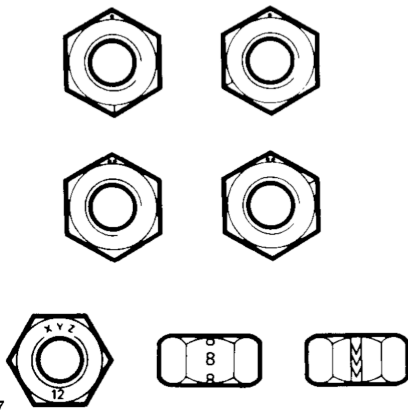


Nut Identification



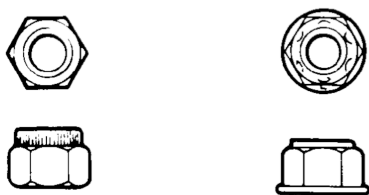
S003047

A nut with an ISO metric thread is marked on one face or on one of the flats of the hexagon with the strength grade symbol 8, 12, or 14. Some nuts with a strength grade 4, 5 or 6 are also marked and some have the metric symbol M on the flat opposite the strength grade marking.

When tightening a slotted or castellated nut, never loosen it to insert a split pin except where recommended as part of an adjustment. If difficulty is experienced, alternative washers or nuts should be selected, or the washer thickness reduced.

Where bearing preload is involved, nuts should be tightened in accordance with special instructions.

Self-locking Nuts



S003048

Self-locking nuts can be reused providing resistance can be felt when the locking portion of the nut passes over the thread of the bolt or stud.

Where self-locking nuts have been removed, it is advisable to replace them with new ones of the same type.

Don't use non self-lock nuts in the area where self-lock nuts must be used.

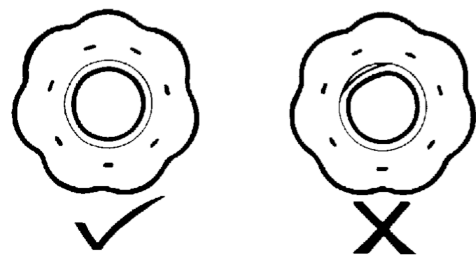
Flexible Pipes and Hoses

Overview

When removing and refitting flexible hydraulic pipes and hoses, ensure that the following practices are observed to ensure component serviceability.

- Clean end fittings and the area surrounding them as thoroughly as possible.
- Obtain appropriate plugs or caps before detaching hose end fittings, so that the ports can be immediately covered to prevent the ingress of dirt.
- Clean hose externally and blow through with compressed air. Examine carefully for cracks, separation of plies, security of end fittings and external damage. Reject any faulty hoses.
- When refitting a hose, ensure that no unnecessary bends are introduced, and that hose is not twisted before or during tightening of union nuts.
- Fit a cap to seal a hydraulic union and a plug to its socket after removal to prevent ingress of dirt.
- Absolute cleanliness must be observed with hydraulic components at all times.
- After any work on hydraulic systems, carefully inspect for leaks underneath the vehicle.

Flexible Pipes



S003049

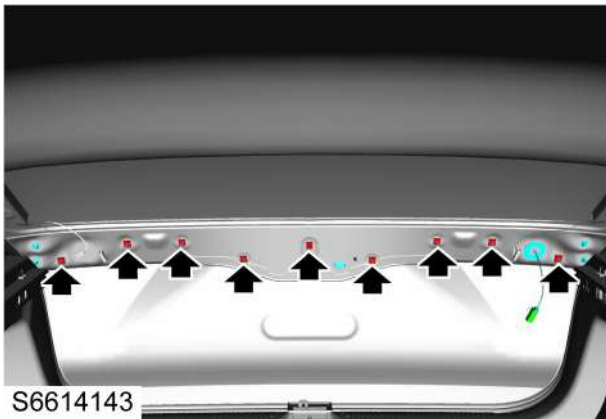
All flexible pipes are made up of two laminations, an armoured rubber outer sleeve and an inner viton core. If any of the flexible pipes has been disconnected, it is imperative that the internal bore is inspected to ensure that the viton lining has not become separated from the armoured outer sleeve. A new flexible pipe must be fitted if separation is evident.

Through-type Rear Width Lamp Assembly Remove

1. Disconnect the negative battery cable.
2. Remove the tail gate interior trim panel.

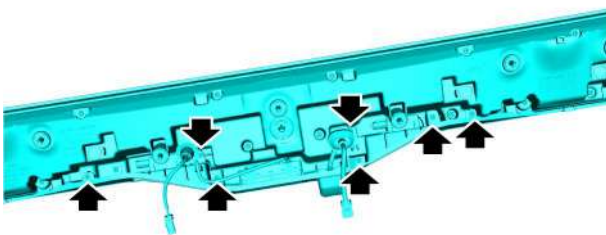
Tail Gate Interior Trim Panel

3. Remove 9 nuts fixing the through-type rear position lamp assembly to the tail gate.



S6614143

4. Disconnect the harness connector and remove the through-type rear position lamp assembly.
5. If necessary, remove 7 screws fixing the rear license plate lamp trim panel to the through-type rear position lamp assembly, and remove the rear license plate lamp trim panel.



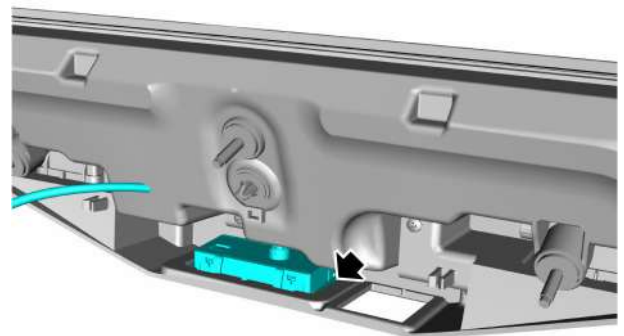
S6514239

6. if necessary, pry open the clip fixing the rear camera to the through-type rear position lamp and remove the rear camera assembly.



