0701 Electrical Equipment

1 Battery

07

1.1 General information

1.1.1 Description

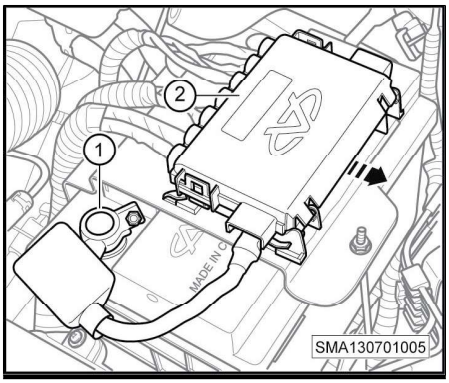
This vehicle is equipped with a 12V battery, which is located in the engine compartment and consists of the following components:

- Battery - is used to store the chemical energy converted from the electrical energy and convert it back into the electrical energy for electrical equipment when necessary.
- Battery cable - connects the positive and negative terminals of the battery and supplies power to the vehicle's electrical system.
- Battery cover - fixes the battery in place with the battery tray.
- Battery tray - is located inside the engine compartment and used to install the battery.

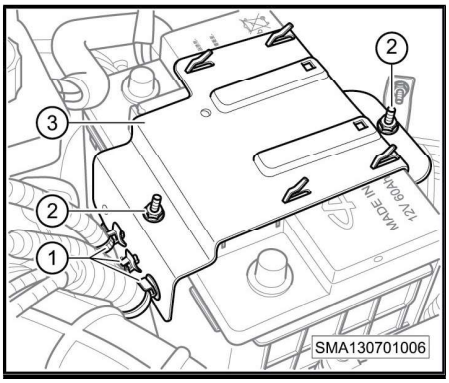
1.2 Removing and installing the battery

Removal

1. Switch off all electrical equipment and disconnect the battery negative cable.
2. Disconnect the battery positive cable (-1-) and pull out the fuse box (-2-) out of the battery cover in the (-arrow-) direction and put it aside.



3. Loosen the fixing clip (-1-) from the wiring harness.
4. Unscrew the battery cover nuts (-2-) and remove the battery cover (-3-).
5. Remove the battery.

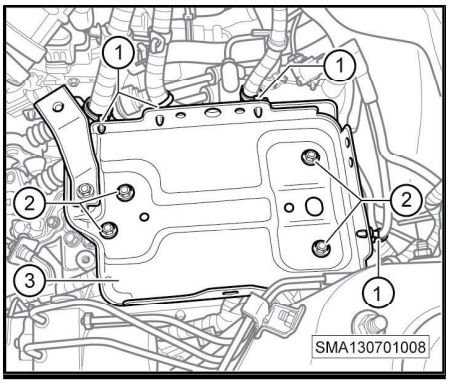


Installation

Installation shall follow the reverse sequence of the removal procedure.

1.3 Removing and installing the battery tray

Removal



1. Remove the battery => refer to page 975.
2. Remove the air filter assembly => refer to page 239.
3. Loosen the fixing clips (-1-) from the wiring harness.
4. Unscrew the fixing bolts (-2-) from the tray.
5. Remove the battery tray (-3-).

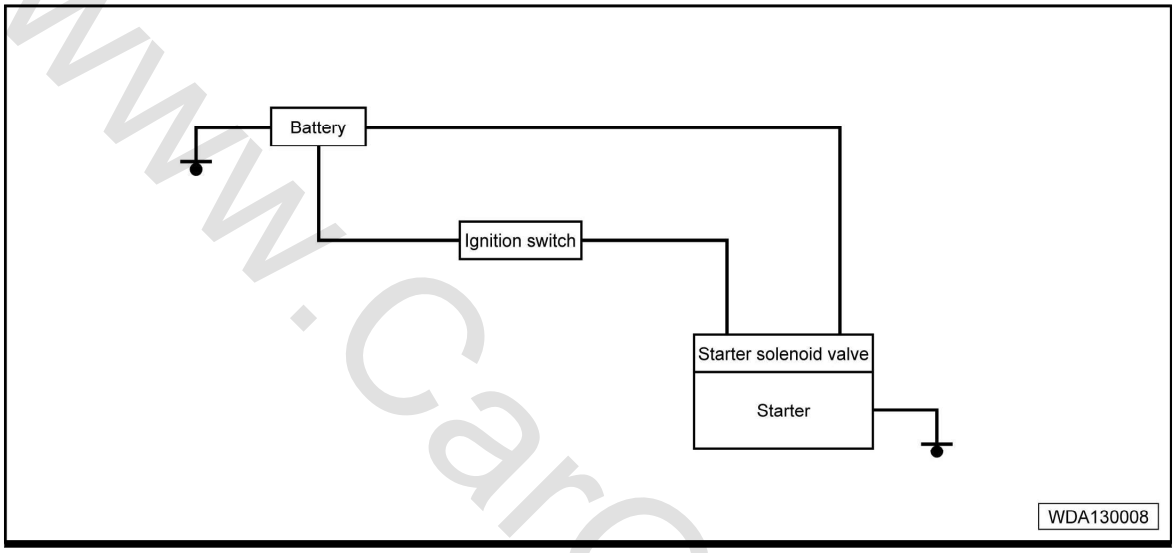
Installation

Installation shall follow the reverse sequence of the removal procedure.

2 Starting System

2.1 General information

2.1.1 Description



The battery interacts with the charging system to support the proper operation of the vehicle's electrical system. The electrical system is divided into two separate circuits: one is a heavy-current circuit, e.g. starting circuit; and the other is a low-current control circuit, such as the common operating circuit of the electrical system. The starting system consists of the following components:

- Starter
- Battery
- Battery cable
- Ignition switch
- Wiring harness

2.1.2 Product specifications

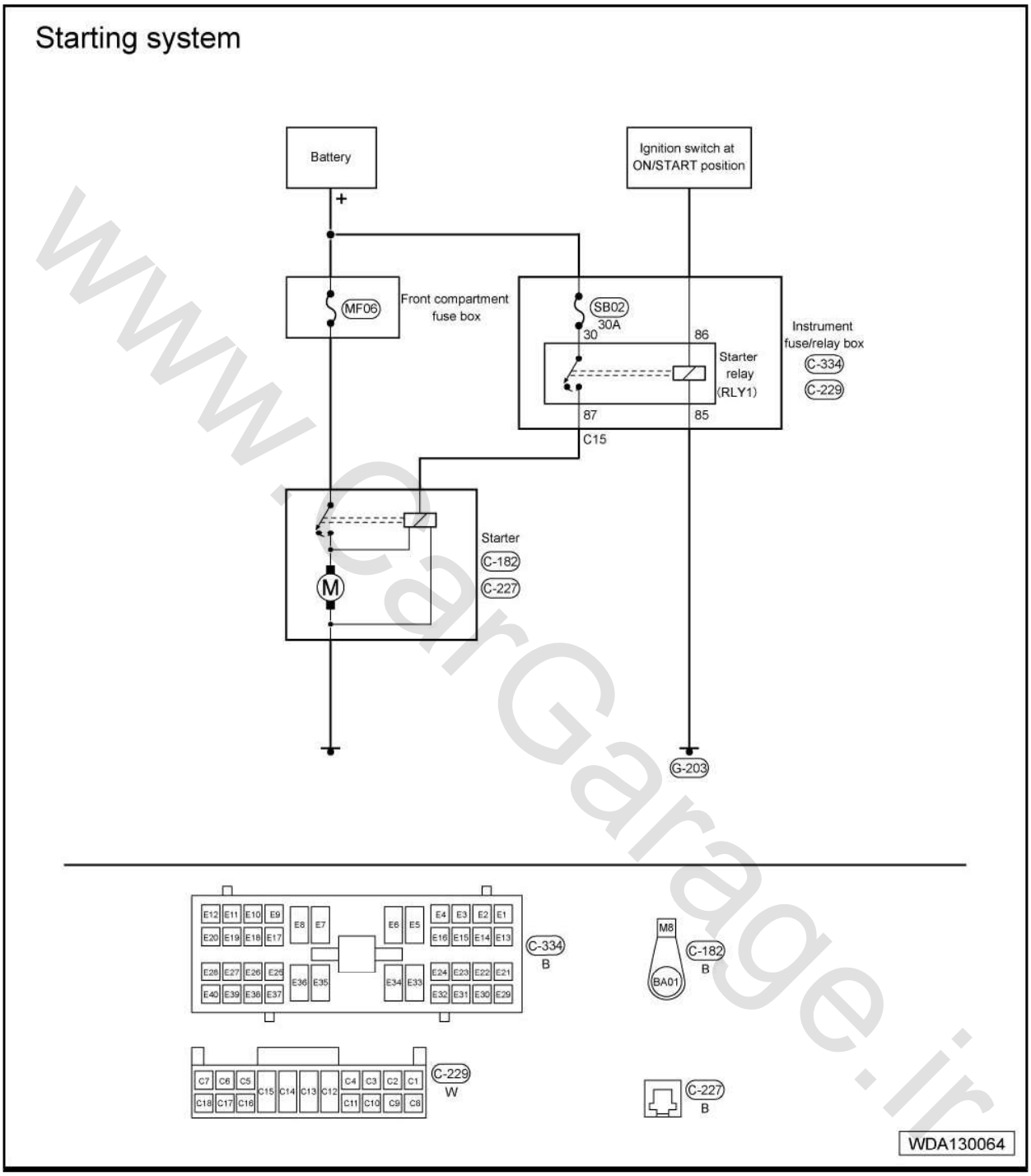
Torque specifications

Component	Torque (N·m)
Starter mounting bolt	30

2.2 Circuit diagram

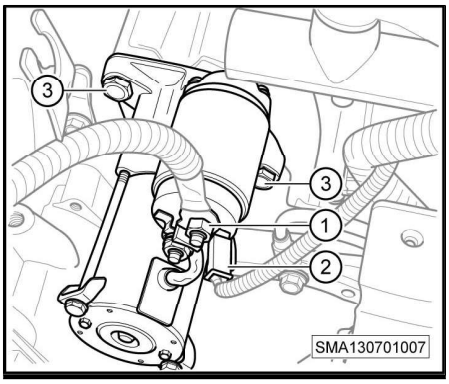
Starting system (page 1)

07



2.3 Removing and installing the starter

Removal



1. Remove the battery.=> refer to page 975
2. Remove the air filter assembly.=> refer to page 239
3. Remove the battery tray.
4. Unscrew the nut (-1-) of the starter terminal B+.
5. Disconnect the connector of the starter solenoid switch (-2-).
6. Unscrew the starter fixing bolts (-3-).
   - Tightening torque of the bolt: 30 N•m
7. Remove the starter.

Installation

Installation shall follow the reverse sequence of the removal procedure.

2.4 Diagnosis and inspection

2.4.1 Testing the starter

Warning

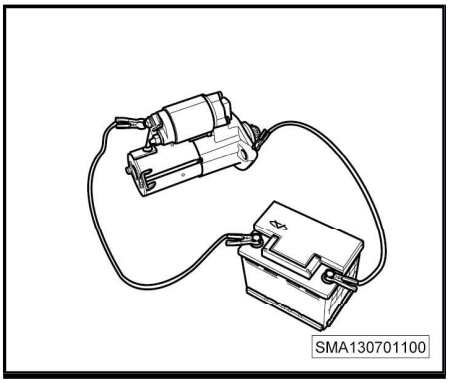
- Since it is dangerous when the starter is running at a high speed, the operators shall take precautions.
- Please familiarise yourself with the operating procedures before inspection.
- Supplying power to the starter with the battery for a long time will burn out the coil, so the given time for each test shall be within 3-5 minutes.

Note

- This test can only be applied to the starter removed from the vehicle.
- This test is intended to check the continuous starting performance of the starter.

Procedures

1. Remove the starter from the engine compartment.
2. Install the starter onto a soft-palated bench vise.
3. Connect the 12V battery to the starter by cables with the battery positive connected to the starter terminal B+ and the negative connected to the starter housing.
4. Connect the power supply terminal of the starter solenoid switch to the positive power supply terminal by leads. At this moment, the starter starts to operate. If the starter fails to run, replace the failed starter with a new one.



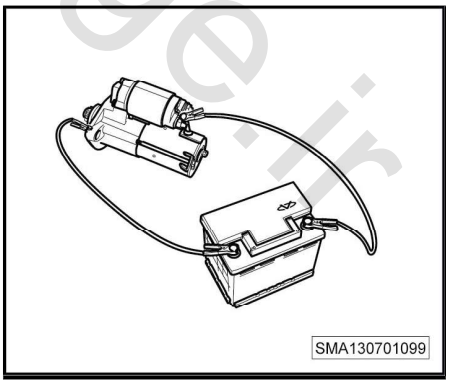
2.4.2 Testing the starter solenoid switch

Note

- This test can only be applied to the starter removed from the vehicle.

Procedures

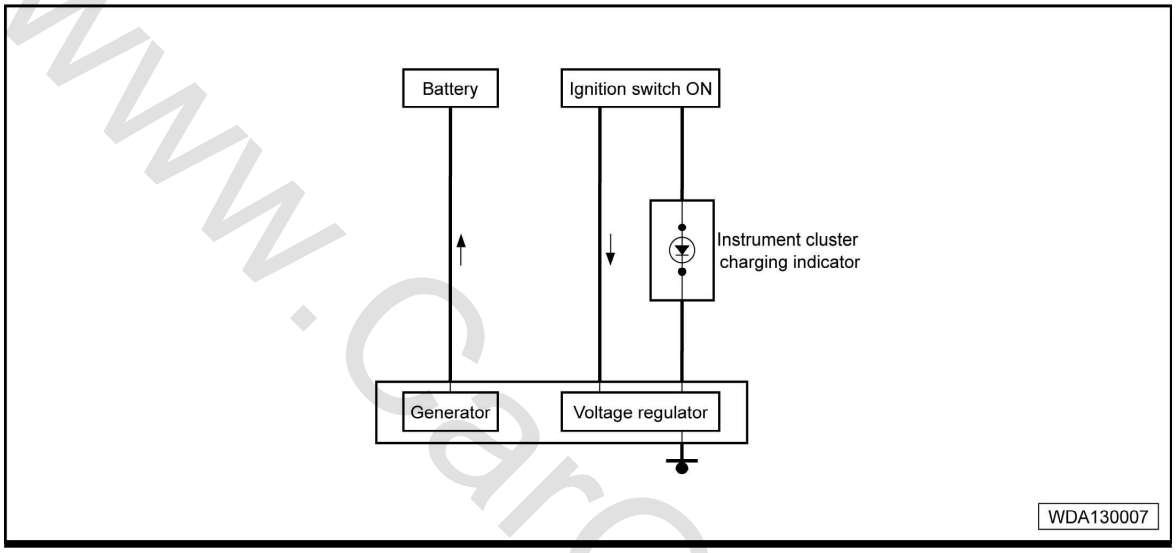
1. Remove the starter from the engine compartment.
2. Disconnect the solenoid switch terminal.
3. Connect the battery negative to the starter housing and its positive to the terminal of the starter solenoid switch. When switching on the starter, you shall hear the starter solenoid switch pushing the pinion and engaging it with the gear ring. Otherwise, replace the failed starter assembly.



3 Charging System

3.1 General information

3.1.1 Description



- The generator is a device that converts mechanical energy into electrical energy and serves as one of the main power of the vehicle. When the engine is running, it drives the generator via the poly-V belt, thereby supplying power to electrical equipment (except for the starter) and charging the battery.
- When the engine is running, it drives the energized rotor of the generator exciting winding to rotate so that the Y-shaped stator winding produces induced electromotive force, which is subsequently rectified into DC power by the electronic rectifier, thereby feeding the electricity to vehicle's electrical system. To keep the DC voltage stable, the generator is also equipped with a voltage regulator to stabilize the power voltage of the system.

