



UNI-K

- **Body electrical appliance**

UNI-KRM2H/1/1

4.2 Body electrical appliance

Model :UNI-K

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4.2.1 Instrument

Specifications

General specifications

Name	Rated voltage	Maximum current
Combination instrument power supply	12 V(DC)	-

Torque specification

Name	Nm	lb-ft	lb-in
Combination instrument retaining screw	4	-	27

Description and operation

System introduction

The instrument cluster is located on the left side of the instrument panel, above the steering column, and the instrument in the instrument cluster provides vehicle performance information to the driver. When the ignition switch is in "ACC" or "ON" position, some functions of combination instrument (IPC) will be self-inspected to check whether these functions are normal. The following will occur:

- 1.The airbag indicator lamp goes out within 6 s when the system is normal.
- 2.When the system is normal, the ABS indicator lamp will turn on for about 3 s and then go out.
- 3.When the system is normal, the brake fluid position indicator lamp turns on for about 3 s and then goes out.
- 4.When the coolant temperature indicator lamp is under normal water temperature, it turns on for about 3 s and then goes out.
5. When the main seat belt lock tongue is inserted into the buckle, the seat belt indicator lamp goes out.
6. When the front passenger seat belt lock tongue is inserted into the buckle, the main driver seat belt indicator lamp goes out.
7. When the door is not closed tightly, the display screen will give a prompt, and the prompt disappears after closing tightly.
- 8.When the system is normal, the EPS indicator lamp turns on for about 3 s and then goes out.
- 9.When the system is normal, the ESP indicator lamp turns on for about 3 s and then goes out. When the system is normal, the ESP_OFF indicator lamp will turn on for about 3s and then turn off. Press the ESP_OFF switch for about 3 s and then turn on.
- 11.When the system is normal, the fuel level indicator lamp will turn on for about 3 s and then go out.
12. When the engine oil pressure indicator lamp is normal in the system, the instrument will turn off after 3S, indicating that the instrument oil pressure indicator lamp hardware status is normal.
13. When the electronic anti-theft lock indicator lamp is in alarm state, the alarm flashes at a relatively fast frequency.
14. Engine malfunction indicator lamp goes out when there is no fault after starting.
15. Idle system malfunction indicator lamp goes out when there is no fault after starting.
- 16.When the system is normal, the EPB malfunction indicator lamp turns on for about 3 s and then goes

out.

17. When the tire pressure and temperature alarm is normal, it goes out after it is turned on for about 3 s.

Combination instrument includes temperature gauge, fuel gauge, speedometer, tachometer and various indicator lamps.

1. Engine tachometer

The engine tachometer indicates the engine speed with r/min. Indication value x 1000 indicates the engine speed at this time

2. Water temperature gauge

Indicates the engine coolant temperature. The temperature of cooling water during driving shall be kept within the normal range. This is shown as the center position. When the water temperature gauge is displayed in red, it indicates that the current water temperature is high. Stop the fire immediately. Please contact Chang'an Automobile Authorized Service Center for overhaul.

3. Fuel gauge

The fuel gauge indicates the approximate amount of fuel remaining in the fuel tank. When the segment code indicates full scale, i.e. in the "F" position, it indicates that the fuel tank is full of fuel. When the segment code is displayed for 1 bar, the fuel low alarm lamp is on, indicating that the fuel tank is close to running out. When the segment code is displayed for 1 bar, the fuel low alarm lamp is on, indicating that the fuel tank is close to running out.

4. Speedometer

The speedometer represents the vehicle speed in km/h.

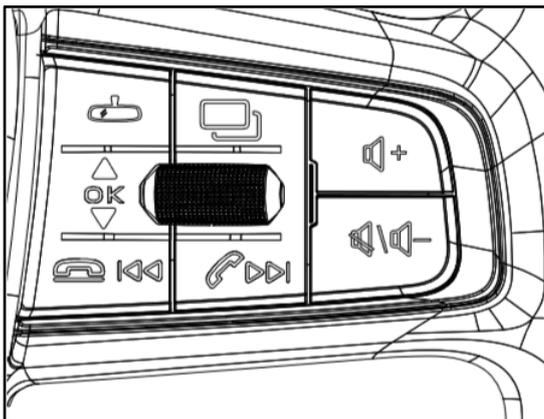
5. Odometer

Display the mileage on the instrument middle LCD screen. Mileage display is divided into total mileage and subtotal mileage.

Total mileage means the total mileage of the vehicle, with a maximum value of 999, 999 km and a minimum unit of 1 km. The maximum subtotal mileage is 999 .9 km and the minimum unit is 0.1 km.

Key switch

The key switch is on the steering wheel. Four-way key switch is used for operation, as shown in the figure below.



1. Press the key to switch the menu information in the display screen cyclically. Such as driving

information, subject information and alarm information.



2. Press the key to confirm the operation. Press the key to enter the corresponding level-1 menu information. OK OK

3. Press or key to turn page in list under each menu. For example, in the driving information interface, press the key directly to enter the normally displayed information list, or press the key to cycle short-term

driving, long-term driving, tire pressure and other information, and subtotal mileage. ▲ ▼ OK



4. Key switching relationship(Key reverse) ▼ ▲

Instrument indicator lamp

The indicator light in the instrument cluster is used to indicate the function or possible malfunction of a particular system while the vehicle is operating. The indicator light on the combination instrument provides warning or indication information to the user. The indicators on the instrument cluster are of the following types:

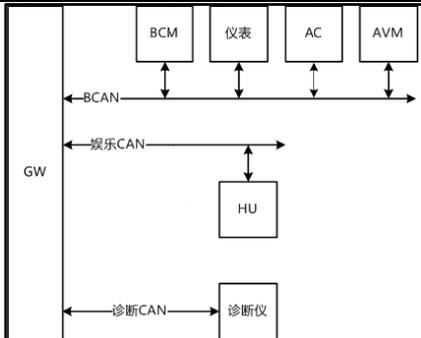
Lamp symbol	Indicator light	Color	Lamp symbol	Indicator light	Color
	Position indicator light	Green		Oil pressure warning lamp	Red
	Engine anti-theft indicator	Red		Charging indicator	Red
	ESP Multifunction Indicator	Yellow		Engine emission malfunction indicator	Yellow
	ESC_OFF indicator lamp	Yellow		Driver seat belt unfastened indicator	Red
	Cruise indicator	Green		EPS indicator lamp	Yellow
	Tire pressure warning indicator	Yellow		Airbag malfunction indicator	Red
	Idle start/stop indicator	Yellow		High beam indicator	Blue
	Electronic parking	Red		Low fuel level indicator	Yellow
	Electronic parking fault	Yellow		Engine overheating indicator	Red
	HDC working indicator	Green		ABS malfunction indicator lamp	Yellow
	Door opening indicator	Red		Brake fault/brake fluid low indicator	Red
	120 km/h Overspeed alarm indicator	Yellow		Left steering indicator	Green
	Rear seat belt unfastened indicator	Grey/red		Right steering indicator	Green
	Rear fog lamp indicator	Yellow		Low beam indicator	Green
	Automatic parking indicator	Green		Automatic high beam	Green
	Transmission fluid temperature high indicator	Red		Transmission fault lamp	Red

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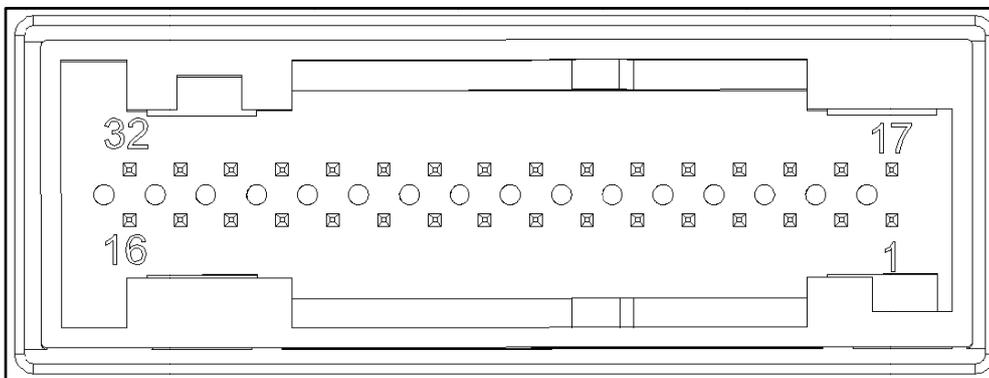
instrument

4.2.1-5

	Adaptive cruise light	White/yellow		Collision warning indicator	Green/yellow
	Lane Departure Indicator	Green/yellow		Parallel auxiliary indicator	Yellow

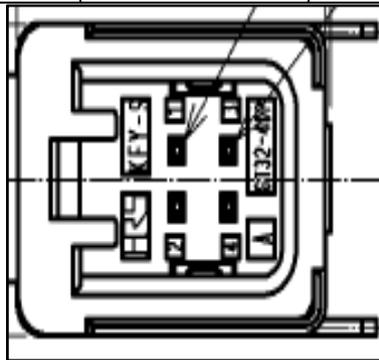


Interface definition



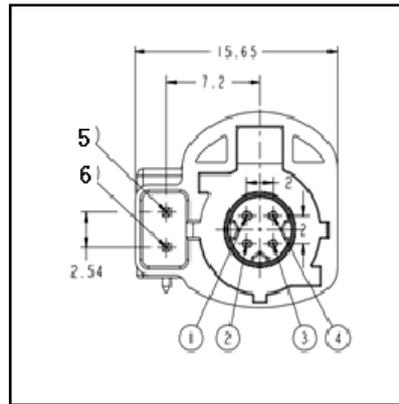
Pin number	Function description	Signal type	Signal range	Remarks
1	Battery power supply	Power supply	9V~18V	
2	Ignition power supply	Power supply	9V~18V	
3	NC	-	-	
4	Instrument ground	Grounding	-0.1V~0.1V	
5	Fuel sensor ground	Input	-0.1V~0.1V	
6	NC	-	-	
7	NC	-	-	
8	Fuel signal	Input	30Ω-260Ω	
9	Left blind area indicator lamp output	Output	Digital signal	
10	Right blind area indicator lamp output	Output	Digital signal	
11	Anti-theft indicator	Input	Digital signal	
12	Oil pressure alarm	Input	Digital signal	
13	Low brake fluid level	Input	Digital signal	
14	NC	-	-	
15	NC	-	-	
16	Battery charging	Input	Digital signal	

	indication(Reserved)			
17	Low washer fluid level alarm(Reserved)	Input	Digital signal	
18	NC	-	-	
19	CAN-H	Two-way	Digital signal	
20	CAN-L	Two-way	Digital signal	
21	NC	-		
22	NC	-		
23	NC	-		
24	NC	-		
25	NC	-	-	
26	Key switch 1	Input	Digital signal	
27	NC	Input	Digital signal	
28	NC	-		
29	NC	-		
30	Key switch 2	Input	Digital signal	
31	NC	-		
32	NC	-		



C-U

Pin number	Function description	Signal type	Signal range	Remarks
C-U1	NC	-		
C-U2	NC	-		
C-U3	USB_DATA+	USB communication		
C-U4	USB_DATA-	USB communication		
C-U5	Ground(Housing)	USB shield		

**D-L**

Pin number	Function description	Signal type	Signal range	Remarks
D-L1	LVS0-P	LVDS signal		
D-L2	LVS1-N	LVDS signal		
D-L3	LVS0-N	LVDS signal		
D-L4	LVS1-P	LVDS signal		
D-L5	PWR-12V	TFT power supply		
D-L6	GND	TFT supply ground		
D-L7	DGND	LVDS data line shielding ground		

Fault phenomenon and diagnosis

Common troubleshooting methods

Display fault

Symptoms	Possible causes	Maintenance method
Instrument not powered on, black screen	Battery voltage is lower than 8V or higher than 16 V	Use a multimeter to check whether the battery voltage is lower than 8V or higher than 16 V. If yes, repair the battery.(The instrument will enter the self-protection state and stop working when it exceeds this voltage range.)
	Poor contact of harness connector	Replace the corresponding connector or harness.
	Fuse damage	Replace the corresponding fuse.
	Instrument unit fault	Exchange the test instrument cluster and test whether the fault performance follows the instrument. If yes, replace the instrument.
Instrument flower screen, grey screen, white screen	Instrument fault	Replace instrument
Instrument splash screen	Instrument fault	Replace the test instrument. If the fault follows the instrument, replace the instrument.
	Dimmer fault	Switch the test dimmer. If the fault follows the dimmer, replace the dimmer.
There is no indication of vehicle speed and speed, and multiple fault lamps are on abnormally.	Can network communication fault	Check CAN network communication operation
Blind area monitoring, anti-theft function, low brake fluid level, abnormal four-way button function	Hard wire signal abnormal	Check harness and connector
Inaccurate fuel display	Fuel signal abnormal	Check fuel signal parameters

DTC fault code list and simple troubleshooting method

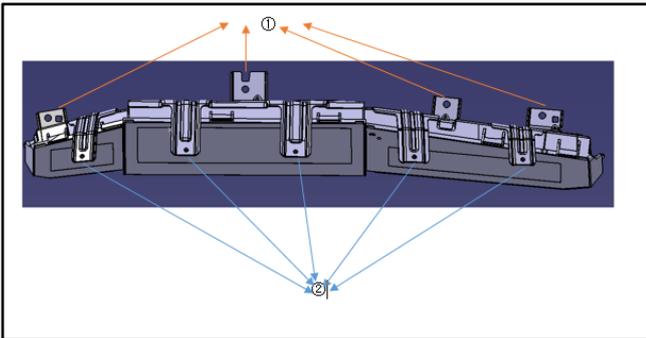
Fault code	Meaning	Possible fault causes	Maintenance advice
U10A1	Bus communication fault	Can network fault, gateway fault, other controller fault	Check and repair gateway and other controllers
U10A7	IP_280 message sending timeout	Sending timeout	Check BAN connection
B1105	Battery voltage is lower than normal range	Battery voltage too low	The vehicle ignites to charge the battery.
B1106	Battery voltage is higher than normal range	Battery voltage too high	Measure the battery voltage with a multimeter, the instrument does not work normally when the voltage is higher than 18 V, and the instrument enters self-protection. After the battery is repaired normally, it can be used normally.
B1107	Abnormal ignition signal	Hard wire ignition signal and CAN signal are different.	Checking and repairing ignition system
U108A	Loss of communication with RRS	Can connection of relevant ECU is disconnected	Check node
U108D	Lost communication with DSM	Can connection of relevant ECU is disconnected	Check node
U1080	Lost communication with BCM	Can connection of relevant ECU is disconnected	Check node
U1081	Lost communication with GW	Can connection of relevant ECU is disconnected	Check node
U1082	Lost communication with HU	Can connection of relevant ECU is disconnected	Check node
U1083	Loss of communication with AC	Can connection of relevant ECU is disconnected	Check node
U108F	Loss of communication with AWD	Can connection of relevant ECU is disconnected	Check AWD and related harness
U1097	Loss of communication with SAS	Can connection of relevant ECU is disconnected	Check SAS and related harness
B1100	Steering wheel button input device open circuit fault	Steering wheel button input device open circuit fault	Check steering wheel

Removal and installation

Combination instrument assembly

Removal

1. Disconnect the negative battery harness.
2. Remove dashboard cover.
3. Remove 4 screws on instrument cluster assembly with sleeve(E.g. (1))
4. Remove 5 screws with electric screwdriver to separate instrument and cover plate.



Installation

The installation sequence is the reverse of the removal sequence.

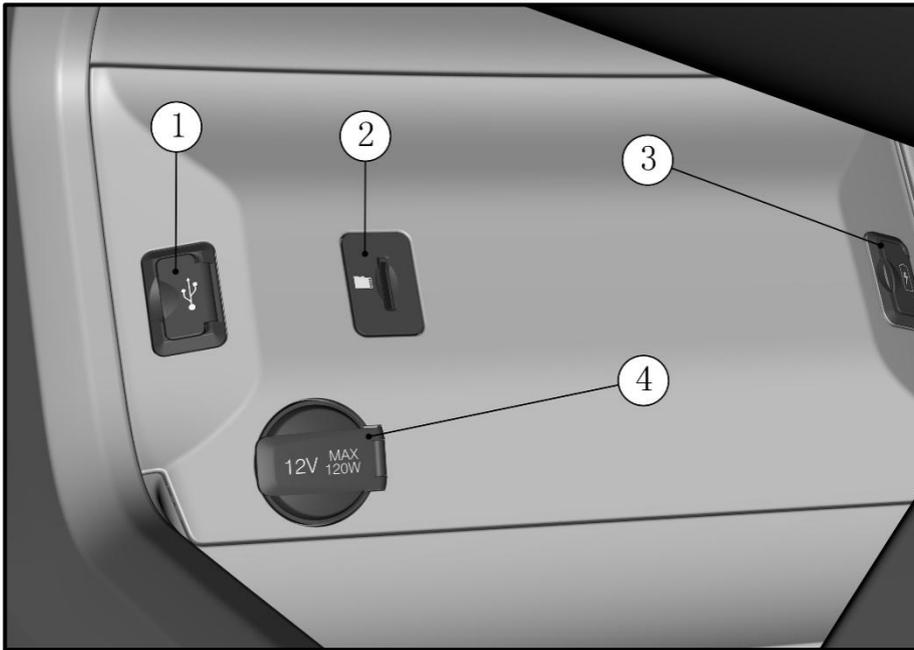
4.2.2 Power socket

Description and operation

System introduction

The power socket is usually on the cigarette lighter panel under the instrument panel central control panel. Through this socket, 12 V DC power output can be obtained.

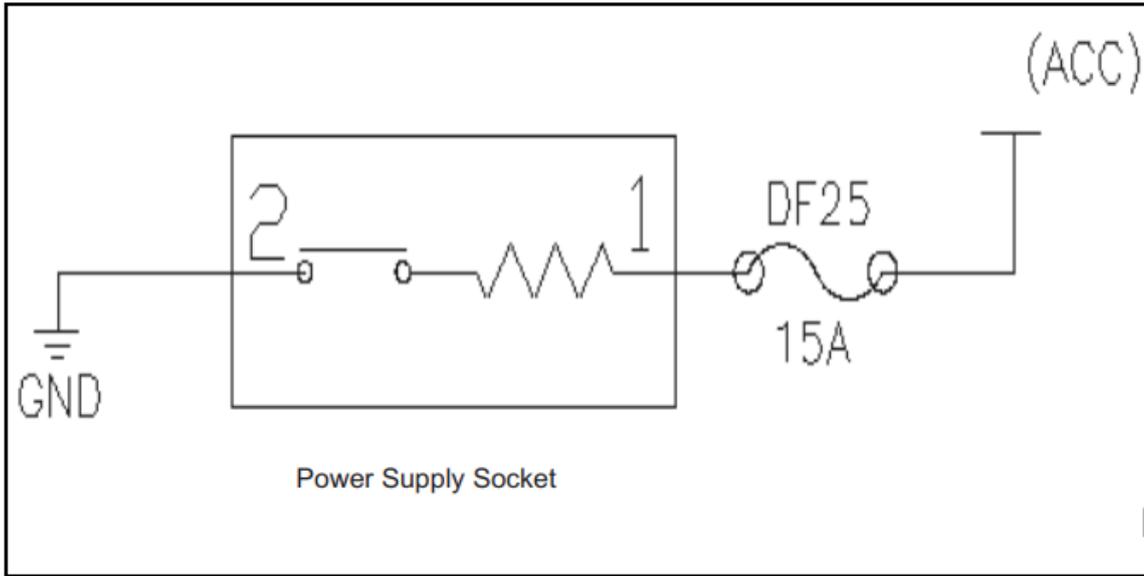
Component position diagram



Project	Description	Project	Description
1	USB data interface	3	USB charging interface
2	TF card slot	4	12 V power socket

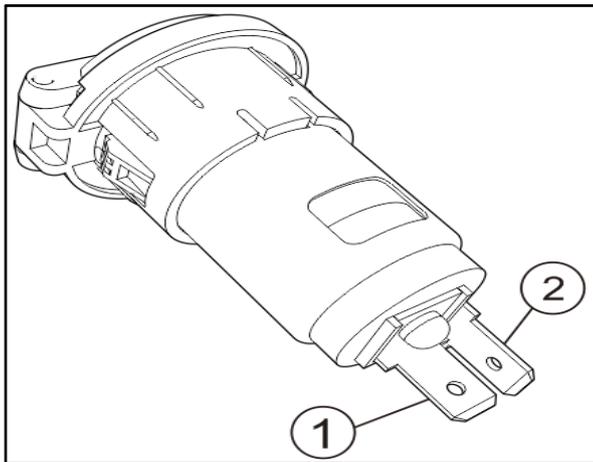
Schematic diagram of system circuit:

Power socket



Pin pin definition

Power socket



Pin	Function
1	Power supply
2	Ground

Fault phenomenon and diagnosis

General equipment

Digital multimeter

Diagnostic scanner

Inspection and confirmation

1. Confirm the customer's problem.
2. Visually inspect whether there are obvious traces of mechanical or electrical damage and whether there are obvious traces of collision deformation.

Mechanical part	Electrical part
<ul style="list-style-type: none"> • Accessory power supply 	<ul style="list-style-type: none"> • Fuse • Circuit • Accessory power supply

3. Check the system circuit which is easy to see or can be seen.
4. If the observed or raised problem is obvious and the cause has been found, the cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.

Fault symptom table

If the fault occurs but no DTCs are stored in the control module and the cause of the fault cannot be confirmed in the basic inspection, the fault diagnosis and rule out shall be performed according to the sequence listed in the following table.

Symptoms	Possible causes	Measures
Accessory power failure	<ul style="list-style-type: none"> • Fuse, circuit • Accessory power outlet 	Reference: Accessory power failure diagnosis process .

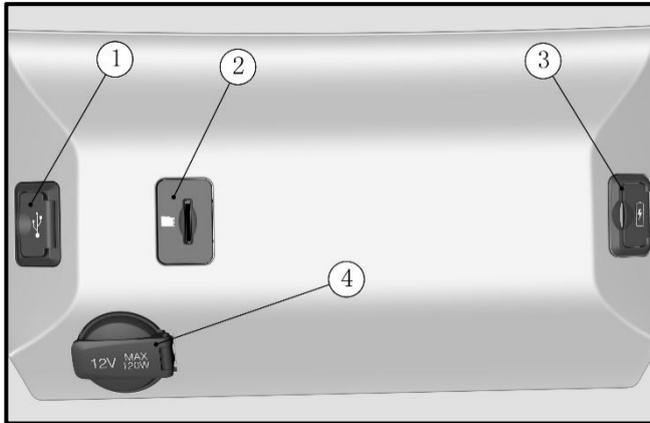
Power socket failure diagnosis process

Test conditions	Details/Results/Measures
1. Check battery voltage	
	<p>A. Check whether the battery voltage is normal.</p> <p>? Yes</p> <p>Go to step 2.</p> <p>? No</p> <p>Check the battery.</p>
2. Check power supply gear	
	<p>A. Confirm the vehicle key is turned to ACC or ON position.</p> <p>? Yes</p> <p>Go to Step 3.</p> <p>? No</p> <p>Turn the key to gear ACC/ON and check the cigarette lighter working status again.</p>
3. Check fuse	
	<p>A. Inspect whether fuse DF25 (15 A) in fuse box of instrument panel is broken.</p> <p>? Yes</p> <p>Replace the fuse.</p> <p>? No</p> <p>Go to Step 4.</p>
4. Check power outlet circuit	
	<p>A. In the state of gear ACC or ON, check the power terminal and grounding terminal of the instrument panel harness connected to the power socket.</p> <p>The power supply terminal shall have at least 9v voltage output, and the grounding terminal shall be well grounded.</p> <p>? Yes</p> <p>Replace the power outlet.</p> <p>? No</p> <p>Check the connection circuit between the power supply terminal and the battery and the connection circuit from the grounding terminal to the ground.</p>

Removal and installation

Removal

1. Disconnect the negative battery harness.
2. Use a suitable tool to remove the accessory power control panel.
3. Take out USB connector and accessory power supply.



Installation

The installation sequence is the reverse of the removal sequence.

4.2.3 Multimedia control system

Specifications

General specifications

Name	Working voltage	Rated current
Vehicle infotainment terminal assembly host power supply	9~16V	-

Torque specification

Name	Nm	lb-ft	lb-in
Onboard infotainment terminal assembly host mounting screws	6±1	-	-
Front speaker retaining screws	1.5±0.5	-	-
Rear speaker retaining screw	1.5±0.5	-	-
Tweeter attaching screw	1.2±0.5	-	-
Centre speaker retaining screw	1.5±0.5		
Surround speaker retaining screw	1.5±0.5		
Subwoofer retaining bolt	6±1		
External power amplifier assembly retaining nut	3±1		

Description and operation

System introduction

Onboard infotainment terminal assembly(With navigation)

The vehicle is in ACC or ON position, and the onboard infotainment terminal assembly enters the standby state. Insert a USB flash drive, and the host can be controlled through the display screen or the touch button below the display screen. Read the data in the USB flash drive to the host of the vehicle-mounted infotainment terminal assembly, and finally output through the display screen and various speakers.

The on-board infotainment terminal assembly (configuration with navigation) also features GPS navigation, which can receive 12 satellite signals. Generally, only 3-4 satellite signals need to be received to accurately calculate your exact position.

Component description

Speaker

The number of speakers is also different for different models:

1) 7 Speaker model: 2 front speakers are arranged in the front door; 2 rear speakers are arranged on the rear door; 2 tweeters are arranged on left and right A-pillar; One centre speaker is arranged on the upper dashboard. The loudspeakers of this configuration are driven by the infotainment terminal assembly.

2) 13 Speaker model: 2 front speakers are arranged in the front door; 2 front speakers and 2

tweeters are arranged on the rear door; The other 2 tweeters are arranged on the left and right A-pillar; One center speaker is arranged on the upper instrument panel; Arrange left and right C-pillar around speaker; One subwoofer is arranged in the rear hub bag position; One headrest speaker is arranged in the headrest of the driver's seat. The loudspeaker of this model is driven by external power amplifier assembly to sound.

External power amplifier assembly

External power amplifier assembly and vehicle infotainment terminal assembly can realize multimedia, navigation, Bluetooth and other related functions sound output through A2B and CAN channel. The external power amplifier assembly and combination instrument assembly can play the vehicle alarm sound through the CAN channel.

Driver fatigue detection camera

The driver fatigue detection camera is connected with the vehicle infotainment assembly through the coaxial line, and the data collected by the camera is then used to determine whether the driver is in fatigue or inattention based on the face recognition detection technology. Once the system detects that the driver is fatigue or distracted, the driver will be reminded in the instrument or vehicle infotainment terminal through text, animation and TTS voice broadcast.

Interior HD camera

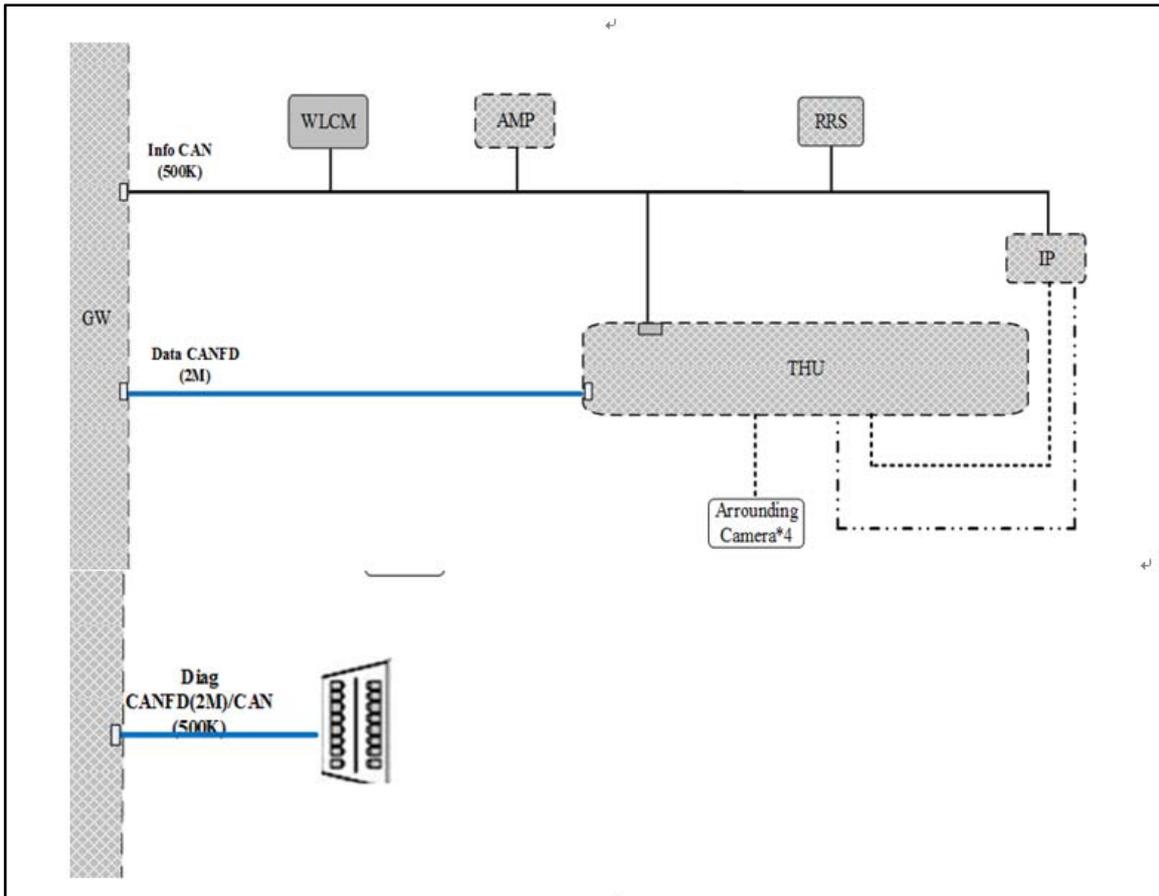
The high-definition camera in the vehicle and the infotainment assembly are connected through the coaxial line, the data collected through the camera, and then smoke detection, gesture recognition and photographing based on the algorithm.

AR camera

AR camera and vehicle-mounted infotainment assembly are connected through coaxial line, real-time video data in front of the vehicle is collected, and map application fuses the data captured by camera and map algorithm, which can directly present intuitive augmented reality guidance in real-time in photographed realistic road picture, and assist users to make action decision faster and more accurately in multiple key scenarios such as steering, fork, lane change and so on.

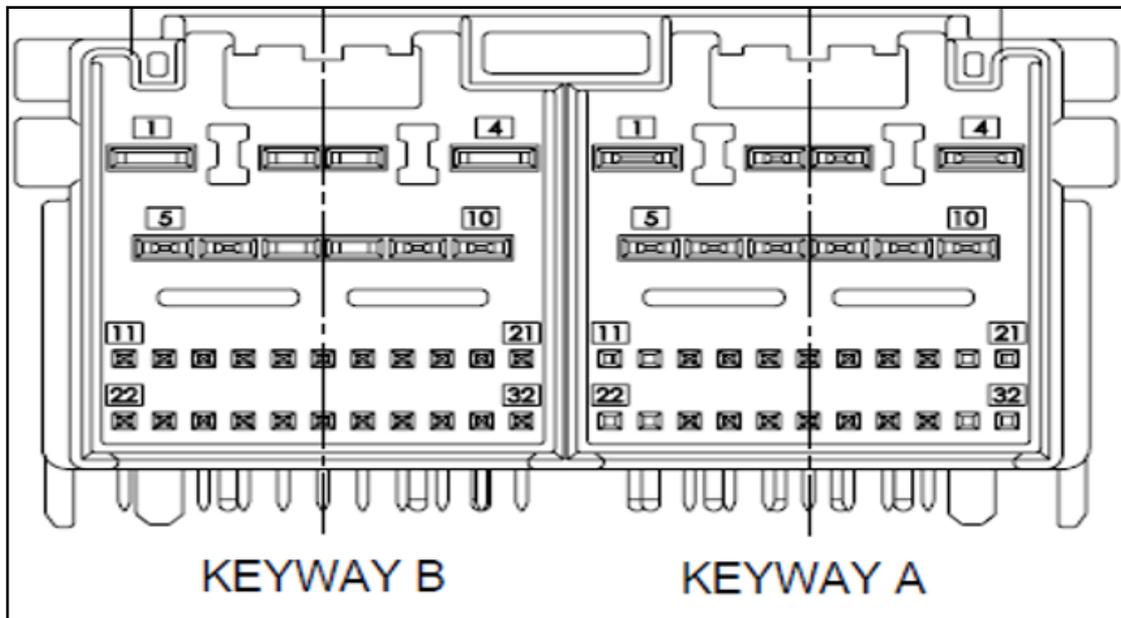
Steering wheel volume control switch

The steering wheel has volume control button, voice button and telephone button, etc. When different control switches are pressed, the onboard infotainment terminal assembly will carry out corresponding function operation according to CAN signal.



Interface definition

Main socket interface definition

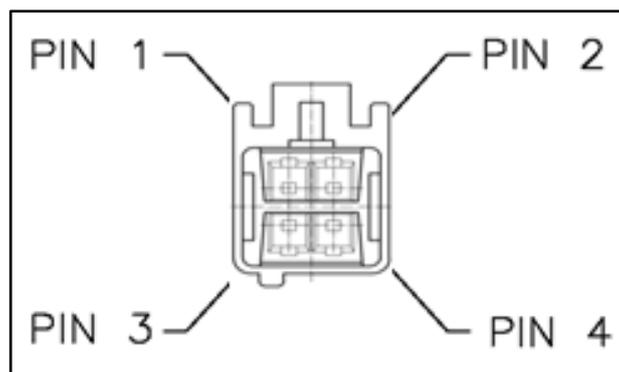


Pin	Function description	Signal type	Remarks
A1	Power supply GND	High level	
A2	FL+	Audio signal	Speaker
A3	FL-	Audio signal	
A4	B+	Low level	

A5	RL-	Audio signal	
A6	RL+	Audio signal	
A7	FR-	Audio signal	
A8	FR+	Audio signal	
A9	RR+	Audio signal	
A10	RR-	Audio signal	
A11	ACC	High level	Power supply
A12	/	/	
A13	Complete vehicle CAN_L	Communication signal	
A14	Complete vehicle CAN_H	Communication signal	
A15	Reverse triggering signal	High level	/
/	Private CAN_L	/	/
/	Private CAN_H	/	/
A18	Panoramic switch signal switching/blind area switching switch	Low level active	
A19	/	/	SD/AHD reversing camera. When the camera has only two wires: Video signal and video ground signal, A21 is not connected.
A20	/	/	
A21	/	/	
A22	/	/	SD/HD AHD backup camera powered by terminal
A23	/	/	SD/AHD reversing camera is powered by terminal
A24	/	/	/
A25	/	/	/
A26	/	/	/
A27	/	/	
A28	/	/	
A29	Microphone 1 signal	Audio signal	1. Auxiliary microphone, close to the passenger; 2. Use this microphone channel for voice;
A30	Microphone 1 signal ground	Signal ground	
A31	Microphone 2 signal	Audio signal	1. Master MIC, close to the driver; 2. Bluetooth telephone function and voice use this microphone channel, and the terminal has noise reduction processing;
A32	Microphone 2 signal ground	Audio signal ground	
B1	AI IR lamp power supply	Power supply	
B2	CR-	Audio signal	Center speaker
B3	CR+	Audio signal	
B4	AI infrared lamp power supply ground	Low level	
B5	/	/	/
B6	/	/	/
B7	/	/	/

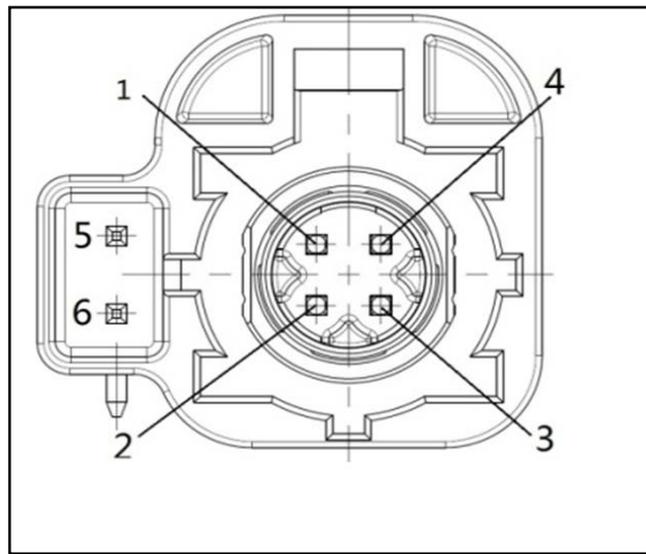
B8	/	/	/
B9	/	/	/
B10	Emergency_Record_SW	/	/
B11	/	/	/
B12	/	/	/
B13	/	/	/
B14	CAN_FD_L	/	/
B15	CAN_FD_H	/	/
B16	/	/	/
B17	/	/	/
B18	/	/	/
B19	/	/	/
B20	/	/	/
B21	/	/	/
B22	/	/	/
B23	/	/	/
B24	/	/	/
B25	/	/	/
B26	/	/	/
B27	/	/	/
B28	/	/	/
B29	/	/	/
B30	A2B_N	/	/
B31	A2B_P	/	/
B32	A2B_SHIELD_GND	/	/

USB interface definition(3: User, instrument, DVR)



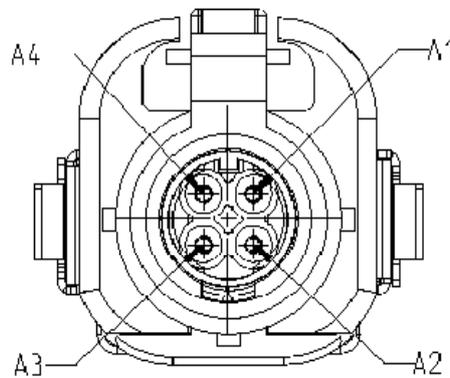
Pin	Pin function
1	USB_5V
2	GND
3	USB_DATA+
4	USB_DATA-
5	GND(Housing)

Central control display interface definition



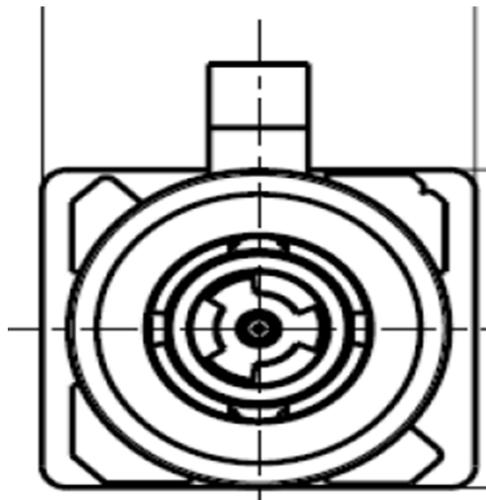
H1	LVDS signal	LVDS signal
H2	LVDS signal	LVDS signal
H3	LVDS signal	LVDS signal
H4	LVDS signal	LVDS signal
H5	TFT power supply	Power supply
H6	TFT supply ground	Power supply ground
H7	LVDS data line shielding ground	Low level

Definition of host to instrument LVDS interface



AD1	LVDS0_P	Map input	Differential signal
AD2	LVDS1_N	Map input	Differential signal
AD3	LVDS0_N	Map input	Differential signal
AD4	LVDS1_P	Map input	Differential signal
AD5	Ground(Housing)	LVDS shield ground	Low level

Definition of GPS antenna interface

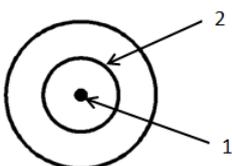


Q1	GPS signal, coaxial power supply +	RF signal/high level	GPS antenna
Q2	GPS signal ground	RF signal ground	

Built-in panoramic definition

T1	SPDIF IN 1	Video signal	Built-in AVM coaxial HD/AHD video input/HD reverse/HD blind area (1) (front)
T2	SPDIF SHIELD_GND 1	Low level active	
T3	SPDIF IN 2	Video signal	Built-in AVM coaxial high definition/AHD video input/high definition reverse/high definition blind area (2) (rear)
T4	SPDIF SHIELD_GND 2	Low level active	
T5	SPDIF IN 3	Video signal	Built-in AVMs coaxial HD/AHD video input/HD reverse/HD blind(3) (Left)
T6	SPDIF SHIELD_GND 3	Low level active	
T7	SPDIF IN 4	Video signal	Built-in AVMs coaxial HD/AHD video input/HD reverse/HD blind(4) (Right)
T8	SPDIF SHIELD_GND 4	Low level active	

Driver fatigue detection camera, in-vehicle HD camera, AR camera



U1	CAM IN 5	Video signal, coaxial power	Video signal
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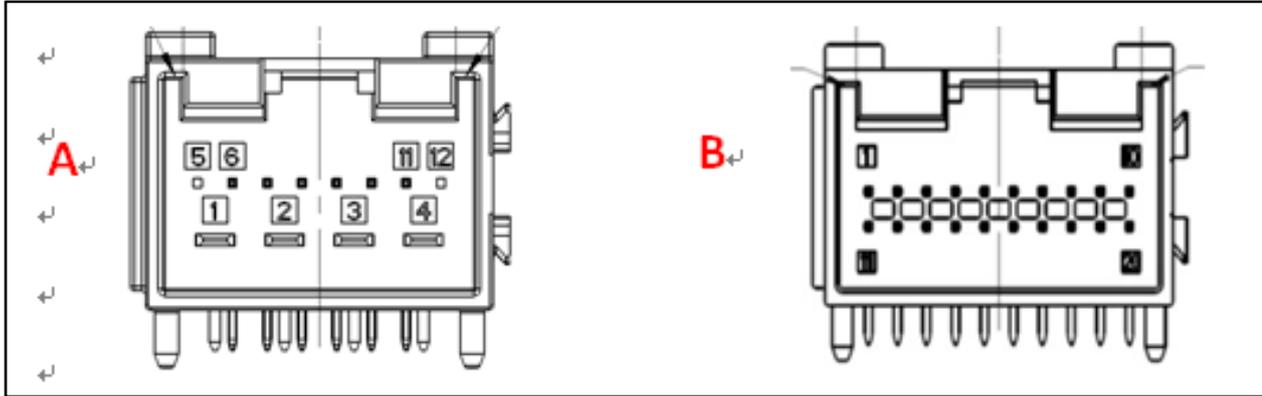
		supply +	
U2	CAM SHIELD_GND 5	Video signal shielding ground	Low level active

Driver fatigue detection camera color is coffee

Interior HD camera in red

AR camera in orange

Interface definition of external power amplifier assembly



Pin	Function description	Signal type	Remarks
A1	B+	Power input	
A2	B+	Power input	
A3	GND	Power GND	
A4	GND	Power GND	
A5	FR SP-	Audio Output -	Front right speaker
A6	FR SP+	Audio Output +	Front right speaker
A7	FL SP-	Audio Output -	Front left speaker
A8	FL SP+	Audio Output +	Front left speaker
A9	RL SP-	Audio Output -	Rear left speaker
A10	RL SP+	Audio Output +	Rear left speaker
A11	RR SP-	Audio Output -	Rear right speaker
A12	RR SP+	Audio Output +	Rear right speaker
B1	CTR SP+	Audio Output +	Center speaker
B2	SRD SP+	Audio Output +	Surround loudspeaker
B3	SUBW1 SP-	Audio Output -	Subwoofer
B4	SUBW1 SP+	Audio Output +	Subwoofer
B5	SUBW2 SP-	Audio Output -	Subwoofer
B6	SUBW2 SP+	Audio Output +	Subwoofer
B7	NC(TEST1)	DEBUG	
B8	A2B_GND		
B9	A2B_N	Audio input -	Vehicle
B10	A2B_P	Audio input +	Vehicle
B11	CTR SP-	Audio Output -	Center speaker
B12	SRD SP-	Audio Output -	Surround loudspeaker
B13	HRSPL-	Audio Output -	Headrest speaker
B14	HRSPL+	Audio Output +	Headrest speaker
B15	HRSPL-	Audio Output -	Headrest speaker
B16	HRSPL+	Audio Output +	Headrest speaker
B17	IGN		IGN line
B18	NC(TEST2)	DEBUG	
B19	CAN-		
B20	CAN+		

Fault phenomenon and diagnosis

Common troubleshooting methods

Display fault

Symptoms	Possible causes	Maintenance method
Display screen is black and cannot be turned on.	Fuse burns	Check the fuse of the vehicle system and replace it.
	Main socket A1, A4 corresponding harness fault	Measure the harness corresponding to pins A1 and A4 of main socket with a multimeter for short circuit, open circuit and looseness, and replace the harness if any.
	Faulty cable between display and host	Check the connecting line for missing assembly and looseness. If any, reassemble it again. Inspect the aging and poor contact of the connecting wire, if any, replace the connecting wire. Remove the connecting wire, measure it with a multimeter for short circuit and open circuit, if any, replace the connecting wire.
	Display screen fault	Replace the test display. If the fault follows the display, replace the display.
	Vehicle fault	Exchange the test host. If the fault follows the host, replace the host.
Display blue screen, flower screen, white screen	Vehicle fault	Replace the test display. If the fault follows the display, replace the display.
	Display screen fault	Replace the test vehicle. If the fault follows the host, replace the host.
Display Splash	Display screen fault	Replace the test vehicle. If the fault follows the host, replace the host.
	Dimmer fault	Switch the test dimmer. If the fault follows the dimmer, replace the dimmer.
Touch failure	Vehicle fault	Replace the test display. If the fault follows the display, replace the display.
	Display screen fault	Replace the test vehicle. If the fault follows the host, replace the host.
Crash, restart	Battery voltage too low or too high	If the battery voltage of two multimeter drives is lower than 8V or higher than 16 V, do not handle the main unit, and check and repair the battery.
	Main socket A1, A4 power supply short circuit	Measure the wiring harness corresponding to pins A1 and A4 of main socket with a multimeter for short circuit, and replace if necessary.

	Vehicle fault	Replace vehicle
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GPS positioning problems

Symptoms	Possible causes	Maintenance method
Navigation cannot be positioned	There is no GPS signal at the vehicle position.	Without maintenance, the vehicle can drive out of no signal area.(Areas without signal or signal difference are generally: Garage, workshop, under viaduct, dense area of high building, tunnel, etc.)
	GPS antenna fault	Replace the test antenna. If the fault follows the antenna, replace the antenna.
	GPS feeder body section fault	Replace the test feeder. If the fault follows the feeder, replace the feeder.
	GPS feeder instrument panel section fault	Replace the test feeder. If the fault follows the feeder, replace the feeder.
	The output voltage of the host GPS socket is abnormal.	Use a multimeter to measure whether the voltage of No.1 pin of the host GPSsocket is 3.3 V-5.5 V. If not, replace the host. Note: For the model with TBOX, no voltage on pin No.1 of host GPSsocket is normal.
	Vehicle fault	Exchange the test host. If the fault follows the host, replace the host.
Slow search	GPS signal difference of vehicle location	Without maintenance, the vehicle can drive out of the signal poor area.(Areas without signal or signal difference are generally: Garage, workshop, under viaduct, dense area of high building, tunnel, etc.)
	GPS antenna fault	Replace the test antenna. If the fault follows the antenna, replace the antenna.
Path planning error	Old map	Network update map
No destinations found	Destination does not exist	No treatment
	Old map	Network update map

Playback problems of USB flash drive

Symptoms	Possible causes	Maintenance method
Unable to recognize USB flash drive	USB flash drive is damaged	Put the USB flash drive on other vehicles and observe its identification. If most vehicles cannot be identified, replace the normal USB flash drive for use.
	USB adapter cable fault	Dismantle the front panel of central control host, check whether there is missing and looseness between the USB adapter cable and the host, if yes, reassemble again. Exchange test adapter wiring, if the fault follows the adapter wiring, replace the component.
	Host fault	Exchange the test host. If the fault follows the host, replace the host.
The USB flash drive can be identified, but the music file cannot be identified.	Music file damaged Incompatible formats	Replace music files in common format without any treatment(MP3, WMA, APE, FLAC, etc.)

Sound abnormality

Symptoms	Possible causes	Maintenance method
No sound	Human click mute	Readjust volume
	Speaker fault	Swap the test speakers, if the fault follows the speaker, replace the speaker.
	Circuit fault between host and speaker	Remove the main socket B chamber socket, measure whether there is short circuit or open circuit in pin B1-B8 of harness end with a multimeter. If there is locking fault, replace the harness.
	Host fault	Exchange the test host. If the fault follows the host, replace the host.
Noise and broken sound	Speaker fault	Check the appearance of the speaker for appearance damage, etc.
	Host fault	Exchange the test host. If the fault follows the host, replace the host.

Vehicle entertainment terminal assembly DTC fault code list and simple troubleshooting method

Fault code	Meaning	Possible fault causes	Maintenance advice
B150016	THU voltage is lower than the limit value	THU voltage below specified threshold 8.5 V	The vehicle does not perform any treatment, and the maintenance battery reduces the output voltage to a reasonable range.
B150017	THU voltage is higher than the limit value	THU voltage is higher than the specified threshold 16.5 V	The vehicle does not perform any treatment, and the maintenance battery reduces the output voltage to a reasonable range.
U128088	Network bus drop	Hu receives Bus Off signal	Check the CAN bus, locate the node causing bus off and repair it.

DTC fault code list of external power amplifier assembly and simple troubleshooting method

Fault code	Meaning	Possible fault causes	Maintenance advice
B1F0016	Voltage below limit	1.Voltage <8.5 V, time >2000 ms 2.The non-Crank state lasts more than 500 ms	Maintain the battery to raise the output voltage to a reasonable range, voltage ≥ 8.5 V, time >2000 ms
B1F0017	Voltage above limit	1.Voltage >16.5 V, time >2000 ms 2.The non-Crank state lasts more than 500 ms	Maintain the battery to reduce the output voltage to a reasonable range, voltage ≤ 16.5 V, time >2000 ms
U1E8088	Bus off	1.Power supply voltage 8.5 V~16.5 V internal ≥ 500 ms; 2. Under the condition that the corresponding ECU has no successful communication, detect the disconnection status for 5 times continuously. (Can controller send and receive error counter > 255)	Check can bus, locate the node causing bus off and repair it.
B1F0D00	The external PA internal key components are faulty or the communication	External power amplifier fault	Replace external power amplifier

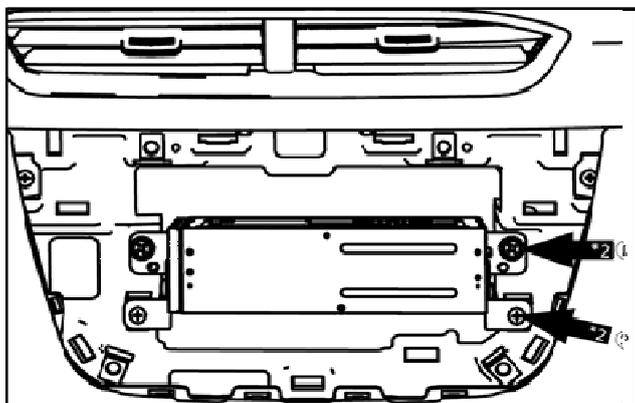
	between components is faulty. Such faults cannot be recovered by the external PA.		
B1F0F00	A2B Error	A2B channel error	Replace the vehicle and confirm. If there is any problem, replace the external power amplifier.

Removal and installation

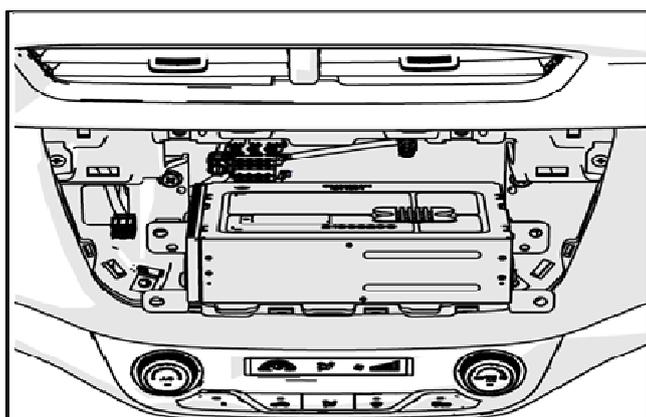
Onboard infotainment terminal assembly

Removal

1. Disconnect the battery negative harness.
Reference: 3.1.11 charging system
2. Remove auxiliary instrument panel assembly.
Reference: 4.1.1 Auxiliary instrument panel assembly
3. Remove the onboard infotainment terminal assembly host.
 1. Remove the four screws on the vehicle.
6N.m



4. Disconnect the harness plug connected to the vehicle infotainment terminal assembly, and remove the vehicle infotainment terminal assembly host.



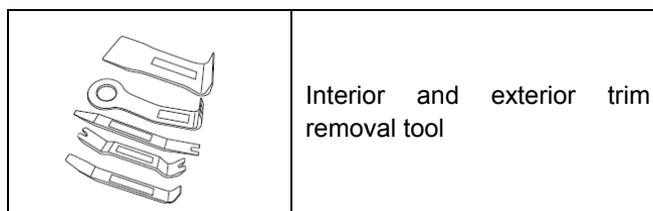
Installation

Install in the reverse order of removal.

Tweeter

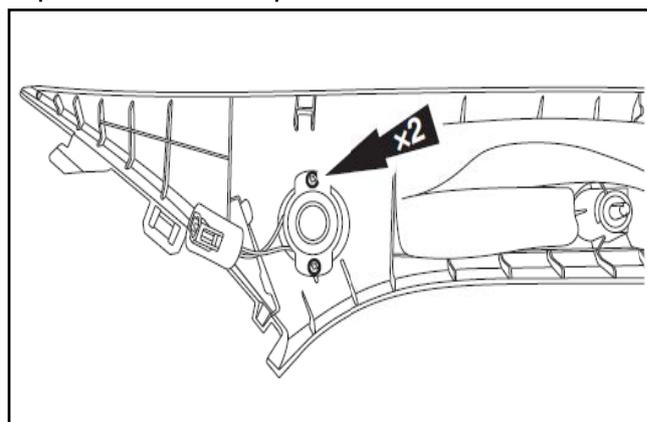
Removal

Tool

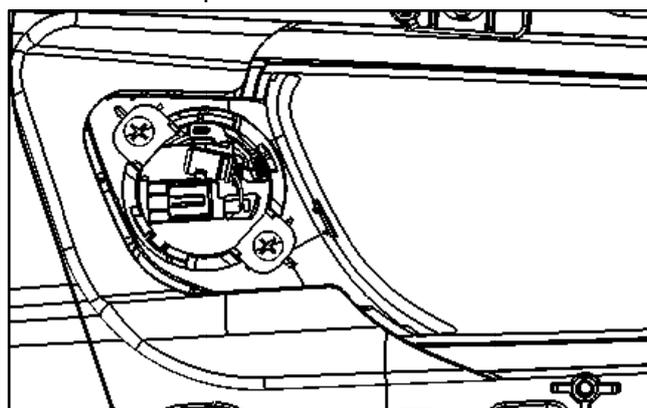


1. Disconnect the battery negative harness.
Reference: 3.1.11 charging system
2. Remove the upper trim panel of pillar A; For high configuration models, remove the rear door interior trim panel.
3. Remove the tweeter retaining screws and remove the tweeter.

A-pillar interior trim panel tweeter:



Rear door trim panel tweeter:



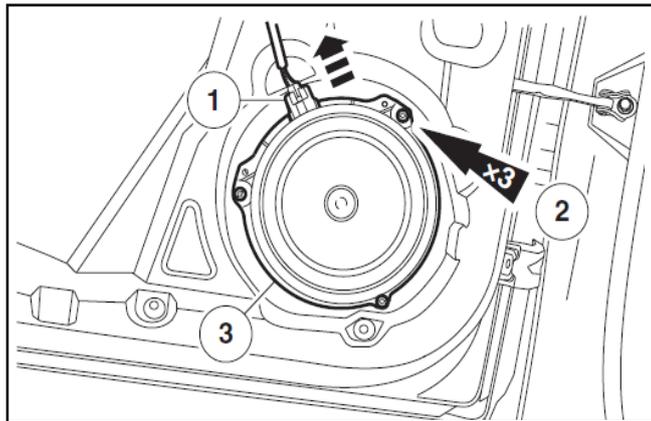
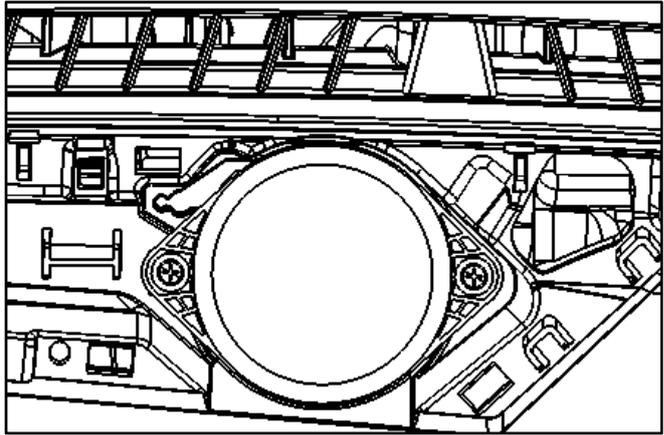
Installation

Install in the reverse order of removal.

Front and rear speakers

Removal

1. Disconnect the battery negative harness.
Reference: 3.1.11 charging system
2. Dismantle front door interior trim panel.
3. Disconnect front and rear speaker harness connectors.
4. Remove retaining screws of front and rear speakers.
5. Remove the front and rear speakers.



Installation

The installation sequence is the reverse of the removal sequence.

Center speaker

Removal

1. Disconnect the battery negative harness.
Reference: 3.1.11 charging system
2. Remove the dashboard center speaker cover.
3. Disconnect the center speaker harness connector.
4. Remove the retaining screws of center speaker.
5. Remove the center speaker.