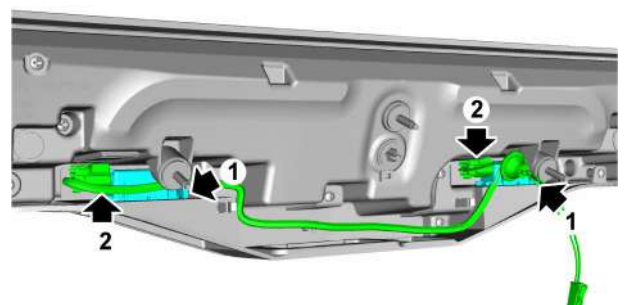
S6514212

7. if necessary, pry open the clip fixing the tail gate switch to the through-type rear position lamp and remove the tail gate switch assembly.



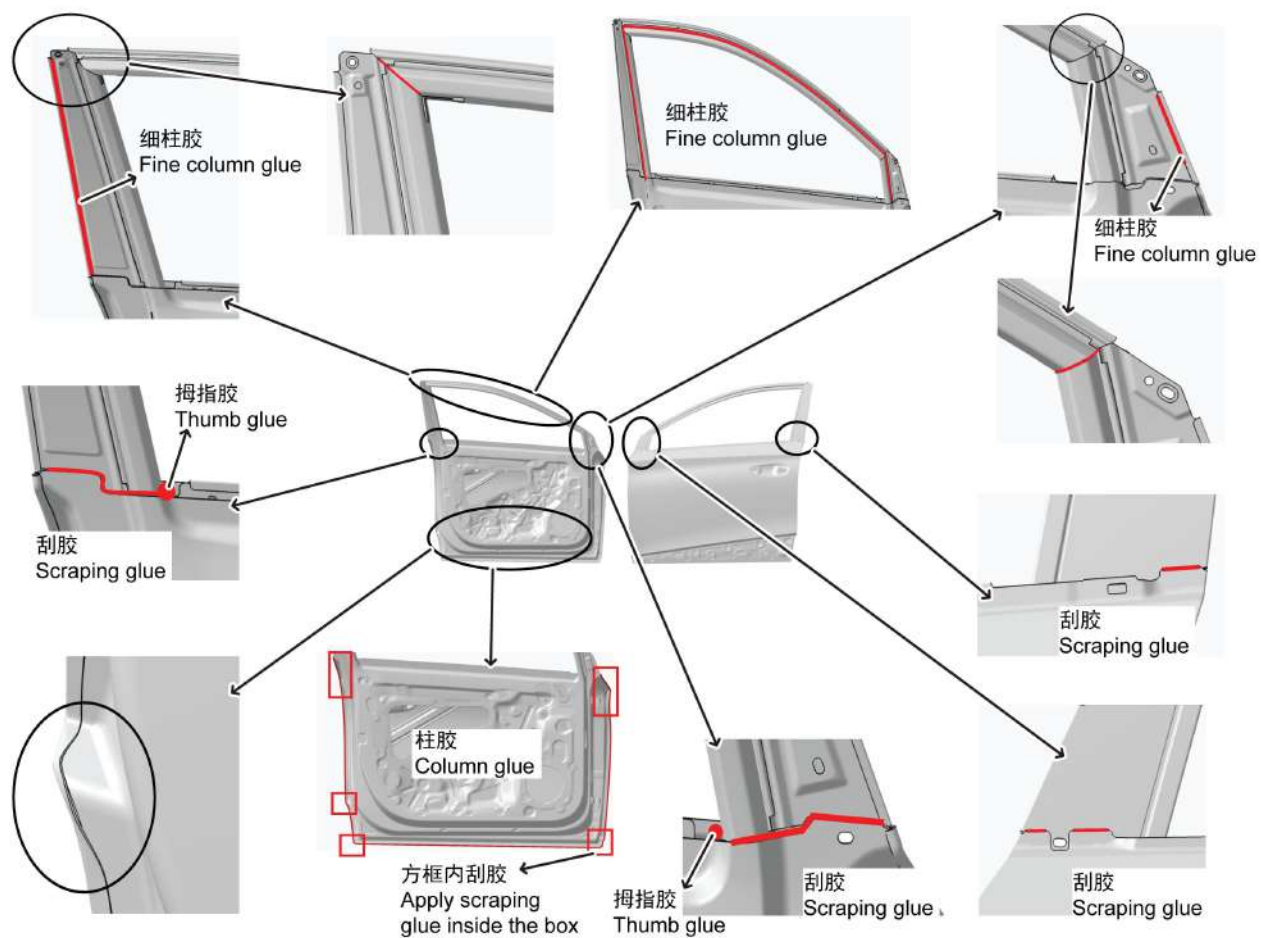
S6514213

8. if necessary, pry open the clip fixing the rear license plate lamp to the through-type rear position lamp (1), disconnect the harness connector (2) and remove the rear license plate lamp assembly.