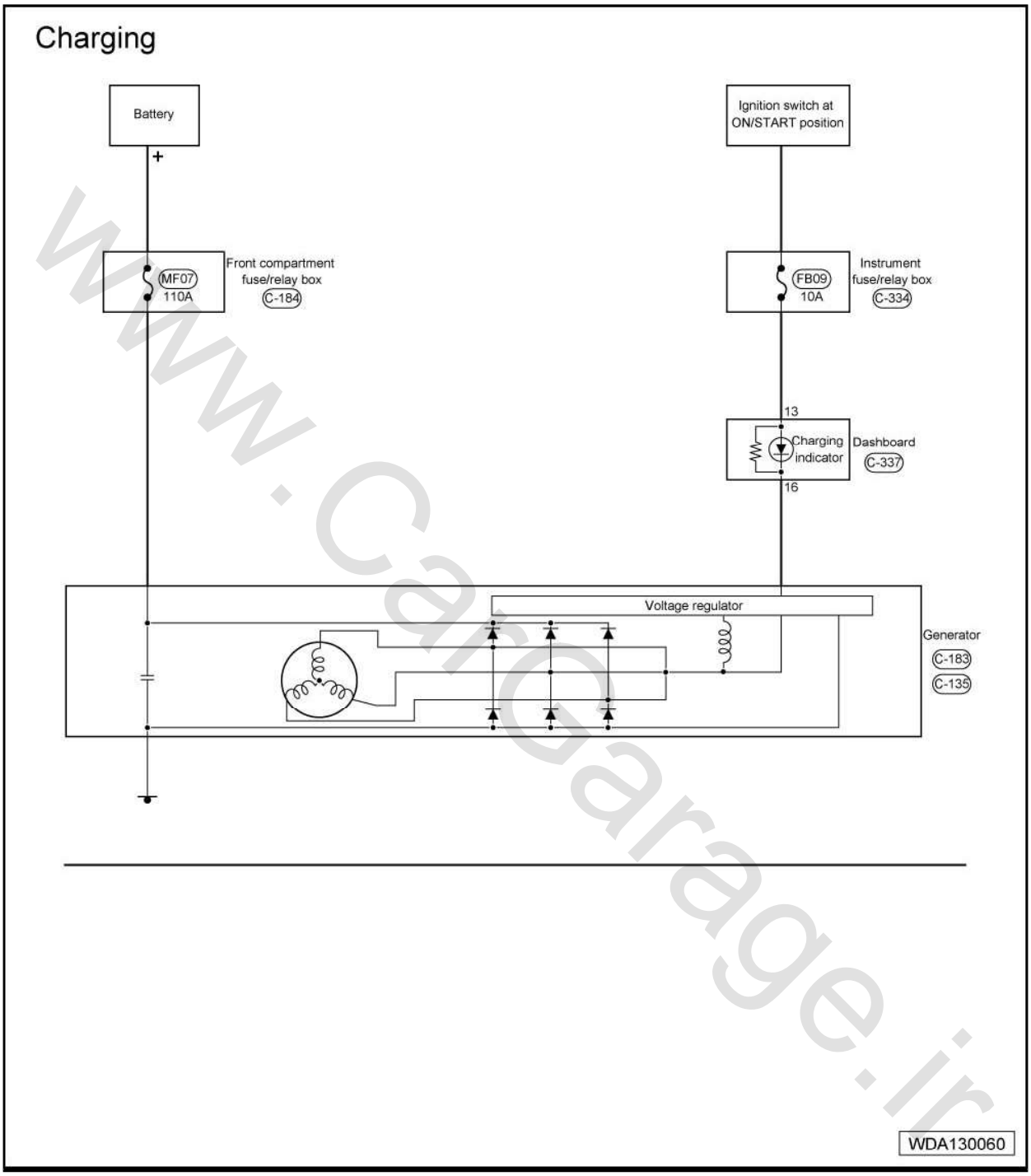
3.1.2 Product specifications

Torque specifications

Component	Torque (N·m)
Generator cable fixing nut	13
Generator mounting bolt	30

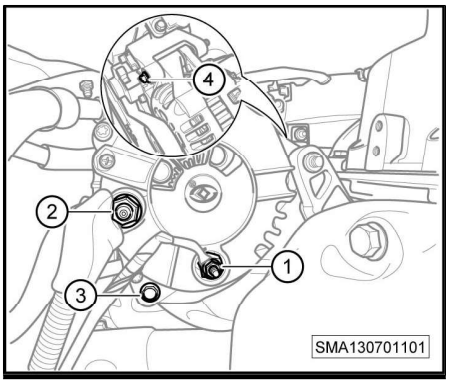
3.2 Circuit diagram

Charging system (page 1)



3.3 Removing and installing the generator

Removal



1. Switch off all electrical equipment and the ignition switch.
2. Disconnect the battery negative cable.
3. Remove the poly-V belt of the generator.=> refer to page 72
4. Unscrew the fixing nut (-1-) and remove the generator cable.
5. Pull off the cable rubber sleeve, unscrew the cable fixing nut (-2-) and remove the generator cable.
6. Unscrew the generator bottom fixing bolt (-3-) and the bracket fixing bolt (-4-).
   - Tightening torque of the bolt: 30 N•m
7. Remove the generator.

Installation

Installation shall follow the reverse sequence of the removal procedure.

3.4 General troubleshooting

Symptoms	Causes	Troubleshooting
Abnormal noise of the generator	• Wear, loosening or bearing damage	• Replace the generator assembly
	• Inadequate grease	• Add grease
	• Improper installation	• Re-install as specified requirements
	• Inadequate poly-V belt tension	• Replace the tensioner
	• Disalignment between the poly-V belt pulley and the generator pulley	• Re-install as specified requirements
	• Internal damage of the generator	• Replace the generator assembly

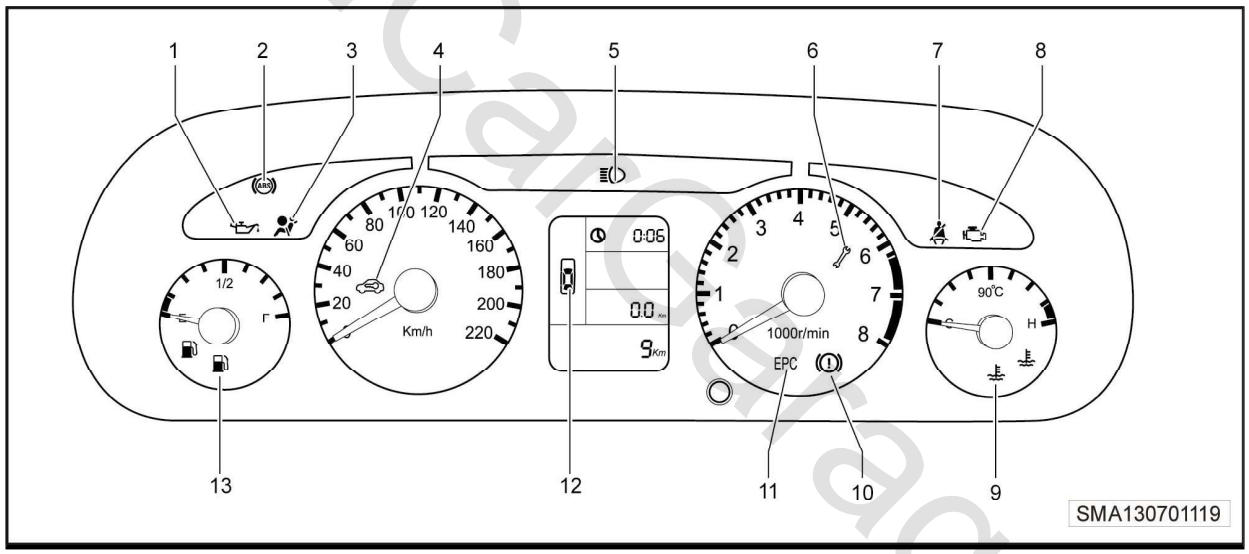
4 Instrument Cluster

4.1 General information

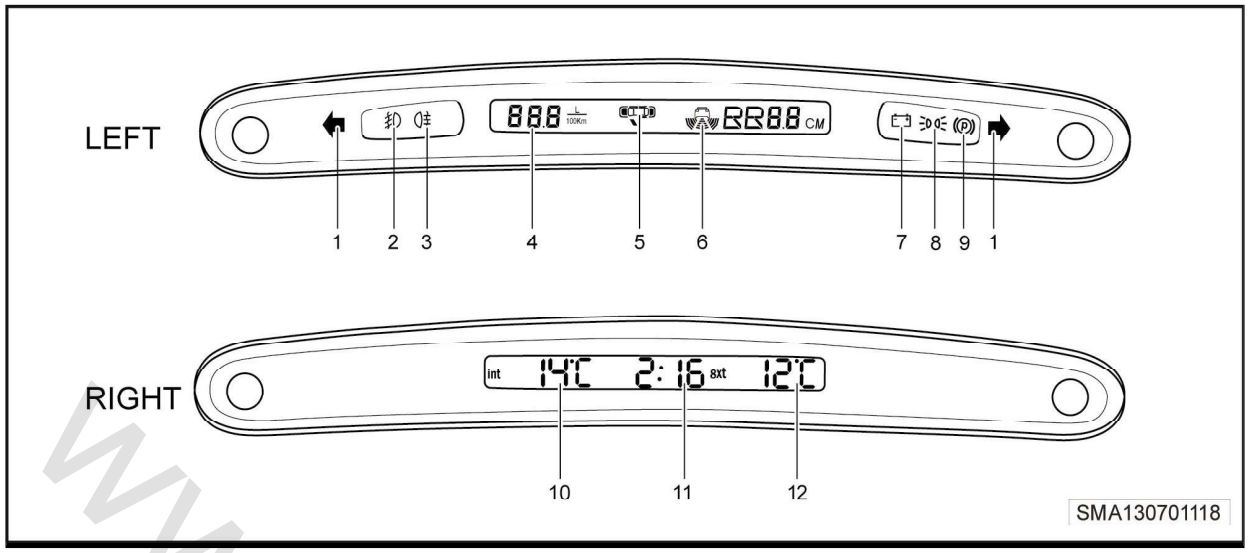
4.1.1 Description

- The instrument cluster is located on the instrument console in front of the driver and used to monitor and display the operating status of vehicle's systems and parts at any time to ensure that you can drive your vehicle reliably and safely. It shows digits, pointers and indicators and reminds the driver to rectify potential faults timely via flashing lights and sound warnings to effectively prevent accidents.
- The instrument system of Chery A13/A13A has two forms of display depending on different configurations. One is the instrument cluster in combination with the auxiliary instrument, and the other is the instrument cluster independently.

The applied instrument cluster and auxiliary instrument:

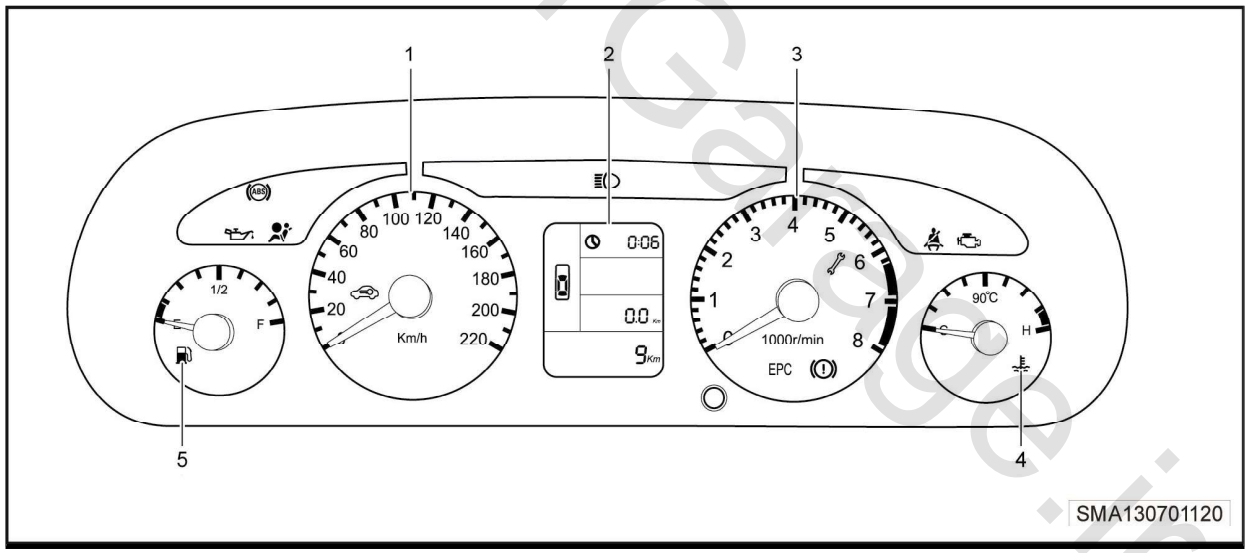


1 Engine oil pressure warning lamp	8 Engine fault indicator
2 ABS indicator (if equipped)	9 Coolant temperature indicator
3 Airbag system indicator	10 Brake system indicator
4 Anti-theft system indicator	11 Electronic throttle fault indicator
5 High beam indicator	12 Door ajar indicator
6 Vehicle service indicator	13 Fuel level indicator
7 Driver side seat belt indicator	



1 Turn signal indicator	7 Charging system indicator
2 Front fog lamp indicator	8 Parking/position indicator
3 Rear fog lamp indicator	9 Parking brake indicator
4 Instant fuel consumption gauge	10 Interior temperature display unit
5 Door opening status indicator	11 Clock display unit
6 Reversing radar system display unit	12 Exterior temperature display unit

