tools and gloves. Otherwise, the edges of the interior trim panels will be easily scratched.



Disassembly procedure:

1. Please refer to the replacement of back door sill guard assembly to disassemble the back door sill guard assembly.
2. Please refer to the replacement of rear door sill guard assembly to disassemble the rear door sill guard assembly.
3. Remove the 2 fixed screws and 2 threaded snap fasteners from the C-pillar lower guard assembly.
4. Please refer to the replacement of sealing strip to disassemble the rear door sealing strip.
5. Disassemble and remove the C-pillar lower guard assembly.



Installation procedure:

1. Install the C-pillar lower guard assembly.
2. Install and tighten the 2 fixed screws and 2 threaded nuts in the C-pillar lower guard assembly.
3. Install the rear door sill guard assembly.
4. Install the rear back door sill guard assembly.
5. Install the rear door sealing strip.

13.6.2.13 Replacement of rear back door sill guard assembly

Caution

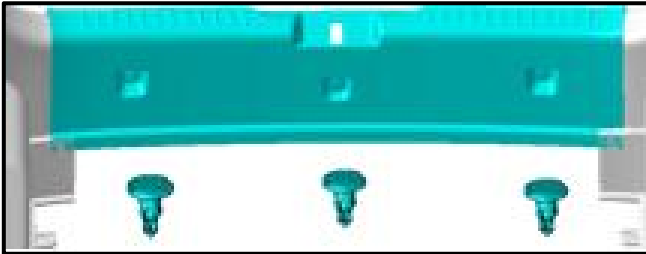
1. Please disassemble the trim panels with special carbody repair tools and gloves. Otherwise, the edges of the interior trim panels will be easily scratched.





Disassembly procedure:

1. Disassemble the 3 threaded nuts and bolts that secure the back door sill guard assembly with the appropriate tool.
2. Pry off the rear back door sill guard assembly with a suitable tool, and remove the rear back door sill guard assembly.



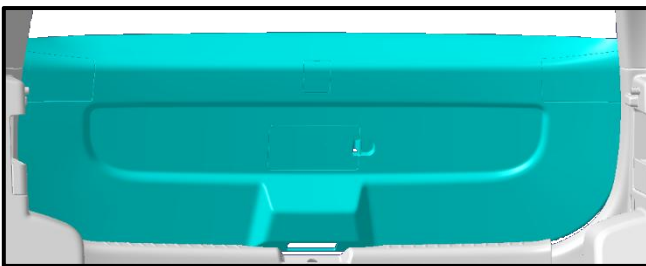
Installation procedure:

1. Install the rear back door sill guard assembly
2. Install the 3 threaded snap fasteners that secure the back door sill guard assembly.

13.6.2.14 Replacement of rear back door guard assembly

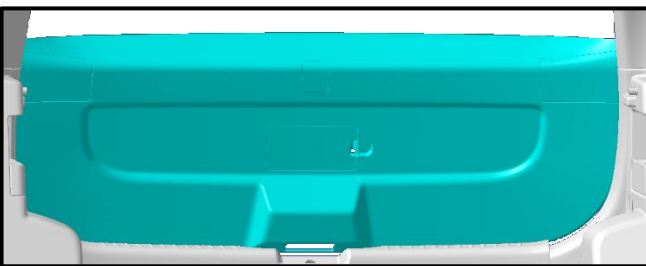
Caution

1. Please disassemble the trim panels with special carbody repair tools and gloves. Otherwise, the edges of the interior trim panels will be easily scratched.



Disassembly procedure:

1. Pry off and remove the back door guard assembly with a suitable tool.



Installation procedure:

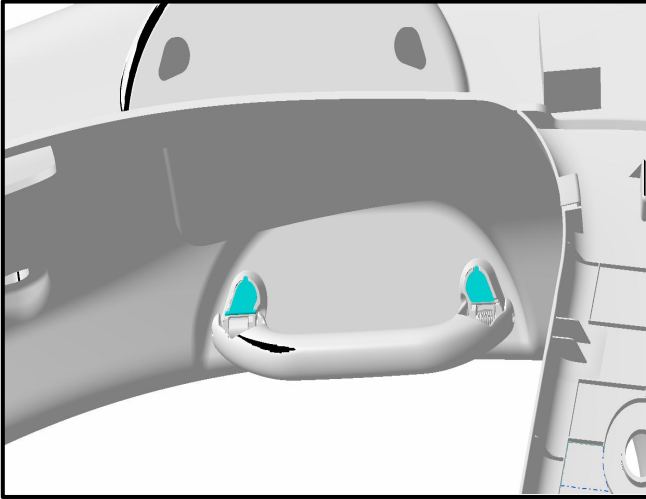
1. Install the rear back door guard assembly.

13.6.2.15 Replacement of top puller assembly

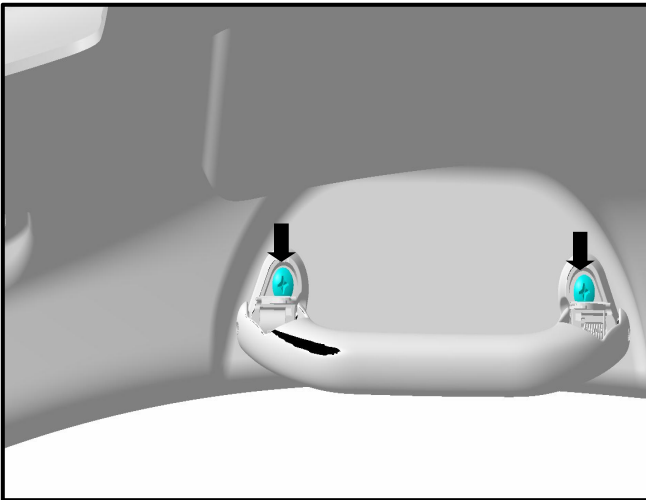
Disassembly process

1. Disassemble the top puller assembly

- a. Open the top puller screw cover



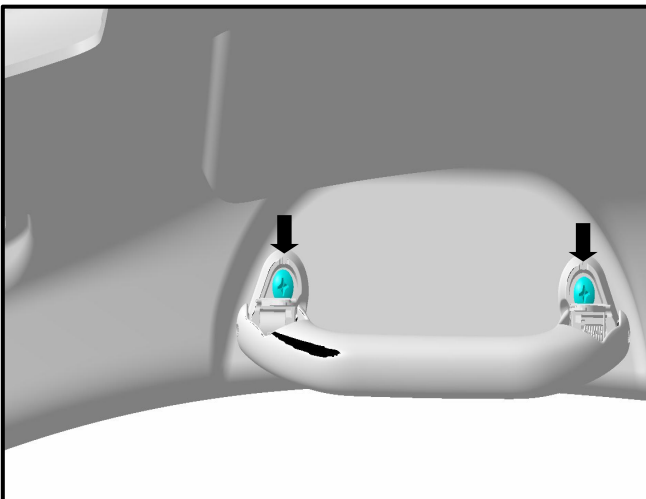
- b. Disassemble the 2 fixed screws to remove the top puller

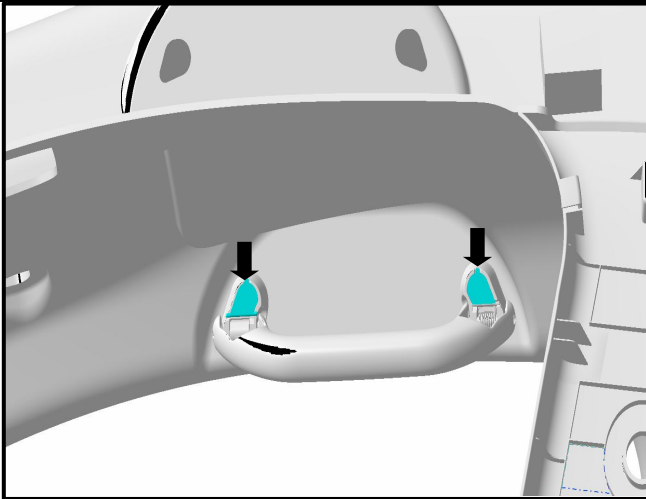


Installation process

1. Install the top puller assembly

- a. Align the puller locating pin with the carbody locating hole to install the safety puller. Tighten the 2 fixed screws connecting the safety puller with the carbody.





b. Close top puller screw cover

13.6.2.16 Replacement of roof body assembly

Note: Left and right sides can be disassembled in the same way

Disassembly process

1. Open the front engine compartment cover
2. Disconnect the negative battery harness
3. Please refer to 13.5.3.1 Replacement of the left side knee pad version of the instrument board to disassemble left side end cap of the instrument board
4. Please refer to 13.6.2.5 Replacement of A-pillar upper guard assembly to disassemble the left side A-pillar upper guard assembly
5. Please refer to 13.6.2.9 Replacement of left front sill guard assembly to disassemble the left front sill guard assembly
6. Disassemble the A-pillar lower shield assembly; (Please refer to 13.6.2.6 Replacement of A-pillar lower shield assembly)
7. Please refer to 13.6.2.10 Replacement of rear door sill guard assembly to disassemble the left rear door sill guard assembly
8. Disassemble the B-pillar lower shield assembly; (Please refer to 13.6.2.8 Replacement of B-pillar lower shield assembly)
9. Please refer to 13.6.2.7 Replacement of B-pillar upper guard assembly to disassemble the left B-pillar upper guard assembly
10. Open the trunk cover.
11. Please refer to 13.6.2.19 Replacement of interior trim of trunk to disassemble trunk carpet body assembly
12. Please refer to 13.6.2.19 Replacement of interior trim of trunk to disassemble the shelf basin
13. Please refer to 13.6.2.13 Replacement of rear back door sill guard assembly to disassemble the rear back door sill guard assembly
14. Please refer to 13.6.2.12 Replacement of C-pillar lower guard assembly to disassemble the left C-pillar lower guard assembly
15. Please refer to 13.6.2.11 Replacement of C-pillar upper guard assembly to disassemble the left C-pillar upper guard assembly

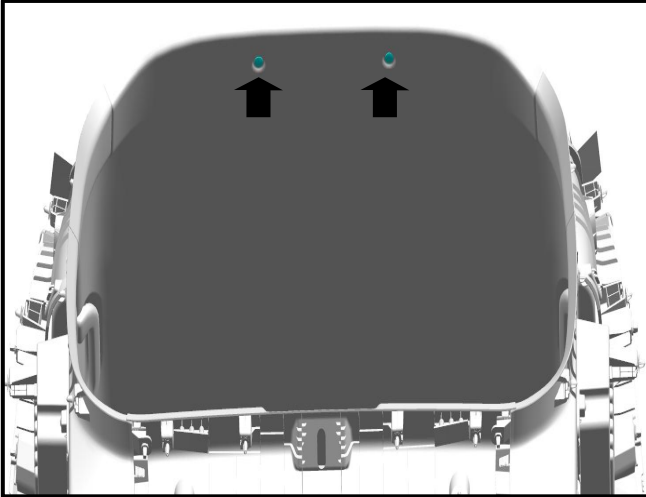
16. Please refer to 13.6.2.15 Replacement of top puller assembly to disassemble the 3 top puller assemblies

17. Disassemble the left sun visor body and hooks

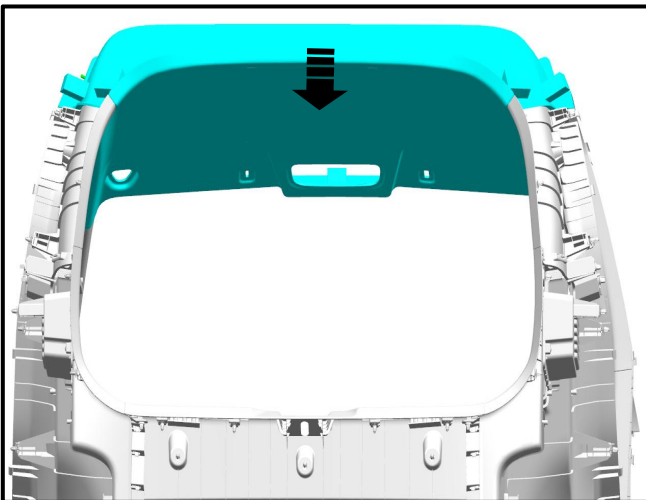
18. Please refer to 12.1.4 Disassembly and installation of the lighting system to disassemble the front dome light

19. Disassemble the canopy body assembly

a. Disassemble the two fasteners on the rear side of the canopy that connect to the rear cross member of the roof cover



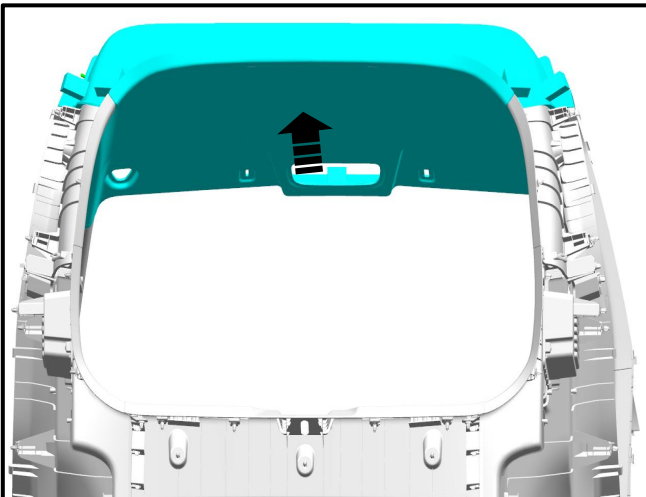
b. Remove the canopy body assembly

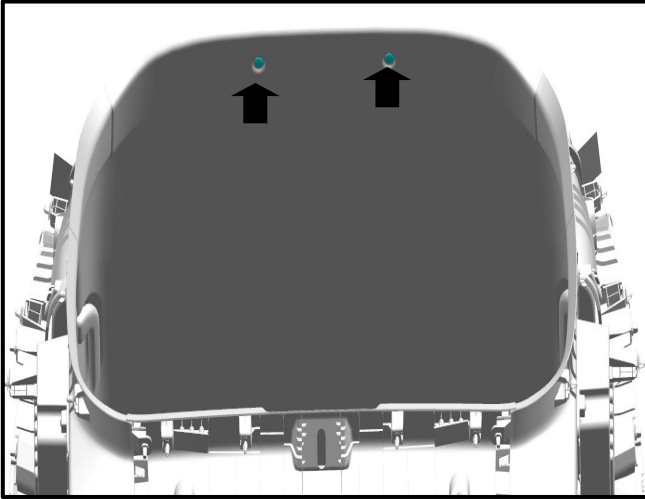


Installation process

1. Install the canopy body assembly

a. Put into the canopy body assembly





b. Install the two fasteners that connect the rear side of the canopy to the rear cross member of the roof cover

2. Please refer to 12.1.4 Disassembly and installation of the lighting system to install the front dome light

3. Please refer to 13.6.2.17 Replacement of sun visors and supports to install the left sun visor body and hooks

4. Please refer to 12.6.2.15 Replacement of top puller assembly to install 3 top puller assemblies

5. Please refer to 12.6.2.11 Replacement of C-pillar upper guard assembly to install the left C-pillar upper guard assembly

6. Please refer to 12.6.2.12 Replacement of C-pillar lower guard assembly to install the left C-pillar lower guard assembly

7. Please refer to 12.6.2.13 Replacement of rear back door sill guard assembly to install the rear back door sill guard assembly

8. Please refer to 13.6.2.19 Replacement of interior trim of trunk to install the shelf basin

9. Please refer to 13.6.2.19 Replacement of interior trim of trunk to install trunk carpet body assembly

10. Please refer to 13.6.2.7 Replacement of B-pillar upper guard assembly to install the left B-pillar upper guard assembly

11. Please refer to 13.6.2.8 Replacement of B-pillar lower guard assembly to install the left B-pillar lower guard assembly

12. Please refer to 13.6.2.5 Replacement of A-pillar upper guard assembly to install the left A-pillar upper guard assembly

13. Please refer to 13.6.2.6 Replacement of A-pillar lower guard assembly to install the left A-pillar lower guard assembly

14. Please refer to 13.5.3.1 Replacement of the left side knee pad of the instrument board to install left side knee pad of the instrument board

15. Please refer to 13.6.2.9 Replacement of left front sill guard assembly to install the left front sill guard assembly

16. Please refer to 13.6.2.10 Replacement of rear door sill guard assembly to install the left rear door sill guard assembly

17. Connect the negative battery harness

18. Close the front engine hood

13.6.2.17 Replacement of sun visor and support

Note: Left and right side disassembly methods are the same

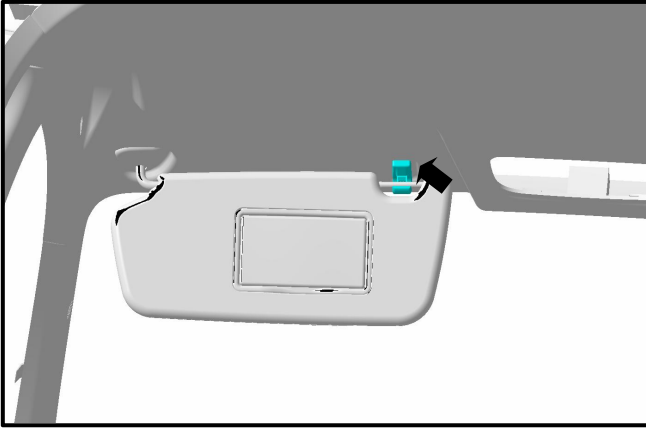
Disassembly process

1. Open the front engine compartment cover

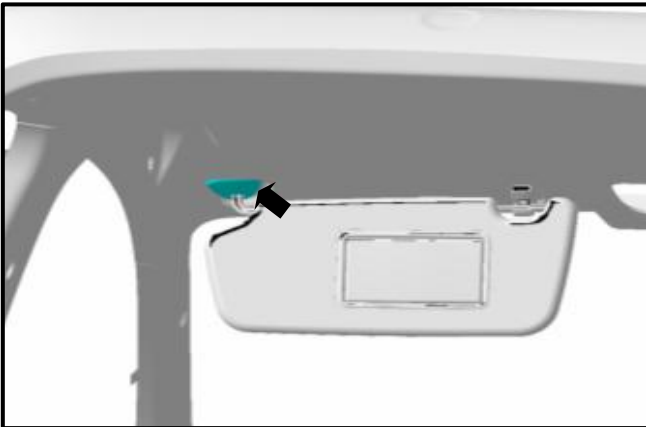
2. Disconnect the negative battery harness

3. Disassemble the left sun visor body and hooks

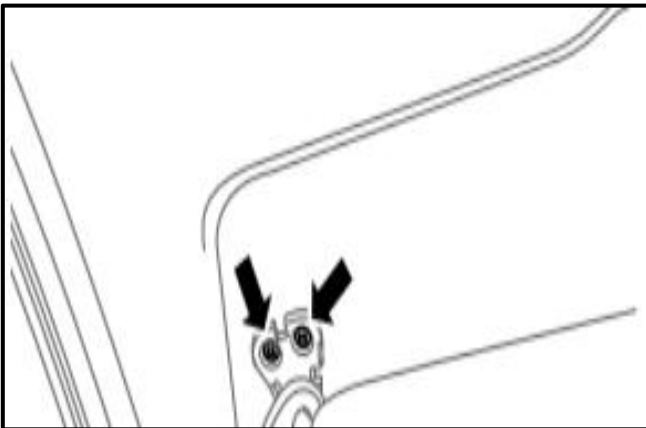
a. Disengaging the sun visor from the sun visor hooks



b. Pry off the left sun visor screw cover with a suitable tool



c. Disassemble the 2 fixed screws of the left sun visor, and take off the sun visor



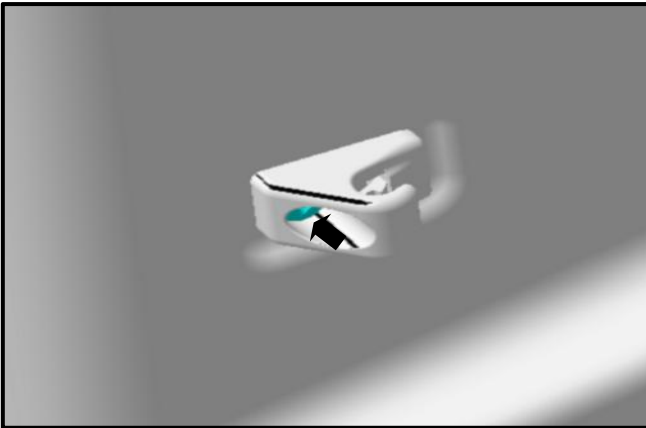
d. Disassemble 1 fixed screw of the hook, and remove the hook



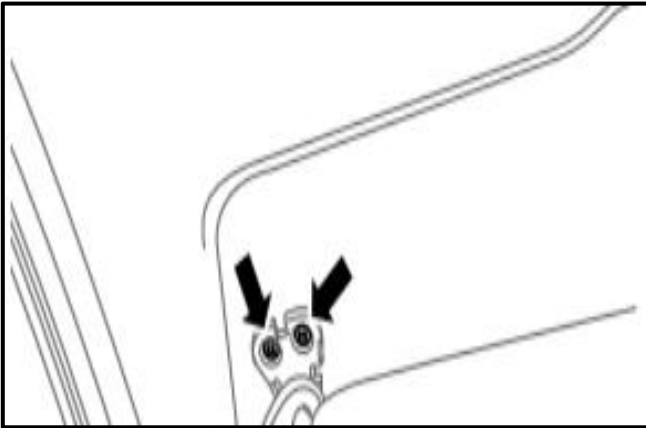
Installation process

1. Install the left sun visor body and hooks

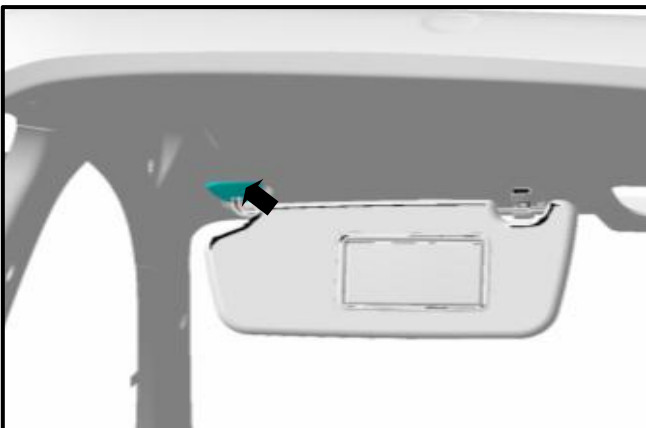
a. Install hook, and secure 1 bolt

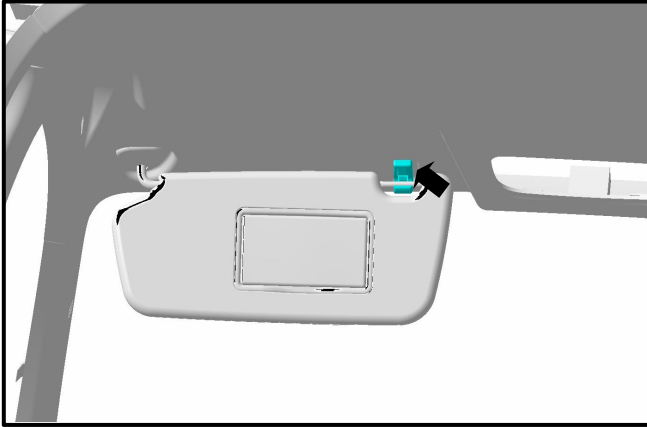


b. Put on the sun visor, and install the 2 fixed bolts for the left sun visor



c. This upper left sun visor screw cover plate





d. Snap the sun visor onto the hooks

2. Connect the negative battery harness
3. Close the hood

13.6.2.18 Replacement of the carpet

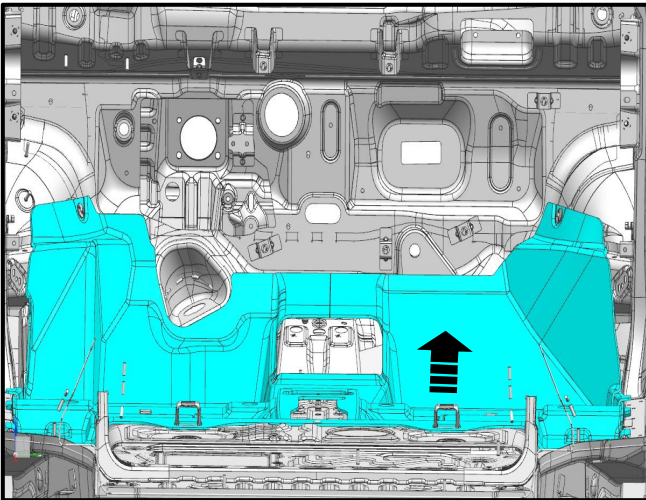
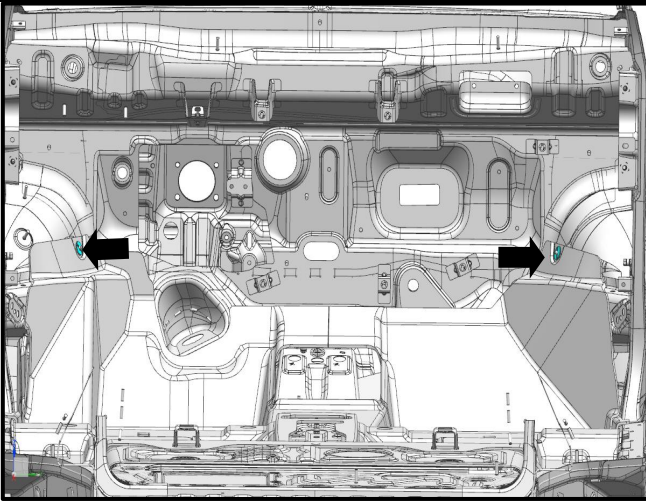
Note: Left and right side disassembly methods are the same

Disassembly process

1. Open the front engine compartment cover
2. Disconnect the negative battery harness
3. Please refer to 12.14.7 Replacement of the seat to disassemble all seats from the vehicle
4. Please refer to 13.5.3.1 Replacement of the left side knee pad version of the instrument board to disassemble left side end cap of the instrument board
5. Please refer to 13.6.2.9 Replacement of left front sill guard assembly to disassemble the left front sill guard assembly
6. Disassemble the A-pillar lower shield assembly; (Please refer to 13.6.2.6 Replacement of A-pillar lower shield assembly)
7. Disassemble the B-pillar lower shield assembly; (Please refer to 13.6.2.8 Replacement of B-pillar lower shield assembly)
8. Please refer to 13.6.2.10 Replacement of rear door sill guard assembly to disassemble the left rear door sill guard assembly
9. Please refer to 13.5.3.12 Replacement of the auxiliary instrument board to disassemble the auxiliary instrument board assembly
10. Please refer to 13.5.3.8 Replacement of the instrument board to disassemble the lower left guard assembly
11. Disassemble carpet body assembly

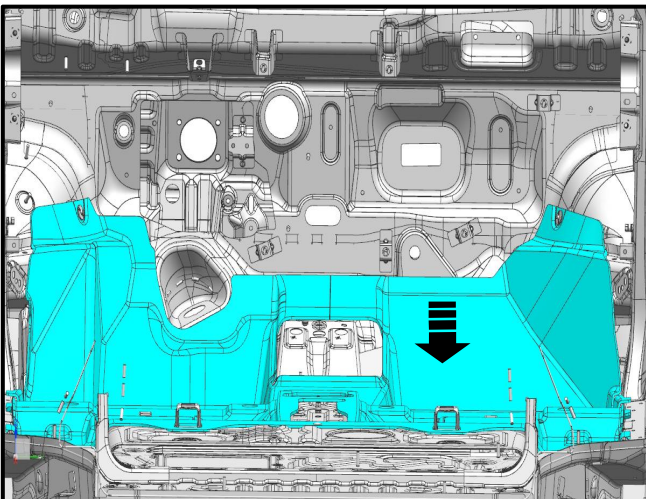
Yuehu Maintenance Manual

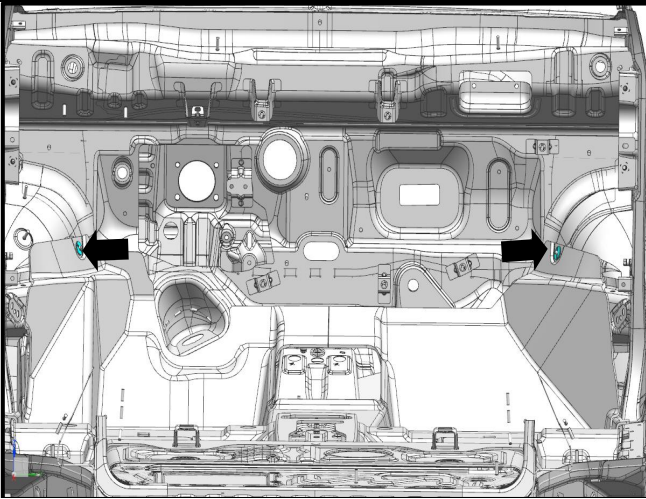
- a. Disassemble the cap fasteners on the left and right sides of the carpet, and take out the carpet



Installation process

1. Install carpet body assembly
 - a. Put on the carpet, and install the cap fasteners on the left and right sides of the floor.