S6514211

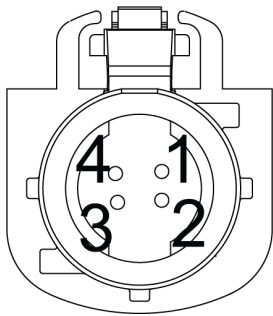
Front Door



Entertainment System

4	-
5	USB4 Ground

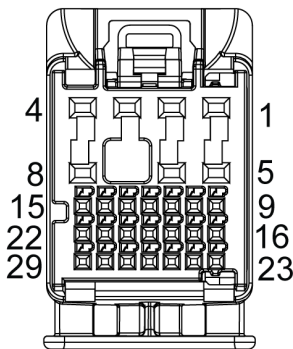
End View and Pin Information of Entertainment Mainframe Connector FA050



Pin No.	Description
1	Display LVDS 1+
2	Display LVDS 2+
3	Display LVDS 1-
4	Display LVDS 2-

End View and Pin Information of High Configuration Entertainment Mainframe Connector

End View and Pin Information of Entertainment Mainframe Harness Connector FA057



Driver Information and Entertainment System

Pin No.	Description
1	Front Left Audio -
2	Front Left Audio +
3	Front Right Audio +
4	Front Right Audio -
5	Ground
6-11	-
12	360° Panoramic Front View Camera Signal
13	360° Panoramic Front View Camera Shielded Wire
14	360° Panoramic Rear View Camera Signal
15	360° Panoramic Rear View Camera Shielded Wire
16	TBOX Microphone Signal
17	TBOX Microphone Shielded Wire
18	Front Right Microphone Signal
19	Front Right Microphone Shielded Wire
20-23	-
23	RBRM Left Audio Signal
24	RBRM Left Audio Ground
25	RBRM Audio Shielded Wire
26	RBRM Right Audio Signal
27	RBRM Right Audio Ground
28	TBOX Audio Signal
29	TBOX Audio Shielded Wire

End View and Pin Information of Entertainment Mainframe Connector FA056

Service Guide - Universal Guide

Drain and Refill - EDS

Drain

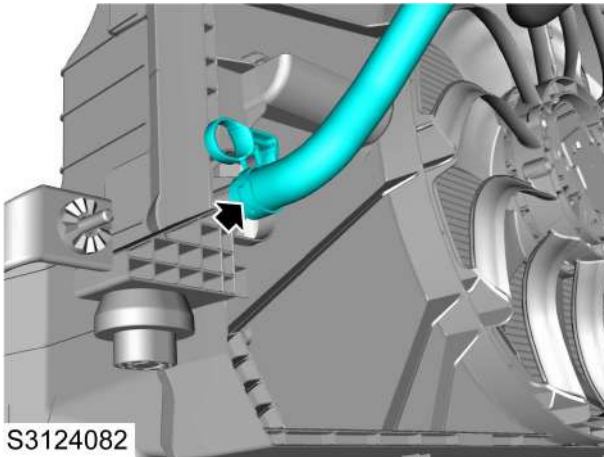
1. Unscrew the coolant expansion tank cap.
2. Prepare a proper container to collect the spilled coolant.
3. Remove the front bottom deflector.

Bottom Deflector Remove

4. Remove the manual service disconnect.

Manual Service Disconnect Remove

5. Disconnect the pipeline from the radiator.



6. Drain the cooling system.

Refill

1. Connect the pipeline to the radiator.
2. Fit the manual service disconnect.

Manual Service Disconnect Refit

3. Fit the front bottom deflector.

Bottom Deflector Refit

4. Prepare the coolant of specified concentration.

Fluid Fluid

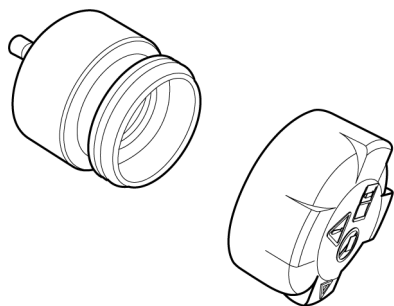
5. Refill the cooling system, until the coolant level reaches between MIN and MAX marks on the expansion tank and keeps still.
6. Connect the scan tool and enter the SIPS to perform the electric drive unit coolant refill/bleeding. The specific path is SIPS—Fast Channel—Electric Drive Unit Coolant Refill/Bleeding.
7. Observe the flow of coolant in the tank (coolant flow indicates that the pump is not idling).
8. Keep the coolant flowing for 20 to 30 minutes. The coolant can be added when the coolant level in the expansion tank is low during this process.
9. When the coolant level in the expansion tank does not change, disconnect the scan tool.
10. Check whether the coolant level is between MIN and

MAX. If not, fill the coolant between MIN and MAX as required.

11. Fit and tighten the coolant expansion tank cap.
12. Check the cooling system for leak.

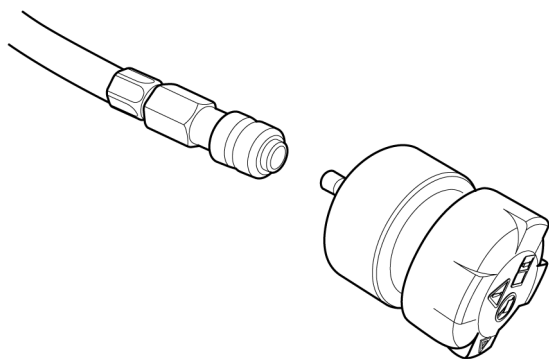
Pressure Cap Testing - ESS Check

1. Visually check the expansion tank cap for signs of leakage.
2. Check the hose for signs of rupture or twisting and for the reliability of pipeline connection.
3. Open the coolant expansion tank cap.
4. Fit TEN00010 to the expansion tank cap.