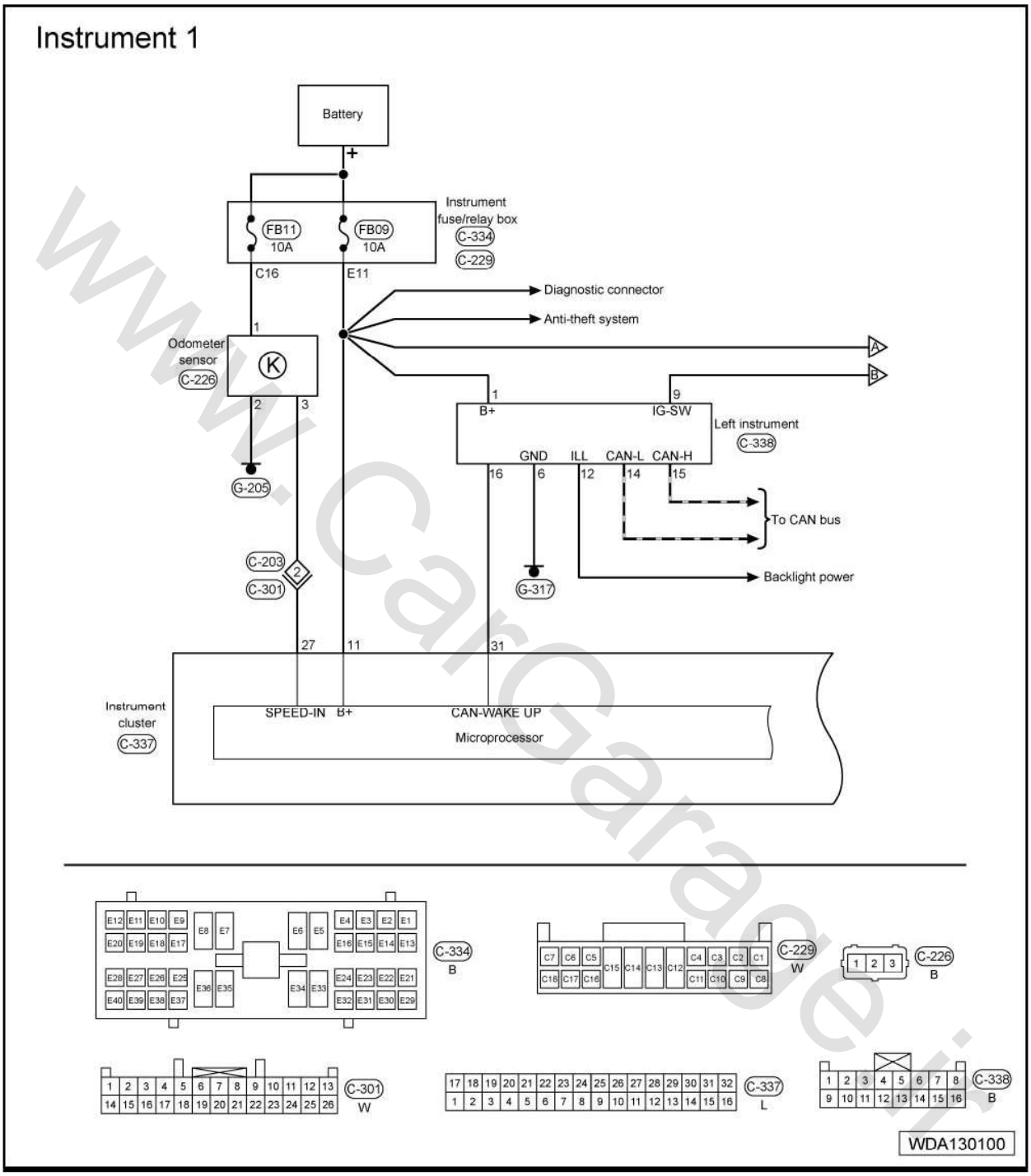
The independent instrument cluster:



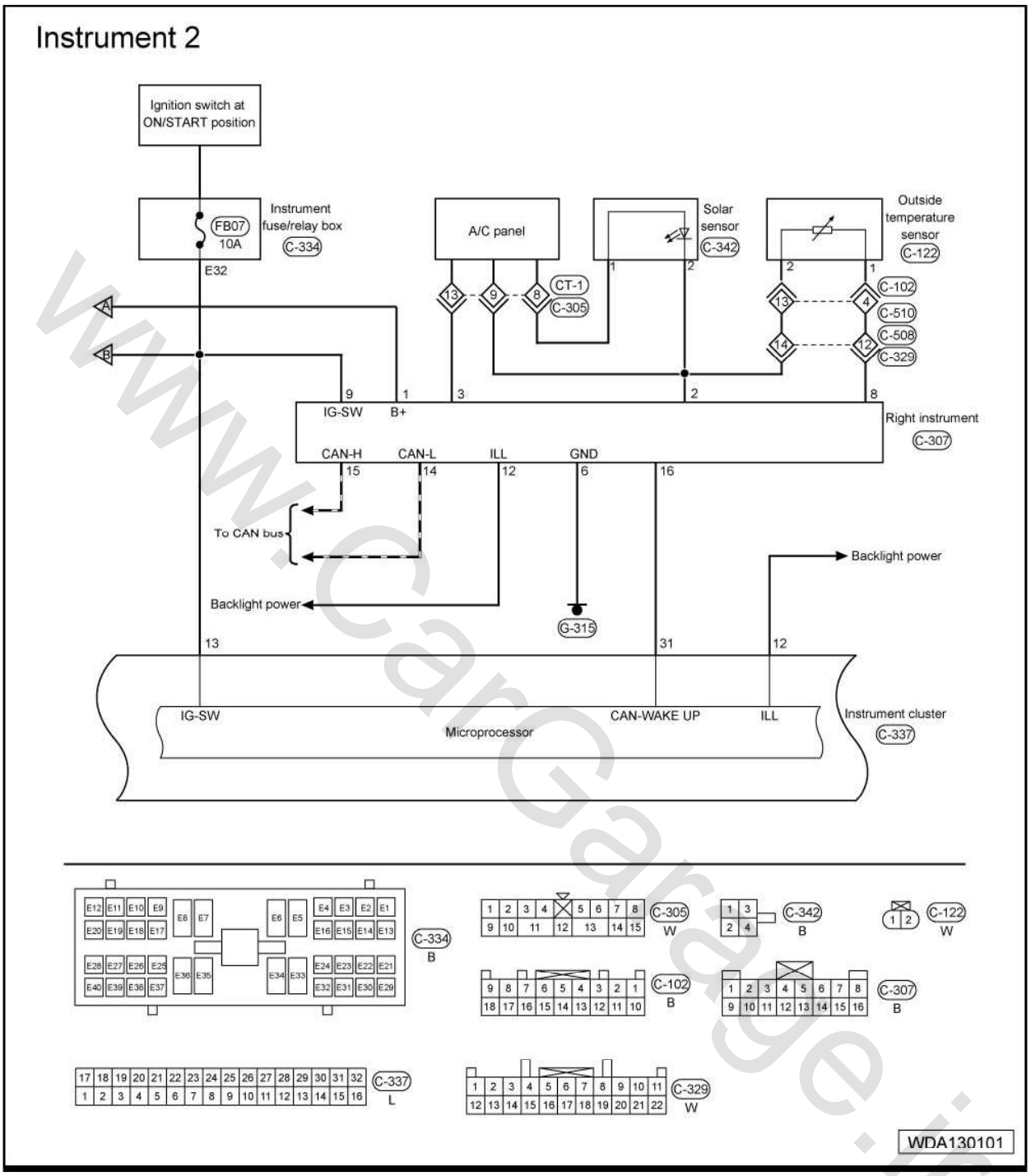
1 Speedometer	4 Coolant temperature gauge
2 LCD display	5 Fuel gauge
3 Tachometer	

4.2 Circuit diagrams

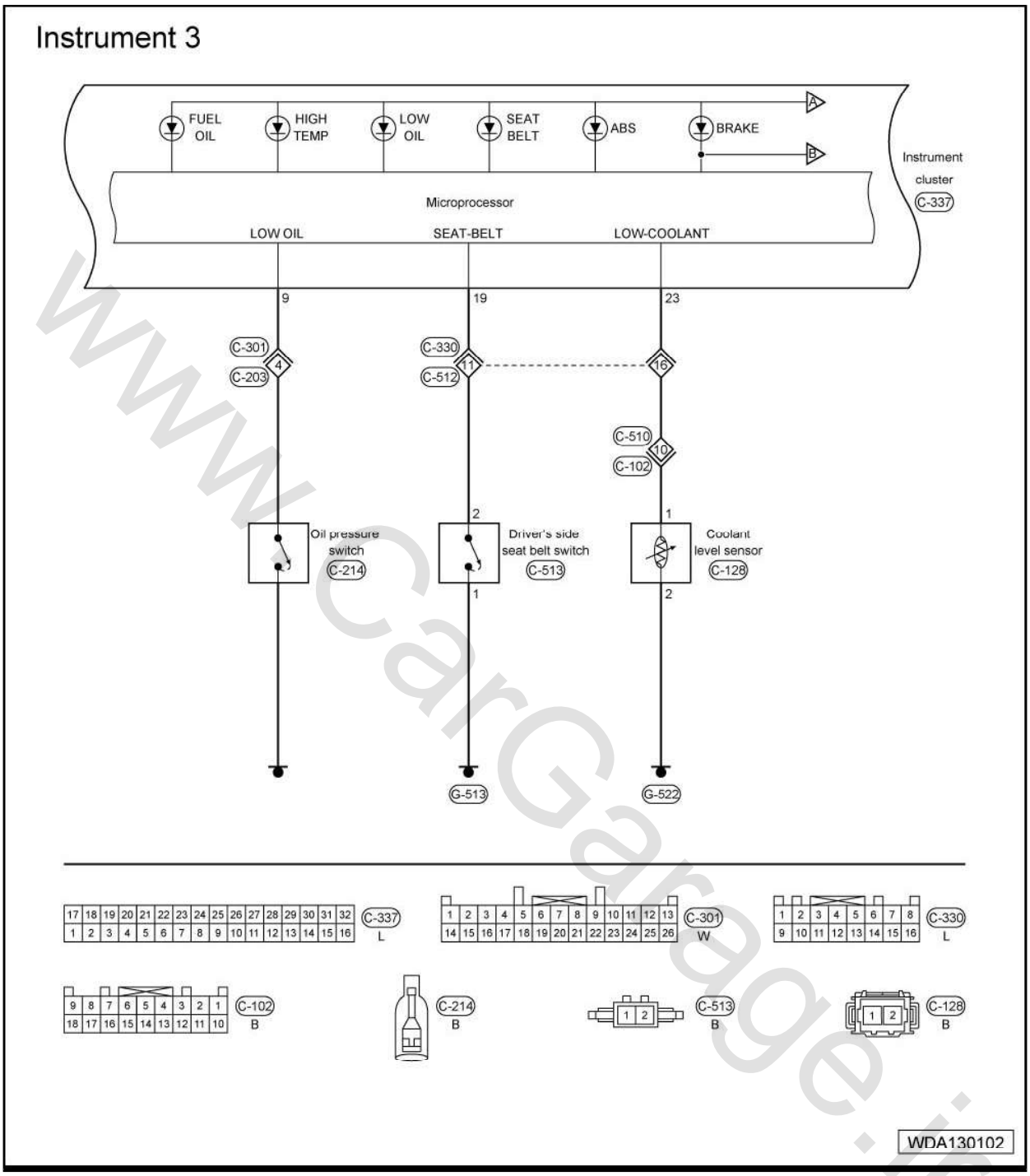
Instrument cluster (page 1)



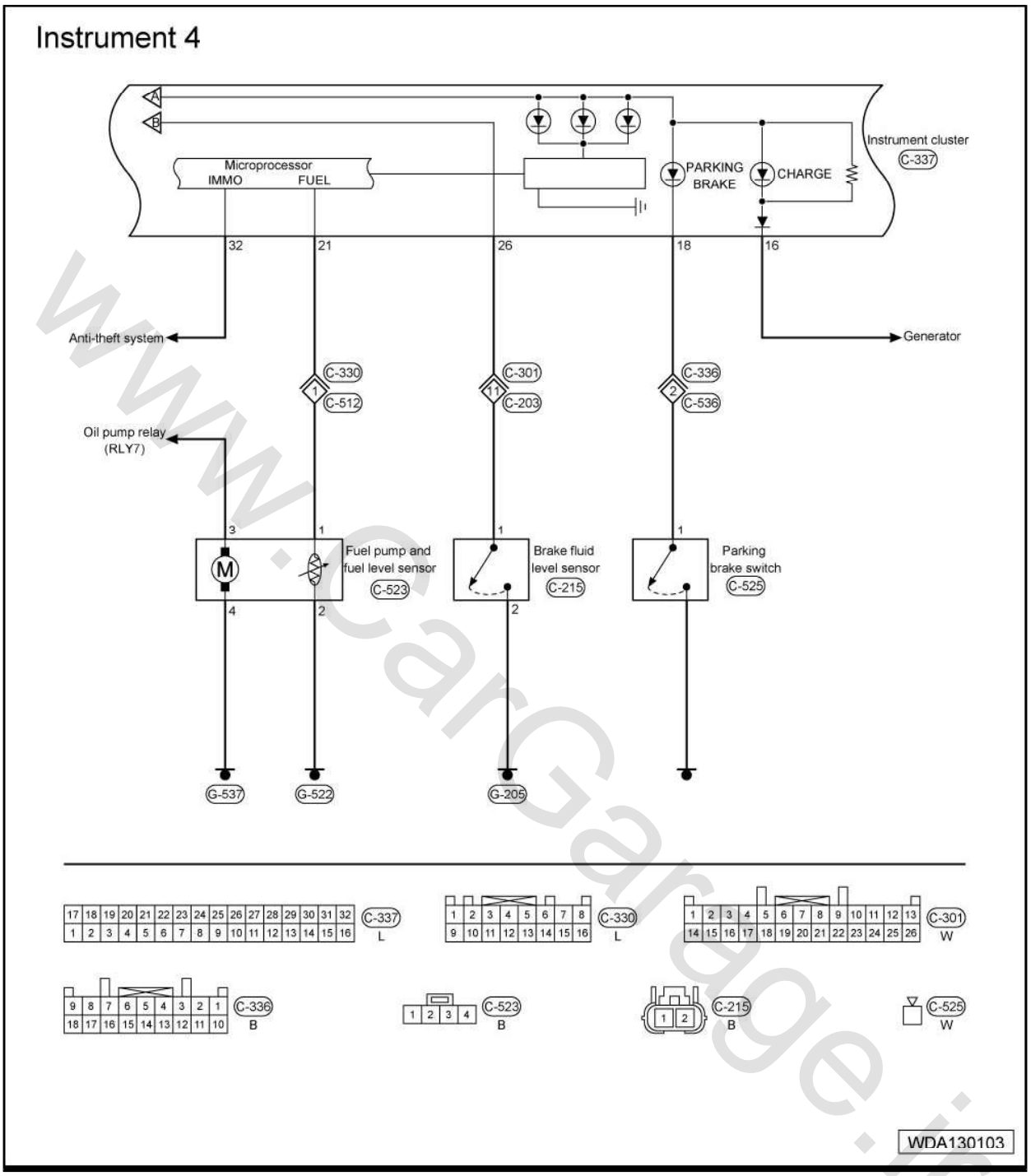
Instrument cluster (page 2)



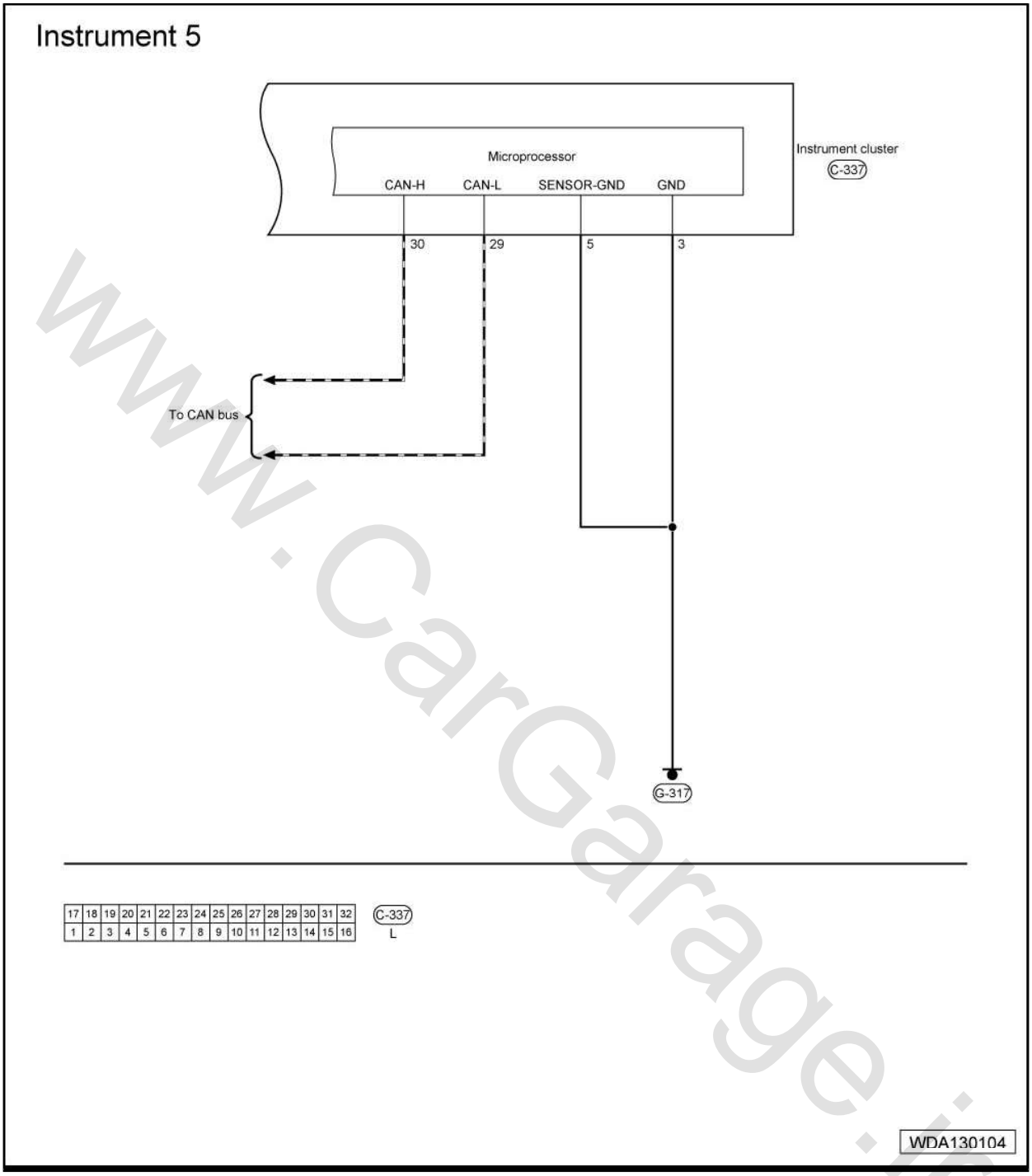
Instrument cluster (page 3)