2. Please refer to 13.5.3.8 replacement of the instrument panel to install the lower left guard assembly

3. Please refer to 13.5.3.12 Replacement of the auxiliary instrument panel to install the auxiliary instrument panel assembly

4. Please refer to 13.6.2.8 Replacement of B-pillar lower guard assembly to install the left B-pillar lower guard assembly

5. Please refer to 13.6.2.10 Replacement of the rear door sill guard to install the left rear door sill guard assembly

6. Please refer to 13.6.2.6 Replacement of A-pillar lower guard assembly to install the left A-pillar lower guard assembly

7. Please refer to 13.6.2.9 Replacement of left front sill guard assembly to install the left front sill guard assembly

8. Please refer to 13.5.3.1 Replacement of the left side knee pad of the instrument panel to install left side end cap assembly of the instrument panel

9. Please refer to 12.14.7 Replacement of the seat to install all seats from the vehicle

10. Connect the negative battery harness

11. Close the front engine hood

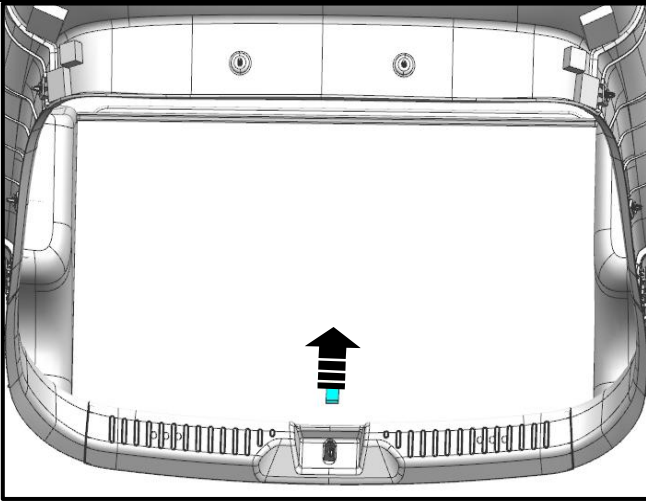
13.6.2.19 Replacement of trunk interior trim

Disassembly process

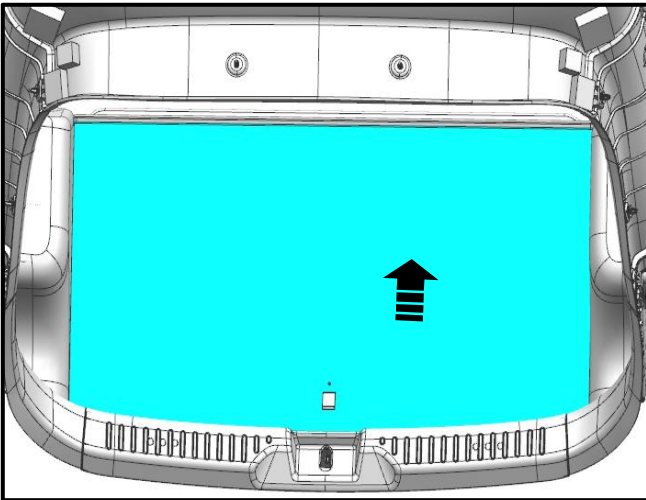
1. Open the trunk

2. Disassemble carpet body assembly

a. Pull up the trunk carpet drawstring

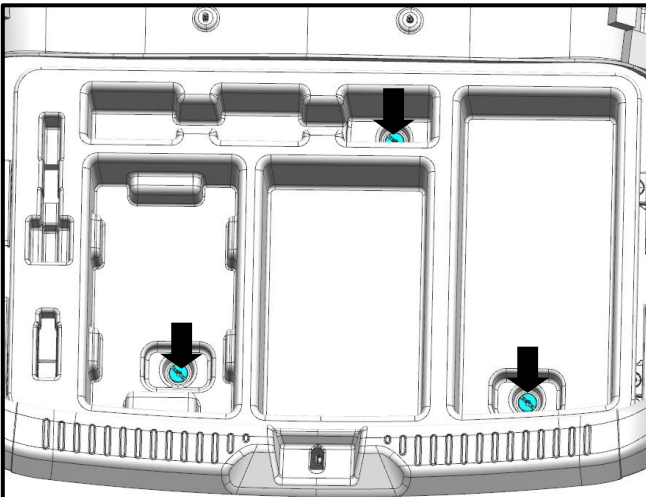


b. Take out the trunk carpet body

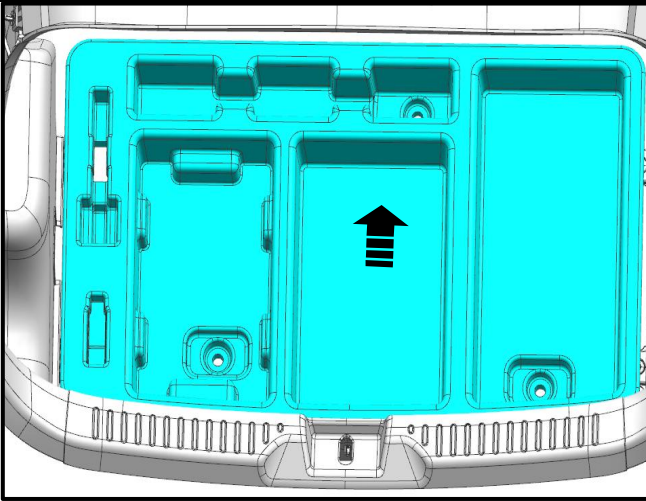


3. Disassemble basin

a. Disassemble the 3 fasteners that attach the basin to the carbody



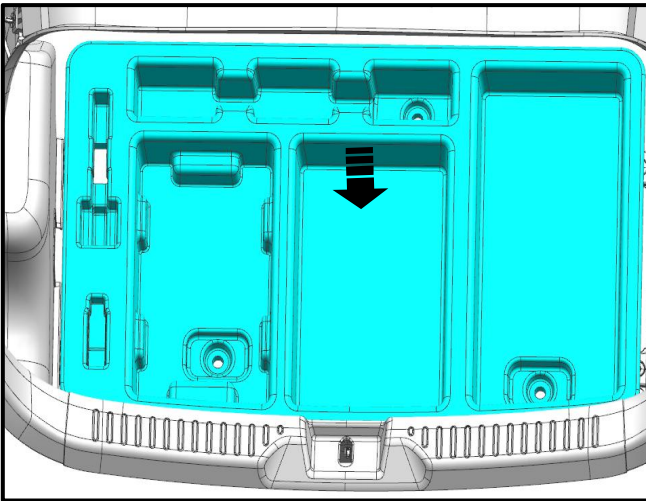
b. Take out the basin



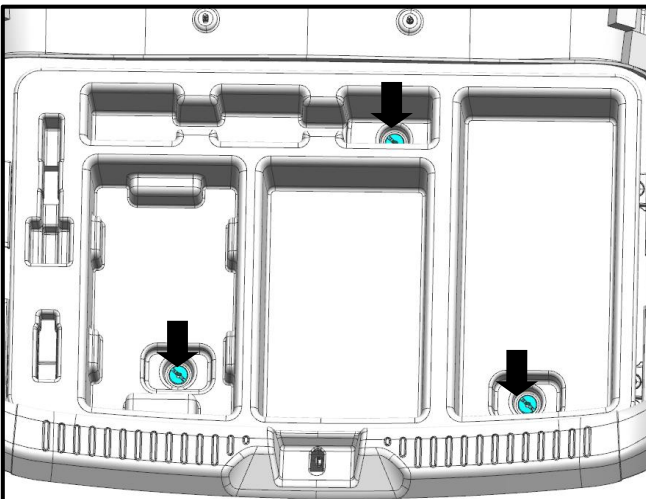
Installation process

1. Install the basin

a. Put in the basin



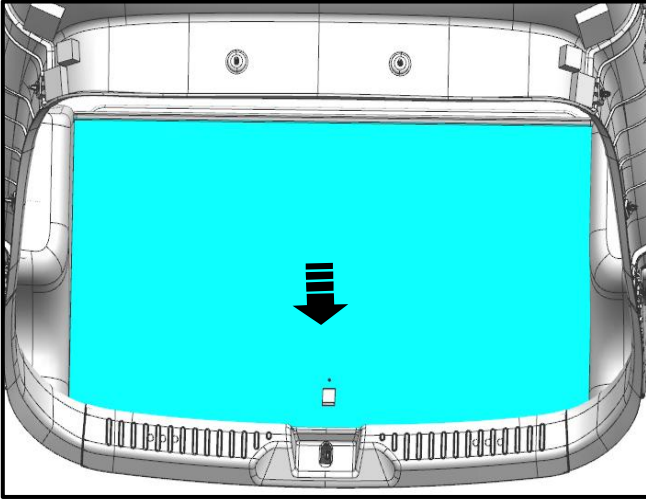
b. Install the 3 fasteners that connect the basin to the carbody



3. Install trunk carpet body assembly

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a. Put into the trunk carpet body assembly



4. Close the trunk.

13.7 Exterior trim

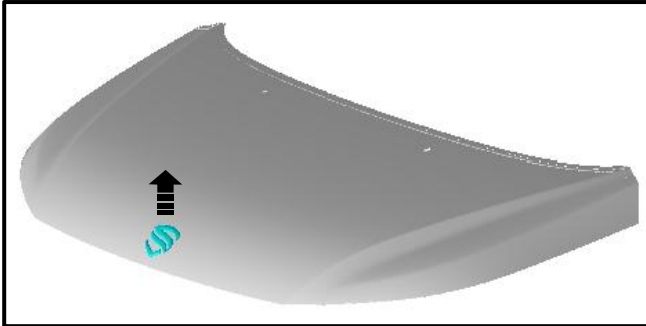
13.7.1 Specifications

13.7.1.1 Fastener specifications

Fastener name	Specifications	Torque range (N·m)
Fixed bolts that connect the upper front bumper to the mounting bracket in the front bumper	M6×20	4~6
Fixed bolts that connect the mounting bracket in the front bumper to the front end frame	M6×20	4~6
Fixed bolts that connect the left/right mounting bracket in the front bumper to the wing	M6×20	4~6
Fixed bolts that connect the left and right mounting bracket in the front bumper to the wing	M6×16	4~6
Fixed bolts that connect the front walker's calf protection bracket to the calf girder	M6×20	4~6
Fixed bolts that connect the front bumper assembly to left and right mounting brackets	ST4.8×16	4~6
Fixed bolts that connect the lower trim panel of the front windguard to the triangular beam	M6×16	4~6
Fixed bolts that connect the engine compartment storage box body to the cross member	M6×16	4~6
Fixed bolts that connect the engine compartment storage box body to the mounting bracket	M6×16	4~6
Fixed bolts that connect the left/right mounting bracket 1 of the rear bumper	M6×16	4~6
Fixed bolts that connect the left/right mounting bracket 2 of the rear bumper	M6×16	4~6
Fixed bolts that connect the left/right mounting bracket in the rear bumper	M6×16	4~6
Fixed bolts that connect the bottom guard unit to the counterpart	M6×16	4~6
Fixed screws that connect the bottom guard unit to the wheel cover	ST4.8×16	4~6
Fixed screws that connect the wheel cover to bumper	ST4.8×16	4~6
Fixed screws that connect the bottom guard to the bumper	ST4.8×16	4~6
Fixed bolts that connect the rear bumper to rear bumper mounting bracket	M6×16	4~6
Fixed bolts that connect the side skirt to side skirt mounting bracket	M6×16	4~6
Mounting bolts that connect the rear license plate light trim panel to rear back door	M6×16	4~6
Fixed nuts of the outside rear-view mirror and the front door assembly	M6	4~6

13.7.2 Disassembly and installation

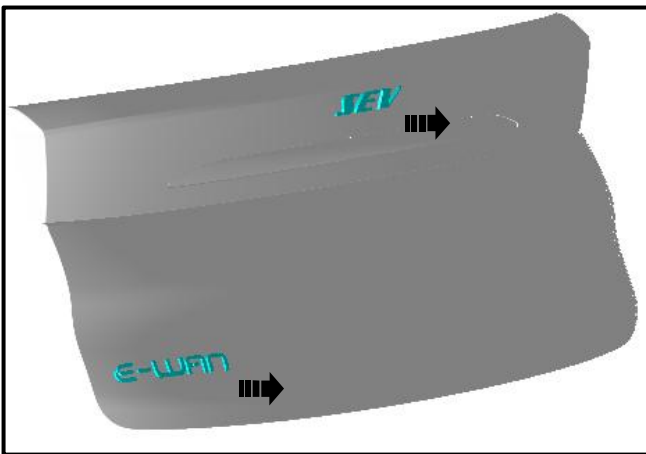
13.7.2.1 Replacement of carbody markings



Disassembly procedure:

1. Disassemble the front marker with a suitable tool;
2. Take down the front marker in the direction shown in the figure.

Note: Wrap screwdriver ports with tape to protect parts.



Installation procedure:

1. Clean the surface where the front marker is attached with a special cleaner.
2. Paste the front marker to its original position.

Disassembly procedure:

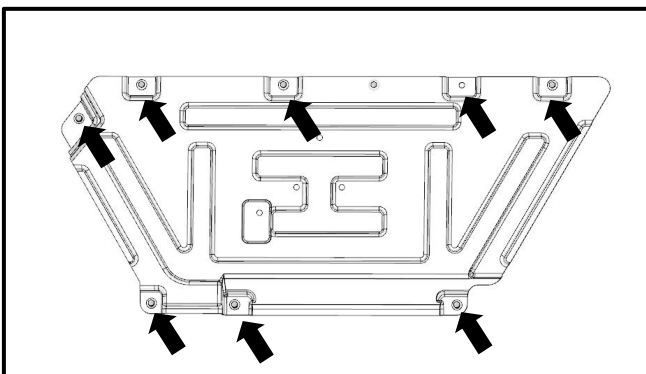
1. Disassemble the tail LOGO with the appropriate tool (in no particular order);
2. Take down the tail LOGO in the direction shown in the figure (in no particular order).

Note: Wrap screwdriver ports with tape to protect parts.

Installation procedure:

1. Clean the surface where the tail LOGO is attached with a special cleaner.
2. Paste the tail logo to its original position.

13.7.2.2 Replacement of the lower guard of the engine compartment

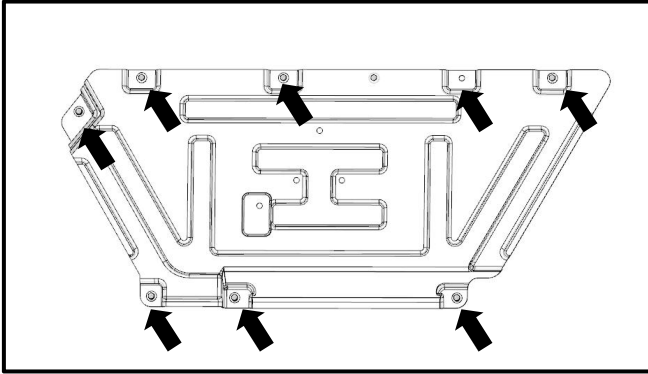


Disassembly procedure:

1. Disconnect the battery, and lift the vehicle with a lift machine. Please refer to 1.1.1.1 Warnings and cautions for precautions.
2. Disassemble the 8 hexagon head bolts and flat washer assemblies. Remove the rear section of the lower guard of the engine compartment, and lower the lift. Please refer to 1.1 Warnings and cautions for precautions.

Installation process

1. Lift the vehicle with a lift machine. Please refer to 1.1.1.1 Warnings and cautions for precautions.

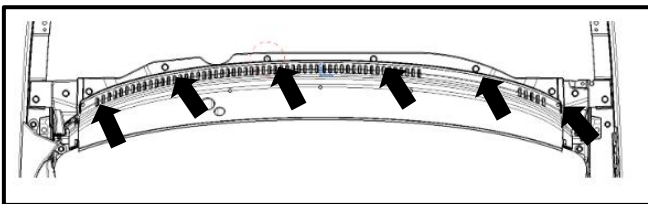
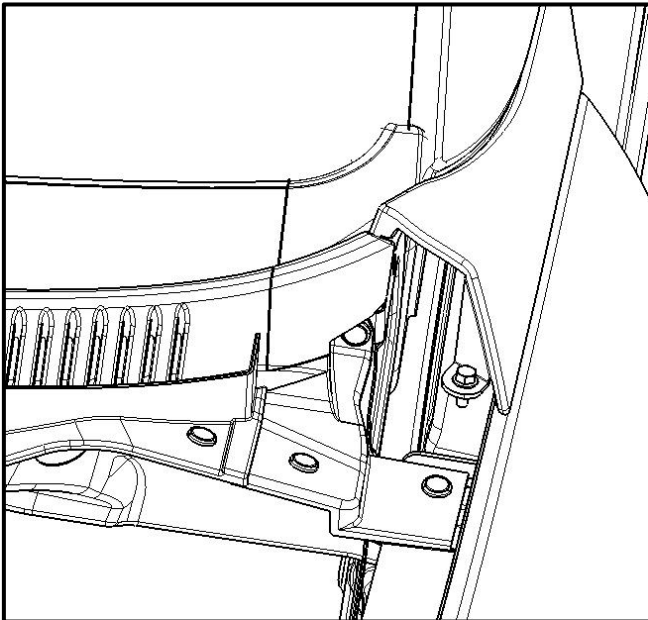


2. Mount the rear section of the lower guard of the front engine compartment. Install the 8 hexagon head bolts and flat washer assemblies, and lower the lift machine. Please refer to 1.1.1.1 Warnings and cautions for precautions.

13.7.2.3 Replacement of the lower trim panel of the front windguard

Disassembly procedure:

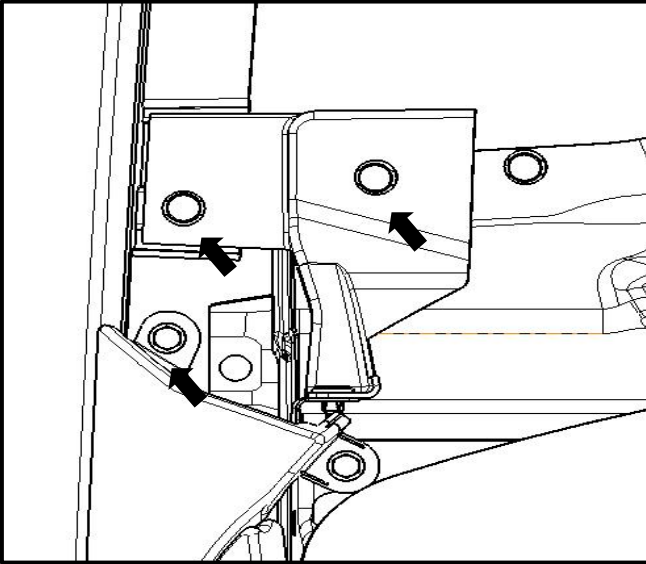
1. Please refer to 12.2.7 Disassembly and installation to disassemble the front wiper unit
2. Separate the three jaws, and disassemble left and right guards of the front windguard.



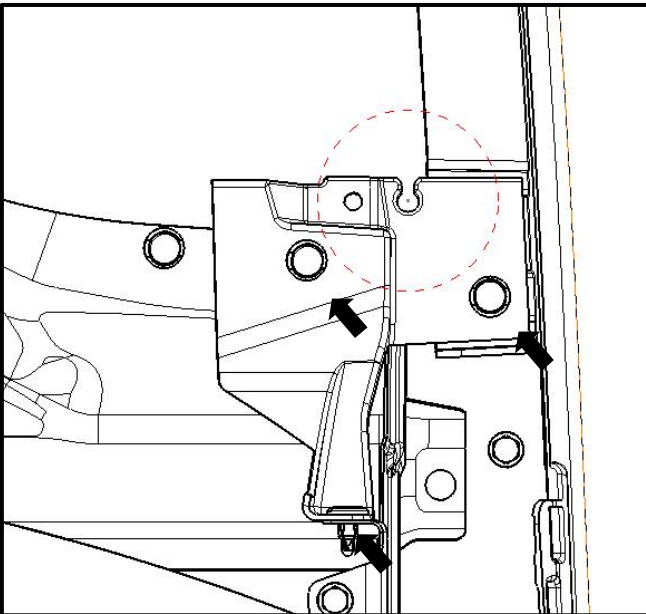
3. Remove the 6 sub-fasteners, and take down the lower trim panel assembly of the front windguard.

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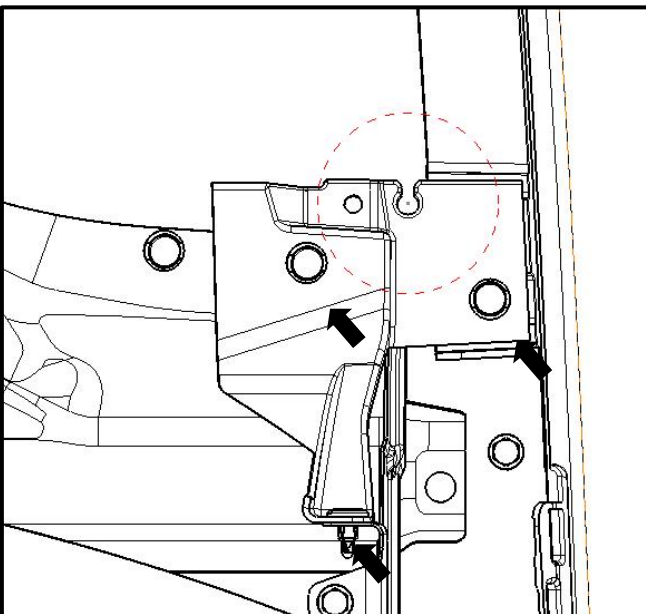
4. Remove the 3 sub-fasteners, and take down the left side water block assembly of the front windguard.



5. Take down the spray hose, and remove the right side water block assembly of the front windguard as per step 4.

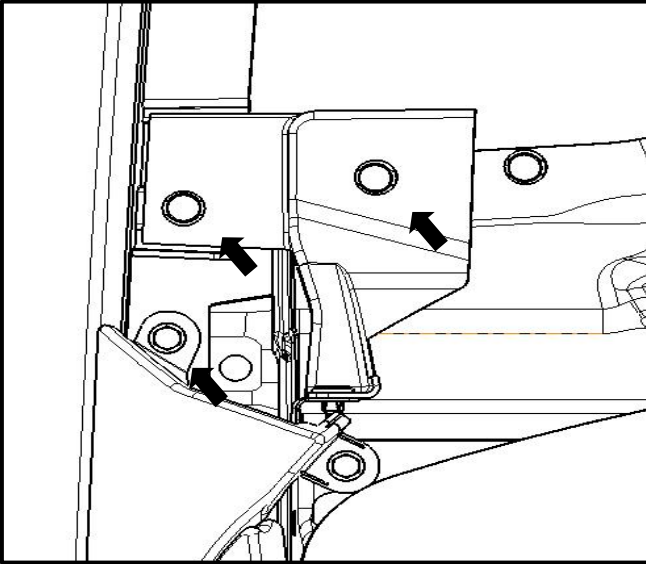


Installation procedure:
1. Install the right side water block assembly of the front windguard.

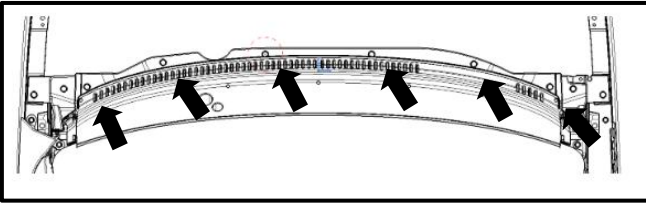


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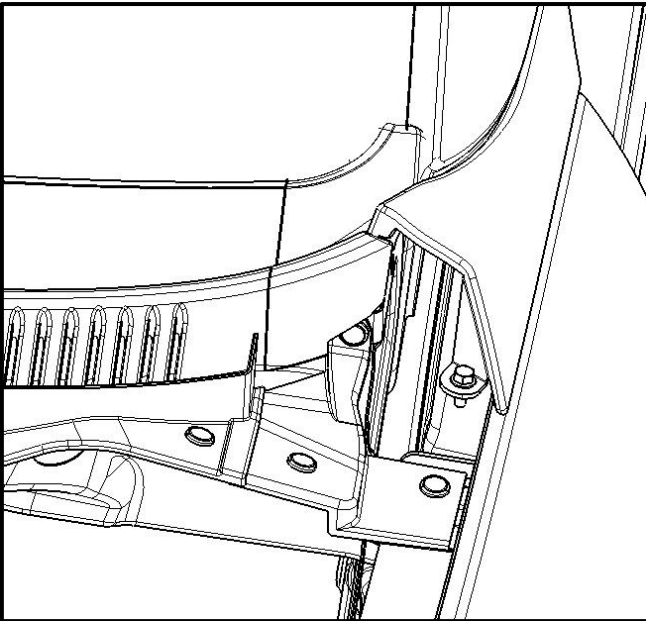
2. Install the left side water block assembly of the front windguard, and remove the 3 sub-fasteners.



3. Install the lower trim panel assembly of the front windguard, and assemble the 6 sub-fasteners.

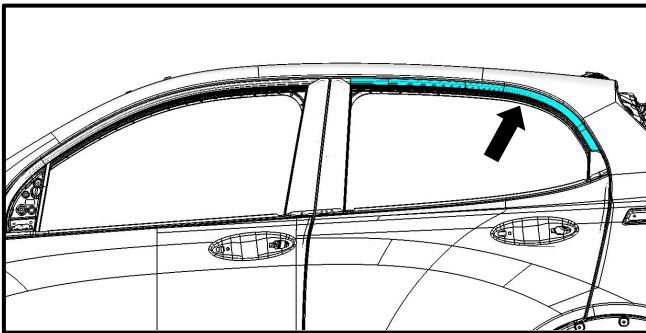
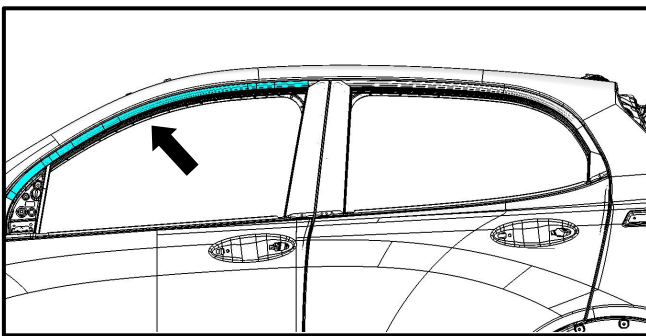
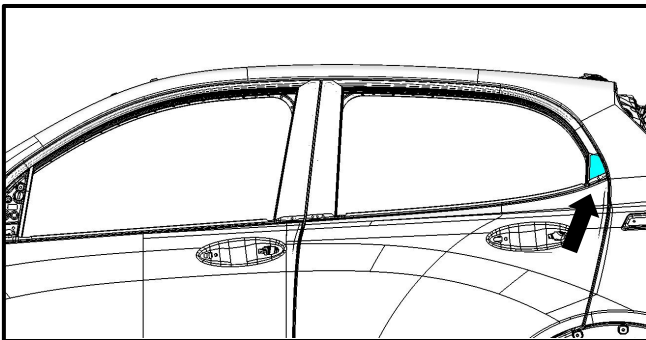
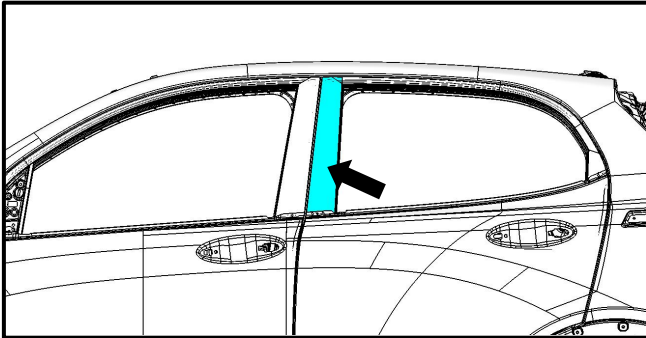
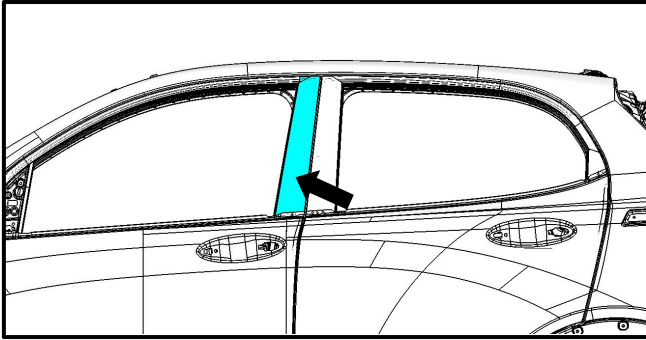


4. Separate the three jaws, and disassemble left and right guards of the front windguard.



5. Install the wiper device; Please refer to 12.2.7 Disassembly and installation.

13.7.2.4 Replacement of black membrane device



Caution

The disassembly and installation of the left black membrane and the right black membrane are the same, and the left black membrane is used as an example for illustration.

Disassembly procedure:

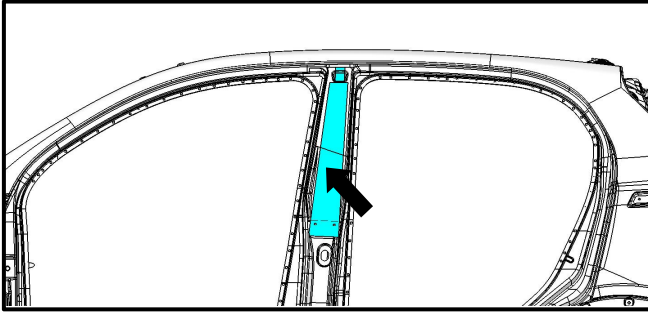
1. Remove the black membrane of the rear section on the left front door.

2. Remove the black membrane of the front section on the left rear door.

3. Remove the lower black membrane of the rear section on the left rear door.

4. Remove the black membrane of the front section on the left front door.

5. Remove the black membrane of the rear section on the left rear door.



6. Disassemble the black membrane of left B-pillar.
 - a. Open the left front door and the left rear door;
 - b. Remove the black membrane of left B-pillar.

Installation procedure:

1. Wipe the bonding surface with alcohol cotton;
2. Install in the reverse order of disassembly.

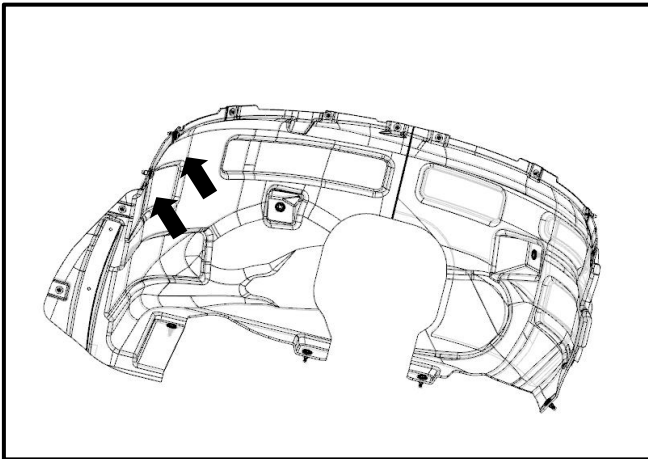
13.7.2.5 Replacement of front wheel housing

Caution

The disassembly and installation of the left/right front wheel cover is the same as the figure on the left side as an example for illustration

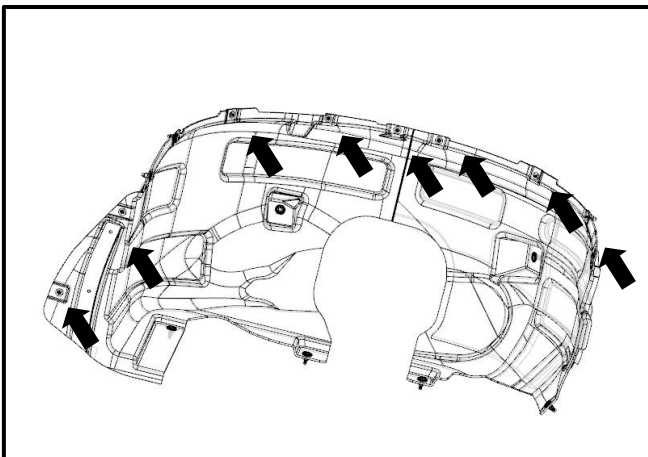
Disassembly procedure:

1. Disconnect the battery.
2. Disassemble the left front wheel brow assembly;
Please refer to 13.7.2.8 Replacement of wheel brow .