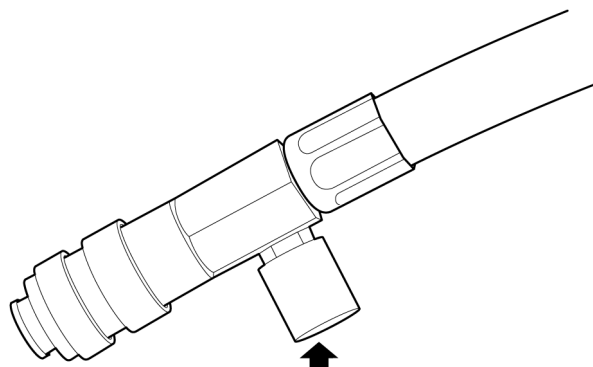
S3123414

5. Connect TI4001 pressure hose to TEN00010.



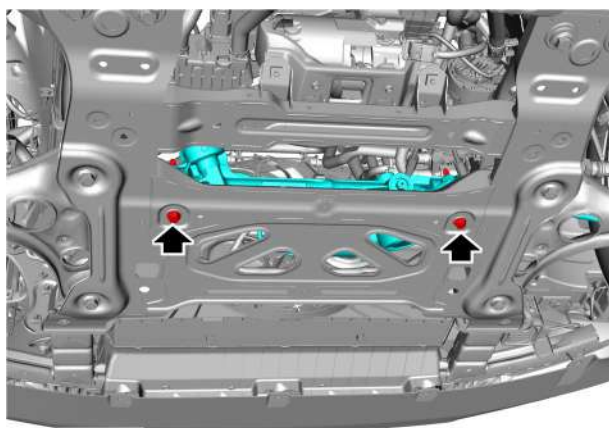
S3123415

6. Pressurize the expansion tank cap slowly to the specified pressure, then check the pressure; if the pressure is maintained at 140KPa, the expansion tank cap is normal.
7. Release pressure through the relief valve on the pressurizer.

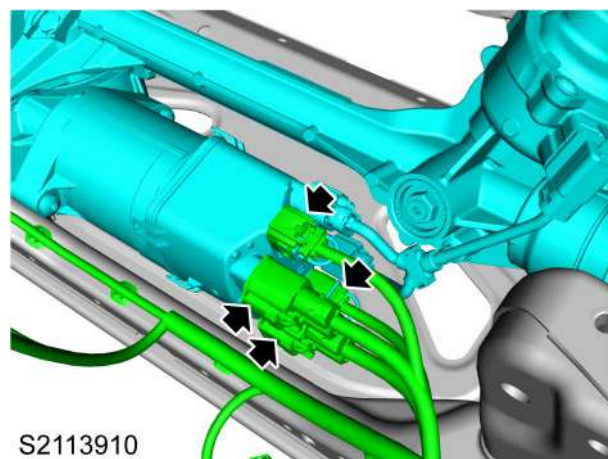


S143048

8. Remove TI4001 pressure hose from TEN00010.
9. Remove the expansion tank cap from TEN00010 and fit it to the expansion tank.
10. Fit the high-voltage battery pack expansion tank trim panel.



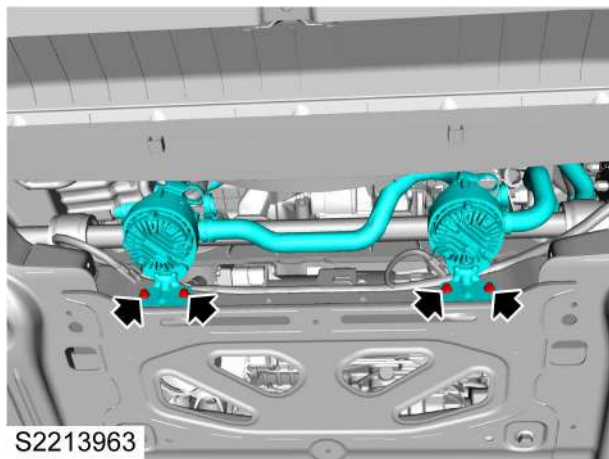
S2113730



S2113910

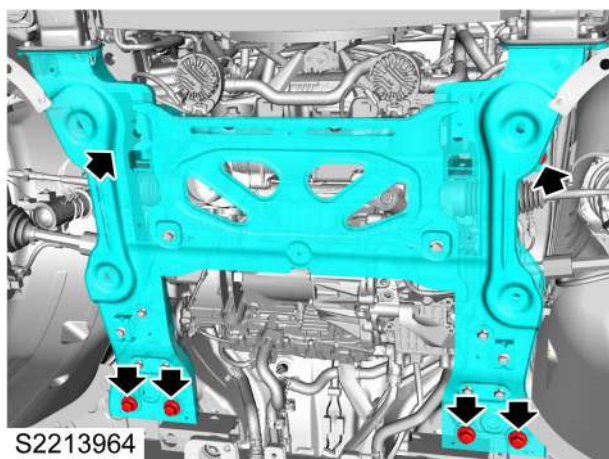
9. Remove the steering gear subassembly (4WD)

- a. Remove 4 bolts fixing the water pump bracket (4WD) to the front subframe, and remove the pump.



S2213963

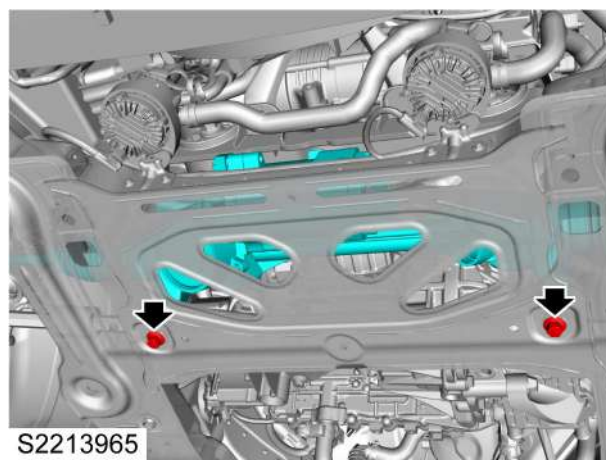
- b. Loosen the harness clips, use a hydraulic lifting device to lift the front subframe, remove and discard 6 bolts fixing the front subframe to the body.



S2213964

- c. Lower the front subframe to a proper height.
- d. Disconnect the harness connector of the steering gear subassembly.

- e. Remove and discard 2 bolts and nuts fixing the steering rack to the front subframe.