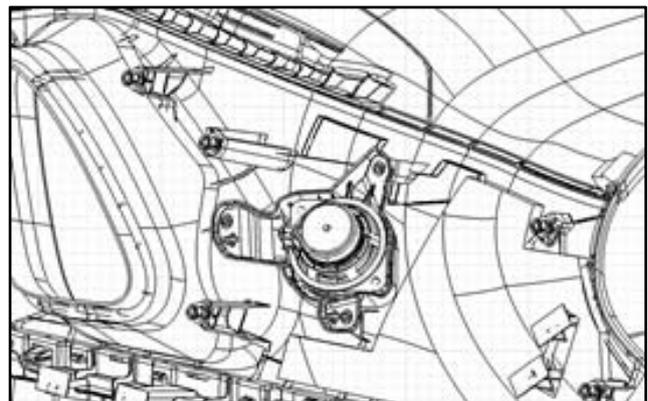
Installation

The installation sequence is the reverse of the removal sequence.

Surround loudspeaker

Removal

1. Disconnect the battery negative harness.
Reference: 3.1.11 charging system
2. Remove the C-pillar interior trim panel.
3. Disconnect the surrounding speaker harness connector.
4. Remove the retaining screws around the speaker.
5. Remove the surround speaker.



Installation

The installation sequence is the reverse of the removal sequence.

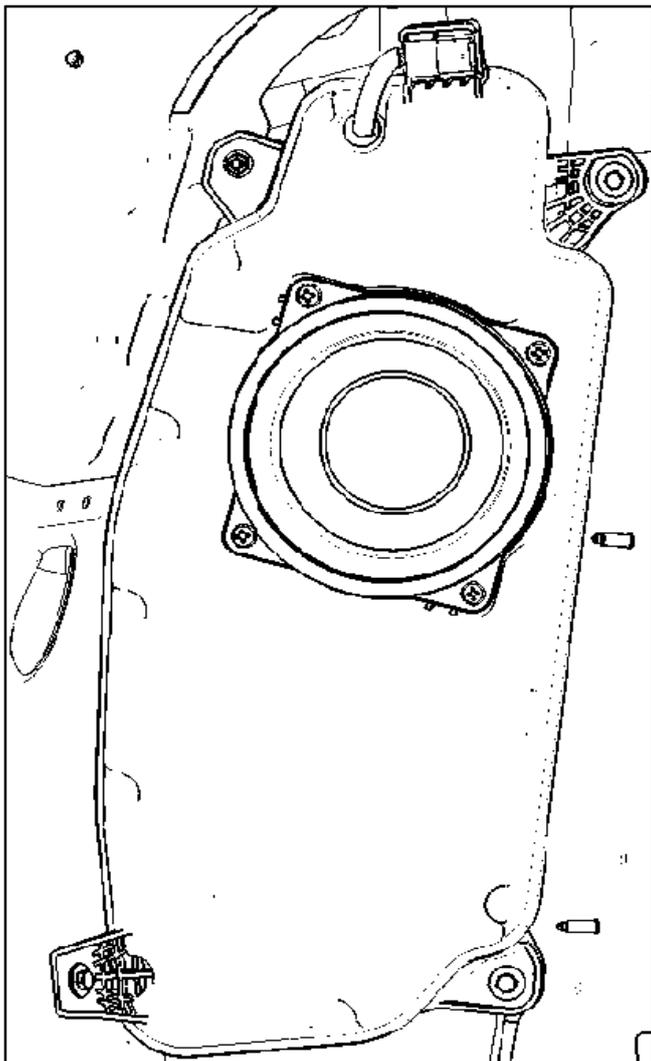
Subwoofer

Removal

1. Disconnect the battery negative harness.

Reference: 3.1.11 charging system

2. Remove the subwoofer cover.
3. Disconnect subwoofer harness connector.
4. Remove retaining bolts of subwoofer.
5. Remove subwoofer.



Installation

The installation sequence is the reverse of the removal sequence.

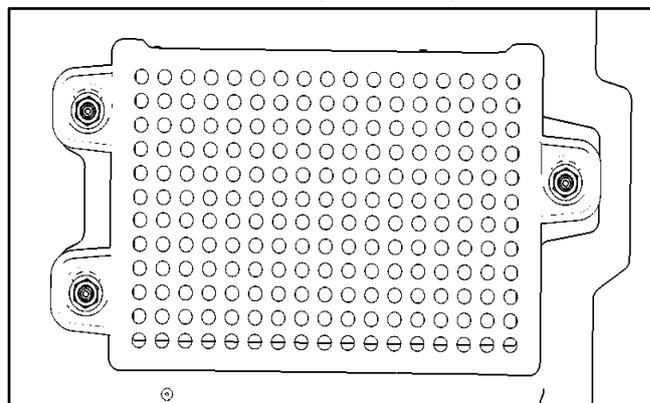
External power amplifier assembly

Removal

1. Disconnect the battery negative harness.

Reference: 3.1.11 charging system

2. Remove the driver's seat assembly.
3. Cut the floor carpet under the driver's seat.
4. Remove retaining nuts of external power amplifier.
5. Remove the power amplifier heat shield.
6. Disconnect the external power amplifier connector.
7. Remove the external power amplifier.



Installation

The installation sequence is the reverse of the removal sequence.

GPS antenna

Installing and removing

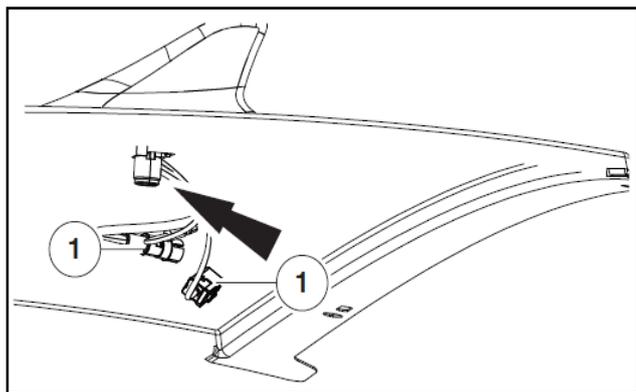
1. Installation is the reverse of removal.
2. Disconnect the battery negative harness.

Reference: 3.1.11 charging system

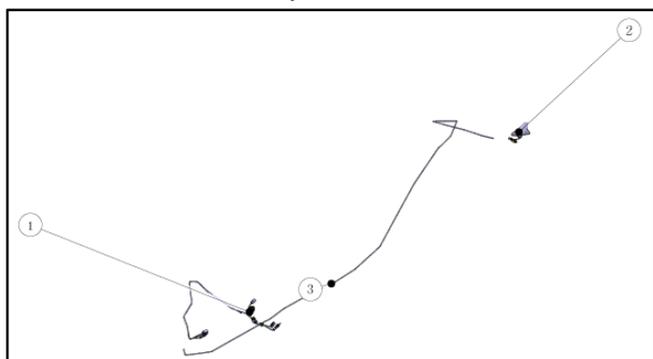
3. Remove the driver front windshield cover.

Reference: [5.3.4 Middle interior trim](#)

4. Disconnect connector 1 between GPS antenna and feeder.
5. Remove the GPS antenna. Line.



GPS line direction: 2 is GPS antenna, 3 is GPS antenna body section and 1 is GPS antenna instrument panel section.



4.2.4 TBOX and Internet of Vehicles

Specifications

Currently, 4G module is integrated in THU. For detailed specifications, see section THU.

Description and operation

System introduction

Remote control and inquiry

Remote control and inquiry function can realize real-time remote control of vehicle, remote control of seat, remote control of air conditioner and query of vehicle condition data, etc. This function shall be used together with in Call remote assistant mobile phone APP.

For other functions, refer to section THU System Introduction.

Fault phenomenon and diagnosis

Common troubleshooting methods

APP prompts network abnormality

Fault symptom	Diagnosis and test
APP remotely unlocks, APP always prompts: Network is abnormal. Other functions of remote control are normal	Read THU fault code with diagnostic scanner. If the fault code shows that the BCM node is lost, please check the maintenance manual.
APP starts the engine remotely, and the APP always prompts that the network is abnormal. Other functions of remote control are normal	Read THU DTC with diagnostic scanner. If DTC shows PEPS node is lost, please check PEPS service manual.
Use APP to find vehicle remotely, APP always prompts: Network is abnormal. Other functions of remote control are normal	Read THU fault code with diagnostic scanner. If the fault code shows that the BCM node is lost, please check the maintenance manual.
Both the mobile terminal and the vehicle are in the environment with good network signal and the background is not in the state of stopping service. The vehicle is in the environment with good GPS signal. Operate the APP for remote positioning. The APP prompts: Failed to obtain the position information, which is displayed as the previous position information. Remote control function is normal	Switch the complete vehicle power supply to ACC gear, check the SOS indicator lamp status on the top lighting lamp and GPS signal strength displayed on the vehicle HU, and take corresponding measures according to the following phenomena: (1) If the indicator flashes and the GPS signal strength is normal, replace the navigation signal splitter.
	If the indicator lamp flashes and the GPS signal strength is not available, replace the navigation signal splitter; If the problem still exists, replace GPS antenna.
	(3) If the indicator lamp is always on and the GPS signal strength is normal, perform TBOX replacement.

(4) If the indicator lamp is always on and the GPS signal strength is not available, replace the navigation signal splitter; If the problem still exists, replace GPS antenna.
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THU cannot be normally activated

On-board infotainment terminal assembly (THU) is shipped from the factory and the software is set to the transportation mode. Before 4S store sells out, it will guide the customer to do real name registration (you have two methods to bind the car: You can initialize the account information and bind the vehicle with the help of the service personnel at the authorized service network of Chang'an Automobile. 2. You can also choose to self-bind the vehicle according to the prompts in the "inCall" application) and the THU will be activated automatically after successful registration, i.e. the Internet of Vehicles service will be activated. If the THU is not activated, it will be seen that the customer's mobile phone logs in to the APP (incall remote assistant) and prompts "Please be sure to perform the activation operation when the vehicle is in the ignition state and click to activate." Then start the vehicle for ignition 5~ 10 min and "click to activate" on the APP to activate the 4G function.

If the equipment is in transport, the following operations need to be attempted on the equipment:

- a) Power off the THU and connect it after one minute.
- b) If the mobile phone APP still cannot display the vehicle status after the above operation, repeat the above operation, and check whether the signal of mobile phone is good at the same time. If not, please drive the vehicle to the open area with good signal and repeat step a, b).
- c) If the above methods fail to be activated successfully, please determine the mobile network condition of the vehicle location, determine that there is no problem, and contact the designated personnel of car pin for assistance.

THU Unable to connect

Under normal circumstances, THU cannot be connected means that the function that needs to be connected through 4G cannot be used. This includes but is not limited to the following:

- 1) Vehicle WIFI cannot be used
- 2) Vehicle machine system cannot use online map, online music and other network connection functions
- 3) When using mobile APP for remote operation, APP will prompt network error.

.....

In case of non-THU hardware damage, if it is found that the network cannot be connected, the following steps can be taken for troubleshooting:

a) Check whether the THU fuse is normal. If the fuse is blown, please replace the fuse. When the fuse is normal, unplug the THU connector, and measure pins 4 (battery supply pin) and 1 (GND) of the THU harness with a multimeter. If the voltage is lower than 6V, please troubleshoot the vehicle harness and battery faults. If none of the above is correct, follow up.

b) Check whether the binding between the THU frame number and the owner is realized through real name registration and certification, and the detailed information can be inquired through the Chang'an background. In case of non-real name authentication, THU cannot realize networking. Ask the owner to bring relevant certificates to the 4S store or contact Chang'an Customer Service for real-name authentication through customer service guidance.

c) : If the THU has been authenticated and registered with the real name, it still cannot be connected, try to power on the whole vehicle again after cutting off the power, or wait for the whole vehicle to wake up after sleeping, and re-connect the network. There is occasional situation (environmental impact) in

which the THU cannot be connected, but the probability of this situation is extremely low. Unable to connect to the network after multiple attempts, perform d actions.

d) : If there is no abnormality according to the above steps, you can dial Chang'an customer to inquire about THU package information (flow information), and move the vehicle to the region with good signal to try again.

According to the above steps, it is found that there is still a problem, which can be considered as THU hardware damage. You can apply for after-sales replacement.

Troubleshooting method of value-added service abnormality

1). Value-added service not available

a) Check the APP to confirm whether the value-added service expires. Please renew the fee upon expiration; If not, perform operation b

b) Check online map and voice online query function. If the problem is normal, feed back the problem to the 4S store, and the 4S store will feed back the problem to the customer service system for handling (VIN, vehicle version information, problem screenshot, problem description, problem occurrence time, 4S store name, 4S store contact number, seven elements are archived and sent to the mailbox: service@changan.com.cn). If the problem is not normal, power off and restart (first confirm whether the vehicle THU is dormant. In this case, ignite and start the vehicle to try again. If the condition is not effective, plug in the THU fuse or power off and restart the vehicle; Check the update time of APP data. If the time is real-time, it indicates that THU wakes up successfully. In case of unsuccessful wakeup, the store shall inquire the card status and contact the customer service system for handling if the card is "stopped").

c) Power off for 10 min and restart the vehicle THU. If not, upgrade the latest vehicle system. If none of the above schemes is effective, feed the problem back to the 4S store, and then feed the problem back to the customer service system for processing.

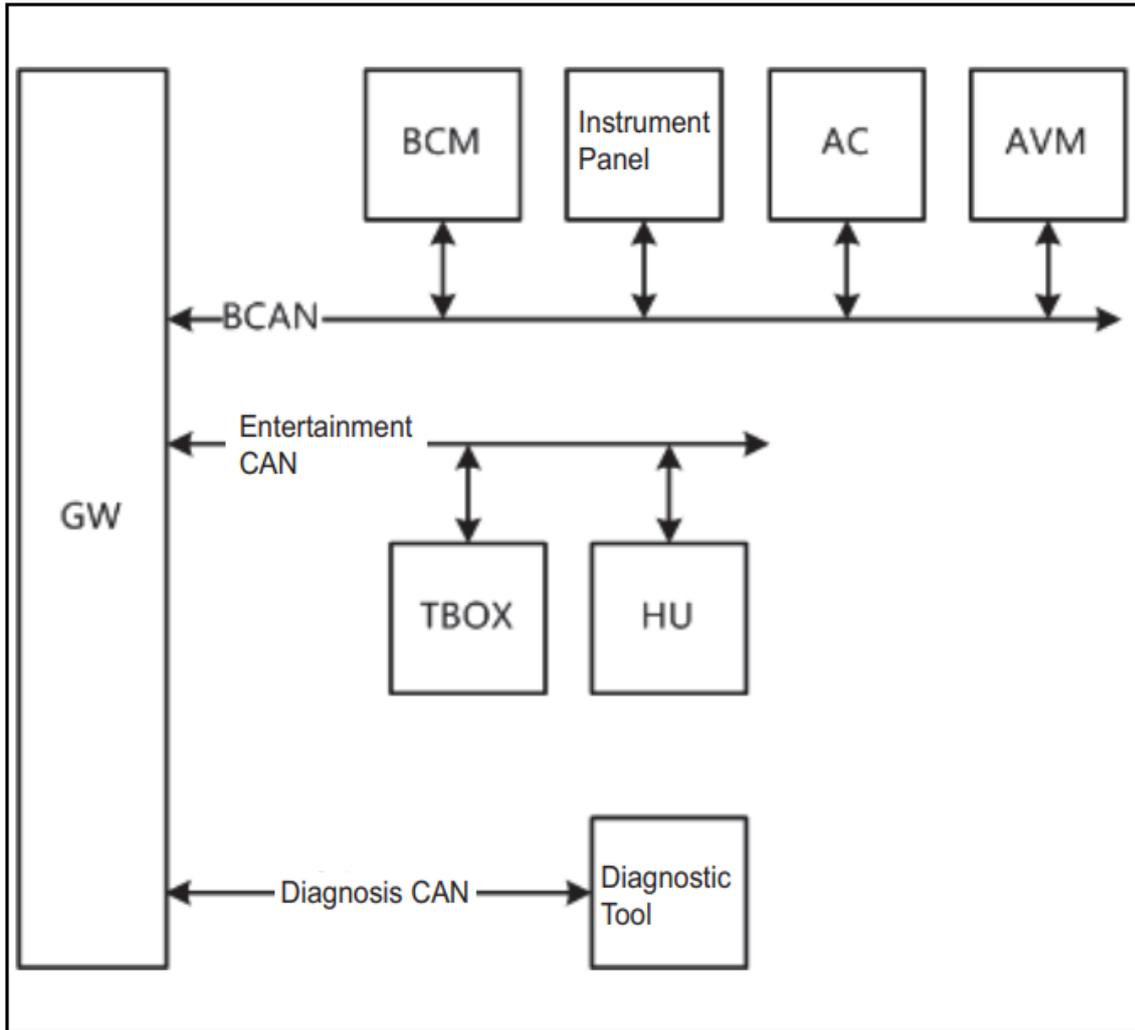
2). Value-added service is not presented

Wait for two hours before viewing. If the problem is still not presented successfully, feed back the problem to the 4S store, and the 4S store will feed back the problem to the customer service system for handling (file the VINs, vehicle version information, problem screenshot, problem description, problem occurrence time, 4S store name, 4S store contact number, and seven elements to the mailbox: service@changan.com.cn).

3). Equipment status problem

If the card is stopped, contact the background technician to reset the SIM card status.

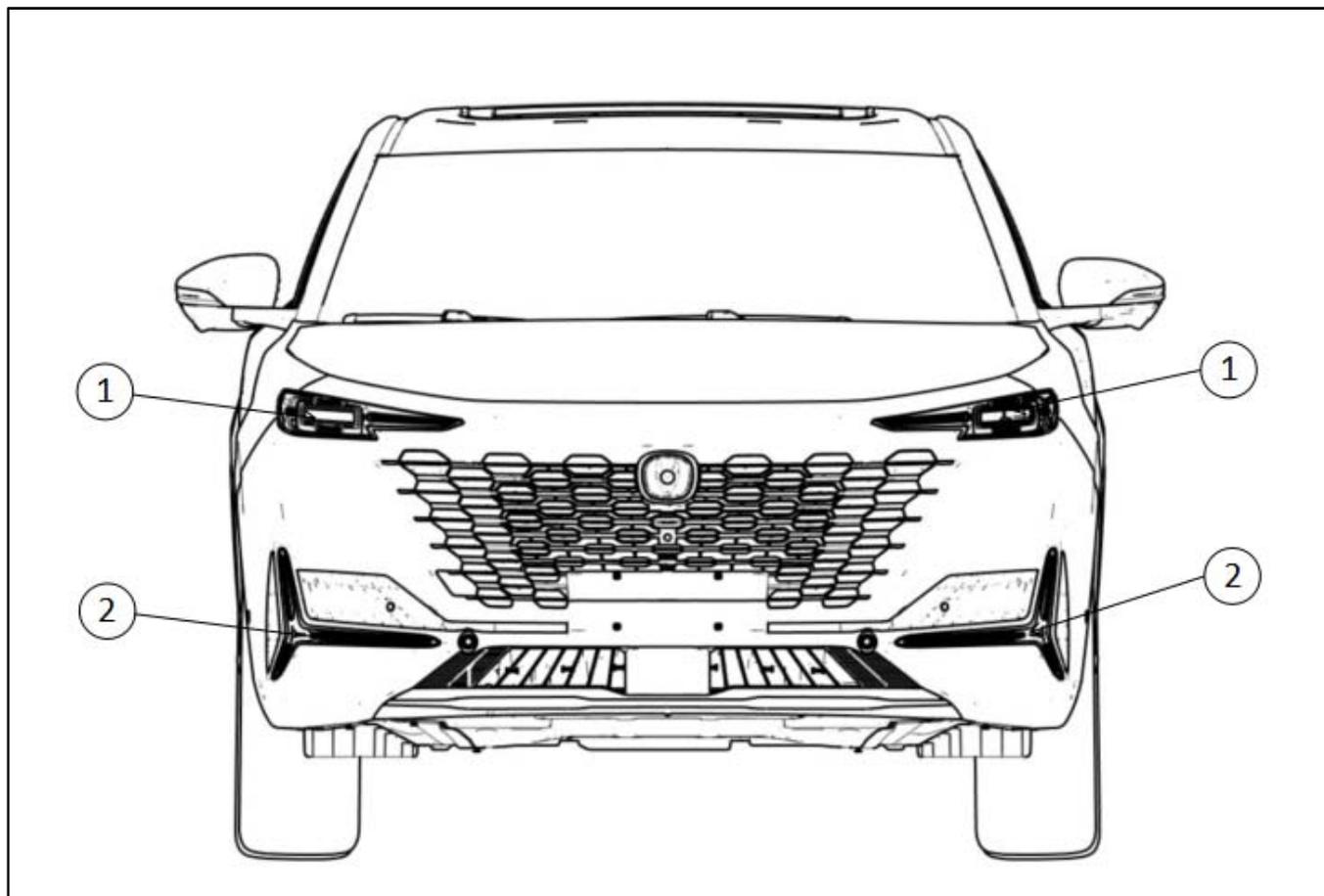
Please contact the 4S store for assistance in handling common user networking problems and value-added service problems, and the 4S store end after-sales feedback problems shall be sent to the customer service system of Chang'a for assistance in solving the problems. Relevant personnel at the 4S store end may inquire about the conventional question answering and value-added service question answering in the customer service system/Help/IN Encyclopedia of the 4S store (see the figure below).



4.2.5 Lighting system

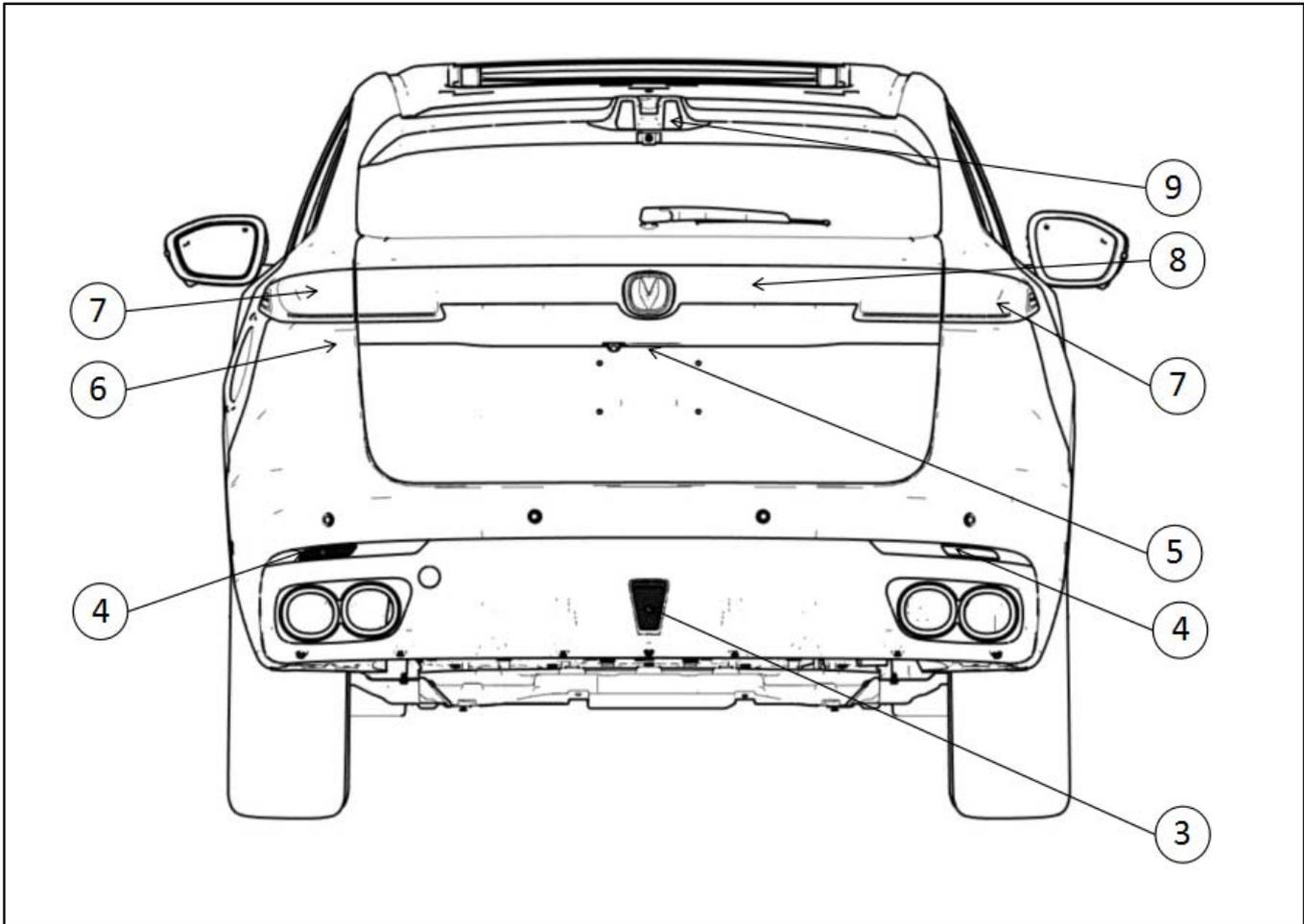
Component position diagram

Front light position diagram



Project	Description	Remarks
1	Combination front lamp assy. I	
2	Combination front lamp assy. II	L3.2\L4 equipped

Rear light position diagram



Project	Description	Remarks
3	Rear fog lamp assembly	
4	Combination rear lamp assembly III	
5	License plate lamp and switch assembly	
6	Trunk lamp assembly	
7	Combination rear lamp assembly I	
8	Combination rear lamp assy. II	
9	High-mounted brake lamp assembly	

Specifications

Component specification

Component name	Power	Model
Combination front lamp assy. I - low beam lamp	41W	LED
Combination front lamp assembly I - high beam lamp	28W	LED
Combination headlamp assembly I - front turn signal lamp	14W	LED
Combination front lamp assembly I - daytime running lamp	28W	LED
Combination headlamp assembly I - front position lamp	5W	LED
Combination front lamp assembly II - daytime running lamp	12W	LED
Combination headlamp assembly II-- front position lamp	2.4W	LED
Combined rear lamp assembly I - rear turn signal lamp	8.1W	LED
Combination rear lamp assembly I - rear position lamp	2.7W	LED
Combination rear lamp assembly I - brake lamp	4W	LED
Combined rear lamp assembly II - rear turn signal lamp	8.1W	LED
Combination rear lamp assembly II - rear position lamp	12W	LED
Combination rear lamp assembly III- reverse lamp	16W	W16W
High-mounted brake lamp assembly	1.4W	LED
License plate lamp assembly	1W	LED
Rear fog lamp assembly	16W	W16W
Trunk lamp assembly	1W	LED



Note: The dimensions and photoelectric performance of all bulbs shall conform to GB/T 15766.1 -2008.

- **Combination front lamp assy. I(CR01)**

Combination headlamp assembly I Middle and high beam, low beam, front turn signal lamp, front position lamp and daytime running lamp are all LED;

- **Combination front lamp assy. I(CR02/03)**

Combined headlamp assembly I middle and high beam, low beam and front turn signal lamp light sources are all LED;

- **Combination front lamp assy. II**

The front position lamp and daytime running lamp light source of combination headlamp assembly II are LED.

- **Combination rear lamp assembly I**

The light sources of brake lamp, rear position lamp and rear turn signal lamp of combined rear lamp assembly I are all LED.

- **Combination rear lamp assy. II**

The light sources of reverse brake lamp, rear position lamp and rear turn signal lamp in combined rear lamp assembly II are all LED.

- **License plate lamp and switch assembly**

License plate lamp and switch assembly light source are LED.

- **Rear fog lamp assembly**

The rear fog lamp assembly light source is a bulb.

- **Trunk lamp assembly**

The light source of trunk lamp assembly is LED.

- **High-mounted brake lamp assembly**

The light source of high-mounted brake lamp assembly is LED.

Description and operation

System introduction

Headlamp control

Low beam control:

The power supply gear is in the ON and START state. If the position lamp switch and low beam switch are turned on, the IBCM drive illuminates the low beam. If the position lamp switch or low beam switch is turned off or the ignition switch is in the ACC/OFF state, the low beam lamp will be turned off.

High beam control

In the power supply position in ON and START state, only when the low beam switch is closed and the high beam is on and off, the high beam is on; Only when the low beam switch is turned off or the high beam switch is turned off, the high beam lamp is turned off; When the high beam switch is open, if the low beam switch is still closed, IBCM will continue to light the low beam.

Overtaking lamp control:

The power supply gear is in any gear, turn to the overtaking gear, and the IBCM control high beam lights up.

Welcome light:

The vehicle locks the anti-theft state, and after unlocking (including remote control, PE, Bluetooth and remote unlocking), the turn signal lamp operates once at normal frequency, and the external light displays the breathing effect or the specific time sequence lighting effect.

After the vehicle meets the locking conditions, and the position lamp is OFF and locked (including remote control, PE, Bluetooth and remote), the turn signal lamp operates at normal frequency twice, and the external light shows the breathing effect or the specific time sequence lighting effect.

Follow home lighting:

Mode 1: The power supply gear is in the off state, within 2s, the low beam lamp switch is from OFF→POS (small lamp switch) to low beam lamp (or →AUTO→ low beam lamp) →POS→OFF, and then the low beam lamp is delayed to turn off (the time can be set in the center of the multimedia display vehicle, 30 S by default);

Mode 2: The vehicle is in dark environment and meets the locking conditions. The dimming switch is in position AUTO. The multimedia display headlamp delay (follow-home lighting) is set to ON (default 30 s). After the blocking (including remote control, PE, Bluetooth and remote) completes the sending of guest lighting, the low beam delay goes out 30 s.

Position lamp control

If the power supply is in any gear, turn on the position lamp switch, and light the position lamp and interior background light; When the position lamp switch is off, turn off the position lamp and background light.

Automatic position lamp closing function:

The automatic switch-off position lamp function is activated when all of the following conditions are met at the same time:

- 1) Shift the power supply gear from non-OFF gear to OFF gear;
- 2) Position lamp switch is on;
- 3) Emergency alarm lighting function is not activated;

The position lamp is automatically switched off after a delay of 10 minutes after the automatic switching off position lamp function is activated. The automatic switch-off position lamp function exits when any of the following conditions are met:

- 1) Power supply gear changes;
- 2) Position lamp switch changes;

3) Emergency warning light is activated.

Automatic light

When the power supply gear is ON or START and the automatic light switch is turned on, the low beam and position lamps are on immediately in the following conditions: The light switch request signal state output by the light sensor is light on; The low beam and position lamp are off under the following conditions: Stop the low beam relay and position lamp relay when the lighting switch request signal output by the lighting sensor is applied.

When BCM receives rain ambient light sensor fault or light sensor fault or rain ambient light sensor node is lost, it is light sensor fault at this time. BCM illuminates position lamp and low beam lamp, forwards the signal to instrument, and prompts driver with text on instrument. BCM needs to record the fault information sent by rain ambient light sensor through LIN bus in the form of DTC.

Automatic high beam

When the vehicle power supply gear is ON or START, BCM will automatically turn on the high beam lamp when the following conditions are met:

- 1) The automatic high beam function sent by LAS is on;
- 2) Automatic light controlled by BCM is active and low beam is on
- 3) Overtaking lamp switch is off
- 4) After 3 seconds from activation to off of overtaking lamp
- 5) After three seconds from non-AUTO to AUTO.
- 6) Automatic headlamp status sent by LAS is valid.

Exit the automatic high beam function when any of the above conditions are not met.

Brake lamp control

Bcm controls brake lamp on and off according to collected brake signal of brake switch, brake lamp on request signal from EPB on CAN bus or electronic control deceleration function status signal from ESP.

Rear fog lamp

Rear fog lamp: When the power supply gear is in ON or START position, the rear fog lamp will be on when the low beam lamp is on (not following home) or the high beam lamp is on (not passing light) or the front fog lamp is on for the first time when the rear fog lamp switch is turned on (the rear fog lamp switch is active at this time); When the position lamp goes out or the rear fog lamp switch is toggled again (the rear fog lamp switch is canceled at this time), or the gear is from ON→ACC to ON→OFF, the rear fog lamp goes out. After the rear fog lamp goes out, the rear fog lamp switch is regarded as canceled. If it is necessary to turn on the rear fog lamp again, it is necessary to toggle the rear fog lamp switch again when the rear fog lamp is on. If the rear fog lamp switch is toggled without meeting the conditions for the rear fog lamp to illuminate, its status is deemed invalid.

Vehicle searching light

When the ignition key is removed and the four doors are locked, if the same remote control key is pressed continuously for two times within 2s, the left and right turn signals are activated and flashing, and the electric horn sounds twice. Turn signal lamp goes out after 10 s. If the unlock key is pressed or the door is opened or the power supply gear is ON during this period, the left and right turn signals are switched to the corresponding flashing function.

Steering and hazard warning light

Turn signal lamp (Note: Sound of turn signal lamp is simulated by instrument)

Left turn signal lamp:

When the power supply position is in ON or START position, the left steering switch is activated, the left steering lamp is activated and flashes, and the flashing frequency is 360 ms-ON/360 ms-OFF; At the same time, the same frequency drives the external turn signal lamp sounding relay and the left turn indicator lamp on the instrument.

Right turn signal lamp:

When the power supply position is in ON or START position, the right steering switch is activated, the right steering lamp is activated and flashes, and the flashing frequency is 360 ms-ON/360 ms-OFF; At the same time, the same frequency drives the external turn signal lamp sounding relay and the left turn indicator lamp on the instrument.

Filament failure detection:

If the front turn signal lamp or rear turn signal lamp fails, the flashing frequency is 2 times normal. Flashing frequency is 160 ms-ON/160 ms-OFF; At the same time, the same frequency drives the external steering lamp sounding relay and the steering indicator on the instrument. The failure of the side steering lamps will not cause a change in frequency.

Lane change flash function:

When the power supply gear is in ON or START position, if the steering switch is set by OFF->ON->OFF within $100 \text{ ms} < t < 700 \text{ ms}$, the steering lamp on the corresponding side flashes for three times; Meanwhile, if there is $100 \text{ ms} < t < 700 \text{ ms}$ switch signal during three times of lamp flashing, BCM will not respond.

Hazard warning light:

If the emergency alarm switch is activated, the left and right turn signals flicker and the flashing frequency is 360 ms-ON/360 ms-OFF; If the hazard alarm switch is activated and pressed again, the hazard alarm flashing function is turned off. Activation of the emergency alarm signal is not controlled by the ignition switch.

Emergency brake alarm

Definition of emergency brake alarm function:(This function is turned off by default at delivery, and can be turned on after sales through diagnostic scanner.)

1. Function activation:

When the vehicle speed is greater than 96Km/h and less than or equal to 160 km/h, collect the vehicle speed at an interval of one second to calculate the deceleration. If the deceleration is greater than or equal to 6 m/s^2 , activate the emergency brake warning function, and the vehicle steering lamp flashes at the frequency of 160 ms on -160 ms off;

When the vehicle speed is greater than 160 km/h, collect the vehicle speed at an interval of one second to calculate the deceleration. If the deceleration is greater than or equal to 5 m/s^2 , the emergency brake alarm function is activated, and the vehicle steering lamp flashes at the frequency of 160 ms on -160 ms off.

2. Function cancellation:

There are two ways to cancel this function:

A. After the function is activated, collect the vehicle speed at an interval of one second to calculate the deceleration. If the deceleration is less than 2.5 m/s^2 , stop the emergency brake alarm function;

B. After the function is activated, the emergency brake alarm function can be stopped by pressing the emergency alarm switch. At this time, the turn signal lamp will flash at the frequency defined by the emergency alarm function;

Collision alarm:

When there is a collision signal (bus or hard wire), it is also necessary to activate the hazard alarm lamp. Press the emergency alarm switch 4 seconds after the signal is activated to terminate the hazard alarm lamp.

Turn signal activation priority

1. When the power supply position is in ON or START position, if the emergency alarm switch is

activated first and then the left or right turn signal switch is activated, the turn signal is preferred; If the left or right turn signal switch is activated first and then the emergency alarm switch is activated, the emergency alarm signal is preferred.

2. When the left/right lane change flashing function is activated, if the emergency alarm switch is activated again, the alarm signal will take precedence, and after the alarm signal is canceled, the flashing function will not be continued for three times until there is another activation signal.

3. When the left/right lane change flashing function is activated, if the right or left steering switch is activated again, the steering signal is first, and the left and right lane change flashing functions are canceled within 1s, and all the steering lamp switch signals of $100\text{ ms} < t < 700\text{ ms}$ are regarded as ordinary steering switch signals.

Except for the above three cases, the priority of turn signal is as follows:

- 1). Anti-theft alarm;
- 2). Emergency alarm;
- 3). Turn signal;
- 4). Unlocking/locking signal;
- 5). Central control mode change feedback signal;
- 6) Service mode(Learning key, etc.)

The frequency of each turn signal is 360 ms-ON/360 ms-OFF and the duty cycle is 50%.

Function	Frequency	Priority	Time	Duty cycle
Anti-theft alarm	360ms-ON/360ms-OFF	1	5 min	50%
Emergency alarm switch	360ms-ON/360ms-OFF	2		50%
Brake emergency alarm	160ms-ON/160ms-OFF	3		50%
Crash emergency alarm	160ms-ON/160ms-OFF	4		50%
Turn signal lamp	360ms-ON/360ms-OFF	5		50%
Low battery alarm	360ms-ON/360ms-OFF	6	9 times	50%
Unlock prompt	360ms-ON/360ms-OFF	7	1 time	50%
Locking prompt	360ms-ON/360ms-OFF	8	2 times	50%
Vehicle searching light	360ms-ON/360ms-OFF	9	10 seconds	50%
Exit anti-theft prompt	360ms-ON/360ms-OFF	10	4 times	50%

Dome lamp

The dome lamp turns on gradually:

The dome lamp turns on gradually: If the dome lamp switch is in gear door, the dome lamp is illuminated linearly within 1s under any of the following conditions;

1. Any door is opened (including trunk door).
2. The ignition switch is in off state, and press "unlock" button on the remote controller to

unlock the door, or use mechanical key or central control lock switch or receive "unlock" signal from PEPS on the bus to unlock the door.

3. The power supply gear changes from gear START/ON/ACC to gear OFF.

Dome lamp fade out:

When the dome lamp switch is in gear door under any of the following conditions, the dome lamp will extinguish linearly within one:

1. Without central control locking, all doors (including trunk door) are closed for 25 s. If the DOOR gear switch is turned off within this time, the dome lamp immediately goes out, and then the DOOR gear switch is turned on, and the dome lamp immediately lights up.
2. Power supply gear is OFF, all doors (including trunk door) are closed and the door is locked with central control lock switch.
3. The ignition switch is in the OFF position, and all doors (including trunk door) are closed, then press the "lock" button on the remote controller to lock the door.
4. The power supply position is in the off position, and the "lock" signal from PEPS on the bus is received to lock the door.
5. All doors are closed and power supply gear is in ON gear/START.

Power saving function

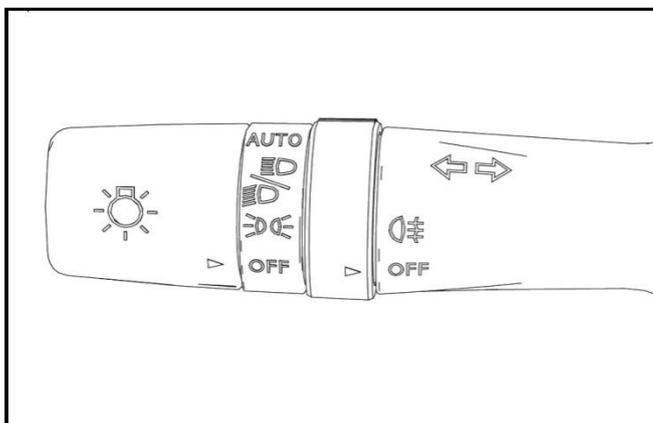
There are two cases:

1. The power supply gear is in the OFF state, and the dome lamp switch is in the non-OFF position. If the door is not related, the dome lamp will go out immediately after 10 minutes delay.
2. If the ignition key is removed (or the key is not detected), the dome lamp switch is in the ON position, and all doors are closed, the dome lamp goes out immediately after 10 minutes delay.

Trunk lamp

When the power supply is in any gear, open the trunk and the trunk lamp lights up.

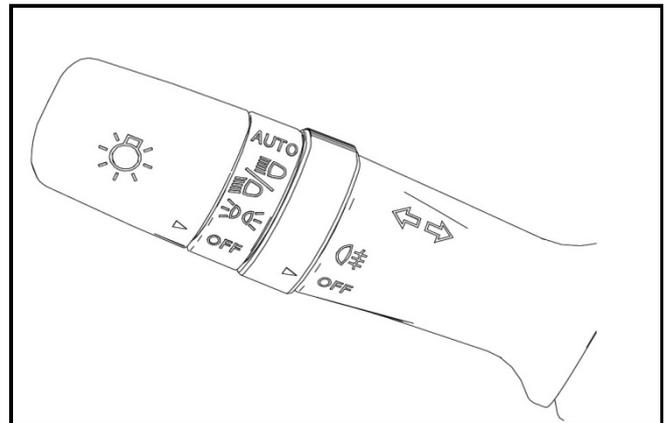
Combination switch light handle



The switch control lever is on the left side of the steering column. The high beam control lever has two gears. When the low beam is on, push down the control lever to the high beam position, the high beam is on, and the indicator on the instrument panel is on; After resetting, gently lift up to the dimming gear, which is dimming. The high beam flashes to be used during overtaking and reset immediately after releasing the hand.

Rear fog lamp switch: After the low beam or high beam is turned on, rotate the rear fog lamp switch to turn on the rear fog lamp; After the rear fog lamp switch is turned on, turn the rear fog lamp switch again to turn off the rear fog lamp.

Left and right turn signal lamps

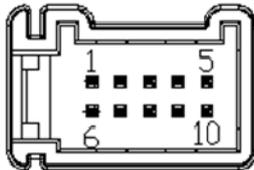


When the ignition switch is in the ON position, push the control lever to the right, and the right turn signal lamp flashes; Push the control lever to the left, and the left turn signal lamp flashes.

Note: When changing left and right lanes, gently push the control rod in the direction of lane change (control rod automatically returns).

Circuit schematic

Combination switch light end



引脚功能定义

PIN FUNCTION DISCRIPTION

引脚 PIN	功能 DESCRIPTION
1	小灯开关 / TAIL LAMP SW
2	灯光开关接地 / LIGHTING SW GND
3	自动大灯 / AUTO LIGHT SW
4	大灯开关 / HEAD LAMP SW
5	左转向灯开关 / T/SIGNAL LEFT
6	-
7	后雾灯开关 / REAR FOG SW
8	远光 / H/LAMP LOW BEAM
9	超车 / H/LAMP PASS BEAM
10	右转向灯开关 / T/SIGNAL RIGHT

开关通断图

TURN SIGNAL SWITCH CIRCUIT

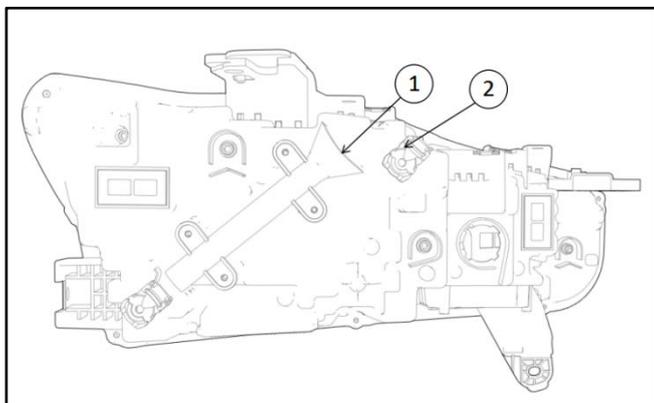
		端子定义 / PIN DEFINITION												
		1	2	3	4	5	6	7	8	9	10			
灯光开关通断 COMBINATION SW ASSY	关 / OFF													
	小灯 / TAIL LAMP	○	○											
	大灯 / HEAD LAMP	○	○		○									
	自动大灯 / AUTO LIGHT SW		○	○										
雾灯开关通断 FOG LIGHT	关 / OFF													
	前雾灯 / FRONT FOG LIGHT													
	后雾灯 / REAR FOG LIGHT		○	○	○	○	○	○						
远光超车通断 DIMMER & PASSING SW	关 / OFF													
	远光 / DIM		○	○	○	○	○	○						
	超车 / PASS		○	○	○	○	○	○					○	
转向开关通断 TURN SIGNAL & LANE CHANGE SW	左转向 / 变道 / TURN/ROAD LEFT		○	○	○	○								
	关 / OFF													
	右转向 / 变道 / TURN/ROAD RIGHT		○											○

Headlamp adjustment

Equipment

General equipment or tools
Headlamp Tester, Allen screwdriver

Adjustment instructions



The figure above shows the left headlamp, and the dimming point is

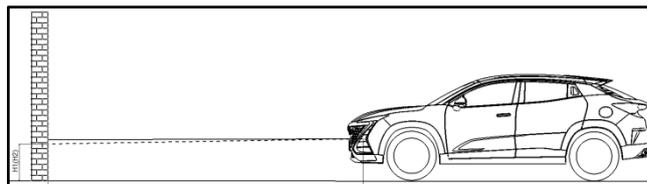
Serial number	Name	Remarks
1	Far/low beam horizontal dimming point	Right side symmetrical to it
2	Far/low beam vertical dimming point	Right side symmetrical to it

1 is the horizontal dimming point of the high/low beam. Rotate the low beam clockwise with an Allen screwdriver to move to the right and vice versa;(Right side symmetrical to it)

2 is the vertical dimming point of the high/low beam. Rotate the low beam clockwise with a hexagon socket screwdriver to move it downwards and vice versa;(Same on the right)

Preliminary work

The vehicle shall be parked on a horizontal ground, and the distance L between the headlamp reference center and the dimming screen (in case of headlamp tester, the distance required by the equipment shall prevail) shall be 5m or 10 m (if conditions permit, 10 m is preferred), as shown in the following figure;



Check whether the headlamp works normally and replace the damaged parts if necessary;

Turn on the headlamp low beam, toggle the dimmer switch to check whether the low beam moves up and down, and finally turn the dimmer switch back to "0";

Check the tire pressure to make it under full load pressure;

Adjust the vertical and horizontal dimming points several times to check whether the dimming function is normal;

In the case of no load (dead weight of empty vehicle), seat one person in the driver's seat or place 75 kg's articles;

Check the load (fuel tank filled with not less than 90% of its volume); If the fuel content in the fuel tank does not reach 90%, increase the load as follows:

Read the filling level of the fuel tank on the fuel gauge, derive the weight of the additional weight according to the table below, and then place the additional weight in the trunk.

Fill level displayed on the fuel gauge	Weight of additional weight Unit: Kg
1/4	30
1/2	20
3/4	10
Full	0

Example: If the fuel tank is 1/2, the additional weight of 20 kg must be placed in the trunk.

Light adjustment

Low beam adjustment steps are as follows:

1) Turn on the headlamp low beam, rotate the low beam vertical dimming point2, so that the ground height H1 of the low beam cut-off line turning point illuminated on the dimming screen is within the range required by the following table;

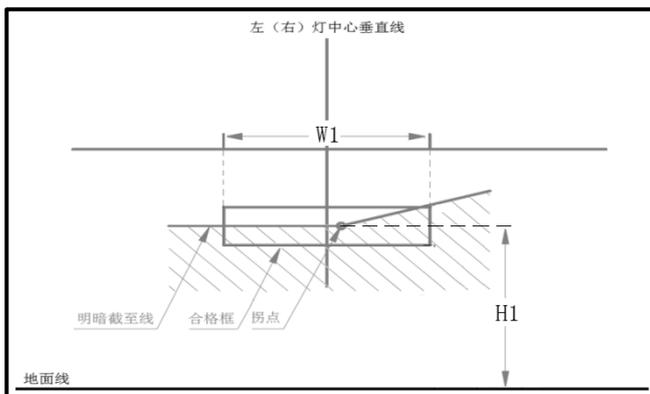
2) Rotate the low beam horizontal dimming point 1 so that the horizontal position W1 of the low beam cut-off line turning point illuminated on the dimming screen is shifted to the left or right within the range required by the following table. Refer to the following figure.

Distance from low beam reference center to dimming screen L	5m	10m
Ground height H 1 of low beam cut-off line turning point	900mm~915mm	835mm~865mm
Horizontal position of low beam cut-off line turning point	-25mm~25mm	-50mm~50mm

Note 4: Some astigmatism of low beam may be above the cut-off line;

Note 5: It may be necessary to perform vertical adjustment again after horizontal adjustment;

Note 6: After the low beam is adjusted in place, it is not necessary to adjust the high beam separately.



 Note 1: Make sure that the dimming switch gear is in gear 0 before headlamp adjustment;

Note 2: Replace the lamp if the lamp housing, lamp shade, reflector and installation support are broken and leaking;

Note 3: Description of water leakage: After lighting the lamp for 30 minutes, no water droplets can exist on the lamp shade, and water mist is allowed in the place where light is not available. It is normal if the above conditions are met;

Light combination switch check

Please turn the ignition switch to ON position for the following check

Phenomenon	Solution
1. Steering lamp switch problem	
	<p>A. Turn the combination switch to the left steering gear and right steering gear respectively, and check whether the combination switch pins 2 and 5 and 2 and 10 are connected respectively;</p> <p>? No Replace combination switch;</p> <p>? Yes Repair the turn signal lamp.</p>
2. dimmer switch problem	
	<p>A. Turn the combination switch to the high beam dimming position, and check whether the combination switch pins 2 and 9 are connected; Turn to overtaking gear and check whether combination switch 2 and 9 are connected;</p> <p>? No Replace combination switch;</p> <p>? Yes Repair the high beam.</p>
3. position lamp switch problem	
	<p>A. Turn the combination switch to the position lamp. Check whether combination switch pins 1 and 2 are turned on;</p> <p>? No Replace combination switch;</p> <p>? Yes Service position lamp.</p>
4. Low beam switch problem	
	<p>A. Turn the combination switch to the low beam (headlamp) position. Check whether combination switch pins 1, 2 and 4 are connected;</p> <p>? No Replace combination switch;</p> <p>? Yes Repair the low beam.</p>
5. Rear fog lamp switch problem	

	<p>A. Turn the combination switch to the low beam position. Turn the knob rear fog lamp switch position, and check whether combination switch pins 2 and 7 are connected;</p> <p>? No</p> <p>Replace combination switch;</p> <p>? Yes</p> <p>Repair rear fog lamps.</p>
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Fault symptom diagnosis and test

General equipment

Digital multimeter
Diagnostic scanner
Special tool for wiring harness maintenance

Inspection and confirmation

1. Confirm the customer's problem.
2. Visually inspect for obvious electrical faults and rule out bulb damage.

Visual Check List

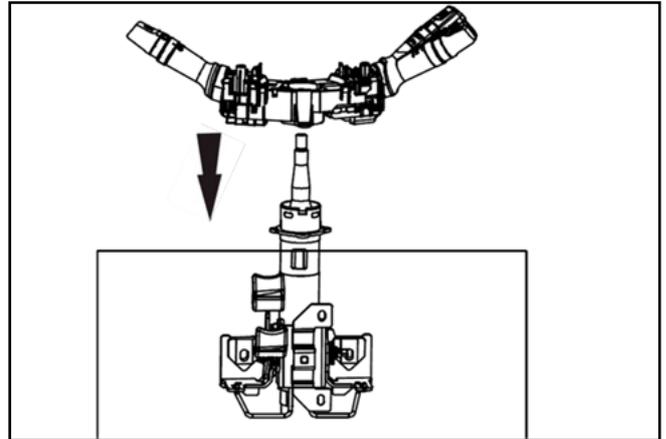
Electrical part
<ul style="list-style-type: none"> • Fuse • Circuit • Switch • Bulb

3. Check system lines that are easy to see or can be seen.
4. If the apparent cause of the observed or raised problem has been found, the cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.



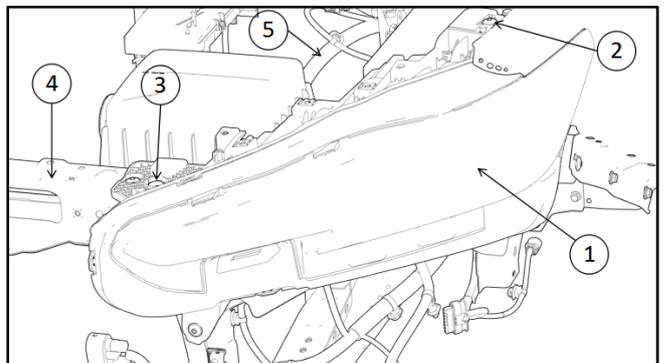
Note: Before replacing the bulb, confirm that the lamp switch has been turned off. Make sure to replace the new bulb with the same type and power as the old bulb.

Removal and installation Combination switch



1. Install the combination switch assembly on the steering column in the direction of arrow as shown in the figure, align the mounting hole, and then fix it with two screws.
2. Make sure the positioning direction of harness connector is consistent with the positioning direction of switch connector, and then align and insert. When the clamp springs up, the connector locking clip is assembled in place.

Combination front lamp assy. I



Serial number	Name	Quantity
1	Combination front lamp assy. I	2
2	Hexagon socket head bolt	8
3	Push screw	2
4	Body	1
5	Harness	1

4.2.5 -16

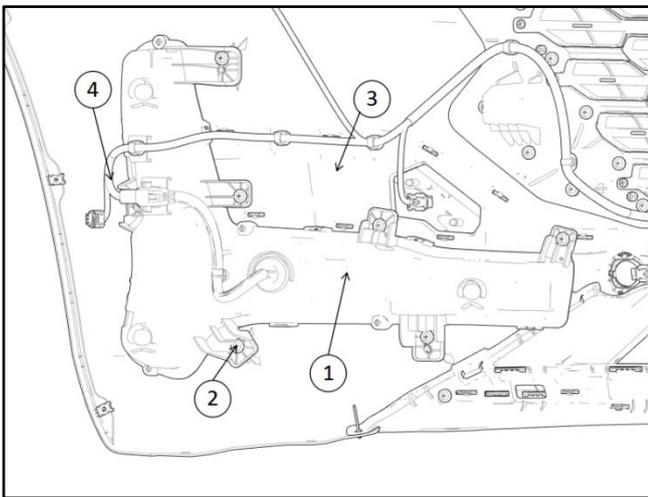
Lighting system

4.2.5-16

Assembly sequence (take the left lamp as an example, and the right lamp is symmetrical with it):

- Align 4 mounting points of combination headlamp assembly I with body mounting hole, and install 2 locating holes into body locating pin;
- Install 1 push screw and 4 hexagon socket head bolts;
- Connect the combination headlamp assembly I connector to the engine compartment harness.

Combination front lamp assy. II



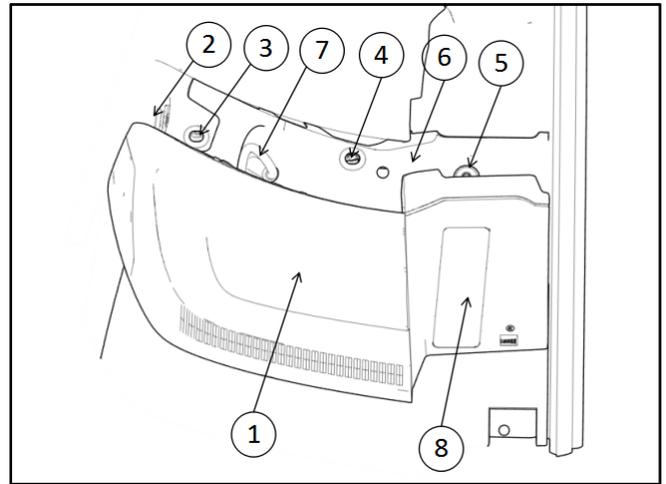
Serial number	Name	Quantity
1	Combination front lamp assy. II	2
2	Cross recessed pan head tapping screw	14
3	Front bumper	1
4	Harness	1

Assembly sequence (take the left lamp as an example, and the right lamp is symmetrical with it):

- Install the 2 locating holes of combination headlamp assembly II into the front bumper upper locating pin;
- Install 7 cross recessed pan head tapping screws respectively;

- Connect the combination headlamp assembly II connector and front bumper harness.

Combination rear lamp assembly I



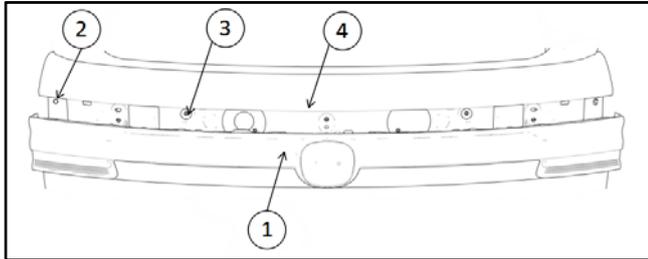
Serial number	Name	Quantity
1	Combination rear lamp assembly I	2
2	Buckle(09409-10102)	2
3	Buckle(09409-10105)	2
4	Buckle(09409-10104)	2
5	Hexagon socket head bolt	4
6	Body	2
7	Harness	1
7	Combination rear lamp assembly I cover plate	1

Assembly sequence (take the left lamp as an example, and the right lamp is symmetrical with it):

- Clamp three kinds of buckles into the body mounting holes respectively;
- Butt lamp end connector and floor harness connector;
- Install the combination rear lamp assembly I along the body direction, align the lamp locating pin and side clamping slot with the buckle respectively, and push forward to make the assembly in place;

- Tighten with two hexagon socket head bolts;
- Cover the rear lamp assembly I cover plate.