3. Disassemble the left front wheel housing guard assembly;

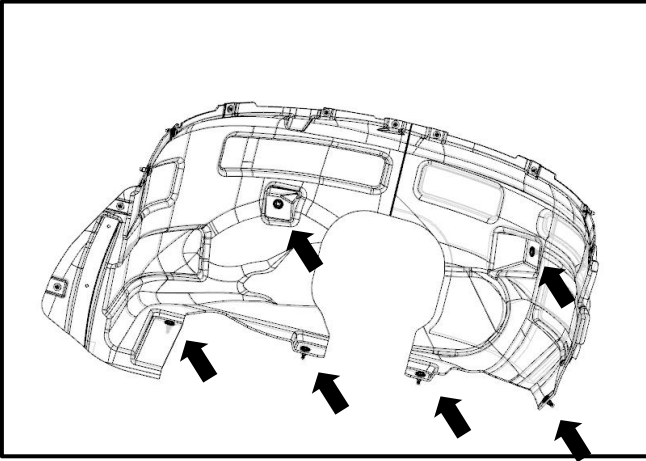
- a. Disassemble 2 cross-slotted pan head tapping screws and large washer assemblies.



- b. Disassemble 8 cross-slotted pan head tapping screws.

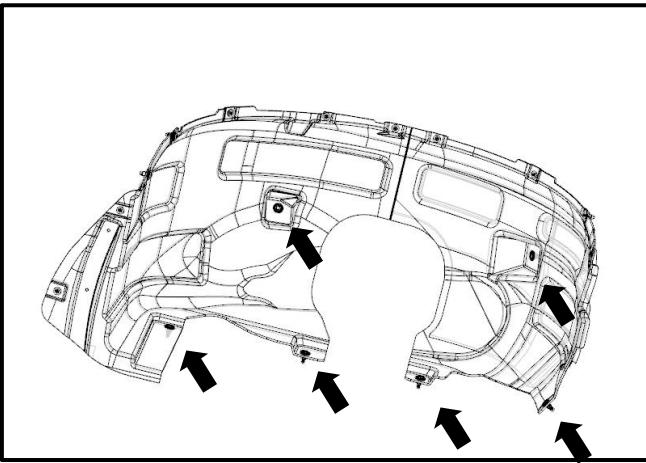
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c. Disassemble 6 snap fasteners to remove the left front wheel housing assembly.

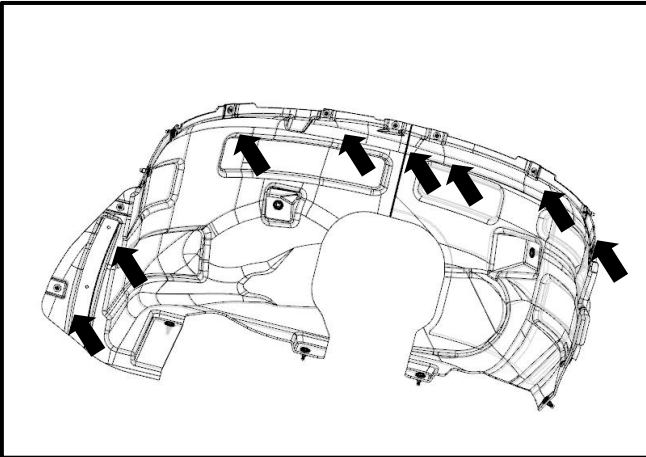


Follow the procedure:

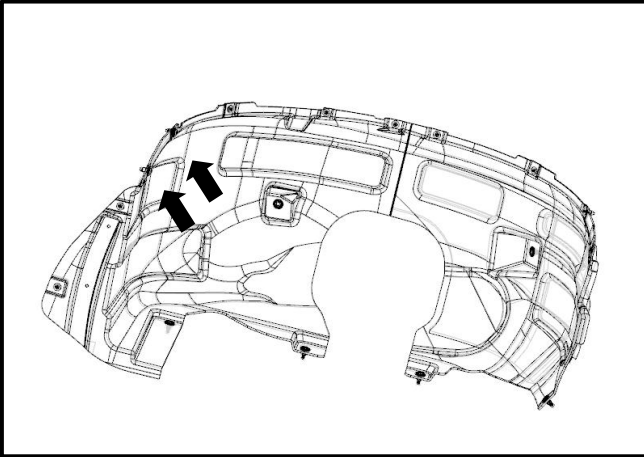
1. Install the left front wheel housing;
 - a. Install the left front wheel housing assembly.
 - b. Assemble 6 snap fasteners.



c. Install 8 cross-slotted pan head tapping screws.



- d. Install 2 cross-slotted pan head tapping screws and large washer assemblies to lower the lift machine.



- e. Install the left front wheel brow assembly; Please refer to 13.7.2.8 Replacement wheel brow.

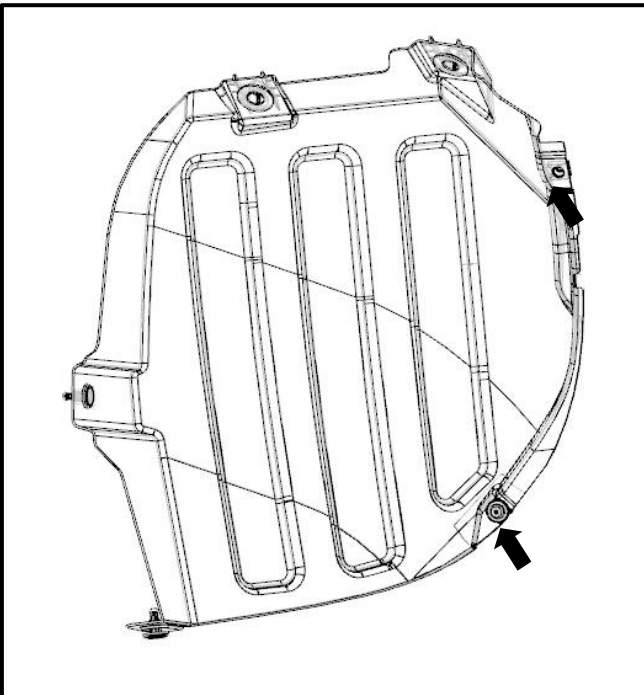
13.7.2.6 Replacement of rear wheel housing

Caution

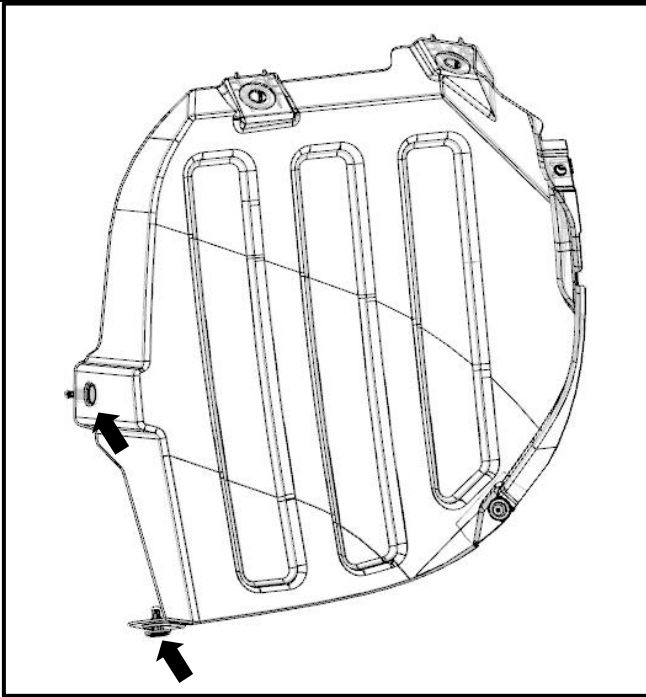
The disassembly and installation of the left/right rear wheel cover is the same as the figure on the left side as an example for illustration

Disassembly procedure:

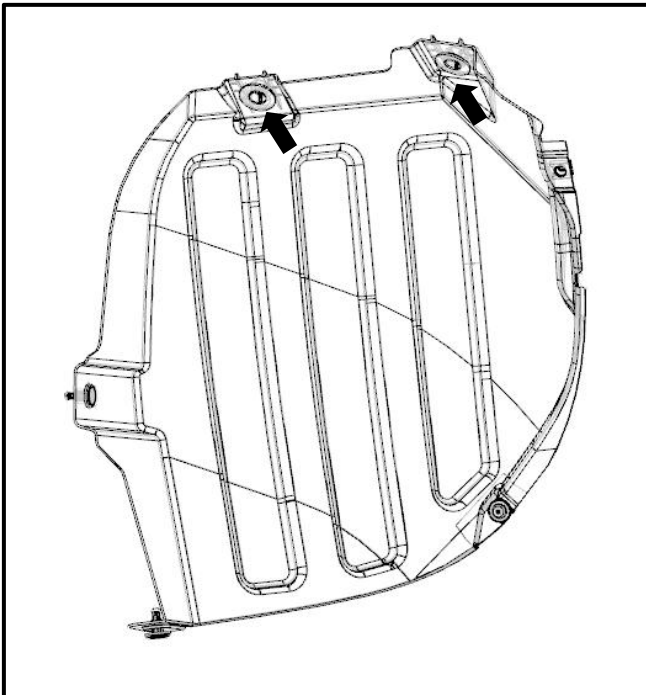
1. Disconnect the battery.
2. Disassemble the left rear wheel brow assembly; Please refer to 13.7.2.8 Replacement of wheel brow.
3. Disassemble the left rear wheel housing.
 - a. Disassemble the cross-slotted pan head tapping screws and large washer assemblies.



b. Remove 2 snap fasteners.

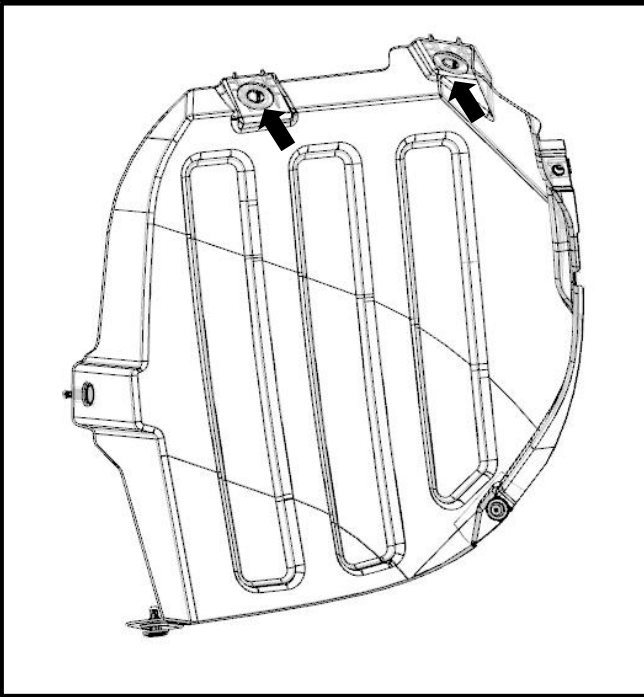


c. Remove 2 clips to remove the left rear wheel housing guard assembly.

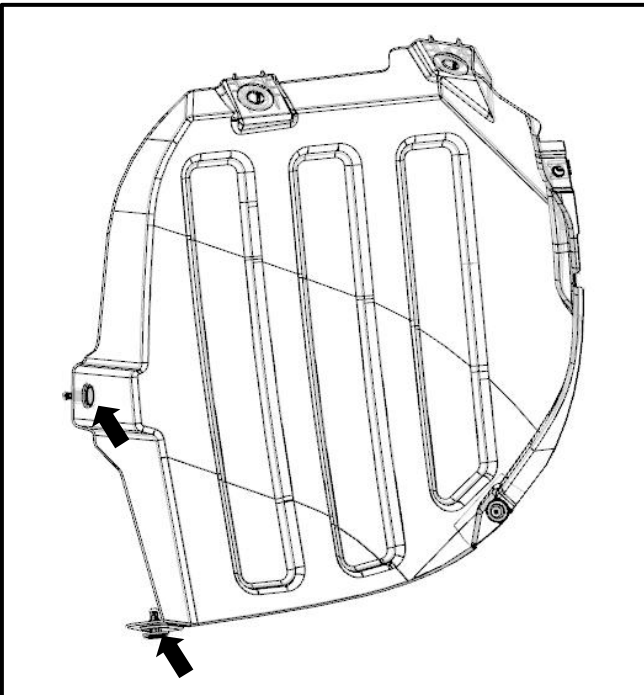


Installation procedure:

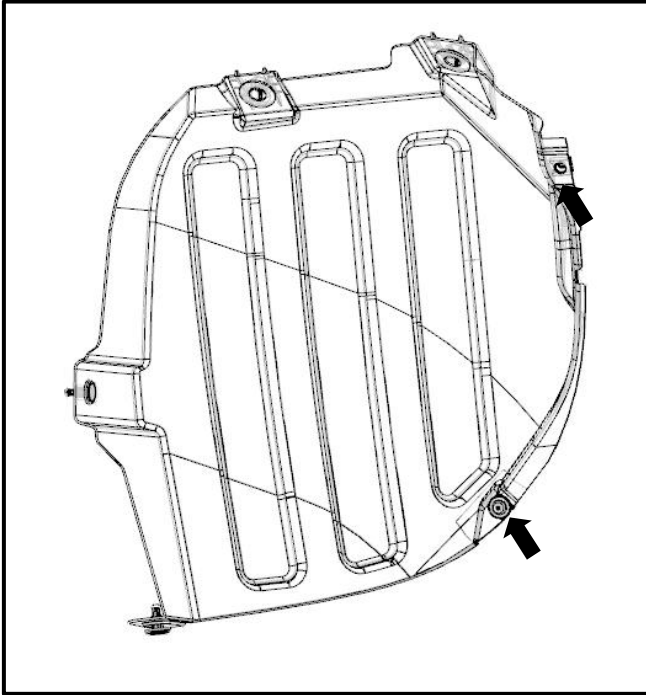
1. Install the left rear wheel cover guard panel assembly:
 - a. Install clips.



- b. Install 2 snap fasteners.



c. Install cross-slotted pan head tapping screws and large washer assemblies.



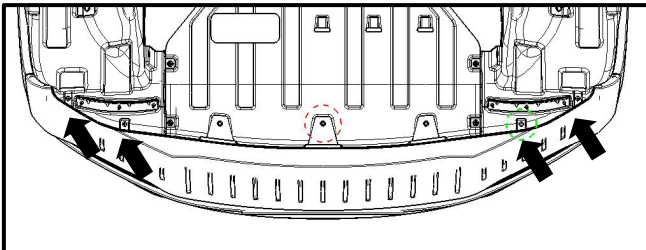
d. Install the left rear wheel brow assembly. Please refer to 13.7.2.8 Replacement of wheel brow .

13.7.2.7 Replacement of front bumper

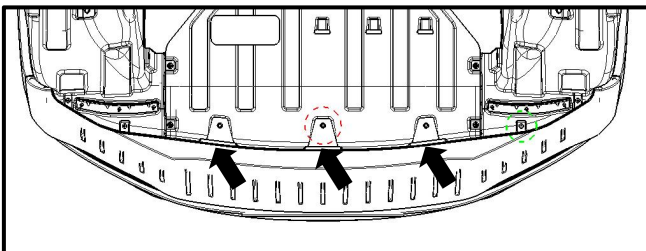
Disassembly procedure:

1. Disassemble the left/right wheel brow assembly. Please refer to 13.7.2.8 Replacement of wheel brow.

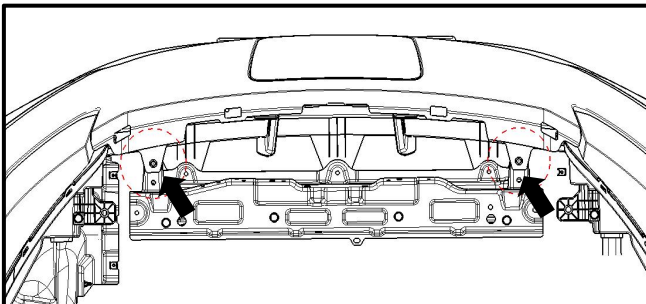
2. Disassemble the front bumper assembly
a. Remove 4 cross-slotted pan head tapping screws that connect the lower front bumper to the wheel housing guard.

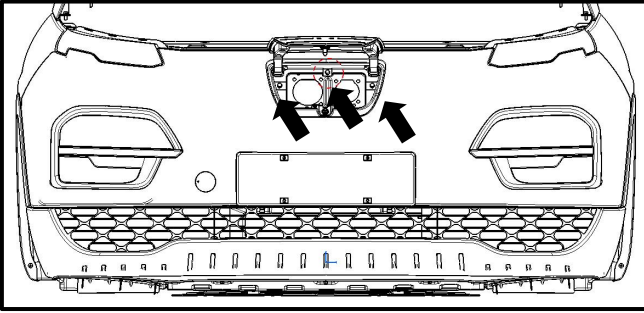


b. Remove 3 hexagon head bolts and flat washer assemblies.

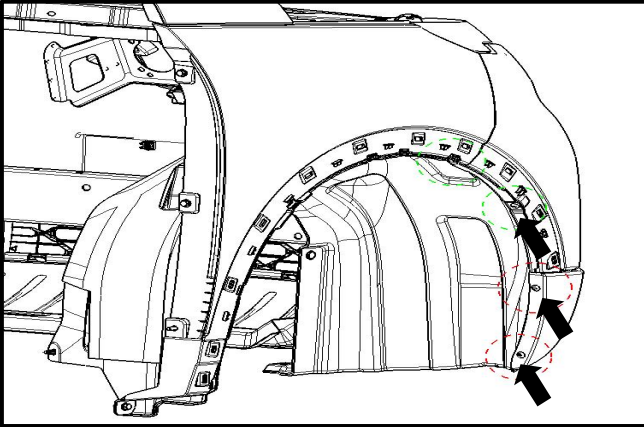


c. Remove the 2 hexagon head bolts and flat washer assemblies that connect the upper front bumper to the upper cross member of tank.

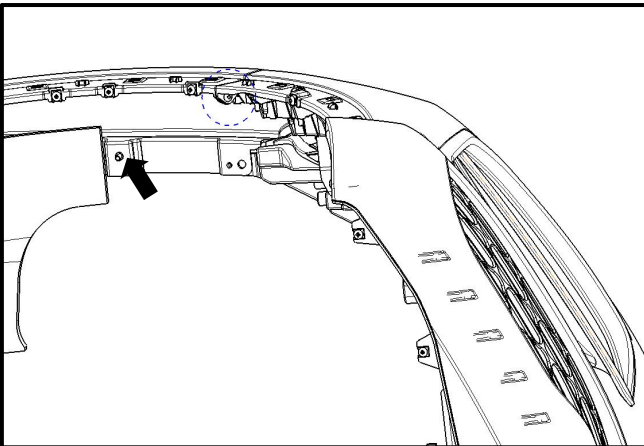




d. Open the charging port cover and disassemble the 3 hexagon head bolts and flat washer assemblies.



e. Remove 4 mounting cross-slotted pan head tapping screws of left/right wheel housing guard with left/right symmetry.



f. Remove one left and one right (bilateral symmetry) mounting cross-slotted pan head tapping screws of the wing.

h. Disconnect the charging port lock body assembly and the connector;

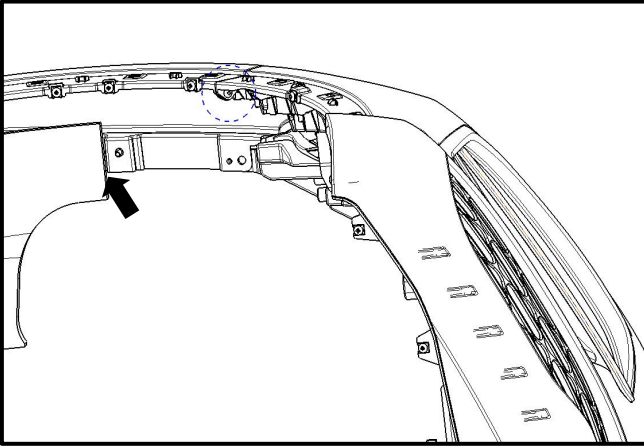
i. Remove the front bumper assembly.

Installation procedure:

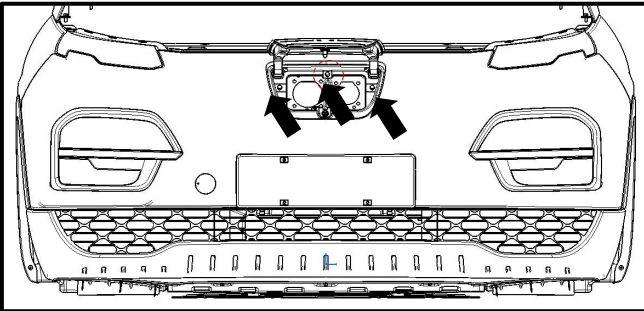
1. Please refer to 13.7.2.16 Replacement of wing to install the wing device.

2. Install the left/right front wheel cover guard assembly; Please refer to 13.7.2.5 Front wheel cover replacement.

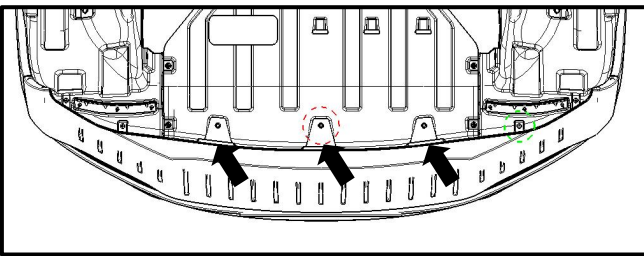
3. Complete installation of the headlamp, trailer hitch cap, spring nut, fog light decorative cover, charging port cover assembly, charging port cover lock bracket, and charging port cover lock.



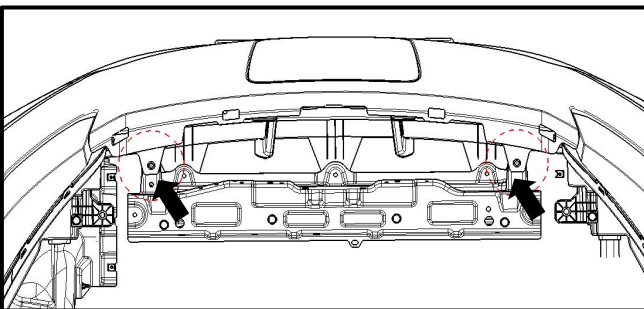
4. Install the front bumper assembly;
 - a. Install the cross-slotted pan head tapping screws on each left and right side of the wing.



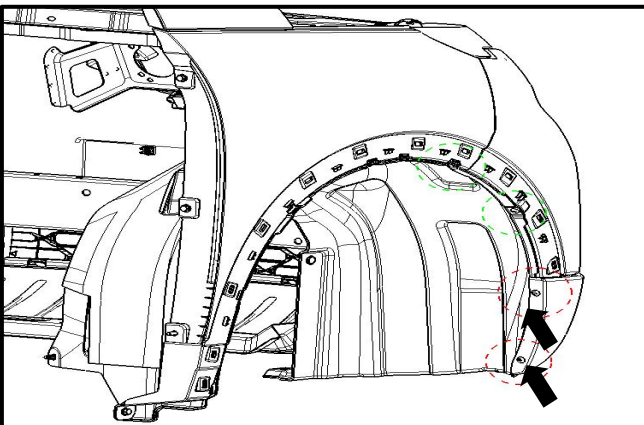
- b. Install 3 hexagon head bolts and flat washer assemblies.



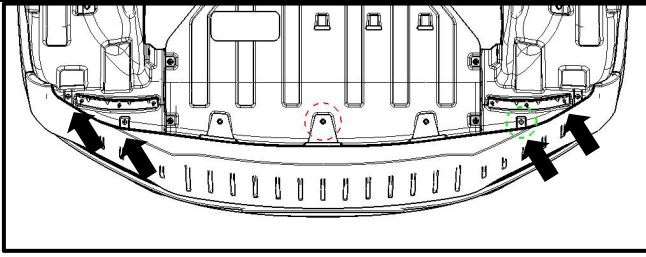
- c. Install 3 hexagon head bolts and flat washer assemblies.



- d. Install 2 hexagon head bolts and flat washer assemblies.



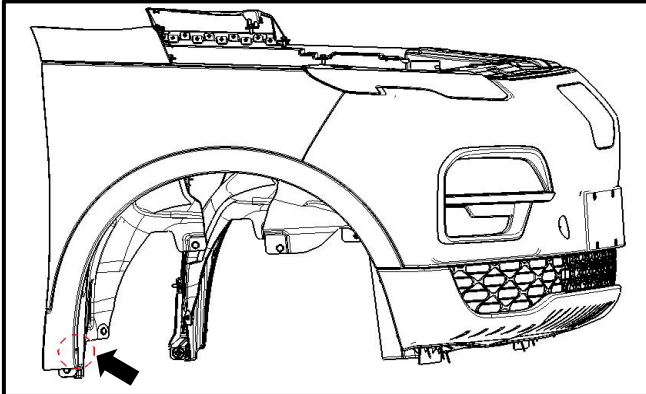
- e. Install 4 mounting cross-slotted pan head tapping screws of the left/right wheel housing guard (bilateral symmetry).



h. Install 4 mounting cross-slotted pan head tapping screws of the lower front bumper and the wheel housing guard.

5. Insert the connector cable of charging port cover lock.

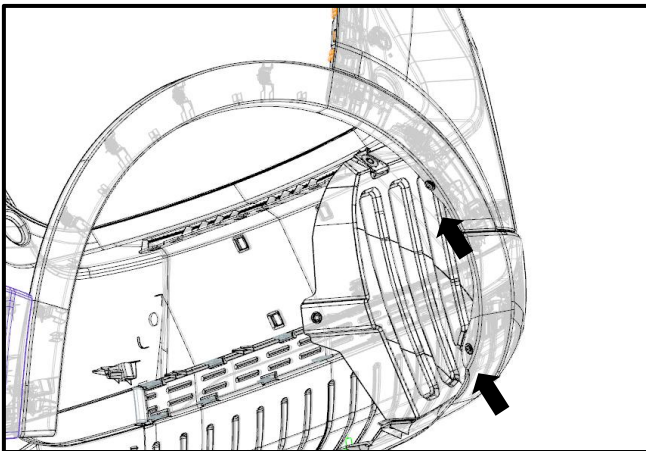
13.7.2.8 Replacement of wheel brow



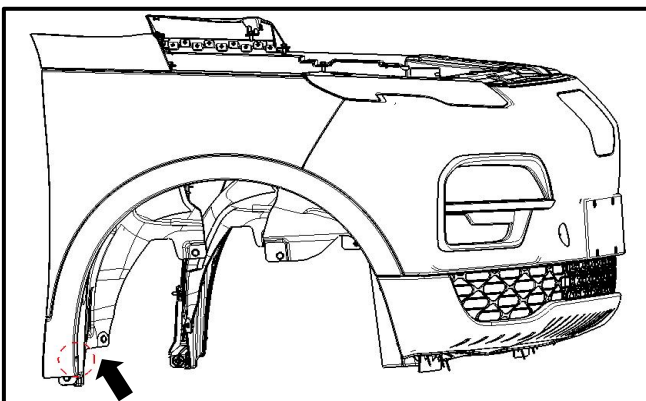
The disassembly method for left and right front wheel brows is the same as the assembly method. The disassembly method for the left and right rear wheel brows is the same as the assembly method. The left side is taken as an example

Disassembly procedure:

1. Disassemble the left front wheel brow;
a. Disassemble the mounting cross-slotted pan head tapping screws of wheel brow and wing.



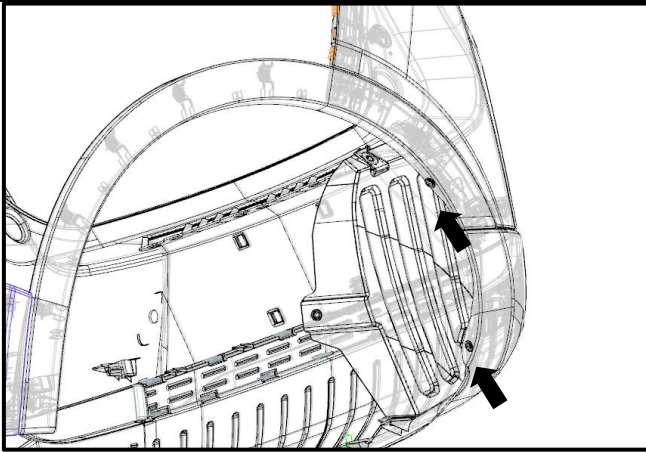
b. Remove the left front wheel brow.
2. Disassemble the left rear wheel brow assembly:
a. Disassemble the wheel brow and 2 mounting cross-slotted pan head tapping screws of rear bumper.



b. Remove the left rear wheel brow.

Installation procedure:

1. Snap in the left front wheel brow and install the mounting cross-slotted pan head tapping screws of the wheel brow and wing.



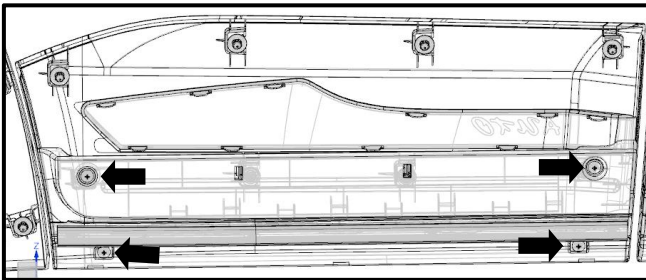
2. Snap in the left rear wheel brow and screw on 2 mounting cross-slotted pan head self-tapping screws of wheel brow and rear bumper.