S2213965

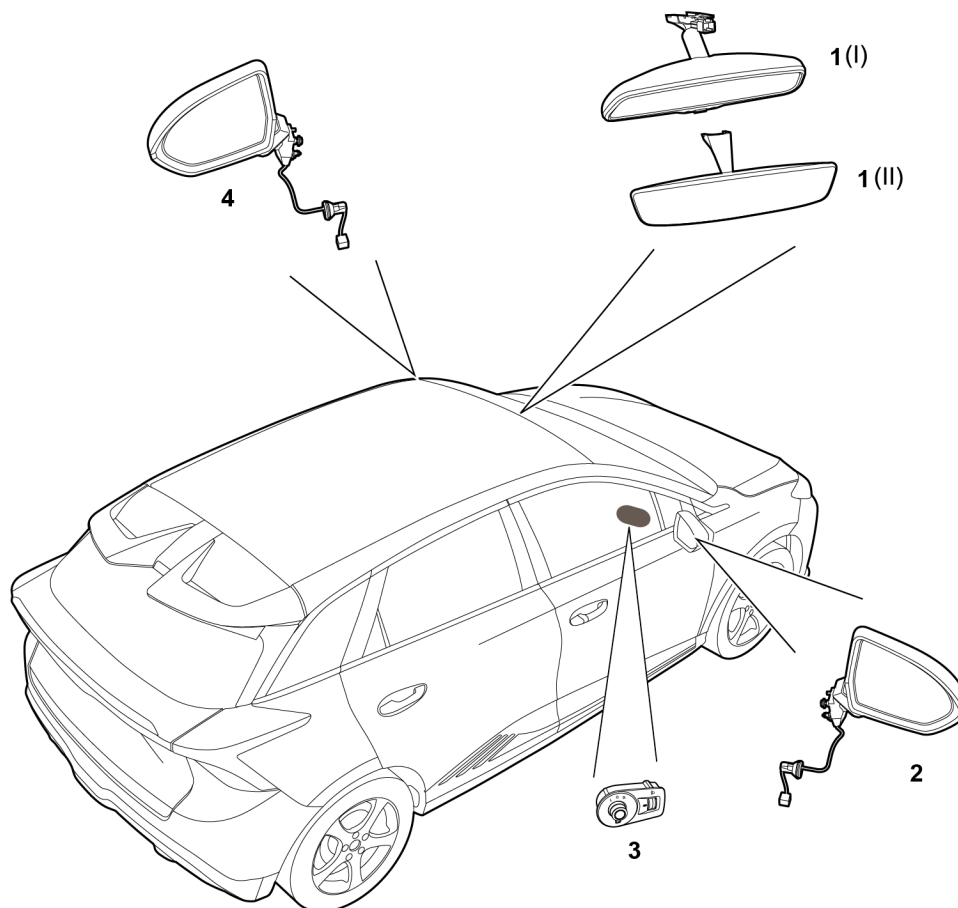
10. Lower the hydraulic lifting device to a proper height, and carefully pull the steering gear subassembly out of the vehicle.

Refit

1. Locate the steering gear assembly to the front subframe, fit 2 new nuts and bolts in sequence (start at the driver side), and tighten them to **63-77Nm+ (175°-185°)**.
2. Ensure that the front subframe mounting area is clean, use a hydraulic lifting device to lift the front subframe.
3. Connect the harness connector .
4. Refit the steering gear subassembly (4WD)
 - a. Locate the front subframe to the body, fit 6 bolts, and tighten them to **(135-165) Nm+ (85-95) °**.
 - b. Fix the pump bracket to the front subframe, fit 4 bolts and tighten them.
5. Refit the steering gear subassembly (2WD)
 - a. Locate the front subframe to the body, fit 6 bolts, and tighten them to **(135-165) Nm+ (85-95) °**.
6. Fix the front bumper beam to the front subframe, fit 3 new bolts (both side), and tighten them to **19-25Nm**.
7. Lower the hydraulic lifting device, and move it to the safety zone.