Instrument cluster (page 4)



Instrument cluster (page 5)



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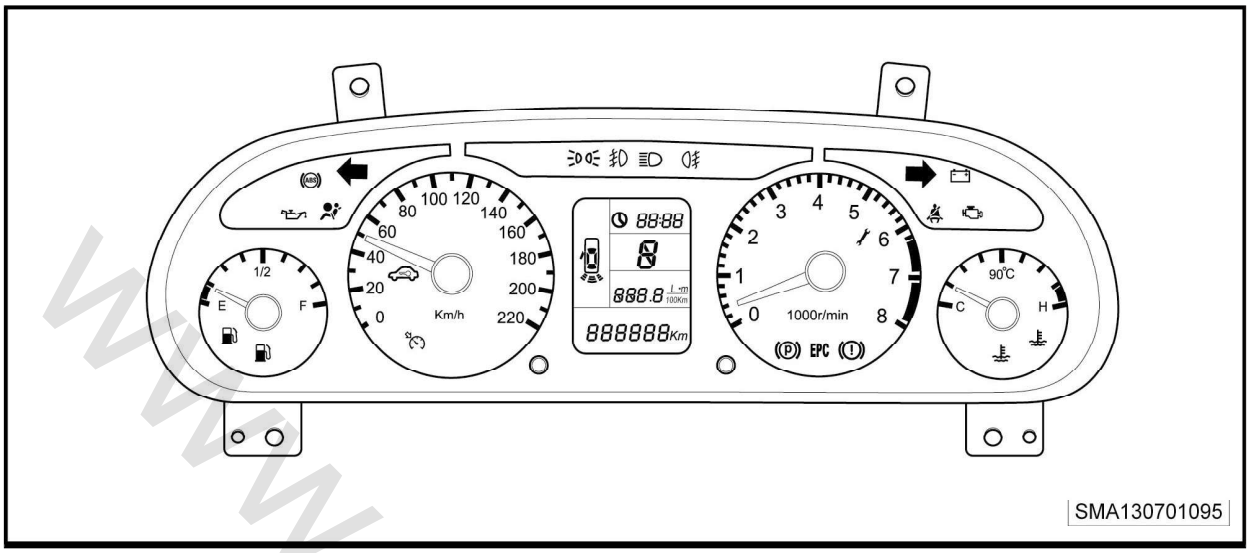
4.3 Definition of the instrument cluster pins

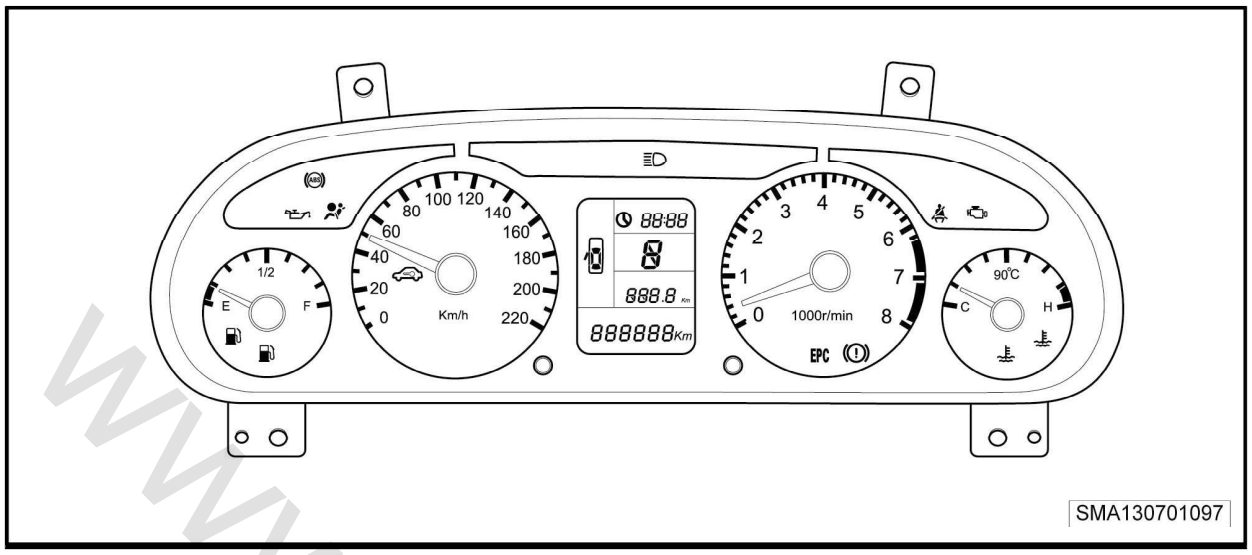
Instrument cluster (independent)



Instrument cluster 32-pin connector

Pin No.	Function	Pin No.	Function
1		17	
2		18	Parking brake signal input
3	Grounding	19	Seat belt switch input
4		20	
5	Sensor grounding	21	Fuel sensor
6		22	
7	Vehicle speed output	23	Low coolant level
8		24	
9	Low engine oil pressure	25	Low brake fluid level
10		26	
11	KL30	27	Vehicle speed input
12	Backlight	28	
13	KL15	29	CAN-L
14		30	CAN-H
15		31	Wake up signal
16	Generator charging and discharging	32	Engine theft protection

Instrument cluster (with auxiliary instrument)

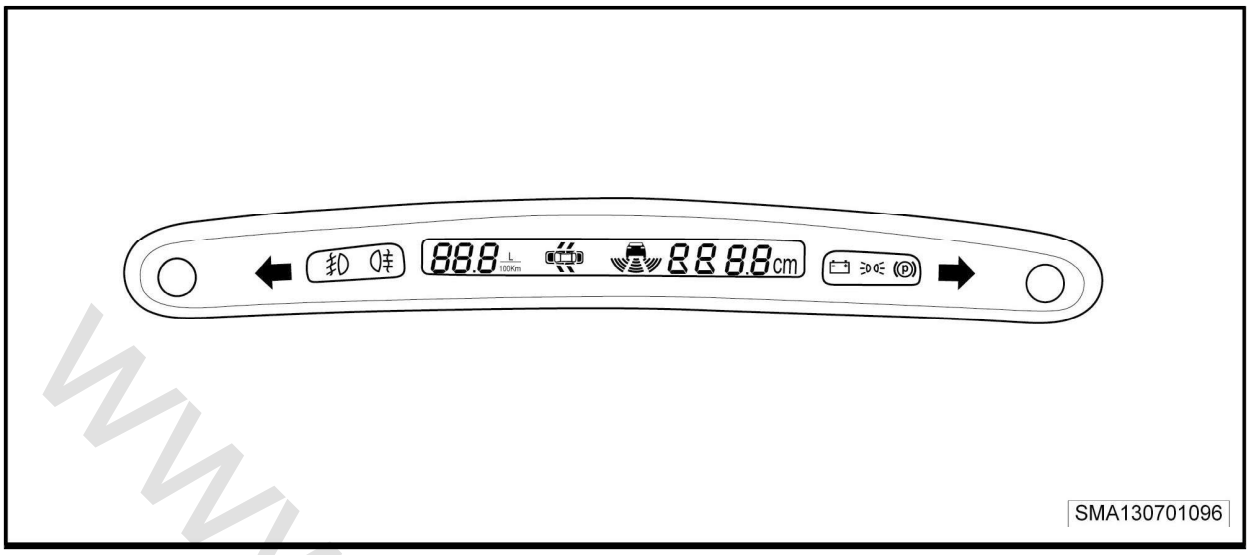


Instrument cluster 32-pin connector

Pin No.	Function	Pin No.	Function
1		17	
2		18	Parking brake signal input
3	Grounding	19	Seat belt switch input
4		20	
5	Sensor grounding	21	Fuel sensor
6		22	
7	Speed output	23	Low coolant level
8		24	
9	Low engine oil pressure	25	Low brake fluid level
10		26	
11	KL30	27	Speed input
12	Backlight	28	
13	KL15	29	CAN-L
14		30	CAN-H
15		31	Wake up signal
16	Generator charging and discharging	32	Engine theft protection

07

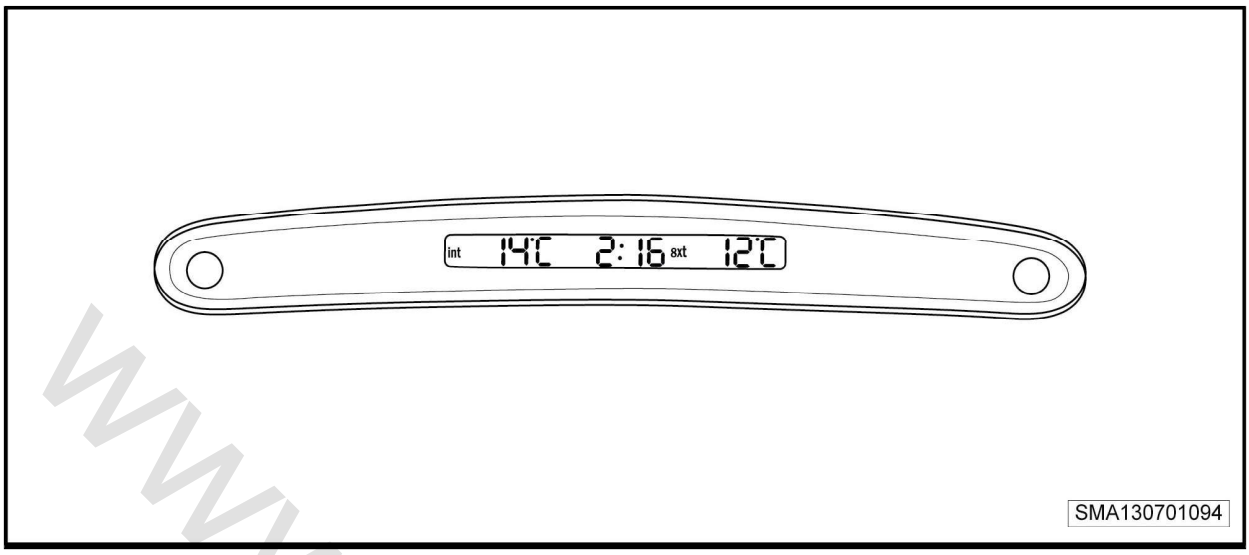
Left auxiliary instrument



16-pin connector of the left auxiliary instrument

Pin No.	Function	Pin No.	Function
1	KL30	9	KL15
2		10	
3		11	
4		12	Backlight
5		13	
6	Grounding	14	
7		15	
8		16	Wake up signal

Right auxiliary instrument



16-pin connector of the right auxiliary instrument

Pin No.	Function	Pin No.	Function
1	KL30	9	KL15
2	Solar sensor	10	
3	Air-conditioner panel	11	
4		12	Backlight
5		13	
6	Grounding	14	
7		15	
8	Exterior temperature input	16	Wake up signal

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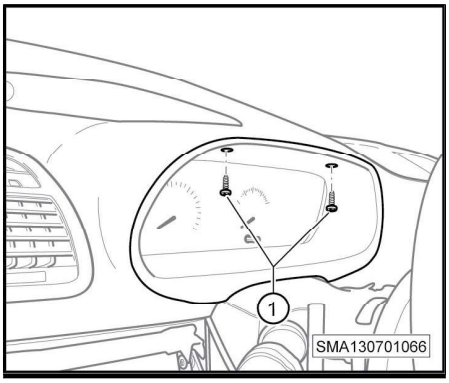
4.4 Assembling the instrument cluster

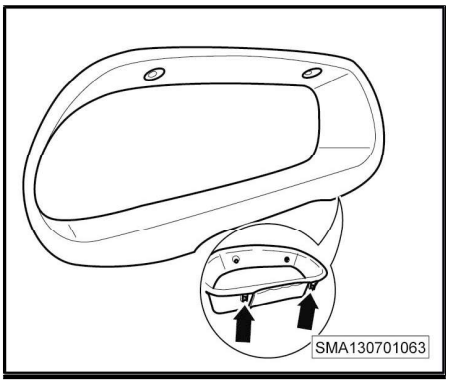
4.4.1 Removing and installing the instrument cluster

Removal

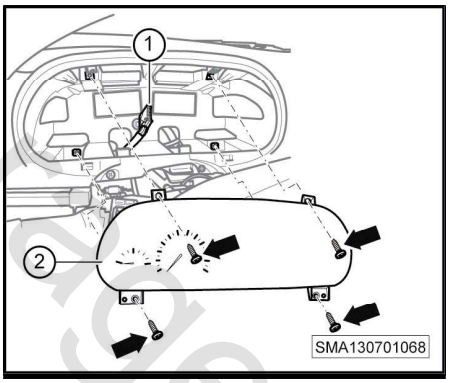
1. Unscrew the shield sleeve assembling screws (-1-) from the instrument cluster.



2. Lever out the fixing clips (-arrow-) of the shield sleeve carefully with a tool and remove the shield sleeve.



3. Unscrew the four fixing screws (-arrow-) from the instrument cluster.
4. Remove the instrument cluster (-2-) from the instrument console carefully and disconnect the wiring harness connector (-1-).



Installation

Installation shall follow the reverse sequence of the removal procedure.

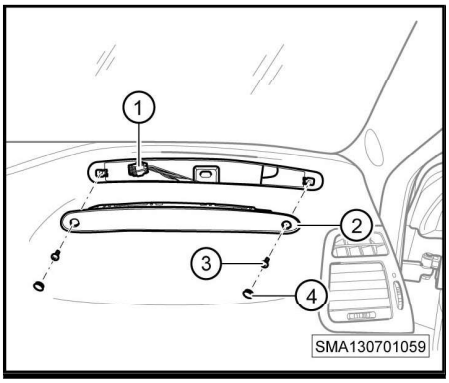
4.4.2 Removing and installing the auxiliary instrument

Note

- The removal and installation procedures of the left auxiliary instrument are the same as that of the right one. The method of removing and installing the right auxiliary instrument is taken as an example here.