13.7.2.9 Replacement of decorative parts for four-door

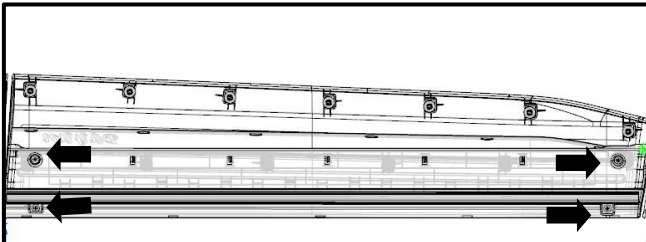
Disassembly procedure:

The left and right front door panel decorative parts are installed and disassembled in the same way, and the left and right rear door panel decorative parts are installed and disassembled in the same way.

1. Open the door;
2. Disassemble decorative parts of the left rear door;
 - a. Disassemble 4 cross-slotted pan head tapping screws to remove decorative parts of the left rear door.

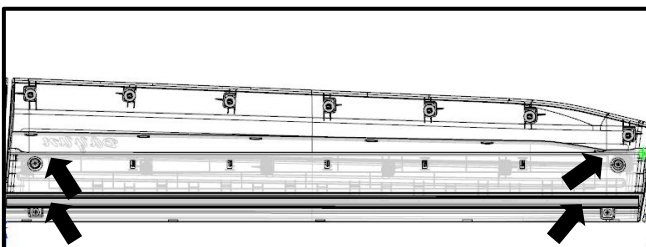


3. Disassemble decorative parts of left front door
 - a. Disassemble 4 cross-slotted pan head tapping screws to remove decorative parts of the left front door.

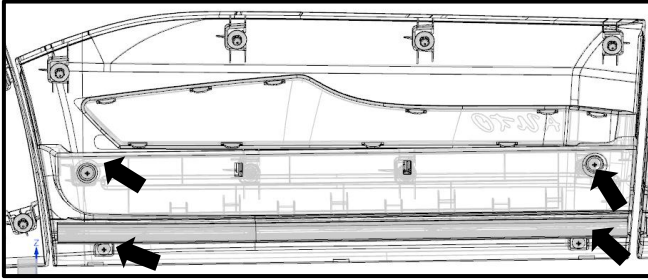


Installation procedure:

1. Assemble decorative parts of the left front door;
 - a. Snap decorative parts of the left front door into the left front door assembly.
 - b. Install 4 cross-slotted pan head tapping screws.



3. Assemble decorative parts of the left rear door;
 - a. Snap decorative parts of the left rear door into the left rear door assembly.



b. Install 4 cross-slotted pan head tapping screws.

4. Close the four-door.

13.7.2.10 Replacement of rear bumper

Disassembly procedure:

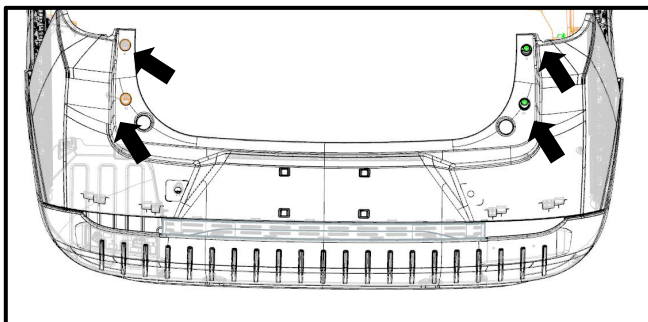
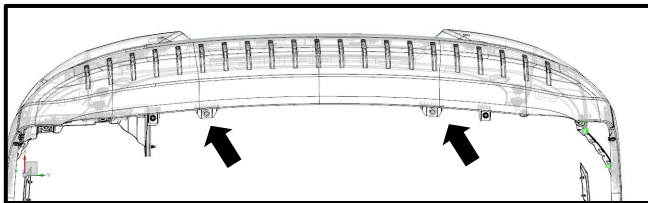
1. Disconnect the battery; Please refer to 1.1.1.1 Warnings and precautions.

2. Disassemble the left rear wheel brow assembly; Please refer to 13.7.2.8 Replacement of wheel brow.

3. Disassemble the rear wheel housing guard assembly; Please refer to 13.7.2.6 Replacement of rear wheel housing.

4. Disassemble the rear bumper assembly;

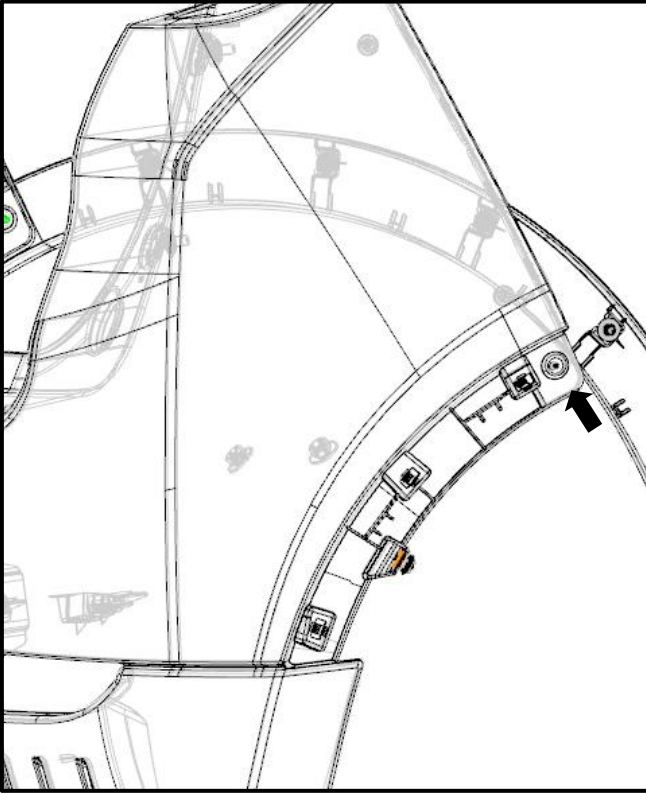
a. Disassemble 2 hexagon head bolts and flat washer assemblies.



b. Disassemble upper 4 bolt caps and 4 hexagon head bolts and flat washer assemblies of rear bumper.

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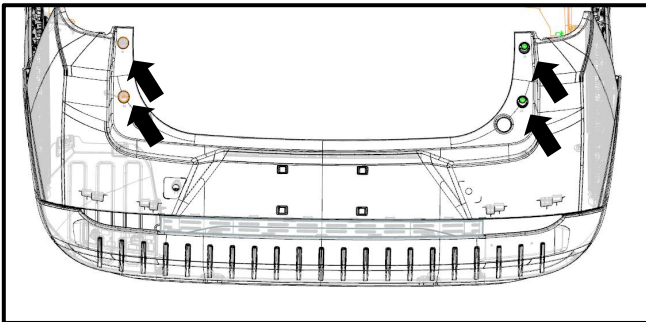
c. Disassemble 2 mounting cross-slotted pan head tapping screws of bumper and rear mounting rear bracket of rear bumper with bilateral symmetry.



d. Remove the rear bumper assembly.

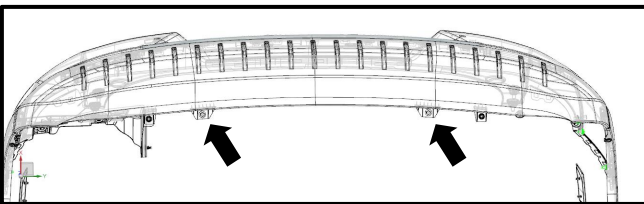
Installation process

1. Snap the rear bumper into the body;
2. Install the 4 bolt caps, 4 hexagon head bolts and flat washer assemblies on the upper rear bumper.





3. Install the rear bumper and mounting bracket and mounting cross-slotted pan head tapping screws to ensure bilateral symmetry.



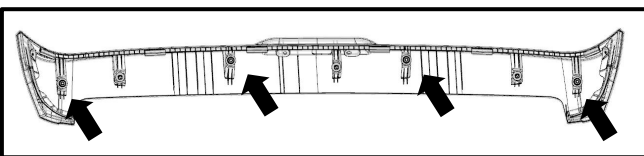
4. Install 2 hexagon head bolts and flat washer assemblies.

5. Install the left/right rear wheel brow assembly; Please refer to 13.7.2.8 Replacement of wheel brow.

6. Install the rear wheel housing guard assembly; Please refer to 13.7.2.6 Replacement of rear wheel housing.

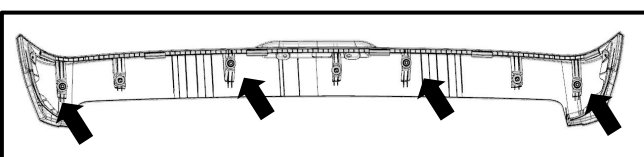
7. The vehicle is powered on.

13.7.2.11 Replacement of spoiler device



Disassembly procedure:

1. Disconnect the battery.
2. Disassemble the spoiler device;
 - a. Disassemble 4 hexagon head bolts and flat washer assemblies to remove the spoiler.



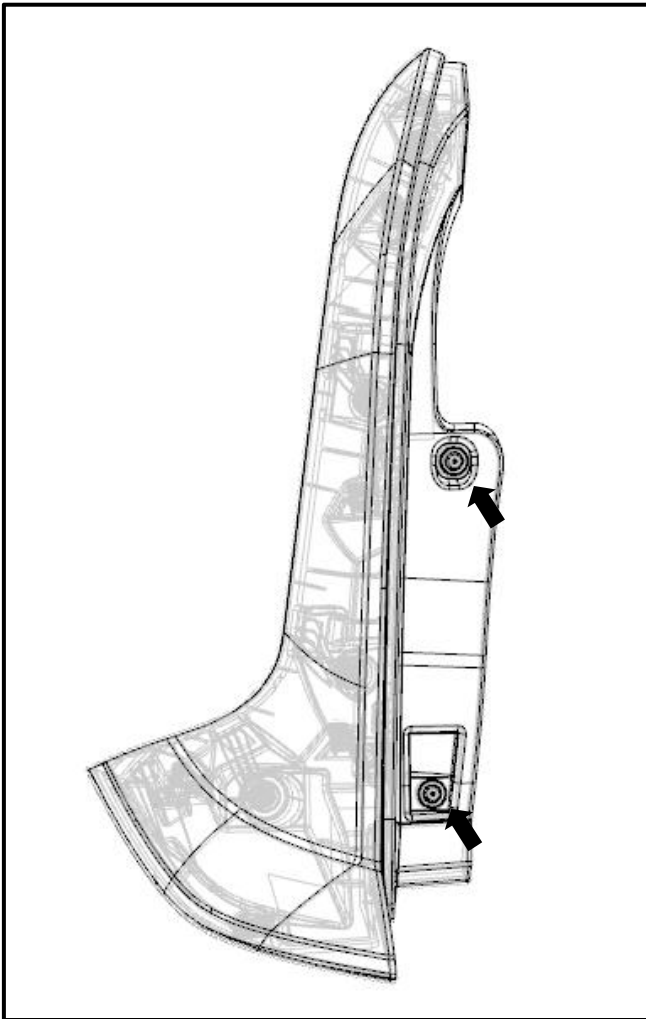
Installation procedure:

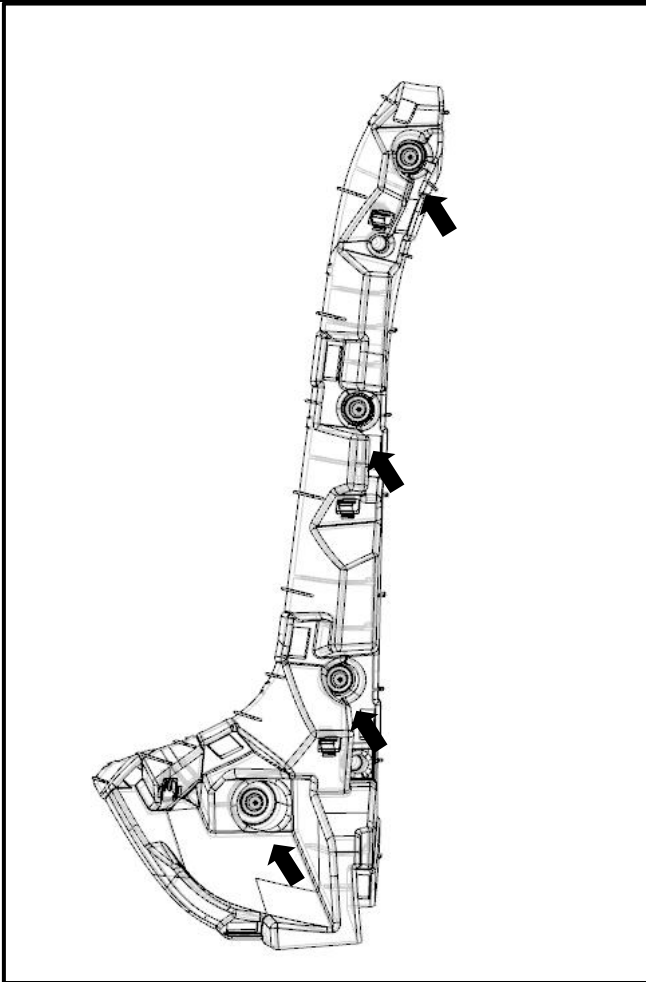
1. Assemble the spoiler device;
 - a. Install the spoiler assembly and install 4 hexagon head bolts and flat washer assemblies.

13.7.2.12 Replacement of rear peripheral devices

Disassembly procedure:

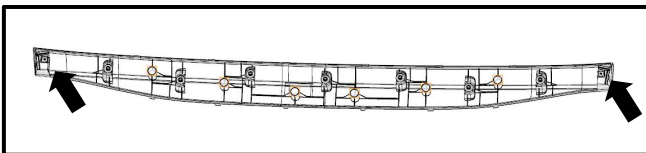
1. Disconnect the battery.
2. Disassemble the trim assembly on the left side of rear windshield (bilateral symmetry with the same disassembly way);
 - a. Disassemble 2 mounting cross-slotted pan head tapping screws and large washer assemblies to remove the trim assembly on the left side of windshield.





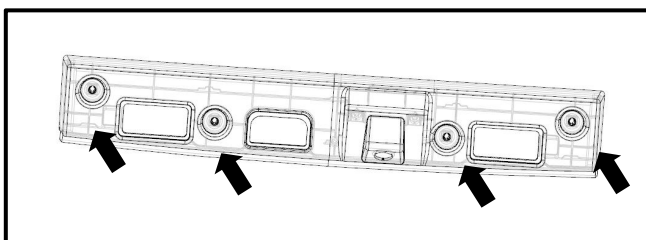
3. Disassemble the trim mounting bracket on the left side of the rear windshield (bilateral symmetry with the same disassembly way);

a. Disassemble 4 mounting cross-slotted pan head tapping screws and large washer assemblies to remove the trim mounting bracket on the right side of the rear windshield.



4. Disassemble the lower trim assembly of the rear windshield;

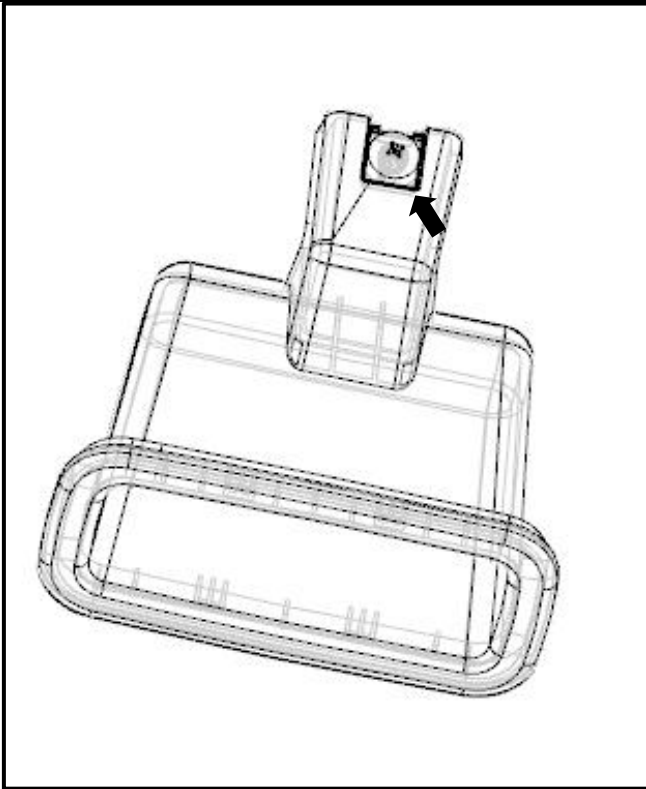
a. Disassemble two cross-slotted pan head tapping screws to remove the lower trim assembly of the rear windshield;



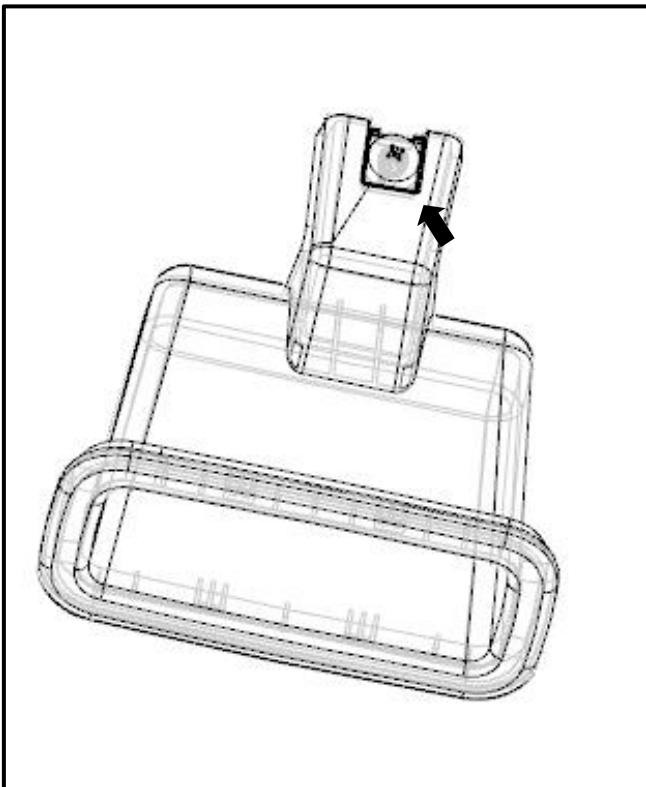
5. Disassemble the lower trim body of back door;

a. Open the back door and disassemble 4 cross-slotted pan head tapping screws and large washer assemblies.

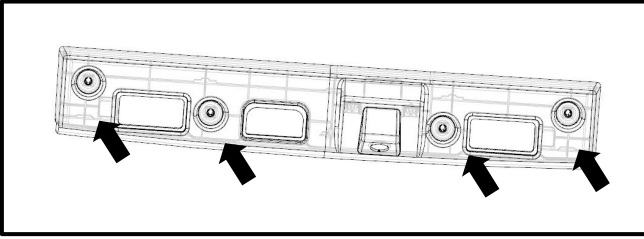
b. Unplug the patch cords of electrical appliances and remove the lower trim body of the back door.



6. Disassemble the handle box assembly of the back door;
 - a. Disassemble the inner guard assembly of the back door; please refer to 13.6.2.14 Replacement of back door guard assembly.
 - b. Disassemble 1 cross-slotted pan head tapping screw and large washer assembly.
 - c. Remove the handle box assembly of the back door.



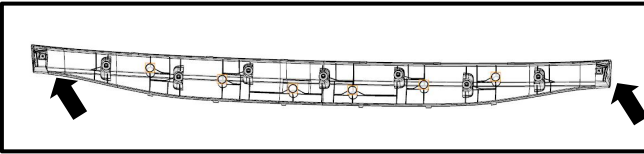
- Installation procedure:
1. Open the back door;
 2. Assemble the handle box assembly of the back door ;
 - a. Install the rear back door handle box assembly into the rear back door and assemble the cross-slotted pan head tapping screws and large washer assemblies.



3. Assemble the lower trim body of the rear back door;

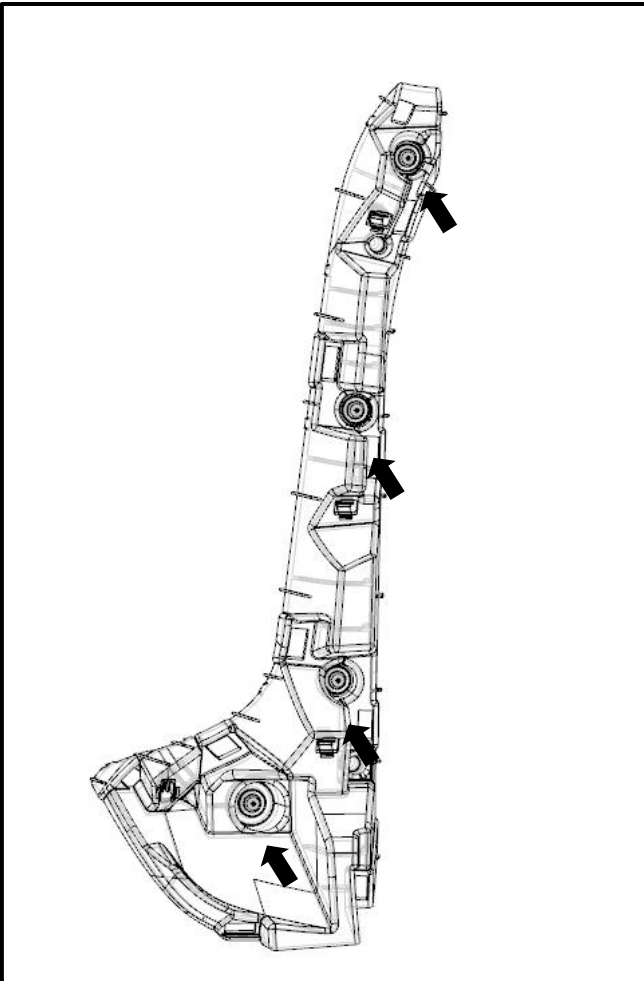
a. Separately install the microswitches, rear license plate light, and rear camera on the lower trim of the rear back door;

b. Connect the bottom patch cords of electrical appliances, install the lower trim body of the rear back door into the rear back door and assemble the 4 cross-slotted pan head tapping screws and large washer assemblies.



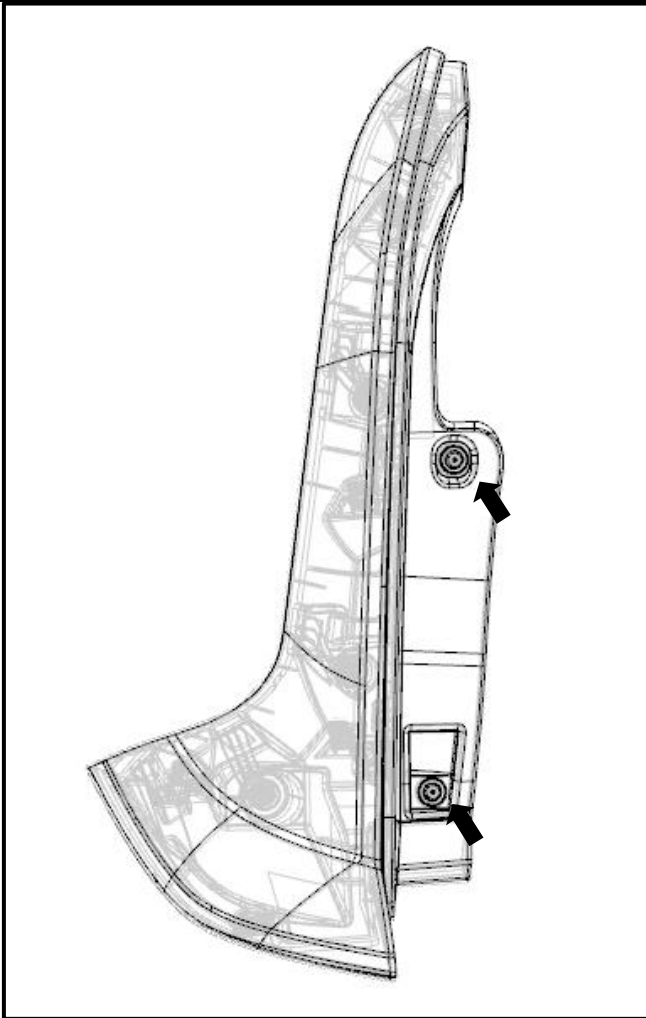
4. Assemble the lower trim of the rear windshield;

a. Snap the lower trim of the rear windshield into the rear back door and install two cross-slotted pan head tapping screws.



5. Install the trim mounting bracket on the right side of the rear windshield (bilateral symmetry with the same disassembly way);

a. Install the trim mounting bracket on the right side of the rear windshield and install 4 cross-slotted pan head tapping screws.



6. Assemble the trim assembly on the left side of the rear windshield (bilateral symmetry with the same disassembly way);

a. Install the trim assembly on the left side of the rear windshield and install 2 cross-slotted pan head tapping screws.

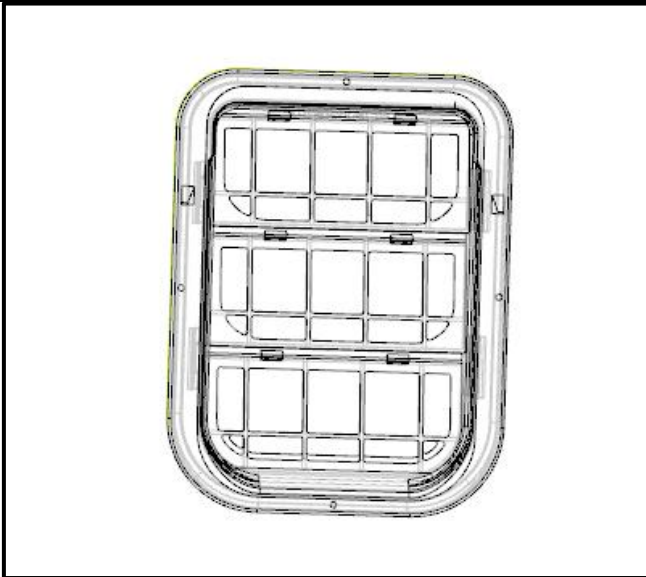
13.7.2.13 Replacement of rear ventilation frame



Disassembly procedure:

1. Disassemble the rear bumper assembly; please refer to 13.7.2.10 Replacement of rear bumper.

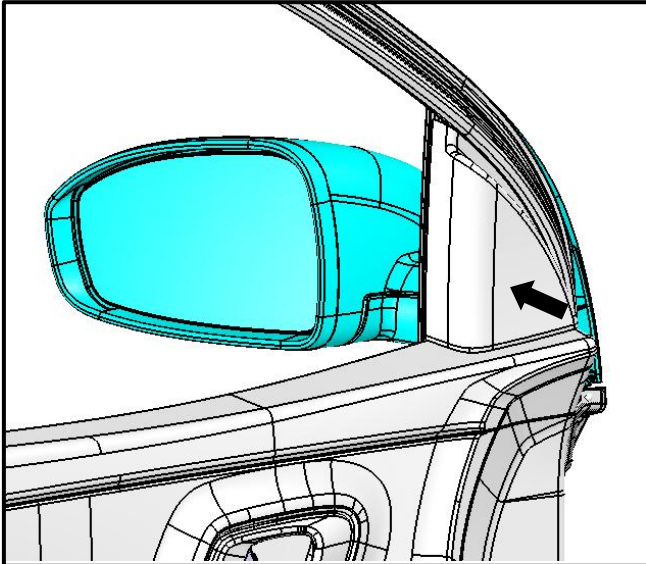
2. Disassembly the rear ventilation frame assembly (bilateral symmetry).



Installation procedure:

1. Install the rear ventilation frame assembly (bilateral symmetry);
2. Install the rear bumper assembly; please refer to 13.7.10 Replacement of rear bumper.

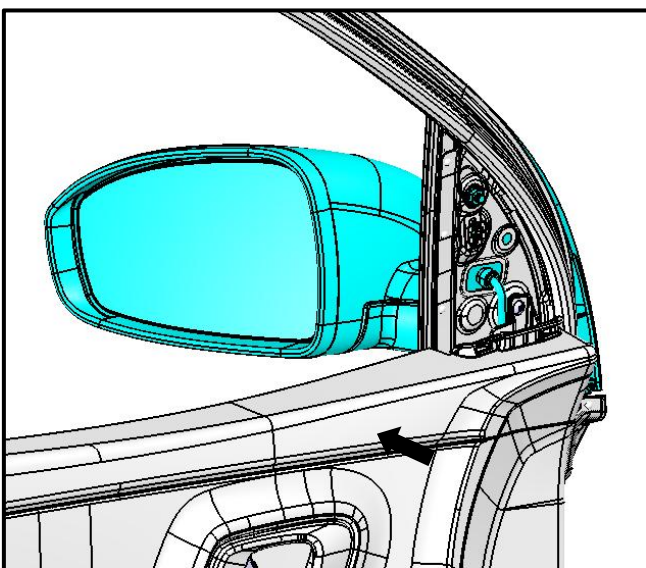
13.7.2.14 Replacement of exterior rearview mirrors



The left and right exterior rearview mirrors are disassembled and installed in the same way, taking the left exterior rearview mirror as an example.