Combination rear lamp assy. II

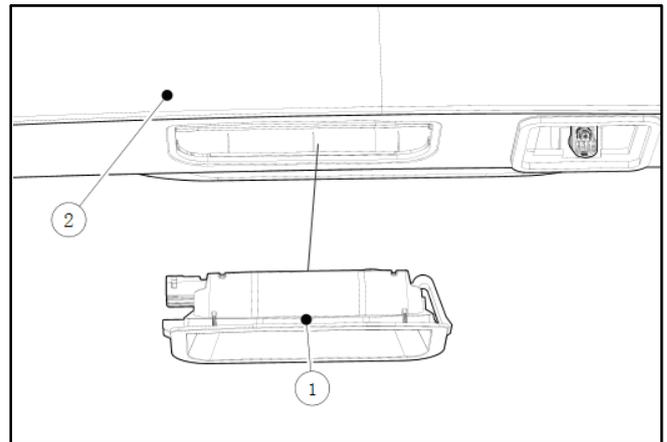


Serial number	Name	Quantity
1	Combination rear lamp assy. II	1
2	Hexagon socket pan head bolt and plain washer assembly	4
3	Hexagon flange nut	7
4	Tailgate	1

Assembly sequence:

- Pass the combination rear lamp assembly II harness through the trunk cover assembly harness hole, three locating pins through three corresponding locating holes, and seven mounting studs through the corresponding mounting holes on the combination rear lamp assembly II mounting support;
- Open the tailgate, fix the combination rear lamp assembly II from inside to outside with seven nuts, and then fix it with four bolts;
- Butt lamp end connector and tailgate harness end.

License plate lamp and switch assembly

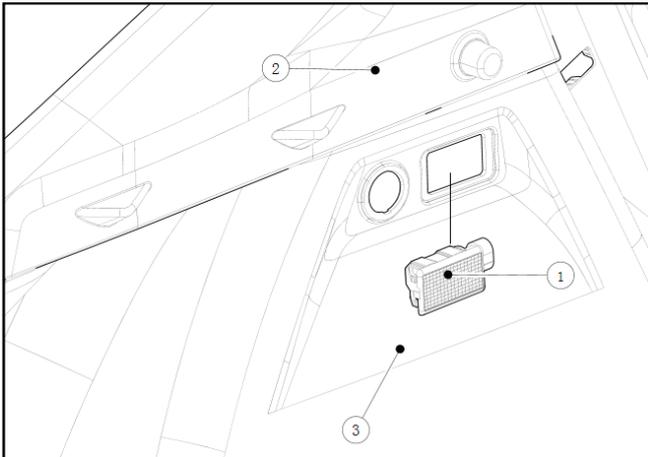


Serial number	Name	Quantity
1	License plate lamp and switch assembly	1
2	License plate lamp trim panel	1

Assembly sequence:

- Connect license plate lamp and switch assembly connector with tailgate harness connector;
- Place the license plate lamp and switch assembly connector end toward the left side of the vehicle, then install it into the mounting hole of the license plate lamp and switch assembly trim panel, and then install the other end of the license plate lamp and switch assembly into the mounting hole of the trim panel.

Trunk lamp assembly

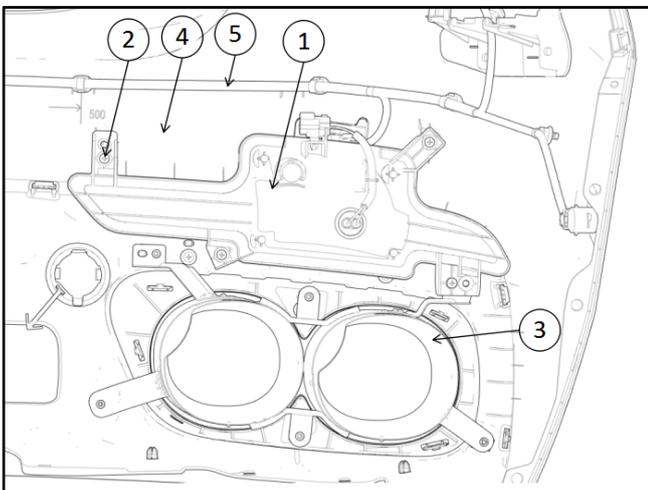


Serial number	Name	Quantity
1	Trunk lamp assembly	1
2	C Pillar lower trim panel assembly	1
3	C pillar upper trim panel assembly	1

Assembly sequence:

- Connect trunk lamp assembly connector with floor harness connector;
- Place the trunk lamp assembly connector towards the front of the vehicle, install the trunk lamp assembly connector end into the trunk lamp assembly mounting hole, and then clamp the other end into the trunk lamp assembly mounting hole.

Combination rear lamp assembly III

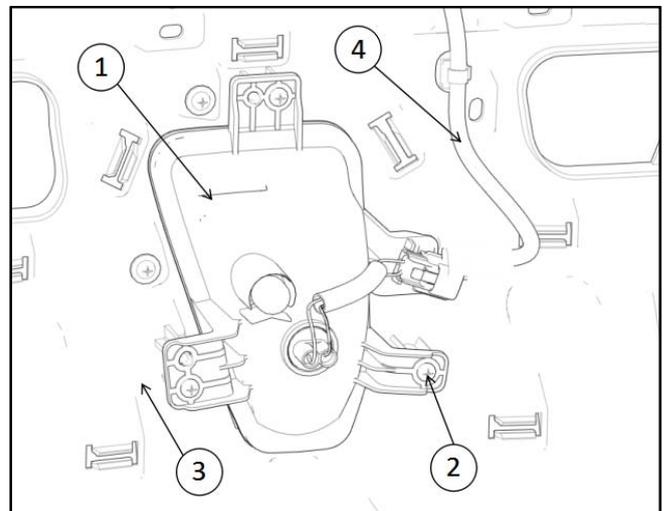


Serial number	Name	Quantity
1	Combination rear lamp assembly III	2
2	Cross recessed pan head tapping screw	8
3	Rear tailpipe trim assembly	2
4	Rear bumper body	1
5	Harness	1

Assembly sequence (take the left part as an example, and the right part is symmetrical with it):

- Assemble and fix the rear tailpipe trim assembly on the rear bumper;
- Then position the combination rear lamp assembly III on the rear bumper through two locating pins;
- Use four screws to fix the combination rear lamp assembly III.

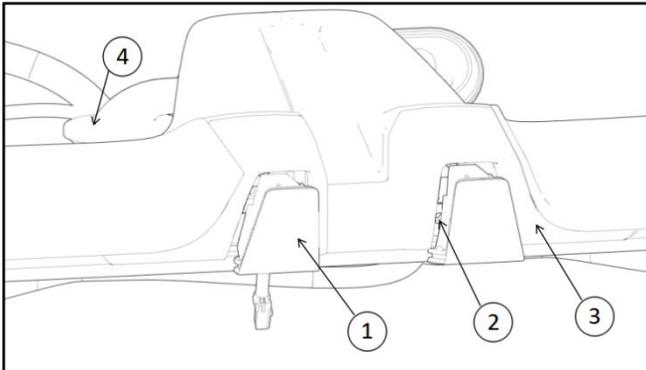
Rear fog lamp assembly



Serial number	Name	Quantity
1	Rear fog lamp assembly	1
2	Cross recessed pan head tapping screw	3
3	Rear bumper body	1
4	Rear protection harness	1

Assembly sequence:

- Position rear fog lamp assembly to rear bumper through two locating pins;
- Use three screws to fix rear fog lamp assembly.
- Butt the rear fog lamp assembly connector with the rear bumper harness connector.
- High-mounted brake lamp assembly



Serial number	Name	Quantity
1	High-mounted brake lamp assembly	1
2	Hexagon flange nut	2
3	Spoiler assembly	1
4	Tailgate harness	1

Assembly sequence:

- Align • high-mounted brake lamp assembly claw and mounting bolt with corresponding mounting hole of spoiler;
- Install the high-mounted brake lamp onto the spoiler with two hexagon flange nuts;
- Connect the left and right high-position lamp plugs;
- After the spoiler is assembled to the tailgate, connect the tailgate harness connector to the high-mounted brake lamp.

4.2.6 Horn

Specifications

Torque specification

Name	Nm	lb-ft	lb-in
Horn retaining bolt	23	17	-

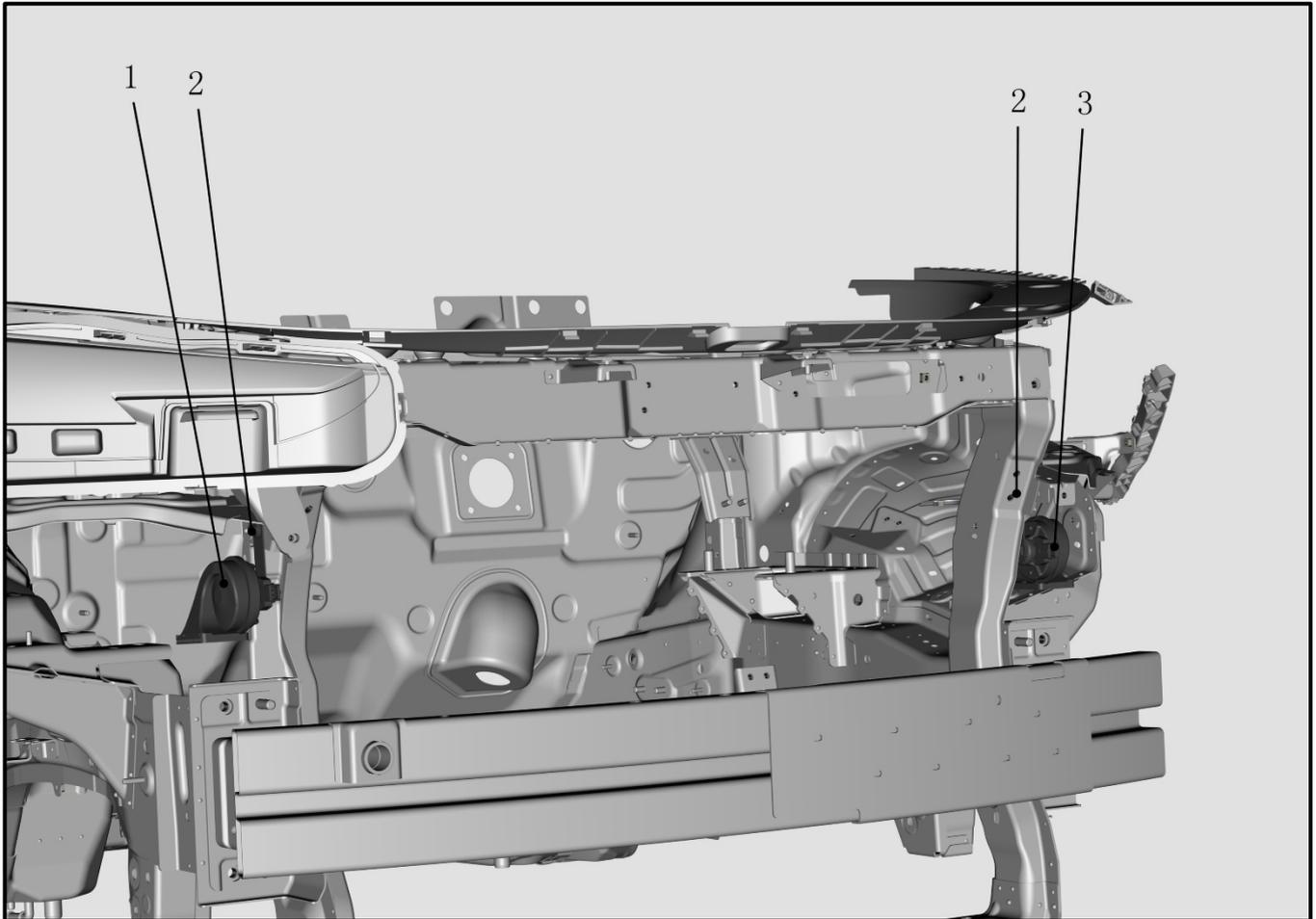
Description and operation

System overview

⚠ Warning: The vehicle is equipped with airbag system. If the correct operation procedure is not followed, the following conditions may occur: A.The airbag system turns on unexpectedly. b. The airbag system does not function when required.

⚠ Warning: The following guidelines must be strictly observed to avoid the above conditions: A.Before working, determine if you are performing a service operation around the inflatable restraint system components or on their wiring. b. If you are performing a service operation on an inflatable restraint system component, surrounding or its wiring, you should disarm the inflatable restraint system.

The horn is arranged on the radiator upper cross member in the engine compartment. The horn is connected to the horn circuit through the horn relay contact by the power supply, and energizes the coil through the contact to generate a magnetic field. Under the electromagnetic force generated by the magnetic field, the armature is attracted, and the armature drives the diaphragm and resonance plate to move downward. At the same time, the armature also pulls down the lower contact arm to open the upper and lower contacts and cut off the circuit. After the coil is powered off, the electromagnetic force disappears, the armature is released, and the diaphragm and lower contact arm are reset. At this time, the upper and lower contacts are closed, and the power supply energizes the coil through the contacts to generate a magnetic field. Repeat the above process. The vibration system vibrates the air to generate sound.

Component position diagram**Horn**

Project	Description
1	Bass electric horn assembly
2	Hexagon flange bolt
3	Tweeter horn assembly

Fault symptom diagnosis and test

General equipment

Digital multimeter

Diagnostic scanner

 Warning: Improper installation of clock spring assembly will damage the internal spiral coil of clock spring, which may cause coil fault and cause airbag module to not work normally, thus causing personal injury.

 Warning: The airbag control module (SDM) has a reserve power supply. The airbag can be deployed smoothly after losing battery voltage during collision. Disconnect the battery negative harness more than 60 s before performing airbag system maintenance work to ensure safety.

Inspection and confirmation

1. Confirm the customer's problem.
2. Visual inspection for visible mechanical or electrical damage

Trace, whether there is obvious collision trace.

Visual Check List

Mechanical part	Electrical part
<ul style="list-style-type: none"> • Steering wheel • Horn 	<ul style="list-style-type: none"> • circuit • Clock spring • Steering wheel horn switch • body control module

3. Check the system circuit which is easy to see or can be seen.
4. If the apparent cause of the observed or raised problem has been found, the cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.

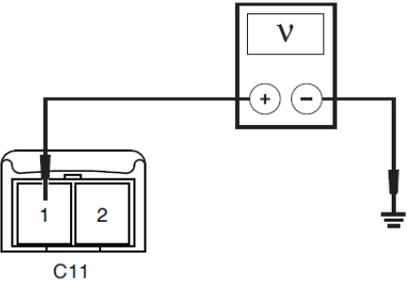
Fault symptom table

If the fault occurs but no DTCs are stored in the control module and the cause of the fault cannot be confirmed in the basic inspection, the fault diagnosis and rule out shall be performed according to the sequence listed in the following table.

Symptoms	Possible causes	Measures
Horn normally sounds	<ul style="list-style-type: none">• circuit• Clock spring• Horn• Horn switch• body control module	Reference: Horn normally sounds diagnostic process.
Horn does not sound	<ul style="list-style-type: none">• circuit• Clock spring• Horn• Horn switch• body control module	Reference: Horn does not sound diagnostic process.
Abnormal horn sound	<ul style="list-style-type: none">• Horn	<ul style="list-style-type: none">• Replace horn

Normal horn sound diagnosis process

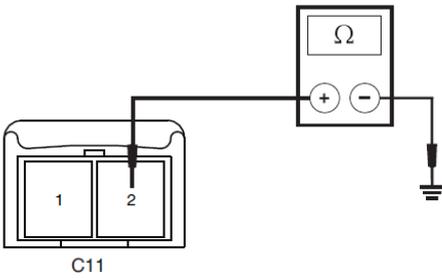
Test conditions	Details/Results/Measures
1. General inspection	
	<p>A. Inspect the clock spring and horn harness plug for signs of damage, poor contact, aging and loosening. Is it normal? ? Yes Go to step 2. ? No Repair the fault point.</p>
2. Check horn switch	
	<p>A. Disconnect harness plug P09 of horn switch. Does the horn still ring frequently? ? Yes Go to Step 3. ? No Overhaul the horn switch, and replace the horn switch if necessary. Reference: 5.4.1 Safety Restraint System</p>
3. Check horn switch control circuit	
	<p>A. Disconnect horn switch harness plug. B. Measure the resistance between horn terminal of horn switch harness plug and reliable grounding. Standard resistance: 10 MΩ or higher Is the resistance normal? ? Yes Go to Step 4. ? No Overhaul the circuit between horn terminal of horn switch harness plug and horn terminal of horn relay on engine compartment electrical center or short circuit to ground to horn terminal of BCM harness plug.</p>
4. Check horn relay	
	<p>A. Replace a new horn relay. B. Horn relay. Does the horn still ring? ? Yes Go to Step 5. ? No Confirm the system is normal.</p>

Test conditions	Details/Results/Measures
5. Check horn power circuit	
	<p>A. Disconnect terminal 1 of horn harness plug C11. B. Measure the voltage of terminal 1 of horn harness plug C11. Standard voltage: 0 V Is the voltage normal? ? Yes Go to Step 6. ? No Overhaul short circuit to power between horn harness plug C11 terminal 1 and horn terminal of horn relay.</p>
6. Check power circuit of body control module	
	<p>A. Turn the ignition switch to "ON" position. B. Measure the voltage between horn terminal of body control module harness connector and reliable grounding. Standard voltage: 11 ~ 14 V Is the voltage normal? ? Yes Go to Step 7. ? No Repair the BCM power supply circuit.</p>
7. Check grounding circuit of body control module	
	<p>A. Turn the ignition switch to "LOCK" position, and measure the resistance between horn terminal of body control module harness connector and grounding point harness. B. Turn the ignition switch to "LOCK" position, and measure the resistance between horn terminal of body control module harness connector and grounding point harness. Standard resistance: Less than 5 Ω Is the resistance normal? ? Yes Go to Step 8. ? No Repair the BCM ground circuit.</p>
8. Check circuit between body control module and horn relay	
	<p>A. Turn the ignition switch to "LOCK" position and disconnect the battery negative harness. B. Disconnect the body control module harness plug. C. Connect negative battery harness and measure resistance between horn terminal of body control module harness plug and reliable grounding point. Standard resistance: Is the resistance 10 MΩ or higher normal? ? Yes</p>

	Go to step 9. ? No Overhaul short circuit to ground between horn terminal of body control module harness plug and horn terminal of horn relay.
Test conditions	Details/Results/Measures
9. Replace body control module	
	A. Turn the ignition switch to "LOCK" position and disconnect the battery negative harness. B. Replace the body control module. Confirm repair is complete.

Horn does not sound diagnostic process

Test conditions	Details/Results/Measures
1. General inspection	
	<p>A. Inspect the clock spring and horn harness plug for signs of damage, poor contact, aging and loosening. Is it normal? ? Yes Go to step 2. ? No Repair the fault point.</p>
2. Check fuse	
	<p>A. Inspect the horn fuse. Rated capacity of insurance: 15 A Is the fuse normal? ? Yes Go to Step 3. ? No Overhaul the fuse circuit and replace the fuse of rated capacity.</p>
3. Check horn switch	
	<p>A. Disconnect harness plug of horn switch, and use harness service tool to ground horn terminal of harness plug. Does the horn sound? ? Yes Overhaul the horn switch, and replace the horn switch if necessary. Reference: 5.4.1 Safety Restraint System ? No Go to Step 4.</p>
4. Check horn relay	
	<p>A. Replace a new horn relay. B. Horn relay. Is the horn normal? ? Yes Confirm the system is normal. ? No Step 5.</p>
5. Check horn switch control circuit	
	<p>A. Disconnect horn switch harness plug. B. Measure the voltage of horn terminal of horn switch harness plug. Standard voltage: Is the resistance of 11 ~ 14 V normal? ? Yes Go to Step 6. ? No Overhaul open circuit fault between horn terminal of horn</p>

	harness plug and horn terminal of horn relay on engine compartment electrical center.
Test conditions	Details/Results/Measures
6. Check horn power circuit	
	<p>A. Press the horn switch and use a multimeter to measure the horn terminal voltage of the horn harness plug. Standard voltage: 11 ~ 14 V Is the voltage normal? ? Yes Go to Step 7. ? No Overhaul open circuit fault between horn terminal of horn harness plug and horn terminal of horn relay on engine compartment electrical center.</p>
7. Inspect the horn grounding circuit.	
 <p>C11</p>	<p>A. Disconnect harness plug of horn. B. Measure the resistance between horn terminal of horn harness plug and reliable grounding. Standard resistance: Less than 5 Ω Is the resistance normal? ? Yes Go to Step 8. ? No Overhaul open circuit fault between horn terminal of horn harness plug and grounding point.</p>
8. Replace horn	
	<p>A. Replace horn. Confirm whether the system is normal?</p>

Removal and installation

Horn

Removal

1. Disconnect the battery negative harness.

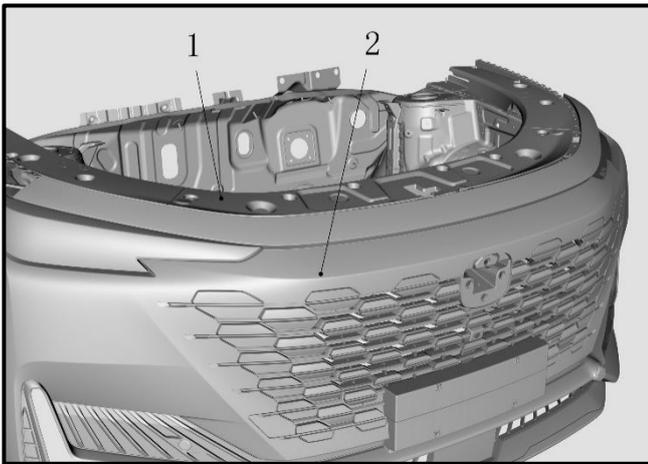
Reference: [3.1.11 charging system](#)

2. Remove the radiator upper cross member trim panel.

3. Remove the horn.

1. Remove the horn retaining bolts.
2. Remove the horn assembly.

Torque: (23±3) N·m



Project	Description
1	Front bumper upper trim cover assembly
2	Front bumper assembly

Installation

1. The installation sequence is the reverse of the removal sequence.

4.2.7 Wiper and washer

Specifications

General specifications

Name	Specifications	Capacity(L)
Washer fluid	ZT-30	3

Torque specification

Name	Nm	lb-ft	lb-in
Front wiper arm retaining nut	20	15	-
Front wiper motor and drive arm assembly mounting bolts	11	8	-
Windshield washer kettle retaining bolt	11	8	- Confirmation of interior and exterior trim
Rear wiper arm retaining nut	11	8	-
Retaining bolt of rear window wiper assembly	11	8	-

Description and operation

System introduction

Wiper system consists of wiper motor, drive arm, wiper arm and blade and wiper combination switch. The wiper circuit has an automatic stop. Wiper system is driven by permanent magnet motor. The wiper motor is installed on the heater pressure chamber plate assembly and directly connected to the wiper drive arm.

All wiper functions must be in ON position in order to be valid.

The judgment condition of the cycle described in the wiper washing function is that the return signal is from invalid to valid.

1. Front wiper high speed operation: If the front wiper switch is turned to high speed, the front wiper will run at high speed. If it is turned to OFF from high speed, the front wiper must return at low speed.
2. Front wiper low speed operation: If the front wiper switch is turned to low speed, the front wiper will operate at low speed.
5. Front wiper short-term operation: If the front wiper switch is turned to gear mist, the front wiper will operate at low speed for one cycle.

The current wiper is in intermittent movement state. If you turn the gear to the front wiper low gear or front wiper high gear, the wiper shall switch to the corresponding movement state immediately.

If the resistance of the variable resistor is not adjusted, the wiper will operate at the last set valid time.

Automatic wiper

The vehicle power supply is in ON position, when the switch assembly is in AUTO position, the wiper is in return state, and the rain ambient light sensor has no fault:

The rain ambient light sensor outputs the corresponding wiper brush request to the body controller according to the change of external rainfall, so as to realize automatic wiper.

When BCM receives rain ambient light sensor fault or node is lost, in case of rain sensor fault, BCM shall drive wiper to run at low speed, and forward this signal to instrument, and give text prompt on instrument, body controller will record the fault information sent by rain ambient light sensor through LIN bus in DTC form.

Front washer/wiper:

1. If the front washer switch is pressed by ≥ 400 ms, the front wiper operates at low speed. After releasing the switch, the front wiper operates for three cycles. If the front washer switch ≥ 400 ms is pressed again during activation of the front washer wiper, the new switch input is responded immediately after the front wiper returns. The current wiper switch is in high or low gear, press the washer switch ≥ 400 ms, and the front wiper still operates at high or low speed. The front wiper motor does not act when the current washer switch is on for < 400 ms.
2. The current wiper switch is in gear AUTO and press the washer switch ≥ 400 ms. If the wiper brush request of the washer switch is no request, the BCM drives the front wiper to operate at low speed. After releasing the switch, the front wiper operates at low speed for three cycles. If the wiper hanging brush request for rain ambient light before the washer switch is valid is a high-speed or low-speed wiper request, the BCM drives the front wiper to operate at high-speed or low-speed for 3 cycles, and the wiper hanging brush request for rain ambient light sensor is still executed after 3 cycles.

When the current washer switch on time is < 400 ms, the BCM executes according to the wiper request of rain ambient light.

Intermittent operation of rear wiper:

If the rear wiper switch is turned to the intermittent position, the rear wiper will run intermittently at low speed, once every six seconds.

Rear wiper Rear washer/wiper:

If the rear washer switch is pressed for ≥ 400 ms, the rear wiper operates at low speed. After releasing

the switch, the rear wiper operates for three cycles. After an interval of 6 seconds, operate another cycle. If the rear washer switch ≥ 400 ms is pressed again during the activation of the rear washer wiper, the new switch input is responded immediately after the rear wiper returns. When the rear wiper switch is in intermittent gear, if the rear washer switch is pressed by ≥ 400 ms, the rear wiper will operate at low speed. After releasing the switch, the rear wiper will operate for three cycles, and then resume intermittent operation after an interval of 6s. When the rear washer switch is turned on for < 400 ms, the rear wiper motor does not act.

Reverse automatic scraping

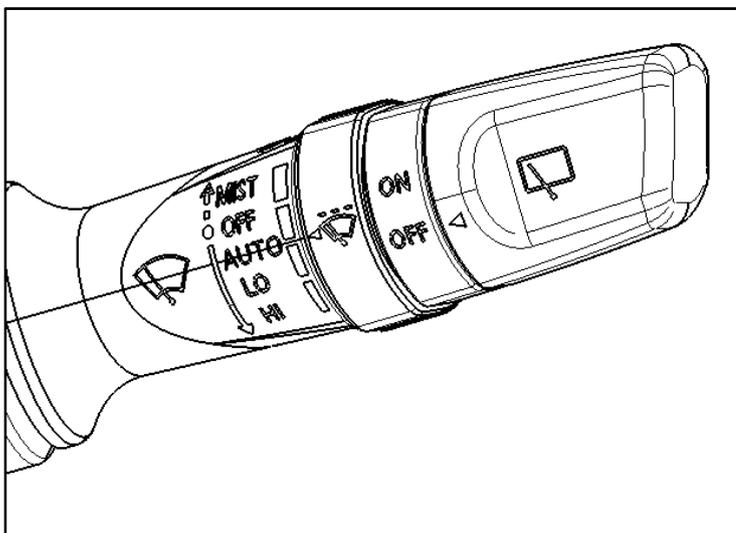
The vehicle power supply is in ON position, and the front wiper switch is in any working position (except washing) such as high speed and low speed. If the reverse gear signal received by BCM is greater than or equal to 1S, the rear wiper automatically operates for one cycle, and it is necessary to ensure that the function on HU is in ON mode.

Wiper maintenance mode

When the vehicle power supply gear is ON, quickly operate the wiper switch from OFF→HIGH→OFF within 2s, and set it to the maintenance mode. After the wiper returns, it will automatically wiper 800 ms to the maintenance mode (this function is invalid when the vehicle speed is greater than 3 km/h, so as to prevent the user from operating incorrectly during driving).

- During the execution of maintenance mode, wiper switch inputs any signal (short time, high speed, low speed, front washing is greater than 400 ms), and wiper shall be maintained in maintenance mode.
- After the maintenance mode is executed, any signal input of wiper switch (short time, high speed, low speed, front washing is greater than 400 ms), the wiper exits the maintenance mode and works according to the input signal.
- In maintenance mode, the wiper operates at low speed during operation.

Combination switch wiper handle



The switch control lever is on the right side of the steering column. The control lever has five gears, one wiper automatic gear sensitivity adjustment knob switch and one rear wiper switch.

MIST: Wiper scraping once, this gear is suitable for defogging.

Off: Wiper stops running.

AUTO: Wiper is in automatic gear.

LO: Wiper will operate at a stable low speed.

HIGH: Wiper will operate at a stable high speed.

Sensitivity adjustment knob switch of wiper automatic gear: Adjust the sensitivity of wiper automatic

gear, and the trapezoidal width means that the sensitivity of wiper is higher.

Glass washer switch.

Lift the switch control lever up slightly, spray the washer liquid to the front windshield, wipe it once, and reset it immediately after loosening; Press the switch control lever downwards to spray the washer fluid to the rear windshield, wipe it for three times, and reset it immediately after loosening.

On: The rear wiper is turned on and will operate at a stable low speed.

Off: Rear wiper function is off.

Automatic wiper function

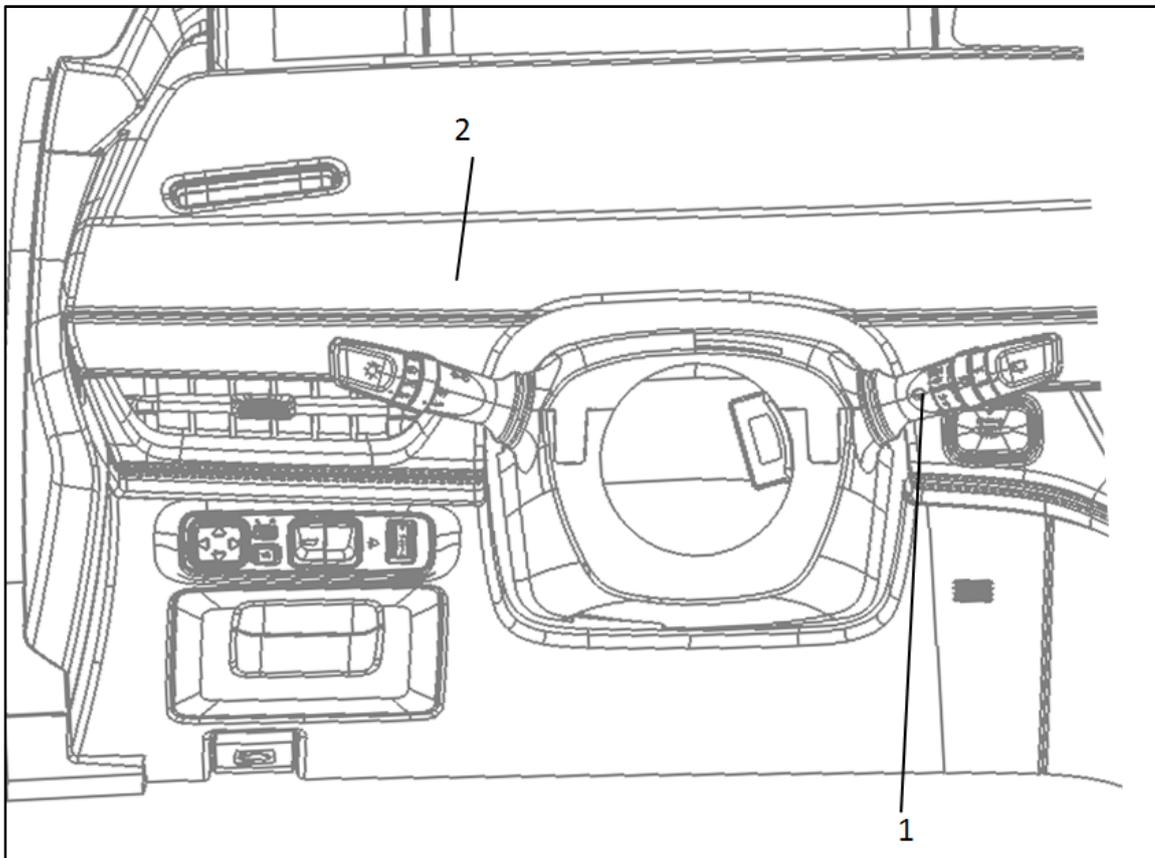
The vehicle power supply is in ON position, the wiper handle is in "AUTO" position, and the automatic wiper function is activated. According to the amount of rainfall, the wiper shall act accordingly. The automatic wiper sensitivity can be adjusted by adjusting the "intermittent time adjusting ratchet." If the ratchet is rotated from narrow width to wide width, the automatic wiper sensitivity is increased by one level, which is more sensitive to rainfall, and the primary feedback sensitivity of wiper blade is increased.

Activate scraping function

If the power gear is in ON position first, the wiper handle is turned to 'AUTO "position, and the wiper blade wipers once to remind the user that the automatic wiper function is activated.

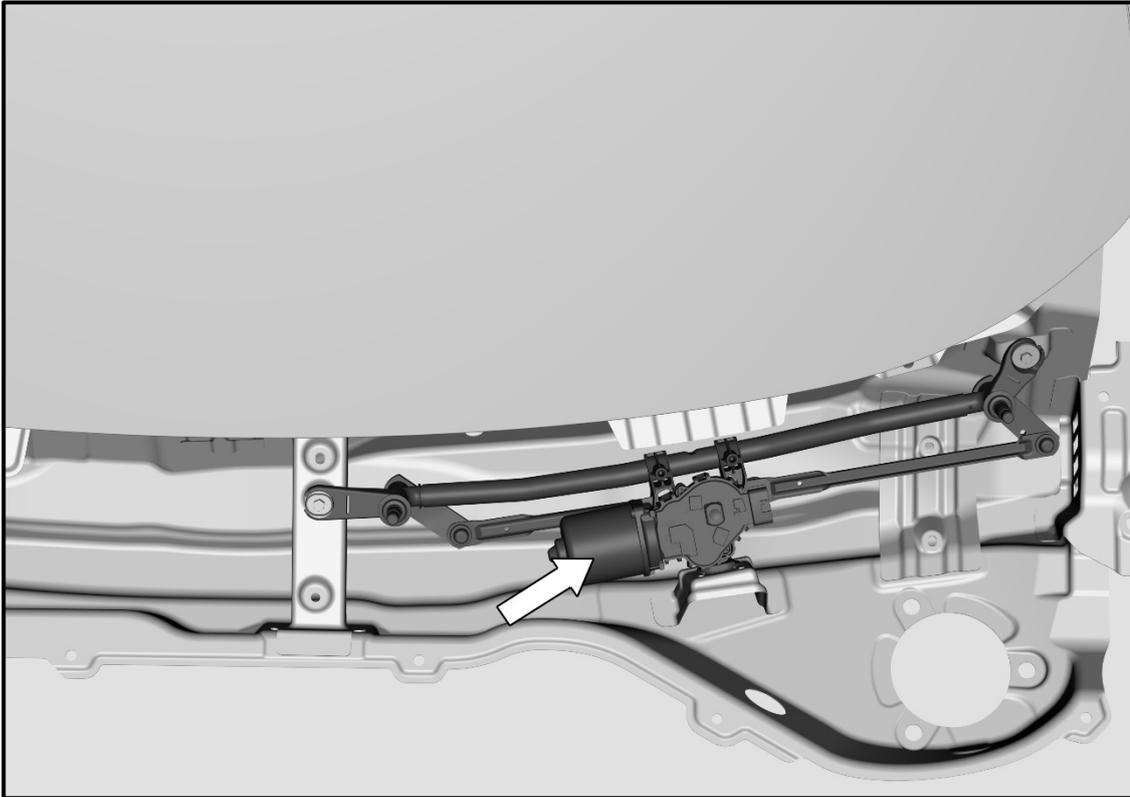
Component position diagram

Wiper combination switch position

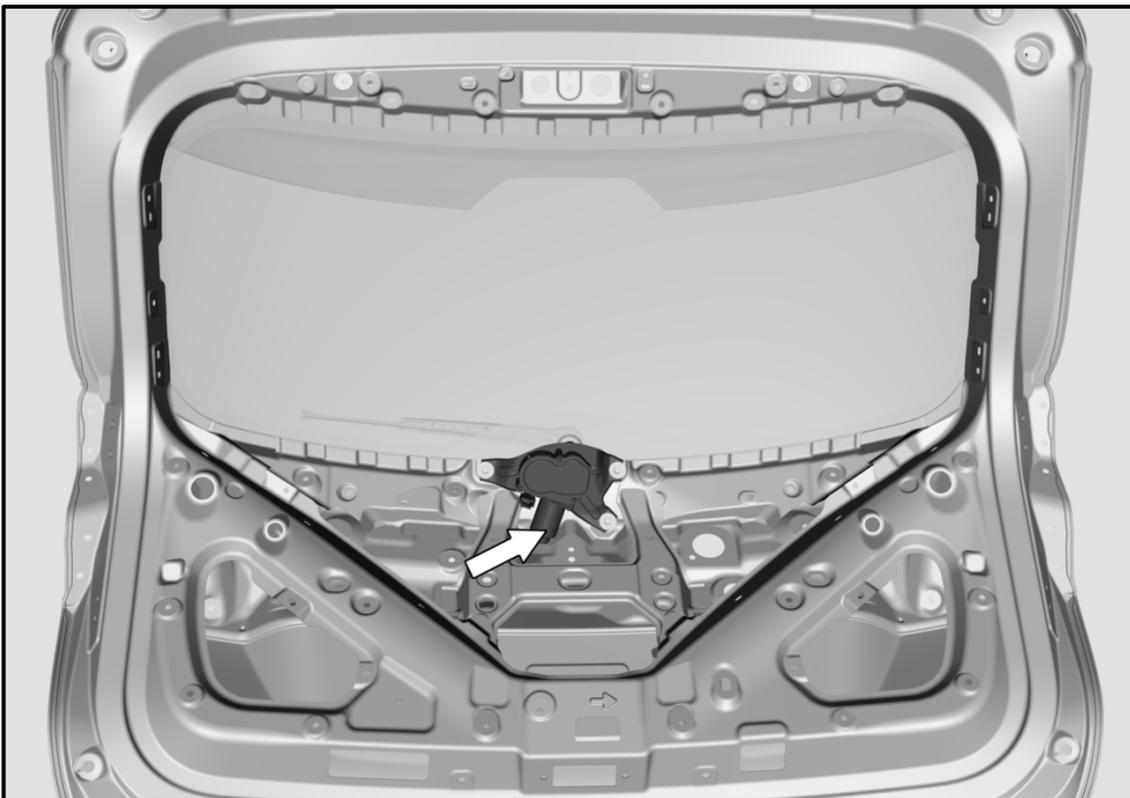


Project	Description	Project	Description
1	Combination switch wiper handle assembly	2	Instrument panel

Front wiper motor and drive arm assembly position diagram

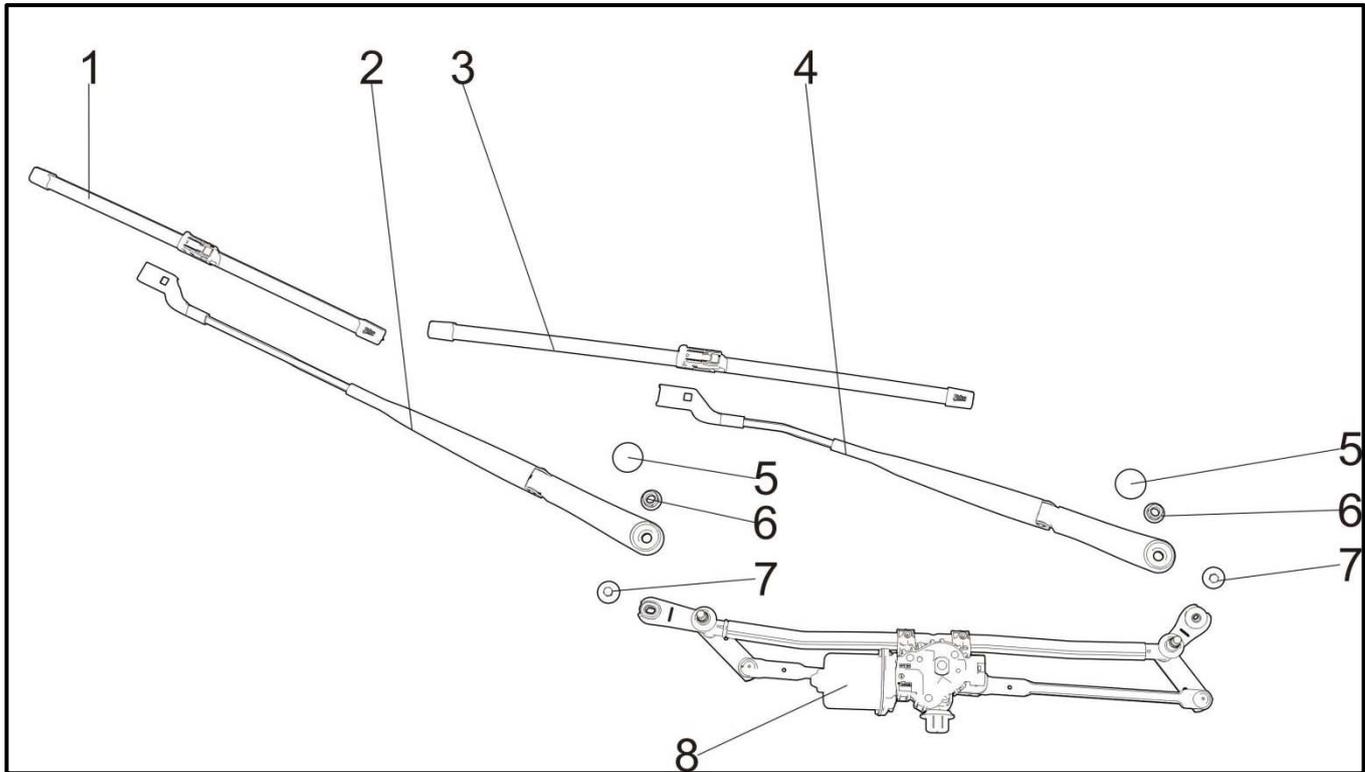


Rear wiper motor assembly position diagram



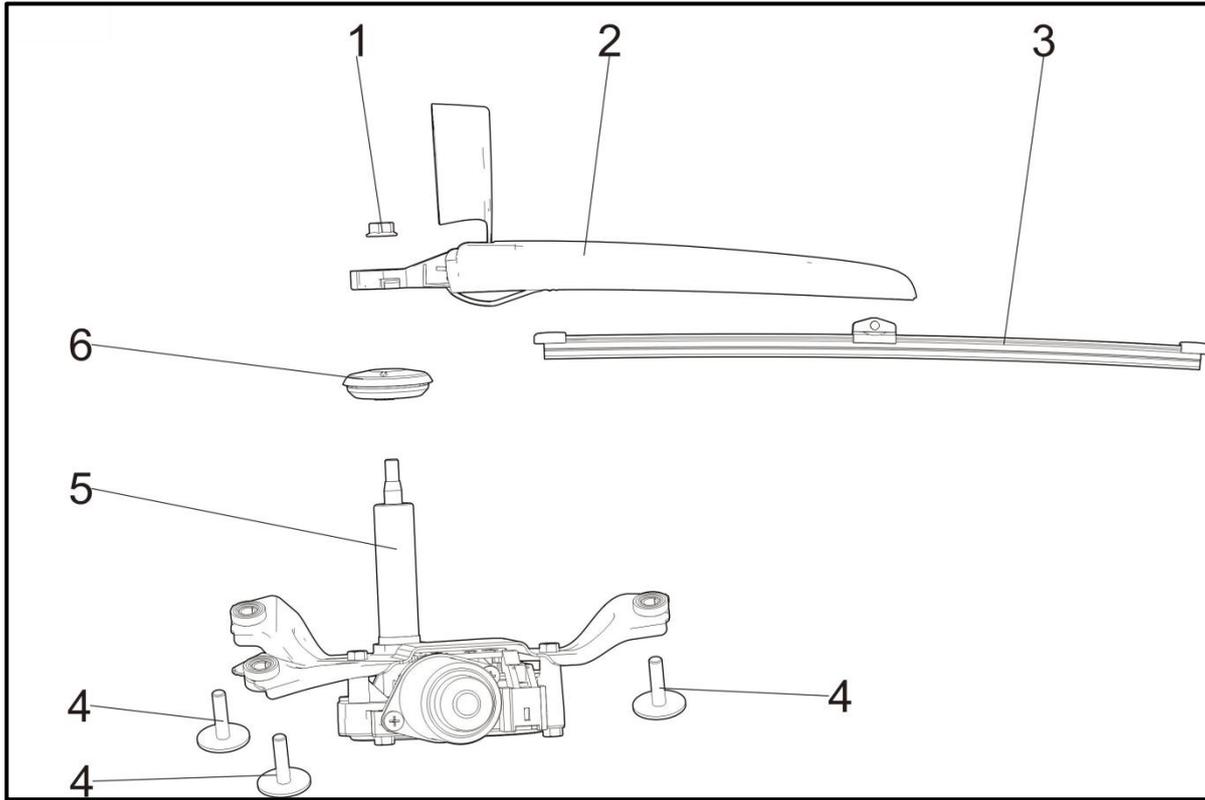
Exploded view

Front wiper assembly exploded view



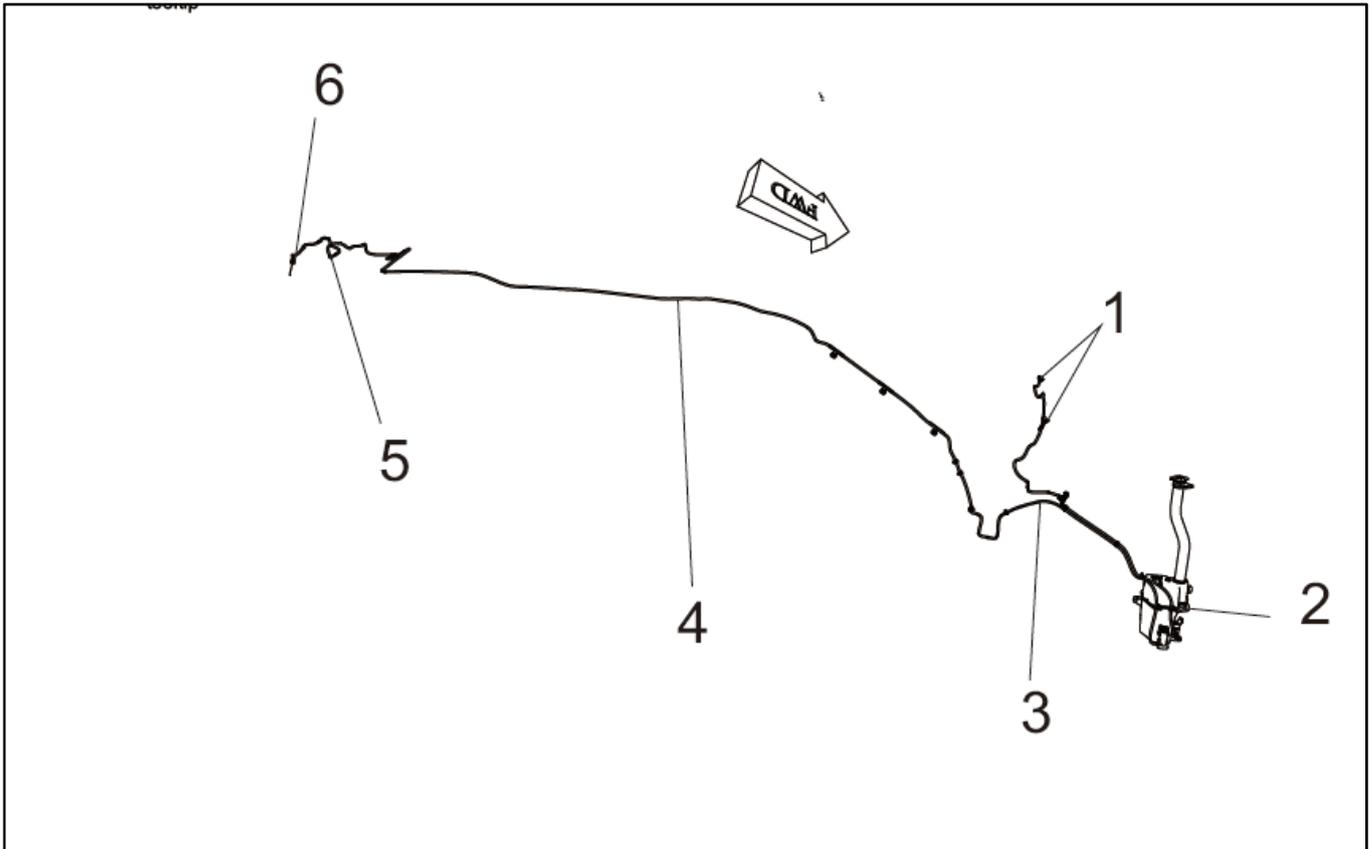
Project	Description	Project	Description
1	Auxiliary wiper brush assembly	5	Wiper arm hole cover
2	Auxiliary wiper arm assembly	6	Hexagon flange nut
3	Main wiper brush assembly	7	Hexagon bolt and plain washer assembly
4	Main wiper arm assembly	8	Wiper motor and drive arm assembly

Exploded view of rear wiper assembly



Serial number	Component	Serial number	Component
1	Hexagon flange nut	4	Rear wiper brush assembly
2	Rear wiper arm assembly	5	Rear window wiper motor assembly
3	Rear wiper brush assembly	6	Rear wiper waterproof sleeve

Washer system layout



(The A side of the complete vehicle cannot be found, it is recommended that the exploded drawing contains the data of the complete vehicle, so that the water pipe layout can be known conveniently)

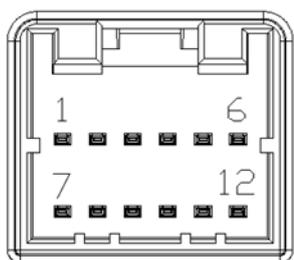
Serial number	Component	Serial number	Component
1	Washer can assembly	4	Washer rear hose assembly I
2	Washer front hose assembly	5	Rear washer rear hose assy. II
3	Washer front hose assembly	6	Washer rear nozzle assembly

Circuit schematic

Combination switch wiper end

引脚功能定义

PIN FUNCTION DISCRIPTION



引脚 PIN	功能 DESCRIPTION
1	点动 / MIST SW
2	-
3	低速刮刷 / WIPER LOW SPEED
4	自动雨刮 / AUTO
5	灵敏度 / RESPONSE RATE
6	后喷水开关 / REAR WASHER SW
7	后刮刷开关 / REAR WIPER SW
8	自动刮刷开关 / AUTO WIPER SW
9	高速刮刷开关 / WIPER HIGH SPEED
10	前喷和前刮刷供电 / IGN(2)-FRONT WASHER & WIPER
11	前喷水开关 / FRONT WASHER SW
12	后喷和后刮刷供电 / IGN(2)-REAR WASHER & WIPER

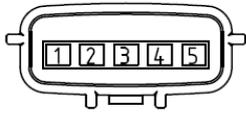
雨刮开关通断图

WIPER SWITCH CIRCUIT

功能 FUNCTION		端子定义 / PIN DEFINITION											
		1	2	3	4	5	6	7	8	9	10	11	12
雨刮开关、间歇调节开关通断 WIPER & INT VOLUME SW	点动 / MIST 关 / OFF	○									○		
	自动 / AUTO				○	○			○		○		
	低速 / LO			○							○		
	高速 / HI									○	○		
	前喷水开关通断 FRONT WASHER SW	喷水关 / OFF											
	喷水开 / ON										○	○	
后喷水开关通断 REAR WASHER SW	喷水关 / OFF												
	喷水开 / ON							○					○
后刮刷开关通断 REAR WIPER SW	刮刷关 / OFF												
	刮刷开 / ON							○					○

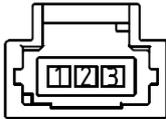
Connector definition

Pin definition of front wiper motor plug(Wiper motor)



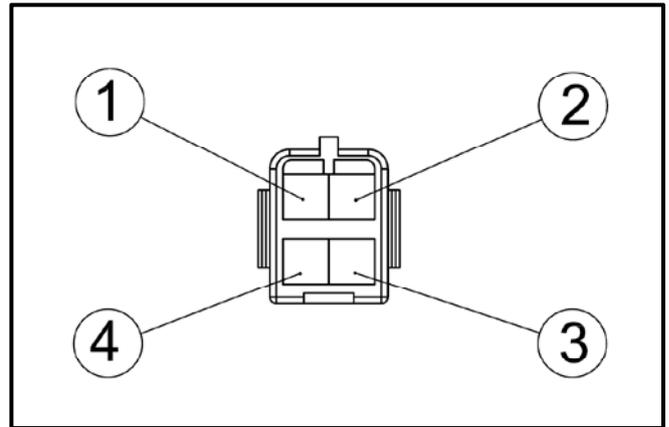
引脚 PIN	引脚功能 PIN FUNCTION
1(53b)	高速/HIGH
2(53)	低速/LOW
3	空置
4(31b)	停位/R
5(31)	接地/GND

Pin definition of rear wiper motor plug(Wiper motor)



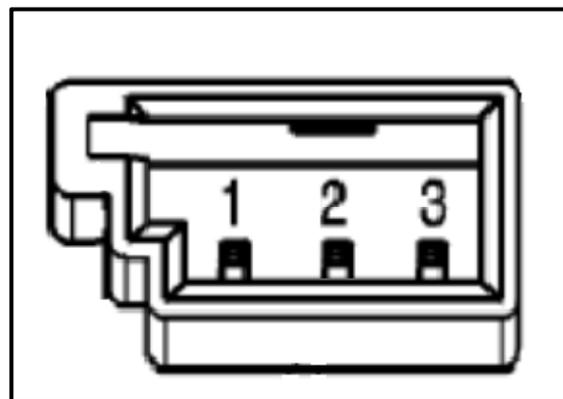
引脚 PIN	引脚功能 PIN FUNCTION
1(53)	工作/+
2(31b)	回位/s
3(31)	接地/GND

Pin definition of rear wiper motor harness end connector



Hole position	Line number	Function	Corresponding conductor color
1	-	Empty	-
2	RW08	Reset	V/P
3	G209/1	Grounding	B
4	RW05	Work	V/R

Definition of connector of rain ambient light sensor



Pin	Input/output	Rated current	Definition description
1	Power supply		12 V power supply
2	LIN		LIN
3	Ground		Ground

Definition of washer pot connector



Name	Rated power(W)	Rated current (A)	Peak current (A)	Locked current (A)
Front washer motor(White)	36	3		2.8
Rear washer motor(Black)	36	3		2.8

Fault symptom diagnosis and test

General equipment

Digital multimeter

Diagnostic scanner

Inspection and confirmation

1. Confirm the customer's problem.
2. Visually inspect for visible signs of mechanical or electrical damage, Whether there is obvious impact deformation trace.

Visual Check List

Mechanical part	Electrical part
<ul style="list-style-type: none"> • Front windshield • Rear windshield • Nozzle • Washer fluid pipeline • washer fluid bottle • Wiper blade • Wiper arm • Wiper drive arm 	<ul style="list-style-type: none"> • Fuse • circuit • Wiper combination switch • Front wiper motor • Front washer motor •BCM

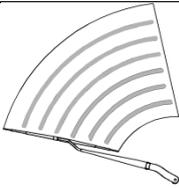
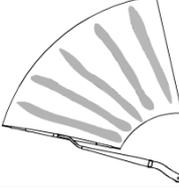
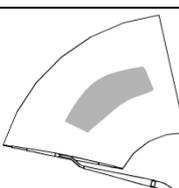
3. Check the system circuit which is easy to see or can be seen.
4. If the apparent cause of the observed or raised problem has been found, The cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.

Fault symptom table

If the fault occurs but no DTCs are stored in the control module and the cause of the fault cannot be confirmed in the basic inspection, the fault diagnosis and rule out shall be performed according to the sequence listed in the following table.

Symptoms	Possible causes	Measures
Wiper motor does not work(The motor has no low gear and high gear.)	<ol style="list-style-type: none"> 1. Battery voltage too low 2. Front wiper motor fuse DF13 in instrument fuse box is broken. 3. Poor grounding of engine compartment harness GD 303 connecting wiper motor grounding terminal 4. Open circuit in engine compartment harness BCB17 or BCB06 connecting wiper motor and BCM 5. BCM or combination switch wiper handle fault 6. BCM port harness to combination switch is not connected. 1. 7. Wiper motor fault 	Reference: Fault symptom diagnosis and test.
Wiper motor cannot reset	<ol style="list-style-type: none"> 1. BCC20 voltage between BCM and engine compartment harness of wiper motor reset end is abnormal. 2. Harness connected to wiper motor terminal voltage is abnormal 3. Wiper motor harness port is not connected to BCC20 port of BCM. 	
Wiper constant rotation(When the switch is in OFF position, the wiper still works.)	<ol style="list-style-type: none"> 1. BCM or combination switch fault 1. The harness connecting BCM and combination switch is not connected. 	
Occasionally the wiper turns	<ol style="list-style-type: none"> 3. Wrong judgment by user: The combination switch is set to the clearance gear, and the wiper clearance gear time is set to the maximum. 2. Combination switch internal contact is poor, send error signal to BCM to make wiper work. 	
Unclean wiper, shaking abnormal sound	<ol style="list-style-type: none"> 1. The windshield or rubber strip is not clean and there are foreign matters. 2. Assembly problem: Insufficient torque of wiper arm mounting nut or insufficient torque of motor mounting bolt 3. The wiper blade is not qualified, and the edge of rubber strip is defective. 3. Unqualified wiper arm, deformed wiper arm, loose riveting, unqualified pressure 	

Common phenomenon of poor scraping

Common faults	Fault diagram	Possible causes
Slender curved stripes that affect the line of sight.		There is foreign matter on the wiper rubber strip, or the edge of the rubber strip is damaged.
The wiper blade sends out abnormal sound and shakes, and the rubber strip cannot reverse smoothly, and vertical stripes appear.		There is oil or wax on the glass, or the rubber strip is deformed or the wiper arm is unqualified.
After scraping, the scraper leaves spots of water.		The rubber strip is deformed or aged.
The glue strip is not attached to the glass surface and cannot be scraped evenly to form a sheet-like or strip-like area.		The rubber strip is deformed, or the scraper frame is deformed, resulting in insufficient pressure.