Removal

1. Lever out the trim covers of the auxiliary instrument fixing screws carefully (-4-).
2. Unscrew the two fixing screws (-3-), remove the auxiliary instrument (-2-) and disconnect the wiring harness connector (-1-).



Installation

Installation shall follow the reverse sequence of the removal procedure.

5 Diagnosis and Inspection of the Instrument Cluster

5.1 Diagnosis and inspection of sporadic DTC faults

If the sporadic DTC faults occur, please check the following items:

- Check if the connector of the DTC-related actuator or sensor is properly installed.
- Check the connector pins of the actuator or sensor for leakage and corrosion.
- Check the leads for bending or squeezing.
- Check the sensor for dirt or damage.
- Check if the routing of wiring harness is correct and proper.

5.2 Checking earth connection

A good earth connection is prerequisite for ensuring the normal operation of the circuit. If the earth terminal of the circuit is always exposed to the wet and dusty environment, the metal of the earth terminal will corrode and affect the circuit smoothness, thus causing various electrical system malfunctions. As the control circuit is very sensitive, the loosened or corroded wires may significantly affect the transmission of various signals in the electronic control circuit. Therefore, please note the followings when inspecting:

- Replace the earth bolts or nuts.
- Check the earth terminal and coil for corrosion.
- Clean and polish the earth terminal and coil when necessary to ensure good contact.
- Check if there is any accessory interfering with the earth circuit.

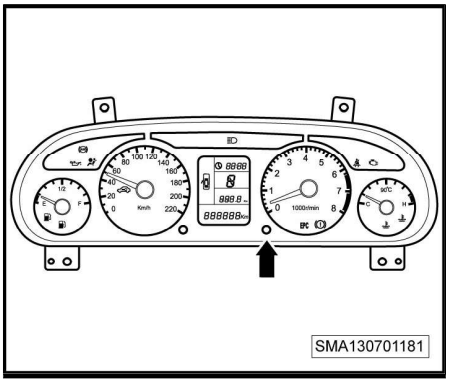
5.3 Canceling the vehicle service indicator

The vehicle service indicator can be canceled by the following two ways:

1. Cancel via the diagnostic device.
2. Cancel via the adjusting knob.

The procedure of clearing the service indicator via the adjusting knob is as follows:

- Turn off the ignition switch.
- Press and hold the adjusting knob (-arrow-) and turn on the ignition switch.
- Press and rotate the adjusting knob for no more than 2 seconds within 30 seconds after releasing it.
- Release the adjusting knob when the indicator goes out to cancel the service indicator.



5.4 Special tools

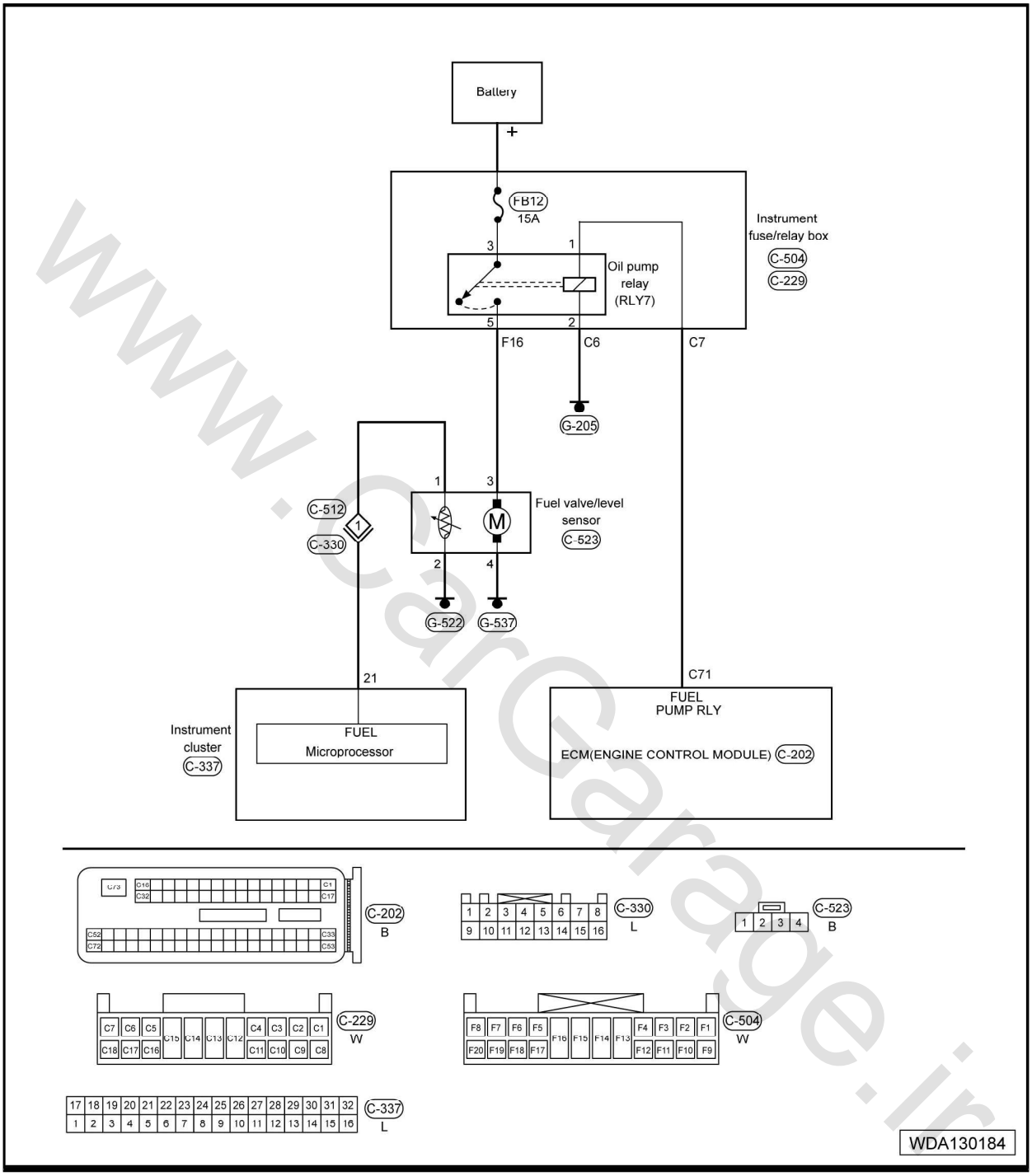
- X-431 diagnostic device
- Digital multimeter
- Adapter cable

5.5 Fault diagnosis (DTC)

5.5.1 Instrument cluster DTC fault list

DTC	Definition
B1701	Fuel sensor open circuit/short to battery
B1702	Fuel sensor short to ground
B1709	Failure of the ABS warning lamp
B1713	Failure of the parking warning lamp
U1701	Failure of the instrument and BCM CAN communication
U1702	Failure of the instrument and the engine CAN communication
U1705	Failure of the instrument and ABS CAN communication
U1710	Failure of the instrument and the airbag module CAN communication

5.5.2 B1701 Fuel sensor open circuit/short to battery
B1702 Fuel sensor short to ground



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1701	Fuel sensor open circuit/short to battery	The ignition switch in the ON/START position	Wiring harness between the instrument cluster and the fuel sensor open/short circuit	• Failure of the wiring harness or the connector • Failure of the fuel sensor

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
				• Failure of the instrument cluster
B1702	Fuel sensor short to ground	The ignition switch in the ON/START position	Wiring harness of the fuel sensor short circuit	• Failure of the wiring harness or the connector • Failure of the fuel sensor • Failure of the instrument cluster

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

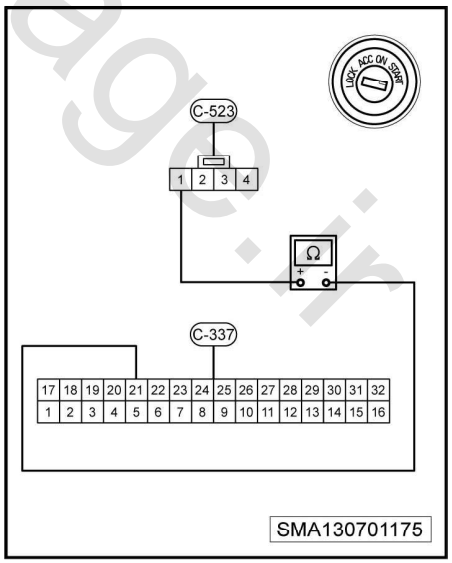
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

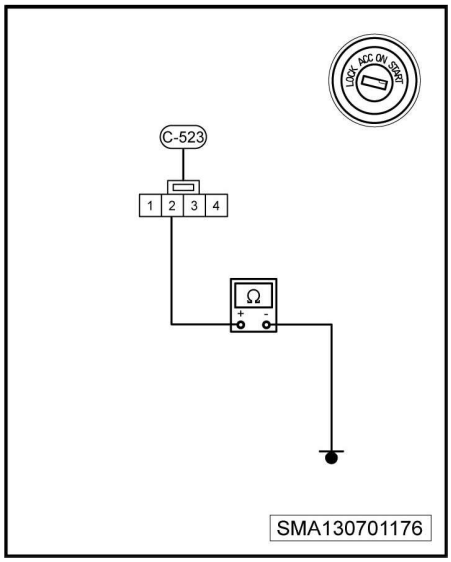
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

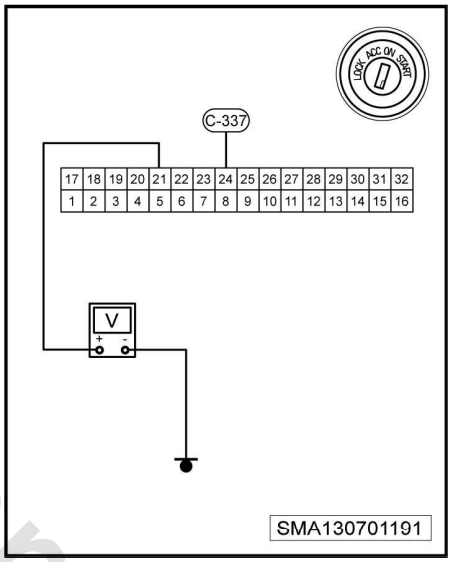
1. Turn the ignition switch to the LOCK position, check if the lead between the pin 1 of the fuel sensor connector C-523 and the pin 21 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin 1 of the fuel sensor connector C-523 and the pin 21 of the instrument cluster connector C-337 is open/short circuit. And repair the lead. ■



2. Turn the ignition switch to the LOCK position and check if the pin 2 of the fuel sensor connector C-523 is grounded properly.
   - If yes, go to step 3.
   - If not, check if the lead between the pin 2 of the fuel sensor connector C-523 and the ground is open circuit. And repair the lead. ■



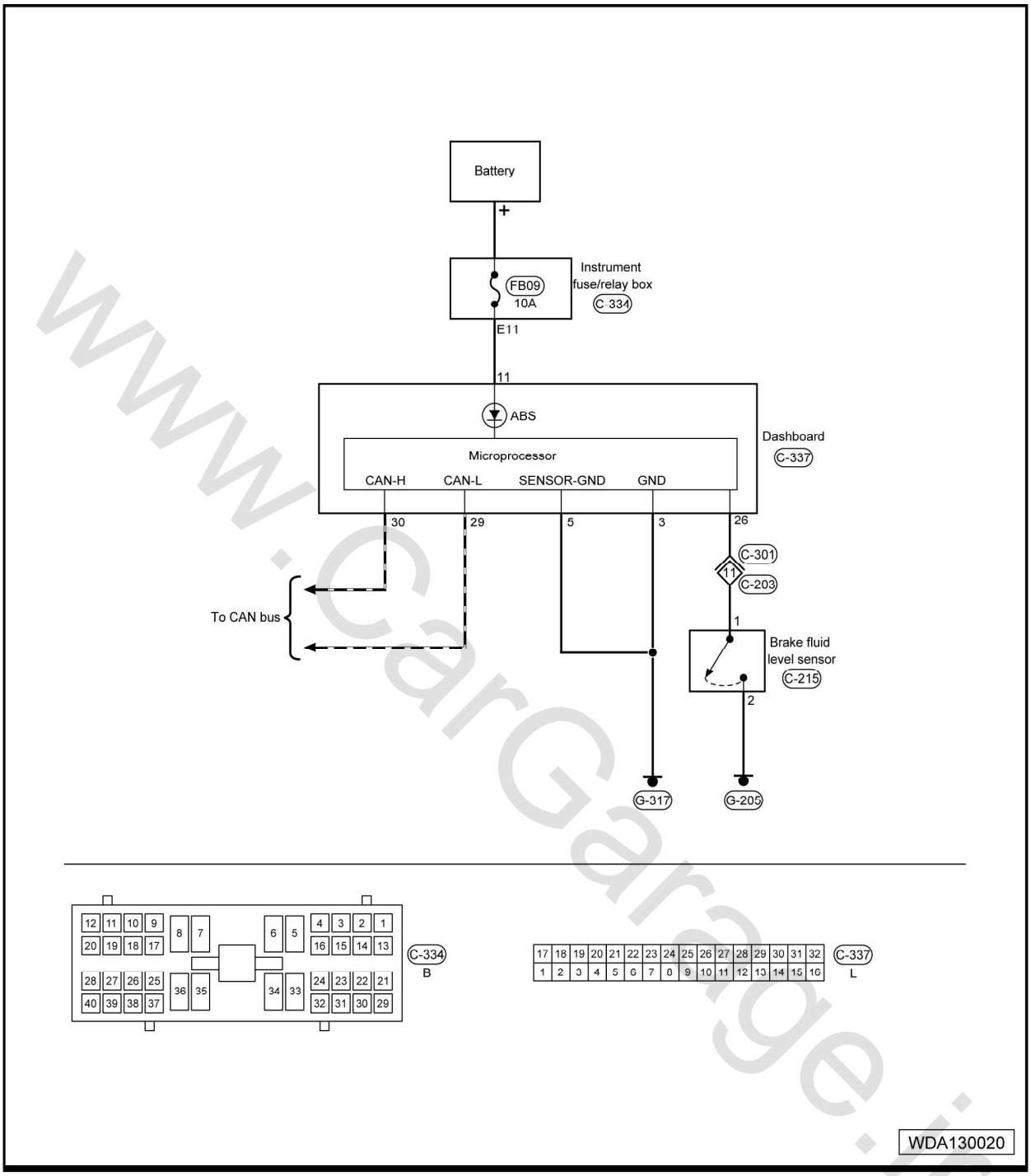
3. Test if the voltage between the pin 21 of the instrument connector C-337 and the ground is 0-5V.
   - If yes, check the fuel sensor for failure. And repair or replace the fuel sensor. ■
   - If not, go to step 4.