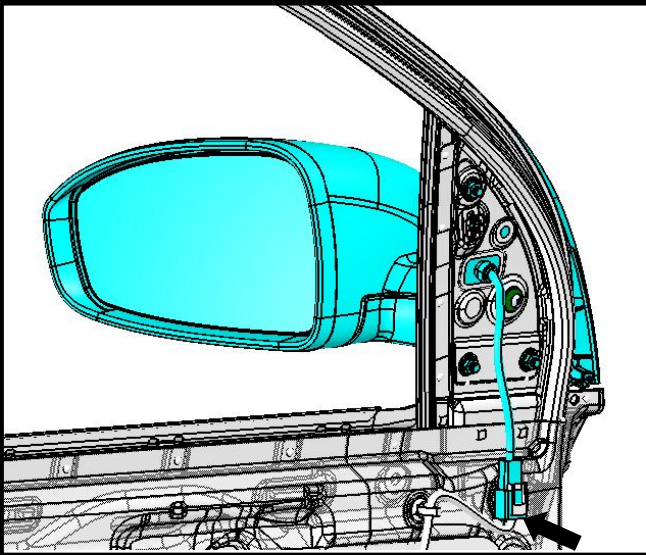
Disassembly procedure:

1. Disassemble the inner triangle plate assembly of the left front door.

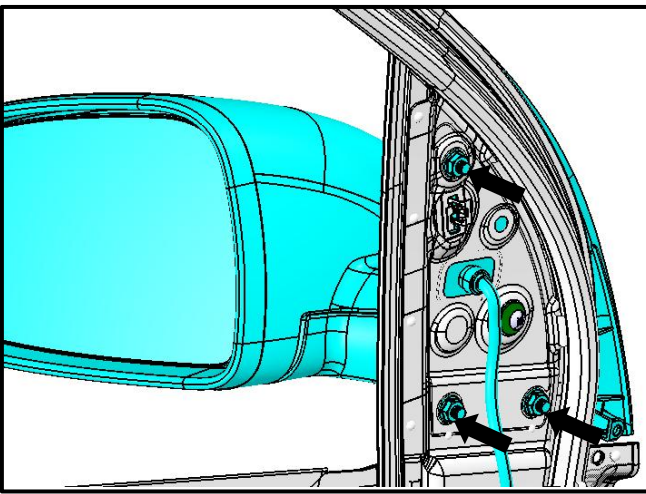


2. Disassemble the guard assembly of the left front door.

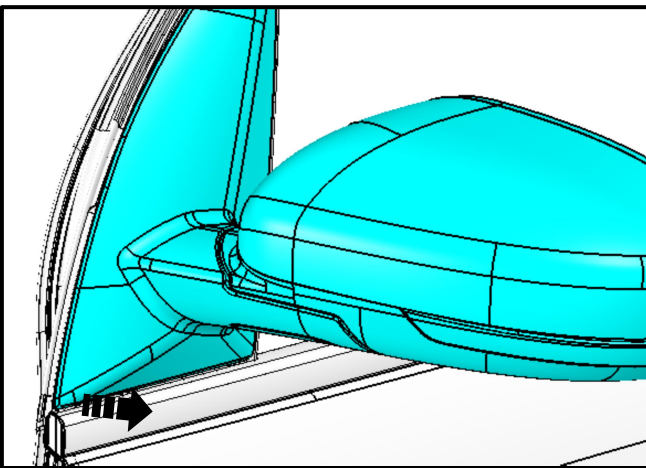
3. Disassemble the connector of the left front door wiring harness.



4. Disassemble the exterior rearview mirrors;
a. Remove 3 fixed bolts of the exterior rearview mirrors.



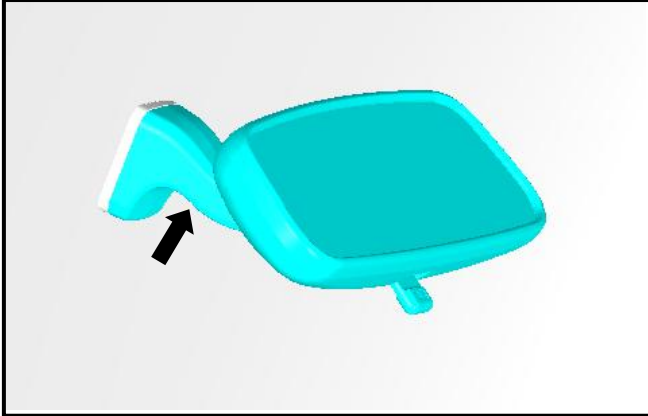
b. Remove the snap-in structure at the lower left position of the exterior rearview mirrors in the direction shown and remove the exterior rearview mirrors.



Installation procedure:

1. Install in the reverse order of disassembly.

13.7.2.15 Replacement of interior rearview mirrors



Disassembly procedure:

1. Tap the area of the interior rearview mirrors shown in the figure with a rubber mallet until the interior rearview mirrors can be removed by hand;

2. Remove the interior rearview mirrors.

Note: Wear gloves to prevent hand injuries. Do not scratch the glass and other components.

Installation procedure:

1. Install in the reverse order of disassembly.

13.7.2.16 Replacement of wing

Disassembly procedure:

1. Disassemble the left / right front wheel brow assembly; Please refer to 13.7.2.8 Replacement of wheel brow .

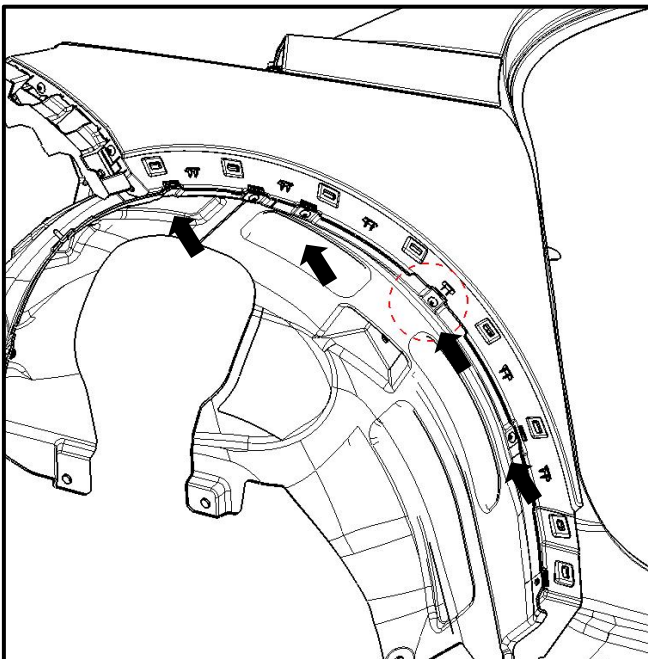
2. Disassemble the front bumper assembly; Please refer to 13.7.2.7 Replacement of front bumper.

3. Disassemble the daytime running light assembly; Please refer to 12.1.4 Removal and installation;

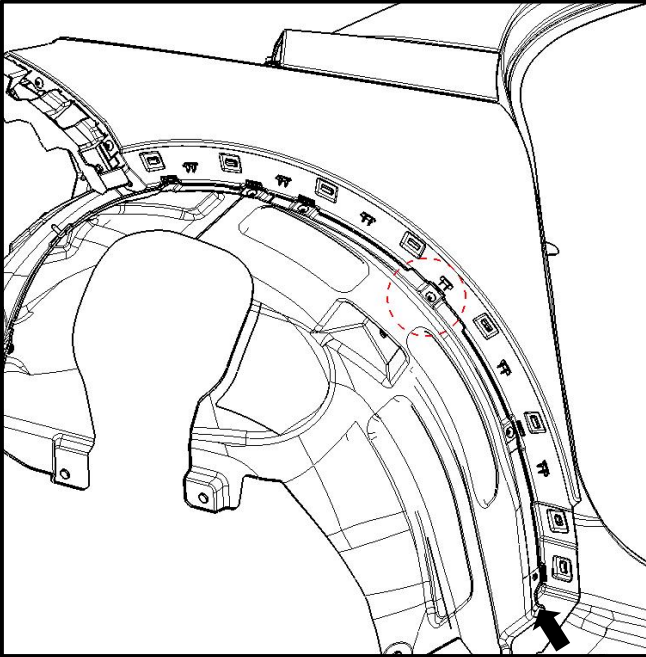
4. Disassemble the left side guard and left side water block assembly of lower trim panel of the front windshield; Please refer to 13.7.2.3 Lower trim panel replacement of front windshield.

5. Disassemble the wing assembly;

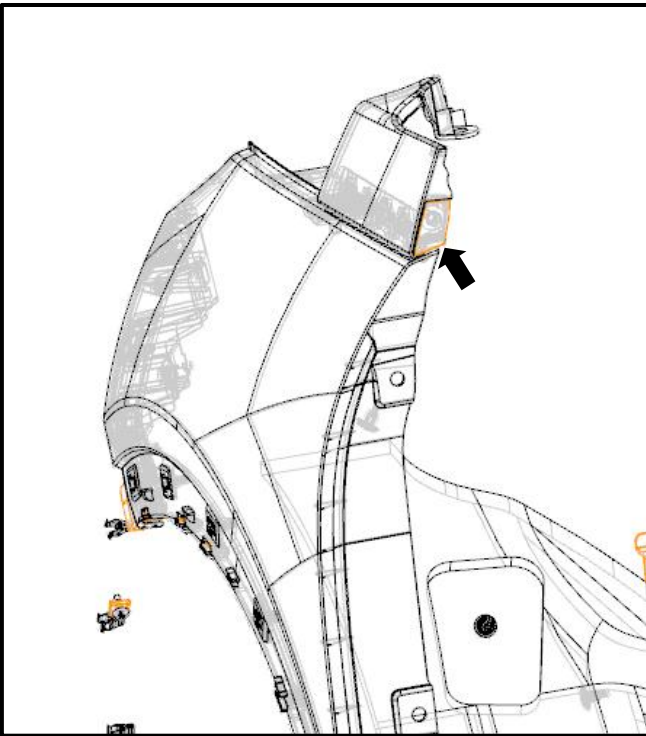
- a. Remove the cross recessed pan head tapping screws.



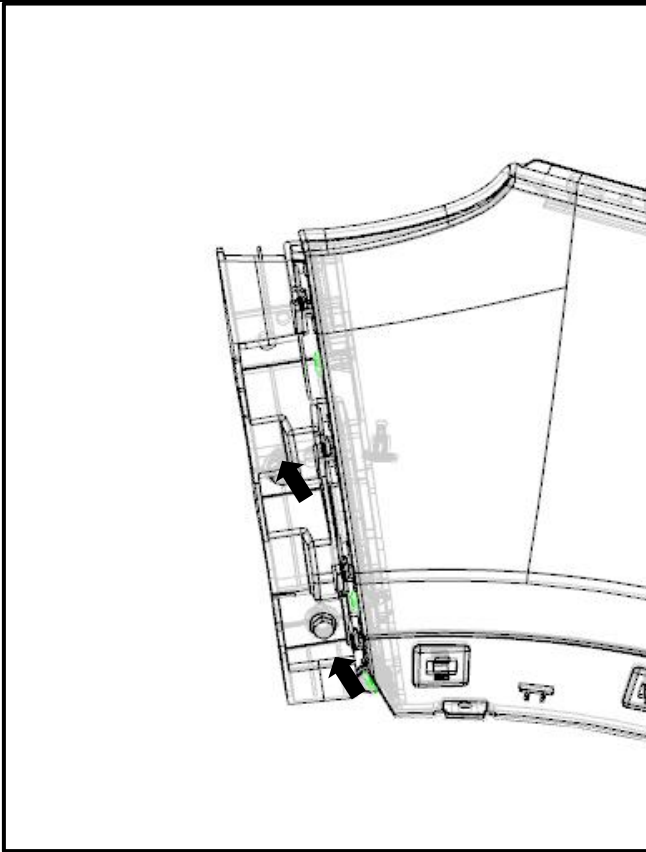
b. Remove the hex head bolts and flat washer assemblies.



c. Remove the bolt plug cover on the left side of the wing trim.

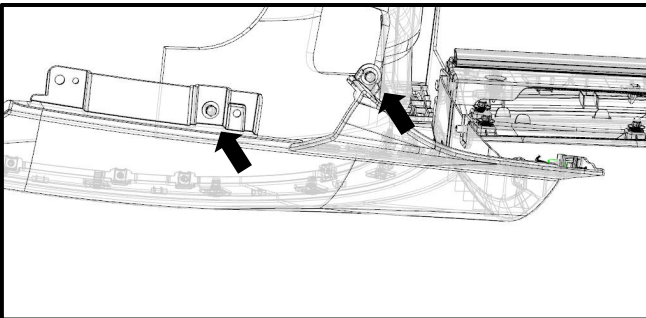
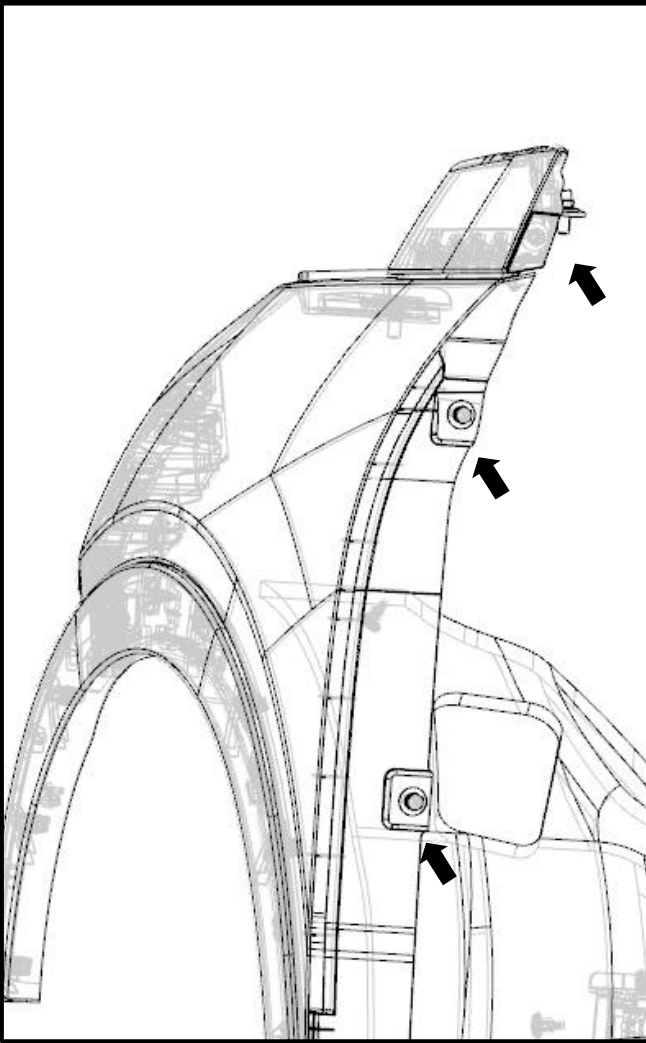


d. Remove the mounting bracket to install the hex head bolt and flat washer assembly.



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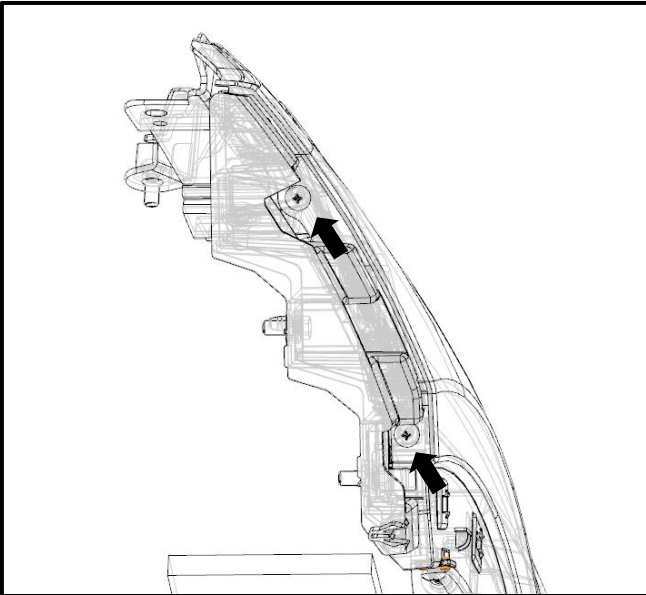
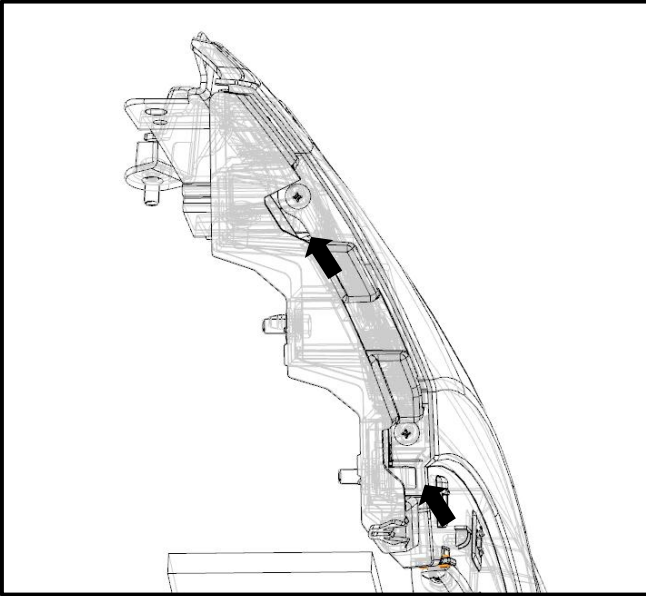
e. Remove the mounting bracket to install the 3 hex head bolts and flat washer assembly.



f. Install the hex head bolts and flat washer assemblies.

Yuehu Maintenance Manual

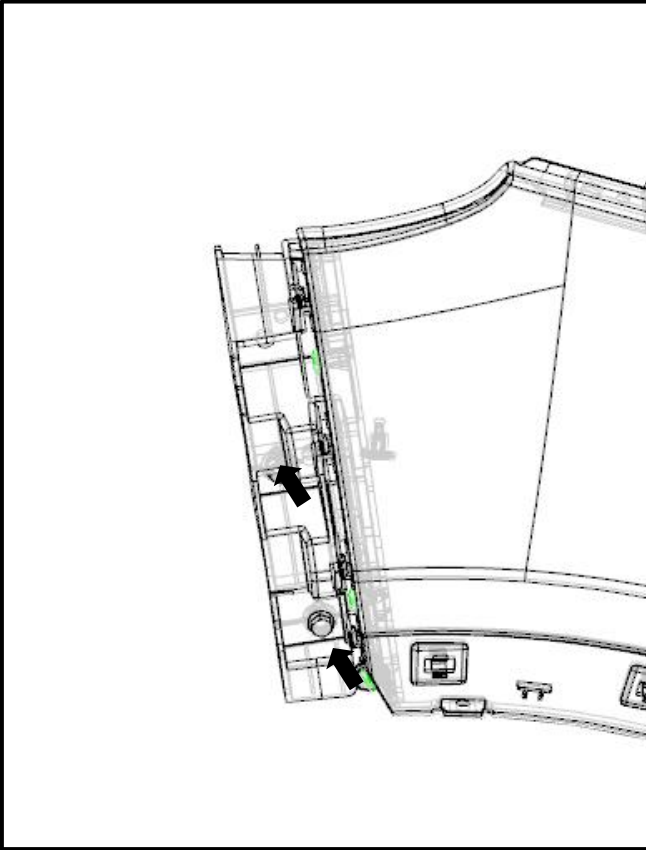
g. Take down the wing assembly by removing the cross-slotted pan head self-tapping screws.



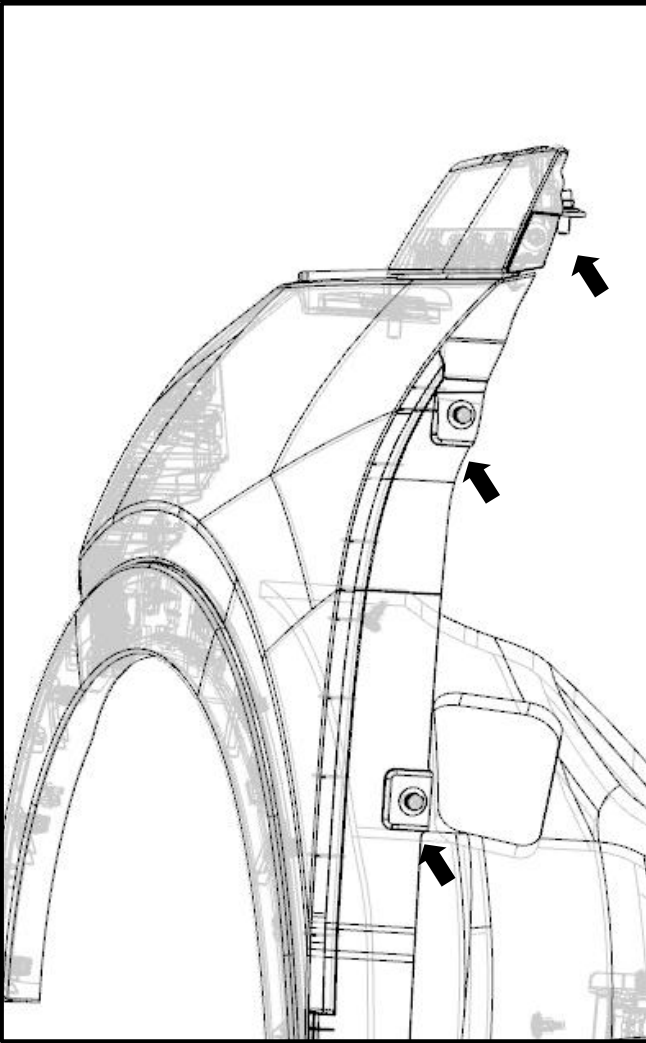
Installation procedure:

1. Split the wing left mounting bracket to the wing.

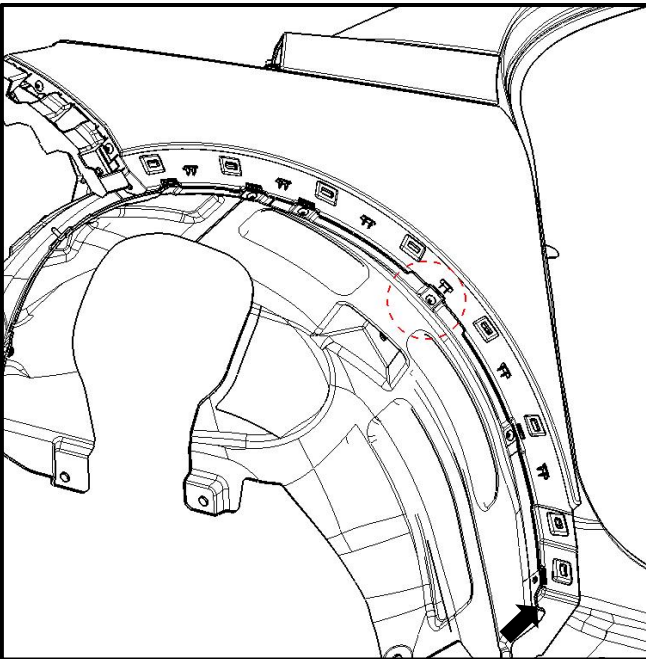
2. Install the wing assembly and install the hex head bolts and flat washer assemblies.



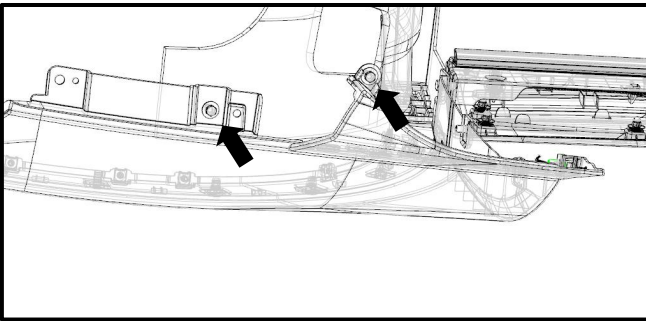
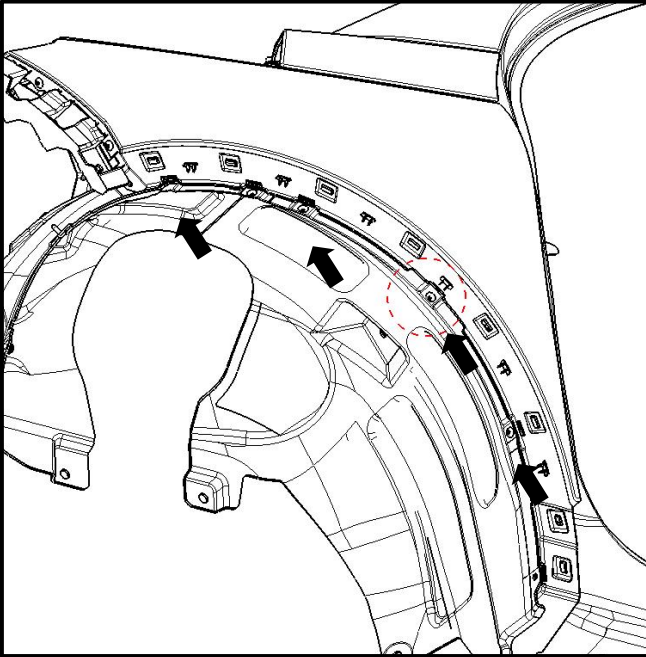
3. Install the mounting bracket 3 hex head bolts and flat washer assemblies.



4. Install the hex head bolts and flat washer assemblies.



5. Install cross recessed pan head tapping screws.



6. Install the hex head bolts and flat washer assemblies.

7. Please refer to 13.7.2.8 Replacement of wheel brow to install the left/right front wheel brow assembly;

8. Install the front bumper assembly; Please refer to 13.7.2.7 Front bumper replacement;

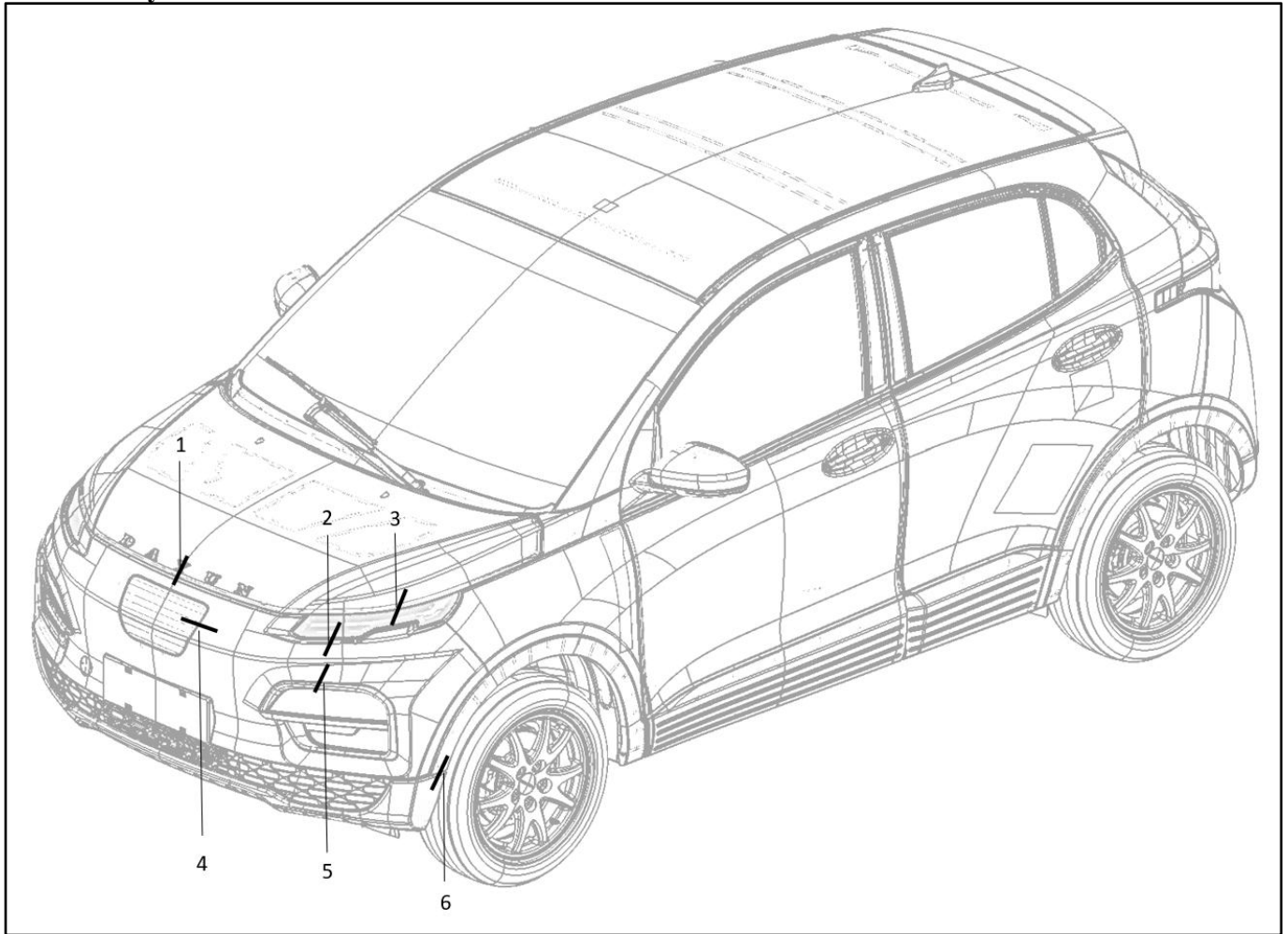
9. Install the daytime running light assembly; Please refer to 12.1.4 Removal and installation;

10. Install the left side guard and left side water block assembly of lower trim panel of the front windshield; Please refer to 13.7.2.3 Lower trim panel replacement of front windshield.