Wiper combination switch inspection

Please turn the ignition switch to ON position for the following check

Phenomenon	Solution
Front wiper problem	<p>A. Place the combination switch wiper switch in the following gears respectively, and check whether the corresponding pin is connected.</p> <p> Gear MIST: Whether combination switch pins 1 and 10 are connected</p> <p> Int gear (AUTO gear): Whether the combination switch pins 8 and 9 are connected, rotate the adjustment knob, and whether the resistance changes;</p> <p> Gear LOW: Whether combination switch pins 3 and 10 are connected</p> <p> Hi: Is pin 9 and pin 10 of combination switch connected</p> <p> Spray gear: Are pins 10 and 12, 6 and 12 of combination switch connected</p> <p> ? No</p> <p> Replace combination switch;</p>

	<p>? Yes</p> <p>Please check the harness and wiper motor, water spray motor.</p>
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Common fault diagnosis of rain ambient light sensor

Fault symptom	Fault cause	Solution	Remarks
Automatic wiper failure	<ol style="list-style-type: none"> 1. Vehicle voltage is insufficient or overvoltage. 2. System harness fault 3. Switch signal failure 4. Lin communication fault 5. Abnormal temperature signal 6. Sensor is not installed correctly. 7. Sensor rainfall calibration error 8. BCM fault 9. Wiper fault 10. Sensor fault 	<ol style="list-style-type: none"> 1. Check whether the vehicle voltage is normal. 2. Check whether the whole system harness is normal. 3. Check whether the wiper handle of combination switch is normal. 4. Check whether LIN communication is normal. 5. Check whether the temperature signal is normal. 6. Check whether the sensor is assembled normally. 7. Check whether the sensor rainfall calibration is normal. 8. Replace BCM. 9. Replace wiper. 10. Replace the sensor. 	
Activation scraping failure	<ol style="list-style-type: none"> 1. Vehicle voltage is insufficient or overvoltage. 2. System harness fault 3. Switch signal failure 4. Lin communication fault 5. Abnormal temperature signal 6. Sensor is not installed correctly. 7. Sensor rainfall calibration error 8. BCM fault 9. Wiper fault 10. Sensor fault 	<ol style="list-style-type: none"> 1. Check whether the vehicle voltage is normal. 2. Check whether the whole system harness is normal. 3. Check whether the wiper handle of combination switch is normal. 4. Check whether LIN communication is normal. 5. Check whether the temperature signal is normal. 6. Check whether the sensor is assembled normally. 7. Check whether the sensor rainfall calibration is normal. 8. Replace BCM. 9. Replace wiper. 10. Replace the sensor. 	
Automatic light failure	<ol style="list-style-type: none"> 1. Vehicle voltage is insufficient or overvoltage. 2. System harness fault 3. Switch signal failure 4. Lin communication fault 5. Sensor is not installed correctly. 6. BCM fault 7. Wiper fault 8. Sensor fault 	<ol style="list-style-type: none"> 1. Check whether the vehicle voltage is normal. 2. Check whether the whole system harness is normal. 3. Check whether the wiper handle of combination switch is normal. 4. Check whether LIN communication is normal. 5. Check whether the sensor is assembled normally. 6. Replace BCM. 7. Replace wiper. 8. Replace sensor 	

Diagnostic process of front wiper motor failure

Test conditions	Details/Results/Measures
<ul style="list-style-type: none"> Check battery voltage 	<p>A. Check whether the battery voltage is greater than 9V?</p> <p>? Yes Perform step 2;</p> <p>? No Please check the battery.</p>
<ul style="list-style-type: none"> Inspect the instrument fuse box front wiper motor fuse. 	<p>A. Inspect whether front wiper motor fuse DF13 (25 A) of instrument fuse box is broken.</p> <p>? Yes Replace fuse;</p> <p>? No Step 3.</p>
<ul style="list-style-type: none"> Inspect whether the engine compartment harness is connected to grounding of wiper motor end G 306. 	<p>A. Inspect whether grounding of engine compartment harness to wiper motor end G 306 is in good condition.</p> <p>? Yes Perform step 4;</p> <p>? No Check wire harness.</p>
<ul style="list-style-type: none"> Inspect whether the engine compartment harness is connected to wiper motor terminal BCC20B. 	<p>Under A. ON position, check whether the engine compartment harness is connected to wiper motor terminal BCC20B is normal.</p> <p>? Yes Next step;</p> <p>? No Check wire harness.</p>
5. Check whether wiper can work at high speed	
	<p>A. In ON position, put the wiper control handle of combination switch in high speed (HI) position. Does the wiper work at high speed?</p> <p>Yes Step 6;</p> <p>? No Perform step B;</p> <p>B. Inspect whether the voltage of engine compartment harness terminal BCB17B connecting wiper motor is normal.</p> <p>Yes Replace wiper motor;</p> <p>? No Check whether this port harness is connected to the combination switch and whether the combination switch is connected to the fast gear.</p>
6. Check whether the wiper can work at low speed.	
	<p>A. In ON position, put the wiper control handle of combination switch in low speed (LOW) position. Does the wiper work at low speed?</p>

	<p>Yes Step 7;</p> <p>? No Perform step B;</p> <p>B. Inspect whether the voltage of engine compartment harness terminal BCB06B of wiper motor is normal.</p> <p>Yes Replace wiper motor;</p> <p>? No Check whether this port harness is connected to the combination switch and whether the combination switch is connected to the fast gear.</p>
7. Check whether the wiper can work in clearance.	
	<p>A. In ON position, put the wiper control handle of combination switch in INT position. Does the wiper work in clearance?</p> <p>? Yes Perform step 8;</p> <p>? No Perform step B;</p> <p>B. Please check whether the clearance resistance of combination switch is within the fixed range. (Refer to clearance resistance range of combination switch for resistance value)</p> <p>Yes Please check the C8 port of BCM;</p> <p>? No Replace combination switch.</p>
8. Check whether wiper can achieve primary wiper	
	<p>A. In ON position, put the wiper control handle of combination switch in primary wiper (MIST) position, and check whether the wiper can achieve primary wiper.</p> <p>The wiper motor can work normally;</p> <p>No Replace combination switch.</p>

Front wiper motor cannot reset diagnostic process

Test conditions	Details/Results/Measures
1. Inspect whether the voltage is normal when the engine compartment harness is connected to the wiper motor BCB06B port.	
	<p>Under A. ON state, measure whether the voltage of BCB06B port of engine compartment harness connecting wiper motor is normal?</p> <p>Yes Please perform step 2;</p> <p>No Please check the circuit.</p>
2. Check the voltage of BCC20B port between the harness and wiper motor.	
	<p>In A. ON position, use a multimeter to measure the voltage of harness to wiper motor port BCC20B. First turn on the combination switch wiper gear, and then return. At this time, observe whether the voltage output of the multimeter is normal.</p> <p>Yes Please perform step 3;</p> <p>No Please replace wiper motor;</p>
3. Check whether BCC20B port of wiper motor harness is connected to C20 port of BCM.	
	<p>A. Inspect whether the BCC20 port of wiper motor harness is connected to the C20 port of BCM, and whether it is conductive.</p> <p>Yes Check BCM;</p> <p>No Check the circuit.</p>

Diagnostic process of wiper blur and jitter

Test conditions	Details/Results/Measures
1. Inspect whether there is foreign matter on the windshield.	<p>A. Check whether the vehicle windshield is clean and has foreign matter?</p> <p>Use cleaning agent to clean the windshield of automobile windshield;</p> <p>No Please proceed to the next step.</p>
2. Slide along the edge of rubber strip edge of wiper blade with finger tip, check its roughness, whether there are foreign matter and damage.	<p>A. Check whether the adhesive strip has foreign matter?</p> <p>Clean rubber strips with cleaning agent;</p> <p>None Perform B;</p> <p>B. whether the edge of adhesive tape is damaged or severely deformed,?</p> <p>Please replace the rubber strip;</p> <p>None Please proceed to the next step</p>
3. Install wiper brush on other vehicles and check whether the fault disappears.	<p>Yes, the wiper blade is qualified, and perform step 4;</p> <p>No Replace wiper blade</p>
4. Check whether there is abnormal sound when the rubber strip contacts the glass.	<p>A. On the basis of passing the judgment in step 2, continuously scrape the wiper, and check whether there is "squeak" or "goofy" abnormal sound when the adhesive strip comes into contact with the glass by ear-hearing method.</p> <p>Yes Perform B;</p> <p>No The wiper blade is qualified.</p> <p>B. Remove and reinstall the wiper arm, torque requirements 18~22N·m, check whether abnormal sound and fault disappear?</p> <p>Yes, fault resolved</p> <p>No, replace wiper arm</p> <p>If there is abnormal sound, please confirm: (1) The glass is smooth without ripple; (2)</p>

	<p>The glass has been cleaned. If the above two points are confirmed to be correct, it is judged that the wiper blade is not qualified. Please replace the wiper blade.</p>
--	---

Rear wiper does not work or does not return

Test conditions	Details/Results/Measures
1. Check battery voltage	
	A. Check whether the battery voltage is greater than 9V? ? Yes Perform step 2; ? No Please check the battery.
2. Inspect the instrument fuse box rear wiper motor fuse.	
	A. Inspect whether rear wiper motor fuse DF31 (15 A) of instrument fuse box is broken. ? Yes Replace fuse; ? No Step 3.
3. Inspect whether the rear wiper motor harness terminal connector is grounded.	
	A. Use a multimeter to check whether the rear wiper motor harness terminal connector is grounded properly. ? Yes Perform step 4; ? No Check wire harness.
Under 4. ON state, check whether the wiper can work.	(Clearance work)
	In A. ON position, check whether the voltage of rear wiper motor harness end and hole position 3 is greater than 9V. Yes Replace wiper motor; ? No Check according to step B; B. Inspect whether the harness between the port and rear wiper relay, rear wiper relay and BCM, BCM and combination switch wiper handle are connected in sequence. Yes Check rear wiper relay, combination switch, BCM; ? No Check wire harness.
In 5. ON position, check whether the wiper can return.	
	A. In ON position, put the wiper control handle of combination switch in rear wiper working position, and check whether the wiper gap works. ? Yes Please check according to step B; ? No Please check according to step 4; B. Check whether the rear wiper motor harness terminal connector reset terminal trips between voltage greater than 9V and voltage of 0V. ? Yes Replace BCM. ? No Replacing rear wiper motor

Rear wiper does not work or does not return

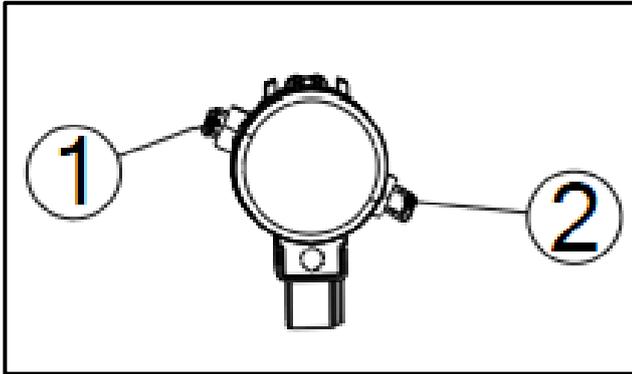
Test conditions	Details/Results/Measures
1. Check battery voltage	
	A. Check whether the battery voltage is greater than 9V? ? Yes Perform step 2; ? No Please check the battery.
2. Inspect the instrument fuse box rear wiper motor fuse.	
	A. Inspect whether rear wiper motor fuse DF31 (15 A) of instrument fuse box is broken. ? Yes Replace fuse; ? No Step 3.
3. Inspect whether the rear wiper motor harness terminal connector is grounded.	
	A. Use a multimeter to check whether the rear wiper motor harness terminal connector is grounded properly. ? Yes Perform step 4; ? No Check wire harness.
Under 4. ON state, check whether the wiper can work.(Clearance work)	
	In A. ON position, check whether the voltage of rear wiper motor harness end and hole position 3 is greater than 9V. Yes Replace wiper motor; ? No Check according to step B; B. Inspect whether the harness between the port and rear wiper relay, rear wiper relay and BCM, BCM and combination switch wiper handle are connected in sequence. Yes Check rear wiper relay, combination switch, BCM; ? No Check wire harness.
In 5. ON position, check whether the wiper can return.	
	A. In ON position, put the wiper control handle of combination switch in rear wiper working position, and check whether the wiper gap works. ? Yes Please check according to step B; ? No Please check according to step 4; B. Check whether the rear wiper motor harness terminal connector reset terminal trips between voltage greater than 9V and voltage of 0V. ? Yes Replace BCM. ? No Replacing rear wiper motor

Diagnosis process of front and rear water spraying in place

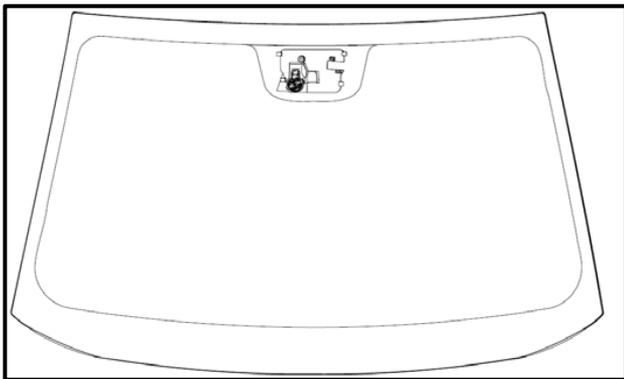
Test conditions	Details/Results/Measures
1. General inspection	
	A. Check the capacity of washer fluid; B. Check whether the washing hose is deformed, bent or damaged. Is it normal? ? Yes Go to step 2; ? No Repair fault point
2. Check washer nozzle	
	A. Carry out washing operation, check water spraying angle and position; B. Adjust the washing nozzle. Is it normal? ? Yes Confirm maintenance is completed; → Go to step 3.
3. Replace the washing nozzle.	
	A. Replace the washing nozzle. Confirm the system is normal.

Removal and installation

Rain Ambient Light Sensor



The installation position of rain ambient light sensor is above the front windshield, close to the windshield.



Installation

1. Remove the protective cover on the rain/sunlight sensor.

- Do not touch or damage silicone
- Silicone must be free of any dirt

2. Inspect silicone and windshield for damage, stains and bubbles.

- In order to ensure the function of rain/sunlight sensor, it is necessary to ensure that silicone inner ring 310 mm is not damaged. Damage to media can cause sensor fault.

- Before installation, it is allowed to have a maximum of 1 mm bubbles or gaseous inclusions. A maximum of 3 bubbles are allowed throughout the detection area.

- Silicone must be free of stains
- The windscreen shall be clean and free of labels or the like. The surface of the windscreen must be dry and free of impurities, fibre, grease (fingerprint) and moisture (mist).

Position where the 3. rain/sunlight sensor is mounted on the support

- Don't touch silicone
 - Do not damage silicone during installation-place carefully
 - rain/sunlight sensor can only be installed in one (fixed) position (fault prevention procedure)
4. Clip the spring arm on the bracket
- Push down the spring arm until it gets stuck and you hear the sound. At the same time, fix spring arm (keep sensor still).
 - Then push down the spring arm (2) until it gets stuck and you hear the sound.
 - Cannot buckle the spring arm at the same time

⚠️ Note: There are two sounds.

5. Check the buckle mounting connection between spring and bracket.

- Incorrect buckle installation will cause rain/sunlight sensor fault

6. Connect rain/sunlight sensor

- The rain/sunlight sensor needs to be installed on the windshield before connection.
- Push both sides of the vehicle socket into the connector interface

⚠️ Note: There will be sound after clamping.

7. Check connection interface of rain/sunlight sensor

The buckle connection between •• vehicle socket on both sides and rain/sunlight sensor connector must be installed accurately.

- Incorrect connection and installation may cause rain/sunlight sensor fault

8. Check whether the air bubbles on the windshield are stained.(Vehicle exterior)

- Make sure that there are no stains and dirt where rain sunlight sensor is installed outside the vehicle.

- After installation, visible air bubbles are allowed. Bubbles will disappear automatically within two hours after the rain/sunlight sensor is installed on the windshield (depending on temperature)

⚠️ Note: If the air bubble does not disappear after 2 hours, it will cause rain sunlight sensor fault.

Removal

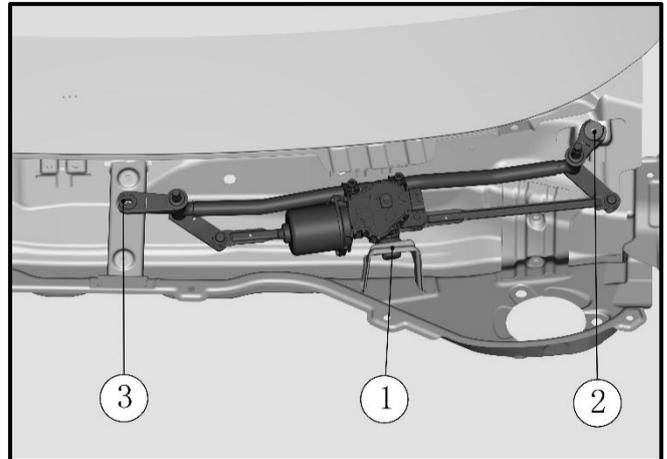
When replacing the front windshield, it is also

necessary to replace the rain ambient light sensor.

Front wiper

Installation

1. Installation of wiper motor and drive arm assembly (Installing heater pressure chamber plate under front cover trim)

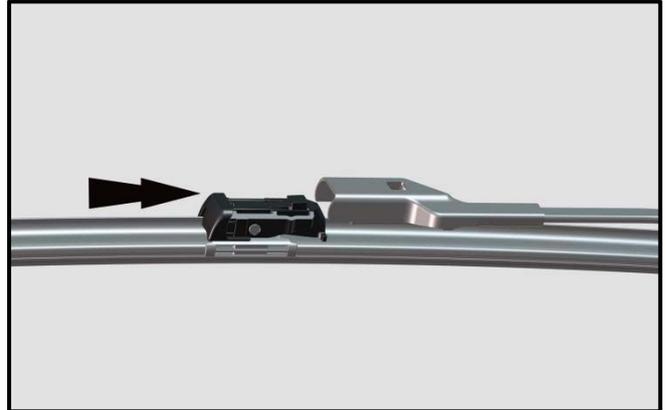


Serial number	Name
①	Mounting point of wiper motor and drive arm assembly
②	Wiper round hole
③	Wiper strip hole

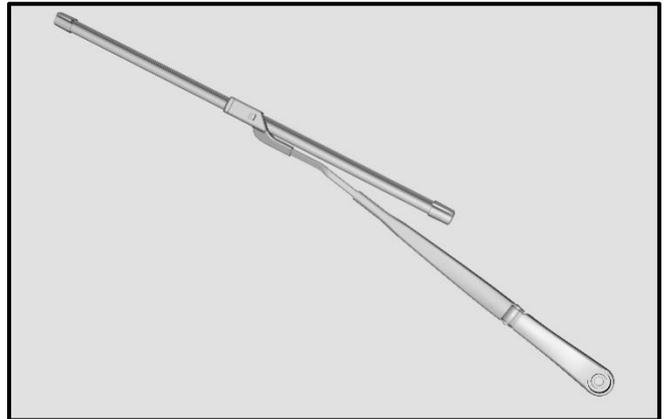
- Mounting point of wiper motor and drive arm assembly (1) is clamped in strip hole of heater pressure chamber plate. (It is designed as interference fit, and firmly clamped in place during installation.)
 - Wiper round hole (2) Install hexagon head bolt and plain washer assembly M6, which is the main mounting locating point.
 - Install and install hexagon bolt and plain washer assembly M6.
2. Install the front cover trim assembly, pay attention to the concentric opening of the front cover trim assembly and the output shaft of the wiper motor and drive arm assembly.



3. The main wiper arm and auxiliary wiper arm are separately assembled with the main wiper arm and auxiliary wiper brush.



-  **Note:** When the "click" sound appears at the connection between wiper arm and wiper brush, the assembly is in place.



4. The sub-assembled wiper arm and wiper brush assembly are installed on the output shaft of the wiper motor and drive arm assembly, tighten the wiper arm with M10 nut, and install the wiper arm hole cover.

-  **Note:** During installation, it is necessary to ensure that the initial parking position of the main and auxiliary scraping brushes must fit or be lower than the marking points on the front stop glass.

Removal

Remove the front wiper system in the following order:

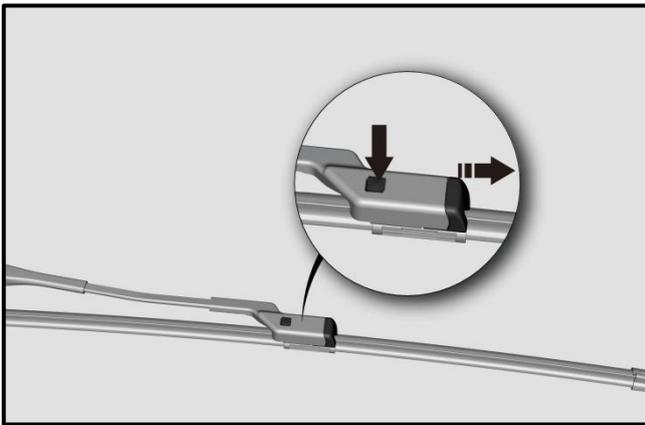
- Lift and fix the engine hood;
- Use a word to start, and remove the wiper arm hole cover;

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Wiper and washer

4.2.7-28

- Loosen the mounting nut of wiper arm, and remove the wiper arm;
 - Remove front cover trim
1. Remove wiper arm and wiper brush from wiper motor and drive arm assembly;(If only the wiper is removed, first lift the wiper arm up, and then remove the wiper.)
 2. Dismantling method of scraping: At the joint of scraping arm and scraping brush, hold the scraping arm rod firmly with left hand, press the scraping button firmly with finger (as shown in the figure) and keep it.



3. Pull out the wiper along the direction shown in the above figure to complete the removal of wiper blade.

Rear wiper

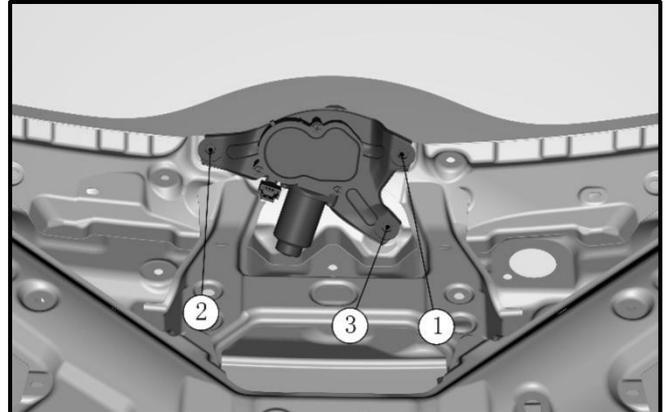
Installation

1. Rear window wiper assembly installation
Buckle the rear wiper waterproof sleeve on the tailgate glass. Note that the arrow mark on the waterproof sleeve should point directly below the glass.



2. Pass the motor output shaft through the body sheet metal hole, install the M6 hexagon-head

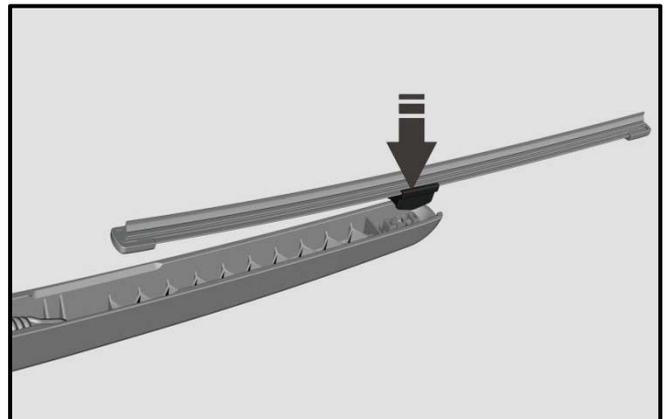
bolt and plain washer assembly (as shown in the figure below) in the order of mounting hole ①-②-③, and the torque requirement (9~13) N·m. After the wiper motor assembly is installed, connect the harness connector.



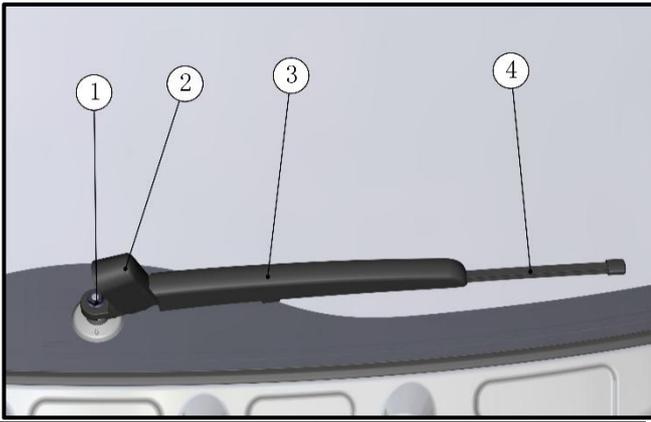
3. After the rear wiper motor is installed, install the tailgate trim panel to the body.



4. Subassembly of rear wiper arm and wiper brush

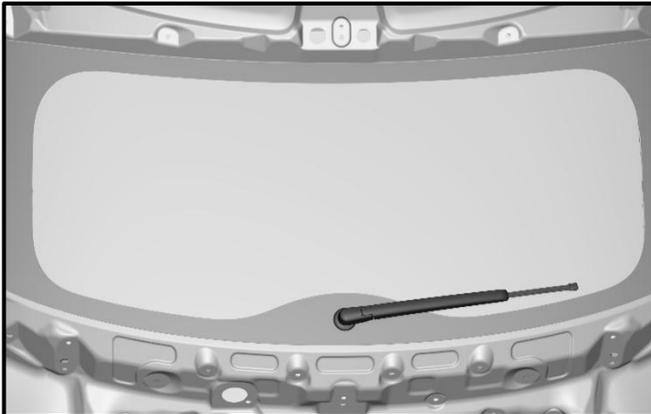


5. Rear window wiper arm and wiper brush assembly installation



Serial number	Name
1	Hexagon flange nut
2	Wiper trim cover
3	Rear wiper arm assembly
4	Rear wiper brush assembly

Remove the wiper arm trim cover, install the rear wiper arm assembly on the wiper motor output shaft, and make the initial parking position of the wiper brush approximately flush with the lower edge of the glass black edge. Tighten with M6 hexagon flange nut, torque requirement (9~11) N·m. Install the wiper arm trim cover buckle back on the wiper arm. (It is required to fasten when installing back and hear "click"). After the rear wiper is installed, the effect drawing is as follows:



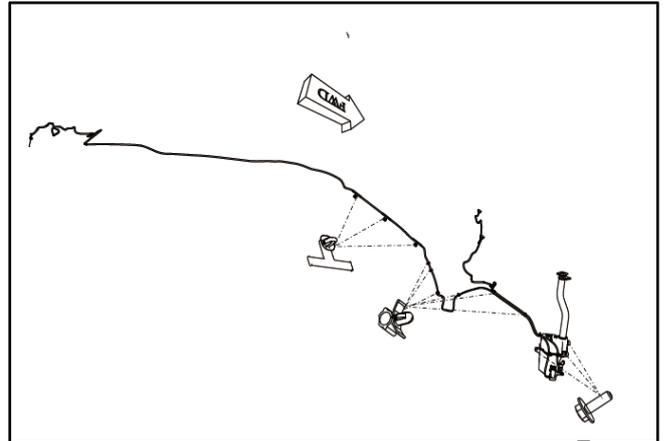
Removal

The removal method is the reverse of the installation sequence.

Washing system

Removal

1. Removing front nozzle Remove front cover trim
2. Remove the kettle assembly and remove the fender liner.
3. Remove the rear spray and nozzle. Remove the spoiler assembly.
4. Wash system standard parts are distributed as follows:



Reference: [5.2.11 Body exterior trim](#)

4.2.8 Whole vehicle lock assembly

Description and operation

System introduction

Whole vehicle lock assembly mainly refers to steering lock and front door lock cylinder related to key, including mechanical key and front door lock cylinder. If the key is lost, replace the whole vehicle lock assembly.

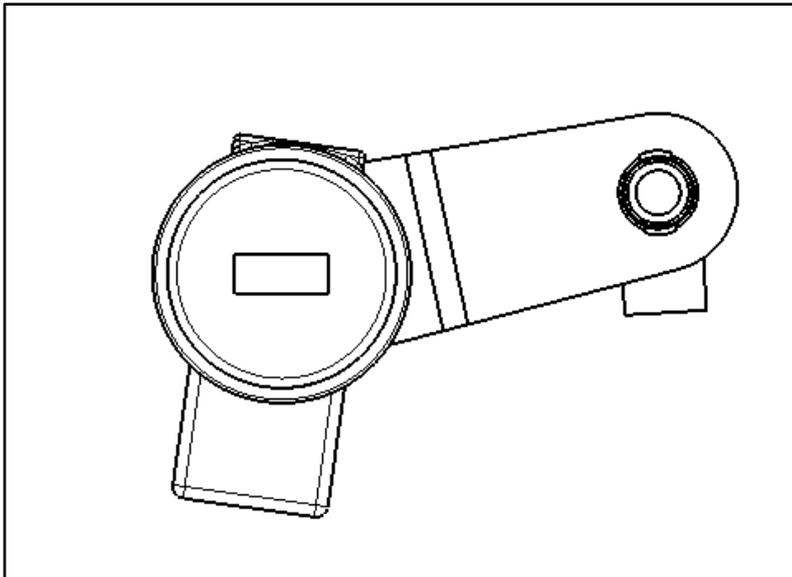
Component description

Mechanical key

Refer to 4.2.12 Keyless Control System

Front door lock cylinder

Insert the key into the front door lock cylinder, rotate it counterclockwise to unlock, and rotate it clockwise to lock.



Removal and installation

Front door lock cylinder maintenance and installation:

Reference: 5.2.6 Front Door

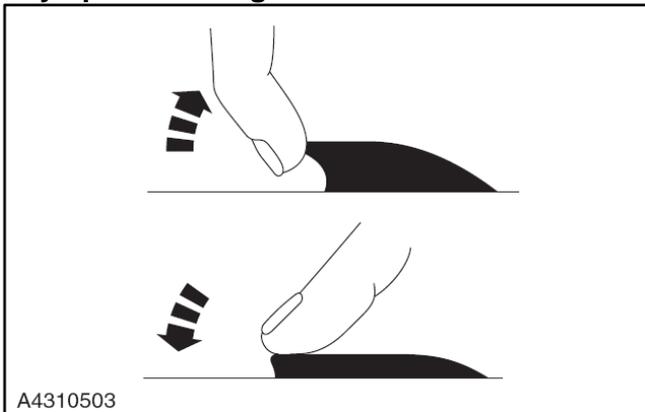
4.2.9 Power window

Description and operation

System overview

The whole window glass of the vehicle adopts the power lifting mode. When the door glass needs to be lifted, just press the window regulator button. The driver door is equipped with the door window regulator button on the inner side of the vehicle, and the buttons on other doors control the corresponding door window. Button 3 is the window locking button. Pressing the locking button can lock and unlock the other three doors except the driver's door. Button 4 is the unlock door switch, and button 5 is the lock door switch.

Key operation diagram



The driver anti-pinch glass lifter switch has two gears: Lowering and lifting on the driver side. The first gear is manual lifting, and the second gear is automatic lifting. The remaining buttons have only one gear and can only be lifted or lowered manually (only for some models).

Window enable signal:

The BCM outputs the window enable signal within 1 minute after the power supply position is in ON position or ON to OFF position, and the low level is valid.

Manual remote control window rising:

When the ignition switch is off, the key is removed and the four doors are closed, if the key "Lock" key >2s is pressed for a long time, the BCM outputs the remote control window rising signal until the remote control key is released (the RF signal changes from lock to no), the remote control window rising function stops. (When there is one key for window lifting, remote control window lifting is executed by anti-pinch module).

The window ascends successively in the order of FRT RH window, RR RH window, FRT LH window and RR LH window, and the ascending interval between windows is 200 ms. (This function is reserved, and the function is turned off by default at delivery)

Manual remote control window lowering:

When the ignition switch is off, the key is removed and the four doors are closed, if the key "unlock" key >2s is pressed for a long time, the BCM outputs the remote control window lowering signal until the remote control key is released (the RF signal changes from unlock to none). The remote control window lowering function stops (this function is reserved, and the function is turned off by default at delivery) (the remote control window lowering function is executed by the anti-pinch module when there is window one-button lifting).

The window descends in the order of FRT RH window, RR RH window, FRT LH window and RR LH window, and the ascending interval between windows is 200 ms. (This function is reserved, and the

function is turned off by default at delivery)

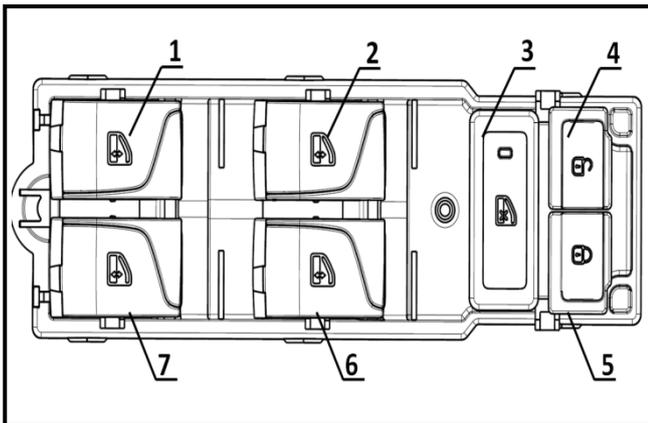
Anti-pinch alarm:

The power supply is in OFF position. When BCM receives sunroof/FRT LH/FRT RH/RR LH/RR RH anti-pinch signal is set to "Active," BCM outputs a low level control horn sound (40 ms).

Note: Automatic remote control lifting window (long press 2S for subsequent release of hands) is only for windows or sunroof with anti-pinch function. Windows and sunroof without anti-pinch function can only be controlled by manual remote control lifting window (long press key until lifting is completed).

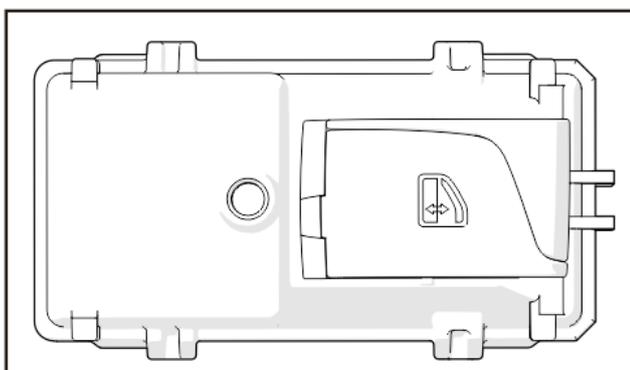
Component description

Main power window switch

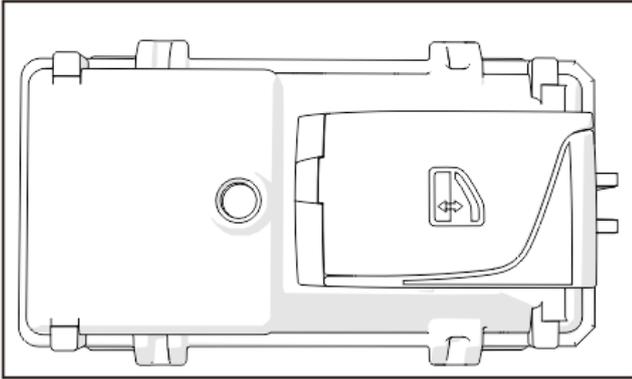


Serial number	Name
1	RR LH door window regulator button
2	Driver door window regulator
3	Locking button
4	Unlock button
5	Door lock button
6	F.R. door window lifting button
7	Right rear door window lifting button

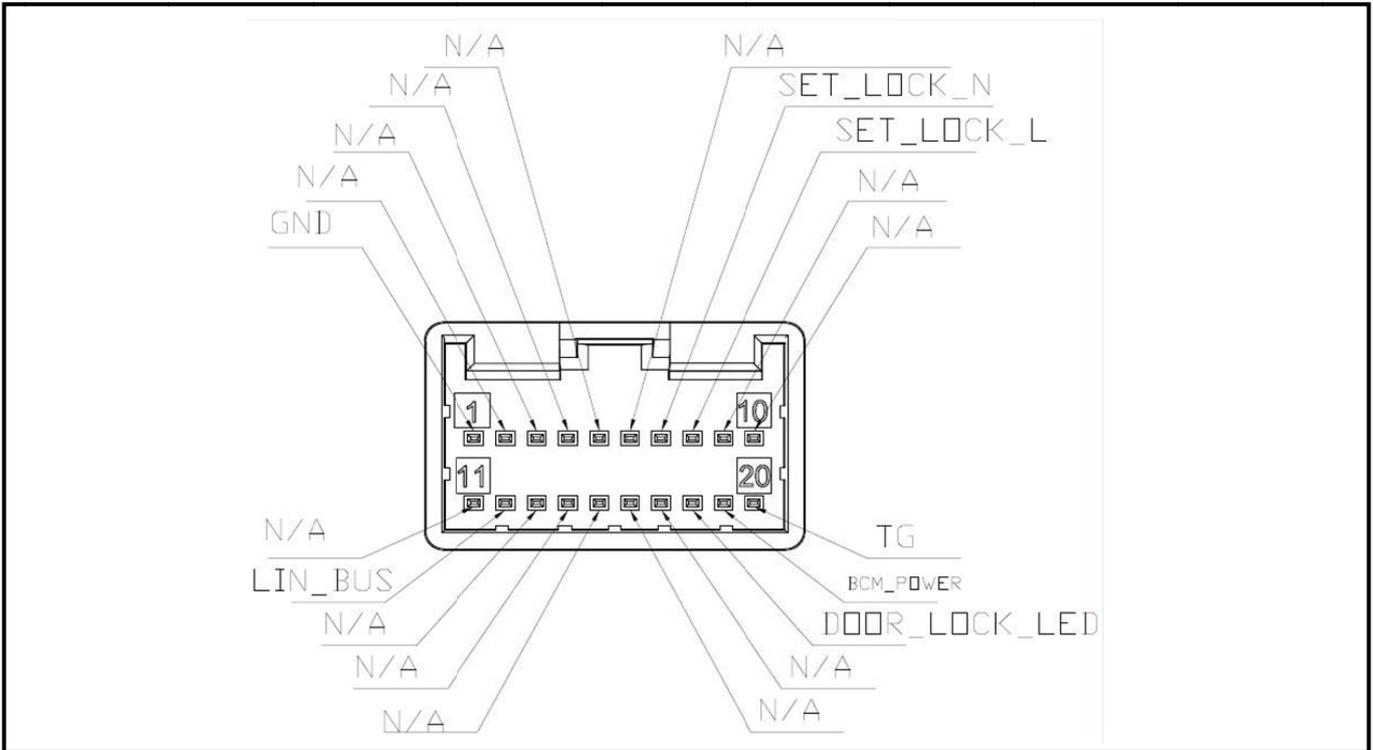
Auxiliary power window switch



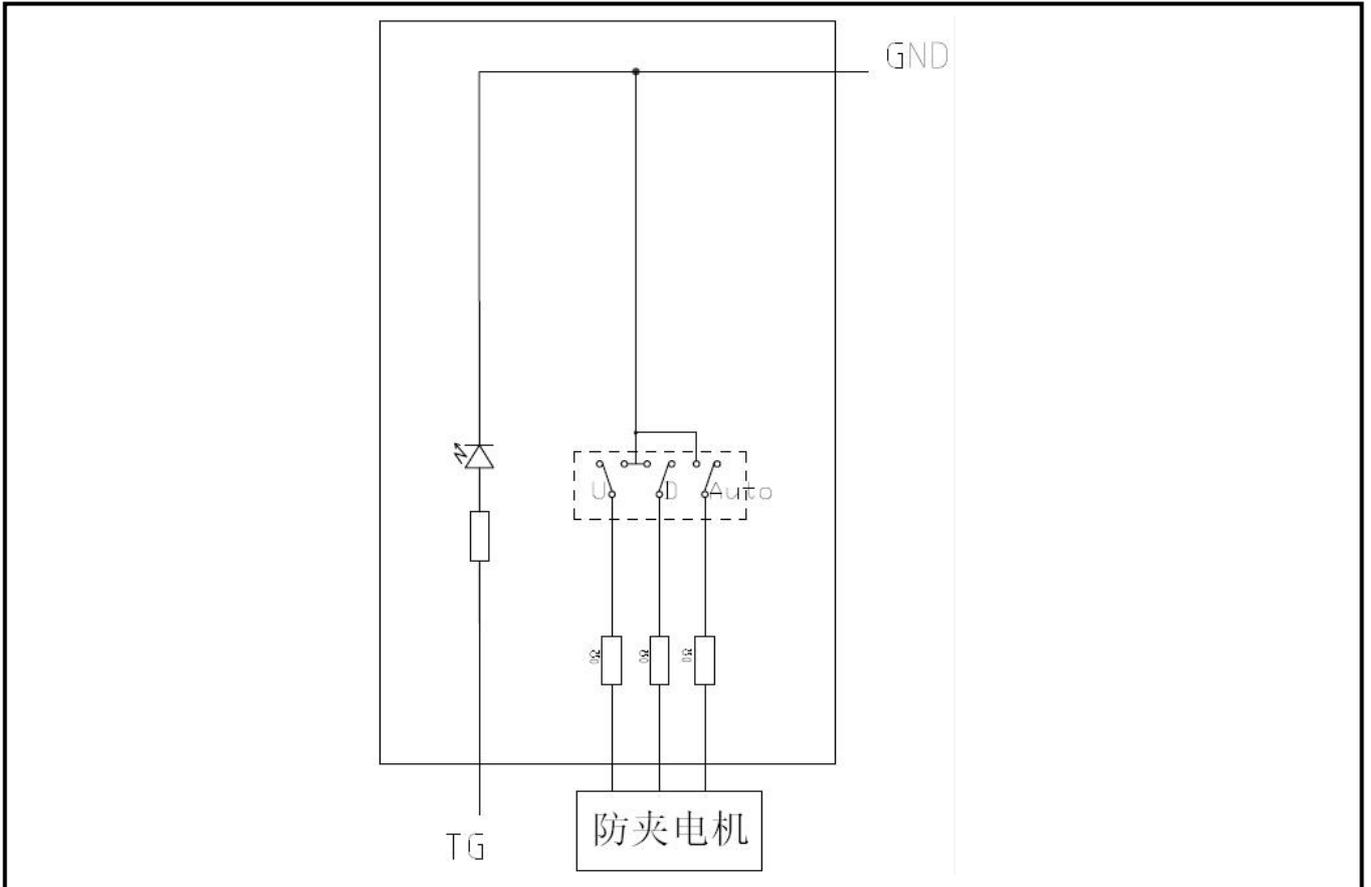
Rear door power window switch assembly(Left)

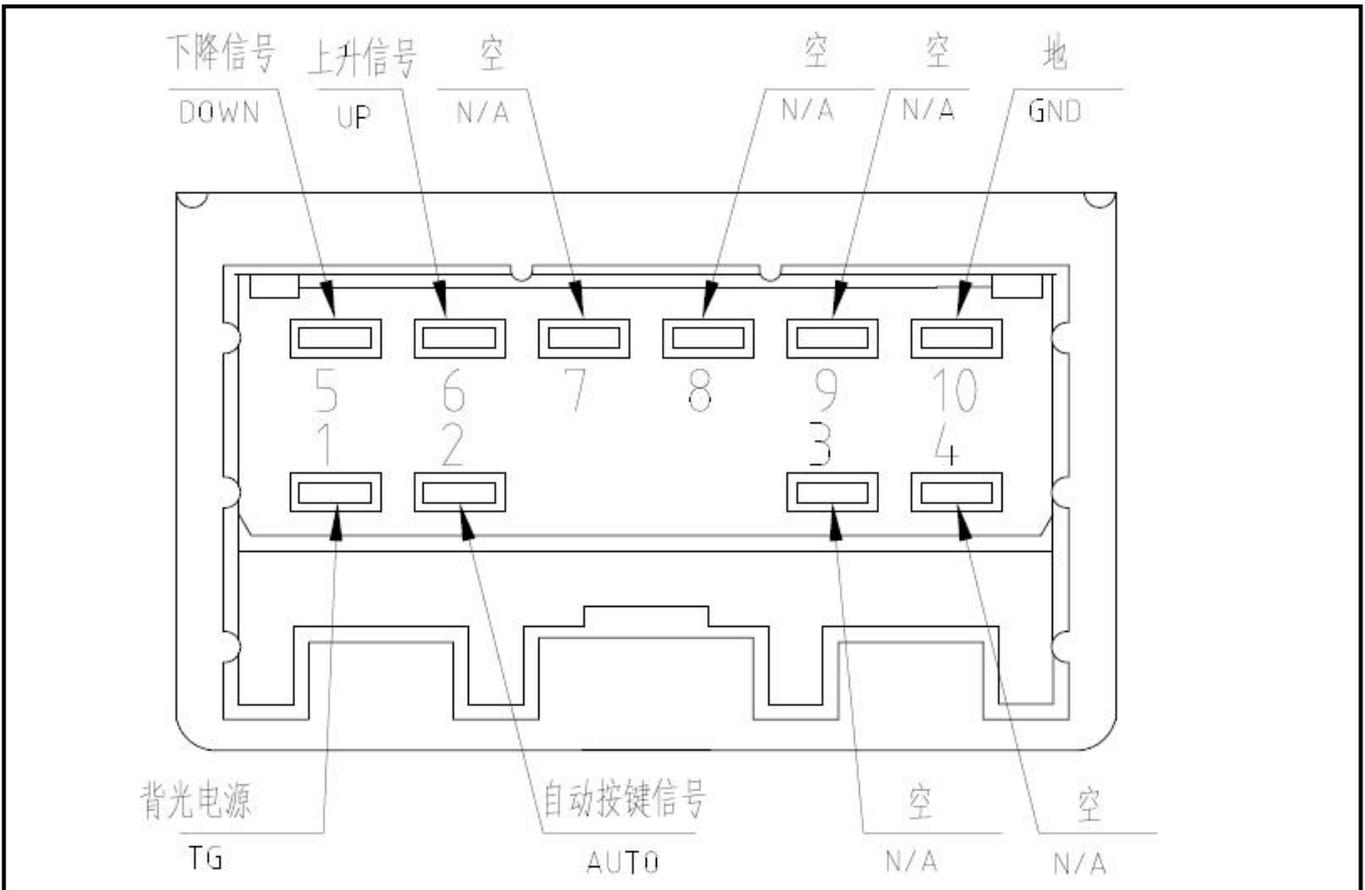


引脚编号/DEFINITION 档位/POSITION	锁门	解锁	门锁指示地	地 GND	电源 BCM_POWER	背景灯 TG	LIN总线								
锁门/SET_LOCK_N	○		○	△	○	○									
解锁/SET_LOCK_L		○	○	△	○	○									
左前门信号 FL				△	○	○									
右前门信号 FR				△	○	○									
左后门信号 RL				△	○	○									
右后门信号 RR				△	○	○									
开窗/UNLOCK WINDOWS				△	○	○									
闭窗/LOCK WINDOWS				△	○	○									



Auxiliary power window switch/rear door power window switch assembly (left) (anti-pinch)





档位 POSITION	引脚编号 DEFINITION	上升 UP	下降 DOWN	自动信号 AUTO	地 GND	背光电源 TG
按键上升/UP		○			○	○
按键下降/DOWN			○		○	○
自动上升/AUTO UP		○		○	○	○
自动下降/AUTO DOWN			○	○	○	○

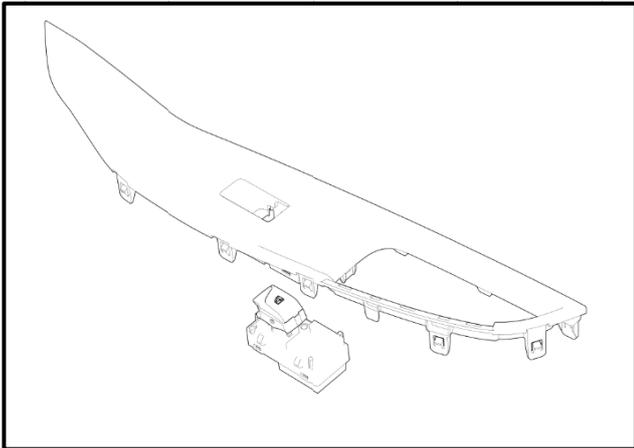
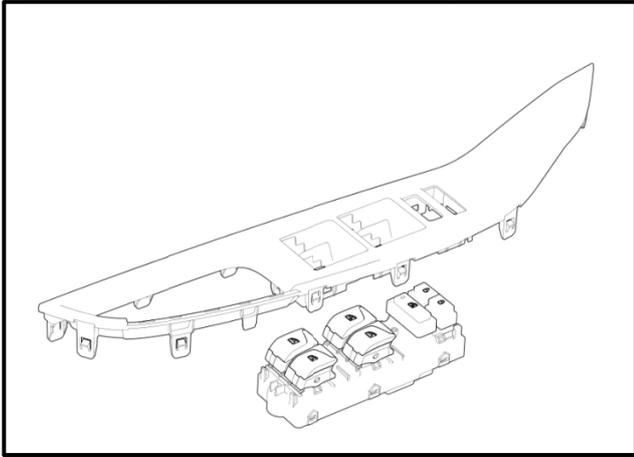
Fault phenomenon and diagnosis

Inspection and maintenance

Phenomenon	Solution
1. All power window switches are inoperative	
	<p>A. Check whether the ignition switch is turned to ON position: No, please turn the ignition switch to ON position; Yes, go to the second step;</p> <p>B. Inspect whether the fuse of the control window motor in the instrument panel central control box assembly is blown: Yes, replace the fuse; No, measure the switch with a multimeter.</p>
2. lock switch on/off	
	<p>A. button locking: Pin W-Lock and pin ECU-GND of main power window switch connector are connected.</p> <p>B. button is not locked: Pin W-Lock and or ECU-GND of main power window switch connector are not connected.</p> <p>C. After the above inspection is completed normally, if the other three window switches cannot work, please check the harness connection between the main power window switch and the other three window switches.</p>
3. Door lock switch on/off	
	<p>A. Press and hold the button to lock the door end, and the main power window switch connects to pin SET-LOCK and/or pin ECU-GND with resistance.</p> <p>B. Press and hold the unlocking end of the button, and pin SET-LOCK and or pin ECU-GND of the main power window switch connector are connected without resistance.</p> <p>C. After the above inspection is completed normally, if the door lock switch is still invalid, please check whether the central control lock works normally, or check the harness connection between the main power window switch and the central control lock.</p>

Removal and installation

Main power window switch



Auxiliary power window switch/rear door power window switch(Left)

Removal

As shown in the figure, when removing the main power window switch and auxiliary power window switch, first press and hold the harness unlocking clamp, remove the harness plug, and then remove the switch from the armrest panel.

4.2.10 Body immobilizer

Specifications

Name
Body intelligent controller(IBC)
Electronic steering lock
Low frequency antenna
Smart key
Door lock mechanism
RF receiver

Description and operation

System introduction

Note: This remote control anti-theft device adopts two-key type, locking key is anti-theft device, and unlocking key is anti-theft release.

Preset protection status

(1) Enter Preset:

b) When the vehicle power supply status is off and all doors are closed (including trunk), the IBCM bus sends "lock" signal, the four doors are locked and the vehicle enters the preset anti-theft status, and the anti-theft indicator changes to steady on.

(2) Exit Preset:

Enter preset anti-Tp (Tp can be configured as 15 s, 25 s, 35 s, 45 s through diagnostic scanner in 4S shop). After any of the following conditions is met, the vehicle exits preset anti-Tp state and enters de-preset anti-Tp state, and anti-theft indicator goes out at the same time:

- a) Open any door (including trunk door);
- b) Key insertion or power supply status changes to non-OFF gear (ACC, START or ON);
- c) Receive remote control unlocking signal or PE unlocking signal;
- d) "IMMO Certification Successful" signal received from the bus or EMS and BCM IMMO Certification Successful.
- e) Enter the preset anti-Tp, if the remote control opens the luggage compartment, the vehicle will remain in the preset anti-Tp state, and the vehicle will enter the anti-Tp state after closing the luggage compartment.
- f) If any of the above conditions does not occur, the complete vehicle after Tp enters the fortification state from the preset fortification state.

Fortification status

1. Enter fortification:

The conditions for entering fortification are described in the Exit Preset Fortification function. Refer to Exit Preset Prevention Function for details.

Enter the condition of fortification in the secondary anti-theft function. Refer to secondary anti-theft function for details.

The anti-theft indicator lamp flashes slowly after the vehicle enters the fortification.

De-fortification:

Regardless of the state of the vehicle, when the power supply state of the vehicle is off, as long as the BCM receives the "unlock" signal from the PEPS bus, the vehicle enters or maintains the defensive state. When the power supply status of the complete vehicle is not OFF, as long as the "IMMO certification

feedback" signal value received from the BCM on the EMS bus is "Successful," the complete vehicle enters or remains in the anti-theft state, and the anti-theft indicator goes out.

Anti-theft activation status

1. Anti-theft activation:

If any of the following conditions is met in the fortification state, the vehicle will enter the anti-theft activation state and the anti-theft indication will flash quickly:

- a) Open any door when not remotely unlocked or "unlocked" signal from PEPS bus is not received;
- b) When non-remote control trunk is unlocked or "trunk unlocking" signal or body sense signal is not received from PEPS bus is set (PEPS_LuggageUnlockSignal is set to 0x1 or 0x2; PEPS_Easy_open=0x1) Open the trunk door;
- c) IMMO is not approved successfully, and the power supply gear changes to ON gear for 5s;
- d) Anti-theft is not activated in case of remote start;

2. Anti-theft activation alarm logic. According to the configuration, the activation status logic is as follows: After entering the anti-theft activation state TW (TW can be configured as 5s, 10 s and 15 s), the turn signal lamp will give an alarm for 5 minutes, meanwhile the horn will sound 28 sounds and the anti-theft indicator lamp will flash quickly; If there is an intrusion signal 5 minutes after the turn signal alarm, the light alarm of 5 minutes and the audible alarm of 28 times are activated again.

3. Anti-theft release, in the following two cases

a) For PEPS model, when the vehicle is in anti-theft activation status, Upon receiving the "unlock" signal from the PEPS bus, the anti-theft activation can be canceled, the vehicle enters the anti-theft state, the turn signal flashes four times, and the buzzer alarm mode is "Exit anti-theft activation state prompt." If the bus receives the IMMO certification success signal sent by the EMS, the anti-theft activation can also be canceled. The vehicle enters the anti-theft state, the turn signal flashes four times, the buzzer alarm mode is "Exit anti-theft activation state prompt," and the anti-theft indicator goes out.

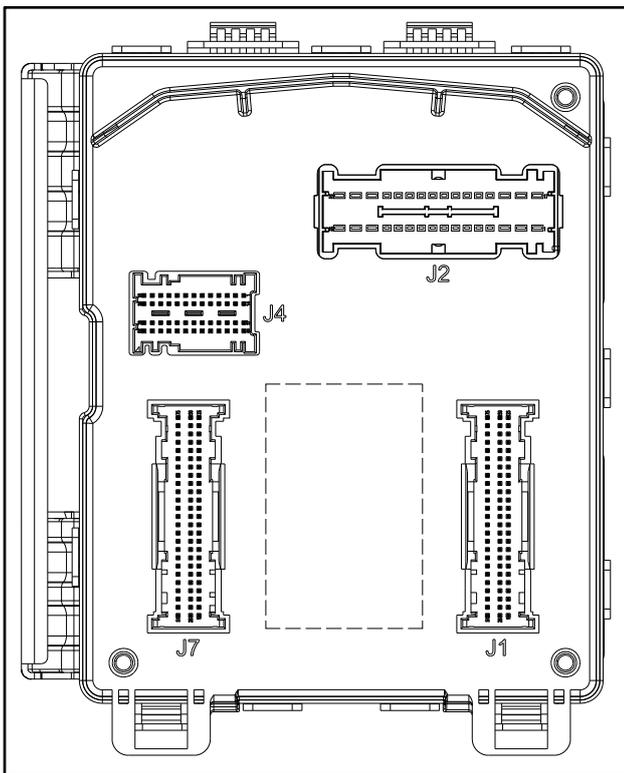
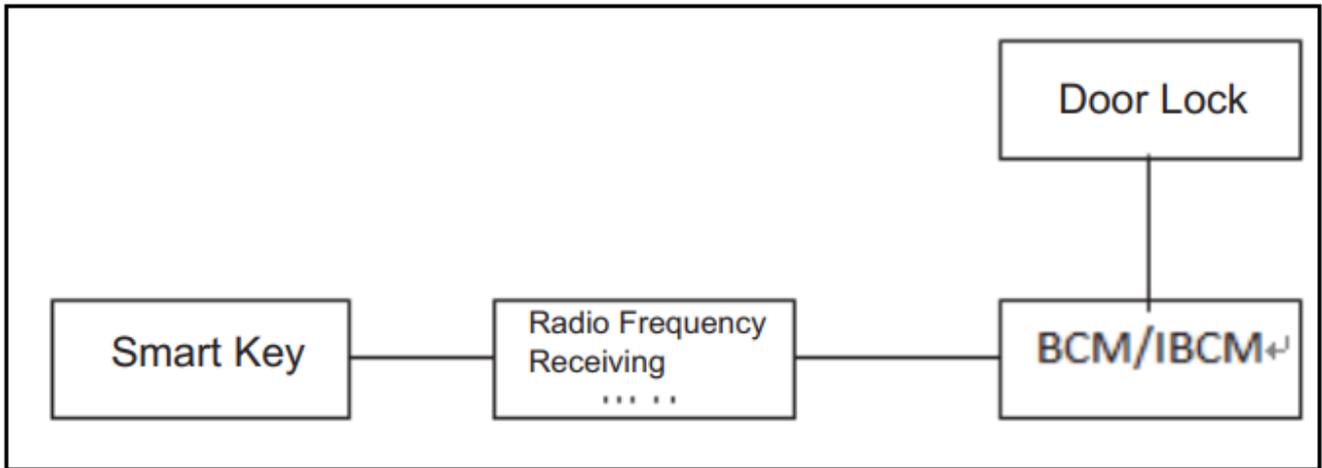
b) For the model equipped with IMMO, the power supply is switched to ON position. After the certification of EMS and BCM IMMO succeeds, the anti-theft activation can also be canceled. The vehicle enters the anti-theft state, and the turn signal lamp flashes for four times. The buzzer alarm mode is "Exit anti-theft activation state prompt," and the anti-theft indicator lamp goes out;

4. The factory state of BCMs is the initial state, and the initial password shall be set at the factory (see diagnostic file of BCMs for details). When BCM is in initial state, the state of its vehicle anti-theft function is fortified state. If the password of BCMs is the initial password, there is no light and sound alarm when anti-theft is activated, but the status signal sent on the BCMs bus is still in the fortification status (i.e. arm status); If the password of BCM is not the initial password, it is executed according to normal logic when anti-theft is activated (i.e. there shall be light and audible alarm).