4. Check if the power supply line and the ground line of instrument cluster are normal.
   - If yes, go to step 5.
   - If not, repair the faulty line. ■

5. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

5.5.3 B1709 Failure of the ABS warning lamp



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1709	Failure of the ABS warning lamp	The ignition switch in the ON position	Brake fluid level switch open/short circuit detected by the instrument cluster	• Failure of the wiring harness or the connector • Failure of the instrument cluster • Failure of the brake fluid level switch

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

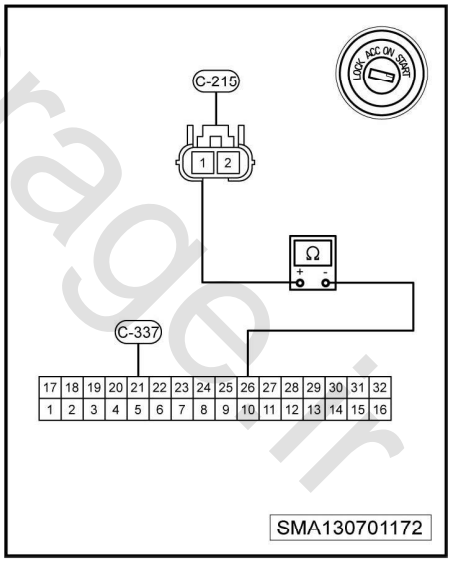
Diagnosis procedures:

Note

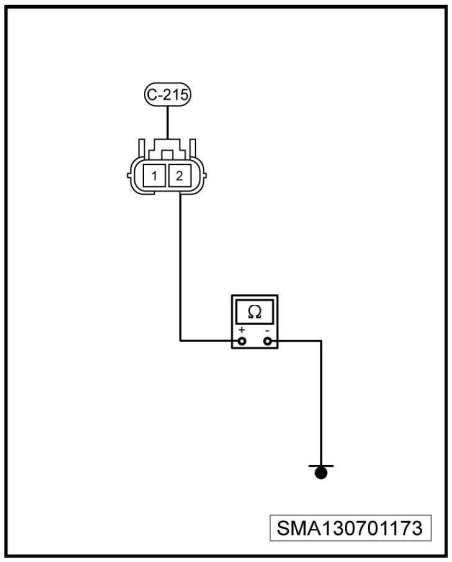
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the fluid level in the brake fluid reservoir is normal.
   - If yes, go to step 2.
   - If not, check if the brake fluid level has dropped to low and add adequate brake fluid until it reaches the proper level if necessary. ■

2. Turn the ignition switch to the LOCK position, check if the lead between the pin 1 of the brake fluid level switch connector C-215 and the pin 26 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 3.
   - If not, check if the lead between the pin 1 of the brake fluid level switch connector C-215 and the pin 26 of the instrument cluster connector C-337 is open/short circuit. And repair the lead. ■



3. Turn the ignition switch to the LOCK position, check if the pin 2 of the brake fluid level switch connector C-215 is grounded properly.
   - If yes, go to step 4.
   - If not, check if the lead between the pin 2 of the brake fluid level switch connector C-215 and the ground is open/short circuit. And repair the lead. ■

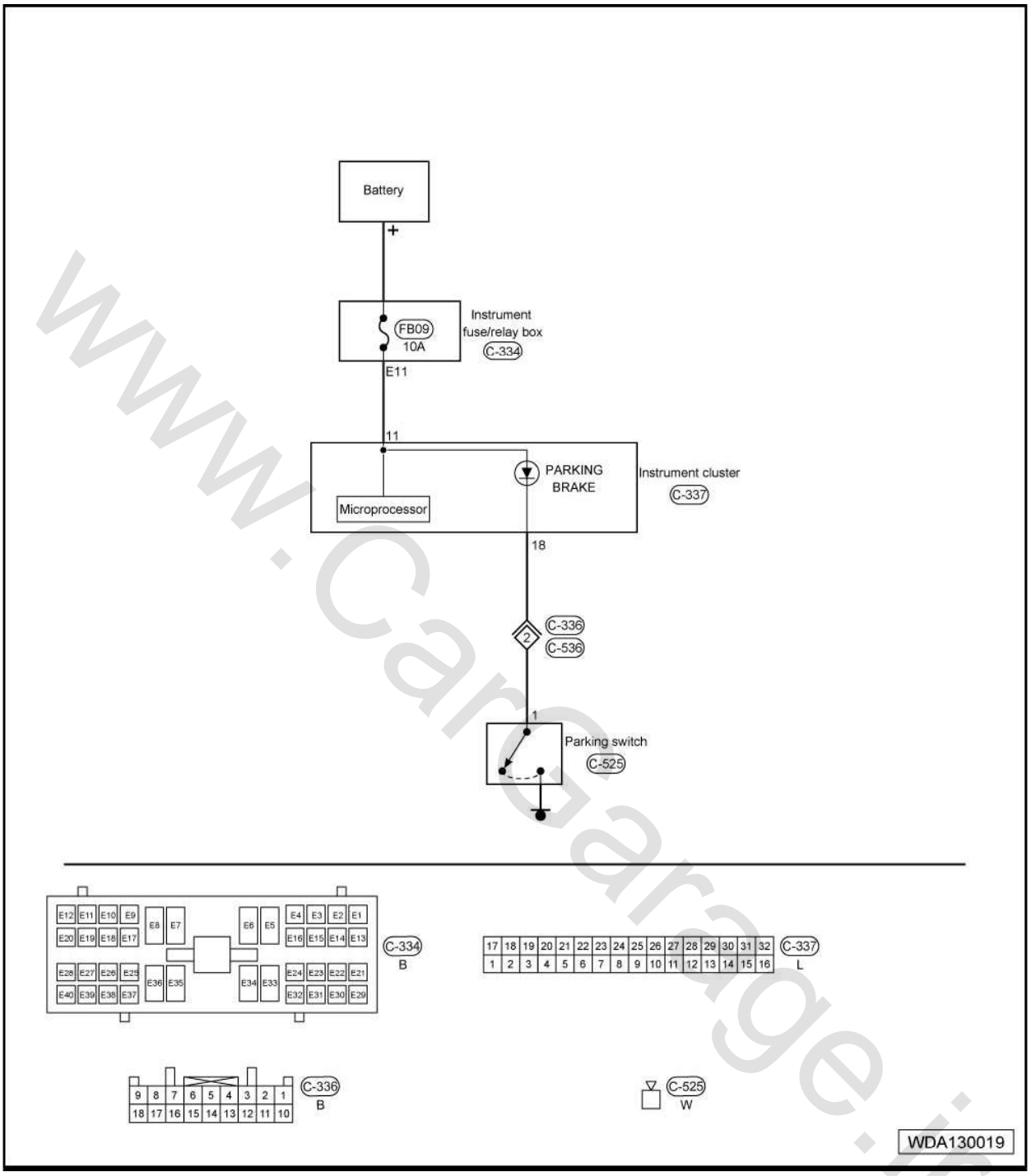


4. Check the fault in the brake fluid level switch and confirm if the brake fluid level switch is normal.
   - If yes, go to step 5.
   - If not, replace the brake fluid level switch. ■

5. Check if the power supply line and ground line of the instrument cluster are normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

5.5.4 B1713 Failure of the parking warning lamp



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1710	Failure of the parking warning lamp	The ignition switch in the ON/START position	Parking switch short/open circuit detected by the instrument cluster	• Failure of the wiring harness or the connector • Failure of the instrument cluster • Failure of the parking switch

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

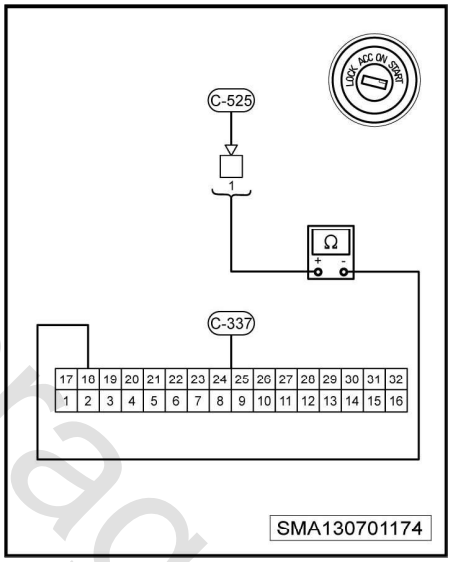
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, check if the lead between the pin 1 of the parking switch connector C-525 and the pin 18 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin 1 of the parking switch connector C-525 and the pin 18 of the instrument cluster connector C-337 is open/short circuit. And repair the defective lead. ■

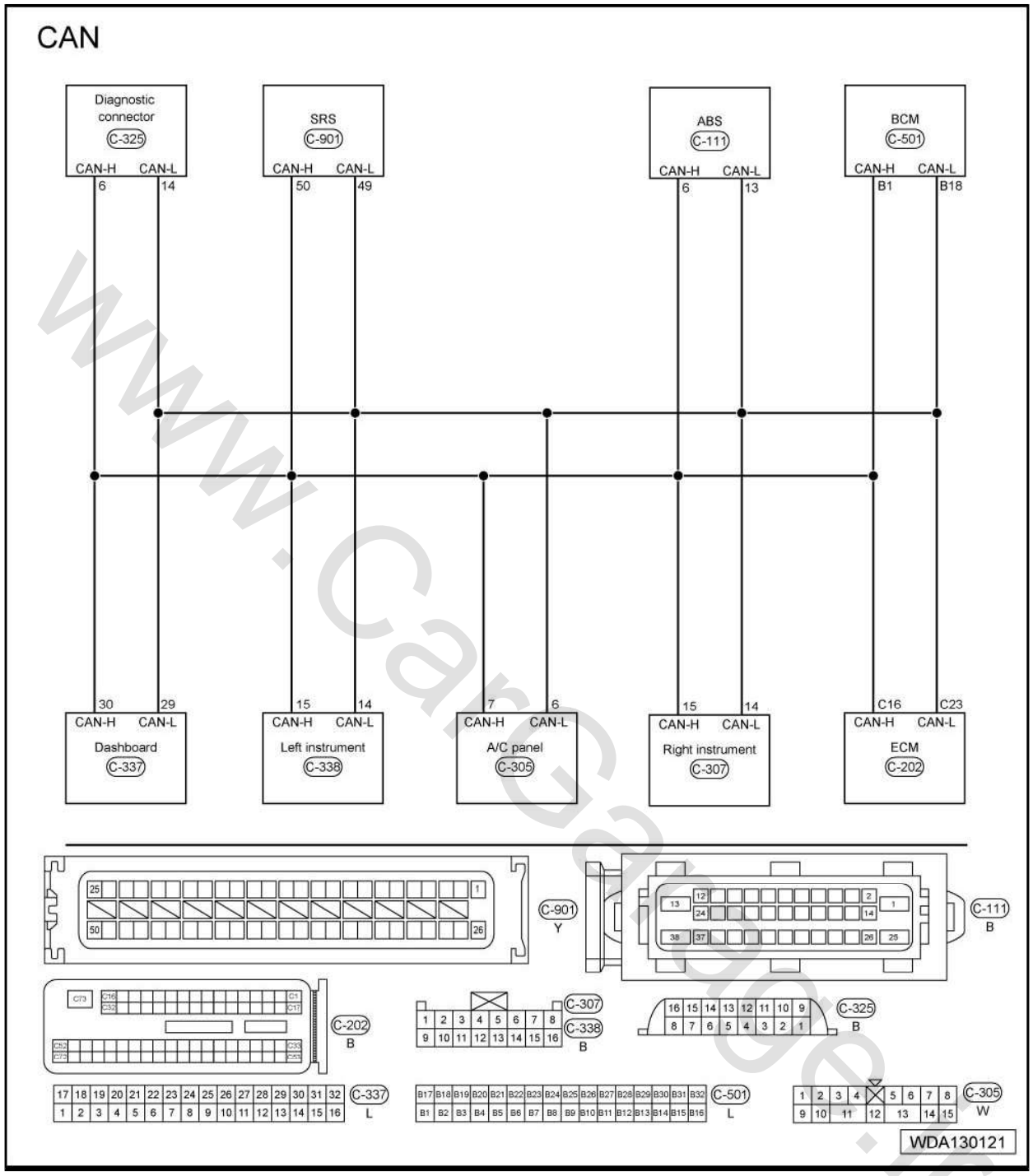


2. Check if the parking switch is normal.。
   - If yes, go to step 3.
   - If not, replace the parking switch. ■

3. Check if the power supply line and ground line of the instrument cluster are normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

4. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

5.5.5 U1701 Failure of the instrument and BCM CAN communication



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
U1701	Failure of the instrument and BCM CAN communication	The ignition switch in the ON/START position	Wires between the instrument and the BCM CAN communication open/short circuit	• Failure of the wiring harness or the connector • Failure of the BCM (Body Control Module) • Failure of the instrument cluster

07

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

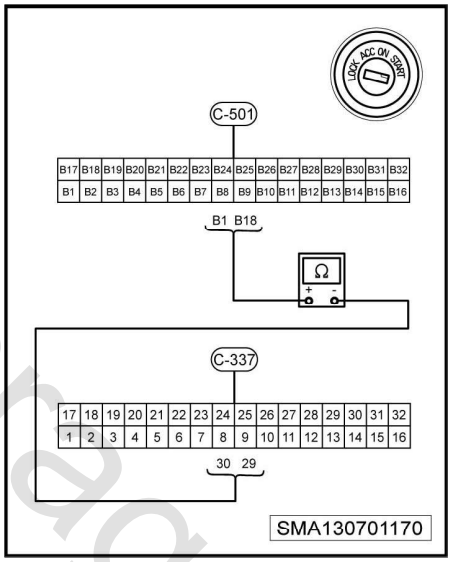
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, check if the lead between the pin B1 of the BCM connector C-501 and the pin 30 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 3.
   - If not, check if the lead between the pin B1 of the BCM connector C-501 and the pin 30 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■



2. Turn the ignition switch to the LOCK position, check if the lead between the pin B18 of the BCM connector C-501 and the pin 29 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 4.
   - If not, check if the lead between the pin B18 of the BCM connector C-501 and the pin 29 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■

3. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 4.
   - If not, repair the faulty line. ■

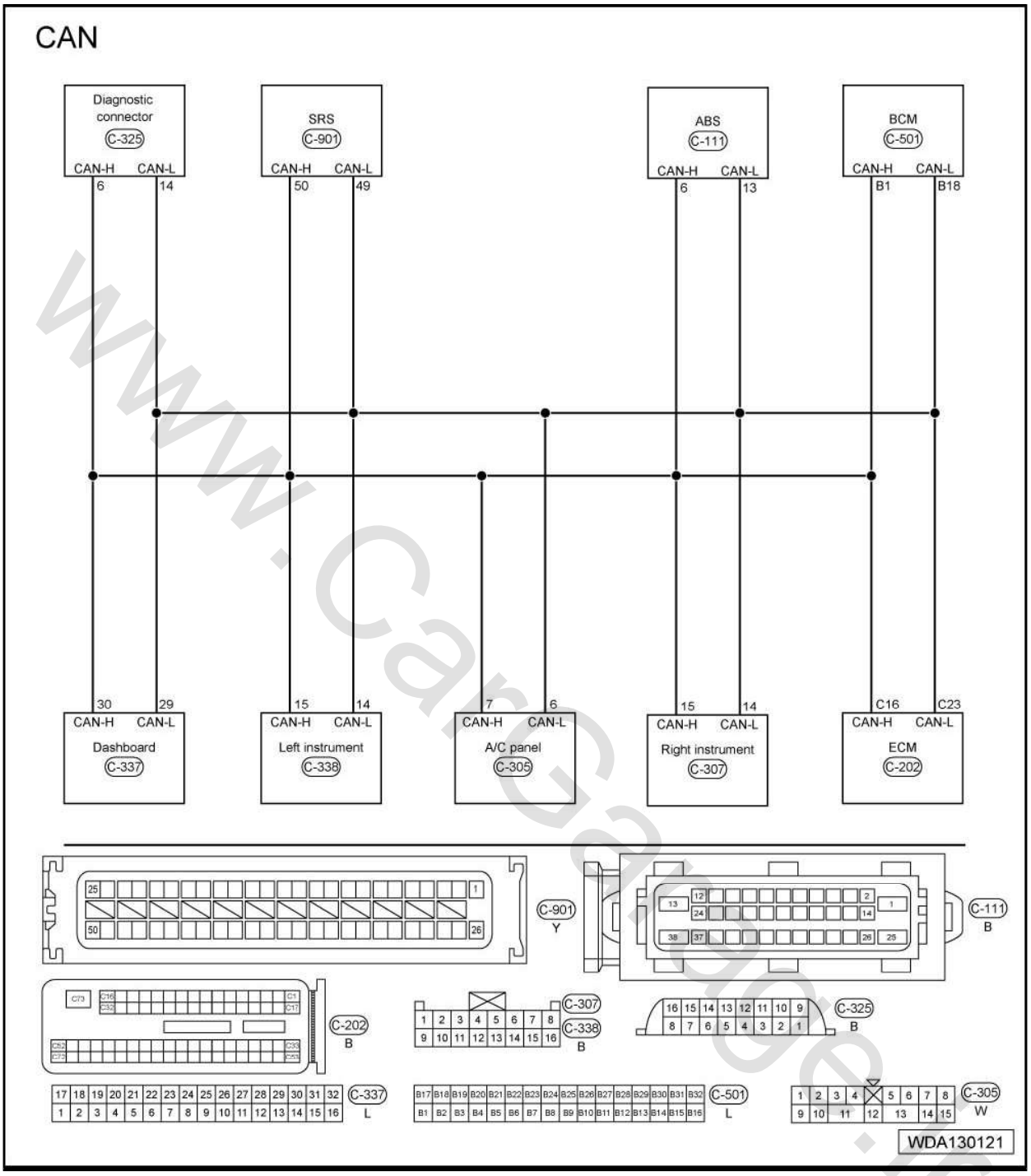
4. Check if the power supply line and ground line of the instrument cluster are normal.
   - If yes, go to step 5.