Description and Operation

System Layout



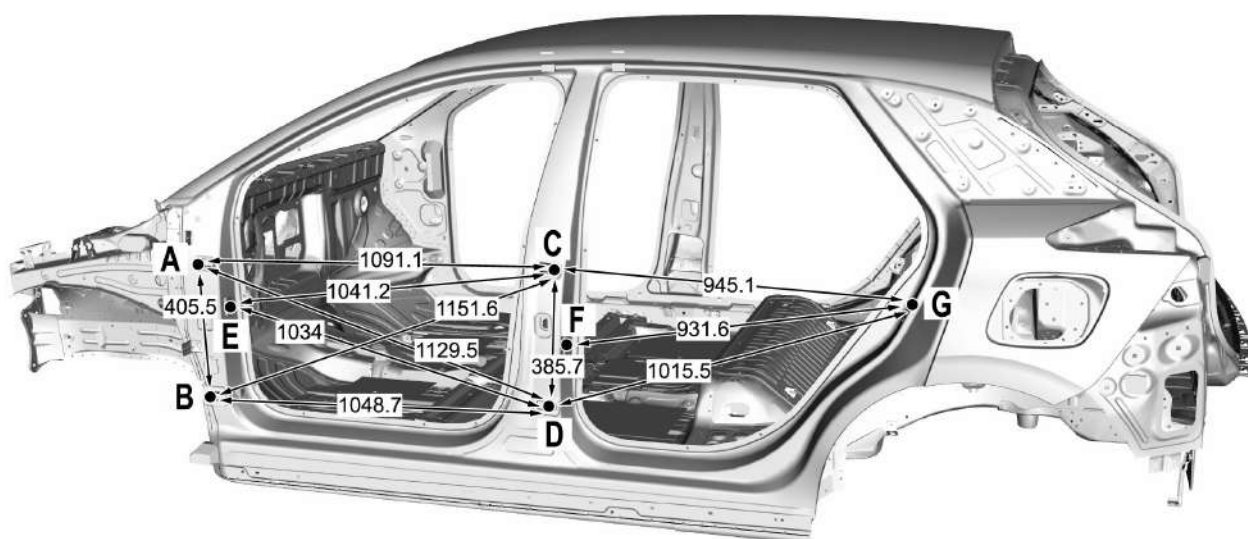
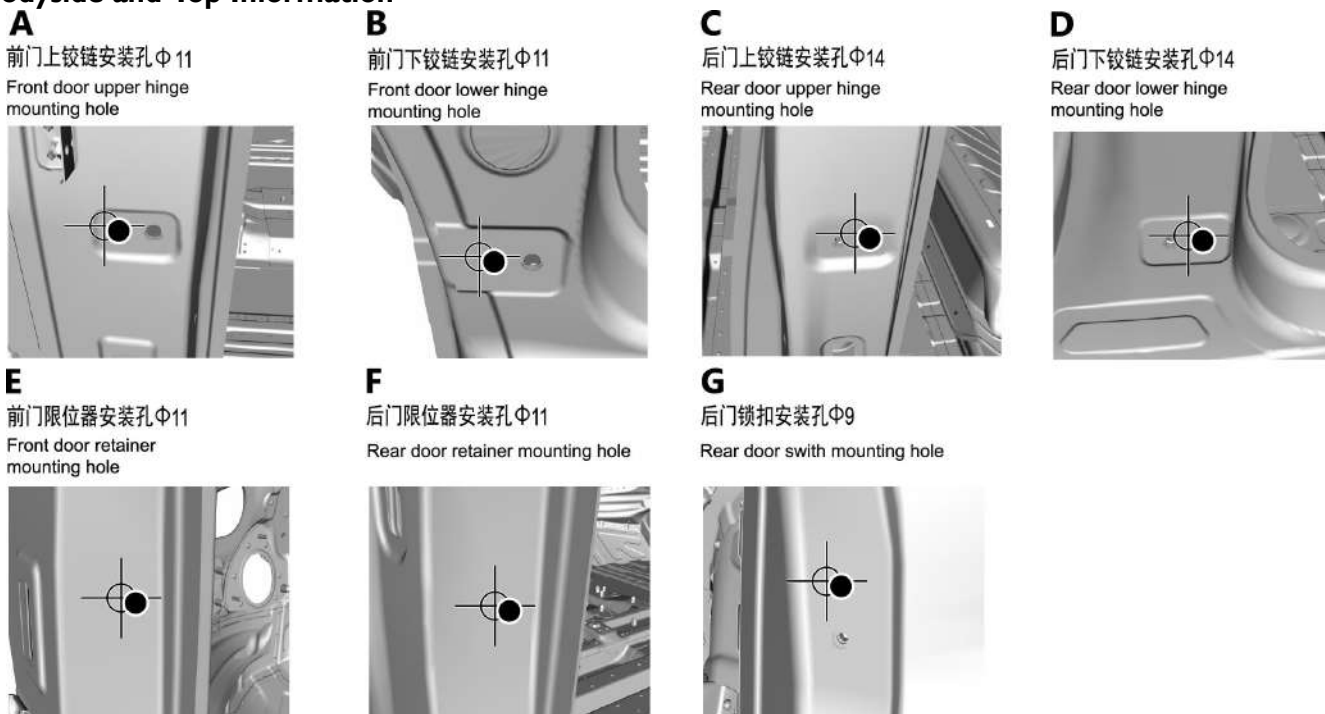
SC410206

- | | |
|---|--|
| 1. (I) Automatic Anti-dazzle Interior Rearview Mirror (II)
Manual Anti-dazzle Interior Rearview Mirror | 3. Exterior Rearview Mirror Control Switch |
| 2. Exterior Rearview Mirror (Right) | 4. Exterior Rearview Mirror (Left) |

Body Size

Point-to-point Dimension

Bodyside and Top Information



Note : All dimensions refer to central dimensions of hole (slotted hole).

High Voltage Harness

Steering Column Lock Control Module (ESCL)

Scenario and Route

Scenario	Configuration	Anti-theft matching	Operation Route
Configuration	①		SIPS - Programming and Encoding - ESCL - Configuration
ECU Replacement	①	②	SIPS - Programming and Encoding - ESCL - Replacement

Number in ○ describes the sequence of performing the functional operations.

ESCL Configuration

Function Description

This function is used for re-configuring each control function of ECU and writing VIN.

Execution Condition

1. P is selected;
2. Ensure that high power on the whole vehicle and the instrument "READY" is not lit;
3. Do not let vehicle power off through the screen.