Secondary anti-theft

After the vehicle enters the defensive state from the defensive state or the preset defensive state, if the ignition switch is not opened within 30 seconds, BCM locks all the doors and the vehicle enters the defensive state. Meanwhile, anti-theft indicator flashes slowly.

Note: The anti-theft status before power-off shall be maintained when the BCM is powered on again. At the same time, when factory configuration is delivered, the BCM status is fortification status.



IBCM interface definition

Pin	Function description	Rated current	Signal type
J1-01	Steering lamp diagnosis(To front turn signal lamp)	5mA	I-D-H /L
J1-02	Brake switch	5mA	I-D -H
J1-03	IG1 relay feedback	5mA	I-D -H
J1-04	Starter relay feedback(Hardware reservation)	5mA	I-D -H
J1-05	Rear washer switch	5mA	I-D -H
J1-06	Front wiper high-speed switch		I-D -H
J1-07	Front wiper low speed switch	5mA	I-D -H
J1-08	Front wiper automatic switch	5mA	I-D -H
J1-09	Rear wiper low speed switch	5mA	I-D -H

J1-10	Rear right hidden door handle deployment position switch	5mA	I-D -H
J1-11	Ambient light sensor(Hardware reservation)	5mA	I-D -H
J1-12	Rear fog lamp switch	5mA	I-D -L
J1-13	Front fog lamp switch(Hardware reservation)	5mA	I-D -L
J1-14	Overtaking lamp switch	5mA	I_D_L
J1-15	High beam switch	5mA	I-D -L
J1-16	Automatic light switch	5mA	I_D_L
J1-17	Rear right hidden door handle retraction position switch	5mA	I-D -L
J1-18	Reverse gear switch	5mA	I-D -L
J1-19	FRT RH hidden door handle deployment position switch	5mA	I-D -L
J1-20	Gear P/N switch	5mA	I_D_L
J1-21	Mirror folding output	1A	O_H/L
J1-22	Mirror Deployment Output	1A	O_H/L
J1-23	Driver door handle deployment drive	5W-bulb	O_H
J1-24	Driver door handle retraction drive	5W-bulb	O_H
J1-25	Other three door handle deployment drive	5W-bulb	O_H
J1-26	Rear antenna negative	1A	PEPS
J1-27	Position lamp switch	5mA	I_D_L
J1-28	ACC relay feedback	5mA	I_D_H
J1-29	IG2 relay feedback	5mA	I_D_H
J1-30	Front washer switch	5mA	I_D_H
J1-31	Rear left hidden door handle deployment position switch	5mA	I_D_L
J1-32	Rear left hidden door handle retraction position switch	5mA	I_D_L
J1-33	Left front hidden door handle deployment position switch	5mA	I_D_L
J1-34	Central locking switch	5mA	I_D_L
J1-35	Rear left electric child lock status feedback(Function reserved without hardware)	5mA	I-D-H /L
J1-36	Front left hidden door handle retraction position switch	5mA	I-D-H /L
J1-37	Left turn signal lamp switch	5mA	I_D_L
J1-38	Rear right door status	5mA	I_D_L
J1-39	FRT LH door status	5mA	I_D_L
J1-40	Rear left door status	5mA	I_D_L
J1-41	Low beam switch	5mA	I-D -L
J1-42	Right steering switch		I_D_L
J1-43	Steering lamp diagnosis(To rear	5mA	I-D -L

	turn signal lamp)		
J1-44	Interior trunk switch	5mA	I-D -L
J1-45	Front wiper stop signal	30mA	I_D_L
J1-46	Rear wiper stop signal	30mA	I_D_L
J1-47	Hardware reservation		O_PWM
J1-48	Right antenna positive	1A	PEPS
J1-49	Right antenna negative	1A	PEPS
J1-50	Other three door handle retraction drive	5W-bulb	O_H
J1-51	Rear antenna positive	1A	PEPS
J1-52	Emergency alarm switch	5mA	I-D -L
J1-53	Trunk release switch	5mA	I-D -L
J1-54	Analog signal ground	5mA	GND
J1-55	Horn switch	5mA	I-D -L
J1-56	Mirror folding switch	5mA	I-D -L
J1-57	Front right hidden door handle retraction position switch	5mA	I_D_L
J1-58	Central control unlocking switch	5mA	I_D_L
J1-59	F.L. door handle switch	5mA	I_D_L
J1-60	Kick sensor signal input	5mA	I_D_L
J1-61	Front left lock status	5mA	I_D_L
J1-62	Trunk status	5mA	I_D_L
J1-63	Hood status	5mA	I_D_L
J1-64	FRT RH door status	5mA	I_D_L
J1-65	Middle antenna negative	1A	PEPS
J1-66	Middle antenna positive	1A	PEPS
J1-67	Front position lamp and license plate lamp output	5W-bulb+3*3W-LED	O_H
J1-68	Rear position lamp	2*5W-bulb+3*3W-LED	O_H
J1-69	Rear right fog lamp output(Hardware reservation)	21W	O_H
J1-70	Rear left fog lamp	21W	O_H
J1-71	Monochrome ambient lamp (or side marker lamp) (hardware reserved)	10W	O_H
J1-72	Trunk lamp	5W-bulb	O_H
J1-73	Function reservation HSD	20W	O_H
J1-74	Function reservation HSD	10W-bulb	O_H
J1-75	One-key starter switch orange lamp(Reserved)	3.5A-bulb/??-LED	O_PWM
J2-01	Power supply	12A	
J2-02	Power supply	13A	
J2-03	Power supply	7A	
J2-04	Right turn signal lamp	2x21+5W	O_H
J2-05	Left turn signal lamp	2x21+5W-bulb/??-LED	O_H
J2-06	F.R. corner lamp(Hardware reservation)	55W-bulb	O_H

J2-07	Function reservation	15W	O_H
J2-08	Background light	25W	O_PWM
J2-09	Right daytime running lamp	55W	O_H
J2-10	F.L. corner lamp(Hardware reservation)	55W-bulb	O_H
J2-11	Function reservation	15W	O_H
J2-12	High-mounted brake lamp	25W	O_H
J2-13	Left daytime running lamp	55W	O_H
J2-14	Power supply	13.5A	
J2-15	Analog signal ground	5mA	
J2-16	Power supply	12.5A	
J2-17	Analog signal ground	5mA	
J2-18	Other three doors unlock output	9A	O_H/L
J2-19	Power supply	12A	
J2-20	Trunk release output	3A	O_H
J2-21	Fuel pump pressure building relay	8A	O_H
J2-22	Function reservation	5A	O_H
J2-23	Energy saving output	50W	O_H
J2-24	Function reservation HSD	3.5A-bulb/??-LED	O_PWM
J2-25	Function reservation HSD	3.5A-bulb/??-LED	O_PWM
J2-26	Brake lamp	2x21W	O_H
J2-27	Reverse lamp output	2x21W	O_H
J2-28	Front left door unlock output(Fuel tank cap lock)	3A	O_H/L
J2-29	Dome lamp output	40W	O_L
J2-30	Locking output	12A	O_H/L
J2-31	Power supply	11A	power
J2-32	Power supply	14A	power
J7-01	Function reservation	5mA	I-PWM
J7-02	Function reserved LSD	200mA	O-L
J7-03	Wireless charging enable	100mA	O-L
J7-04	Rainfall ambient light sensor, reversing radar sensor, IBS node	-	comm
J7-05	Function reservation		comm
J7-06	One-key starter switch ground		
J7-07	ADAS-CAN terminal resistance		comm
J7-08	One-key starter switch indicator lamp green	30mA	O-H
J7-09	One-key starter switch breathing lamp white	30mA	O-H
J7-10	Other three door handle lamps	30mA	O-H
J7-11	Remote control lowering	30mA	O-L
J7-12	RFR LIN communication bus	-	comm
J7-13	Analog signal ground		
J7-14	CAN1_L	-	comm
J7-15	Analog signal ground	5mA	

J7-16	Crash input	5mA	I-PWM
J7-17	Function reservation		comm
J7-18	Function reservation		comm
J7-19	Function reservation		comm
J7-20	Function reservation		comm
J7-21	Low beam relay output	150mA	O-L
J7-22	Front wiper intermittent adjustment switch reference power supply	-	I-A
J7-23	Front wiper intermittent adjustment switch analog input	-	I-A
J7-24	Function reserved analog input 3	-	I-A
J7-25	Function reserved analog input 3	-	I-A
J7-26	Hardware reservation	-	comm
J7-27	Multi-color framed lamp	-	comm
J7-28	Driver window, co-driver window, rear left window, rear right window, sunroof glass controller, sunroof sunshade controller node	-	comm
J7-29	Clutch switch	5mA	I-L
J7-30	Function reservation		comm
J7-31	Door handle signal ground	5mA	
J7-32	ADAS-CAN terminal resistance		comm
J7-33	FRT RH door handle switch	5mA	I-L
J7-34	Welcome output signal	30mA	O-H
J7-35	Driver door handle lamp	30mA	O-H
J7-36	High beam output signal	150mA	O-H
J7-37	Remote control rising	30mA	O-L
J7-38	Function reservation		I-A
J7-39	CAN1_H	-	comm
J7-40	Analog signal ground	5mA	
J7-41	Anti-theft indicator	30mA	O-L
J7-42	Vehicle speed signal input(Hardware reservation)	5mA	I-PWM
J7-43	Electric child lock input(Function reservation)	5mA	I-D -L
J7-44	Function reservation	5mA	I-D -L
J7-45	Background lamp analog resistance input ground	5mA	
J7-46	Gear shift enable relay(Hardware reservation)	150mA	O-L
J7-47	Start/stop switch 1	-	I-D
J7-48	Background brightness adjustment switch	-	I-A
J7-49	Function reservation	5mA	I-A
J7-50	Driving mode 1	5mA	I-A

J7-51	S-CAN terminal resistance		
J7-52	S-CAN terminal resistance		
J7-53	Front antenna positive	1A	Ant+
J7-54	Front antenna negative	1A	Ant-
J7-55	Front wiper low speed	150mA	O-L
J7-56	Front wiper high speed	150mA	O-L
J7-57	Rear wiper relay	150mA	O-L
J7-58	Locking indicator light	150mA	O-L
J7-59	Driving mode sport indicator lamp/4WD mode auto indicator lamp	150mA	O-L
J7-60	Driving mode ECO indicator lamp/4WD mode 2WD indicator lamp	150mA	O-L
J7-61	Water steering lamp control signal	150mA	O-L
J7-62	Drive Mode Normal/4WD Mode 4WD	150mA	O-L
J7-63	Left antenna positive	1A	Ant+
J7-64	Left antenna negative	1A	Ant-
J7-65	Function reservation		I-A
J7-66	IG1 relay	150mA	O-L
J7-67	IG2 relay	150mA	O-L
J7-68	ACC relay	150mA	O-L
J7-69	Horn relay	150mA	O-L
J7-70	Rear defrosting relay	150mA	O-L
J7-71	Window delay relay	150mA	O-L
J7-72	Start/stop switch 2	-	I-D
J7-73	Analog signal ground	5mA	
J7-74	Function reservation	1A	Ant+
J7-75	Function reservation	1A	Ant-

Fault phenomenon and diagnosis

General equipment

Sleeve
Multimeter
Oscilloscope
One mobile lighting device
Diagnostic scanner

Inspection and confirmation

1. Confirm the customer's problem.
2. Visually inspect obvious faults in electrical equipment.

Visual Check List

Electrical part
<ul style="list-style-type: none"> • Battery • Fuse • Loose or corroded electrical connection plug • Harness

3. Check the system circuit which is easy to see or can be seen.
4. If the observed or raised problem is obvious and the cause has been found, the cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.

IBCM Common fault diagnosis

Function	Fault symptom	Fault cause	Solution	Remarks
Remote control function	Failure of all functions of remote controller	1. does not match the remote controller. 2. is too far from the vehicle, or there is strong interference source near the vehicle. (Transmitter, etc.) 3. The remote controller has no power, check whether the voltage of battery in the remote controller is >2.9 V; The 4. remote controller is in poor contact with the battery. 5. Vehicle battery is low. The 6. remote control is damaged.	A. Re-online key configuration or diagnostic scanner manual key configuration. B. walk into the vehicle or leave the area C. Replace the battery for the key. D. Refit PCBs in the remote control. E. Charge the battery. F. Replace the remote controller and re-learn the keyless system menu through the diagnostic scanner.	First note that the power supply must be in the OFF state.
Keyless entry function	Keyless entry failure	1. Smart key has fault; 2. Front left/right door handle switch is short circuit or open circuit;	A. When pressing the door handle button, observe whether the indicator light on the smart key flashes. If it flashes, confirm the	

		<p>3. Front left/right door handle has antenna short circuit or open circuit;</p> <p>4. Keyless control module is damaged;</p> <p>5. Vehicle battery is low.</p> <p>6. Problems with IBCM</p> <p>7. Keyless control module and BCM direct CAN bus short circuit or open circuit.</p>	<p>key is normal; If there is no flicker, please press remote control failure treatment;</p> <p>B. Read the IBCM fault code with the diagnostic scanner, and check whether there is problem with the door handle antenna;</p> <p>C. Read the IBCM fault code with the diagnostic scanner to see if the IBCM is faulty;</p> <p>D. Charge the battery;</p> <p>F. Replace body intelligent controller assembly;</p> <p> Note: To replace the body intelligent controller, it is necessary to re-learn the smart key and re-perform anti-theft matching.</p>	
One-button start	Vehicle cannot be started	<p>1. first observe whether the starter motor rotates. If the starter motor rotates, please press the engine related fault rule out, and the keyless system is normal;</p> <p>2. Observe whether there is relevant fault prompt on the instrument. If yes, please refer to the troubleshooting method of diagnostic scanner fault code.</p> <p>3. Observe whether the indicator lamp on the key flashes. If it flashes normally, confirm the key is normal; If there is no flicker, please press remote control failure treatment;</p> <p>4. Check whether the start request signal is normal;</p> <p>5. Vehicle battery is insufficient;</p> <p>6. Short circuit or open circuit of CAN bus;</p>	<p>1. Refer to troubleshooting method of diagnostic scanner fault code;</p> <p>2. Check whether the key is normal;</p> <p>3. Check whether the engine control module has fault code;</p> <p>4. Check the battery voltage and charge;</p> <p>5. Check whether the circuit is open or short.</p> <p>6. Replace body intelligent controller;</p> <p> Note: To replace the body intelligent controller, it is necessary to re-learn the smart key and re-perform anti-theft matching.</p>	

DTC fault code list and simple troubleshooting method

BCM DTC DTC list

Serial number	DC code	DC Meaning	Fault type	Controller pin	Possible causes	Maintenance advice
1						
2	B104 D17	Batt1 Voltage Too High Battery 1 voltage too high	<i>Circuit voltage above threshold circuit voltage exceeds threshold</i>	J2_03	Power supply fault	1. Check Batt1 Voltage 2. Check connection 1. Check battery 2. Check harness
3	B104 D16	Batt1 Voltage Too Low Battery 1 voltage too low	<i>Circuit voltage below threshold circuit voltage below threshold</i>	J2_03	Power supply fault	1. Check Batt1 Voltage 2. Check connection 1. Check battery 2. Check harness
4	B104 E17	Batt2 Voltage Too High Battery 2 voltage too high	<i>Circuit voltage above threshold circuit voltage exceeds threshold</i>	J2_31	Power supply fault	1. Check Batt2 Voltage 2. Check connection 1. Check battery 2. Check harness
5	B104 E16	Batt2 Voltage Too Low Battery 2 voltage too low	<i>Circuit voltage below threshold circuit voltage below threshold</i>	J2_31	Power supply fault	1. Check Batt2 Voltage 2. Check connection 1. Check battery 2. Check harness
6	B104 F17	Batt3 Voltage Too High Battery 3 voltage too high	<i>Circuit voltage above threshold circuit voltage exceeds threshold</i>	J2_14	Power supply fault	1. Check Batt3 Voltage 2. Check connection 1. Check battery 2. Check harness

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body immobilizer

4.2.10-12

7	B104 F16	Batt3 Voltage Too Low Battery 3 voltage too low	<i>Circuit voltage below threshold circuit voltage below threshold</i>	J2_14	Power supply fault	1. Check Batt3 Voltage 2. Check connection 1. Check battery 2. Check harness
8	B105 017	Batt5 Voltage Too High Battery 5 voltage too high	<i>Circuit voltage above threshold circuit voltage exceeds threshold</i>	J2_32	Power supply fault	1. Check Batt5 Voltage 2. Check connection 1. Check battery 2. Check harness
9	B105 016	Batt5 Voltage Too Low Battery 5 voltage too low	<i>Circuit voltage below threshold circuit voltage below threshold</i>	J2_32	Power supply fault	1. Check Batt5 Voltage 2. Check connection 1. Check battery 2. Check harness
10	B105 117	Batt6 Voltage Too High Battery 6 voltage too high	<i>Circuit voltage above threshold circuit voltage exceeds threshold</i>	J2_02	Power supply fault	1. Check Batt6 Voltage 2. Check connection 1. Check battery 2. Check harness
11	B105 116	Batt6 Voltage Too Low Battery 6 voltage too low	<i>Circuit voltage below threshold circuit voltage below threshold</i>	J2_02	Power supply fault	1. Check Batt6 Voltage 2. Check connection 1. Check battery 2. Check harness
12	U100 988	CAN1 Bus Off CAN1 bus off	<i>Bus off bus off</i>	J7_39 J7_14	Bus fault	1. Check the connector assembly of BCM 2. Check Connection 1. Check BCM connector connection 2. Check harness
13	U104 087	CAN message 0x196 time out Can message 0x 196 timeout	<i>Missing message message missing</i>	J7_39 J7_14	Bus fault	1. Check the connector assembly of BCM and EMS 2. CheckConnection

4.2.10 -13

body immobilizer

4.2.10-13

						1. Check the connection of BCM and EMS connectors. 2. Check harness
14	U104 187	CAN message 0x197 time out Can message 0x 197 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and EPB 2. Chenck Connection 1.Check the connection of BCM and EPB connectors. 2. Check harness
15	U104 287	CAN message 0x180 time out Can message 0x 180 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and SAS 2. Chenck Connection 1. Check the connection of BCM and SAS connectors. 2. Check harness
16	U104 387	CAN message 0x50 time out Can message 0x50 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and SRS 2. Chenck Connection 1. Check the connection of BCM and SRS connectors. 2. Check harness
17	U103 387	CAN message 0x1A8 time out Can message 0x1A8 timeout	Missing message message missing	J7_39 J7_14	Bus fault.	1. Chenk the connector assembly of BCM and TCU 2. Chenck Connection 1. Check the connection of BCM and TCU connectors. 2. Check harness
18	U103 187	CAN message 0x187 time out Can message 0x 187 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and ESP 2. Chenck Connection 1. Check the connection of BCM and ESP connectors. 2. Check harness
19	U103 687	CAN message 0x3FE time out Can message 0x3FE	Missing message message	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and PTS

4.2.10 -14

body immobilizer

4.2.10-14

		timeout	<i>missing</i>			2. <i>Chenck</i> Connection 1. <i>Check</i> the connection of BCM and PTS connectors. 2. <i>Check</i> harness
20	U101 687	CAN message 0x2AF time out Can message 0x2AF timeout	<i>Missing</i> <i>message</i> <i>message</i> <i>missing</i>	<i>J7_39</i> <i>J7_14</i>	Bus fault	1. <i>Chenck</i> the connector assembly of BCM and LCDAR 2. <i>Chenck</i> Connection 1. <i>Check</i> the connection of BCM and LCDAR connectors. 2. <i>Check</i> harness
21	U101 187	CAN message 0x2AE time out Can message 0x2AE timeout	<i>Missing</i> <i>message</i> <i>message</i> <i>missing</i>	<i>J7_39</i> <i>J7_14</i>	Bus fault	1. <i>Chenck</i> the connector assembly of BCM and LCDAL 2. <i>Chenck</i> Connection 1. <i>Check</i> the connection of BCM and LCDAL connectors. 2. <i>Check</i> harness
22	U101 587	CAN message 0x3E0 time out Can message 0x3E0 timeout	<i>Missing</i> <i>message</i> <i>message</i> <i>missing</i>	<i>J7_39</i> <i>J7_14</i>	Bus fault	1. <i>Chenck</i> the connector assembly of BCM and AVM 2. <i>Chenck</i> Connection 1. <i>Check</i> the connection of BCM and AVM connectors. 2. <i>Check</i> harness
23	U100 A87	CAN message 0x385 time out Can message 0x 385 timeout	<i>Missing</i> <i>message</i> <i>message</i> <i>missing</i>	<i>J7_39</i> <i>J7_14</i>	Bus fault	1. <i>Chenck</i> the connector assembly of BCM and IP 2. <i>Chenck</i> Connection 1. <i>Check</i> the connection of BCM and IP connector. 2. <i>Check</i> harness
24	U100 B87	CAN message 0x276 time out Can message 0x 276 timeout	<i>Missing</i> <i>message</i> <i>message</i> <i>missing</i>	<i>J7_39</i> <i>J7_14</i>	Bus fault	1. <i>Chenck</i> the connector assembly of BCM and ESCL 2. <i>Chenck</i> Connection 1. <i>Check</i> the connection of BCM and ESCL

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body immobilizer

4.2.10-15

						connectors. 2. Check harness
25	U100 C87	CAN message 0x330 time out Can message 0x 330 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and AC 2. Chenck Connection 1. Check the connection of BCM and AC connectors. 2. Check harness
26	U101 287	CAN message 0x332 time out Can message 0x 332 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and LAS 2. Chenck Connection 1. Check the connection of BCM and LAS connectors. 2. Check harness
27	U101 387	CAN message 0x38D time out Can message 0x38D timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and TBOX 2. Chenck Connection 1.Check the connection of BCM and TBOX connectors. 2. Check harness
28	U103 087	CAN message 0x51A time out Can message 0x51A timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and HU 2. Chenck Connection 1. Check the connection of BCM and HU connectors. 2. Check harness
29	U103 487	CAN message 0x264 time out Can message 0x 264 timeout	Missing message message missing	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and APA 2. Chenck Connection 1. Check the connection of BCM and APA connectors. 2. Check harness
30	U103 587	CAN message 0x3EE time out Can message 0x3EE	Missing message message	J7_39 J7_14	Bus fault	1. Chenk the connector assembly of BCM and RFBT

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body immobilizer

4.2.10-16

		timeout	missing			2. Check Connection 1. Check the connection of BCM and RFBT connectors. 2. Check harness
31	B108 862	EMSImmo authentication failed Failed with EMS certification	EMSImmo authentication Fail EMS certification failed	J1-36 J1-64	Unlearned immobilizer	1. Check if learn authentication status is successful 2. Check the CAN connection 1. Check whether anti-theft learning is successful. 2. Check CAN wire connection
32	U100 281	LIN2 DDCU response Error LIN2 DDCU feedback error	Invalid serial data received Invalid serial port data reception	J7_28	Circuit fault	1. Check the connector assembly of BCM and DDCU 2. Check Connection 1. Check the connection of BCM and DDCU module connectors. 2. Check harness
33	U101 C81	LIN2 PDCU response Error LIN2 PDCU feedback error	Invalid serial data received Invalid serial port data reception	J7_28	Circuit fault	1. Check the connector assembly of BCM and PDCU 2. Check Connection 1. Check the connection of BCM and PDCU module connectors. 2. Check harness
34	U101 D81	LIN2 RLDCU response Error LIN2 RLDCU feedback error	Invalid serial data received Invalid serial port data reception	J7_28	Circuit fault	1. Check the connector assembly of BCM and RLCU2. 2. Check Connection 1. Check the connection of BCM and RLCU module connector. 2. Check harness
35	U101 E81	LIN2 RRDCU response Error LIN2 RRDCU feedback error	Invalid serial data received Invalid serial port	J7_28	Circuit fault	1. Check the connector assembly of BCM and RRCU 2. Check Connection

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body immobilizer

4.2.10-17

			<i>data reception</i>			1. Check the connection of BCM and RRCU module connectors. 2. Check harness
36	U101 F81	LIN2 Sunroof response Error LIN2 Sunroof feedback error	<i>Invalid serial data received Invalid serial port data reception</i>	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunroof Module 2. Check Connection 1. Check the connection of BCM and sunroof module connector. 2. Check harness
37	U102 181	LIN2 Sunshade response Error LIN2 Sunvisor feedback error	<i>Invalid serial data received Invalid serial port data reception</i>	J7_28	Circuit fault	1. Check the connector assembly of Sunroof Module 2. Check Connection 1. Check the sunroof control module connector connection 2. Check harness
38	U100 287	LIN2 DDCU communication timeout LIN2 DDCU When communication arrives	<i>Missing message message missing</i>	J7_28	Circuit fault	1. Check the connector assembly of BCM and DDCU 2. Check Connection 1. Check the connection of BCM and DDCU module connectors. 2. Check harness
39	U102 887	LIN2 PDCU communication timeout LIN2 PDCU When communication arrives	<i>Missing message message missing</i>	J7_28	Circuit fault	1. Check the connector assembly of BCM and PDCU 2. Check Connection 1. Check the connection of BCM and PDCU module connectors. 2. Check harness
40	U102 987	LIN2 RLDCU communication timeout LIN2 RLDCU When communication arrives	<i>Missing message message missing</i>	J7_28	Circuit fault	1. Check the connector assembly of BCM and RLDCU 2. Check Connection 1. Check the connection of BCM

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body immobilizer

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						and RLDCU module connectors. 2. Check harness
41	U102 A87	LIN2 RRDCU communication timeout When LIN2 RRDCU communication arrives	Missing message message missing	J7_28	Circuit fault	1. Check the connector assembly of BCM and RRDCU 2. Check Connection 1. Check the connection of BCM and RRDCU module connectors. 2. Check harness
42	U102 B87	LIN2 Sunroof communication timeout LIN2 Sunroof communication arrives	Missing message message missing	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunroof Moudle 2. Check Connection 1. Check the connection of BCM and sunroof module connector. 2. Check harness
43	U102 D87	LIN2 Sunshade communication timeout LIN2 Sunvisor communication arrives	Missing message message missing	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunroof Moudle 2. Check Connection 1. Check the connection of BCM and sunroof module connector. 2. Check harness
44	U100 381	LIN3 RLS response Error LIN3 RLS feedback error	Invalid serial data received Invalid serial port data reception	J7_04	Circuit fault	1. Check the connector assembly of BCM and RLS Moudle 2. Check Connection 1. Check the connection of BCM and RLS connectors. 3. Check harness
45	U100 387	LIN3 RLS communication timeout When LIN3 RLS communication arrives	Missing message message missing	J7_04	Circuit fault	1. Check the connector assembly of BCM and RLS 2. Check Connection 1. Check the

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body immobilizer

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						connection of BCM and rain sensor connector. 2. Check harness
46	U100 701	Sunroof Window System Failure Sunroof system failure	General Electric Failure General Electric fault	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunroof Module 2. Check Connection 1. Check the connection of BCM and sunroof module connector. 2. Check harness
47	U100 709	Sunroof Window Switch Failure Sunroof switch failure	Component Failures component failure	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunroof Switch 2. Check Connection 1. Check the connection of BCM and sunroof switch connector. 2. Check harness
48	U100 801	Sunroof Curtain System Failure Sunroof curtain system failure	General Electric Failure General Electric fault	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunshade 2. Check Connection 1. Check the connection of BCM and sunroof curtain connector. 2. Check harness
49	U100 809	Sunroof Curtain Switch Failure Sunroof curtain switch fails	Component Failures component failure	J7_28	Circuit fault	1. Check the connector assembly of BCM and Sunshade Switch 2. Check Connection 1. Check the connection of BCM and sunroof curtain switch connector. 2. Check harness
50	U100 04B	RLS Over temperature RLS overtemperature	#REF!	J7_04	Circuit fault	1. Check RLS 2. Check Connection 1. Check rain sensor

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body immobilizer

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						2. Check harness
51	U100 046	Rain Sensor Calibration Error Rain sensor calibration error	Calibration/parameter memory failure calibration error	J7_04	Circuit fault	1. Check RLS 2. Check Connection 1. Check rain sensor 2. Check harness
52	U100 017	RLS Over Voltage RLS overvoltage	Circuit voltage above threshold circuit voltage exceeds threshold	J7_04	Received RLS_Error_status_over_voltage signal Receive RLS_Error_status_over_voltage signal	1. Check RLS 2. Check Connection 1. Check rain sensor 2. Check harness
53	U101 787	BCM NM limp home failure BCM NM limp home failure	Missing message message missing	J7_39 J7_14	Been in NM limp home state for more than 2000ms consecutively Continuously hold NM Limp home state more than 2000 ms	1. Check BCM 2. Check Connection 1. Check BCM 2. Check harness
54	U101 883	EMSImmo authentication request frame Checksum error EMSImmo Validation Request frame Checksum Error	#REF!	J7_39 J7_14	CAN communication is Error Can bus transmission is abnormal	1. Reset the power of vehicle battery 2. Check the voltage of battery 1. Disconnect the battery and power on again. 2. Check battery power
55	U101 987	No EMSImmo authentication request received No verification request received from EMSImmo	Missing message message missing	J7_39 J7_14	Configuration is Error Configuration word error	1. Check the vehicle configuration 2. Reset the power of vehicle battery 3. Check the voltage of vehicle battery 1. Check whether the configuration word is correct. 2. Disconnect the battery and power on again. 3. Check battery power
56	U101 A87	No EMSImmo authentication result received No verification results received from	Missing message message missing	J7_39 J7_14	Can bus transmission is abnormal	1. Reset the power of vehicle battery 2. Check the voltage of battery 1. Disconnect the

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body immobilizer

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		EMSIImmo				battery and power on again. 2. Check battery power
57	U101 C88	LIN1 Transimit Error LIN1 transmission error	Bus off bus off	J7_12	LIN1 Transimit Error Flag set(After BCM re-transmitting the request frame for maximum times as defined in CA-P3-DML-79) LIN1 transmission error flag position bit	1. Check the LIN connection 1. Check LIN line connection
58	U103 D87	IBS communication timeout IBS communication loss	Missing message message missing	J7_28	LIN2 Transimit Error Flag set(After BCM re-transmitting the request frame for maximum times as defined in CA-P3-DML-79) LIN2 Transmission error flag position bit	1. Check the LIN connection 1. Check LIN line connection
59	U100 901	IBS System Failure IBS system fault	System failure system fault	J7_28	IBS sensor error. IBS sensor fault.	Change a new IBS sensor. Replace IBS.
60	U102 F81	IBS response Error IBS feedback error	Invalid serial data received Invalid serial port data reception	J7_28	nResponseError reaches value of MaxnResponseError, See BaseTech for definition of nResponseError The number of consecutive errors returned exceeds the defined maximum number of times	1. Chenk the connector assembly of BCM and IBS 2. Chenk Connection 1. Check the connection of BCM and IBS module connectors. 2. Check harness
61	B106 823	Drive_mode1 Stuck Drive mode switch stuck	Signal stuck low signal stuck	J7-50	Switch stuck Drive mode switch stuck	check the state of drive mode switch Check driving mode switch status
62	U103 787	LIN2 WindowSW communication timeout LIN2 WindowSW Lost power saving communication	Missing message message missing	J7-28	BCM can't communicate to WindowSW for tTimeoutCommunication, See BaseTech for definition of tTimeoutCommunication BCM cannot communicate with WindowSW within	1. Chenk the connector assembly of BCM and WindowSW 2. Chenk Connection 1.Check the connection of BCM and WindowSW module connectors. 2. Check harness

					<i>tTimeout time</i>	
63	U103 781	LIN2 WindowSW response error LIN2 WindowSW Feedback error	<i>Invalid serial data received Invalid serial port data reception</i>	J7-28	<i>nResponseError reaches value of MaxnResponseError, See BaseTech for definition of nResponseError The number of consecutive errors returned exceeds the defined maximum number of times</i>	1. Check the connector assembly of BCM and WindowSW 2. Check Connection 1. Check the connection of BCM and WindowSW module connectors. 2. Check harness
64	U103 881	RLS sunroof close failure Rain closing sunroof failure	<i>Invalid serial data received Invalid serial port data reception</i>	J7-04	<i>nResponseError reaches value of MaxnResponseError, See BaseTech for definition of nResponseError The number of consecutive errors returned exceeds the defined maximum number of times</i>	1. Check the connector assembly of BCM and RLS 2. Check Connection 1. Check the connection of BCM and RLS module connectors. 2. Check harness
65	U100 386	LIN3 RLS Singnal Error LIN3 RLS signal error	<i>invalid serial data received</i>	J7_04	IF Supply Voltage within 9 - 16V AND BCM is in AWAKE Mode AND LIN_tDelayMonitoring seconds after LIN Bus wake up, received RLS_LIN2 signal RLS_RLS_error=01(Err or active) count to 3 times continuously The battery voltage is 9-17 V, and the BCM is in the wake-up state. After the LIN wakes up, the delay tDelay starts, and the LIN signal RLS_RLS_error=01 on the RLS_LIN2 is received for three consecutive times.	1. Check the connector assembly of BCM and RLS Moudle 2. Check Connection 1. Check the connection of BCM and RLS connectors. 3. Check harness
66						
67	B100 111	Welcome_Output_Sign al short to ground Welcome output signal short circuit to ground	<i>Short to ground short circuit to ground</i>	J7_34	Welcome_Output_Sign al short to ground Welcome output signal short circuit to ground	1. Check wire harness 2. Check connection 1. Check harness 2. Check connector

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body immobilizer

4.2.10-23

68	B100 212	RKE_Window_Down short to Battery Remote control door window lowering battery short circuit	Short to battery Short circuit to battery	J7_11	RKE_Window_Down short to Battery Remote window down output short circuit to power supply	1. Check connection 1. Check harness
69	B100 312	IGN2_Rly_Ctrl short to Battery IGN2_ relay _ control battery short circuit	Short to battery Short circuit to battery	J7_67	IGN2_Rly_Ctrl short to Battery IGN2 relay short circuit to power supply	1. Check IGN2_Rly_Ctrl 2. Check connection 1. Check IGN2 relay 2. Check harness
70	B100 313	IGN2_Rly_Ctrl open circuit IGN2_ relay - control open loop	Open circuit Open loop	J7_67	IGN2_Rly_Ctrl open circuit IGN2 relay open circuit	1. Check IGN2_Rly_Ctrl 2. Check connection 1. Check IGN2 relay 2. Check harness
71	B100 412	Rear_Defrost_Rly short to Battery Rear side defrost _ relay battery short circuit	Short to battery Short circuit to battery	J1_18	Rear_Defrost_Rly short to Battery Rear defrost relay short circuit to power supply	1. Check Rear_Defrost_Rly 2. Check connection 1. Check rear defrosting relay 2. Check harness
72	B100 413	Rear_Defrost_Rly open circuit Rear side defrost _ relay open loop	Open circuit Open loop	J1_18	Rear_Defrost_Rly open circuit Rear defrosting relay open circuit	1. Check Rear_Defrost_Rly 2. Check connection 1. Check rear defrosting relay 2. Check harness
73	B100 612	Front_Wiper_Spd_Rly short to Battery Front wiper speed control _ relay battery short circuit	Short to battery Short circuit to battery	J7_56	Front_Wiper_Spd_Rly short to Battery Front wiper speed regulating relay short circuit to power supply	1. Check Front_Wiper_Spd_Rly 2. Check connection 1. Check front wiper speed regulating relay 2. Check harness
74	B100 613	Front_Wiper_Spd_Rly Open circuit Front wiper speed control _ relay open loop	Open circuit Open loop	J7_56	Front_Wiper_Spd_Rly Open circuit Front wiper speed regulating relay open circuit	1. Check Front_Wiper_Spd_Rly 2. Check connection 1. Check front wiper speed regulating relay 2. Check harness
75	B100 812	RKE_Window_Up short to Battery Remote Access Control _ Window Up Battery Short	Short to battery Short circuit to battery	J7_37	RKE_Window_Up short to Battery Remote window up output short circuit to power supply	1. Check connection 1. Check harness
76	B100 912	IGN1_Rly_Ctrl short to Battery IGN1_ relay _ control battery short circuit	Short to battery Short circuit to	J7_66	IGN1_Rly_Ctrl short to Battery IGN1 relay short circuit to power supply	1. Check IGN1_Rly_Ctrl 2. Check connection 1. Check IGN1 relay

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body immobilizer

4.2.10-24

			battery			2. Check harness
77	B100 913	IGN1_Rly_Ctrl open circuit IGN1_ relay - control open loop	Open circuit Open loop	J7_66	IGN1_Rly_Ctrl open circuit IGN1 relay open circuit	1. Check IGN1_Rly_Ctrl 2. Check connection 1. Check IGN1 relay 2. Check harness
78	B100 A12	ACC_Rly_Ctrl short to Battery ACC_ relay _ control battery short circuit	Short to battery Short circuit to battery	J7_68	ACC_Rly_Ctrl short to Battery ACC relay short circuit to power supply	1. Check ACC_Rly_Ctrl 2. Check connection 1. Check ACC relay 2. Check harness
79	B100 A13	ACC_Rly_Ctrl open circuit ACC_ relay _ control open loop	Open circuit Open loop	J7_68	ACC_Rly_Ctrl open circuit ACC relay short open circuit	1. Check ACC_Rly_Ctrl 2. Check connection 1. Check ACC relay 2. Check harness
80	B100 B12	Horn_Rly short to Battery Horn _ relay battery short circuit	Short to battery Short circuit to battery	J7_69	Horn_Rly short to Battery Horn relay short circuit to power supply	1. Check Horn_Rly 2. Check connection 1. Check horn relay 2. Check harness
81	B100 B13	Horn_Rly open circuit Horn _ relay open loop	Open circuit Open loop	J7_69	Horn_Rly open circuit Horn relay open circuit	1. Check Horn_Rly 2. Check connection 1. Check horn relay 2. Check harness
82	B100 D12	ACC or IGN relay control output and feedback input is not consistent ACC/IGN relay feedback terminal is inconsistent with output terminal	Short to battery Short circuit to battery	J7_68 J7_66 J7_67 J1_28 J1_03 J1_29	ACC_Rly, IGN1_Rly, IGN2_Rly error ACC, IGN1 and IGN2 relay are abnormal. ACC, IGN1, IGN2 short to battery or GND ACC, IGN1, IGN2 have short circuit to power supply or ground fault	1. Check ACC_Rly, IGN1_Rly, IGN2_Rly 2. Check connection 1. Check ACC, IGN1, IGN2 relay 2. Check harness
83	B101 312	PW_Delay_Rly short to Battery PW_Delay_ relay battery short circuit	Short to battery Short circuit to battery	J7_71	PW_Delay_Rly short to Battery Window delay relay short circuit to power supply	1. Check PW_Delay_Rly 2. Check connection 1. Check window delay relay 2. Check harness
84	B101 313	PW_Delay_Rly open circuit PW_Delay_ relay open loop	Open circuit Open loop	J7_71	PW_Delay_Rly open circuit Window delay relay open circuit	1. Check PW_Delay_Rly 2. Check connection 1. Check window delay relay 2. Check harness

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body immobilizer

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85	B101 412	Front_Wiper_Pwr_Rly short to Battery Front wiper power supply _ relay battery short circuit	Short to battery Short circuit to battery	J7_55	Front_Wiper_Pwr_Rly short to Battery Front wiper power supply control relay short circuit to power supply	1. Check Front_Wiper_Pwr_RI y 2. Check connection 1. Check front wiper power supply control relay 2. Check harness
86	B101 413	Front_Wiper_Pwr_Rly Open Circuit Front wiper power supply _ relay open loop	Open circuit Open loop	J7_55	Front_Wiper_Pwr_Rly Open Circuit Front wiper power supply control relay open circuit	1. Check Front_Wiper_Pwr_RI y 2. Check connection 1. Check front wiper power supply control relay 2. Check harness
87	B101 512	Rear_Wiper_Rly short to Battery Rear wiper relay battery short circuit	Short to battery Short circuit to battery	J7_57	Rear_Wiper_Rly short to Battery Rear wiper relay short circuit to power supply	1. Check Rear_Wiper_Rly 2. Check connection 1. Check rear wiper relay 2. Check harness
88	B101 513	Rear_Wiper_Rly Open Circuit Rear wiper relay open loop	Open circuit Open loop	J7_57	Rear_Wiper_Rly Open Circuit Rear wiper relay open circuit	1. Check Rear_Wiper_Rly 2. Check connection 1. Check rear wiper relay 2. Check harness
89	B102 012	Anti-theft_Indicator short to Battery Anti-theft indicator battery short circuit	Short to battery Short circuit to battery	J7_41	Anti-theft_Indicator short to Battery Anti-theft indicator lamp short circuit to power supply	1. Check Anti-theft_Indicator 2. Check connection 1. Check anti-theft indicator lamp 2. Check harness
90	B102 112	Mirror_Fold short to battery Mirror folding battery short circuit	Short to battery Short circuit to battery	J1_21	Mirror_Fold short to battery Mirror folding output short circuit to power supply	1. Check connection 1. Check harness
91	B102 111	Mirror_Fold short to ground Mirror fold short circuit to ground	Short to ground short circuit to ground	J1_21	Mirror_Fold short to ground Mirror folding output short circuit to ground	1. Check connection 1. Check harness
92	B102 212	Mirror_Unfold short to battery Mirror deployment battery short circuit	Short to battery Short circuit to battery	J1_22	Mirror_Unfold short to battery Mirror deployment output short circuit to power supply	1. Check connection 1. Check harness
93	B102 211	Mirror_Unfold short to ground Mirror deployment short	Short to ground short	J1_22	Mirror_Unfold short to ground Mirror deployment	1. Check connection 1. Check harness

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body immobilizer

4.2.10-26

		circuit to ground	<i>circuit to ground</i>		<i>output short circuit to ground</i>	
94	B102 411	Rear_Fog_L short to ground Rear left _ fog lamp short circuit to ground	<i>Short to ground short circuit to ground</i>	<i>J1_70</i>	<i>Rear_Fog_L short to ground Rear left fog lamp short circuit to ground</i>	1. Check Rear_Fog_L 2. Check connection 1. Check rear left fog lamp 2. Check harness
95	B102 412	Rear_Fog_L Short to Battery Rear left _ fog lamp battery short circuit	<i>Short to battery Short circuit to battery</i>	<i>J1_70</i>	<i>Rear_Fog_L Short to Battery Rear left fog lamp short circuit to power supply</i>	1. Check Rear_Fog_L 2. Check connection 1. Check rear left fog lamp 2. Check harness
96	B102 413	Rear_Fog_L Open Circuit Rear left _ fog lamp open loop	<i>Open circuit Open loop</i>	<i>J1_70</i>	<i>Rear_Fog_L Open Circuit Seat rear fog lamp open circuit</i>	1. Check Rear_Fog_L 2. Check connection 1. Check rear left fog lamp 2. Check harness
97	B102 611	Foot Light short to ground Foot lamp short circuit to ground	<i>Short to ground short circuit to ground</i>	<i>J1_75</i>	<i>Foot Light short to ground Foot lamp short circuit to ground</i>	1. Check Foot Light 2. Check connection 1. Check foot lamp 2. Check harness
98	B102 811	Rear_Fog_R short to ground Rear right fog lamp short circuit to ground	<i>Short to ground short circuit to ground</i>	<i>J1_69</i>	<i>Rear_Fog_R short to ground Rear right fog lamp short circuit to ground</i>	1. Check Rear_Fog_R 2. Check connection 1. Check rear right fog lamp 2. Check harness
99	B102 812	Rear_Fog_R short to Battery Rear right fog lamp battery short circuit	<i>Short to battery Short circuit to battery</i>	<i>J1_69</i>	<i>Rear_Fog_R short to Battery Rear right fog lamp short circuit to power supply</i>	1. Check Rear_Fog_R 2. Check connection 1. Check rear right fog lamp 2. Check harness
100	B102 813	Rear_Fog_R Open Circuit Rear right fog lamp open loop	<i>Open circuit Open loop</i>	<i>J1_69</i>	<i>Rear_Fog_R Open Circuit Rear right fog lamp open circuit</i>	1. Check Rear_Fog_R 2. Check connection 1. Check rear right fog lamp 2. Check harness
101	B102 911	Dome_Lgt_ON_Ind short to ground Dome lamp ON_Ind short circuit to ground	<i>Short to ground short circuit to ground</i>	<i>J7_10</i>	<i>Dome_Lgt_ON_Ind short to ground Dome lamp ON gear indicator lamp short circuit to ground</i>	1. Check Dome_Lgt_ON_Ind 2. Check connection 1. Check dome lamp ON gear indicator lamp 2. Check harness

4.2.10 -27

body immobilizer

4.2.10-27

10 2	B102 A11	SSSW_LED_G short to ground Start/stop switch _LED_G short circuit to ground	Short to ground short circuit to ground	J7_08	SSSW_LED_G short to ground One-key starter switch indicator lamp green short circuit to ground	1. Check SSSW_LED_G 2. Check connection 1. Check one-key starter switch green indicator lamp 2. Check harness
10 3	B102 B12	Dome_Lgt_Door_Ind short to Ground Dome lamp Door_Ind short circuit to ground	Short to battery Short circuit to battery	J7_35	Dome_Lgt_Door_Ind short to Ground Dome lamp Door gear indicator lamp short circuit to ground	1. Check Dome_Lgt_Door_Ind 2. Check connection 1. Check dome lamp Door gear indicator lamp 2. Check harness
10 4	B102 C12	Pos_Light_Front short to Battery Position lamp _ front battery short circuit	Short to battery Short circuit to battery	J1_67	Pos_Light_Front short to Battery Front position lamp short circuit to power supply	1. Check Pos_Light_Front 2. Check connection 1. Check front position lamp 2. Check harness
10 5	B102 D11	Ambient_Light short to ground Atmosphere lamp short circuit to ground	Short to ground short circuit to ground	J1_71	Ambient_Light short to ground Atmosphere lamp short circuit to ground	1. Check Ambient_Light 2. Check connection 1. Check atmosphere lamp 2. Check harness
10 6	B102 E11	Luggage_Lamp short to ground Trunk lamp short circuit to ground	Short to ground short circuit to ground	J1_72	Luggage_Lamp short to ground Trunk lamp short circuit to ground	1. Check Luggage_Lamp 2. Check connection 1. Check trunk lamp 2. Check harness
10 7	B102 E12	Luggage_Lamp short to battery Trunk lamp battery short circuit	Short to battery Short circuit to battery	J1_72	Luggage_Lamp short to battery Trunk lamp short circuit to power supply	1. Check Luggage_Lamp 2. Check connection 1. Check trunk lamp 2. Check harness
10 8	B102 E13	Luggage_Lamp Open Circuit Trunk lamp open loop	Open circuit Open loop	J1_72	Luggage_Lamp Open Circuit Trunk lamp open circuit	1. Check Luggage_Lamp 2. Check connection 1. Check trunk lamp 2. Check harness
10 9	B102 F11	Pos_Light_Rear short to ground Rear position lamp short circuit to ground	Short to ground short circuit to ground	J1_68	Pos_Light_Rear short to ground Rear position lamp short circuit to ground	1. Check Pos_Light_Rear 2. Check connection 1. Check rear position lamp 2. Check harness
11 0	B102 F12	Pos_Light_R short to Battery Rear position lamp	Short to battery Short	J1_68	Pos_Light_Rear short to Battery Rear position lamp	1. Check Pos_Light_Rear 2. Check connection

4.2.10 -28

body immobilizer

4.2.10-28

		battery short circuit	<i>circuit to battery</i>		<i>short circuit to power supply</i>	1. Check rear position lamp 2. Check harness
11 1	B102 F13	Pos_Light_R Open Circuit Rear position lamp open loop	<i>Open circuit Open loop</i>	J1_68	<i>Pos_Light_Rear Open Circuit Rear position lamp open circuit</i>	1. Check Pos_Light_Rear 2. Check connection 1. Check rear position lamp 2. Check harness
11 2	B103 111	Reverse_Light short to ground Reverse lamp short circuit to ground	<i>Short to ground short circuit to ground</i>	J2_27	<i>Reverse_Light short to ground Reverse lamp short circuit to ground</i>	1. Check Reverse_Light 2. Check connection 1. Check reversing lamp 2. Check harness
11 3	B103 112	Reverse_Light short to Battery Reverse lamp battery short circuit	<i>Short to battery Short circuit to battery</i>	J2_27	<i>Reverse_Light short to Battery Reverse lamp short circuit to power supply</i>	1. Check Reverse_Light 2. Check connection 1. Check reversing lamp 2. Check harness
11 4	B103 113	Reverse_Light Open Circuit Reverse lamp open loop	<i>Open circuit Open loop</i>	J2_27	<i>Reverse_Light Open Circuit Reverse lamp open circuit</i>	1. Check Reverse_Light 2. Check connection 1. Check reversing lamp 2. Check harness
11 5	B103 211	Brake_Light short to ground Brake lamp short circuit to ground	<i>Short to ground short circuit to ground</i>	J2_26	<i>Brake_Light short to ground Brake lamp short circuit to ground</i>	1. Check Brake_Light 2. Check connection 1. Check brake lamp 2. Check harness
11 6	B103 212	Brake_Light short to Battery Brake lamp battery short circuit	<i>Short to battery Short circuit to battery</i>	J2_26	<i>Brake_Light short to Battery Brake lamp short circuit to power supply</i>	1. Check Brake_Light 2. Check connection 1. Check brake lamp 2. Check harness
11 7	B103 213	Brake_Light Open Circuit Brake lamp open loop	<i>Open circuit Open loop</i>	J2_26	<i>Brake_Light Open Circuit Brake lamp open circuit</i>	1. Check Brake_Light 2. Check connection 1. Check brake lamp 2. Check harness
11 8	B103 311	Turn_Light_R short to ground Right turn signal lamp short circuit to ground	<i>Short to ground short circuit to ground</i>	J2_04	<i>Turn_Light_R short to ground Right steering lamp short circuit to ground</i>	1. Check Turn_Light_R 2. Check connection 1. Check right steering lamp 2. Check harness
11 9	B103 312	Turn_Light_R short to Battery Right turn signal lamp battery short circuit	<i>Short to battery Short circuit to battery</i>	J2_04	<i>Turn_Light_R short to Battery Right steering lamp short circuit to power supply</i>	1. Check Turn_Light_R2.Check connection1.Check right steering lamp 2.Check harness

4.2.10 -29

body immobilizer

4.2.10-29

12 0	B103 318	Turn_Light_R Outage Right steering lamp interrupts operation	Outage interrupt output	J2_04	Turn_Light_R Outage Right turn signal lamp open circuit	1. Check Turn_Light_R 2. Check connection 1. Check right steering lamp 2. Check harness
12 1	B103 413	Trunk_Release Open circuit(To Batt7) Trunk open loop(To battery 7)	Open circuit Open loop	J2_20	Trunk_Release Open circuit(To Batt7) Trunk release output open circuit(Short circuit to power supply 7)	1. Check Trunk_Release Switch 2. Check connection 1. Check trunk unlocking switch 2. Check harness
12 2	B103 412	Trunk_Release Short to Battery Trunk open battery short circuit	Short to battery Short circuit to battery	J2_20	Trunk_Release Short to Battery Trunk release output short circuit to power supply	1. Check Trunk_Release Switch 2. Check connection 1. Check trunk unlocking switch 2. Check harness
12 3	B103 513	Driver_Door_Unlock Open circuit(To Batt8) Driver _ Door _ Unlocked Open Loop(To battery 8)	Open circuit Open loop	J2_28	Driver_Door_Unlock Open circuit(To Batt8) Driver door unlock output open circuit	1. Check Driver_Door_Unlock 2. Check connection 1. Check driver door lock 2. Check harness
12 4	B103 512	Driver_Door_Unlock Short to Battery Driver _ Door _ Unlocked Battery Short	Short to battery Short circuit to battery	J2_28	Driver_Door_Unlock Short to Battery Driver door unlock output short circuit to ground	1. Check Driver_Door_Unlock 2. Check connection 1. Check driver door lock 2. Check harness
12 5	B103 613	Passenger_Door_Unlo ck Open Circuit(To Batt8) Passenger _ Door _ Unlocked Open Loop(To battery 8)	Open circuit Open loop	J2_18	Passenger_Door_Unlo ck Open Circuit(To Batt8) Front passenger door unlocking open circuit	1. Check Passenger_Door_Unl ock 2. Check connection 1. Check front passenger door lock 2. Check harness
12 6	B103 612	Passenger_Door_Unlo ck Short to Battery Passenger _ Door _ Unlocked Battery Short	Short to battery Short circuit to battery	J2_18	Passenger_Door_Unlo ck Short to Battery Front passenger door unlocking short circuit to power supply	1. Check Passenger_Door_Unl ock 2. Check connection 1. Check front passenger door lock 2. Check harness
12 7	B103 713	All_Door_Lock Open Circuit(To Batt8) All doors _ lock open loop(To battery 8)	Open circuit Open loop	J2_30	All_Door_Lock Open Circuit(To Batt8) All door unlock outputs open	1. Check All_Door_Lock 2. Check connection 1. Check full door lock 2. Check harness

4.2.10 -30

body immobilizer

4.2.10-30

12 8	B103 712	All_Door_Lock Short to Battery All doors _ lock battery short circuit	Short to battery Short circuit to battery	J2_30	All_Door_Lock Short to Battery All door unlock outputs short circuit to power	1. Check All_Door_Lock 2. Check connection 1. Check full door lock 2. Check harness
12 9	B103 812	Oil_Pump_Pressure_Setup_Rly Short to Battery Fuel pump pressure setting _ relay battery short circuit	Short to battery Short circuit to battery	J2_21	Oil_Pump_Pressure_Setup_Rly Short to Battery Fuel pump pressure building relay short circuit to power supply	1. Check Oil_Pump_Pressure_Setup_Rly 2. Check connection 1. Check fuel pump pressure building relay 2. Check harness
13 0	B103 813	Oil_Pump_Pressure_Setup_Rly open circuit(To Batt7 or Batt6, depend on car config) Fuel pump pressure setting _ relay open loop(To Battery 7 or Battery 6, according to vehicle settings)	Open circuit Open loop	J2_21	Oil_Pump_Pressure_Setup_Rly open circuit(To Batt7 or Batt6, depend on car config) Fuel pump pressure building relay open circuit	1. Check Oil_Pump_Pressure_Setup_Rly 2. Check connection 1. Check fuel pump pressure building relay 2. Check harness
13 1	B103 911	Turn_Light_L short to ground Left steering lamp short circuit to ground	Short to ground short circuit to ground	J2_05	Turn_Light_L short to ground Left steering lamp short circuit to ground	1. Check Turn_Light_L 2. Check connection 1. Check left steering lamp 2. Check harness
13 2	B103 912	Turn_Light_L Short to Battery Left turn signal lamp battery short circuit	Short to battery Short circuit to battery	J2_05	Turn_Light_L Short to Battery Left steering lamp short circuit to power supply	1. Check Turn_Light_L 2. Check connection 1. Check left steering lamp 2. Check harness
13 3	B103 918	Turn_Light_L Outage Left turn signal lamp interrupted	Outage interrupt output	J2_05	Turn_Light_L Outage Left turn signal lamp open circuit	1. Check Turn_Light_L 2. Check connection 1. Check left steering lamp 2. Check harness
13 4	B103 A11	Front_Fog_L short to ground Front left fog lamp short circuit to ground	Short to ground short circuit to ground	J2_10	Front_Fog_L short to ground Front left fog lamp short circuit to ground	1. Check Front_Fog_L 2. Check connection 1. Check front left fog lamp 2. Check harness
13 5	B103 B11	CHMSL short to ground High brake lamp short circuit to ground	Short to ground short circuit to ground	J2_12	CHMSL short to ground High brake lamp short circuit to ground	1. Check CHMSL 2. Check connection 1. Check high-mounted brake lamp