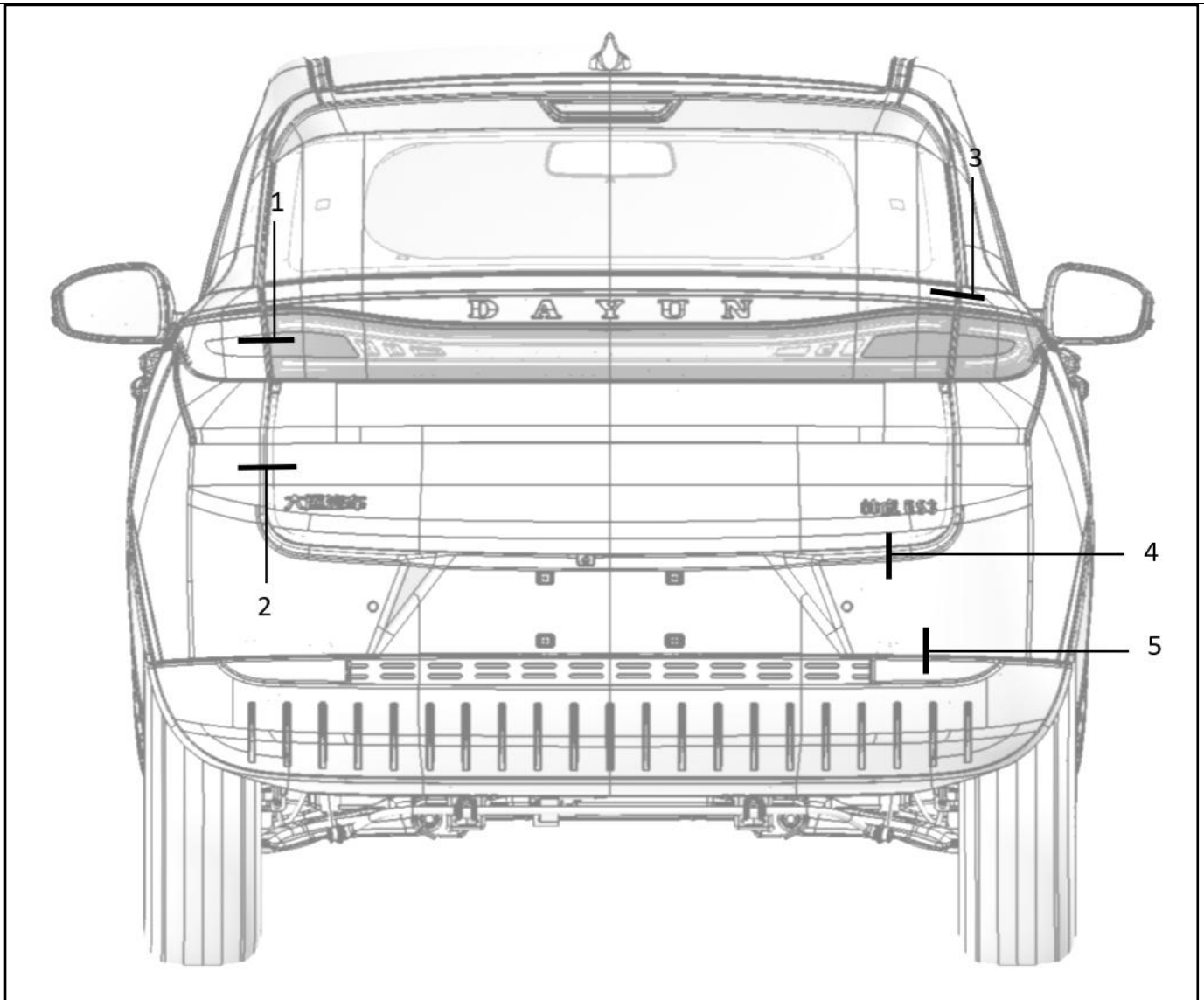
13.8 Collision repair

13.8.1 Specifications

13.8.1.1 Body surface clearance

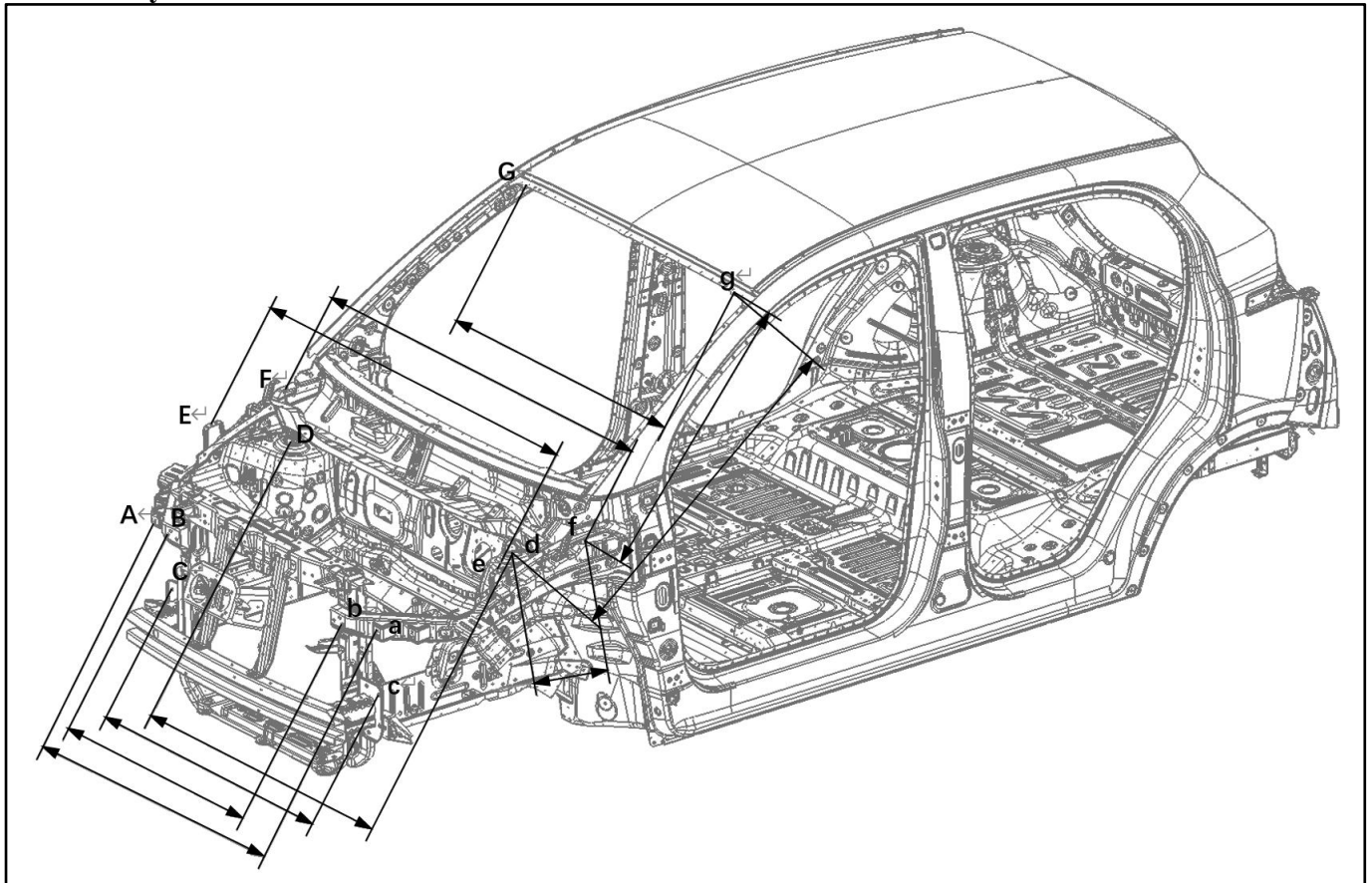


Code	Designation of parts and components (Baseline)	Related part and component names	Defined value			
			Clearances	Flush	Parallelism	Symmetry
1	Front engine compartment cover	Front bumper	4.5±1.0	/	≤1.0	/
2	Front bumper	Daytime running lights	2.1-3.6 to ±1.0	/	≤1.0	/
3	Front engine compartment cover	Daytime running lights	3.3-4.5 to ±1.0	/	≤1.5	≤1.5
4	Front bumper	Charging port cover	2.2±0.5	-0.5±0.5	≤0.5	≤0.5
5	Front bumper	Headlight trim cover	0.5±0.5	/	≤1.0	/
6	Lower body of front bumper	Wheel brow	1.5±0.5	0.5±0.5	≤1.0	≤1.0

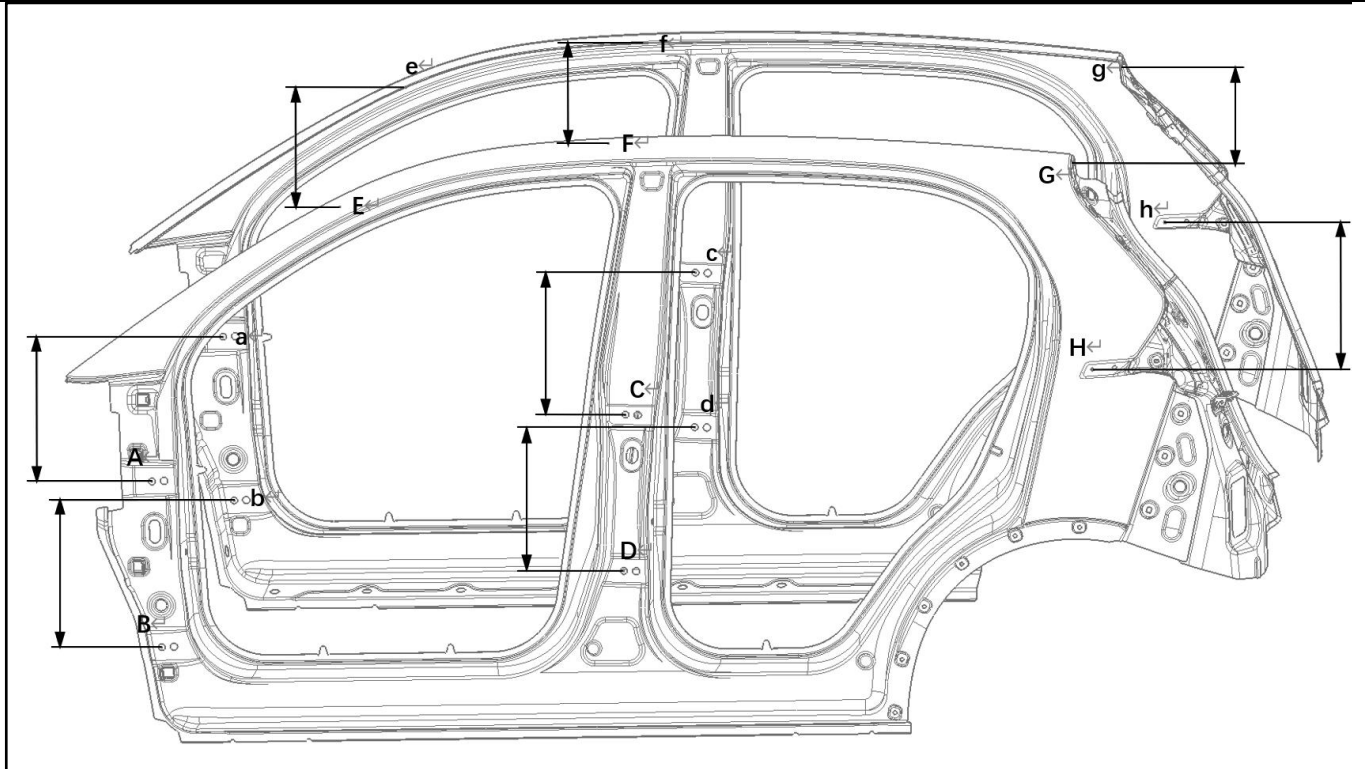


Code	Designation of parts and components (Baseline)	Related part and component names	Defined value			
			Clearances	Flush	Parallelism	Symmetry
1	Rear combination light of sidewall	Combination light behind the back door	5.0±1.0	-2.0±1.0	≤1.0	≤1.0
2	Back door	Rear bumper	5.0±1.0	/	≤1.0	≤1.0
3	Side trim panel of rear windshield	Lower trim panel of rear windshield	5.0±1.0	-1.0±1.0	≤1.0	≤1.0
4	Back door	Rear bumper	7.0 (-2.0-0)	7.0±1.0	≤1.0	/
5	Rear bumper	Rear fog light	1.5±0.7	/	≤1.0	/

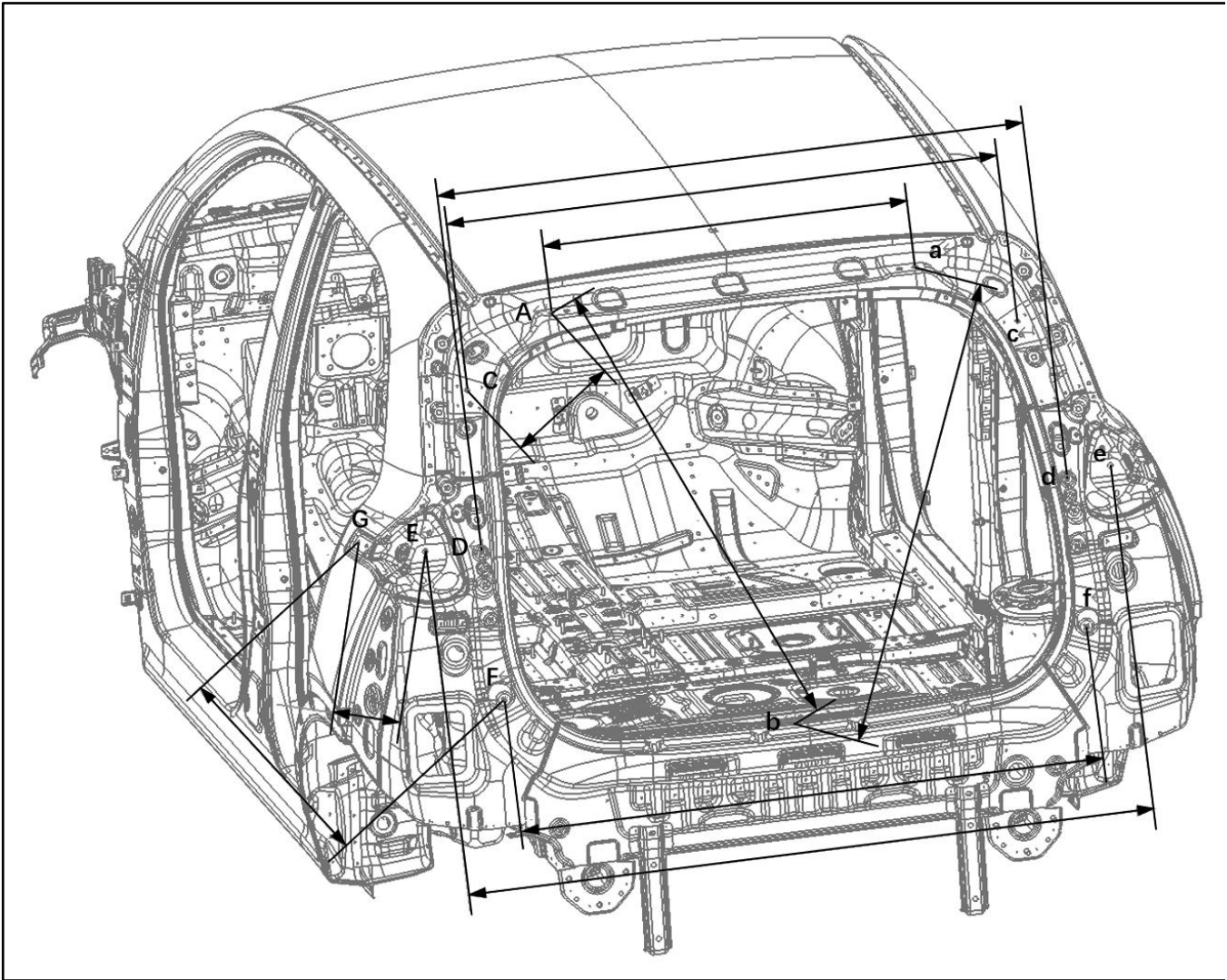
13.8.1.2 Body size



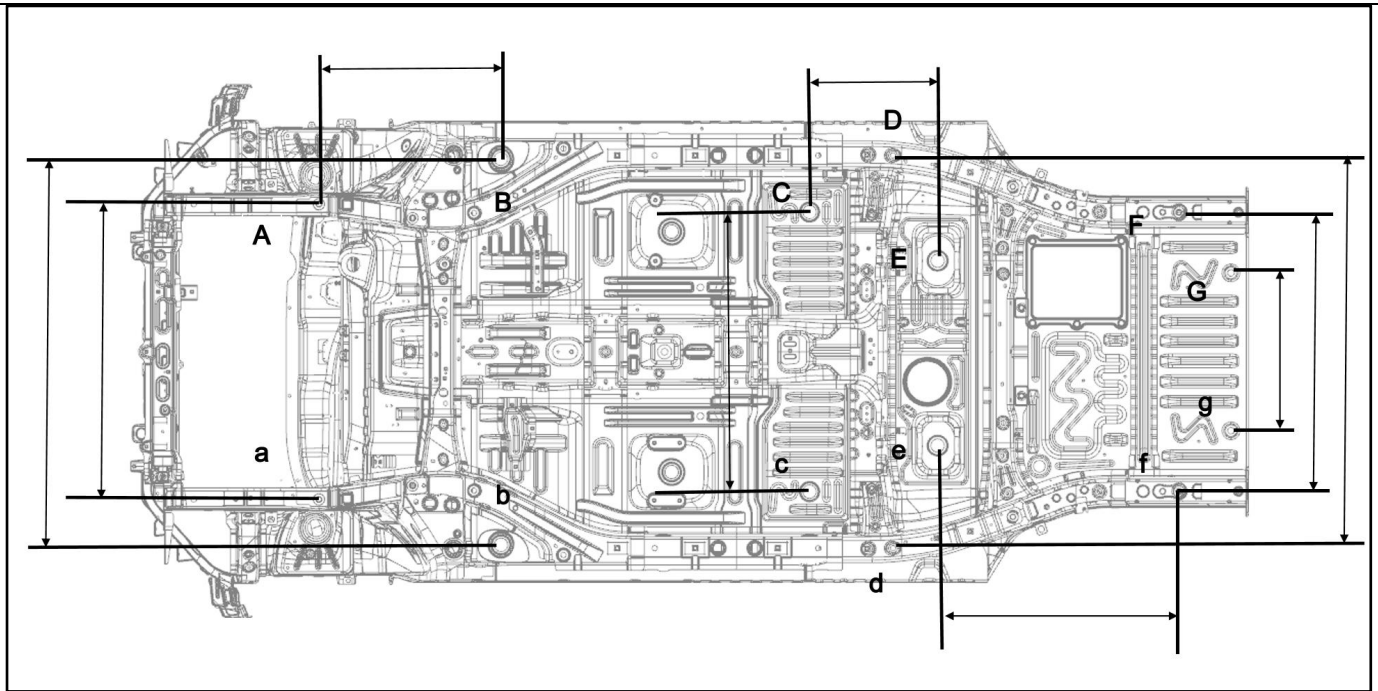
Position	Dimensions	Numerical value (mm)	Difference (±)
Daytime running light mounting holes (front)	A-a	1046	±1.5
Front combination light mounting holes (inside)	B-b	822	±1.5
Front anti-collision beam mounting holes (outside)	C-c	974	±1.5
Front shock absorber locating holes	D-d	1040	±1.5
Wing mounting holes (front)	E-e	1349	±1.5
Hood hinge mounting holes (front)	F-f	1411	±1.5
Front windshield positioning holes	G-g	983	±0.5
Hood hinge mounting holes (front) - Outside plate of sidewall /glass roof combination area	f-g	878.6	±1.5
Front shock absorber locating holes - Outside plate of sidewall /glass top cover combination area	d-g	989.9	±1.5
Front shock absorber locating holes - Hood hinge mounting holes (Front)	d-f	231.4	±1.5



Position	Dimensions	Numerical value (mm)	Difference (\pm)
Upper hinge mounting holes of front door (front)	A-a	1482	± 1.5
Lower hinge mounting holes of front door (front)	B-b	1501.2	± 1.5
Upper hinge mounting holes of rear door (front)	C-c	1452.8	± 1.5
Lower hinge mounting holes of rear door (front)	D-d	1470.9	± 1.5
Outside plate of sidewall /roof front combination area	E-e	1093.6	± 1.5
Outside plate of sidewall /roof type bonding area	F-f	1004.9	± 1.5
Rear gutter channel positioning holes	G-g	981	± 1.5
Sidewall trim strip positioning holes	H-h	1508.2	± 1.5



Position	Dimensions	Nominal size	Difference (\pm)
Rear back door hinge mounting holes (outside)	A-a	702	± 1.2
Rear back door air strut mounting holes (upper side)	C-c	1062	± 1.2
Rear combination light mounting holes	D-d	1130	± 1.2
Rear combination light mounting holes	E-e	1322	± 1.2
Rear bumper mounting holes	F-f	1123.3	± 1.2
Rear back door hinge mounting holes (outside) - Luggage compartment latch mounting holes (left)	A-b	895	± 1.5
Rear back door hinge mounting holes (outside) - Luggage compartment latch mounting holes (left)	a-b	910.6	± 1.5
Rear door hinge mounting holes (outside) - Rear door air strut mounting holes (upper side)	A-C	219	± 1.5
Rear combination light mounting holes - Sidewall trim strip positioning holes (front)	E-G	181.8	± 1.5
Rear bumper mounting holes - Sidewall trim strip positioning holes (front)	F-G	443.9	± 1.5



Position	Dimensions	Nominal size	Difference (±)
Front longitudinal beam locating holes	A-a	872	±1.5
Front longitudinal beam locating holes - Front floor locating holes	A-B	538	±1.5
Front floor positioning holes (front)	B-b	1140	±1.5
Front floor positioning holes (rear)	C-c	826	±1.5
Front floor locating holes (rear) - Center floor locating holes	C-D	600	±1.5
Middle floor positioning holes	D-d	975	±1.5
Rear longitudinal beam locating hole (front)	E-e	546	±1.5
Rear longitudinal beam locating hole (rear)	F-f	824	±1.5
Center floor locating hole - Rear longitudinal beam locating hole (rear)	d-f	492	±1.5
Rear floor positioning holes	G-g	446	±1.5

13.8.2 Description and operation

13.8.2.1 Safety Precautions

The following safety precautions must be strictly observed in the case of performing body sheet metal repair operations:

2. The protective clothing, goggles, gloves, and work shoes must be worn in the case of performing body sheet metal welding, cutting, and grinding operations.
2. The welding area must be well ventilated.
3. Before welding, the battery must be disconnected, with the terminals covered.
4. The battery must be removed if sparks may be generated in the case of working near the battery.
5. Before disassembling the vehicle components, the vehicle should be fixed to the car lifting frame to avoid the change of the center of gravity of the vehicle, which will affect the operation safety.
6. Connect the ground wire of the welding device directly to the part to be welded, and operate it in such a way that there are no electrically conductive parts between the grounding point and the welding point.

7. **Grounding wires or soldering electrodes must not be in contact with the electronic control unit and wires.**
8. **No unprotected vehicles should be parked in the body repair area, as flying sparks can start fires and damage paint and glass.**
9. **It is forbidden to weld, hard braze or soft braze any component of the air-conditioning system that contains refrigerant, and likewise it is forbidden to weld other components of the vehicle that could cause the temperature of the air-conditioning system components to rise, possibly resulting in an explosion of the air-conditioning system. If electro-welding must be performed near refrigerant hoses, the refrigerant must be recovered, since the penetration of the refrigerant hoses by invisible ultraviolet rays generated during electro-welding can cause the refrigerant to decay.**
10. **The battery ground wire must be disconnected in the case of working on the airbag system or in the case of performing body alignment; The ambient temperature of the airbag components must not exceed 100 °C (212 °F).**

13.8.2.2 Condition of parts and components

Before a repaired car or part is sent to the paint shop for painting, the surface must be leveled, caulked, and the surface must be sandpapered. This preparation process is completed by the sheet metal worker. Body and floor components are mainly formed by cold stamping of steel plates, and therefore, the accident damage area should be restored to its shape using the same method. If the damaged component cannot be restored as it is, the damaged position should be disassembled after correcting its neighboring positions and replaced according to the integrity of the part. It is forbidden to cut the parts individually, and after cutting and welding, the rigidity of the vehicle, driving safety and ease of maintenance can be affected.

13.8.2.3 Description of welding types

Common types of welding include spot welding, gas shielded welding, and brazing. The number of weld joints should not be reduced when spot welding is performed. When the usual spot welding device is not available, plug welding can be performed by gas-shielded welding after drilling. When spot welding is used, in the case of a three-layer plate connection where only the outside plate is replaced, the weld joint should be placed on the original weld joint. In the case of using spot welding, single row welds, double row welds, and double row offset welds can be generated. In the case of using gas shielded, lap welds, continuous welds, and continuous welds (interrupted) can be generated. Brazing is commonly used to weld and repair areas with low tensile strength and relatively small element thicknesses.

13.8.2.4 Anti-corrosion treatment

1. The standard corrosion protection layer must be restored with approved materials after repair.
2. Prior to sealing, all welds should be primed on the inside and outside.
3. Primed sheet metal parts must be coated with a sealer.
4. Lapped sheet metal, metal edges, butt welds and weld seams must be sealed with sealant.

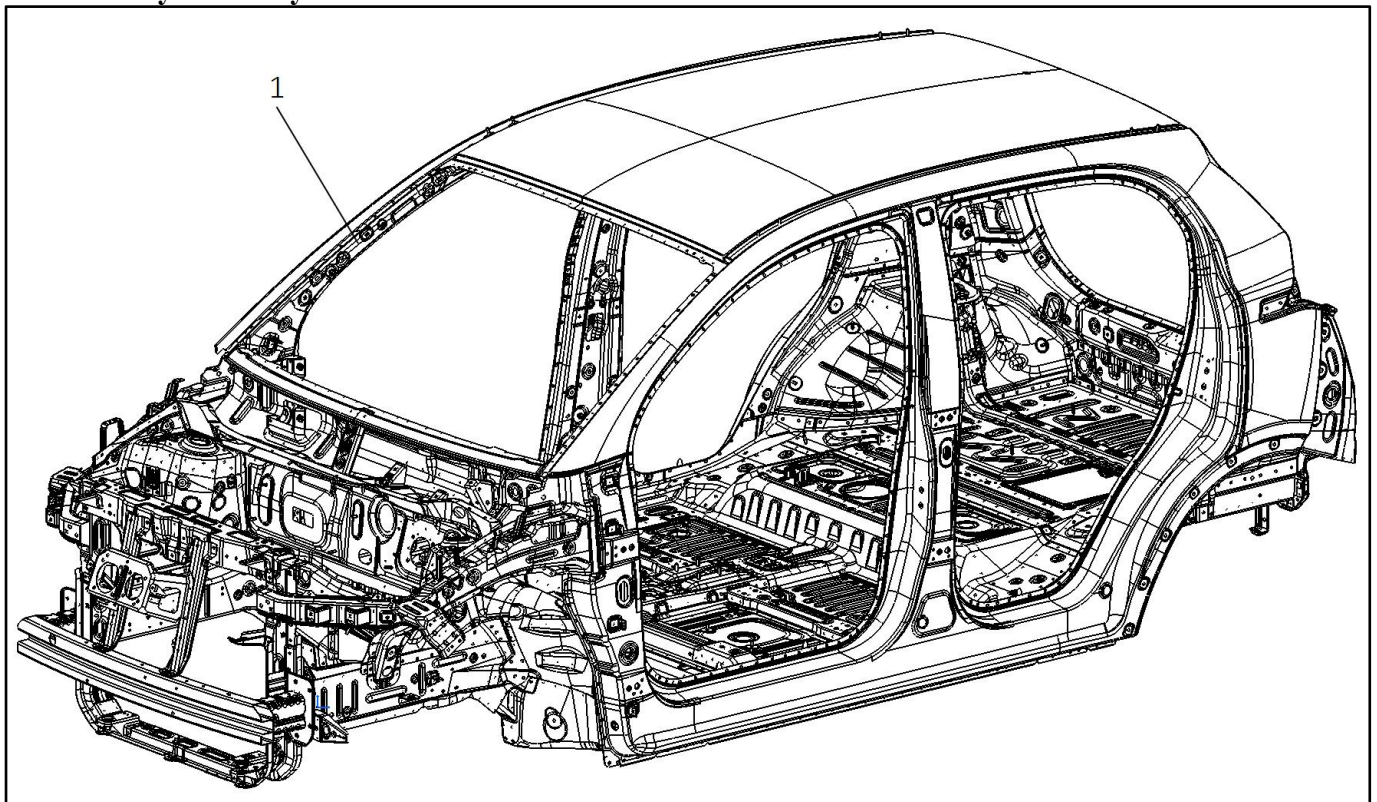
5. The undercarriage is coated with a long-lasting undercarriage protective agent.
6. After spraying the topcoat, cavities in the repair area must be treated with cavity protection material.
7. Clean the drain after the cavity protection material has dried.

13.8.2.5 Environmentally friendly treatment of scrapped parts of vehicle

1. Waste materials must be collected by type after maintenance or repair of the vehicle.
2. Sort waste materials and check for reusability.