ESCL Anti-theft Matching

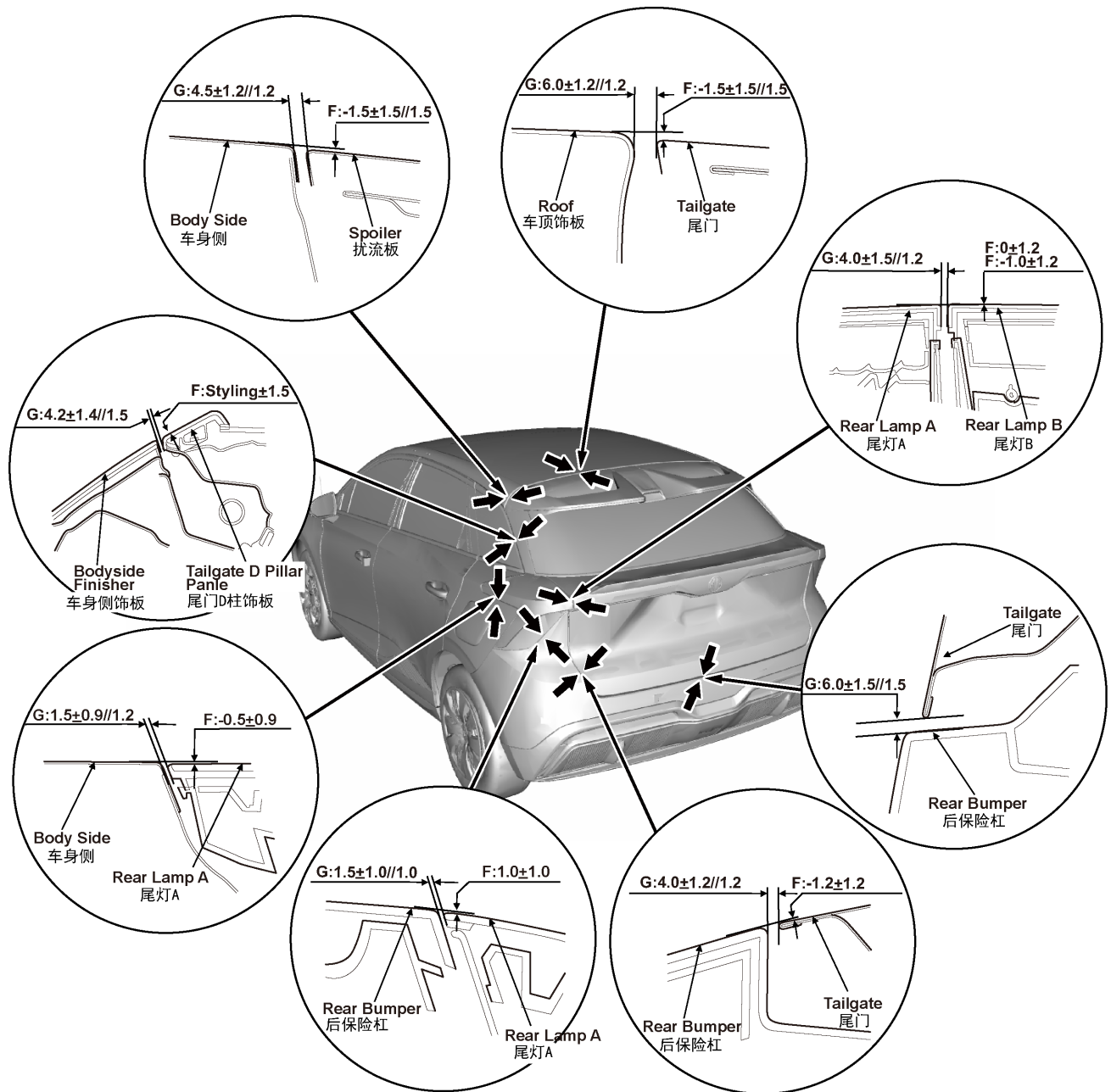
Function Description

ECU is an anti-theft related module; after the ECU is replaced with a new one, it is necessary to perform anti-theft matching, including PIN code writing and key learning. The vehicle can be started normally only after the anti-theft matching is completed successfully.

Execution Condition

1. P is selected;
2. Ensure that high power on the whole vehicle and the instrument "READY" is not lit;
3. Do not let vehicle power off through the screen.

Rear End Information



Note : "//" represents requirements for uniformity, which means the difference between maximum and minimum values of measured gap shall be within the specified range.

Test Condition	Detail/Result/Action
4. Check related lines or connector of brake lamp	A. Check related harness connectors for looseness. If yes: after the repair/replacement, confirm if the symptom disappears. • Yes → Diagnosis is completed. • No → Go to Step B. B. Disconnect the tail lamp/rear combination lamp harness connector from the BCM, and check the conductivity of the corresponding Pin of the connector and check for short to ground or battery. If yes: repair/replace the related circuits; after the repair/replacement, confirm if the symptom disappears. • Yes → Diagnosis is completed. • No → Go to Step C. C. Disconnect the harness connector of the brake lamp and check whether the power supply and the ground are normal. If not: repair/replace the related circuits; after the repair/replacement, confirm if the symptom disappears. • Yes → Diagnosis is completed. • No → Go to Step 5.
5. Check the brake lamp	Remove the original brake lamp from the vehicle, fit a new good one (replace a higher-level assembly) and confirm if it can work properly. • Yes → Diagnosis is completed. • No → Go to Step 6.
6. Check BCM	After flashing the BCM, confirm if the brake lamp can work normally. If yes, diagnosis is completed; if still not, replace the BCM.

Reference Information	
Circuit Diagram	Exterior Lighting

U1562 and U1563

DTC Description

DTC	FTB	DTC Description
U1562	17	Battery Voltage High
U1563	16	Battery Voltage Low

Subsystem Principle

Module monitors the system voltage to confirm whether the module supply voltage is within the normal operating range.

Conditions for Running DTCs

The Start switch is placed in ON position.

Conditions for Setting DTCs

U1562 17: The power supply voltage is greater than 16V for 1s.

U1563 16: The power supply voltage is less than 9V for 1s.

Operations of ECU after Failure

Disable the fault diagnosis function.

Conditions for Clearing DTCs

U1562 17:

- The system voltage is less than 15.5V for 1s.
- History DTCs will be cleared after 40 power-on and power-off cycles.

U1563 16:

- The system voltage is greater than 9.5V for 1s.
- History DTCs will be cleared after 40 power-on and power-off cycles.

Possible Failure Causes and Maintenance Scheme

1. Battery aging/damage.
 - Replace the battery.
2. Harness or connector failures.

- Replace/repair the harness or connector.

3. Battery cable failure.

- Replace/repair the battery cable.

4. High/low voltage conversion system failure.

- Check/repair the related components.

5. Control module internal failure.

- Replace/flash the control module.