4.2.10 -31

body immobilizer

4.2.10-31

						2. Check harness
13 6	B103 B12	CHMSL Short to Battery High mounted brake lamp battery short circuit	Short to battery Short circuit to battery	J2_12	CHMSL Short to Battery High mounted brake lamp short circuit to power supply	1. Check CHMSL 2. Check connection 1. Check high-mounted brake lamp 2. Check harness
13 7	B103 B13	CHMSL Open Circuit High mounted brake lamp open loop	Open circuit Open loop	J2_12	CHMSL Open Circuit High brake lamp open circuit	1. Check CHMSL 2. Check connection 1. Check high-mounted brake lamp 2. Check harness
13 8	B103 C11	DRL_L short to ground DRL _ left short circuit to ground	short to ground	J2_13	DRL_L short to ground Left DRL short circuit to ground	1. Check DRL_L 2. Check connection 1. Check left daytime running lamp 2. Check harness
13 9	B103 C12	DRL_L Short to Battery Daytime running lamp _ left battery short circuit	short to battery	J2_13	DRL_L Short to Battery Left DRL short circuit to power	1. Check DRL_L 2. Check connection 1. Check left daytime running lamp 2. Check harness
14 0	B103 C13	DRL_L Open Circuit DRL _ left open loop	open circuit	J2_13	DRL_L Open Circuit Left daytime running lamp open circuit	1. Check DRL_L 2. Check connection 1. Check left daytime running lamp 2. Check harness
14 1	B103 D12	Interior_Light Short to Battery Interior lamp battery short circuit	Short to battery Short circuit to battery	J2_29	Interior_Light Short to Battery Inner lamp short circuit to power supply	1. Check Interior_Light 2. Check connection 1. Check inner lamp 2. Check harness
14 2	B104 011	DRL_R short to ground DRL _ Right short circuit to ground	short to ground	J2_09	DRL_R short to ground Right DRL short circuit to ground	1. Check DRL_R 2. Check connection 1. Check right daytime running lamp 2. Check harness
14 3	B104 012	DRL_R Short to Battery DRL _ Right Battery Short	short to battery	J2_09	DRL_R Short to Battery Right DRL short circuit to power	1. Check DRL_R 2. Check connection 1. Check right daytime running lamp 2. Check harness
14 4	B104 013	DRL_R Open Circuit Daytime Running Lamp _ Right Open Loop	open circuit	J2_09	DRL_R Open Circuit Right daytime running lamp open circuit	1. Check DRL_R 2. Check connection 1. Check right daytime running lamp 2. Check harness

4.2.10 -32

body immobilizer

4.2.10-32

14 5	B104 111	Bkg_Light short to ground Backlight short circuit to ground	Short to ground short circuit to ground	J2_08	Bkg_Light short to ground Backlight short circuit to ground	1. Check Bkg_Light 2. Check connection 1. Check the background lamp output 2. Check harness
14 6	B104 112	Bkg_Light Short to Battery Backlight battery short circuit	Short to battery Short circuit to battery	J2_08	Bkg_Light Short to Battery Backlight short circuit to power supply	1. Check Bkg_Light 2. Check connection 1. Check the background lamp output 2. Check harness
14 7	B104 113	Bkg_Light Open Circuit Backlight open loop	Open circuit Open loop	J2_08	Bkg_Light Open Circuit Backlight open circuit	1. Check Bkg_Light 2. Check connection 1. Check the background lamp output 2. Check harness
14 8	B104 311	Front_Fog_R short to ground Front right fog lamp short circuit to ground	Short to ground short circuit to ground	J2_06	Front_Fog_R short to ground Front right fog lamp short circuit to ground	1. Check Front_Fog_R 2. Check connection 1. Check front right fog lamp 2. Check harness
14 9	B104 411	Battery_Saver_Supply short to ground Power saving supply short circuit to ground	Short to ground short circuit to ground	J2_23	Battery_Saver_Suppl y short to ground Power saving supply short circuit to ground	1. Check connection 1. Check harness
15 0	B104 412	Battery_Saver_Supply short to battery Power supply battery short circuit	Short to battery Short circuit to battery	J2_23	Battery_Saver_Suppl y short to battery Power supply battery short circuit	1. Check connection 1. Check harness
15 1	B104 413	Battery_Saver_Supply Open Circuit Power saving supply open loop	Open circuit Open loop	J2_23	Battery_Saver_Suppl y Open Circuit Power saving supply open loop	1. Check connection 1. Check harness
15 2	B105 214	LF_Antenna_Rear Short to Ground or Open Circuit LF_antenna _ rear short circuit to ground or open loop	Short to Ground or Open Circuit Short circuit to ground or open loop	J1_51 J1_26	Rear low frequency antenna short circuit to ground or open circuit	1. Check LF_Antenna_Rear 2. Check connection 1. Check rear low frequency antenna 2. Check harness
15 3	B105 314	LF_Antenna_Right Short to Ground or Open Circuit LF_antenna - right short circuit to ground or open loop	Short to Ground or Open Circuit Short circuit to	J1_48 J1_49	Rear low frequency antenna short circuit to ground or open circuit	1. Check LF_Antenna_Right 2. Check connection 1. Check rear low frequency antenna 2. Check harness

4.2.10 -33

body immobilizer

4.2.10-33

			<i>ground or open loop</i>			
15 4	B105 414	LF_Antenna_Front/Imm o Short to Ground or Open Circuit LF_ antenna _ front/Imm short circuit to ground or open loop	<i>Short to Ground or Open Circuit Short circuit to ground or open loop</i>	J7_53 J7_54	LF_Antenna_Front/Imm o Short to Ground or Open Circuit Front low frequency antenna/Imm short circuit to ground or open circuit	1. Check LF_Antenna_Front/Imm 2. Check connection 1. Check front low frequency antenna/Imm 2. Check harness
15 5	B105 514	LF_Antenna_Left Short to Ground or Open Circuit LF_ antenna left short circuit to ground or open loop	<i>Short to Ground or Open Circuit Short circuit to ground or open loop</i>	J7_63 J7_64	LF_Antenna_Left Short to Ground or Open Circuit Left low frequency antenna short circuit to ground or open circuit	1. Check LF_Antenna_Left 2. Check connection 1. Check low frequency antenna 2. Check harness
15 6	B108 C14	Short circuit to ground or open loop in LF_Antenna_Middle Short to Ground or Open Circuit LF_ antenna	<i>Short to Ground or Open Circuit Short circuit to ground or open loop</i>	J1_65J 1_66	LF_Antenna_Middle Short to Ground or Open Circuit Medium and low frequency antenna short circuit to ground or open circuit	1. Check LF_Antenna_Middle2 .Check connection1. Check medium and low frequency antenna 2. Check harness
15 7	B105 624	Washer_SW_F Stuck Front water spray switch stuck	<i>Signal stuck high signal stuck</i>	J1_30	Washer_SW_F Stuck Front washer switch stuck	1. Check Washer_SW 2. Check connection 1. Check front washer switch 2. Check harness
15 8	B105 823	Flash_Light_SW Stuck Overtaking lamp switch stuck	<i>Signal stuck low signal stuck</i>	J1_14	Flash_Light_SW Stuck Overtaking lamp switch stuck	1. Check Flash_Light_SW 2. Check connection 1. Check overtaking lamp switch 2. Check harness
15 9	B105 924	Washer_SW_R Stuck Rear water injector switch stuck	<i>Signal stuck high signal stuck</i>	J1_05	Washer_SW_R Stuck Rear washer switch stuck	1. Check Washer_SW_R 2. Check connection 1. Check rear washer switch 2. Check harness
16 0	B105 A29	Turn_Light_SW Status Error Steering lamp switch status error	<i>Signal signalinva lid signal invalid</i>	J1_37 J1_42	Steering lamp switch status error	1. Check Turn_Light_SW 2. Check connection 1. Check steering lamp switch 2. Check harness

4.2.10 -34

body immobilizer

4.2.10-34

16 1	B105 B29	Low Beam and Position Light Combination switch status Error Low beam and position lamp combination switch status error	Signal signal invalid signal invalid	J1_27 J1_41	Position lamp and low beam combination switch input voltage to BCM is incorrect.	1. Check Light Combination Switch 2. Check connection 1. Check light combination switch 2. Check harness
16 2	B105 D23	Door_Button_SW_RR Stuck Rear right side door switch button stuck	Signal stuck low signal stuck	J1_32	Door_Button_SW_RR Stuck RR LH side door switch button stuck	1. Check Door_Button_SW_RR 2. Check connection 1. Check rear left side door switch button 2. Check harness
16 3	B105 E23	Door_Button_SW_FR Stuck Front right side door switch button stuck	Signal stuck low signal stuck	J7_33	Door_Button_SW_FR Stuck Front left side door switch button stuck	1. Check Door_Button_SW_FR 2. Check connection 1. Check front left side door switch button 2. Check harness
16 4	B105 F23	Trunk_Release_SW Stuck Trunk open switch stuck	Signal stuck low signal stuck	J1_53	Trunk_Release_SW Stuck Rear trunk door switch button stuck	1. Check Trunk_Release_SW 2. Check connection 1. Check rear trunk door switch button 2. Check harness
16 5	B106 023	SSSW_1 Stuck Start/stop switch _1 stuck	Signal stuck low signal stuck	J7_47	SSSW_1 Stuck Start/stop switch 1 is stuck	1. Check SSSW 2. Check connection 1. Check start/stop switch 2. Check harness
16 6	B106 029	SSSW_1 Error Start/stop switch _1 error	Signal signal invalid signal invalid	J7_47	SSSW_1 Error Voltage input from start/stop switch 1 to BCM is too high.	1. Check SSSW 2. Check connection 1. Check start/stop switch 2. Check harness
16 7	B106 013	SSSW_1 Open Circuit Start/stop switch _1 open loop	Open circuit Open loop	J7_47	The voltage on the start/stop switch _1 input pin exceeds the open circuit threshold but is below the short circuit to power supply threshold.	1. Check SSSW 2. Check connection 1. Check start/stop switch 2. Check harness
16 8	B106 123	SSSW_2 Stuck Start/stop switch _2 stuck	Signal stuck low signal stuck	J7_72	SSSW_2 remains on for more than 1 min	1. Check SSSW 2. Check connection 1. Check start/stop switch 2. Check harness
16 9	B106 129	SSSW_2 Error Start/stop switch _2 error	Signal signal invalid	J7_72	Voltage on SSSW_2 input pin out of range of voltage definition	1. Check SSSW 2. Check connection 1. Check start/stop

			<i>signal invalid</i>			switch 2. Check harness
17 0	B106 113	SSSW_2 Open Circuit Start/stop switch _2 open loop	<i>Open circuit Open loop</i>	<i>J7_72</i>	<i>The voltage on SSSW_2 input pin exceeds the open circuit threshold but is below the short circuit to power supply threshold</i>	1. Check SSSW 2. Check connection 1. Check start/stop switch 2. Check harness
17 1	B106 211	SSSW_1 and SSSW_2 Inconformity Start/stop switch 1 and 2 are inconsistent.	<i>Short to ground short circuit to ground</i>	<i>J7_47 J7_72</i>	<i>The voltage on SSSW_1 or SSSW_2 input pin exceeds the open circuit threshold but is below the short circuit to power supply threshold</i>	1. Check SSSW 2. Check connection 1. Check start/stop switch 2. Check harness
17 2	B106 311	Crash_Signal Short to Gound Collision signal short circuit to ground	<i>Short to ground short circuit to ground</i>	<i>J7_16</i>	<i>Voltage on crash signal input pin remains low for more than 1 min</i>	1. Check connection 1. Check harness
17 3	B106 523	Hazard_SW Stuck Emergency switch stuck	<i>Signal stuck low signal stuck</i>	<i>J1_52</i>	<i>Voltage on emergency switch input pin remains low for more than 1 min</i>	1. Check Hazard_SW 2. Check connection 1. Check emergency alarm lamp switch 2. Check harness
17 4	B106 623	Door_Button_SW_FL Stuck Front left door switch button stuck	<i>Signal stuck low signal stuck</i>	<i>J1_59</i>	<i>Voltage on front left door switch button input pin remains low for more than 1 min</i>	1. Check Door_Button_SW_FL 2. Check connection 1. Check front left door button 2. Check harness
17 5	B106 723	Horn_SW Stuck Horn switch stuck	<i>Signal stuck low signal stuck</i>	<i>J1_55</i>	<i>The voltage on horn switch input pin remains low for more than 1 minute</i>	1. Check Horn_SW 2. Check connection 1. Check horn switch 2. Check harness
17 6	B106 929	Front Wiper Switch status Error Front wiper switch status error	<i>Signal signal invalid signal invalid</i>	<i>J1_07 J1_08 J1_06 J7_23</i>	<i>Incorrect voltage on front wiper switch input pin</i>	1. Check Front Wiper Switch 2. Check connection 1. Check front wiper switch 2. Check harness
17 7	B106 B23	Rear_Fog_SW Stuck Rear fog lamp switch stuck	<i>Signal stuck low signal stuck</i>	<i>J1_12</i>	<i>Voltage at rear fog lamp switch input pin remains low for more than 1 min</i>	1. Check Rear_Fog_SW 2. Check connection 1. Check rear fog lamp switch 2. Check harness

4.2.10 -36

body immobilizer

4.2.10-36

178	B106 F00	Front Wiper General Fail General failure of front wiper	FALSE	J7_55 J1_45	Front wiper failure or harness failure	1. Check Front Wiper Combination Switch 2. Check connection 1. Check front wiper 2. Check harness
179	B107 000	PowerMode Distribution Error Power mode allocation fault	FALSE	J7_68 J1_28 J7_66 J1_03 J7_67 J1_29	Relay control terminal and feedback terminal are inconsistent.	1. Check ACC, IG1, IG2 2. Check connection 1. Check ACC, IGN1, IGN2 relay 2. Check harness
180	B107 102	FL Tire low pressure Front left tire low pressure	FALSE	J7_12	Front left tire low pressure	1. Check Tire pressure 2. Check Tire Sensor 1. Check corresponding tire pressure 2. Check tire pressure sensor
181	B107 202	FR Tire low pressure Front right tire low pressure	FALSE	J7_12	Front right tire low pressure	1. Check Tire pressure 2. Check Tire Sensor 1. Check corresponding tire pressure 2. Check tire pressure sensor
182	B107 302	LR Tire low pressure Rear left tire low pressure	FALSE	J7_12	Rear left tire low pressure	1. Check Tire pressure 2. Check Tire Sensor 1. Check corresponding tire pressure 2. Check tire pressure sensor
183	B107 402	RR Tire low pressure Rear right tire low pressure	FALSE	J7_12	Rear right tire low pressure	1. Check Tire pressure 2. Check Tire Sensor 1. Check corresponding tire pressure 2. Check tire pressure sensor
184	B107 502	Tire sensor ID missing Tire pressure ID missing	FALSE	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.

4.2.10 -37

body immobilizer

4.2.10-37

185	B107602	Tire sensor ID repeat Tire pressure ID repeating	FALSE	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
186	B107993	FL Tire Sensor Missing Front left tire sensor failure	No operation Inoperative	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
187	B107A93	FR Tire Sensor Missing Front right tire sensor failure	No operation Inoperative	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
188	B107B93	RL Tire Sensor Missing Rear left tire sensor failure	No operation Inoperative	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
189	B107C93	RR Tire Sensor Missing RR RH tire sensor failure	No operation Inoperative	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
190	B107D92	FL Tire Pressure Sensor Low Battery Front left tire pressure sensor low power	Performance or incorrect operation Abnormal operation	J7_12	Sensor fault or harness fault	1. Check the voltage of tire sensor 1. Check battery power of tire pressure sensor

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body immobilizer

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19 1	B107 E92	FR Tire Pressure Sensor Low Battery Front right tire pressure sensor low power	<i>Performance or incorrect operation Abnormal operation</i>	J7_12	Sensor fault or harness fault	1. Check the voltage of tire sensor 1. Check battery power of tire pressure sensor
19 2	B107 F92	RL Tire Pressure Sensor Low Battery Rear left tire pressure sensor low power	<i>Performance or incorrect operation Abnormal operation</i>	J7_12	Sensor fault or harness fault	1. Check the voltage of tire sensor 1. Check battery power of tire pressure sensor
19 3	B108 092	RR Tire Pressure Sensor Low Battery Rear right tire pressure sensor low power	<i>Performance or incorrect operation Abnormal operation</i>	J7_12	Sensor fault or harness fault	1. Check the voltage of tire sensor 1. Check battery power of tire pressure sensor
19 4	B108 196	FL Tire Pressure sensor hardware failure Front left tire pressure sensor hardware fault	<i>Internal failure of compo nent internal failure compo nents</i>	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
19 5	B108 296	FR Tire Pressure sensor hardware failure Front right tire pressure sensor hardware fault	<i>Internal failure of compo nent internal failure compo nents</i>	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
19 6	B108 396	RL Tire Pressure sensor hardware failure Rear left tire pressure sensor hardware fault	<i>Internal failure of compo nent internal failure compo nents</i>	J7_12	Sensor fault or harness fault.	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether there is interference around the vehicle.
19 7	B108 496	RR Tire Pressure sensor hardware failure Rear right tire pressure sensor hardware fault	<i>Internal failure of compo nent internal failure compo nents</i>	J7_12	Sensor fault or harness fault	1. Check Tire Sensor 2. Check if there are the environment electric interference 1. Check tire pressure sensor 2. Check whether

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body immobilizer

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						there is interference around the vehicle.
198	B108923	Door_Button_SW_RL Stuck Rear left door switch button stuck	Signal stuck low signal stuck	J1_31	Voltage on rear left door switch button input pin remains low for more than 1 min	1. Check Door_Button_SW_RL 2. Check connection 1. Check rear left door button 2. Check harness
199	U101B86	RKE key SI counter error Remote access control key SI counter error	Invalid serial data received Invalid serial port data reception	J7_12	Si value of RKE exceeds valid range	A "not synchronized" key can be resynchronized by: An "Out of Sync" key shall become valid again, if: RKE message/3 successive key presses are received within 30 seconds from the learned key that is out of sync. Generated by receiving three consecutive frames of pressing key within • 30 s
200	U101B85	RKE key low battery Remote control access key low power	Invalid serial data received Invalid serial port data reception	-	Continuously detected RKE low power reaches the maximum number	Learn a new Keyfob Replace battery of key
201	U101B44	RKE key eeprom error Remote access control key eeprom error	Invalid serial data received Invalid serial port data reception	-	Received RKE eeprom error signal	check the Keyfob Check remote control key
202	U101C00	RFR communication error RFR communication error	General Failure General fault	J7_12	RFR communication error flag position	1. Check RFR 2. Check the LIN connection 1. Check RFR 2. Check LIN line connection
203	B108B14	Footstep Sensor Probe 1 open circuit Kick sensor probe 1 open circuit	Open circuit Open loop	J1_60	Kick sensor sends signal to BCM to indicate kick sensor probe 1 open circuit	1. Check Footsensor 1. Check kick sensor

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body immobilizer

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204	B108 B11	Footstep Sensor Probe 1 short circuit Kick sensor probe 1 short circuit	Short Circuit Short circuit	J1_60	Kick sensor sends signal to BCM to indicate kick sensor probe 1 short circuit	1. Check Footsensor 1. Check kick sensor
205	B108 B15	Footstep Sensor Probe 2 open circuit Kick sensor probe 2 open circuit	Open circuit Open loop	J1_60	Kick sensor sends signal to BCM to indicate kick sensor probe 2 open circuit	1. Check Footsensor 1. Check kick sensor
206	B108 B12	Footstep Sensor Probe 2 short circuit Kick sensor probe 2 short circuit	Short Circuit Short circuit	J1_60	Kick sensor sends signal to BCM to indicate kick sensor probe 2 short circuit	1. Check Footsensor 1. Check kick sensor
207	B108 B04	Footstep Sensor system protection Kick sensor system protection	system protection System protection	J1_60	Kick sensor sends signal to BCM to indicate kick sensor system protection	1. Check Footsensor 1. Check kick sensor
208	B108 B01	Footstep Sensor signal wire short to GND Kick sensor signal wire short circuit to ground	Short Circuit to GND Short circuit to ground	J1_60	BCM detects that the kick sensor signal wire is shorted to ground.	1. Check Footsensor 2. Check harness and connector 1. Check kick sensor 2. Check harness and connector
209	U104 562	RFBT_2CA message security check failed RFBT_2CA message security verification failed	Verification failed Verification failed	J7_39 J7_14	1. RFBT/BCM The general process of key learning is not performed after replacement. 1. Not conduct learning process after change a new RFBT/BCM 2. can is disturbed 2. CAN communication is impacted.	1. Re-execute key learning master process 1. Repeat to conduct learning process after change a new RFBT/BCM. 2. Check harness and connector 2. Check harness and connector
210	U104 662	GW_25C synchronization message verification failed GW_25C message security verification failed	Verification failed Verification failed	J7_39 J7_14	1. BCM/GW The general process of key learning is not performed after replacement. 1. Not conduct learning process after change a new GW/BCM 2. can is disturbed 2. CAN communication is impacted.	1. Re-execute key learning master process 1. Repeat to conduct learning process after change a new RFBT/BCM. 2. Check harness and connector 2. Check harness and connector

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body immobilizer

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21 1	U100 309	LIN3 RLS sensor Failure LIN3 RLS sensor fault	LIN3 RLS sensor Failure LIN3 RLS sensor fault	J7_04	RLS sensor failure Light rain sensor fault	Replace light rain sensor Change a new RLS.
21 2	B103 313	Turn_Light_R Open Circuit Right turn signal lamp open loop	Open circuit Open loop	J2_04	Turn_Light_R Open Circuit Right turn signal lamp open circuit	1. Check Turn_Light_R 2. Check connection 1. Check right steering lamp 2. Check harness
21 3	B103 913	Turn_Light_L Open Circuit Left turn signal lamp open loop	Open circuit Open loop	J2_05	Turn_Light_L Open Circuit Left turn signal lamp open circuit	1. Check Turn_Light_L 2. Check connection 1. Check left steering lamp 2. Check harness
21 4	B104 5	FL_Handle_Output_Unf old_STG Driver door handle deployment drive short circuit to ground	Short to GND Short circuit to ground	J1_23	FL_Handle_Output_Unf old_STG Driver door handle deployment drive short circuit to ground	1. Check FL door handle 2. Check harness and connection 1. Check front left door handle 2. Check harness and connector
21 5	B104 5	FL_Handle_Output_Unf old_STB Driver door handle deployment drive short circuit to battery	Short to Battery Short circuit to power supply	J1_23	FL_Handle_Output_Unf old_STB Driver door handle deployment drive short circuit to battery	1. Check FL door handle 2. Check harness and connection 1. Check front left door handle 2. Check harness and connector
21 6	B104 5	FL_Handle_Output_Unf old_Open Driver door handle deployment drive open circuit	Open circuit Open loop	J1_23	FL_Handle_Output_Unf old_Open Driver door handle deployment drive open circuit	1. Check FL door handle 2. Check harness and connection 1. Check front left door handle 2. Check harness and connector
21 7	B104 6	FL_Handle_Output_Fol d_STG Driver door handle retraction drive short circuit to ground	Short to GND Short circuit to ground	J1_24	FL_Handle_Output_Fol d_STG Driver door handle retraction drive short circuit to ground	1. Check FL door handle 2. Check harness and connection 1. Check front left door handle 2. Check harness and connector
21 8	B104 6	FL_Handle_Output_Fol d_STB	Short to Battery	J1_24	FL_Handle_Output_Fol d_STB	1. Check FL door handle

		Driver door handle retraction drive short circuit to battery	<i>Short circuit to power supply</i>		Driver door handle retraction drive short circuit to battery	2. Check harness and connection 1. Check front left door handle 2. Check harness and connector
219	B1046	FL_Handle_Output_Fold_Open Driver door handle retraction drive open circuit	<i>Open circuit Open loop</i>	J1_24	FL_Handle_Output_Fold_Open Driver door handle retraction drive open circuit	1. Check FL door handle 2. Check harness and connection 1. Check front left door handle 2. Check harness and connector

Removal and installation

IBCM

Removal

1. Disconnect the battery negative harness.

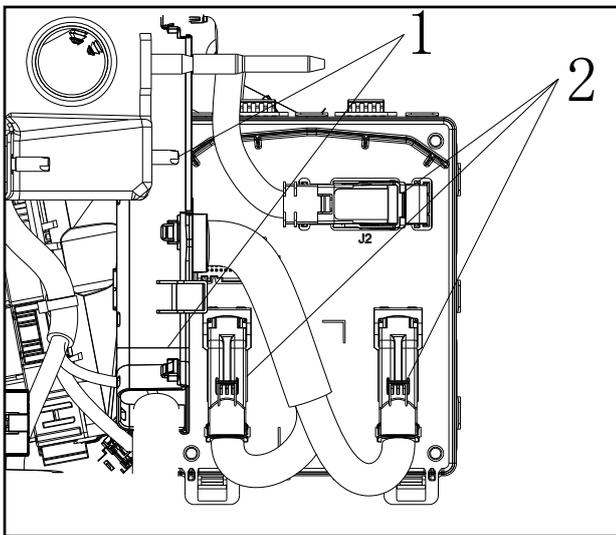
Reference: 3.1.11 charging system

2. Remove the instrument panel.

Reference: 5.3.3 Front interior

3. Dismantle fixing bolt (1) of body control module.

4. Disconnect 4 harness plugs (2) connected to the body control module.



Installation

1. Installation sequence is reverse to removal sequence.

2. Set new BCMs.

- Enter initial password 978 A

! Note: If the initial password is not changed, the left and right turn signals may not work. At the

- With remote control.
- Modify the initial password.
- Equipped models.

same time, the anti-theft indicator does not flash.

If the total mileage is less than 80 km when replacing BCM/IBCM, the vehicle mode needs to be configured with a diagnostic scanner. The specific steps are as follows:

Step 1: Start the vehicle after replacement, and the instrument will prompt to enter the factory mode;

Step 2: Click the diagnostic scanner to enter the UNI-K model;

Step 3: Click the diagnostic scanner to enter the BCM/IBCM catalog;

Step 4: Click the diagnostic scanner to select special functions, and input the security password matching the initial password (initial password: 978 A);

Step 5: Click the diagnostic scanner to select "configure by function";

Step 6: Click the diagnostic scanner to select "Vehicle Mode Management Enable Configuration" operation, select "Enable" option, and return to the special function catalog after prompting that the operation is successful;

Step 7: Click the diagnostic scanner to select "vehicle mode configuration" operation, select "user mode" option, and confirm that the instrument prompt has been cleared after the prompt operation is successful;

Step 8: Configure "Vehicle Mode Management Enable Configuration" as "Not Enable" according to Step 6.

4.2.11 Panoramic Imaging System

Specifications

Name	Specifications
Panoramic camera	Working voltage: 7V-9V Rated current: 0.1 A Rated voltage :8V Operating temperature: -40°C-75°C

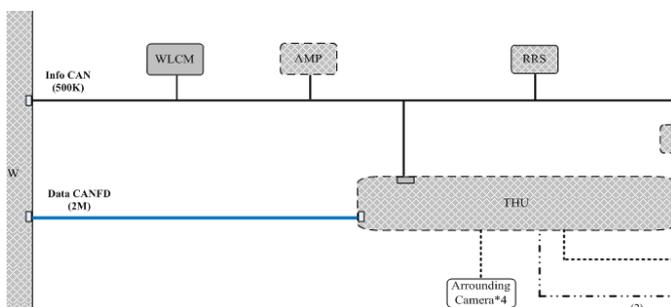
System principle

The THU system integrates a panoramic image and looks around the driving record function:

1) The Panoramic Imaging System (AVM) is a parking assist system that captures images around the body through four cameras on the front, rear, left and right, splices into a 360-degree top view, and displays through the central control screen. The system can greatly reduce the blind area of visual field, help the user park in place smoothly, and improve the traffic of narrow road, narrow lane and other scenes. The vehicle ignition switch is on. When the vehicle is in gear R or the vehicle speed is less than a certain value (27 km/h) and the video switch or 360 intelligent panoramic signal is valid (not zero), the onboard entertainment information assembly (hereinafter abbreviated as HUs) collects video information through four cameras installed in front, rear, left and right directions of the vehicle and displays it on the display screen.

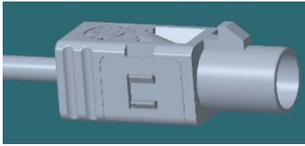
2) The round-the-clock driving recording function (DVR) is the "black box" of the vehicle. The main function is to record the video signals and vehicle status signals outside the vehicle during driving through four cameras around the vehicle via the AVM system to provide evidence for traffic accidents. The DVR collects the video information around the vehicle in real time through the camera, and communicates with TCU, ESP, BCM, etc. through the CAN bus to realize the storage of the vehicle operation status and corresponding video information. In addition, the system shall have photography, real-time display and playback functions.

Network topology diagram



Interface definition

Definition of panoramic camera interface



Camera tip:

Front: Self-opening mould dimension meets ISO 20860

Rear: Self-opening mould dimension meets ISO 20860

Left: Terminal: 59S16A-1M4T4,
Sheath: 59Z114-000-B(White)

Right: Terminal: 59S16A-1M4T4,
Sheath: 59Z114-000-B

Pin number	Pin definition	Interface type	Interface description
1	Video	Input/output	Video signal
2	Video_shield_gnd	/	Signal ground

Common troubleshooting methods

Fault list:

Fault 1	Press AVM key without panoramic image
Fault 2	Gear R is engaged, no panoramic image is displayed, but DVD has picture switching action
Fault 3	Enter panoramic view, image black screen(All or part of black screen)
Fault 4	Enter panoramic view, track line does not move with steering wheel
Fault 5	Unclear image
Fault 6	Abnormal picture color
Fault 7	AVM picture splicing difference
Fault 8	No image in round-the-road recording camera mode
Fault 9	The memory card cannot be recognized by surround driving record

Fault 1:

Fault symptom	Press AVM key without panoramic image
Possible causes	1、 AVM switch fault 2、 Open or short circuit in wire harness for panoramic circuit 3、 Insufficient battery voltage 4、 Can bus fault

Step	Test	Operation	
1	Check whether the panoramic image can be displayed normally in gear R. A. Turn ON the ON position. B. Set the gear switch to R gear. C. Observe whether the DVD display screen displays panoramic image and whether you can click the screen to cut the picture normally.	Yes	Proceed to step 2.
		No	Proceed to step 4.
2	Check harness connection between AVM switch and pin C10 of HU host. A. Detect whether the harness between AVM switch and pin C10 of HU host has short circuit or open circuit.	Yes	Proceed to step 3.
		No	Confirm repair is complete.
3	Detect AVM switch A. Inspect whether the fault still exists after replacing the new AVM switch.	Yes	Replacing wire harness
		No	Replace AVM switch panel
4	Check whether the DVD display has screen switching action when gear R is engaged.	Yes	Go to fault 2 for operation
		No	Replacing DVD

Fault 2:

Fault symptom	Enter panoramic view, image black screen		
Possible causes	1、 Camera fault 2、 Open circuit or short circuit in harness from camera to HU 3、 Hu fault		
Step	Test	Operation	
1	Images are displayed in at least one direction in the panoramic image	Yes	Proceed to step 2.
		No	Replace HU.
2	Detect camera fault Use a multimeter to measure whether there is 5 V voltage, grounding wire and video wire on pin PIN1 of corresponding black screen camera.	Yes	Replace the corresponding camera.
		No	Troubleshoot the harness problem from the corresponding camera to the HU.

Fault symptom	Enter panoramic view, track line does not move with steering wheel
---------------	--

Possible causes	<ol style="list-style-type: none"> 1、 Hu fault 2、 Angle sensor fault 3、 Can bus fault 		
Step	Test	Operation	
1	Check whether there is hollowed red S in the upper right corner of the screen.	Yes	Proceed to step 2.
		No	Replace HU
2	Check whether the angle sensor is faulty.	Yes	Replace angle sensor
		No	Troubleshoot CAN bus problem

Fault 4:

Fault symptom	Unclear image		
Possible causes	<ol style="list-style-type: none"> 1、 There is water mist or dust at the camera outer glass. 2、 Camera leakage 3、 Camera focal length defocus 		
Step	Test	Operation	
1	Wipe the camera with soft cotton cloth for no blur.	Yes	Replace the corresponding camera.
		No	Confirm repair is complete.

Fault 5:

Fault symptom	Abnormal picture color		
Possible causes	<ol style="list-style-type: none"> 1、 Camera fault 2、 Hu fault 		
Step	Test	Operation	
1	Check whether it is full screen discoloration problem	Yes	Replace HU.
		No	Replace the corresponding camera.

Fault 6:

Fault symptom	<p>AVM picture splicing difference</p> <p>Paste 5 cm wide adhesive tape at the front, rear, left and right distance of 1m, and the screen shows the adhesive tape is staggered.</p>		
Possible causes	<ol style="list-style-type: none"> 1、 Front grille or camera moves 2、 Exterior rearview mirror does not extend in place 3、 Unconsciously open the trunk by holding the camera in the middle of the trunk, the sheet metal is slightly changed, and the camera is tilted. 		

Step	Test	Operation	
1	Check whether the rearview mirror extends in place for rule out fault.	Yes	Confirm repair is complete.
		No	Proceed to step 2.
2	Whether rule out fault after after-sales calibration	Yes	Confirm repair is complete.
		No	Check each camera for installation deformation.

Fault 7:

Fault symptom	No image in round-the-road recording camera mode		
Possible causes	1、Hu fault 2、Insufficient battery voltage 3、Can bus fault		
Step	Test	Operation	
1	Check whether the panoramic image can be displayed normally in gear R. A. Turn ON the ON position. B. Set the gear switch to R gear. C. Observe whether the DVD display screen displays panoramic image and whether the screen can be clicked to cut the picture normally.	Yes	Proceed to step 2.
		No	Proceed to step 3.
2	Whether the harness is properly inserted A. Check whether the coaxial line connecting the camera and HU is properly inserted;	Yes	Go to Step 3
		No	Connect the harness
3	Replace HUs and check whether the fault is rule out.	Yes	Repair completed

Fault 8:

Fault symptom	The memory card cannot be recognized by surround driving record		
Possible causes	1、Memory card does not meet requirements 2、Hu fault 3、TF slot fault; 4、The USB cable connecting TF slot and HU is faulty;		
Step	Test	Operation	
1	Check whether the memory card meets the requirements.(Refer to the instruction manual for details.)	Yes	Proceed to step 2.
		No	Replace the memory card that meets the requirements.
2	Re-plug the memory card several times, and check whether the fault is eliminated.	Yes	End of service
		No	Go to Step 3

3	Check whether the USB cable between HU and TF card slot is properly connected.	Yes	Go to Step 4
		No	Reinsert
4	Replace TF card slot, whether the fault is eliminated	Yes	Repair completed
		No	Replace HU

Note: If the image has water ripple, shake and abnormal color, it should be considered whether there is electromagnetic interference.

Removal and installation

Panoramic front camera assembly

Install the front camera on the front bumper.

Removal

- 1、 Remove the front bumper;
- 2、 Remove front camera.

Installation

- 1、 Fix the front camera on the front bumper with screws;
- 2、 Install the front bumper.

Panoramic rear camera assembly

The rear camera is mounted on the tailgate trim.

Removal

- 1、 Remove the rear bumper;
- 2、 Remove rear camera.

Installation

- 1、 Clamp the rear camera onto the rear bumper;
- 2、 Install the rear bumper.

Panoramic left/right camera assembly

The left/right camera is installed on the left and right exterior rearview mirrors respectively, and supplied with the exterior rearview mirror assembly. If it is necessary to replace the left/right camera, directly replace the left/right exterior rearview mirror assembly.

Removal

- 1、 Refer to outer rearview mirror assembly removal procedure

Installation

Refer to outside rearview mirror installation procedure.

Driver fatigue detection camera

Fault determination and maintenance

General specifications

Name	Specifications
Working voltage	8+/-0.5V(CAMERA),10V(LED ARRAY)
Working current	80mA~100mA@12V
Operating temperature	-40℃~85℃

Fault symptom
Fault 1: The camera is not powered on; Fault 2: Night fatigue monitoring function disorder

Diagnosis and maintenance

Fault 1: Camera is not powered on

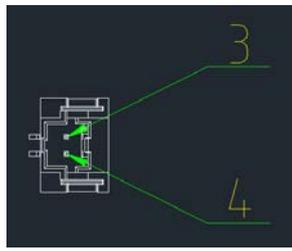
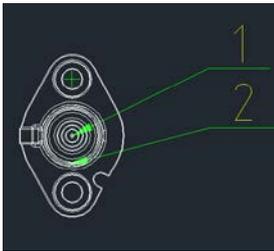
System principle

System overview

The camera captures the driver's driving state image, and the vehicle machine receives the image captured by the camera to judge whether the driver is in fatigue state at present. The camera interior contains LED infrared light supplement lamps to support night driver status monitoring.

Interface definition

Terminal view and terminal definition



Terminal No.	Signal type	Valid value	Remarks
1	POC	100mA	
2	GND	100mA	
3	IR GND	1.5A	
4	IR LED+	1.5A	-

Troubleshooting method

Test equipment

Multimeter

Check and confirm

1. Confirm the customer's problem.
2. Visually inspect whether there are obvious mechanical or electrical damage marks, and whether the camera body is damaged, loose and water inflow.
3. Use a multimeter to troubleshoot system faults.

Test conditions	Details/Results/Measures
-----------------	--------------------------

1. Measure pin pin of power interface camera with a multimeter

Purpose: To determine whether the power supply, grounding wire and video wire of the camera are faulty.	A. Measure whether there is 8V left and right voltage input ? Yes Turn B ? No Go to Step 2 B. Check whether the resistance between the body and the camera head end grounding wire is less than 0.5Ω, whether the video line is shorted, and whether the resistance is less than 0.5Ω. ? Yes Replace camera ? No Go to Step 2
--	--

2.Check DVD player V1/V2, two pins and hard wire.

Objective: To determine whether the harness from DVD and DVD to the camera end is faulty.	A. Check whether V1/V2 has 8V left and right power output. ? Yes Troubleshoot connector and DVD to camera harness ? No Replacing DVD player
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Fault 2: Night fatigue monitoring function disorder

Test conditions	Details/Results/Measures
-----------------	--------------------------

1. Confirm whether the LEDs work.

	A. Check whether there are two red LEDs in the camera in dark environment.
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Purpose: Judge whether the LED lamp power supply is faulty.	? Yes Turn B ? No Go to Step 2 B. Confirm whether the camera software and hardware version number is the latest? ? Yes Confirm the vehicle software and hardware version number. ? No Replace camera
--	--

2. Check whether the LED interface is normal.	
Objective: To determine whether the harness of LED lamp power supply is faulty.	A. Check whether PIN3/PIN4 has 8V left and right power input. ? Yes Replace camera ? No Turn B B. Check whether there is 8V power supply output at vehicle end B1/B4. ? Yes Troubleshoot connector and DVD to camera harness ? No Replace vehicle

Interior HD camera

General specifications

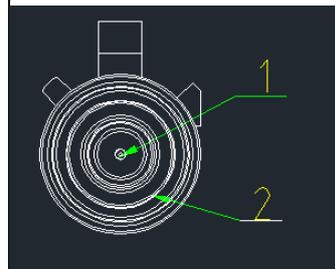
Name	Specifications
Working voltage	8+/-0.5V(CAMERA),
Working current	60mA~80mA@12V
Operating temperature	-40℃~85℃

System overview

The in-vehicle HD camera takes pictures of the in-vehicle scene and sends them to the vehicle. The vehicle can perform face recognition and in-vehicle photography according to the image.

Interface definition

Terminal view and terminal definition



Term inal No.	Signal type	Valid value	Remarks
1	Video	100m A	
2	Video-gnd	100m A	

Fault code list and simple troubleshooting method

None

Removal and installation

The driver fatigue monitoring camera is installed above the steering column.

Removal

1. Dismantle upper housing of steering column cover;
2. Remove the camera;

Installation

1. Install the camera on the upper housing of the pipe column cover;
2. Plug in the connector and install the upper housing.

Troubleshooting method

Test equipment

Multimeter

Check and confirm

1. Confirm the customer's problem.
2. Visually inspect whether there is obvious mechanical or electrical damage mark, and whether there is damage, looseness and water intake of camera body.
3. Use a multimeter to troubleshoot system faults.

Fault determination and maintenance

Fault symptom

Camera is not powered

Diagnosis and maintenance

Fault 1: Camera is not powered on

Test conditions	Details/Results/Measures
1. Measure pin pin of power interface camera with a multimeter	
Purpose: To determine whether the power supply, grounding wire and video wire of the camera are faulty.	A. Measure whether there is 8V left and right voltage input ? Yes Turn B ? No Go to Step 2 B. Check whether the resistance between the body and the camera head end grounding wire is less than 0.5Ω, whether the video line is shorted, and whether the resistance is less than 0.5Ω. ? Yes Replace camera ? No Go to Step 2
2. Check DVD player U1/U2, two pins and hard wire wiring	
Objective: To determine whether the harness from DVD and DVD to the camera end is faulty.	A. Check whether U1 has 8V left and right power output. ? Yes Troubleshoot connector and DVD to camera harness ? No Replacing DVD player

Removal

1. Dismantle inner rearview mirror cover;
2. Remove the camera;

Installation

1. Install the camera on the inner rearview mirror cover;
2. Plug in the connector and install the dome lamp cover;

DTC fault code list and simple troubleshooting method

None

Removal and installation

The driver fatigue monitoring camera is installed near the dome lamp on the inner rearview mirror cover.

**AR navigation camera
General specifications**

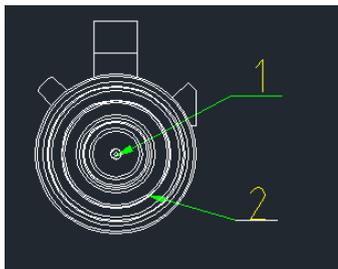
Name	Specifications
Working voltage	8+/-0.5V(CAMERA),
Working current	60mA~80mA@12V
Operating temperature	-40°C~85°C

System overview

AR navigation camera takes the scene in front of the vehicle and sends it to the vehicle machine. The vehicle machine can identify the road, vehicle and pedestrian according to the image, fuse the navigation information, and superimpose the navigation information on the real scene video to guide the user in navigation and positioning.

Interface definition

Terminal view and terminal definition



Terminal No.	Signal type	Valid value	Remarks
1	Video	100mA	
2	Video-gnd	100mA	

Troubleshooting method

Test equipment

Multimeter

Check and confirm

1. Confirm the customer's problem.
2. Visually inspect whether there is obvious mechanical or electrical damage mark, and whether there is damage, looseness and water intake of camera body.
3. Use a multimeter to troubleshoot system faults.

Fault determination and maintenance

Fault symptom
Fault 1: Camera is not powered on

Diagnosis and maintenance

Fault 1: Camera is not powered on

Test conditions	Details/Results/Measures
1. Measure pin pin of power interface camera with a multimeter	
Purpose: To determine whether the power supply, grounding wire and video wire of the camera are faulty.	A. Measure whether there is 8V left and right voltage input ? Yes Turn B ? No Go to Step 2 B. Check whether the resistance between the body and the camera head end grounding wire is less than 0.5Ω, whether the video line is shorted, and whether the resistance are faulty. ? Yes Replace camera ? No Go to Step 2
2. Check DVD player W1/W2, two pins and hard wire wiring	
Objective: To determine whether the harness from DVD and DVD to the camera end is faulty.	A. Check whether U1 has 8V left and right power output. ? Yes Troubleshoot connector and DVD to camera harness ? No Replacing DVD player

DTC fault code list and simple troubleshooting method

None

Removal and installation

The AR camera is mounted near the dome lamp on the inner mirror cover.

Removal

1. Dismantle inner rearview mirror cover;
2. Remove the camera;

Installation

1. Clamp the camera to the windshield bracket;
2. Plug in the connector and install the inner rearview mirror cover;

**Streaming media camera
General specifications**

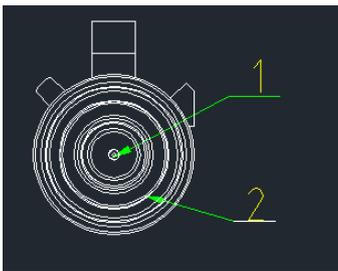
Name	Specifications
Working voltage	8+/-0.5V(CAMERA),
Working current	60mA~80mA@12V
Operating temperature	-40°C~85°C

System overview

The streaming media camera takes the rear view of the vehicle and sends it to the instrument for display, which is consistent with the function of the inner rearview mirror, but the streaming media video image is clearer than the inner rearview mirror image and has a larger field of view.

Interface definition

Terminal view and terminal definition



Terminal No.	Signal type	Valid value	Remarks
1	Video	100mA	
2	Video-gnd	100mA	

Troubleshooting method

Test equipment

Multimeter

Check and confirm

1. Confirm the customer's problem.
2. Visually inspect whether there is obvious mechanical or electrical damage mark, and whether there is damage, looseness and water intake of camera body.
3. Use a multimeter to troubleshoot system faults.

Fault determination and maintenance

Fault symptom
Fault 1: Camera is not powered on

Diagnosis and maintenance

Fault 1: Camera is not powered on

Test conditions	Details/Results/Measures
1. Measure pin pin of power interface camera with a multimeter	<p>Purpose: To determine whether the power supply, grounding wire and video wire of the camera are faulty.</p> <p>A. Measure whether there is 8V left and right voltage input ? Yes Turn B ? No Go to Step 2</p> <p>B. Check whether the resistance between the body and the camera head end grounding wire is less than 0.5Ω, whether the video line is shorted, and whether the resistance is less than 0.5Ω. ? Yes Replace camera ? No Go to Step 2</p>
2. Check the corresponding coaxial interface of instrument, two pins and hard wire wiring.	<p>Objective: To determine whether the harness from DVD and DVD to the camera end is faulty.</p> <p>A. Check whether the interface has left and right 8V power output. ? Yes Troubleshoot connector and instrument to camera harness ? No Replace instrument cluster</p>

DTC fault code list and simple troubleshooting method

None

Removal and installation

The streaming media camera is installed under the vehicle tail wing at the stop lamp.

Removal

1. Disconnect the connector and remove the spoiler assembly;
2. Remove the camera;

Installation

1. Clamp the camera to the spoiler assembly;
2. Install the spoiler assembly and connect the connector;

4.2.12 Keyless control system

Specifications

Name
Body intelligent controller(IBCМ)
RF receiving module
Low frequency antenna(One left and one right on the front door)
Low frequency antenna(Central control box)
Low frequency antenna(Back door sill)
Low frequency antenna(Rear bumper)
Smart key
PE door handle
One-key starter switch

Description and operation

System introduction

When the key is in the vehicle, the starter switch can start and stop the engine, or select OFF, ACC and ON gear switch.

When the brake pedal is not depressed, press the start switch to change the ignition switch mode. If it is OFF for the first time, press ACC mode (amber light); Press the second time to ON mode (amber); Press the third time to return to OFF mode (indicator lamp is off); Cycle by pressing the start switch again.

When the brake pedal is depressed, the starter switch indicator lamp turns green. At this time, press the starter switch to start the engine.

Remote control function

Remote unlocking:

When the vehicle power supply status is in OFF position, press the unlock button on the smart key, the body smart controller (hereinafter referred to as "IBCМ") drives the door lock to complete unlocking, and the hazard warning lamp flashes once after successful unlocking.

Remote control locking

When the vehicle power supply is in off position and all four doors are closed, press the lock button on the smart key, IBCM drives the door lock to complete the lock action, and the hazard warning lamp flashes twice after the lock is successful.

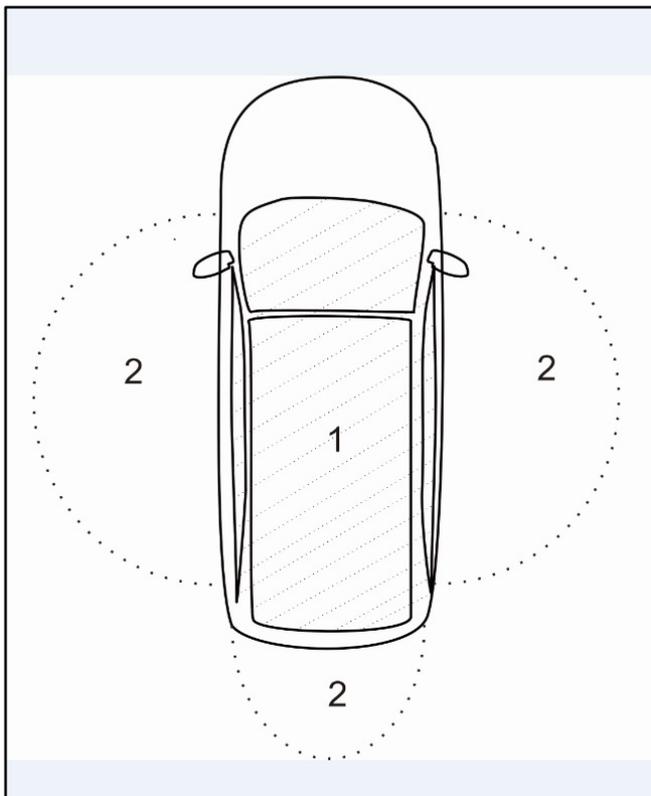
Remote control trunk

Press the luggage compartment button on the smart key for > 1 seconds, and IBCM drives the luggage compartment lock to complete unlocking.

Remote control vehicle seeking

After the vehicle power supply is in off position and the doors are closed, press the lock button on the smart key twice within two seconds to activate the vehicle searching function. The IBCM will drive the horn to sound and the hazard warning lamp will flash to indicate the vehicle position.

Keyless entry function



1. One-key starting function activation area - inside the compartment.

If the smart key is on the instrument panel, on the glove table, on the floor or inside the glove compartment, the start function may not be activated.

2. Enter the function activation area - within about 0.8 m from the keyless button and tailgate opening button on the driver's outer door handle.

If the smart key is too close to the door handle, window or rear bumper center, the keyless entry function may not be activated.

Front left door keyless unlocking:

After the vehicle power supply is in off position and the doors are closed, the user has the legal smart key in the left of area 2. Press the touch area of the front left door handle. If the front left door is locked, the IBCM drives the door lock to complete the unlocking action. The hazard warning lamp flashes once after successful unlocking.

Front left door keyless lock

After the vehicle power supply is in off position and the doors are closed, the user holds the legal smart key in the left of area 2, operate the touch area on the front left door handle, if the front left door is in unlocked state, the IBCM drives the door lock to complete the locking action, and the hazard warning lamp flashes twice after the locking is successful.

Luggage compartment keyless unlocking

After the trunk is closed, the user holds the legal smart key in area C. Operate the switch button on the trunk to drive the IBCM to unlock the trunk.

One-key start and flameout function

One-button start

When the user has the legal smart key in area 1, put the transmission in gear P or N, depress the brake and do not release it (depress the brake in the whole starting process), the working indicator on the

starting switch turns green, and press the one-button starting switch to finish starting.

One-key flameout

When the vehicle speed is zero, press the one-button starter switch to finish flameout. If the transmission gear is in P gear, the power supply status will return to OFF; if the transmission gear is in non-P gear, the power supply status will return to ACC (non-OFF gear will cause remote control to be unavailable, please return to P gear).

Emergency flameout

When the vehicle speed is not zero but less than 40 KM/h, short press of one-button starter switch cannot stop. Long press for more than 5s to finish the stop.

When the vehicle speed is greater than 40 KM/h, short press and long press cannot stop the fire. Please press the brake to lower the vehicle speed and stop the fire.

Standby start

When the smart key has insufficient power, the IBCM may not detect the key. In this case, put the smart key into the storage box in front of the gearshift lever, close to the inclined surface at the front of the storage box, shift the transmission gear to gear P or N, depress the brake not to release (depress the brake in the whole starting process), the working indicator on the starter switch turns green, and press the one-button starter switch to finish starting.

Remote or remote control start

Remote start open

The power supply gear is in OFF gear, and the command of remote starting engine and A/C is sent through the mobile phone. If the vehicle is in anti-theft state, the door is opened and closed once after the last normal start and flameout; The number of successful remote starting times is ≤ 1 , the remote control key is not in the vehicle, and the emergency alarm light is not activated, the vehicle power supply is switched to ON gear. If the transmission gear is in P gear, the vehicle speed is zero, the fuel quantity indicator lamp is not on, the engine is in the shutdown state, and the ambient temperature is greater than 30 C below zero, the engine is started and the gear shift is prohibited; If any of the above conditions is not met, the engine will not be started, and the startup failure and cause will be fed back to the user's mobile phone.

Remote start

The power supply gear is in off gear, press the remote control start button ≥ 2 s on the remote control key, if the vehicle is in anti-theft state, after the last normal start and flameout and the door is opened and closed once; The number of successful remote starting times is ≤ 1 , the remote control key is not in the vehicle, and the emergency alarm light is not activated, the power supply of the vehicle is switched to ON gear. If the transmission gear is in P gear, the vehicle speed is zero, the fuel quantity indicator lamp is not on, the engine is in the shutdown state, and the ambient temperature is greater than 30 C below zero and shifting is prohibited, the engine is started; If any of the above conditions are not met, the engine will not start.

Remote or remote start exit

In the process of remote or remote control starting or after successful starting, exit starting under any of the following conditions, and switch the power supply gear to OFF gear. At the same time.

- (1) Press the "Remote start/stop engine" button on the remote control key again;
- (2) User sends "Remote Start Stop" command via mobile phone or background

- (3) The remote start has been run for 10 minutes (this time can be calibrated);
- (4) Anti-theft activation;
- (5) Emergency alarm light is activated;
- (6) Non-P gear
- (7) Vehicle speed is not 0
- (8) MIL indicator lamp is on
- (9) Engine coolant temperature too high
- (10) Engine oil pressure too low
- (11) EPB is in released state or handbrake is in lowered state

Switch logic between remote or remote control start mode and normal start mode

When the vehicle is in the remote or remote starting mode, press the remote unlocking button or the front left door PE (the key is in the front left door activation area), the following conditions are met at the same time, and the engine can enter the normal starting mode.

- (1) Key in vehicle
- (2) Press the brake
- (3) Start button is pressed

Power supply switching function

When the user holds the legal smart key in area 1 and does not press the brake, short press the one-button starter switch once to switch the power gear to the next gear.

Put the transmission in gear P, short press the one-button starter switch once, then the power supply will go from OFF to ACC and then to ON and then to OFF, so cycle. (Do not step on brake)

Shift the transmission to non-P gear, short press the one-button starter switch once, then the power supply will go from ACC to ON to ACC, so the cycle. (Do not step on brake)

Prompt and alarm functions

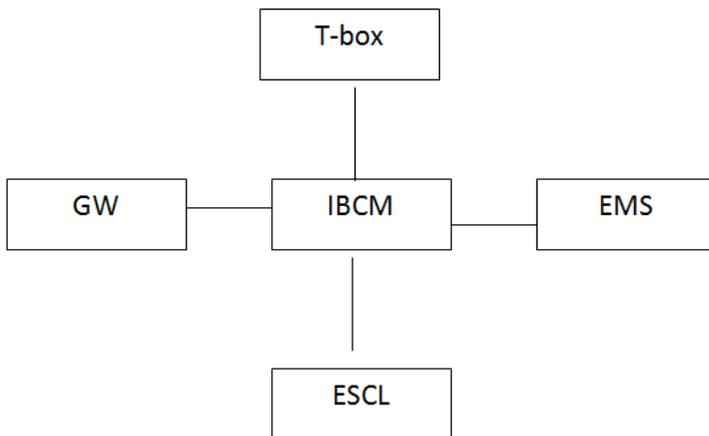
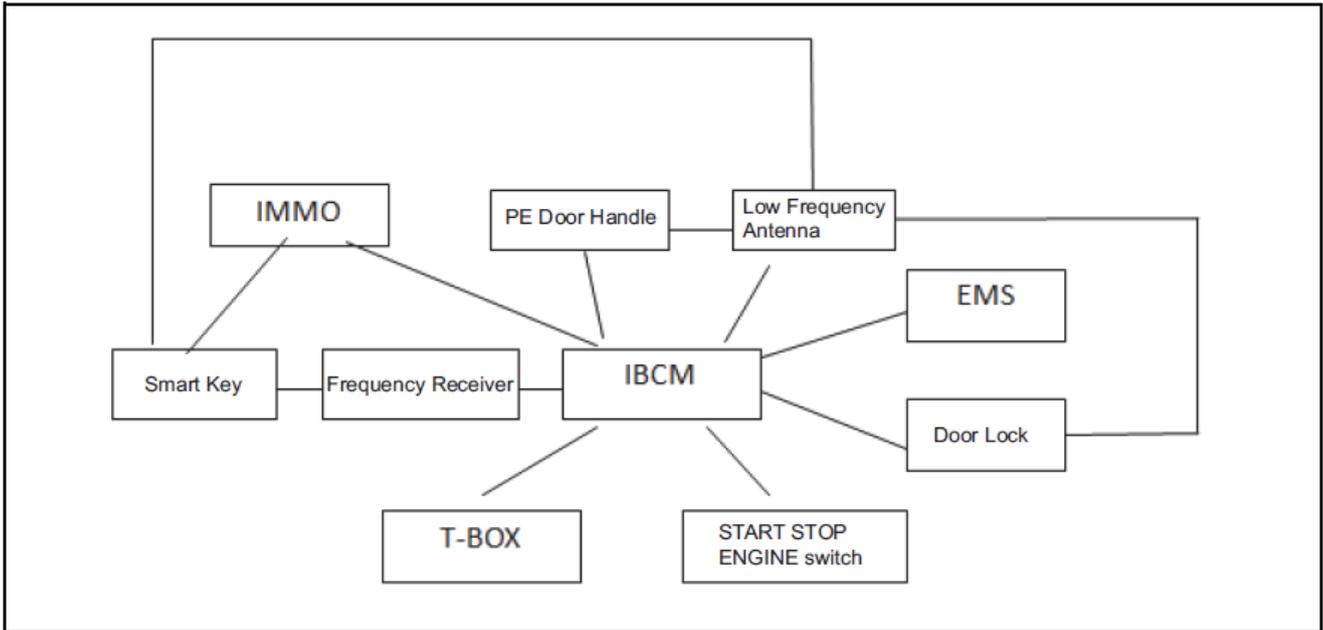
When the key is not detected, the IBCM sends a signal to the instrument for prompt;

When the startup fails, the IBCM sends a signal to the instrument to indicate the failure reason (see diagnosis and maintenance for details);

When it is detected that the starting conditions are met, the working indicator on the one-button starter switch turns green;

When the power supply is ACC or ON, but the brake is not pressed, the tooling indicator on the one-button starter switch changes to amber;

When it is detected that IBCM itself has fault, send corresponding fault signal to instrument for prompt (see diagnosis and maintenance for details);



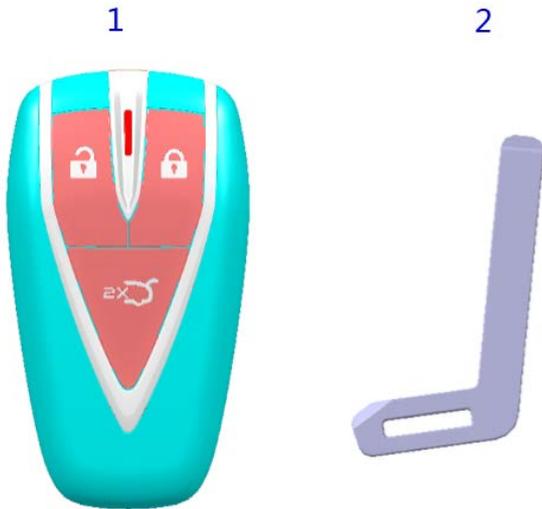
Component description

Serial number	Name
1	Mechanical key

Smart key assembly

Smart key has remote control function, keyless entry function, one-button start function and remote control start function.