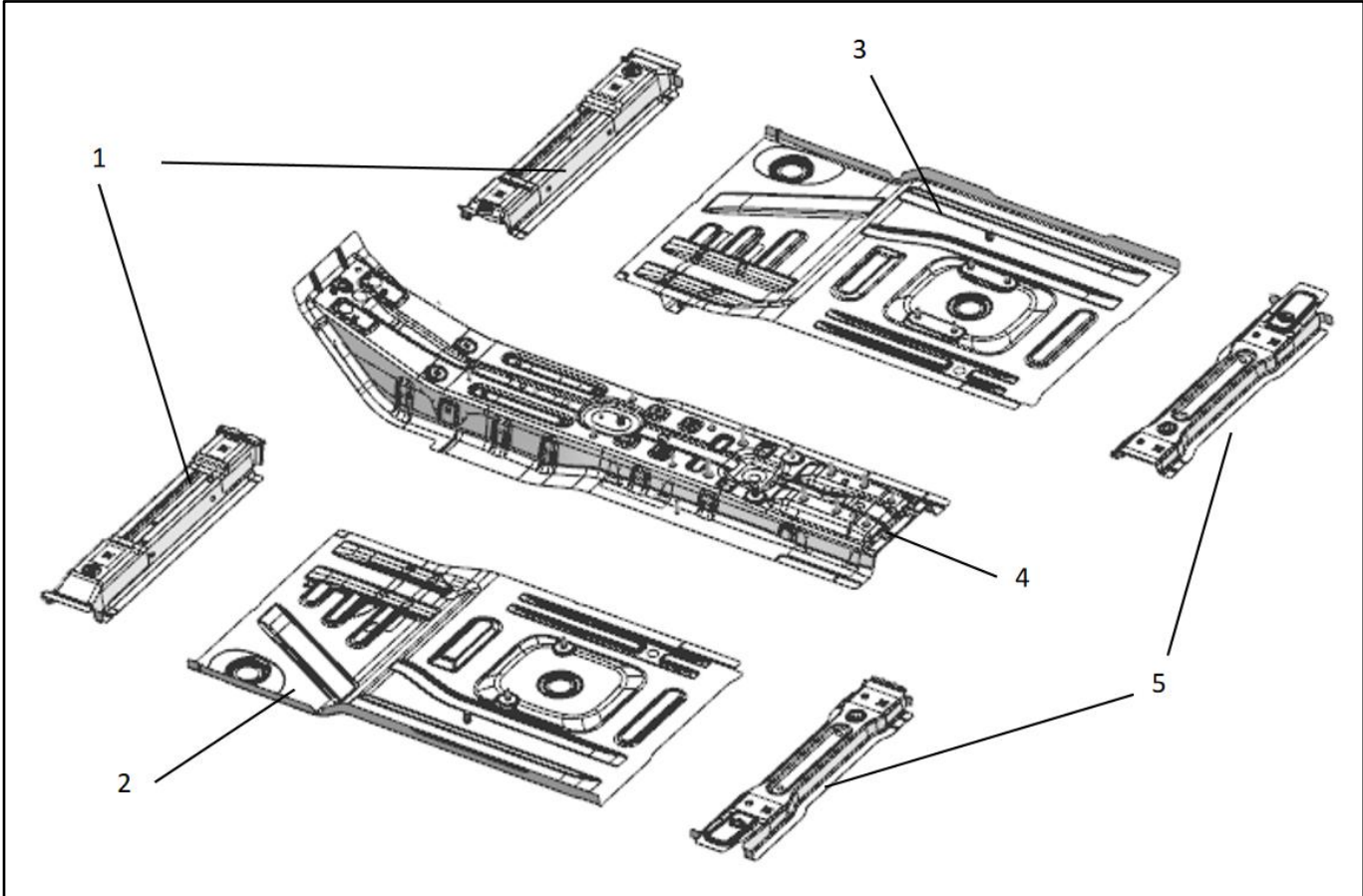
13.8.3 Breakdown drawing

13.8.3.1 Body assembly



1. Body-in-white skeleton assembly

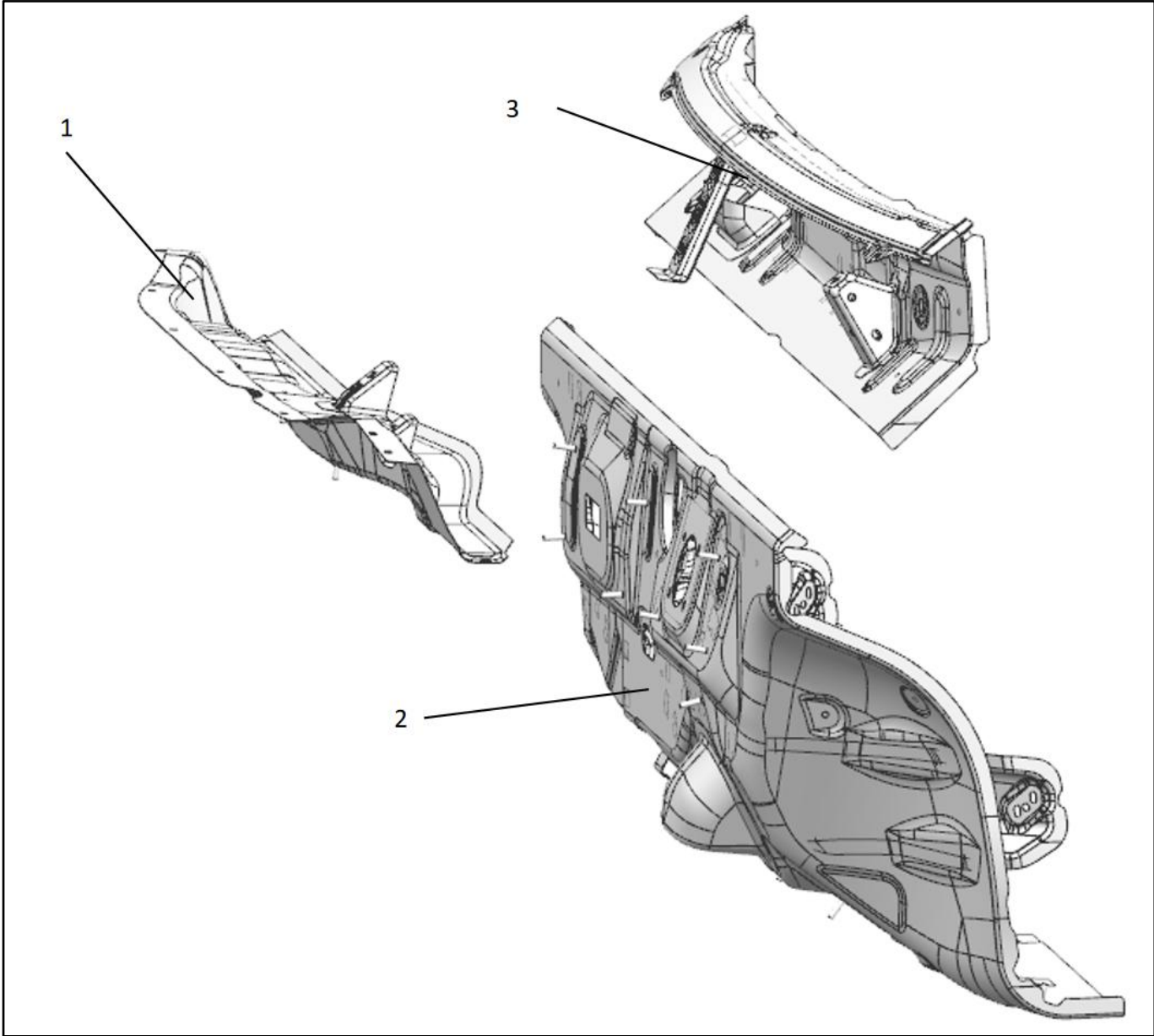
13.8.3.2 Front floor of body



- 1. Front cross member body of front seat
- 2. Left front floor
- 3. Right front floor body

- 4. Center channel assembly
- 5. Rear cross member body of front seat

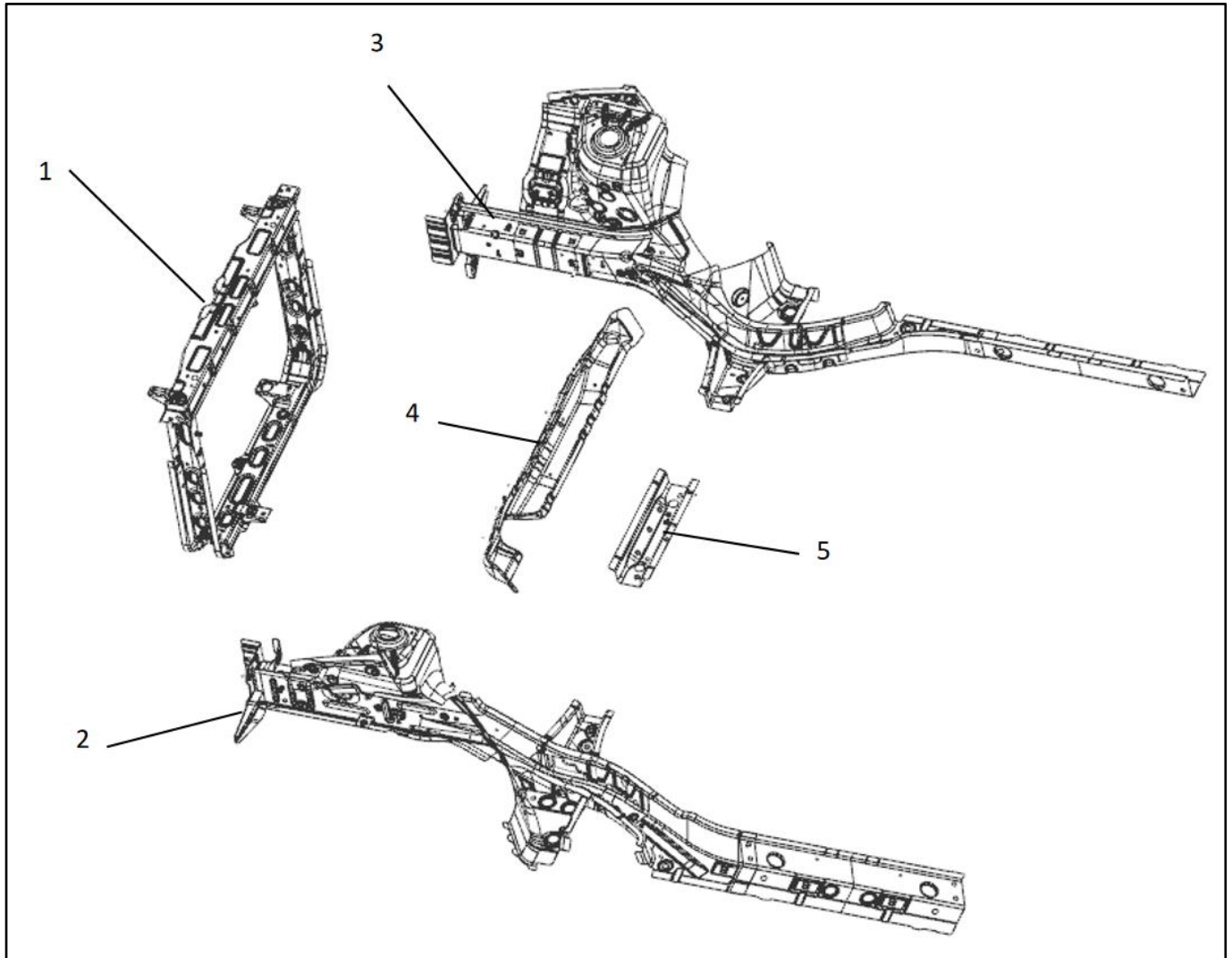
13.8.3.3 Front wall baffle



1. Gutter channel assembly of front wall
2. Lower assembly of front wall

3. Upper assembly of front wall

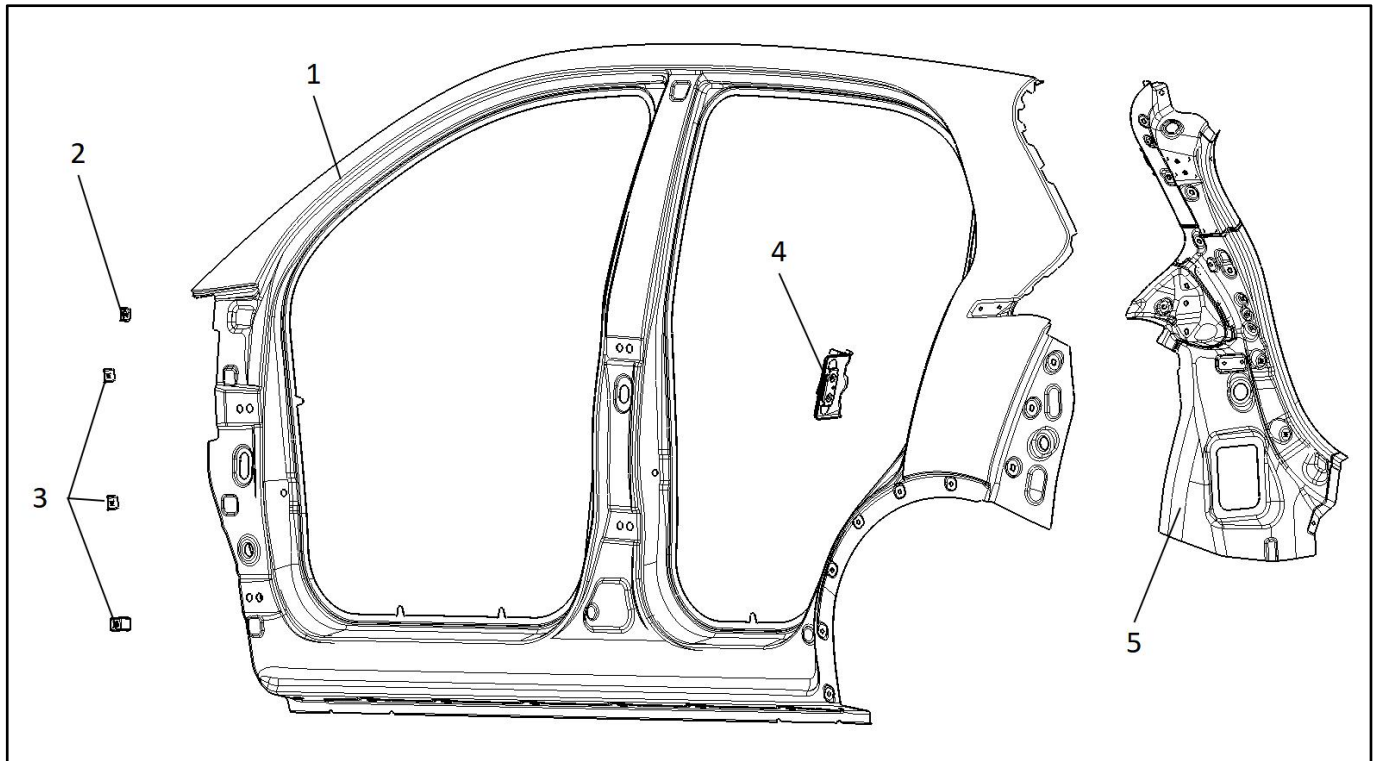
13.8.3.4 Front nacelle



- 1. Tank frame assembly
- 2. Left longitudinal beam assembly
- 3. Right longitudinal beam assembly

- 4. Front cross member assembly of front wall
- 5. Lower cross member assembly of front wall

13.8.3.5 Sidewall



1. Outside plate of left sidewall

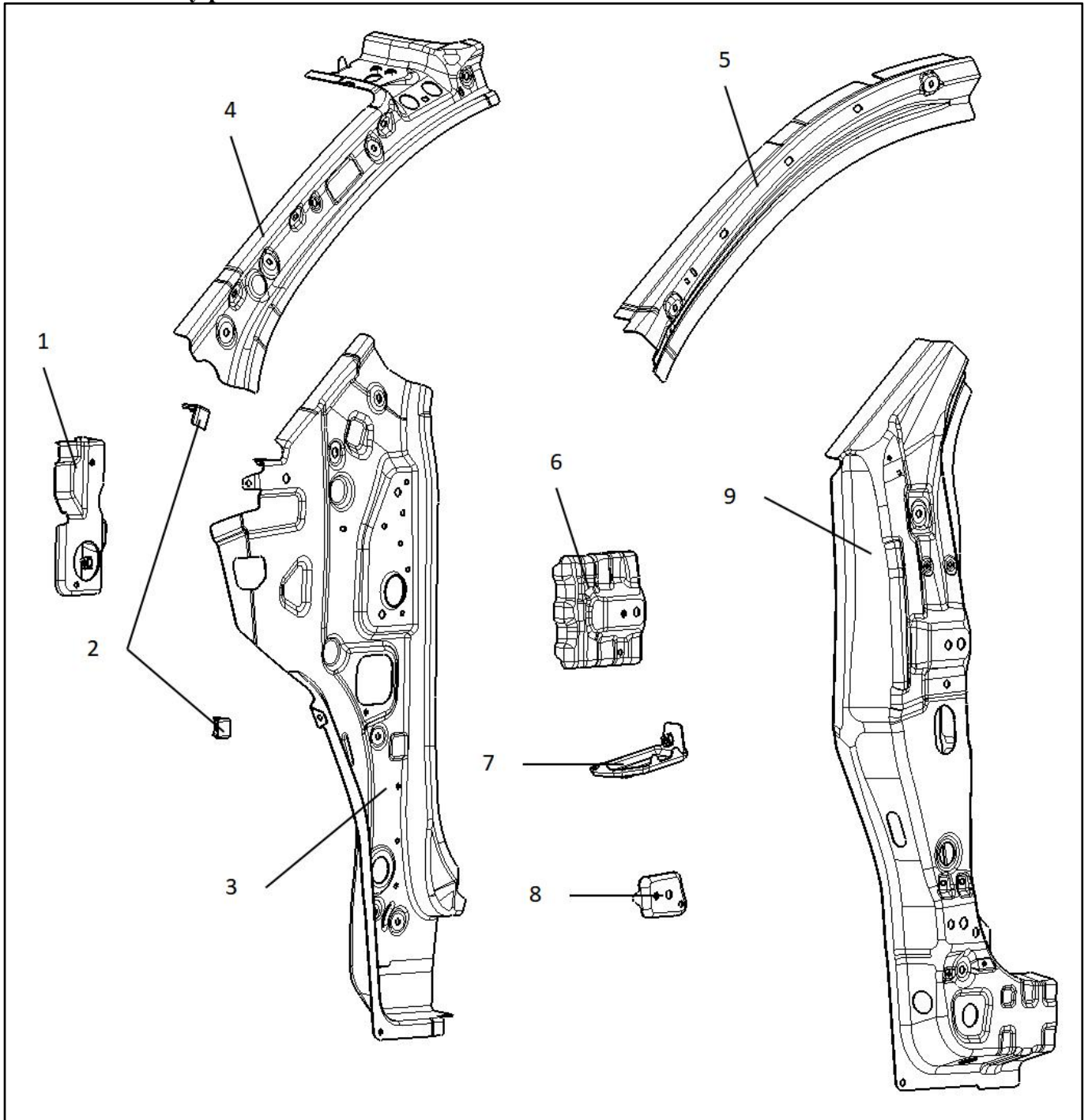
2. Wing trim mounting bracket assembly

3. Rear mounting bracket assembly of wing

4. Reinforcement plate assembly of left rear door latch

5. Rear runner assembly of left side wall

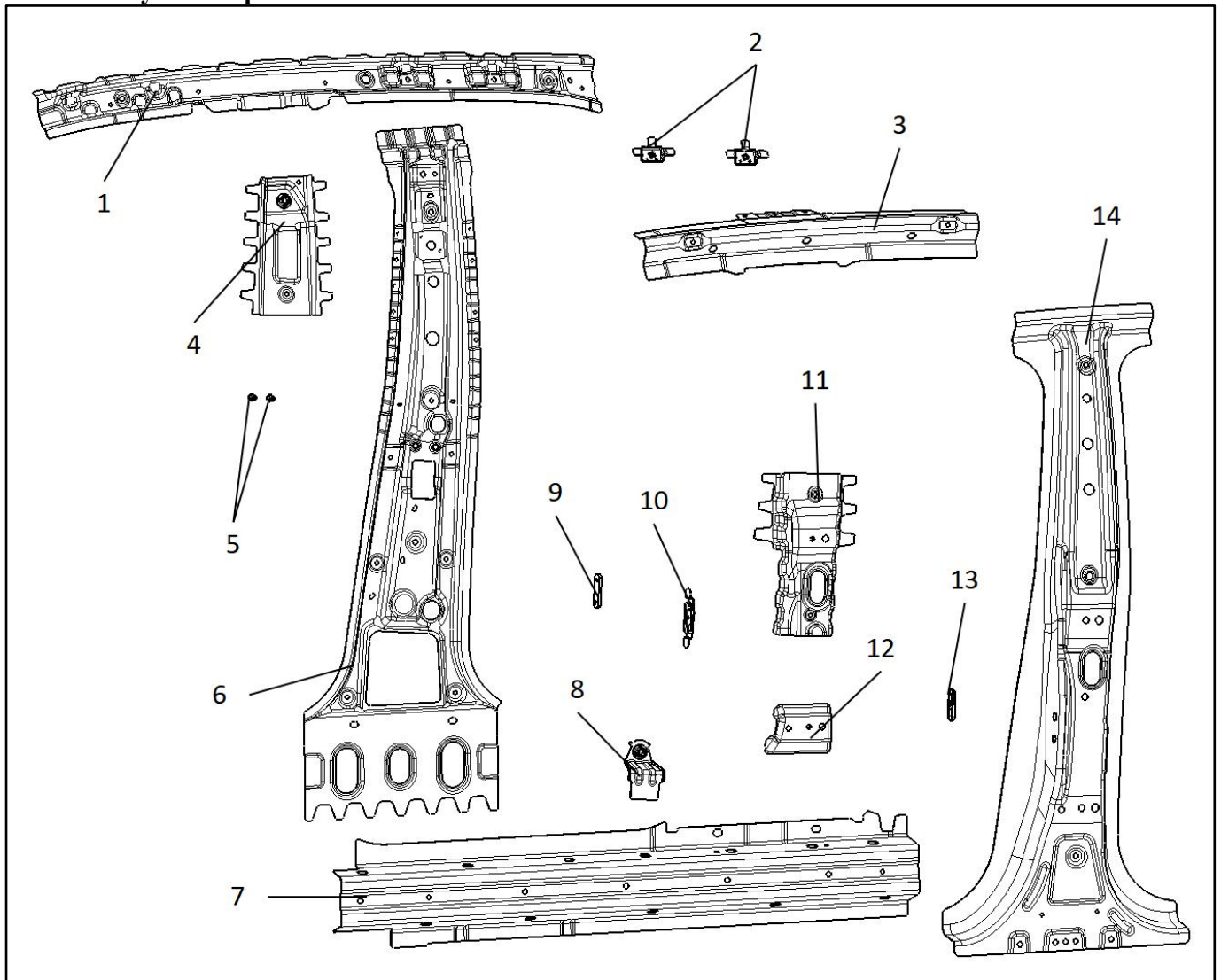
13.8.3.6 Front body pillars



- 1. Left mounting bracket assembly of instrument tube beam
- 2. Rear mounting bracket assembly of wing
- 3. Left wall panel of front nacelle
- 4. Left A-pillar upper inner panel
- 5. Reinforced plate on the left A-pillar

- 6. Mounting plate assembly of upper hinge of left front door
- 7. Mounting plate assembly of left front door limiter
- 8. Mounting plate assembly of lower hinge of left front door
- 9. Reinforced plate on the left A-pillar

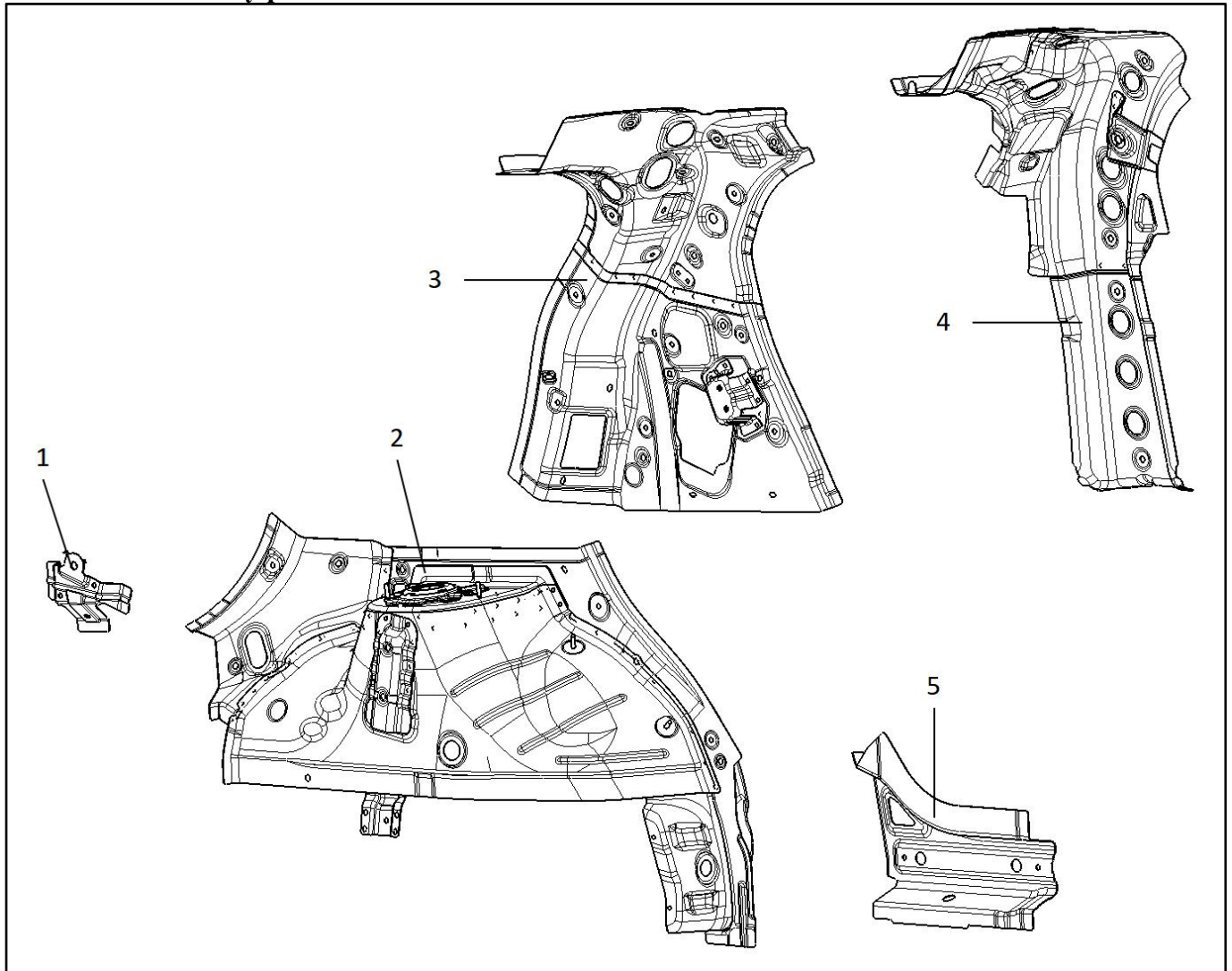
13.8.3.7 Body center pillar



- 1. Upper inner plate of the left beam
- 2. Armrest mounting bracket assembly
- 3. Reinforced plate on left BC pillar
- 4. Mounting plate assembly for left front seat belt
- 5. Flat head rivet nut
- 6. Inner plate body of left B-pillar
- 7. Front connection plate for left door sill

- 8. Left front retractor mounting bracket
- 9. Nut plate
- 10. Nut box
- 11. Hinge reinforcement plate on left sidewall B-pillar
- 12. Lower hinge reinforcement plate on left side wall B-pillar
- 13. Seat mounting reinforcement plate assembly
- 14. Left sidewall B-pillar reinforcement plate

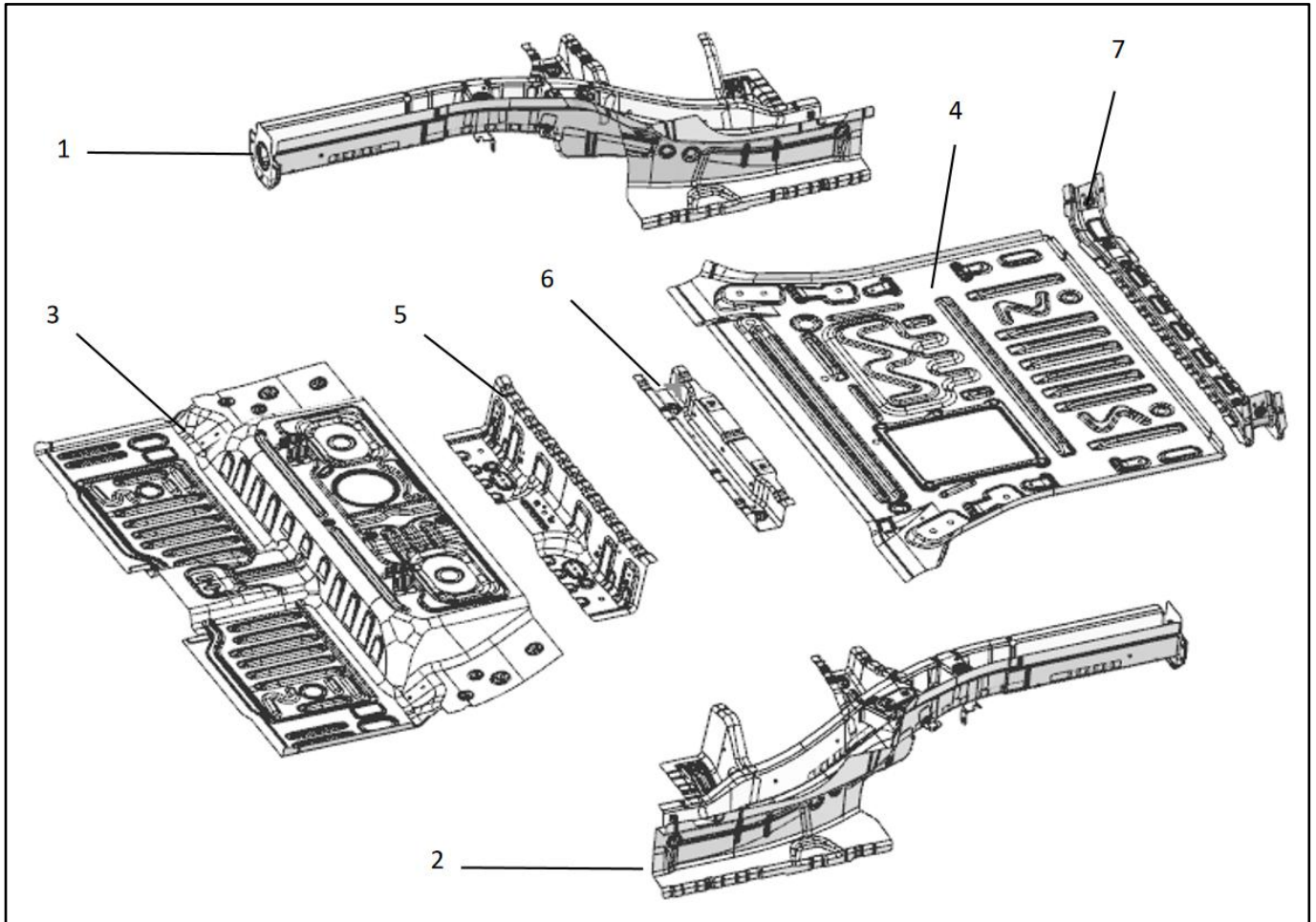
13.8.3.8 Rear carbody pillars



- 1. Lower mounting bracket assembly of left rear seat belt
- 2. Left rear wheel cover assembly
- 3. Left C-pillar inside plate assembly

- 4. Left C-pillar reinforcement plate assembly
- 5. Rear connection plate for left door sill