- If not, repair the faulty line. ■

5. Access other control modules via the diagnostic device to check if it can read the fault in the system module normally.
   - If yes, go to step 6.
   - If not, the body control module fails and please replace it. ■

5. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

5.5.6 U1702 Failure of the instrument and the engine CAN communication



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
U1702	Failure of the instrument and the engine CAN communication	The ignition switch in the ON/START position	Wires between the instrument and the engine CAN communication short/open circuit	• Failure of the wiring harness or the connector • Failure of the BCM (Body Control Module)

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
				• Failure of the engine control module

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

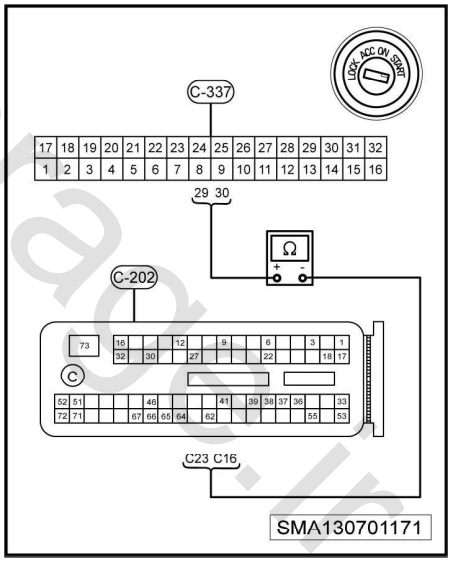
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, check if the lead between the pin C16 of the ECM connector C-202 and the pin 30 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin C16 of the ECM connector C-202 and the pin 30 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■



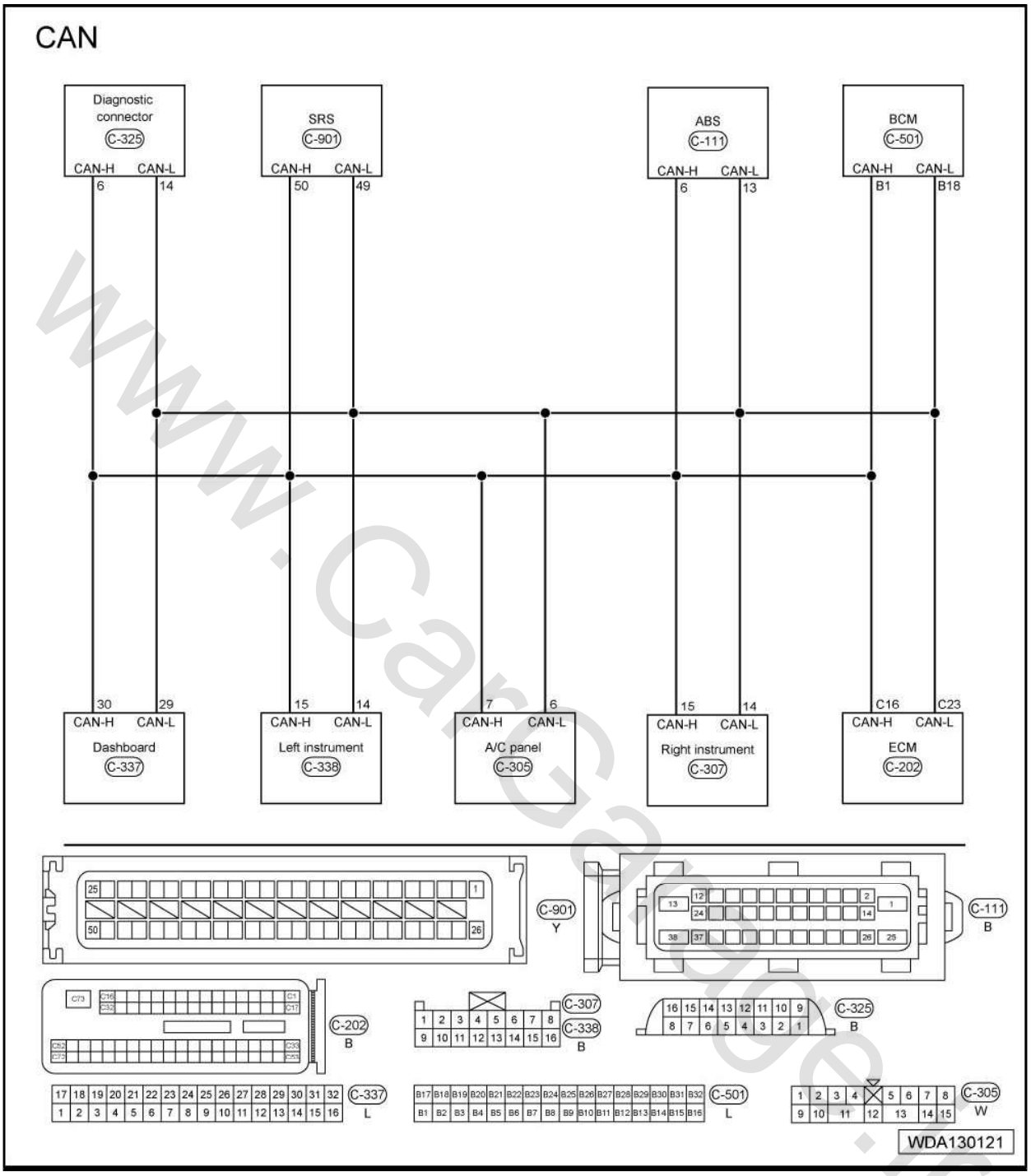
2. Turn the ignition switch to the LOCK position, check if the lead between the pin C23 of the ECM connector C-202 and the pin 29 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 3.
   - If not, check if the lead between the pin C23 of the ECM connector C-202 and the pin 29 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■

3. Check if the power supply line and ground line of the instrument cluster are normal.
   - If yes, go to step 4.

- If not, repair the faulty line. ■

4. Check if the power supply line and the ground line of ECM control module are normal.
   - If yes, go to step 5.
   - If not, repair the faulty line. ■
5. Access other control modules via the diagnostic device to check if it can read the fault in the system module normally.
   - If yes, go to step 6.
   - If not, the engine control module fails and please replace it. ■
6. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

5.5.7 U1705 Failure of the instrument and the ABS CAN communication



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1705	Failure of the instrument and ABS CAN communication	The ignition switch in the ON/START position	Wires between the instrument and the ABS CAN communication short/open circuit	• Failure of the wiring harness or the connector • Failure of the ABS control unit • Failure of the instrument cluster

07

DTC test procedures:

Please confirm that the battery voltage is normal prior to performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

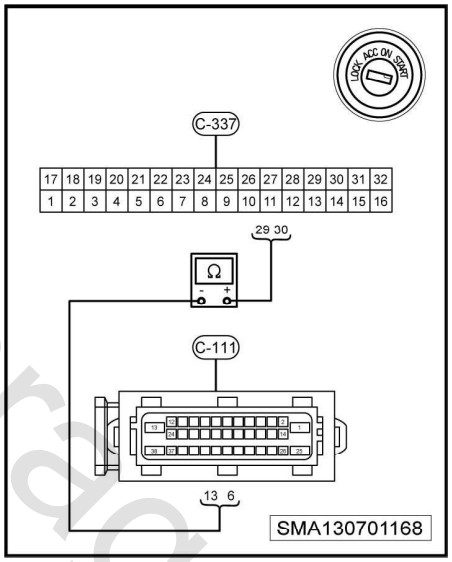
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, check if the lead between the pin 6 of the ABS control module connector C-111 and the pin 30 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin 6 of the ABS control module connector C-111 and the pin 30 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■



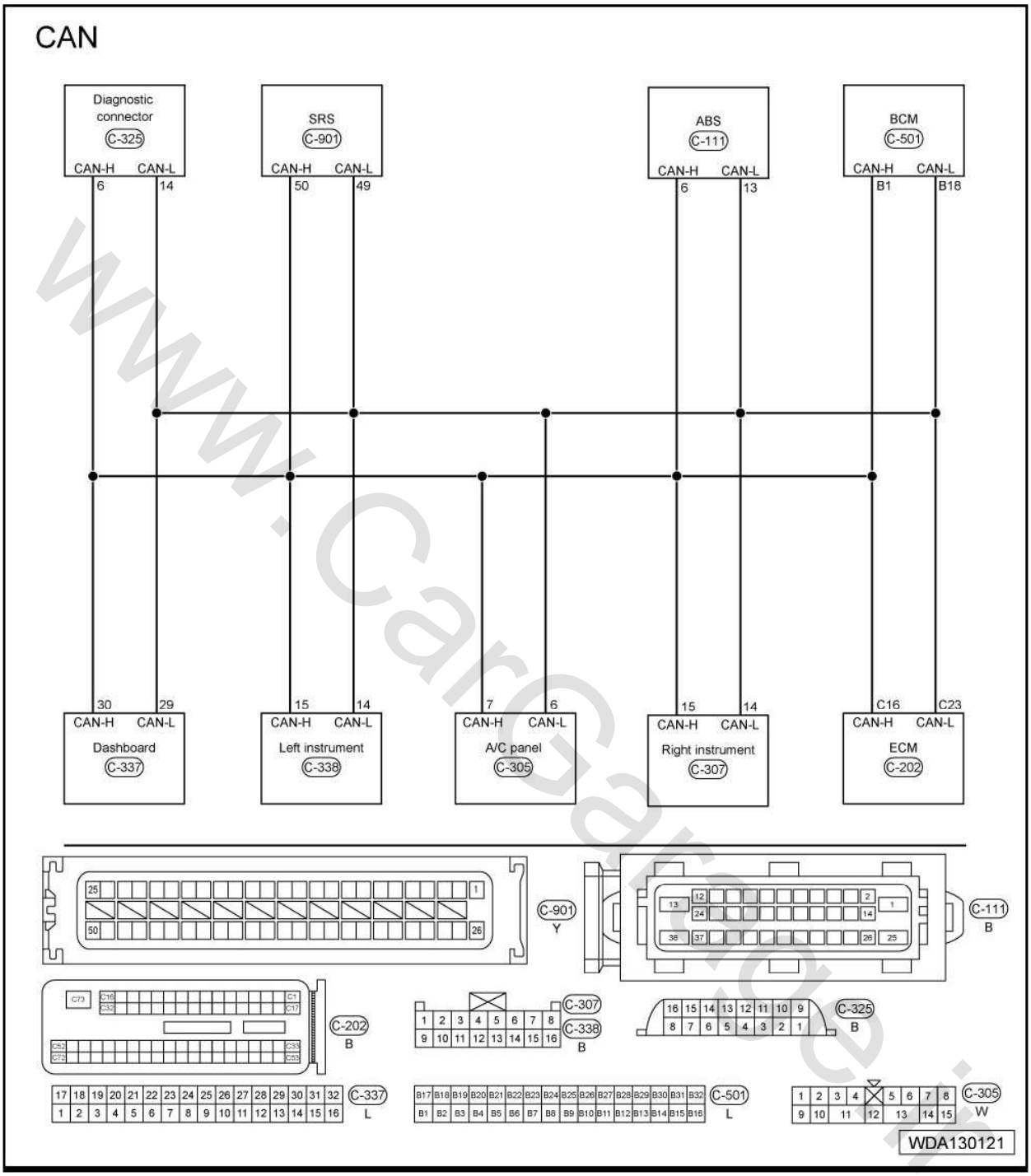
2. Turn the ignition switch to the LOCK position, check if the lead between the pin 13 of the ABS control module connector C-111 and the pin 29 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 3.
   - If not, check if the lead between the pin 13 of the ABS control module connector C-111 and the pin 29 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■

3. Check if the power supply line and ground line of the instrument cluster are normal.
   - If yes, go to step 4.
   - If not, repair the faulty line. ■

4. Check if the power supply line and the ground line of ABS control module are normal.
   - If yes, go to step 5.
   - If not, repair the faulty line. ■

5. Access other control modules via the diagnostic device to check if it can read the fault in the system module normally.
   - If yes, go to step 6.
   - If not, the ABS control module fails and please replace it. ■
6. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

5.5.8 U1710 Failure of the instrument and the airbag module CAN communication



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
U1710	Failure of the instrument and the airbag module CAN communication	The ignition switch in the ON/START position	Wires between the instrument and the airbag module CAN communication open/short circuit	• Failure of the wiring harness or the connector • Failure of the airbag control module

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
				• Failure of the instrument cluster

DTC test procedures:

Please confirm that the battery voltage is normal prior to performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

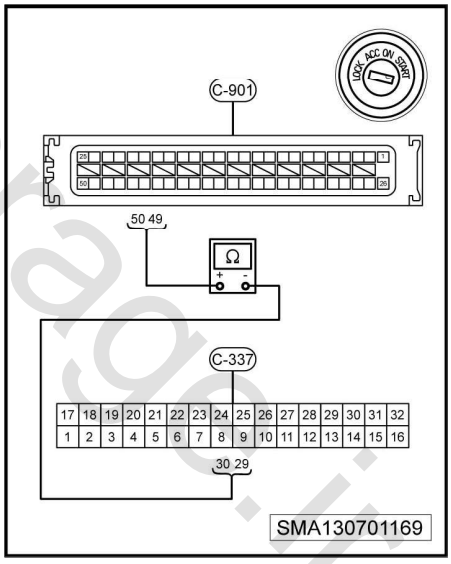
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, check if the lead between the pin 50 of the ABS control module connector C-901 and the pin 30 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin 50 of the airbag control module connector C-901 and the pin 30 of the instrument cluster connector C-337 is open/short circuit. ■



2. Turn the ignition switch to the LOCK position, check if the lead between the pin 49 of the airbag control module connector C-901 and the pin 29 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 3.
   - If not, check if the lead between the pin 49 of the airbag control module connector C-901 and the pin 29 of the instrument cluster connector C-337 is open/short circuit. And repair or replace the defective lead. ■

3. Check if the power supply line and ground line of the instrument cluster are normal.
   - If yes, go to step 4.
   - If not, repair the faulty line. ■

4. Check if the power supply line and the ground line of airbag control module are normal.
   - If yes, go to step 5.
   - If not, repair the faulty line. ■
5. Access other control modules via the diagnostic device to check if it can read the fault in the system module normally.
   - If yes, go to step 6.
   - If not, the airbag control module fails and please replace it. ■
6. Replace the instrument cluster, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