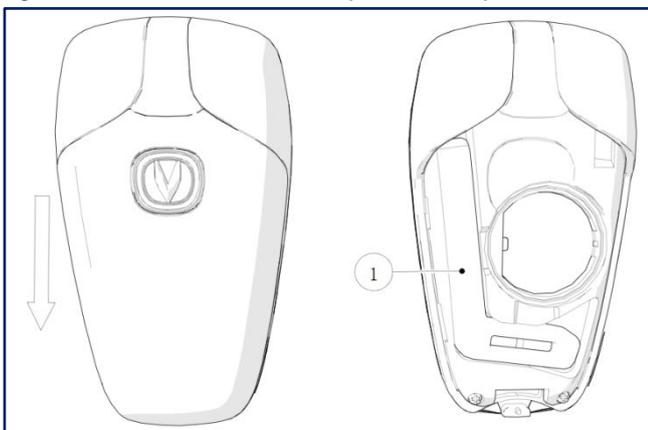
After removing the rear cover of the key, use a tool to remove the battery in the key.



Serial number	Name
1	Electronic key
2	Mechanical key

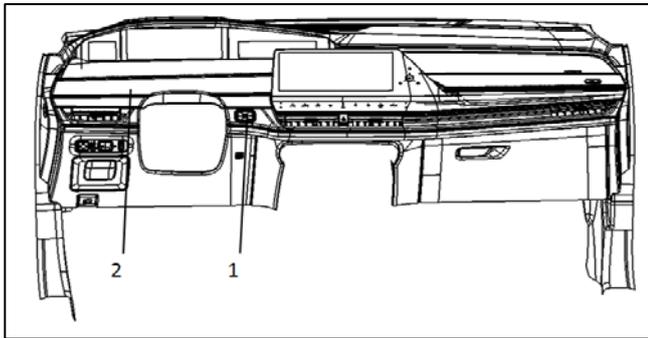
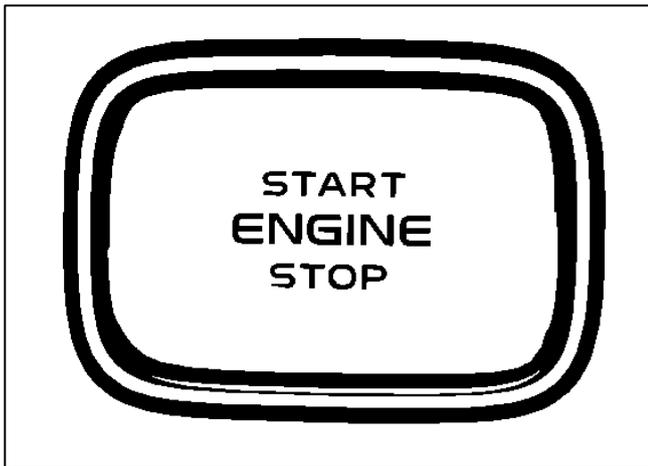
Smart key includes electronic key and mechanical key, and the mechanical key is inserted in the electronic key. The mechanical key can be removed by pressing the release button in the direction of the arrow in the figure.

After removing the mechanical key, use the front end of the mechanical key to pry off the key housing according to the position shown in the figure to remove the battery in the key.



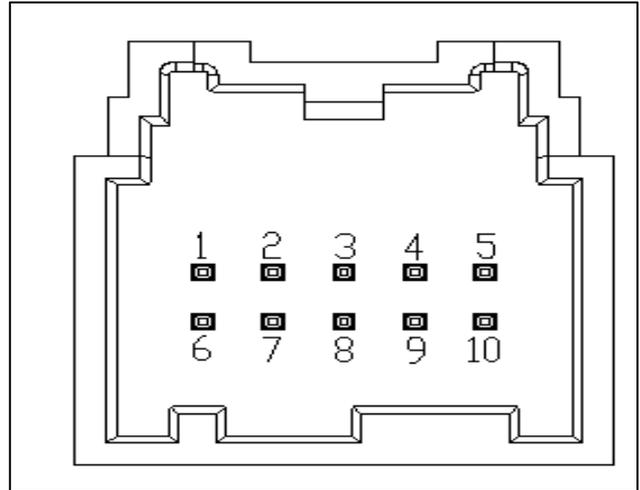
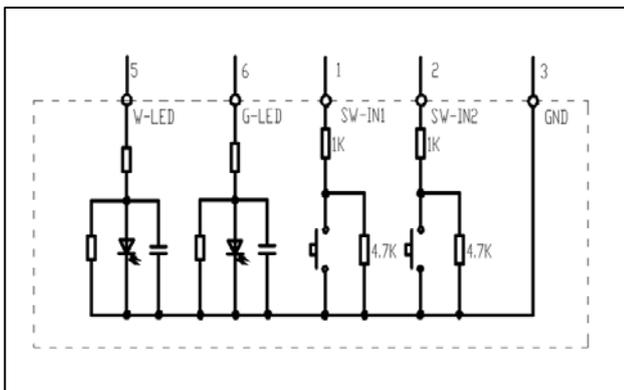
After removing the mechanical key, use the front end of the mechanical key to pry off the key housing according to the position shown in the figure to remove the battery in the key.

One-button starter switch



Serial number	Name
1	Starter switch
2	Instrument panel assembly

Circuit schematic

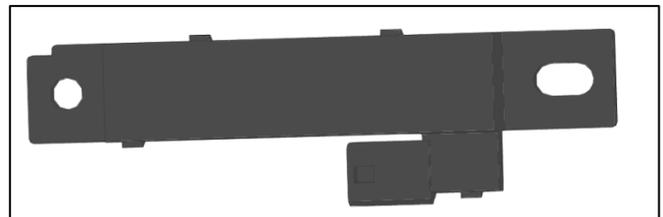


端子序号 ^o	引脚名称 ^o
1 ^o	按键信号 1 输出
2 ^o	按键信号 2 输出
3 ^o	地
4 ^o	/s
5 ^o	白色指示灯正
6 ^o	绿色指示灯正
7 ^o	/s
8 ^o	/s

Interior antennas

Each antenna in the vehicle is used to scan the entire interior area to check whether the key is in the vehicle, and the trunk antenna is used to scan the trunk area. For specific scan area and antenna arrangement, refer to the description of keyless system control module antenna activation area.

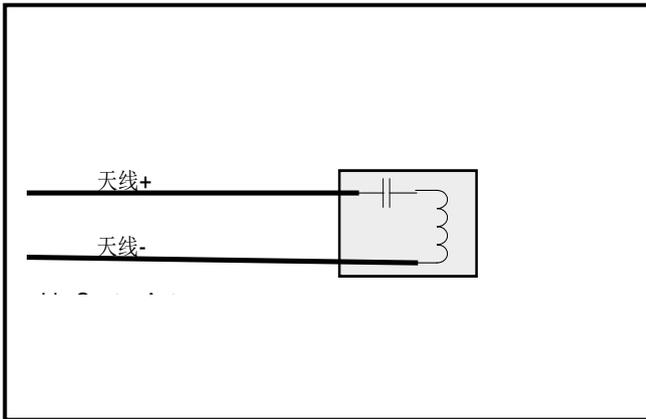
There are 4 antennas in the vehicle, which are respectively arranged under the left rear door panel, right rear door panel, cup holder and rear doorsill. The appearance is as shown in the following figure:



Pin pin definition

Interface definition

Reference: 4.2.10 body immobilizer

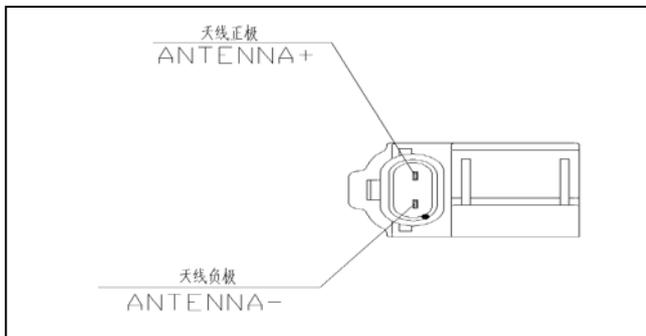


Terminal number	Function description
1	Antenna positive
2	Antenna negative

Front left/right door keyless entry

FRT LH door keyless entry includes FRT LH door handle antenna and is installed in the door handle to scan the keyless entry area of FRT LH/RH door within approx. 1m radius. When carrying the key and in the active area, press the touch area of FRT LH/RH door handle to unlock the door. For specific scan area and antenna arrangement, refer to the description of keyless system control module antenna activation area.

Circuit schematic



Fault phenomenon and diagnosis

Common troubleshooting methods

Fault symptom	Fault cause	Solution
Remote control function failure	<ol style="list-style-type: none"> 1. There is no matching remote controller. 2. It is too far from the vehicle, or there is strong interference source near the vehicle. (Transmitter, etc.) 3. The remote controller has no power, check whether the 	<ol style="list-style-type: none"> 1. Re-online key configuration or manual key configuration of diagnostic scanner. 2. Enter the vehicle for operation, or leave the area. 3. Replace the battery for the key. 4. Reinstall the PCB board in the remote control.

	<p>voltage of battery in the remote controller is >2.9 V;</p> <ol style="list-style-type: none"> 4. The remote controller is in poor contact with the battery. 5. Vehicle battery is low. 6. Remote controller is damaged. 	<ol style="list-style-type: none"> 5. Charge the battery. 6. Replace the remote controller and re-learn the keyless system menu through the diagnostic scanner.
Keyless entry function fails	<ol style="list-style-type: none"> 1. Smart key has fault; 2. Front left/right door handle switch is short circuit or open circuit; 3. Front left/right door handle has antenna short circuit or open circuit; 4. Keyless control module is damaged; 5. Vehicle battery is low. 6. Problems with IBCM 7. Keyless control module and BCM direct CAN bus short circuit or open circuit. 	<ol style="list-style-type: none"> 1. When pressing the door handle button, observe whether the indicator light on the smart key flashes. If it flashes, confirm the key is normal; If there is no flicker, please press remote control failure treatment; 2. Read the IBCM fault code with the diagnostic scanner, and check whether there is problem with the door handle antenna; 3. Read the IBCM fault code with the diagnostic scanner to see if the IBCM is faulty; 4. Charge the battery; 5. Replace body intelligent controller assembly; <p> Note: To replace the body intelligent controller, it is necessary to re-learn the smart key and re-perform anti-theft matching.</p>
Vehicle cannot be started	<ol style="list-style-type: none"> 1. first observe whether the starter motor rotates. If the starter motor rotates, please press the engine related fault rule out, and the keyless system is normal; 2. Observe whether there is relevant fault prompt on the instrument. If yes, please refer to the troubleshooting method of diagnostic scanner fault code. 3. Observe whether the indicator lamp on the key flashes. If it flashes normally, confirm the key is normal; If there is no flicker, please press remote control failure treatment; 4. Check whether the start request signal is normal; 5. Vehicle battery is insufficient; 6. Short circuit or open circuit of CAN bus; 	<ol style="list-style-type: none"> 1. Refer to troubleshooting method of diagnostic scanner fault code; 2. Check whether the key is normal; 3. Check whether the engine control module has fault code; 4. Check the battery voltage and charge; 5. Check whether the circuit is open or short. 6. Replace body intelligent controller; <p> Note: To replace the body intelligent controller, it is necessary to re-learn the smart key and re-perform anti-theft matching.</p>

Smart key indicator lamp does not light up	Key battery low	Replace battery
Key not detected	<ol style="list-style-type: none"> 1. The key is in the vehicle; 2. Insufficient power of key 3. Antenna fault 	<ol style="list-style-type: none"> 1. Confirm whether the key is in the vehicle; 2. Check whether the key is under-charged, refer to the key under-charged fault description. 3. Detect interior antenna fault
Interior antenna fault	Antenna fault	<ol style="list-style-type: none"> 1. The instrument prompts "keyless system fault," read the fault code with the diagnostic scanner, whether it is antenna open circuit or short circuit fault, that is, check whether the relevant circuit is open circuit or short circuit. 2. Replace the antenna assembly.

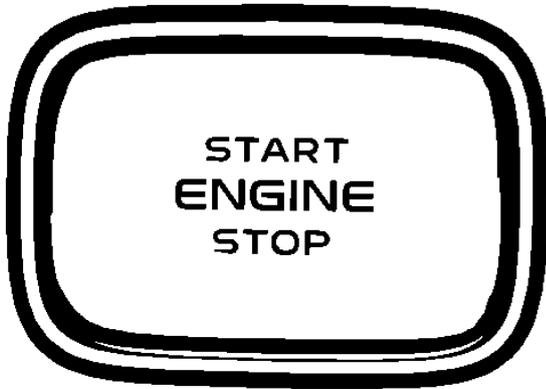
DTC fault code list and simple troubleshooting method

Reference: 4.2.10 body anti-theft

Removal and installation

One-button starter switch

The appearance of one-key starter switch assembly is shown in the figure below:

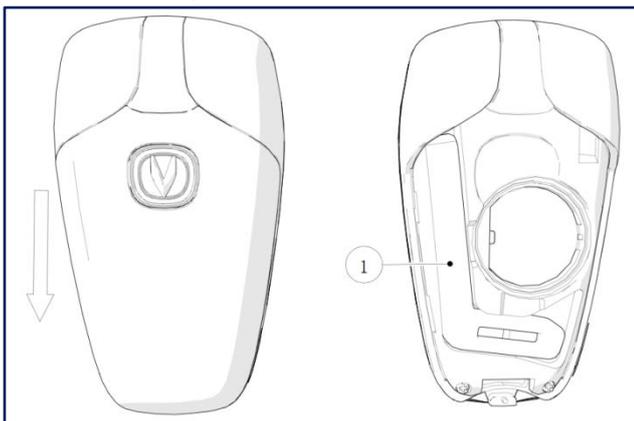


The starter switch is installed in the instrument panel and below the DVD display. Remove the corresponding trim strips to remove the starter switch.

Smart key

Remove mechanical key

Press the release button in the direction of the arrow in the figure and remove the mechanical key.



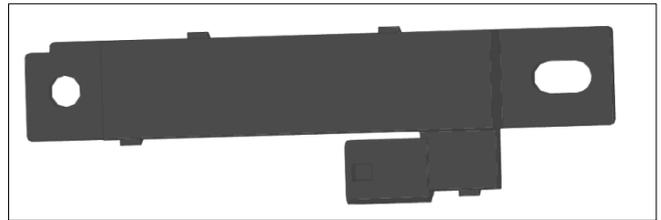
Replace battery

First remove the mechanical key, and then use the front end of the mechanical key to pry off the key housing according to the position shown in the figure to remove the battery in the key.

Interior antennas

There are 4 antennas in the vehicle, which

are respectively arranged under the left rear door panel, the right rear door panel, the cup holder and the trunk. The appearance is as shown in the following figure:



Other antennas are similar to the front antenna in the vehicle, wherein the middle antenna in the vehicle is installed on the front cross beam of the front seat, and fixed by two flange nuts and screws; The luggage compartment inner antenna is installed on the rear floor upper cross beam and fixed by two two cross recessed pan head screws; The rear bumper antenna is installed on the rear skirt outer panel welding assembly and fixed by two flange nuts and screws.

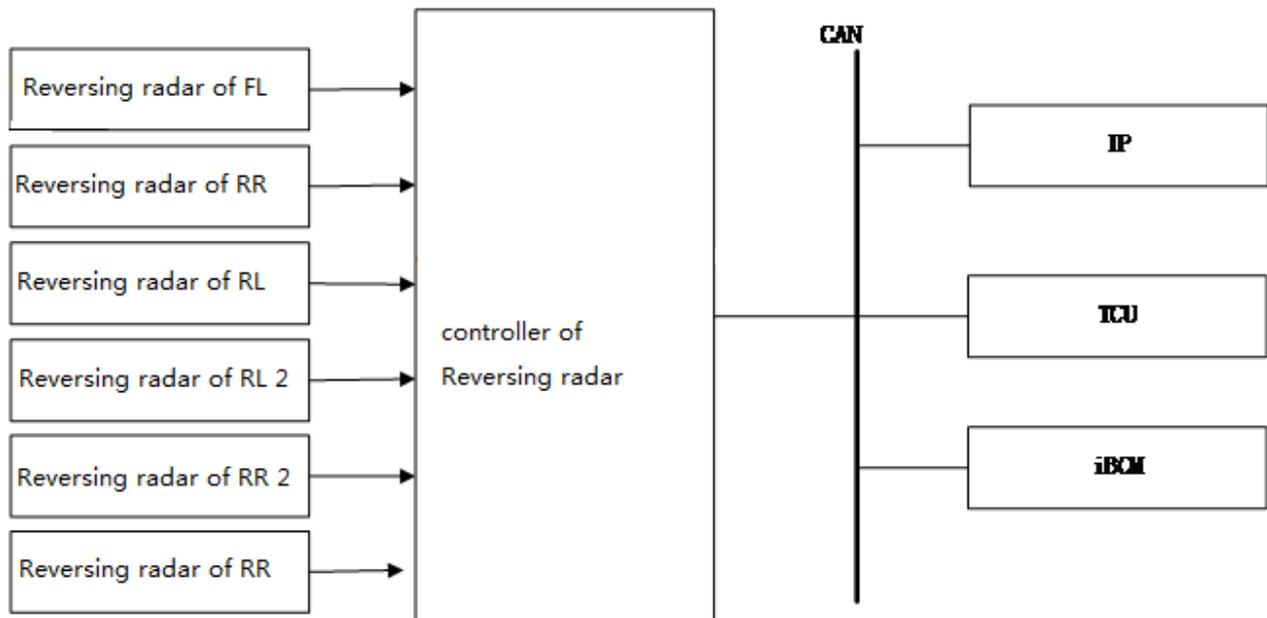
Front left/right door keyless entry

Replace the door handle sensor, and replace the entire FRT LH door handle assembly.

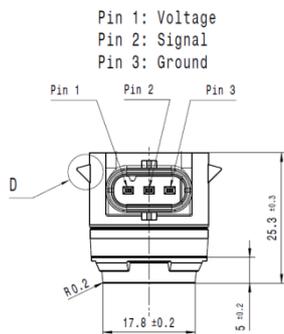
4.2.13 Reversing radar

Description and operation

The UNI-K reversing radar system consists of four or six reversing radar sensor assemblies and one reversing radar controller, which is placed on the rear bumper and connected to the system through the can line. Parking assist system (radar form) mainly consists of reversing radar controller assembly and reversing radar sensor assembly, which can assist the driver to park smoothly.

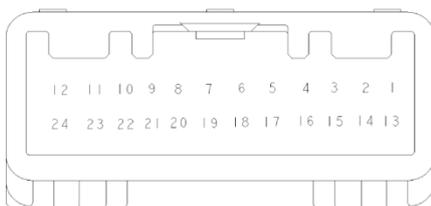


Interface definition



Pin	Function abbreviation	Rated current	Signal type
1	SENSOR signal	15mA	High/low level
2	SENSOR Ground	15mA	Low level
3	SENSOR power supply	15mA	High level

Reversing radar controller:



Pin	Function abbreviation	Rated current	Signal type
1			
2			
3	Front outer left sensor	1mA	High level
4	Front outer right sensor	1mA	High level
5	Can bus H	25mA	Differential
6	Can bus L	25mA	Differential
	Rear middle right sensor	1mA	High level
	Rear outer right sensor	1mA	High level

7	Front sensor power supply	20mA	Power supply
8	ECU ignition power supply	100mA	Power supply
9	Front sensor ground	20mA	Ground
10	Rear sensor ground	20mA	Ground
11	ECU ground	100mA	Ground
12	Reversing radar switch	0mA	High level valid
13	Reversing radar switch indicator lamp	10mA	Low level drive
14			
15			
16			
	Rear middle left sensor	1mA	High level
	Rear outer left sensor	1mA	High level
	Rear sensor power supply	20mA	Power supply

		Controller internal fault		
2	B190001	ECU ROM error ECU ROM fault	ECU Failure ECU fault	Replace ECU Replace ECU
3	B190002	ECU EEPROM error ECU EEPROM fault	ECU Failure ECU fault	Replace ECU Replace ECU
4	B190200	LFC sensor Front left angle sensor	LFC Sensor failure signal line short to Ubat or no GND Front left angle sensor signal wire is short to power supply or has no ground fault	Check left front corner sensor signal line Check front left angle sensor signal wire
5	B190201	LFC sensor Front left angle sensor	LFC Sensor failure signal line short to GND or OC Front left angle sensor signal wire is short to ground or open	Check left front corner sensor signal line Check left angle sensor signal wire
6	B190202	LFC sensor Front left angle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
7	B190203	LFC sensor Front left angle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
8	B190500	RFC sensor Front right angle sensor	RFC Sensor failure signal line short to Ubat or no GND Front right angle sensor signal wire is short to power supply or has no ground fault	Check right front corner sensor signal line Check front right angle sensor signal wire
9	B190501	RFC sensor Front right angle sensor	RFC Sensor failure signal line short to GND or OC Front right angle sensor signal wire is short to ground or open	Check right front corner sensor signal line Check front right angle sensor signal wire
10	B190502	RFC sensor Front right angle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
11	B190503	RFC sensor Front right angle	Sensor error Sensor error	Replace Sensor Replace sensor

		sensor		
12	B190800	RRC sensor Rear right angle sensor	RRC Sensor failure signal line short to Ubat or no GND Right rear corner sensor signal wire is short to power supply or has no ground fault	Check right rear corner sensor signal line Check rear right angle sensor signal wire
13	B190801	RRC sensor Rear right angle sensor	RRC Sensor failure signal line short to GND or OC Right rear corner sensor signal wire is short to ground or open	Check right rear corner sensor signal line Check rear right angle sensor signal wire
14	B190802	RRC sensor Rear right angle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
15	B190803	RRC sensor Rear right angle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
16	B190900	RRM sensor Rear right middle sensor	RRM Sensor failure signal line short to Ubat or no GND Rear right middle sensor signal wire short circuit to power supply or no ground fault	Check right rear middle sensor signal line Check rear right middle sensor signal wire
17	B190901	RRM sensor Rear right middle sensor	RRM Sensor failure signal line short to GND or OC Rear right middle sensor signal wire is short to ground or open	Check right rear middle sensor signal line Check rear right middle sensor signal wire
18	B190902	RRM sensor Rear right middle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
19	B190903	RRM sensor Rear right middle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
20	B190A00	LRM sensor Rear left middle sensor	LRM Sensor failure signal line short to Ubat or no GND Rear left middle sensor signal wire short circuit to power	Check left rear middle sensor signal line Check rear left middle sensor signal wire

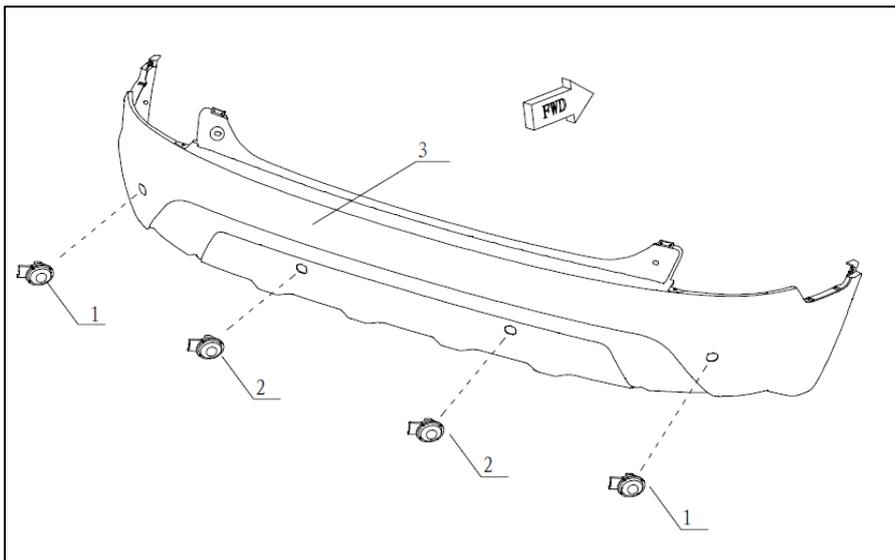
			supply or no ground fault	
21	B190A01	LRM sensor Rear left middle sensor	LRM Sensor failure signal line short to GND or OC Rear left middle sensor signal wire is short to ground or open	Check left rear middle sensor signal line Check rear left middle sensor signal wire
22	B190A02	LRM sensor Rear left middle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
23	B190A03	LRM sensor Rear left middle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
24	B190B00	LRC sensor Rear left angle sensor	LRC Sensor failure signal line short to Ubat or no GND Rear left angle sensor signal wire is short to power supply or has no ground fault	Check left rear corner sensor signal line Check rear left angle sensor signal wire
25	B190B01	LRC sensor Rear left angle sensor	LRC Sensor failure signal line short to GND or OC Rear left angle sensor signal wire short circuit to ground or open circuit	Check left rear corner sensor signal line Check rear left angle sensor signal wire
26	B190B02	LRC sensor Rear left angle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
27	B190B03	LRC sensor Rear left angle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
28	B190300	LFM sensor Front left middle sensor	LFM Sensor failure signal line short to Ubat or no GND Front left middle sensor signal wire is short to power supply or has no ground fault	Check left front middle sensor signal line Check front left middle sensor signal wire
29	B190301	LFM sensor Front left middle sensor	LFM Sensor failure signal line short to GND or OC Front left middle sensor signal wire is short to ground or open	Check left front middle sensor signal line Check front left middle sensor signal

				wire
30	B190302	LFM sensor Front left middle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
31	B190303	LFM sensor Front left middle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
32	B190400	RFM sensor Front right middle sensor	RFM Sensor failure signal line short to Ubat or no GND Front right middle sensor signal wire is short to power supply or has no ground fault	Check right front middle sensor signal line Check front right middle sensor signal wire
33	B190401	RFM sensor Front right middle sensor	RFM Sensor failure signal line short to GND or OC Front right middle sensor signal wire is short to ground or open	Check right front middle sensor signal line Check front right middle sensor signal wire
34	B190402	RFM sensor Front right middle sensor	Sensor blockage (ice or mud) Sensor blocked(Ice or mud)	Clear the blockage Clear blockage
35	B190403	RFM sensor Front right middle sensor	Sensor error Sensor error	Replace Sensor Replace sensor
36	B190E00	UPA Button Reversing radar button	UPA Button mechanically blocked Reversing radar button stuck	Check UPA button Check UPA switch
37	B190E01	UPA LED Reversing radar indicator lamp	UPA LED short to Ubat Reverse radar indicator lamp is short circuit to power supply	Check UPA LED Check UPA LED
38	B190E02	UPA LED Reversing radar indicator lamp	UPA LED short to GND or open circuit Reverse radar indicator lamp open circuit or short circuit to ground	Check UPA LED Check UPA LED

Fault code	DTC Meaning DTC Meaning	Possible fault causes	Maintenance advice
U0170	Lost communication with reversing radar	Node missing	Check harness and reversing radar
B1862	Reverse radar left sensor fault	Reverse radar left sensor fault	Check left reversing radar
	Reverse radar middle sensor fault	Reverse radar middle sensor fault	Intermediate reversing radar
	Reverse radar right sensor fault	Reverse radar right sensor fault RPAS RRError	Check right reversing radar
	Reverse radar power supply fault	Reverse radar power supply fault	Check power supply of reversing radar

Removal and installation

The reversing radar controller is installed on the steering support, the reversing radar sensor is installed on the rear bumper, and there are 4 sensors, and corresponding removal and installation.



1. Side reversing radar sensor assembly
2. Reversing radar sensor
3. Rear bumper assembly

4.2.14 Adaptive cruise control

Description and operation

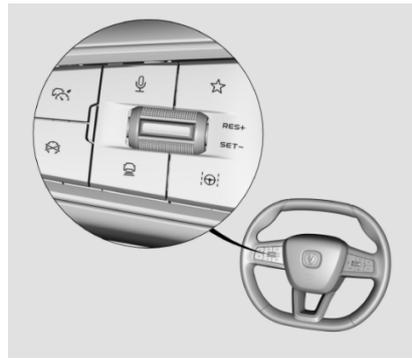
System introduction

The adaptive cruise control assembly is installed at the bottom of the front impact beam behind the lower grille of the front bumper. The integrated millimeter wave radar is used to detect the front vehicle, and the adaptive cruise control and early warning auxiliary braking are realized through the deceleration or (and) acceleration control of the vehicle. The main functions of the system are as follows:

- Adaptive Cruise Control
 - Constant speed cruise: When there is no target vehicle in front or the target vehicle speed is higher than the set cruise speed, control the vehicle to drive at the set cruise speed.
 - Following control: When there is a target vehicle in front and the target vehicle speed is lower than the set cruising speed, the control vehicle and the front vehicle keep the set following time distance.
 - Stop control:
 - When the front target vehicle stops, follow the front vehicle to stop;
 - The front vehicle starts within 3 seconds and automatically follows the start;
 - Start after 3s, press RES+ or slightly press the accelerator to start;
 - After stopping for more than 3 minutes, the adaptive cruise system will exit and the electronic handbrake will start to keep the vehicle still.
- Early warning auxiliary brake system
 - Front collision warning:
 - During high-speed driving, when the vehicle is too close to the vehicle, the driver is reminded of the vehicle distance through the image emitted by the instrument or the image + sound alarm;
 - In case of collision danger, the image + sound or image + sound + brake) emitted by the instrument will remind the driver to take collision avoidance measures.
 - Collision mitigation:
 - When the collision is imminent, brake actively to slow down or avoid the collision.

Function setting

- Adaptive Cruise Control Switch:



 : Activate Adaptive Cruise

 : Cancel adaptive cruise control

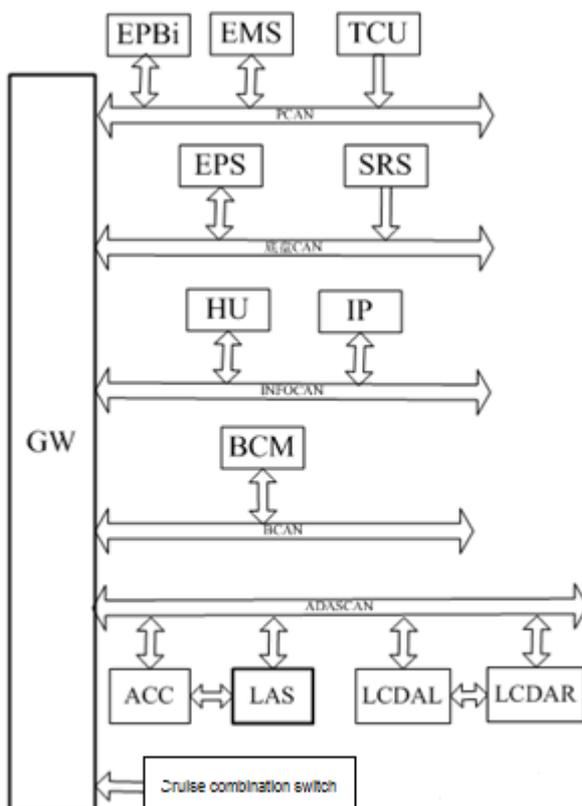
RES+: Restore system or increase cruise speed

SET-: Set system or reduce cruise speed

 : Adjust following distance

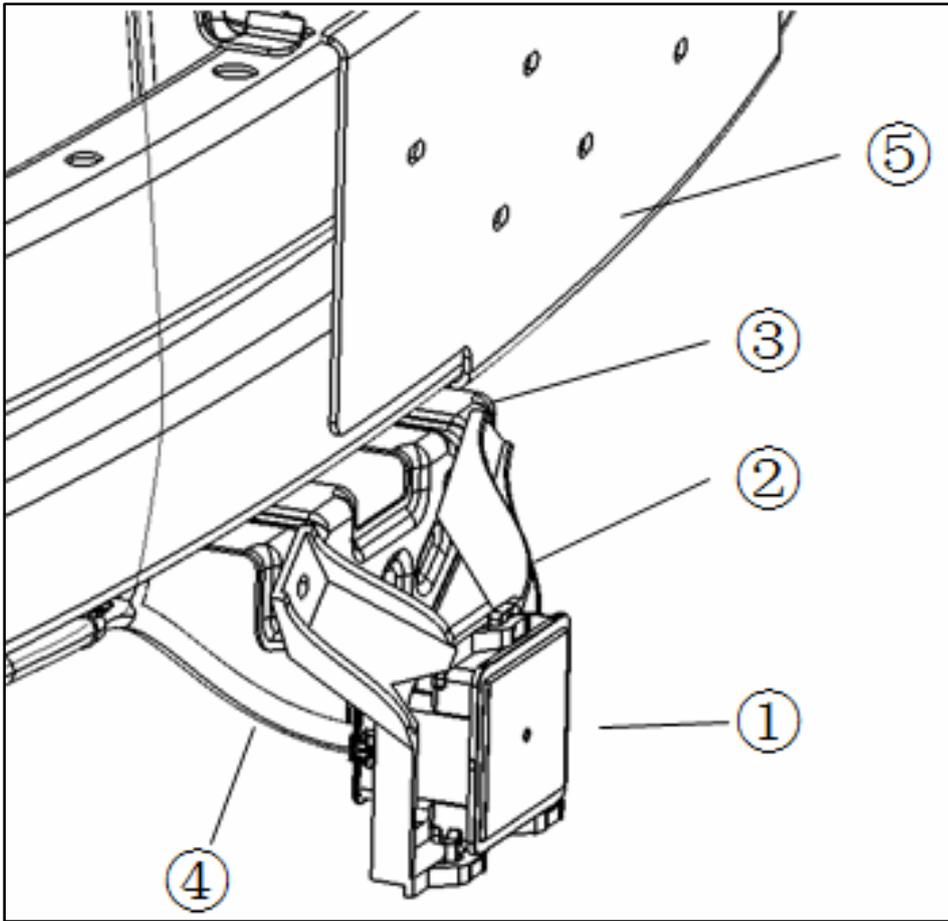
 : Warning auxiliary system switch:

Front collision warning and sensitivity setting can be turned off in the "Vehicle Center" - "Safety" interface of inCall system.



Self-adaptive Cruise System

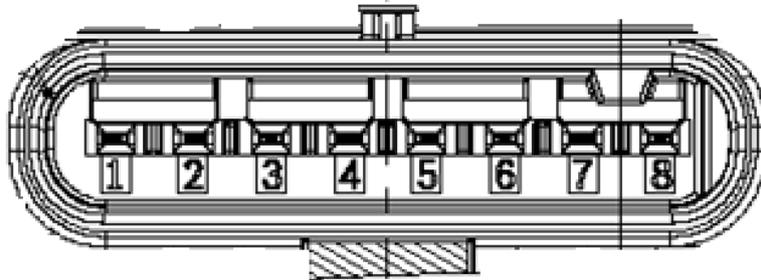
Component position diagram



Serial number	Component	Serial number	Component	Serial number	Component
1	Adaptive cruise control assembly	2	Adaptive cruise controller plastic bracket	3	Adaptive cruise control sheet metal bracket
4	Harness	5	Front impact cross beam assembly		

Interface definition

The adaptive cruise control assembly is powered via the vehicle IG1, terminal views and definitions are as follows:



Terminal No.	Interface definition	Signal type	Remarks
1	MP-2	-	Empty
2	MP-1	-	Empty
3	CAN2-L	Private CAN communication low level	Private CAN, connected to lane departure controller assembly
4	CAN2-H	Private CAN communication high level	
5	GND	Power supply ground	
6	CAN1-L	Male CAN communication low level	Common can, connected to complete vehicle PCAN
7	CAN1-H	Male CAN communication high level	
8	V + SCU	On power cord	

Fault phenomenon and diagnosis

General equipment

Digital multimeter
Hand-held diagnostic scanner KT 700, etc.

 Warning: The adaptive cruise control assembly must be re-professionally calibrated after removing/reinstalling the adaptive cruise control assembly or the front impact beam.

 Warning: After a serious collision accident, the vehicle body is deformed, and the adaptive cruise control cannot be installed in the original design position. The mechanical structure must be corrected to ensure that the control is in the original installation position, and then perform professional calibration.

Inspection and confirmation

1. Confirm the user problem.
 - 1) Time, place, weather, and vehicle configuration of the fault;
 - 2) Vehicle status, such as instrument display fault information, audible alarm, abnormal sound, etc.
 - 3) Surroundings and road conditions (For example, whether there are obvious obstacles and road signs in front of the vehicle and near the road.)
 - 4) Confirm
2. Visually inspect whether there is obvious mechanical or electrical damage and whether the installation position is in the original design state.
3. Visually inspect whether there is obvious impact deformation trace, whether the front of the controller is blocked by foreign objects, including surface ice, dust or mud, and whether the front bumper sinks.

Visual Check List

Mechanical part	Electrical part
Adaptive cruise control assembly, mounting bracket	Harness and connector
Front bumper and front impact cross beam	Fuse
Steering wheel cruise switch	Adaptive cruise control assembly

4. Inspect by hand whether the adaptive cruise control is loose, whether the buckle is broken, and whether the controller and bracket are damaged.
5. If the obvious cause of the observed or raised problem has been found, the cause must be corrected before proceeding to the next step.
6. If the visual inspection is passed, read the version information and fault of the adaptive cruise control system through the diagnostic scanner and refer to the fault symptom table for maintenance.
7. Always clear the adaptive cruise control DTCs after completing the repair.

 Warning: If the relevant systems such as EMS, EPBi and TCU replace parts or update software for some reasons, correct operation must be carried out according to the repair/maintenance methods of the corresponding system, clear the fault code of the adaptive cruise control system, and confirm that the function of the adaptive cruise control system is normal.

Fault symptom table

Symptoms	Fault classification	Possible causes	Measures
ACC icon in lower left corner of instrument turns yellow, and instrument prompts "Early warning auxiliary brake system fault" or "adaptive cruise system fault."	ACC detects low/high supply voltage	Voltage is greater than 16V or less than 9V	1. Use a multimeter to measure the voltage between pin "5" and pin "8" of harness terminal connector when the vehicle is in ON gear; 2. Measure battery voltage and stability 3. Check whether the harness has virtual connection, resulting in partial voltage.
	ACC is not calibrated or calibration deviation is too large; Offline calibration is never done; Offline calibration is not completed	ACC controller angle out of tolerance; Replaced ACC controller	Refer to ACC after-sales calibration method for calibration, and pay attention to operate according to the prompt of diagnostic scanner.
	EMS system fault	1. EMS fault 2. EMS model configuration error	Troubleshoot EMS-related faults with diagnostic scanner, including accelerator pedal, brake pedal, ACC switch, torque response, etc., respectively solve them, power on/off again, and clear ACC fault code.
	EPBi system fault	1. Fault of EPBi itself 2. EPBi model configuration error 3. Unsuccessful calibration of EPBi related sensors (yaw rate, acceleration, etc.)	Troubleshoot EPBi-related faults through diagnostic scanner, including wheel speed sensor, steering wheel angle sensor, yaw rate sensor, EPBi additional function, master cylinder pressure failure, brake overheating, EPBi failure, ABS failure, TCS failure, etc., respectively solve the problems and then re-power on and off, and clear the ACC fault code.
	EPBi system fault	1. Fault of EPBi itself	Refer to EPBi maintenance method to troubleshoot maintenance problems.
	TCU system fault	1. Fault of TCU itself	Troubleshoot TCU-related faults with diagnostic scanner, including gear signal failure and transmission limp fault, and then power on and power off again to clear ACC fault code.
	SAS system fault	1. SAS fault 2. SAS is not calibrated	Check SAS harness and connector, and replace SAS controller;

		successfully.	
Body communication fault		1. ACC connector is loose. 2. Associated system connector is loose. 3. Bus abnormality(Overload, etc.)	Check vehicle network and harness connection; Check ACC fuse to ensure normal connection; Read ACC fault code, determine which controller node is lost through fault code, and then check response controller harness and communication problems;
Gauge display unit indicates an error		1. ACC communication is abnormal.(Such as loose connector, etc.) 2. Instrument fault	1.Carry out AB-BA test with vehicle with normal function; 2. Replace the parts after locking the problem target.
Can bus Busoff (bus off) fault		Bus error	Check vehicle network and harness connection to ensure normal connection.
Radar hardware fault		Radar hardware fault	Replace radar hardware and recalibrate
ACC radar field of view is too narrow		The front bumper falls down to block the radar transmitting wave; ACC controller surface is blocked by dirt or other objects.	1. Refer to the bumper maintenance manual to adjust the front bumper. 2. Remove foreign matter in front/surface of radar sensor. 3. Restart the vehicle
Production mode (Production Line Mode) is not off		Production line mode is turned on	Enter the adaptive cruise control system/special function via diagnostic scanner KT 700 to close the production line mode.
Camera error		1. Lane departure controller fault 2. Lane departure controller and ACC connection error	1. Refer to lane departure control maintenance plan and troubleshoot problems; 2. Refer to the harness schematic diagram and check the wiring.
There is no fault code, the diagnostic scanner cannot enter the ACC library module, and the fault code of the gateway displays ACC node is lost.		1. ACC controller is damaged. 2. ACC controller fuse is blown. 3. Poor contact of ACC connector 4. ACC harness connection error	1.Replace ACC controller for AB-BA test 2. Refer to harness schematic diagram and check whether ACC controller fuse is blown. If so, replace it. 3. Reseat ACC connector 4. Refer to harness schematic diagram and check ACC harness connection.
ACC icon in lower left	Radar blinding	The front bumper falls down to block the radar	1. Refer to the bumper maintenance manual to adjust the front bumper.

corner of instrument turns yellow, and instrument prompts "Radar blocked."		transmitting wave; ACC controller surface is blocked by dirt or how else	2. Remove foreign matter in front/surface of radar sensor. 3. Restart the vehicle
Turn on ACC, increase the target speed, and the vehicle does not accelerate automatically or slowly.	No fault code	1. ACC module does not match the model. 2. Engine ECU does not respond to ACC torque or response abnormality; Vehicle model configuration error, software mismatch	1. Check whether the hardware number of ACC matches the vehicle; if not, replace ACC controller; 2. Refer to engine ECU maintenance method to overhaul engine ECU.
ACC indicator lamp on instrument is normal, and AEB fault lamp is on.	EPBi does not support AEB function	ACC controller is disturbed	Recalibrate radar Power on/off again and clear the fault code;
		The wheel speed sensor is faulty and the assembly is not in place.	Refer to EPBi maintenance method and reinstall or replace wheel speed sensor.
		Master cylinder pressure signal invalid(Read ACCDTC as 211708)	1.Check the master cylinder signal, read the EPBi fault code, and repair according to the EPBi fault handling method; 2. Power on and off again; 3. Clear ACC fault code
		The EPBi function is degraded (read ACCDTC is 211881), and does not respond to the AEB deceleration request.	1. Check the vehicle voltage, and replace the battery if it is abnormal; 2.Read EPBi fault code and repair according to EPBi fault handling method; 3. Power on and off again; Clear ACC fault code
Press ACC button, ACC does not respond	No fault code	1. Steering wheel key fault; 2. The rotary connection sensor is damaged or in poor contact. 3. Harness wiring error 4. Engine ECU does not respond to ACC torque.	1. Refer to harness schematic diagram and check harness connection/disconnection with a multimeter. 2. Check the resistance of each button with a multimeter. 3. Refer to engine ECU maintenance method to overhaul engine ECU.
		ACC controller power supply abnormality ACC controller is damaged	1. Check whether ACC controller fuse is loose or damaged; 2.Check whether the cruise and front impact auxiliary interface keys on inCall can be set; 3. The vehicle is in ON gear. Use a

			multimeter to read whether the voltage between radar connector power supply and ground is normal; 4. If the above two items are normal, replace ACC controller;
		Powertrain harness problem	Check whether the engine harness and steering wheel cruise button harness are shorted and the voltage is normal;
		Damaged steering wheel harness	Power on the vehicle, press the steering wheel button, and measure the harness voltage and resistance of the steering wheel button on the EMS connector;
		EMS and gateway software mismatch	Update EMS software to support ACC function, update gateway software
Turn on ACC, and after a certain speed, ACC icon in the lower left corner turns yellow.	Wheel speed and pulse signal check mismatch	1. ACC module does not match the model. 2. Wheel speed sensor does not match the model.	1. Check whether the hardware number of ACC matches the vehicle; if not, replace ACC controller; 2. Check whether the wheel speed sensor matches the vehicle; if not, replace the wheel speed sensor;
ACC fault lamp on instrument is on and AEB indicator lamp is normal.		EMS does not respond to ACC torque request; Vehicle model configuration error, software mismatch	Check EMS software and model configuration; Read EMS fault code and repair according to EMS fault handling method; Power on and off again; 4. Clear ACC fault code
		Abnormal electronic handbrake signal(Read 210681 or 210581)	1.Read EPBi fault code and repair according to EPBi fault handling method; 2. Power on and off again; 3. Clear ACC fault code
		Brake disc temperature too high	Inquire about vehicle usage when the fault occurs 1. If the road condition is long downhill, wait for the vehicle to stand for a period of time, power on and off again, and check whether the fault disappears; 2. If there is no brake working condition for a long time, check whether there is refitting affecting the heat dissipation of brake disc and carry out rectification.
		The EPBi function is	1.Read EPBi fault code and repair

		degraded and does not respond to the deceleration request.(Read ACCDTC is 211477)	according to EPBi fault handling method; 2. Power on and off again; 3. Clear ACC fault code;
		Correlation system accepts ACC signal error	1.Check and update EMS, EPBi, gateway and instrument software status; 2. Power on and off again; 3. Clear ACC fault code;

DTC fault code list and simple troubleshooting method

Serial number	Fault code	Meaning	Possible fault causes	Maintenance advice
1	U197300	Male CAN bus off	Network fault	Check network status
2	U197388	Private CAN bus off	Network fault	Check network status
3	U170016	Supply voltage too low	Power supply fault	Check power supply voltage
4	U170017	Supply voltage too high	Power supply fault	Check power supply voltage
5	D9 0F	TCU message received by ACC times out	TCU fault	Check TCU status
6	U190E87	SRS message received by ACC timed out	SRS fault	Check SRS status
7	U190D87	SAS message received by ACC timed out	SAS fault	Check SAS status
8	U190387	LAS message received by ACC timed out	LAS fault	Check LAS status
9	U190487	The IP message received by ACC times out.	IP fault	Check IP status
10	U190787	IMS message received by ACC timed out	IMS fault	Check IMS status
11	U190887	HU message received by ACC times out	Hu fault	Check HU status
12	U190C87	ACC receives key message with timeout.	Key fault	Check key status
13	U190687	ESP message received by ACC timed out	ESP fault	Check key status
14	U190987	EPS message received by ACC timed out	EPS fault	Check EPS status
15	U190587	EPB message received by ACC times out	EPB fault	Check EPB status
16	U190087	EMS message received by ACC timed out	EMS fault	Check EMS status
17	U190A87	BCM message received by ACC timed out	BCM fault	Check BCM status
18	U190B87	LCDAR message timeout	LCDAR fault	Check LCDAR status
19	U191087	ACC message timeout diagnosis	ACC fault	Check ACC status
20	U192082	EMS RollingCounter error	EMS fault	Check EMS status
21	U192182	ESP RollingCounter Error	ESP fault	Check ESP status
22	U192282	SAS RollingCounter Error	SAS fault	Check SAS status
23	U192382	TCU RollingCounter Error	TCU fault	Check TCU status
24	U192482	SRS RollingCounter error	SRS fault	Check SRSU status
25	U192582	IMS RollingCounter Error	IMS fault	Check IMS status
26	U192682	HU RollingCounter error	Hu fault	Check HU status
27	U192782	Key RollingCounter error	Steering wheel key fault	Check key status

28	U192882	EPS RollingCounter Error	EPS fault	Check EPS status
29	U192982	EPB RollingCounter Error	EPB fault	Check EPB status
30	U192A82	LCDAR RollingCounter error	LCDAR fault	Check LCDAR status
31	U194083	EMS CRCCheck Error	EMS fault	Check EMS status
32	U194183	ESP CRCCheck Error	ESP fault	Check ESP status
33	U194283	SAS CRCCheck Error	SAS fault	Check SAS status
34	U194383	TCU CRCCheck Error	TCU fault	Check TCU status
35	U194483	IMS CRCCheck Error	IMS fault	Check IMS status
36	U194583	HU CRCCheck error	Hu fault	Check HU status
37	U194683	Key CRCCheck error	Steering wheel key fault	Check key status
38	U194783	EPS CRCCheck Error	EPS fault	Check EPS status
39	U194883	EPB CRCCheck error	EPB fault	Check EPB status
40	U194983	LCDAR CRCCheck Error	LCDAR fault	Check LCDAR status
41	B213581	SRS issued main driving seat belt buckle status is invalid	SRS fault	Check SRS sensor status
42	B210754	SAS calibration fault diagnosis	SAS fault	Calibrate SAS
43	B210881	SAS fault	SAS fault	Check SAS status
44	B212881	SAS angular velocity signal error	SAS fault	Check SAS status
45	B210381	EMS torque signal error	EMS fault	Check EMS status and re-ignite
46	B212C81	EMS torque signal invalid	EMS fault	Check EMS status and re-ignite
47	B212081	TCSVDC signal fault diagnosis	ESP fault	Check ESP status and re-ignite
48	B213481	ABS fault diagnosis sent by ESP	ESP fault	Check ESP status and re-ignite
49	B212B81	Fault Diagnosis of Invalid Shift Process Signal from TCU	TCU fault	Check TCU status and re-ignite
50	B213A81	Invalid diagnosis of ACC real accelerator pedal position signal sent by EMS	EMS fault	Check body of EMS and re-ignite
51	B210181	Brake pedal status signal error diagnosis sent by EMS	EMS fault	Check body of EMS and re-ignite
52	B210081	Engine speed signal error diagnosis sent by EMS	EMS fault	Check body of EMS and re-ignite
53	B210277	Fault diagnosis of ACC accelerator pedal signal sent by EMS	EMS fault	Check body of EMS and re-ignite
54	B210681	EPB status signal fault diagnosis sent by EPB	EPB fault	Check body of EPB and re-ignite
55	B210581	Invalid diagnosis of switch position status signal sent by EPB	EPB fault	Check body of EPB and re-ignite
56	B212D81	Invalid diagnosis of wheel speed direction signal sent by ESP	ESP fault	Check ESP body and re-ignite
57	B211581	Invalid diagnosis of wheel speed signal sent by ESP	ESP fault	Check ESP body and re-ignite
58	B211981	MasCylBrakePressureValid fault from ESPs	ESP fault	Check ESP body and re-ignite

59	B211881	VAF function downgrade from ESPs	ESP fault	Check ESP status
60	B211708	QDC pressure signal fault	ESP fault	Check body of EPS and re-ignite
61	B211477	Deceleration control issued by ESP is not available	ESP fault	Check body of EPS and re-ignite
62	B211281	Invalid longitudinal acceleration signal from ESP	ESP fault	Check status of yaw angle sensor and re-ignite
63	B211381	Invalid lateral acceleration signal from ESP	ESP fault	Check body of EPS and re-ignite
64	B211081	Invalid yaw rate signal from ESP	ESP fault	Check status of yaw angle sensor and re-ignite
65	B213981	The ambient temperature signal sent by AC is invalid.	ESP fault	Check status of yaw angle sensor and re-ignite
66	B213E08	Front wiper status signal error from BCM	BCM fault	Check BCM status
67	B213381	Engine status signal sent by EMS is invalid	EPS fault	Check EMS status and re-ignite
68	B212181	Engine status signal fault sent by TCU	EMS fault	Check TCU status and re-ignite
69	B212A77	Gear position signal sent by TCU is invalid.	TCU fault	Check TCU status and re-ignite
70	B212281	Real gear signal sent by TCU is invalid.	TCU fault	Check TCU status and re-ignite
71	B212408	QEACC signal fault from EMS	EMS fault	Check EMS status and re-ignite
72	B213881	Driver door status signal sent by BCM is invalid.	BCM fault	Check BCM status
73	B216981	RESPlus signal error from key	Steering wheel key fault	Check steering wheel key status
74	B217081	Diagnostic message signal error from key	Steering wheel key fault	Check steering wheel key status
75	B216081	QDashACC signal fault	IP fault	Check instrument status
76	B216181	IP_DIS signal fault from instrument	IP fault	Check instrument status
77	B214381	Vehicle quiesce signal from ESP is invalid	ESP fault	Check ESP signal status
78	B214481	Invalid steering angle signal from SAS	SAS fault	Detect SAS signal status
79	B214681	Camera vision error	Camera fault	Check camera status
80	U196808	Camera status check error	Camera fault	Check camera status
81	U196487	Camera communication timeout	Camera fault	Check camera status
82	U196908	Camera TSR, ASL check error	Camera fault	Check camera status
83	U196587	Camera TSR, ASL timeout	Camera fault	Check camera status
84	U196987	Camera lateral control signal timeout	Camera fault	Check camera status
85	U196908	Camera lateral control signal calibration error	Camera fault	Check camera status
86	U1967008	Camera target signal timeout	Camera fault	Check camera status
87	U1967108	Camera lane signal timeout	Camera fault	Check camera status
88	U1967068	Camera target counter lock error	Camera fault	Check camera status
89	U1967168	Camera Lane Line Counter Lock Error	Camera fault	Check camera status

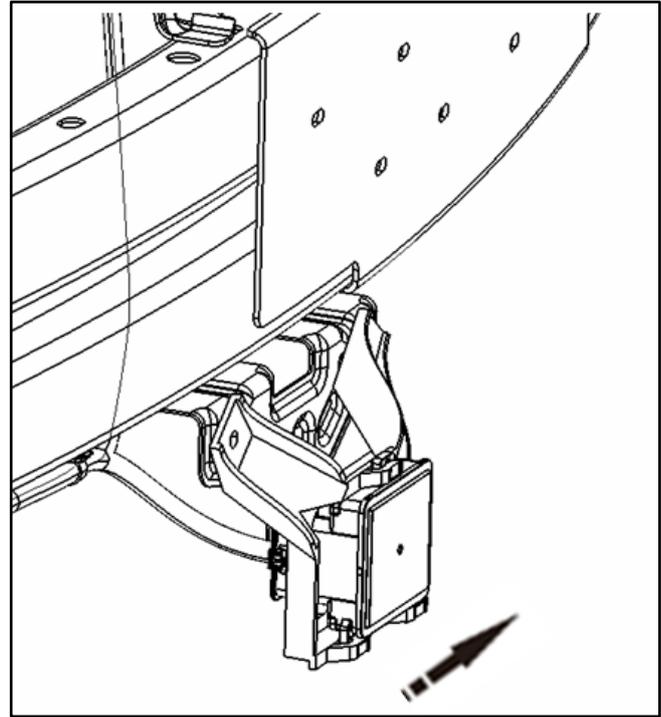
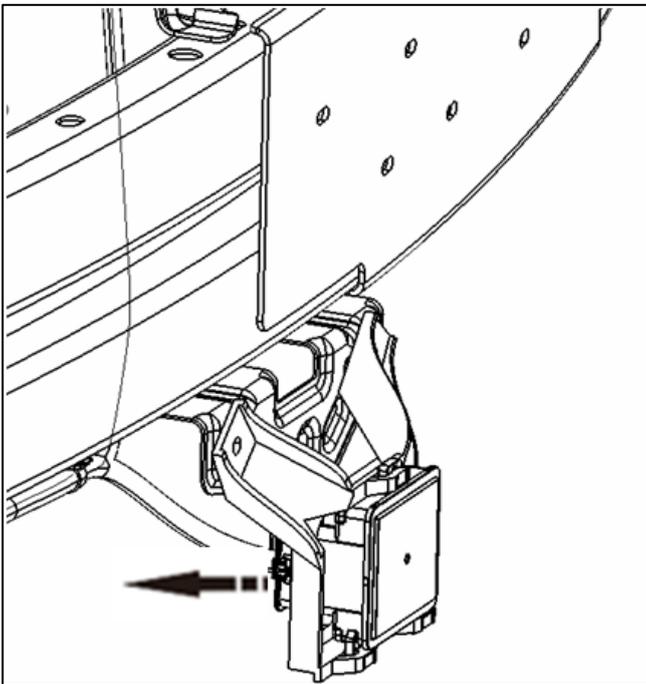
90	U196787	ACC loses communication with DASY	Camera fault	Check camera status
91	U196687	Synchronization timeout with DASY	DASY fault	Check DASY status
92	B212F06	Production line mode activation	Product mode activation	Shut down production line mode through diagnostic 2E service
93	B213178	Radar never calibrated	Not calibrated	Calibration
94	B213278	Abnormal radar calibration status	Not calibrated	Calibration
95	B212578	Radar calibration error	Not calibrated	Calibration
96	B212604	System internal error: Radar blinding detected	Radar covered	Restart the radar and check whether the radar is covered.
97	<i>B2102B0</i>	<i>Radar antenna map unknown</i>	Antenna diagram failed to start	Replacement radar
98	B21a586	Radar DA_core abnormal	1. The received signal is overloaded. 2. Transmission line is subject to electromagnetic interference	1. Power off again after power-on 2. Check whether the tool fault is clear. 3. Check whether the vehicle status returns to normal.
99	B212981	<i>Radar VMC abnormal</i>	1. The received signal is overloaded. 2. Transmission line is subject to electromagnetic interference	1. Power off again after power-on 2. Check whether the tool fault is clear. 3. Check whether the vehicle status returns to normal.