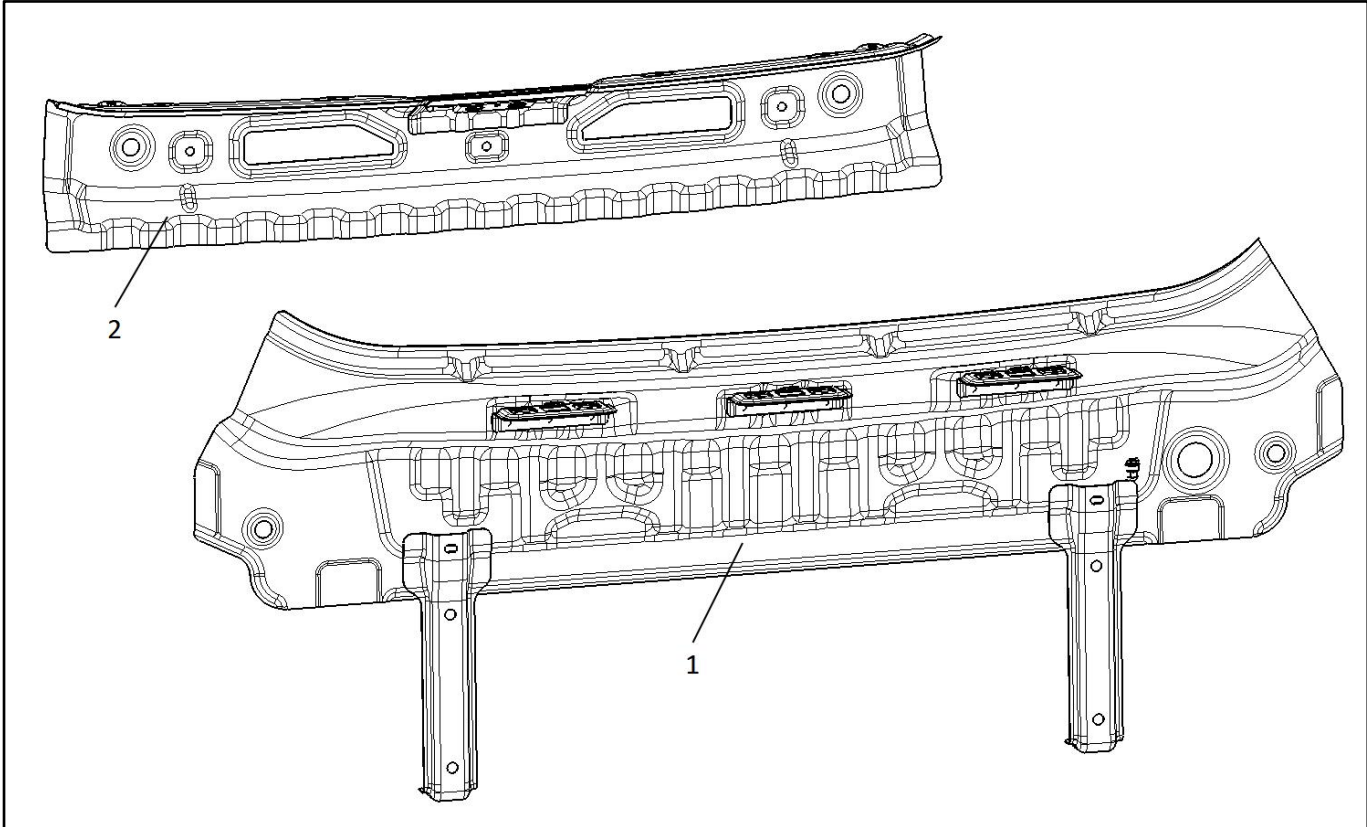
13.8.3.9 Rear floor



- 1. Right rail assembly of rear floor
- 2. Left rail assembly of rear floor
- 3. Center floor body assembly
- 4. Rear floor body

- 5. Front cross member body of rear floor
- 6. Cross member assembly of center floor
- 7. Rear cross member assembly of rear floor

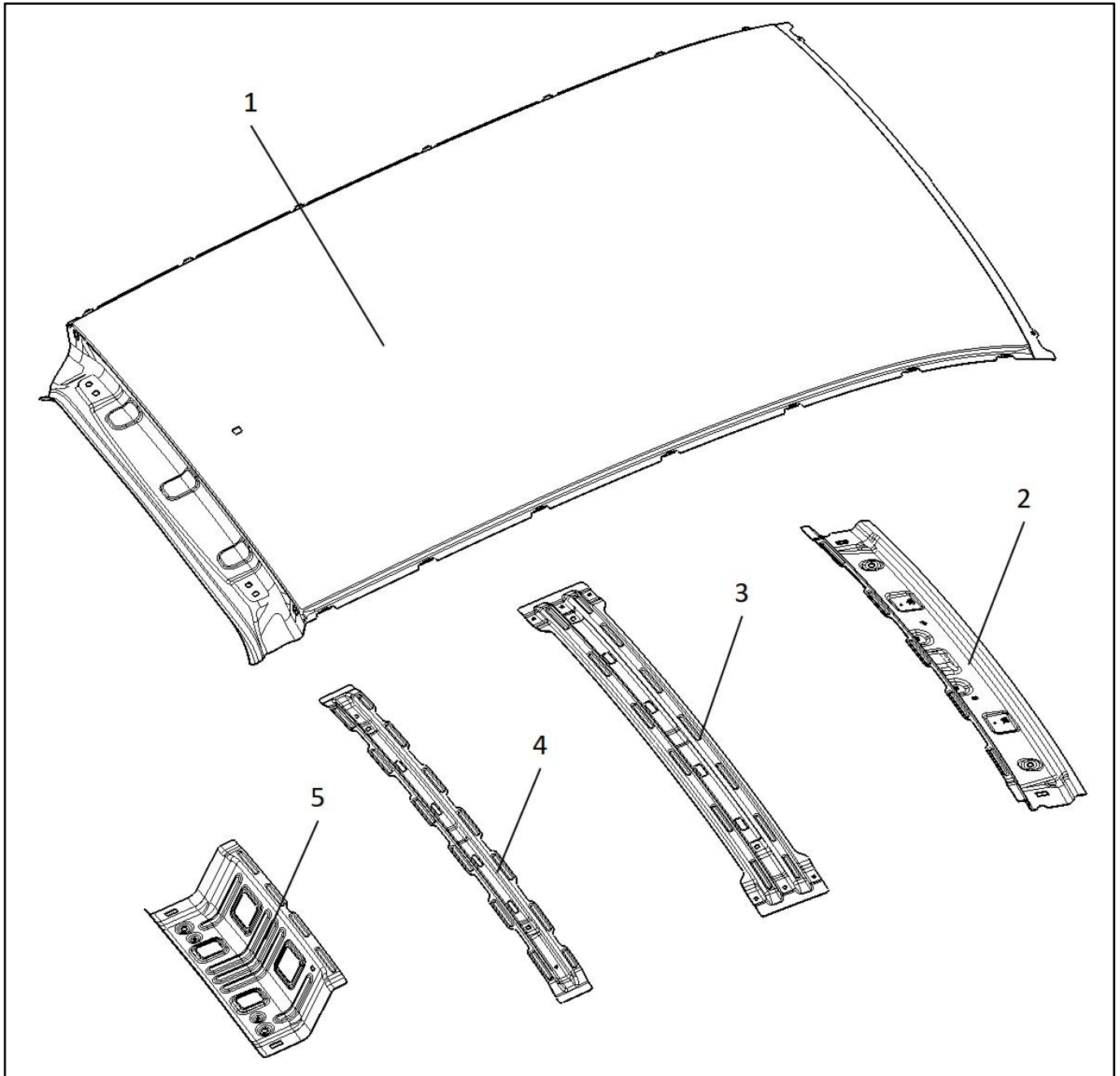
13.8.3.10 Rear wall



1. Outside plate assembly of rear wall

2. Inside plate assembly of rear wall

13.8.3.11 Car roof



- 1. Outside plate of top cover
- 2. Front cross member assembly of top cover
- 3. The second cross member assembly of top cover

- 4. The third cross member of top cover
- 5. Rear cross member of top cover

13.9 Paint coating

13.9.1 Description and operation

13.9.1.1 Paint coating instructions

Paint is a kind of chemical mixture paint that can be firmly covered on the surface of the substrate and plays the role of protecting the substrate and beautifying the appearance, etc. The car has been sprayed with four layers of paint, namely, electrophoresis, intermediate coating, color coating and varnish, so as to make it have good corrosion resistance and appearance when it is delivered.

The main function of electrophoretic paint: 1. rust prevention; 2. improvement of workpiece adhesion; 3. improvement of roughness.

The main function of the intermediate coating: 1. filling and improvement of the paint film fullness; 2. insulation and protection of the primer.

The main function of color coating: 1. adding color; 2. increase in gloss.

The main role of varnish: 1. anti-aging; 2. abrasion resistance; 3. protection of the primer from environmental erosion; 4. aesthetics of the enhancement of the color and gloss of the paint film.

The purpose of paint repair is to restore the defective area to its original appearance. The repair must be done in strict compliance with the painting process of the manufacturer.

13.9.1.2 Routine maintenance for automobile paint

Please observe the following principles in routine maintenance for automobile paint:

1. In automobile repair and maintenance, pay attention not to touching the paint surface of the body with an oily hand or using an oily rag to scrub the paint surface at will. Do not stain with oil tools or organic solvents containing rubbing layout on the body, so as not to cause chemical reactions.

2. For cleaning of body trim, a good quality detergent should be used. Wax should not be applied too heavily to avoid damaging the coating. For some special extremely corrosive stains (such as asphalt, insects, bird droppings, etc.), they should be removed in a timely manner and a special cleaner should be used. A razor blade should not be used randomly to scrape or eliminate with gasoline, so as not to harm the paint surface.

3. Vehicle should be scrubbed with a clean, soft rubbing cloth or sponge to prevent mixing metal shavings and sand particles. A dry cloth, dry towel, dry sponge should be used to wipe the car, so as not to leave scratches. For wiping, the car should be wiped gently from top to bottom in the direction of the water flow, without drawing circles or wiping horizontally.

4. Vehicle should be washed in burning sun or high temperature as the detergent may dry out and leave marks. Car owners should use special detergents for routine maintenance. Alkaline laundry detergent or soapy water should not be used, so as not to harm the paint or accelerate aging. In particular, vehicles traveling in coastal or heavily polluted areas should be rinsed consistently once a day.

5. Wax protection should be carried out for paint surface from time to time and regular (once a quarter) maintenance should be conducted in station for maintenance to restore the body paint surface of the bright luster in time. In addition,, the car paint protection film can be pasted for the front hatch, doors, bumpers and other paint, to protect the paint from being

scratched off by minor scrapes.

6. Strong impacts, knocks or scratches on the paint of the body should be avoided. If it is discovered that there are scars, dents or peeling of the paint, it should be repaired in a timely manner, preferably at a repair station.

7. If there are no obvious scratches on the paint surface, secondary paint spraying should not be conducted to prevent the paint color from not matching or poor compatibility.

8. The vehicle should be parked in a garage or a well-ventilated place if it needs to be parked for a long time. It should be covered with a special body cover in winter. For temporary parking, the vehicle should be parked at a shady area.

9. During the use of the vehicle, it is important to remove dust from the body in a timely manner to minimize the dust on the body due to static electricity.

10. Rinse the car promptly after rain. Rain contains acidic substances, and they will volatilize after rain. The concentration of acidic substances will gradually increase if the rain stains are not rinsed as soon as possible with water, which will corrode the paint over time.

13.9.1.3 Warnings and precautions during paint mixing and spraying operations

Warning:

Diffuse solvents during paint mixing and spraying operations might cause serious respiratory problems. Therefore, it must be operated in strict accordance with the instructions of the manufacturer of the paint, equipment and safety devices. For executing the operation of this procedure, special labor protection equipment should be worn, such as gas mask, anti-static clothing, protective glasses and gloves, to prevent injury.

Caution:

Paint systems or substitute products from different manufacturers cannot be mixed. Mixing incompatible products may result in the following phenomena:

1. Poor bonding between coatings; 2. Solvent in the upper paint softens and swelling the bottom paint film, resulting in the poor adhesion of the bottom paint film and causing the phenomenon of peeling and revealing the bottom; 3. Color difference; 4. Poor curing; 5. Gloss reduction; 6. Coating damage.

13.9.1.4 Precautions for maintenance and repair of overprint varnish

Caution:

- 1. Avoid rinsing vehicles in direct sunlight conditions.**
- 2. Avoid strong soaps and chemical detergents.**
- 3. Avoid products containing acids and alkalis.**
- 4. Brushes or brooms cannot be used to remove snow or ice.**
- 5. The remaining rinse water should be dried immediately after thorough cleaning and it should not be allowed to dry on the surface of the body.**
- 6. The repair area should be minimized as much as possible if the surface defects are not very serious.**

7. Too much varnish should be avoided to be removed, which may cause the paint film to be damaged too quickly.

8. Use polishing equipment in strict accordance with the recommendations of the polishing manufacturer. Do not use wax or silicone-based products to cover the swirl marks (The marks will soon reappear and lead to user dissatisfaction).

13.9.1.5 Precautions for anticorrosion treatment

Caution:

1. For spraying sound-proof or anti-corrosion materials, precautions must be taken to avoid spraying into component openings (e.g., door locks, window lift slots, window regulators, and seat belt emergency locking retractors) as well as any moving or rotating parts. After spraying the material, make sure all drain holes in the body are open.

2. For repairing the bodywork with an open flame, the foam sound insulation in the repair area must be removed. Avoid inhaling body-harming dust during reinstalling soundproofing materials.

3. When the vehicle is delivered, the body sheet metal has been coated with electrophoretic primer., All exposed metal surfaces must be treated with an antirust primer after repairing or replacing parts.

4. If the original plating or corrosion protection material is damaged during the repair process, it is necessary to be cleaned and protected through anti-corrosion.

5. The purposes of sealants are waterproof and rustproof. The original sealants are obvious. If these sealants are damaged, they should be resealed. The joints of new panels should be resealed.

6. The soundproofing material controls the general noise level in the vehicle. It must be replaced with the same material when the soundproofing is damaged by maintenance operations or replacement of panels.

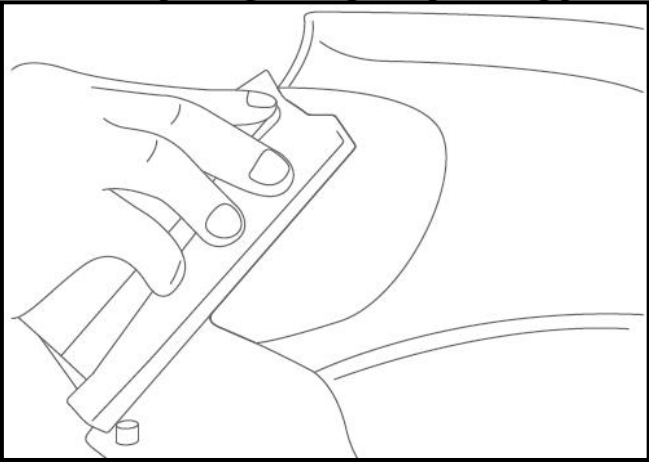
13.9.2 Defect diagnosis and treatment

13.9.2.1 Common defects in automotive paint and methods of treating

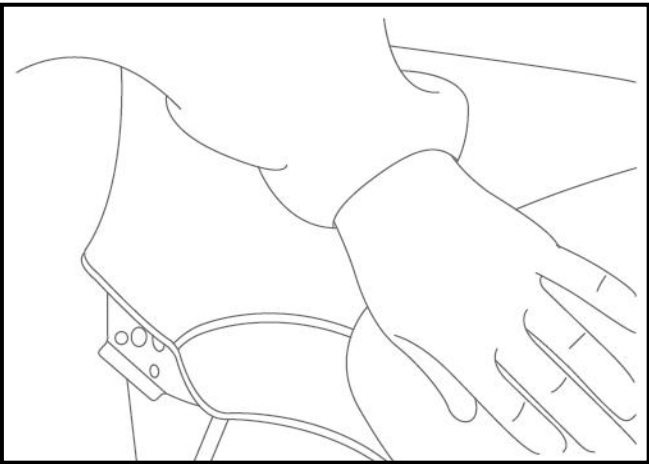
Defect name	Reasons for formation	Treatment
Scratch	A. Low hardness of paint film B. Scratches by hard objects	A. Grinding and polishing treatment (light scratches) B. Local paint repair (scratches)
Guano erosion	A. Bird dropping erosion	A. Grinding and polishing treatment (light erosion) B. Local paint repair (heavy erosion)
Erosion by acid rain	A. Erosion by acid rain	A. Grinding and polishing treatment (light erosion) B. Local paint repair (heavy erosion)
Corrosion	A. Thin paint film B. Bumps and scratches C. Acid and alkali erosion	A. Local paint repair (Severe rust requires sheet metal repair followed by paint repair)
Paint-shedding	A. Poor adhesion of the coating to the substrate B. Paint film corrosion by water, acid and alkali C. Bump deformation	A. Local paint repair (Severe rust requires sheet metal repair followed by paint repair)

<p>Pulverization</p>	<p>A. Strong erosion of the paint film by ultraviolet rays, etc. B. Poor weatherability of coatings C. Vehicles are not regularly cleaned or cleaned poorly D. Cleaning agent is not suitable or the polishing wax is too coarse</p>	<p>A. Local paint repair</p>
<p>Tarnish</p>	<p>A. The paint film is strongly eroded by acid, alkali, seawater and salt spray B. Poor film durability C. Body is not regularly maintained or not properly maintained</p>	<p>A. Grinding and polishing treatment (light tarnish) B. Local paint repair (heavy tarnish)</p>
<p>Bubble</p>	<p>A. The paint film is exposed to humid environment for a long time, which cause moisture to penetrate into the paint film, and bubbles are raised when the temperature rises. B. Corroded and rusted substrate C. Erosion of paint film by gasoline, acid, alkali, etc.</p>	<p>A. Local paint repair</p>

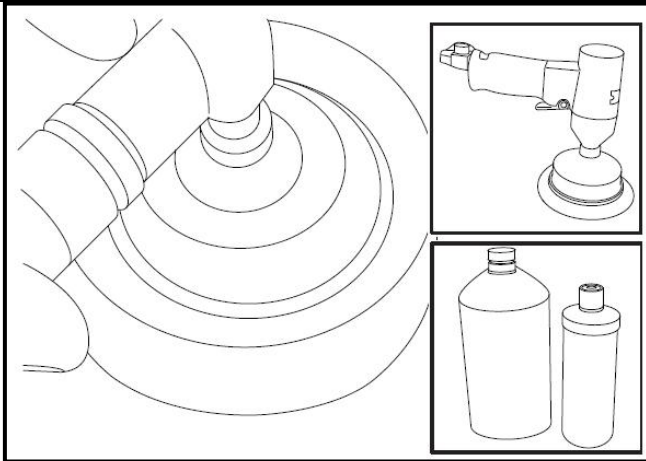
13.9.2.2 Example of grinding and polishing process



1. Grind the damaged paint surface with 2,000# water sandpaper. It should be parallel and close to the paint surface to be ground for round sanding.



2. Remove surface sanding dust.

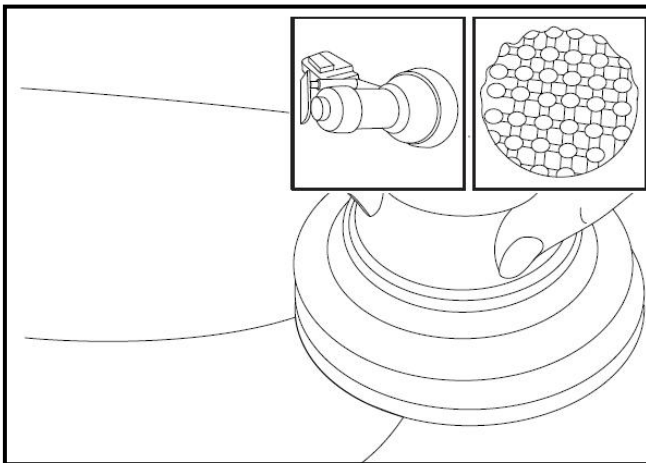


3. Take appropriate amount of polishing paste and apply it on the surface to be polished. Adjust the speed of the polishing machine.

4. Apply the wool ball to the paint surface and turn on the machine at 2,500-3,000r/min.

Caution:

Keep the machine moving smoothly and gently, and never over-grind. The grinding time should be as short as possible (3-5s) and the grinding area should be as small as possible.

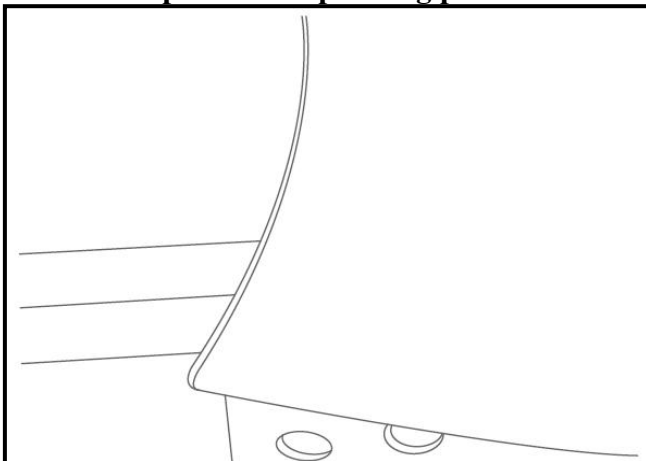


5. First, wet the sponge fully and squeeze out the excess water. Take a small amount of varnish wax applied to the paint to the polishing surface. The sponge will be attached to the paint surface after starting, with the speed of 2,500-3,000r/min for 3-5s varnish treatment.

Caution:

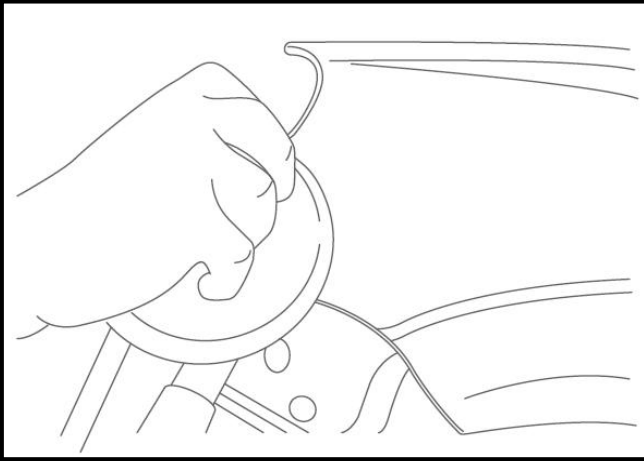
Keep the machine moving gently and smoothly during operation. Do not spend much time to avoid overheating and burning the paint.

13.9.2.3 Example of local painting process

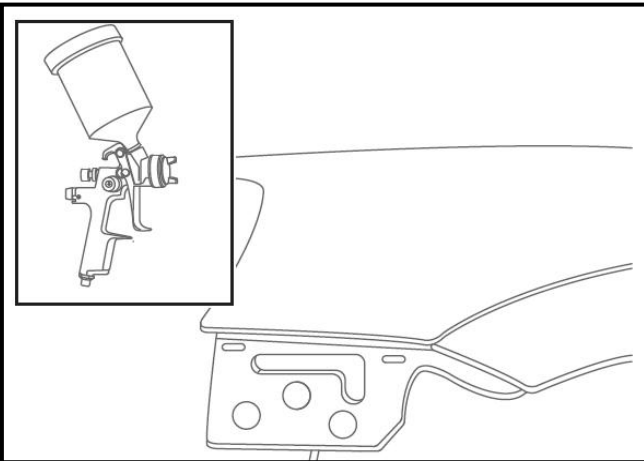


1. If the paint is heavily scratched, a local paint process should be used.

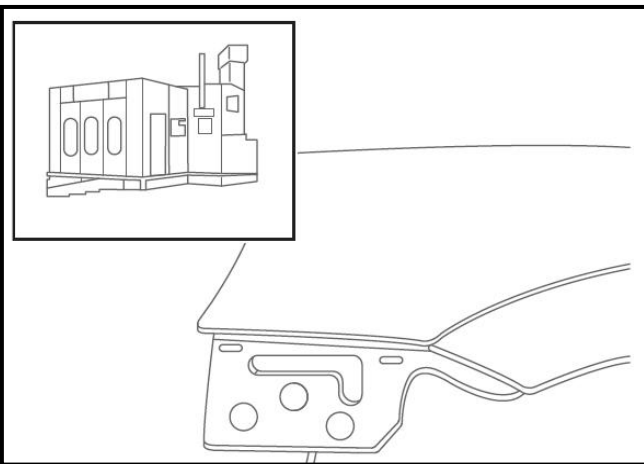
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2. Use P600# sandpaper to sand the damaged paint surface (round sanding), and wipe off the sanding dust after sanding.

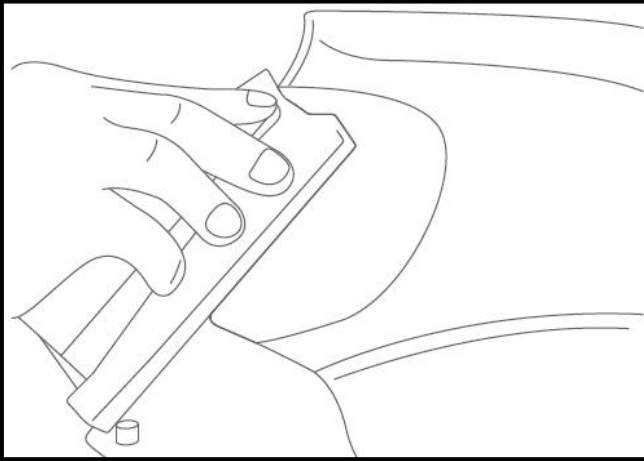


3. Mask the non-sprayed areas. Spray the medium primer, trying to control the spray area as much as possible, with a gradual coating at the edges rather than in a manner of ladder pattern.



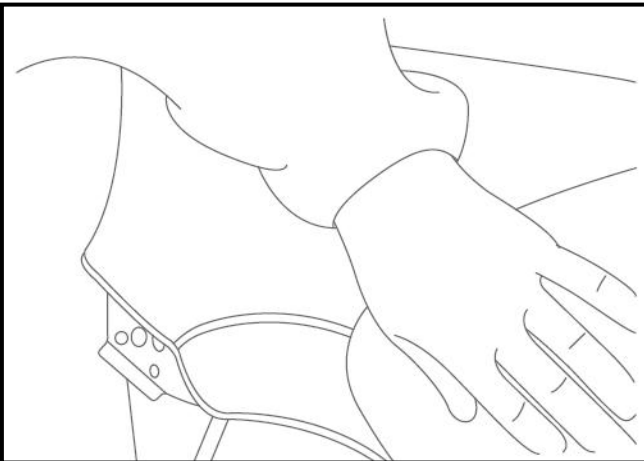
4. Flash dry for 4-5min, followed by drying according to the paint requirements of manufacturer.

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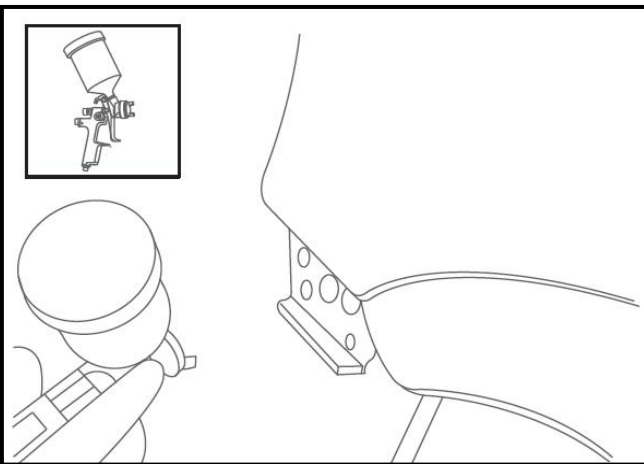


5. Carry out wet sanding with P800-1,000# sandpaper after drying.

6. Sand with 2000# fine water sandpaper and expand the sanding area.



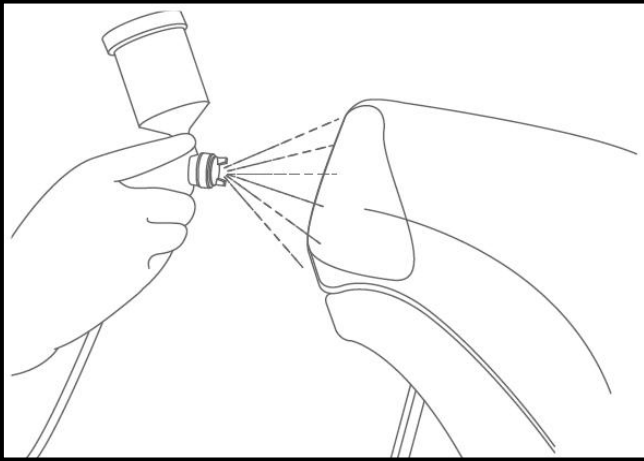
7. Remove sanding dust with a tack cloth after sanding is completed.



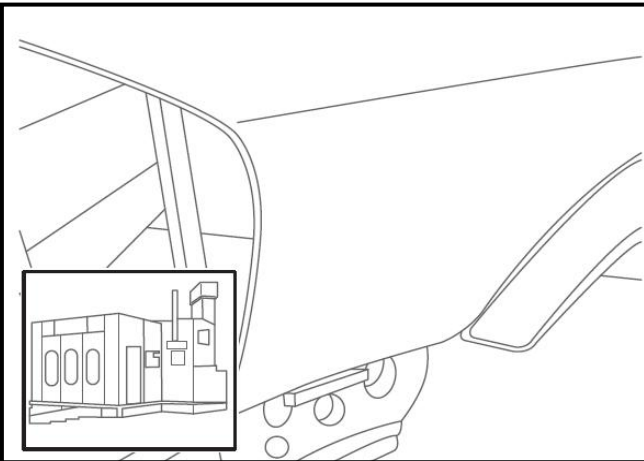
8. Spray the color paint in 2 coats. Flash dry for 2-3min in the process before spraying the varnish.

Caution:

Spray the area in one layer slightly wider than the other to make the transition.



9. After flash drying for 2-3min, remove the masking film and spray the paint interface with barge spray until the interface position is no longer visible.



10. Flash dry for 4-5min, followed by drying according to the paint requirements of manufacturer.

13.9.2.4 Example of paint treatment process after sheet metal repair

The paint treatment procedure after performing sheet metal repair is similar to the partial paint process, except that the following steps are added after the primer is ground and prior to applying the color paint:

1. Scrape and apply putty.
2. Putty grinding.
3. Blow dust, wipe up and degrease.
4. Scrape and apply hole filler putty.
5. Sand, clean, and wipe up.

For specific procedures; Please refer to: 11.9.2.3 Example of a local paint treatment process.