Reference Circuit Diagram

Rear Driving Assistance System

Diagnostic Test Steps

1. Check the battery:

→Confirm whether the battery function is normal, and whether there are battery aging, damage, deformation, liquid leakage and other abnormal conditions: Replace the battery.

→Normal, go to 2.

2. Check the module harness and connector:

→For connector looseness, Pin deformation/breakage, module power supply/grounding harness conductivity failure and other abnormal conditions: Repair/replace the harness connector.

→Normal, go to 3.

3. Check the battery cable:

→Confirm whether the battery cable function is normal, and whether there are looseness, breakage, damage and other abnormal conditions: Repair/replace the battery cable.

→Normal, go to 4.

4. Check the module:

→Confirm whether the module function is normal, and whether there are software

C052C, C052E and C053B

C053B: None.

DTC Description

DTC	FTB	Failure Description
C052C	1B	Internal UnderVoltage at KL30_M
C052C	96	Internal OverVoltage at KL30_M
C052C	A2	Supply is Too Low KL30_2
C052E	A2	Nbrake Function Failure-UnderVoltage
C053B	A2	Supply is Too Low KL30_1

Subsystem Principle

The integrated brake system (IBS) monitors the system voltage to check if the power supply voltage of the module is within the normal operating range.

Conditions for Running DTCs

C052C 1B and 96: MKC motor is operating.

C052C, C052E and C052B A2: Once per cycle.

Conditions for Setting DTCs

C052C 1B: When undervoltage is detected at the internal KL30_M, check if the KL30_2 is within the normal range, if yes, this failure is detected.

C052C 96: When the MKC motor recovers energy, the absorber diode shall limit the overvoltage, if the voltage is too high, this failure is detected.

C052C A2: The voltage at KL30_2 is much lower than that at KL30_1, and the undervoltage at the internal KL30_M is detected.

C052E A2:

- The voltage at KL30_1 and KL30_2 is lower than 4.5V for more than 1ms.
- The voltage at KL30_1 and KL30_2 drops below 6.5V for more than 150ms (stationary period is 250ms).

C052B A2: The voltage at KL30_1 is much lower than that at KL30_2.

Operations of ECU after Failure

C052C: Disable functions: EBD and ABS.

C052E: Disable functions: EBD and ABS.

Conditions for Clearing DTCs

C052C 1B and 96: The start switch is in "ON" position next time.

C052C A2: If the failure setting conditions are not met and the voltage at KL30_2 is higher than 10V for more than 50ms, the temporary DTC will be cleared.

C052E A2: If the voltage at KL30_1 is higher than 7.234V or the voltage at KL30_2 is higher than 7.339V for more than 150ms (stationary period is 250ms).

C052B A2: If the failure setting conditions are not met and the voltage at KL30_1 is higher than 10V for more than 1800ms, the temporary DTC will be cleared.

Possible Failure Causes and Maintenance Scheme

1. Battery aging/damage.
 - Replace the battery.
2. Harness or connector failures.
 - Replace/repair the harness or connector.
3. Integrated brake system (IBS) failure.
 - Flash/replace the integrated brake system (IBS) module.

Reference Circuit Diagram

Brake System

Diagnostic Test Steps

1. Check the battery:
 - Battery feeding, charge the battery;
 - Battery aging or damage, replace the battery;
 - Battery is normal, go to 2.
2. Check related circuits:
 - For connector looseness, Pin deformation/breakage, relevant harness conductivity failure, short to ground failure,

B193A**DTC Description**

DTC	FTB	DTC Description
B193A	12	Crash Out Short to Battery
B193A	14	Crash Out Short to Ground or Open

Subsystem Principle

The driver airbag is mounted in the steering wheel, and is connected to the SDM through a clock spring. The clock spring is a rotary coupler to avoid the movement interference of the wire harness when the steering wheel rotates. The supplemental restraint system sensing and diagnostic module (SDM) monitors the signal from the impact sensor and vehicle speed sensor. When a serious collision signal is detected, it sends a deployment signal to the airbag, triggering the gas generator to release a large amount of gas, and deploying the folded airbag in the device quickly, so as to protect the safety of the driver together with the seat belt in the event of a collision.

Conditions for Running DTCs

B193A 14: Communication/line failure - short to ground or open circuit.

B193A 12: Communication/line failure - short to battery.

Conditions for Setting DTCs

B193A 14: 3 consecutive ACN messages show the ACN bus is short to ground or open.

B193A 12: 3 consecutive ACN messages show the ACN bus is short to battery.

Operations of ECU after Failure

The airbag warning lamp illuminates.

Conditions for Clearing DTCs

- The communication line returns to normal again.
- After 40 failure-free power-on and power-off cycles, the history DTCs will be cleared and the airbag warning lamp will be Off.

Possible Failure Causes and Maintenance Scheme

1. Harness or connector failures:
 - Repair/replace the harness or connector.
2. Impact sensor failure:
 - Flash/replace the impact sensor.
3. Supplemental Restraint System Sensing and Diagnostic Module Failure
 - Flash/replace the SDM.

Reference Circuit Diagram

Supplemental Restraint System

Diagnostic Test Steps:

1. Check the SDM - impact sensor harness and connector:
 - For connector looseness, Pin deformation/breakage, impact sensor harness conductivity failure, control module power supply/grounding harness conductivity failure and other abnormal conditions: Repair/replace the harness connector.
 - Normal, go to 2.
2. Check the impact sensor:
 - Confirm whether the impact sensor function is normal, whether the hardware is damaged and whether there are other abnormal conditions: Repair/replace the impact sensor.
 - Normal, go to 3.
3. Check the SDM:
 - Confirm whether the SDM function is normal, and whether there are software mismatch, hardware damage and other abnormal conditions: Flash/replace the SDM.
 - Normal, go to TAC Human Assistance.