Removal and installation

Adaptive cruise control assembly

Removal

1. Disconnect the negative battery harness.
Reference: 3.1.11 charging system
2. Remove the front bumper assembly.
Reference: 5.2.10 bumper
3. Remove front bumper forward.
4. Disconnect the adaptive cruise control wiring harness connector.



Installation

Push the adaptive cruise controller from the right side of the bracket into the plastic bracket of the adaptive cruise controller and connect it until you hear a click. The subsequent installation sequence is the reverse of the corresponding removal sequence.

5. Press and hold the adaptive cruise control buckle to push the adaptive cruise control to the right.

4.2.15 Lane assist system

Specifications

Name	Specifications
Lane departure controller	Working voltage 9v~16v
	Working current Less than 300 mA
	Operating temperature -40°C~80°C

Description and operation

System introduction

Lane assist system realizes lane departure warning function through camera mounted on front windshield and inside rearview mirror. When the lane assist system is turned on, the status of the lane assist system is displayed on the trip computer interface of the instrument panel. Set the Lane Assist function in the Incall System Vehicle Center - Drive Assist - Lane Assist mode. If Lane Assist is not available, display the fault information in the instrument panel. The main functions of the system are as follows:

Lane departure warning

There is a lane line on the road surface, and the vehicle speed is greater than 60 km/h, and the vehicle deviates from the lane. When the wheel presses the lane marking, the instrument will give an alarm and the steering wheel vibration alarm.

Lane keeping

There is a lane line on the road surface, and the speed is greater than 60 km/h, the vehicle deviates from the lane, and the steering wheel actively rectifies the deviation in the reverse direction when the wheel will press the lane marking, so that the vehicle drives in the lane.

Automatic high beam control

In dark environment, and the vehicle speed is greater than 30 km/h, if there is no vehicle, street lamp and incoming vehicle in front, the system will automatically turn on the high beam; If street lamps, vehicles and incoming vehicles appear in front, the system automatically switches back to low beam lamps.

Speed limit sign recognition

During driving, the camera automatically recognizes the road speed limit sign and displays it on the instrument. If the vehicle speed exceeds the road speed limit value, the instrument will give an alarm.

Emergency lane maintenance

The Emergency Lane Maintenance System (ELK) is used to prevent or reduce the impact injury when the vehicle is in danger of collision with the road boundary barrier under medium and high speed

conditions or when the vehicle is in danger of collision with the "opposite vehicle" or "backward vehicle" when the vehicle deviates from the road edge.

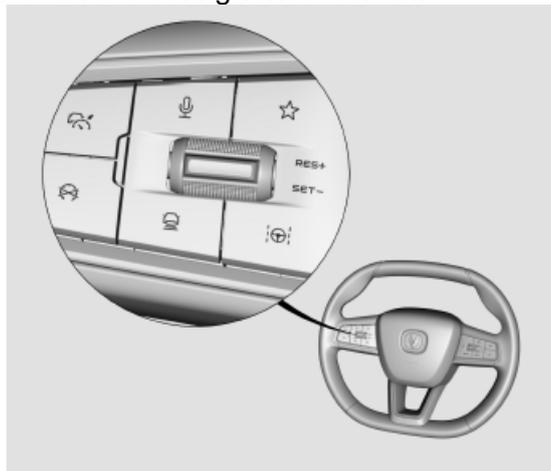
Integrated Adaptive Cruise Control

Use the radar (ACC) used by the adaptive cruise control system and the camera (LAS) used by the lane assist system to detect the front vehicle and lane line, keep the vehicle driving at the set cruise speed or the preset following time distance with the front vehicle by controlling the vehicle speed, and realize the vehicle driving in the lane by controlling the steering.

Use the radar (ACC) used by the adaptive cruise control system and the camera (LAS) used by the lane assist system to detect the front vehicle and the moving track, maintain the preset following time distance with the front vehicle by controlling the vehicle speed, and follow the front vehicle track form by controlling the steering.

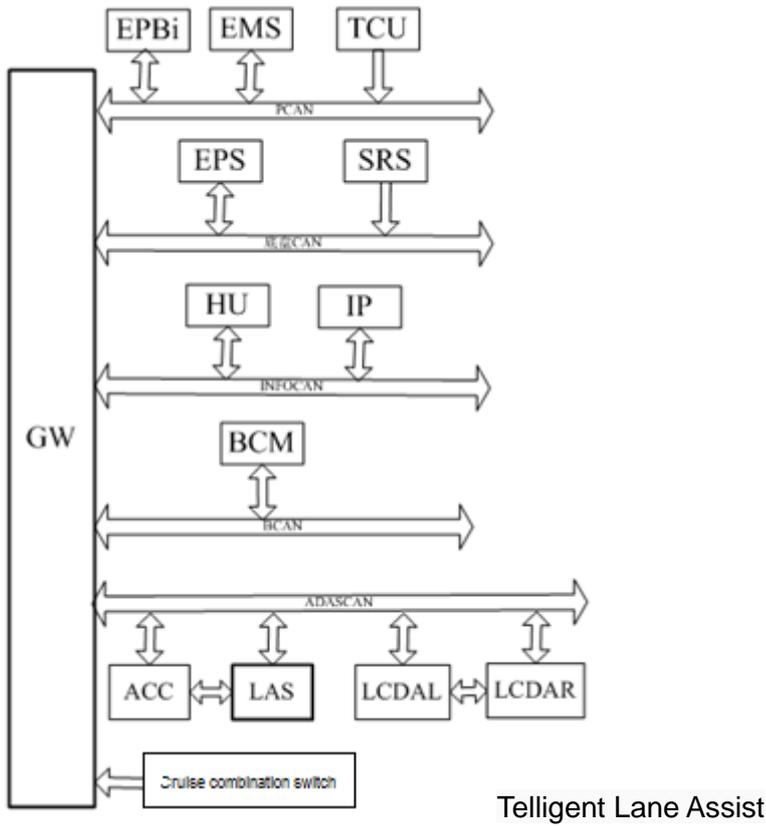
Function setting

- Lane departure warning setting switch:
Set Lane Departure Assist Mode/Warning Mode etc. on the "Vehicle Center"? "Traffic Assistance" interface of the incall system
- Automatic high beam system setting switch:
Switch on/off the automatic high beam, etc. on the "Vehicle centre"? "Light" screen of the incall system.
- Integrated Adaptive Cruise Control Steering Wheel Switch:

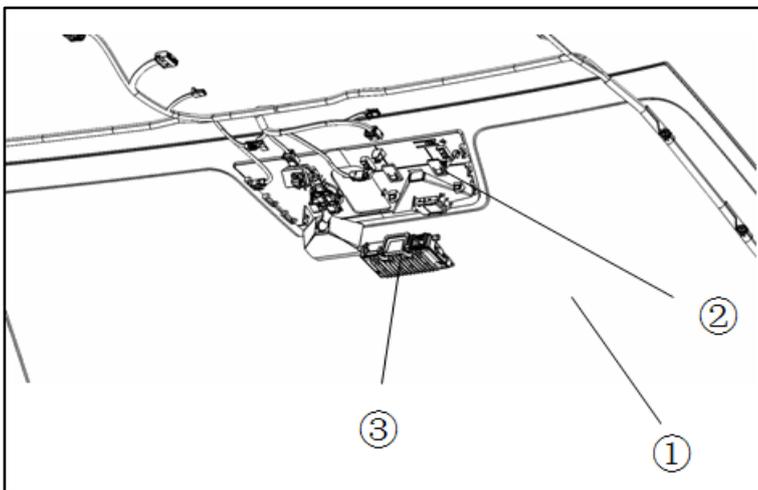


- : Activate integrated adaptive cruise control
- : Exit to Adaptive Cruise Control
- : Cancel integrated adaptive cruise control
- RES+: Restore system or increase cruise speed
- SET-: Set system or reduce cruise speed
- : Adjust following distance

- Integrated Adaptive Cruise System Setup Switch:
Enable/disable integrated adaptive cruise settings on the "Vehicle centre"? "Service assist" screen of the incall system.

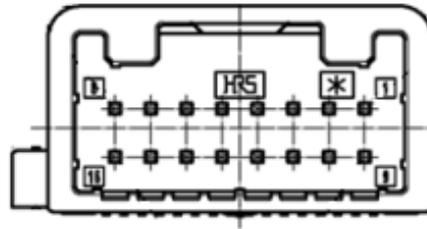


Component position diagram



Serial number	Component
1	Front windshield assembly
2	Lane departure system mounting bracket
3	Lane departure controller assembly

Interface definition



Terminal No.	Terminal description	Signal type	Valid value	Remarks
1	IG1 power supply	Power supply, V_IG1	9V~16V	
2	1st CAN bus, high	Can bus		Connect with complete vehicle ADASCAN, 2M
3	1st CAN bus, low	Can bus		Connect with complete vehicle ADASCAN, 2M
4	-	-		
5	Ground	Power supply, GND	0V	
6	-	-		
7	-	-		
8	-	-		
9	-	-		
10	2nd CAN bus, high	Can bus		Connect with ACC controller
11	2nd CAN bus, low	Can bus		Connect with ACC controller
12	-	-		
13	-	-		
14	-	-		
15	-	-		
16	-	-		

Fault phenomenon and diagnosis

Test equipment

Diagnostic scanner KT 700, multimeter

Check and confirm

1. Confirm the user's problem.
2. Visually inspect whether there is obvious mechanical or electrical damage, and whether the front windshield camera mounting position is broken.
3. Check whether the switch function is normal and whether the function can be turned on or off.
4. Read version information and fault code of lane departure with diagnostic scanner.

⚠ Warning: If the related systems such as EMS, EPBi, TCU and EPS replace parts or update software for some reasons, correct operation must be carried out according to the repair/maintenance methods of the corresponding system, clear the fault code of the lane assist system, and confirm that the system function of the lane assist system is normal.

Fault diagnosis table

Fault symptom	Fault cause	Solution
The lane departure warning function cannot be turned on or off.	<ol style="list-style-type: none"> 1、 Lane departure switch fault 2、 Lane departure controller is short circuit or open circuit to complete vehicle CAN bus 	<ol style="list-style-type: none"> 1. Check whether the voltage at the switch output terminal is open circuit or short circuit. 2. Check whether the CAN bus interface harness at the controller end is connected. If so, use a diagnostic scanner to check whether the vehicle CAN is lost. 3. All above are normal. Replace the lane departure controller assembly.
The instrument prompts that the camera is blocked and the lane departure fault lamp is yellow.	<ol style="list-style-type: none"> 1. Lane deviation controller field of view is blocked by foreign objects. 2. The glass at the lane departure controller field of view is broken. 3. The camera of lane departure controller has dust. 	<ol style="list-style-type: none"> 1. Clean the front windshield. 2. Replace front windshield 3. Clean lens
Diagnostic scanner cannot connect lane departure controller	<ol style="list-style-type: none"> 1、 The fuse of the lane departure controller is blown; 2、 Poor contact of connector; 	<ol style="list-style-type: none"> 1、 Replace the fuse; 2、 Check connector
The instrument prompts lane assist system fault, and the lane departure fault lamp is yellow.	<ol style="list-style-type: none"> 1、 The associated system causes the lane assist system to malfunction; 2、 Lane departure controller fault 	<ol style="list-style-type: none"> 1、 Repair the associated system according to the diagnostic scanner DTC; 2、 Replace lane departure controller assembly
The instrument prompts LAS is not calibrated, and the lane departure fault lamp is yellow.	<ol style="list-style-type: none"> 1. Camera angle out of range 2. Bracket damage 	<ol style="list-style-type: none"> 1. Calibrate lane deviation with diagnostic scanner 2. Reinstall and calibrate 3. If not, replace the lane departure controller assembly. <p>For calibration method, refer to after-sales</p>

		calibration of lane assist system.
Diagnostic scanner prompt and MRR Private CAN interrupt contact	Adaptive Cruise Control model is incorrectly configured	Re-model the adaptive cruise control

DTC fault code list and simple troubleshooting method(Part)

Serial number	Fault code	Meaning	Possible fault causes	Maintenance advice
1	B220016	LAS detects low battery voltage	(1) Battery is insufficient or discharged (2) Poor battery or wiring contact	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check battery and circuit status (4) Keep voltage within normal range
2	B220117	LAS detects high battery voltage	(1) Voltage regulator fault (2) Poor battery or wiring contact	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check battery and circuit status (4) Keep voltage within normal range
3	U178088	Las detects private CAN BUSOFF	(1) Short circuit or open circuit in CAN bus (private CAN) (2) The physical properties of CAN bus (private CAN) line have changed	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status
4	U178188	Las detection public CAN BUSOFF	(1) Short circuit or open circuit in CAN bus (male CAN) (2) Physical property of CAN bus (male CAN) line has changed	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status

5	U17828 7	LAS and SAS lost communication	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
6	U17828 3	SAS_CRCCheck Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
7	U17828 2	SAS_RollingCounter Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
8	U17838 7	LAS and ESP lost communication	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
9	U17838 6	ESP DLC error fault	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU

				components
10	U17838 3	ESP_CRCCheck Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
11	U17838 2	ESP_RollingCoun ter Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
12	U17848 7	LAS and TCU lose communication or DLC error fault	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
13	U17848 3	TCU_CRCCheck Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

14	U17848 2	TCU_RollingCounter error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
15	U17858 7	Loss of communication between LAS and EMS or DLC error fault	<p>(1) Can line fault</p> <p>(2) Loose connector</p> <p>(3) Gateway fault</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
16	U17858 3	EMS_CRCCheck error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
17	U17858 2	EMS_RollingCounter Error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
18	U17868 7	LAS and EPS lose communication	<p>(1) Can line fault</p> <p>(2) Loose connector</p> <p>(3) Gateway fault</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU</p>

				components
19	U17868 3	EPS_CRCCheck Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
			(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
			(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
20	U17868 2	EPS_RollingCoun ter error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

			<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
			<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
20	U17878 7	Lost communication with HU	<p>(1) Can line fault</p> <p>(2) Loose connector</p> <p>(3) Gateway fault</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
21	U17878 3	HU_CRCCheck Error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
22	U17878 2	HU_RollingCounte Error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU</p>

				components
23	U17908 7	Lost communication with IMS	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
24	U17908 3	IMS_CRCCheck error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
25	U17908 2	IMS_RollingCount e Error	(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
26	U17928 7	Lost communication with MFS	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

27	U17928 3	GW_MFS_CRCC heck Error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
28	U17928 2	GW_MFS_Rolling Counter Error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
29	U17938 7	LCDAR message communication timeout	<p>(1) Can line fault</p> <p>(2) Loose connector</p> <p>(3) Gateway fault</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
30	U17938 3	LCDAR_CRCChe ck error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
31	U17938 2	LCDAR_RollingC ounter error	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU</p>

				components
32	U17948 7	Lost communication with SRS	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
33	U17958 7	Lost communication with BCM	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
34	U17918 7	Lost communication with MRR(Private CAN)	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
35	U17918 6	MRR DLC fault	(1) Can line fault (2) Loose connector (3) Gateway fault	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

36	U17918 3	MRR CRC fault	<p>(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components</p>
			<p>(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components</p>
			<p>(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components</p>
			<p>(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components</p>
			<p>(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components</p>

				components
			(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
			(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
			(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
			(1) Received message overload (2) Transmission line is subject to electromagnetic interference (3) Can bus arbitration error	(1) Check whether the voltage is 8.5 V-18.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

37	U17918 2	MRRRollingCount er fault	<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
			<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
			<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
			<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU components</p>
			<p>(1) Received message overload</p> <p>(2) Transmission line is subject to electromagnetic interference</p> <p>(3) Can bus arbitration error</p>	<p>(1) Check whether the voltage is 8.5 V-16.5 V</p> <p>(2) Power on/off the vehicle again</p> <p>(3) Check harness and connector</p> <p>(4) Check CAN bus status</p> <p>(5) Check gateway</p> <p>(6) Replace ECU</p>

				components
38	U1783F 0	ESP speed is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
39	U1783F 2	ESP indicates that the wheel speed direction signal is invalid.	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
40	U1783F 3	ESP indicates that its wheel speed signal is invalid.	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
41	U1783F 4	ESP indicates that the wheel speed pulse signal is invalid.	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

42	U1783F 5	Yaw rate failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
43	U1783F 6	Master cylinder pressure invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
44	U1783F 7	ESP lateral acceleration signal invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
45	U1783F 8	Invalid ESP longitudinal acceleration signal	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
46	U1783F 9	Invalid ESP_TCSFailStatus signal	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU

				components
47	U1785F 0	Engine speed signal invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
48	U1785F 1	Accelerator pedal position I signal invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
49	U1785F 2	Engine status signal is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
50	U1784F 0	Gear shift process status valid signal invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

51	U1784F 1	Gear shifter position is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
52	U1784F 2	Real gear is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
53	U1782F 0	SAS invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
54	U1782F 1	Invalid steering wheel angle	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
55	U1782F 2	SAS not calibrated	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU

				components
56	U1782F 4	Steering wheel angular speed is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
57	U1787F 0	Check HU_NavSpeedLimit signal is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
58	U1787F 1	Check HU_SpeedLimitDistance signal is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
59	U1788F 0	Low beam lamp working status is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

60	U1788F 1	High beam working status is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
61	U1788F 2	Front fog lamp working status is invalid	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
62	U1786F 0	EPS maximum/minimu m safety limit torsion bar torque failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
63	U1786F 2	EPS actual torsion bar torque failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
64	U1786F 3	Driver hand torque failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU

				components
65	U1786F 5	EPS response lateral control not available	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
66	U1786F 7	EPS_ConcussAvailabilityStatus state failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
67	U1790F 0	IMS Attention State Failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
68	U1790F 2	IMS fatigue failure	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

69	U1790F 5	IMS fault	controller	(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
70	U1792F 0	IACC switch is invalid		(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
71	U1792F 0	GW_MFS_DiagInf oSW_28C Invalid		(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
72	U1791F 0	Invalid MRR data(Private CAN)		(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components
				(1) Signal input error (2) Electromagnetic interference (3) Node fault	(1) Check whether the voltage is 8.5 V-16.5 V (2) Power on/off the vehicle again (3) Check harness and connector (4) Check CAN bus status (5) Check gateway (6) Replace ECU components

				components
73	B22029 7	LAS camera block	(1) Camera blocked (2) Camera is subject to strong light interference	(1) Check whether there is obstruction in front of the camera. (2) Make the camera work under good lighting conditions
74	B22039 8	ECU temperature exceeds operating value fault	1. System temperature is too high.(More than 100 degrees Celsius for more than two seconds) 2. The camera temperature is too high or too low.(Camera temperature exceeds --47 C to 108 C 150 ms)	(1) Check ECU and camera temperature (2) Provide a good ambient temperature for ECU
75	B22064 9	LAS internal circuit permanent fault	Circuit permanent fault	Replace camera
76	B22076 2	LAS matching parameter error	(1) No matching parameters written (2) Write matching parameters for wrong version	(1) Check version number of matching parameters (2) Add matching parameters for correct version
77	B22094 9	LAS internal (temporary) circuit fault	Any internal circuit fault occurs(For example, ECU temperature sensor driver fault, imaging sensor driver fault, DMA, RAM, ROM, UART, CAN buffer error, parity error, watchdog error)	(1) Power on/off the vehicle again (2) Check whether it returns to normal (3) Check and repair possible internal circuit faults
78	B220A8 4	Online calibration out of range	Online calibration result out of range	(1) Power on/off the vehicle again (2) Check whether it returns to normal (3) Recalibrate the camera with a suitable method
79	B220A8 5	Initial calibration out of range	Dynamic calibration result out of range	(1) Power on/off the vehicle again (2) Check whether it returns to normal (3) Recalibrate the camera with a suitable method
80	B220A6 3	Initial calibration timeout	Initial calibration timeout	(1) Power on/off the vehicle again (2) Check whether it returns to normal (3) Recalibrate the camera

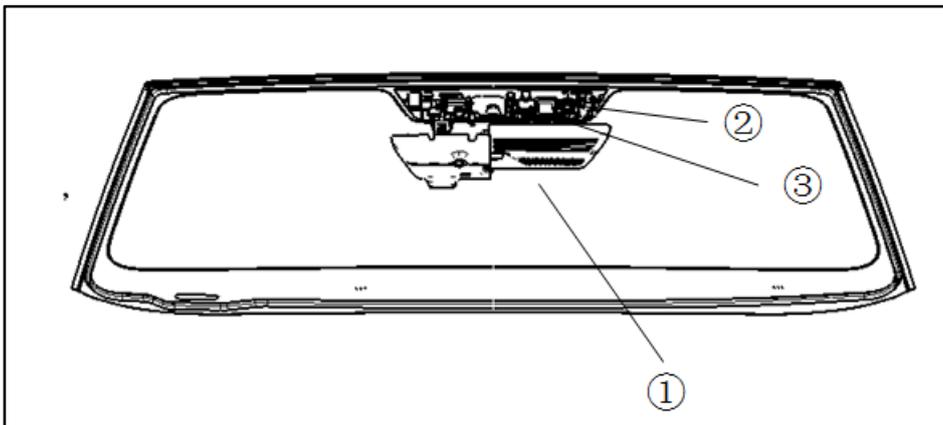
				with a suitable method
81	B220A5 4	Camera calibrated	not Camera not calibrated	(1) Power on/off the vehicle again (2) Check whether it returns to normal (3) Recalibrate the camera with a suitable method

Removal and installation

Removal

1. Dismantle trim cover plate
2. Dismantle harness connector (2)
3. Dismantle controller (3)

Remove the clamping posts successively, break the bracket clips with proper force, and move the controller outward at the same time with the other hand. Be careful not to remove the bracket by force. Damage to the bracket may cause replacement of the whole glass.



Installation

The installation sequence is the reverse of the removal sequence. Put the two front clips into the bracket slots, and then push the two clips into the bracket clips. After installation, check that the cover plate and front windshield are fitted.

4.2.16 Parallel auxiliary system

Specifications

Name	Specifications
Parallel auxiliary controller	Working voltage: 9 V ~ 16 V Maximum working current: ≤ 0.5 A Operating temperature: -40°C ~ 85 °C

Description and operation

System introduction

The system includes parallel line auxiliary system, reversing lateral warning system, reversing lateral brake system, rear rear warning system and door opening warning system. It detects the moving vehicle behind the side through millimeter wave radar installed on the left and right sides inside the rear bumper. When the alarm conditions are met, it performs relevant alarm prompt through alarm indicator light, instrument and vehicle-mounted audio and video entertainment system on the exterior rearview mirror. The main functions of the system are as follows:

- Parallel auxiliary system
 - Blind area detection: When the vehicle exists in the blind area of the exterior rearview mirror during driving, the warning indicator on the exterior rearview mirror is on; At this time, turn on the corresponding side steering lamp, the alarm indicator flashes and the instrument drive buzzer gives an alarm.
 - Lane change assistance: When there is a fast approaching vehicle behind the side of the adjacent lane of the vehicle, the warning indicator on the exterior rearview mirror lights up to prompt the driver to pay attention to the vehicle behind the lane change; At this time, turn on the corresponding side steering lamp, and the alarm indicator flashes.
- Reverse lateral warning system
 - Reversing lateral warning: When the vehicle is reversing, the warning indicator on the outside rearview mirror on the target side flashes when there is lateral fast approaching vehicle at the rear of the vehicle may collide with the vehicle, and the instrument drives the buzzer to alarm.
- Reverse lateral brake system
 - Reverse lateral braking: When the vehicle is reversing, there is lateral rapid approach to the vehicle at the rear side and there is danger of collision, active braking to slow down or avoid

collision.

- Rear tail warning system
 - Rear rear warning: When there is fast approaching vehicle and risk of collision at the rear of the vehicle, remind the driver through instrument picture and buzzer sound (sound reminds the user to set off), and automatically turn on the danger warning lamp to prompt the driver to keep it.
- Door opening warning system
 - Door opening warning: When the vehicle stops, open the door or get off the vehicle and there is a collision risk with the side rear moving vehicle, remind the driver and occupant not to open the door or get off the vehicle through the exterior rearview mirror warning indicator lamp, instrument display screen and multimedia voice system.

Alarm function activation conditions

- Blind area detection and channel change assistance (parallel line assistance) function activation conditions:

Power supply ON gear

InCall system parallel auxiliary function switch setting ON

No fault of left/right module

Traveling speed of the vehicle is greater than 15 km/h.

- Activation conditions of reversing lateral warning function:

Power supply ON gear

Vehicle in R gear

InCall system reversing lateral warning function switch setting is on

No fault of left/right module

- Reverse lateral brake function activation conditions:

Power supply ON gear

Vehicle in R gear

Reversing lateral brake function switch setting of inCall system is turned on.

No fault of left/right module

- Rear tail warning function activation conditions:

Power supply ON gear

Vehicle in D gear

Rear rear warning function switch on inCall system is set to ON.

No fault of left/right module

- Activation conditions of door opening warning function:

Power supply ON gear

InCall system upper door opening warning function switch setting ON

No fault of left/right module

Absolute speed of the vehicle is less than 3 km/h

Power supply OFF gear does not meet function exit conditions

Function setting

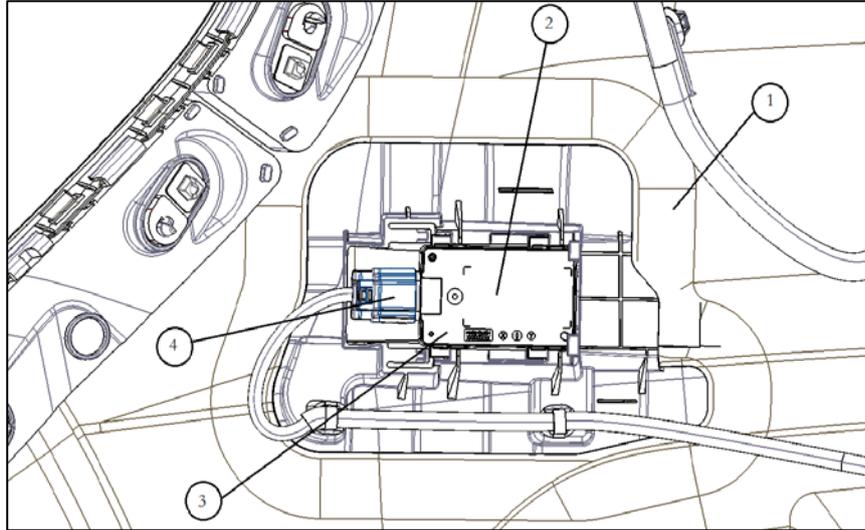
- Parallel auxiliary system switch:

On the "Vehicle Center" - > "Safety" interface of the inCall system, enable or disable the system functions. The factory defaults to the on state, and the system restores the previous user setting state.



Component position diagram

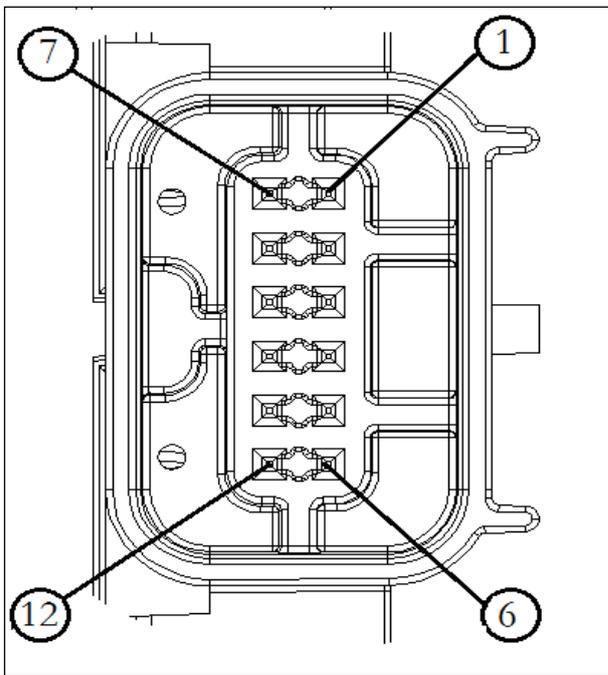
The parallel line auxiliary controller assembly is installed on the parallel line auxiliary controller bracket (the following figure is a schematic diagram of radar installation on the left side, and the right side is symmetrical with this). The bracket is welded on the rear bumper. When it is necessary to replace the hardware of the parallel line controller assembly, it is necessary to remove the rear bumper before replacing it.



Serial number	Component	Serial number	Component
1	Parallel auxiliary controller mounting bracket	2	Parallel auxiliary controller label position
3	Parallel auxiliary controller assembly	4	Parallel auxiliary controller connector

Interface definition

The parallel auxiliary controller assembly is supplied with power through the vehicle Battery and IG1. The terminal view and definition are as follows:



Pin	Function abbreviation	Rated current(12 V)	Input/output	Function description	Signal type
1	Battery	250mA	Input	KL30 Ignition signal	Power supply
2	VCANL	100mA	Input/output	Vehicle CAN/CANFD bus low	CAN/CANFD bus
3	VCANH	100mA	Input/output	Vehicle CAN/CANFD bus high	CAN/CANFD bus
4	GND	250mA	Input	Ground wire	Power supply, ground
5	PCANL	100mA	Input/output	Left and right radar communication private CAN/CANFD low	CAN/CANFD bus
6	PCANH	100mA	Input/output	Left and right radar communication private CAN/CANFD high	CAN/CANFD bus
7	NC	-	-	-	-
8	POS-A	20mA	Input	Position recognition ground(The front radar is connected to this line, and the rear radar is not connected.)	Signal
9	POS-B	20mA	Input	Position recognition ground(The left radar is connected to this line, and the right radar is not connected.)	Signal
10	Ignition	10mA	Input	KL15 Ignition signal	Signal
11	NC	-	-	-	-
12	NC	-	-	-	-

Fault phenomenon and diagnosis

Inspection and confirmation

1. Confirm user problem.
2. Visually inspect for visible signs of mechanical or electrical damage.
3. Visually inspect whether there is detailed collision deformation trace, whether the front of controller is blocked by foreign matter, including surface icing, dust or mud.

Visual Check List

Mechanical part	Electrical part
Parallel auxiliary controller assembly	Harness and connector

Mounting bracket	Fuse
Rear bumper	Parallel auxiliary controller assembly

4. If the apparent cause of the observed or raised problem has been found, the cause must be corrected before proceeding to the next step.
5. If the visual inspection is passed, confirm the fault and refer to the fault symptom table.

Fault symptom table

Common troubleshooting

1. The rearview mirror indicator is always on, and the instrument fault is displayed as "rear auxiliary radar shielding": First check whether there are additional parts or spraying at the rear radar position, and whether there is soil/snow coverage. If yes, remove the shielding, power off again and confirm whether the fault is eliminated;
2. The indicator lamp of rearview mirror is always on, and the instrument fault is displayed as "backward auxiliary radar fault": The diagnostic reading fault code is "radar installation position error"; first visually inspect the rear radar position mechanical collision or deformation, whether the radar is correctly installed in the bracket limit; if yes, repair the deformation and confirm that the radar is correctly clamped in position, and then execute according to "7.3.2 LCDA parallel line auxiliary calibration method";
3. The rearview mirror indicator lamp is not always on, the instrument has no error and no function. At this time, the setting item of "Vehicle Center" - "Safety" interface of inCall system cannot be operated, and the left/right radar controller cannot be connected through the diagnostic scanner. Check whether the left/right radar controller fuse, connector and harness connection are normal;

Fault confirmation

Turn on each function switch, and the function is abnormal after actual vehicle test. It shall be considered as fault. At this time, the fault information can be displayed through the instrument, and the fault code can be read by the diagnostic scanner to further confirm the fault.

▲ Warning: If relevant systems such as EMS, ESC and TCU replace parts or update software for some reasons, correct operation must be carried out according to the repair/maintenance methods of the corresponding system, clear the fault code of the parallel auxiliary control system, and confirm the function of the parallel auxiliary control system is normal.

Fault readable by diagnostic scanner and its solutions are as follows:

Fault symptom	Possible causes	Measures
The fault does exist, but the instrument does not display, and the rearview mirror alarm lamp does not light up.	Instrument configuration error	Reconfigure instrument according to model with diagnostic scanner
	Gateway configuration error	Reconfigure gateway according to vehicle model with diagnostic scanner
	Parallel auxiliary system has no power supply	Fuse burns, replace fuse; Wiring harness or connector faulty, check connector or wiring harness.
The instrument displays "rear auxiliary radar shielding" fault,	If the instrument displays "rear auxiliary radar shielding," the radar surface of	1、 Add-on parts at the controller assembly must be removed; 2、 Try to flush the rear bumper inner and outer surfaces and controller assembly surfaces at the controller;

and the rearview mirror alarm lamp is always on.	corresponding parallel auxiliary controller may be shielded by soil, harness or rear mounting materials.	3、 Check whether the harness blocks the radar wave emitting surface. After checking, power off and restart and drive for 5 km. If the fault is still not relieved, troubleshoot according to the failure fault.
The instrument displays "Rearward auxiliary radar fault," and the rearview mirror alarm lamp is always on.	Battery voltage too high or too low	Check the battery voltage and replace the battery.
	Angle sensor not calibrated	Recalibrate angle sensor
	Backward auxiliary system is not calibrated	Recalibrate with diagnostic scanner(The appearance of parallel line system calibration when it is turned on is: Exterior rearview mirror indicator does not stop flashing, and it goes out after calibration is completed.)
	Backward auxiliary system internal fault	Replace wired auxiliary controller assembly and recalibrate with diagnostic scanner
	Bus communication fault	Check the harness, and confirm whether there is bus short circuit. In this case, other controllers will report faults.
	Network invalid value received	The associated system is faulty. In this case, other controllers will report the fault.
	Radar installation failure	The installation position is out of tolerance, re-check the radar installation, and re-calibrate after correction.
	LED lamp fault	Instrument or rearview mirror alarm lamp fault, replace instrument or rearview mirror

DTC fault code list and simple troubleshooting method

Display code	Meaning	Description	Possible fault causes	Maintenance advice
P0 564 17	High supply voltage	The power supply voltage is greater than 16.5 V for 3s.	Battery fault	1. Check battery voltage 2.Check harness terminal voltage according to interface definition 3.Check harness according to harness schematic diagram
P0 562 17	Low power supply voltage	The power supply voltage is less than 8.5 V for 3s.	Battery fault	1. Check battery voltage 2.Check harness terminal voltage according to interface definition 3.Check harness according to harness schematic diagram
B2 500 01	Radar internal fault	Radar internal fault detected	Radar internal fault	Replace radar, contact Chang'an technician for analysis
B2 500 54	Offline not calibrated	No offline calibration	No offline calibration	Offline calibration completed
B2 500 51	Radar software mismatch	Radar software version mismatch	Radar software mismatch	Check the radar software version information. If it is inconsistent, please contact

				Chang'an technical personnel.
B2 A9181	LED lamp fault	Receive fault signal from LH or RH LED lamp control module	LED lamp is damaged.	Check whether the LED lamp is damaged, the connector is loose, and whether the LED hardware number is configured for this vehicle.
B2 54476	Radar mounting position error	Radar mounting position fault	Radar mounting position movement	Check radar installation and recalibrate
B2 54478	Radar calibration failure	Radar calibration or angle compensation calculation failure	Radar calibration result out of allowable calibration range	Check radar installation and recalibrate
B2 54498	Radar temperature out of range	Radar temperature monitoring out of specified range	Radar internal temperature is too high	Replace radar, contact Chang'an technician for analysis
B2 54468	Radar is blocked	Radar is blocked	There is obstruction in front of radar, or there is no target within 100 meters of radar detection area.	Clean radar and rear bumper
B2 A9251	Radar offline configuration error	Radar offline configuration does not match model	No configuration is made or the configuration word is not within the scope of definition.	Read DID FD00 to check correct configuration

4.2.17 Onboard network system (bus)

Specifications

Name	Specifications
Power CAN bus	Baud rate 500kbps Working voltage range 6.5 V-18 V
Body CAN bus	Baud rate 500kbps Working voltage range 6.5 V-18 V
Entertainment CAN bus	Baud rate 500kbps Working voltage range 6.5 V-18 V
ADASCAN bus	Baud rate 2 Mbps Working voltage range 6.5 V-18 V
Lin bus	Baud rate AC communication rate is 9.6kbps and iBCM and gateway communication rate is 19.2kbps

Description and operation

System introduction

Can is the abbreviation of Controller Area Network, full name is controller local area network bus, that is, control devices are connected to each other for data exchange.

The 120 ohm resistance of the power can bus terminal is arranged in the engine management unit and gateway; Can bus 120 ohm terminal resistor is arranged in gateway and body control module; Entertainment can bus 120 ohm terminal resistor is arranged in gateway and vehicle entertainment terminal module; ADAS CAN bus 120 ohm terminal resistor is arranged in gateway and iBCM; EPSCAN bus 120 ohm terminal resistor is arranged in gateway and iBCM.

Nodes with diagnostic functions on the power CAN include engine management unit, transmission control unit, airbag controller, electronic integrated handbrake (EPBi), electronic power steering (EPS), shift execution control module, electronic shift lever, and gateway system.

The nodes with diagnostic functions on the body can include smart body control module (iBCM), air conditioning system (AC), driver seat module (DSM), tailgate controller (PTS), reversing radar (RRS), radio frequency&Bluetooth module (RFBT), gateway system (GW).

There is diagnostic function node on the entertainment can: Vehicle entertainment basic terminal (HU) (note: Integrated TBOX), instrument system (IP), wireless charging module (WLCM), gateway system (GW), power amplifier (AMP).

The ADASCAN has a diagnostic node Lane Assist System (LAS), Autopark Controller (APA Top-up), Parallel Assist Module (LCDA), Sport Domain Controller (ADS Top-up), High Precision Map (HPP Top-up), Gateway System (GW).

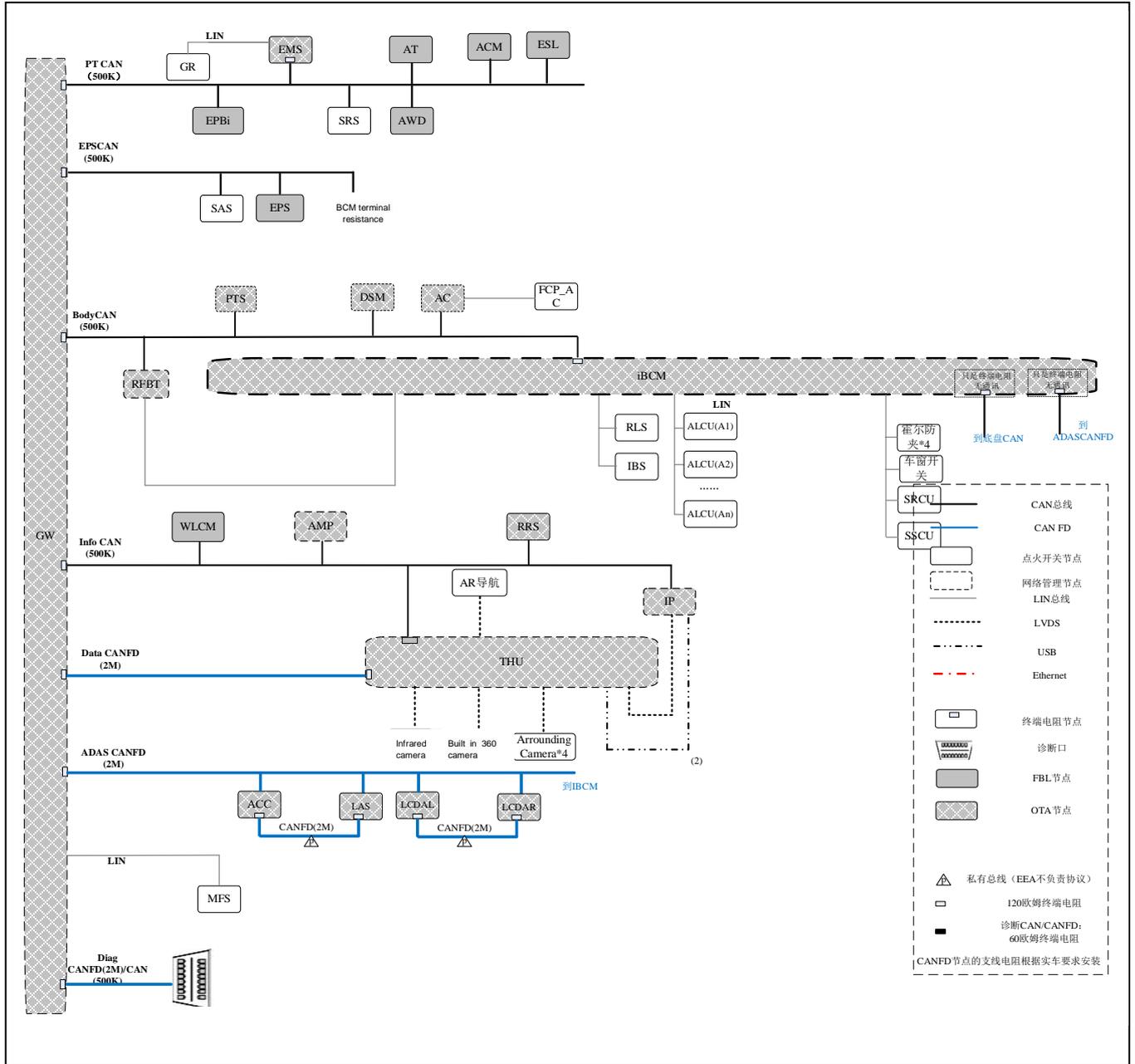
Node EPSs with diagnostic function on EPSCAN.

The diagnostic port is defined as follows:

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16

Pin	Description Description
1	Reserved
2	Reserved
3	Reserved
4	Ground
5	Ground
6	Diagnosis CANH
7	Reserved(Defined in SAE J1962)
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Diagnosis CANL
15	Reserved
16	Battery power supply positive(B+)

Fault phenomenon and diagnosis



Complete vehicle network topology

Common troubleshooting

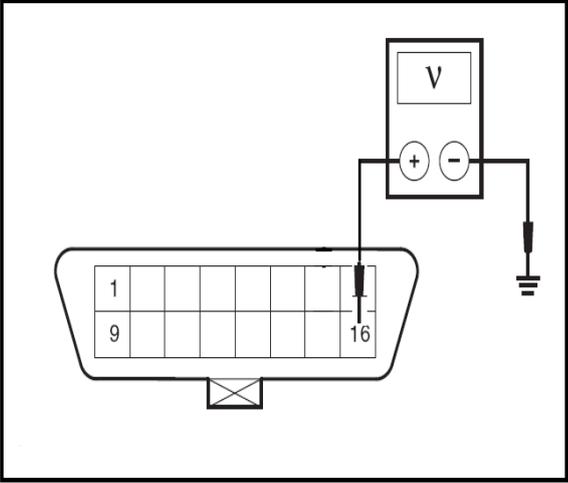
Can bus off 1. Check connector connection 2. Check harness;

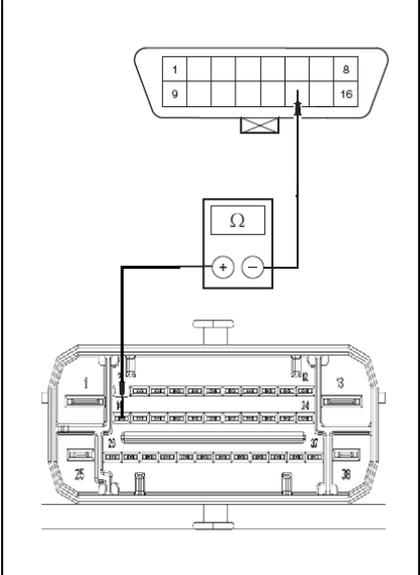
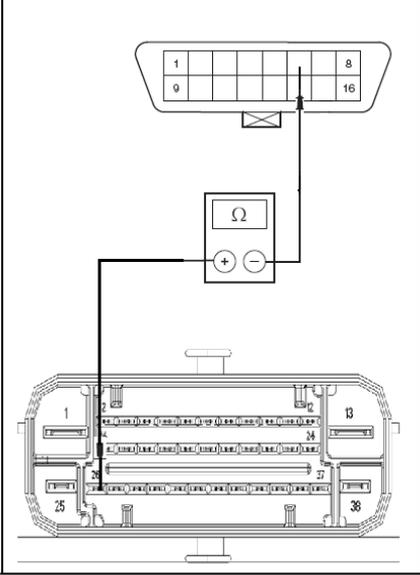
If the fault occurs but no DTCs are stored in the control module and the cause of the fault cannot be confirmed in the basic inspection, the fault diagnosis and rule out shall be performed according to the sequence listed in the following table.

Symptoms	Possible causes	Measures
Diagnostic scanner cannot communicate with EMS	<ul style="list-style-type: none"> Diagnostic scanner Circuit EMS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with TCU	<ul style="list-style-type: none"> Diagnostic scanner Circuit TCU 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with EPBi	<ul style="list-style-type: none"> Diagnostic scanner Circuit EPBi 	<ul style="list-style-type: none"> Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with SRS	<ul style="list-style-type: none"> Diagnostic scanner Circuit SRS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with EPS.	<ul style="list-style-type: none"> Diagnostic scanner Circuit EPS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with ACM	<ul style="list-style-type: none"> Diagnostic scanner Circuit ACM 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with ESL	<ul style="list-style-type: none"> Diagnostic scanner Circuit ESL 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with ACC/FR	<ul style="list-style-type: none"> Diagnostic scanner Circuit ACC 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with LAS/FC	<ul style="list-style-type: none"> Diagnostic scanner Circuit LAS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with APA	<ul style="list-style-type: none"> Diagnostic scanner Circuit APA 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with LCDA/FLC/FRC/RRC/RLC	<ul style="list-style-type: none"> Diagnostic scanner Circuit LCDA 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with iBCM	<ul style="list-style-type: none"> Diagnostic scanner Circuit iBCM 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process

Diagnostic scanner cannot communicate with RFBT	<ul style="list-style-type: none"> Diagnostic scanner Circuit RFBT 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with SLCM	<ul style="list-style-type: none"> Diagnostic scanner Circuit SLCM 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with PTS	<ul style="list-style-type: none"> Diagnostic scanner Circuit PTS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with DSM	<ul style="list-style-type: none"> Diagnostic scanner Circuit DSM 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with AC	<ul style="list-style-type: none"> Diagnostic scanner Circuit AC 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with RRS	<ul style="list-style-type: none"> Diagnostic scanner Circuit RRS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with IP	<ul style="list-style-type: none"> Diagnostic scanner Circuit IP 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with THU	<ul style="list-style-type: none"> Diagnostic scanner Circuit THU 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with WLCM	<ul style="list-style-type: none"> Diagnostic scanner Circuit WLCM 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with AVM	<ul style="list-style-type: none"> Diagnostic scanner Circuit AVM 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with GW	<ul style="list-style-type: none"> Diagnostic scanner Circuit GW 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with ADS	<ul style="list-style-type: none"> Diagnostic scanner Circuit ADS 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process
Diagnostic scanner cannot communicate with AMP	<ul style="list-style-type: none"> Diagnostic scanner Circuit AMP 	<ul style="list-style-type: none"> Fault diagnosis process is similar to EPBi. Reference: Diagnostic scanner cannot communicate with EPBi for diagnosis process

Diagnostic scanner cannot communicate with EPBi for diagnostic process

Test conditions	Details/Results/Measures
1. Confirm fault symptom	
	<p>A. Find a normal vehicle. B. attempts to establish communication with EPBi. Can I establish normal communication with EPBi? ? Yes Go to step 2. ? No Replace with a new diagnostic scanner</p>
2. Check whether the diagnostic circuit is grounded normally.	
3. Check whether the diagnostic circuit is connected to the power supply.	
 <p>The diagram shows a 16-pin Diagnostic Link Connector (DLC) with terminals numbered 1 through 16. A voltmeter (V) is connected across terminal 16 and a ground symbol. The voltmeter has a positive (+) terminal and a negative (-) terminal. The ground symbol is connected to the negative terminal of the voltmeter, and the positive terminal is connected to terminal 16 of the DLC.</p>	<p>A. The vehicle power supply is in off gear. B. Measure the voltage between terminal 16 of harness connector and reliable grounding. Standard value: 9V-16 V Is the voltage normal? ? Yes Go to Step 4. ? No Overhaul whether terminal 16 of DLC is connected to power supply normally.</p>
4. Check diagnostic circuit CAN-L and EPBi circuit	

	<p>A. Disconnect EPBi harness connector. B. Measure terminal 14 of EPBi harness connector and DLC Resistance between terminal 14 of. Standard value: Less than 5 Ω Is the resistance normal? ? Yes Go to Step 5. ? No Overhaul open circuit fault between terminal 14 of EPBi harness connector and terminal 14 of DLC.</p>
<p>5. Check diagnostic circuit CAN-H and EPBi circuit</p>	
	<p>A. Disconnect EPBi harness connector. B. Measure the resistance between terminal 26 of EPBi harness connector and terminal 6 of DLC. Standard value: Less than 5 Ω Is the resistance normal? ? Yes Go to Step 6 ? No Overhaul open circuit fault between terminal 26 of EPBi harness connector and terminal 6 of DLC.</p>
<p>6. Check EPBi power supply circuit</p>	
	<p>A. Inspect EPBi power supply circuit. Refer to Brake System EPBi Diagnosis and Testing Is the power circuit normal? ? Yes Go to Step 7 ? No Handle the faulty position.</p>
<p>7. Replace EPBi, confirm the fault has been rule out</p>	

! Note: Except that IPs, iBCM, RRSs, ACs, THU, AVMS and DSMs need to connect CAN-H and CAN-L at harness ends of electrical equipment to ports 3,11 of DLCs respectively, other equipment can be tested according to the above methods.

Gateway controller fault phenomenon and diagnosis

Fault code	Meaning	Possible fault causes	Maintenance advice
<i>D400</i>	exceed Diagnostic voltage scope((9V - 16V)) KL30 voltage out of diagnostic voltage range(9V - 16 V)	The power supply system is abnormal or disturbed, the voltage drops too much when the engine is started, and the battery is faulty. Power supply is abnormal or be interfered, Voltage decrease at engine start phase, Battery abnormal	Check power supply system, overhaul engine or generator, replace battery Check power supply system, Check ECM and electric generator ,Change Battery.
<i>C010</i>	DiagCAN interface Bus-off DiagCAN Bus off	Harness fault, connector fault Wiring harness failure, connector failure	Check harness and connector connection Check Wiring harness and connector.
<i>C012</i>	PCAN interface Bus-off PCAN Bus off	Harness fault, connector fault Wiring harness failure, connector failure	Check harness and connector connection Check Wiring harness and connector.
<i>C019</i>	BCAN interface Bus-off BCAN Bus off		
<i>C011</i>	SCAN interface Bus-off SCAN Bus off	Harness fault, connector fault Wiring harness failure, connector failure	Check harness and connector connection Check Wiring harness and connector.
<i>C004</i>	PVCAN interface Bus-off PVCAN Bus off	Harness fault, connector fault Wiring harness failure, connector failure	Check harness and connector connection Check Wiring harness and connector.
<i>C013</i>	INFOCAN interface Bus-off InfoCAN Bus off	Harness fault, connector fault Wiring harness failure, connector failure	Check harness and connector connection Check Wiring harness and connector.
<i>D400</i>	BCAN interface Limphome	Single part running, harness fault, connector fault	Check harness and connector connection
<i>D402</i>	SCAN interface Limphome	Single part running, harness fault, connector fault	Check harness and connector connection
<i>D401</i>	ICAN interface Limphome	Single part running, harness fault, connector fault	Check harness and connector connection
<i>C104</i>	Missing ACC ACC node lost 0x35E(1000 ms)	Harness fault, connector fault, relevant ECU fault Wiring harness failure, connector failure , related ECU failure	Check harness, check connector connection, repair or replace relevant ECU Check Wiring harness and connector, Fix ECU bug.
<i>C140</i>	Missing BCM BCM node lost 0 x 384(1000 ms)		
<i>C100</i>	Missing EMS EMS node missing 0 x 355(1000 ms)		
<i>C128</i>	Missing EPBi EPBi node missing 0 x 368(1000 ms)		
<i>C131</i>	Missing EPS EPS node lost 0x2A0(1000 ms)		
<i>C421</i>	Missing ESCL ESCL node missing 0 x 276(1000 ms)		

C427	Missing HU Hu node lost 0 x 580(5000 ms)		
C155	Missing IP IP node lost 0 x 380(2500 ms)		
C156	Missing SRS SRS node missing 0x50(2500 ms)		
C157	Missing TCU TCU node lost 0 x 338(1000 ms)		
C158	Missing APA APA node missing 0x2FF(1000 ms)		
C159	Missing LAS LAS node missing 0x2D8(1000 ms)		
C160	Missing LCDAL LCDAL node missing 0x2AE(1000 ms)		
C161	Missing LCDAR LCDAR node missing 0x2AF(1000 ms)		
C162	Missing AC AC node lost 0 x 330(1000 ms)		
C163	Missing AVM AVM node missing 0x3E0(1000 ms)		
C164	Missing RRS RRS node missing 0x2E0(1000 ms)		
C165	Missing DSM DSM node missing 0x3EA(1000 ms)		
C166	Missing ESL ESL node missing 0x24A(1000 ms)		
C167	Missing PTS PTS node missing 0x3FE(1000 ms)		
C168	Missing RFBT RFBT node missing 0x3B4(1000 ms)		
C169	Missing ATB ATB node missing 0x3B6(1000 ms)		
C170	Missing SLCM SLCM node missing 0x3D8(1000 ms)		

Removal and installation

Gateway controller

Removal

1. Disconnect the battery negative harness.

Reference: 3.1.11 charging system

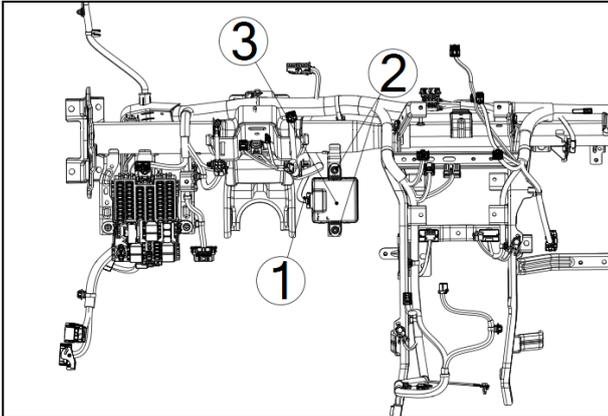
2. Remove the console.

Reference: 5.3.3 Front interior

3. Remove the gateway controller.

- Disconnect the gateway controller harness plug.
- Remove the retaining bolts of gateway controller.
- Remove the gateway controller.

Torque: 6 ± 1 Nm



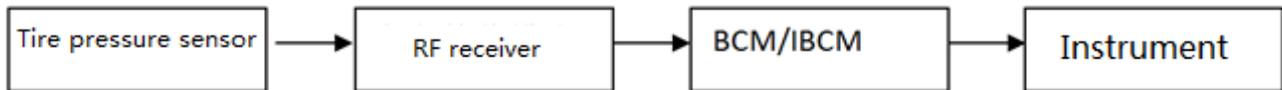
Installation

The installation sequence is the reverse of the removal sequence.

4.2.18 Tire pressure monitoring system

Description and operation

System introduction



Common tire pressure alarm logic

1. High voltage alarm

Alarm reason: Occurs when the actual tire pressure value is higher than the high-pressure alarm threshold value.

Reference picture:

2. Low-voltage alarm

Alarm reason: Occurs when the actual tire pressure value is lower than the low-pressure alarm threshold.

Reference picture:



3. Air leakage alarm

Cause of alarm: The tire air pressure leaks faster than the rated value within a period of time.

Reference picture:



4. Loss alarm

Alarm reason: When the vehicle speed is greater than 40 km/h, the RF receiving module does not receive the sensor tire pressure signal for 10 min.

Reference picture:



Fault phenomenon and diagnosis

Fault symptom	Fault cause	Solution
A tire always displays "-"	<ol style="list-style-type: none"> 1. Tire pressure ID at this position is not matched correctly. 2. Tire pressure sensor at this position fails. 	<ol style="list-style-type: none"> 1. Determine tire pressure sensor ID and BCM storage 2. If it is the same, replace the sensor. 3. If different, re-match the road test.
Four tire pressure display "-"	<ol style="list-style-type: none"> 1. RF receiving module is abnormal. 2. Four tire pressure IDs are not matched correctly. 3. Four tire pressure sensors fail. 2. Harness abnormality 	<ol style="list-style-type: none"> 1. Determine four tire IDs and BCM storage conditions 2. If different, re-match four wheels 2. If the same, and the remote control function is abnormal, troubleshoot the RF module and harness. 3. If the same, and the remote control function is normal, check the RF module and sensor.
All four tires display "0.0"	Vehicle turns on winter mode	Configuration off
Tire pressure value jumping at a certain tire position of instrument	Sensor problem	Replace sensor
The instrument prompts that the tire pressure is still displayed for several minutes. It is not displayed and there is no warning lamp.	<ol style="list-style-type: none"> 1. Tire pressure receiving of BCM is not enabled. 2. The sensor of the vehicle is not assembled. 	<ol style="list-style-type: none"> 1. Confirm whether the sensor is the sensor of the model. 2. Confirm BCM configuration information
Instrument no tire pressure display interface	Instrument configuration	Instrument configuration



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