6 Body Control Module (BCM)

6.1 General information

6.1.1 Description

The body control module (BCM) is installed under the left side of the dashboard. It controls many electrical elements and control systems in the vehicle and serves as the the main control module and information processing centre of the vehicle. It has the following functions:

- Power windows and door lock system control
- Exterior mirror and rear window heating
- Wiper and washer control
- Vehicle lighting
- Light off delay
- Backlight adjustment
- Body theft protection
- Horn
- Warning of not removing the key or switching off the parking light/position lamp
- Alarm and radio receiver system
- Battery saving protection
- Intelligent overload protection
- Failure logging and diagnosis
- BCM wake up signal
- Automatic door unlocking after a crash
- Gateway

The body control module (BCM) receives the input signals from all sensors and switches of the vehicle, and also outputs signals to relevant components. The BCM receives input signals from the following components:

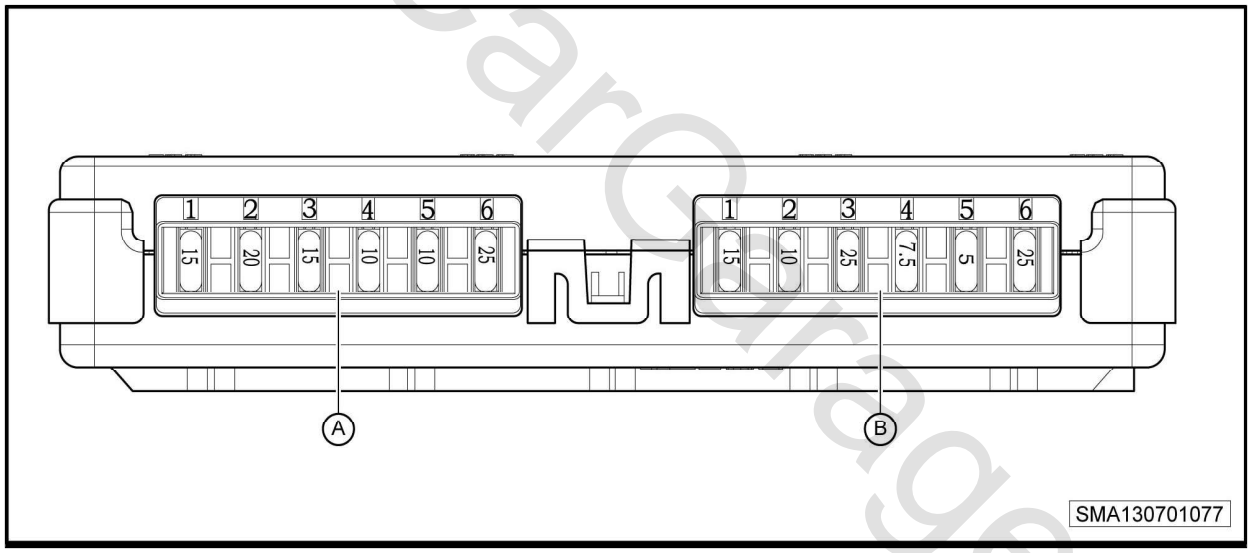
- Key switch
- Rear window defroster switch
- Hazard warning lamp switch
- Power window switch
- Door lock control switch
- Door ajar switch
- Front fog lamp switch
- Trunk lamp switch
- Horn switch
- Lighting and turn signal switch

- Exterior mirror switch
- Wiper and washer switch

The BCM outputs signals to the following components:

- High/low beam relays
- Exterior mirror/rear window defroster heater
- Front combination light
- Tail light
- Backlight adjusting switch output
- Turn signals
- Anti-theft horn/compound horn
- Parking light/position lamp/turn signal
- Front/rear power window motors
- Door lock motor
- Washer motor
- Wiper motor

6.1.2 Functions of the body control module (BCM) fuses

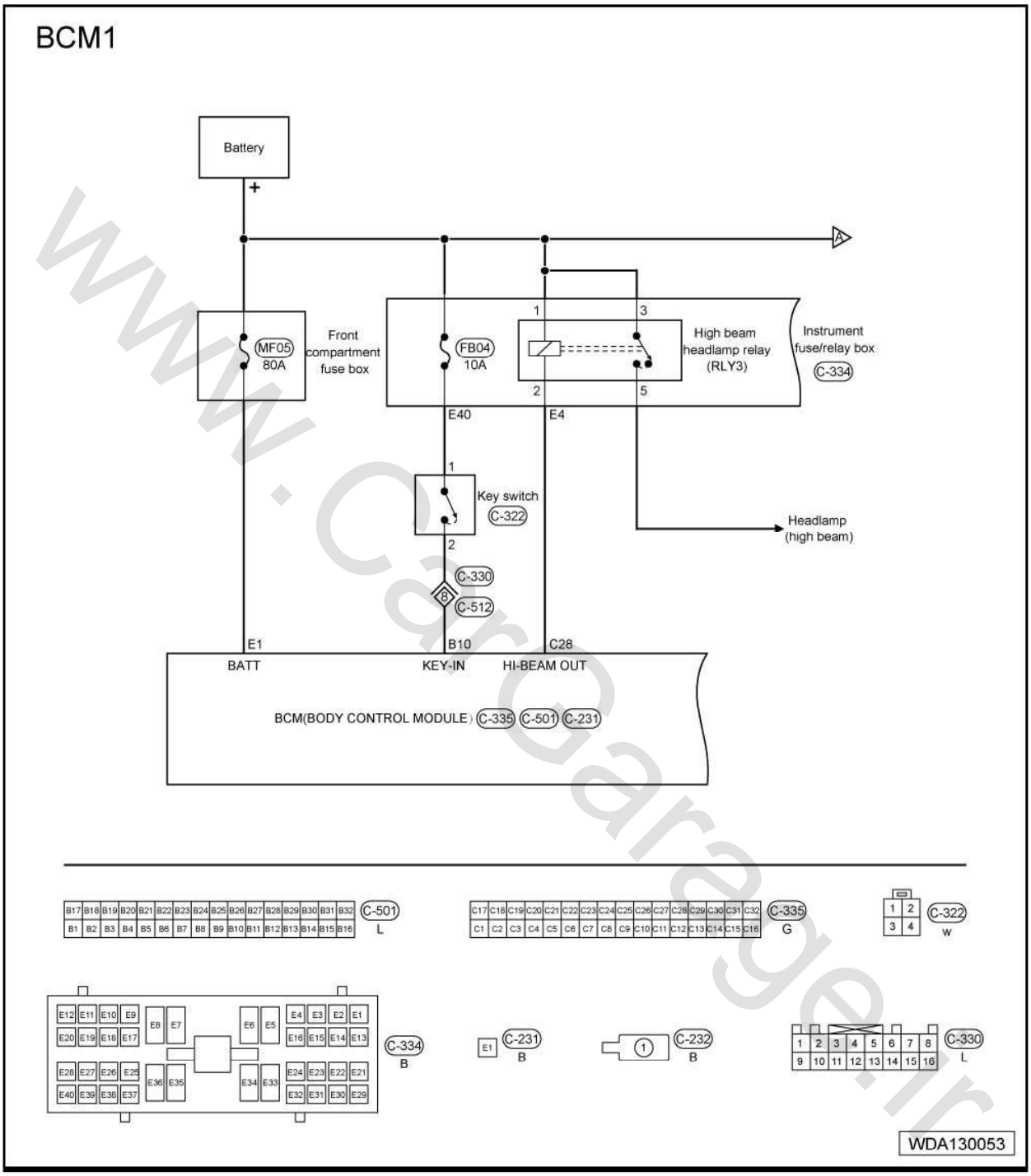


Position code	No.	Ampere (A)	Function
A	1	15A	Central door lock
	2	10A	Rear fog lamp
	3	25A	Rear window lifter
	4	7.5A	Backlight and right position lamp
	5	5A	Left position lamp
	6	25A	Front window lifter
B	1	15A	Warning lamp
	2	20A	Rear window defroster
	3	15A	Fog lamp

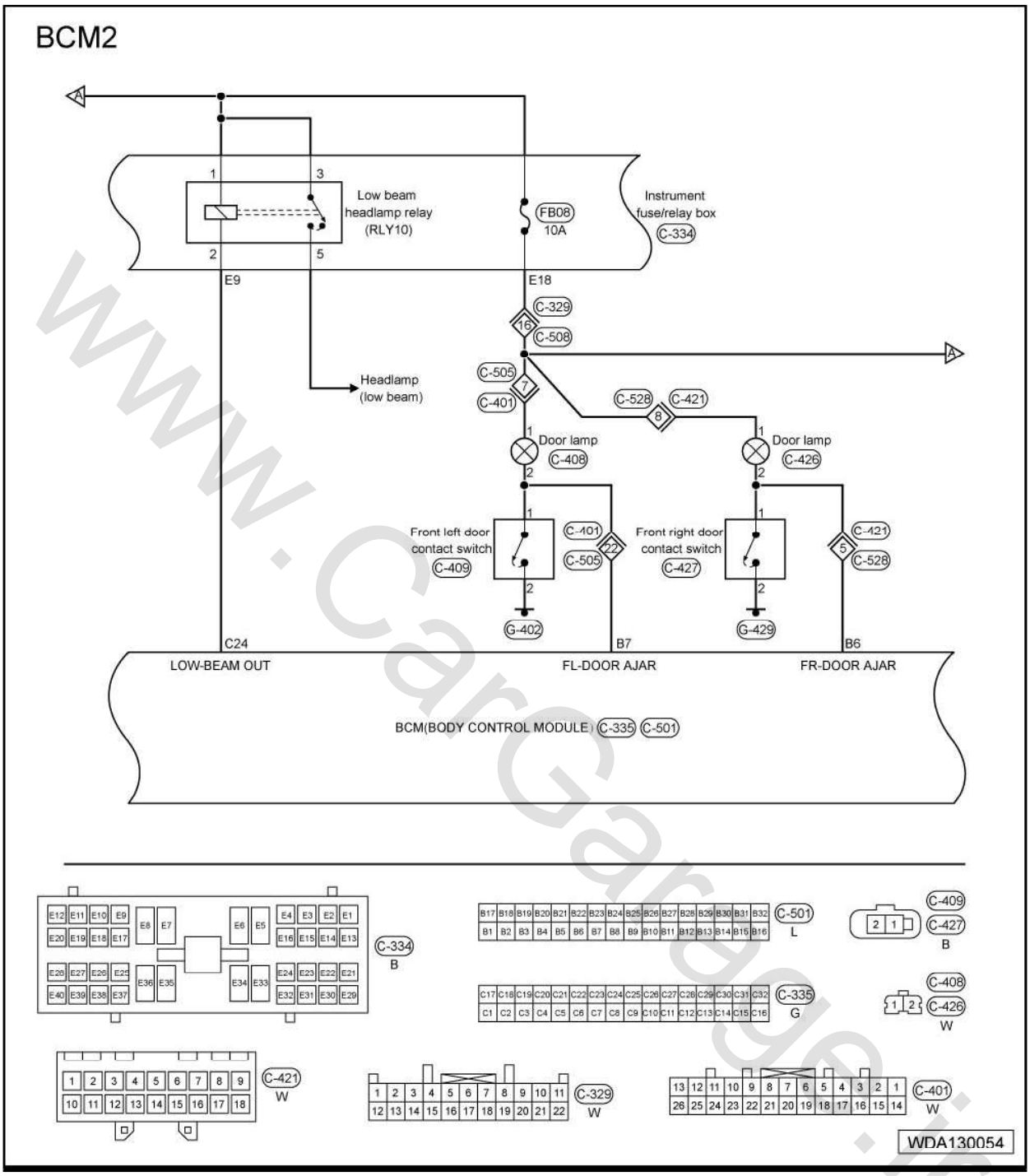
Position code	No.	Ampere (A)	Function
	4	10A	Horn
	5	10A	Battery saving protection
	6	25A	Wiper

6.2 Circuit diagrams

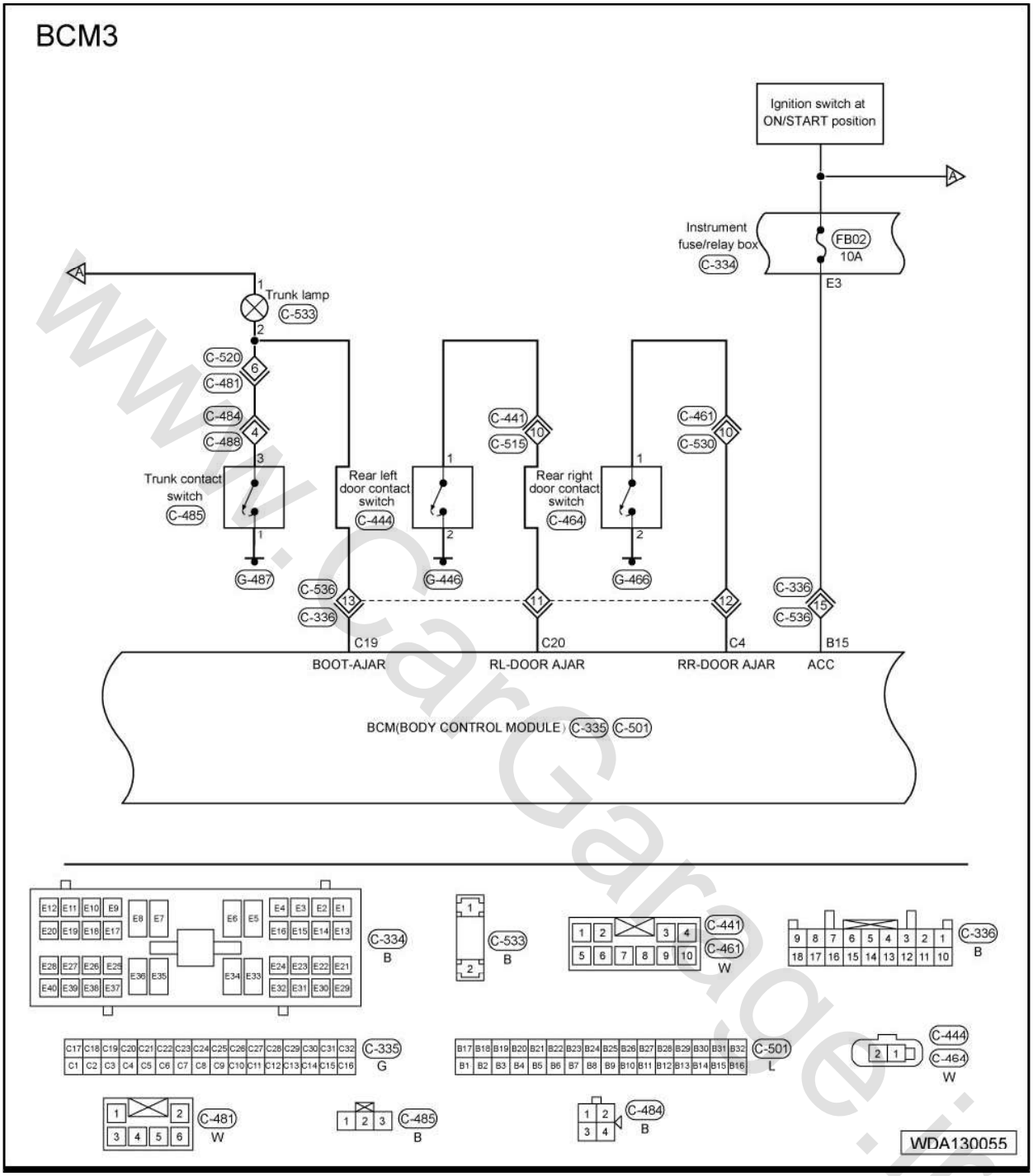
Body control module (BCM) circuit diagrams (page 1)



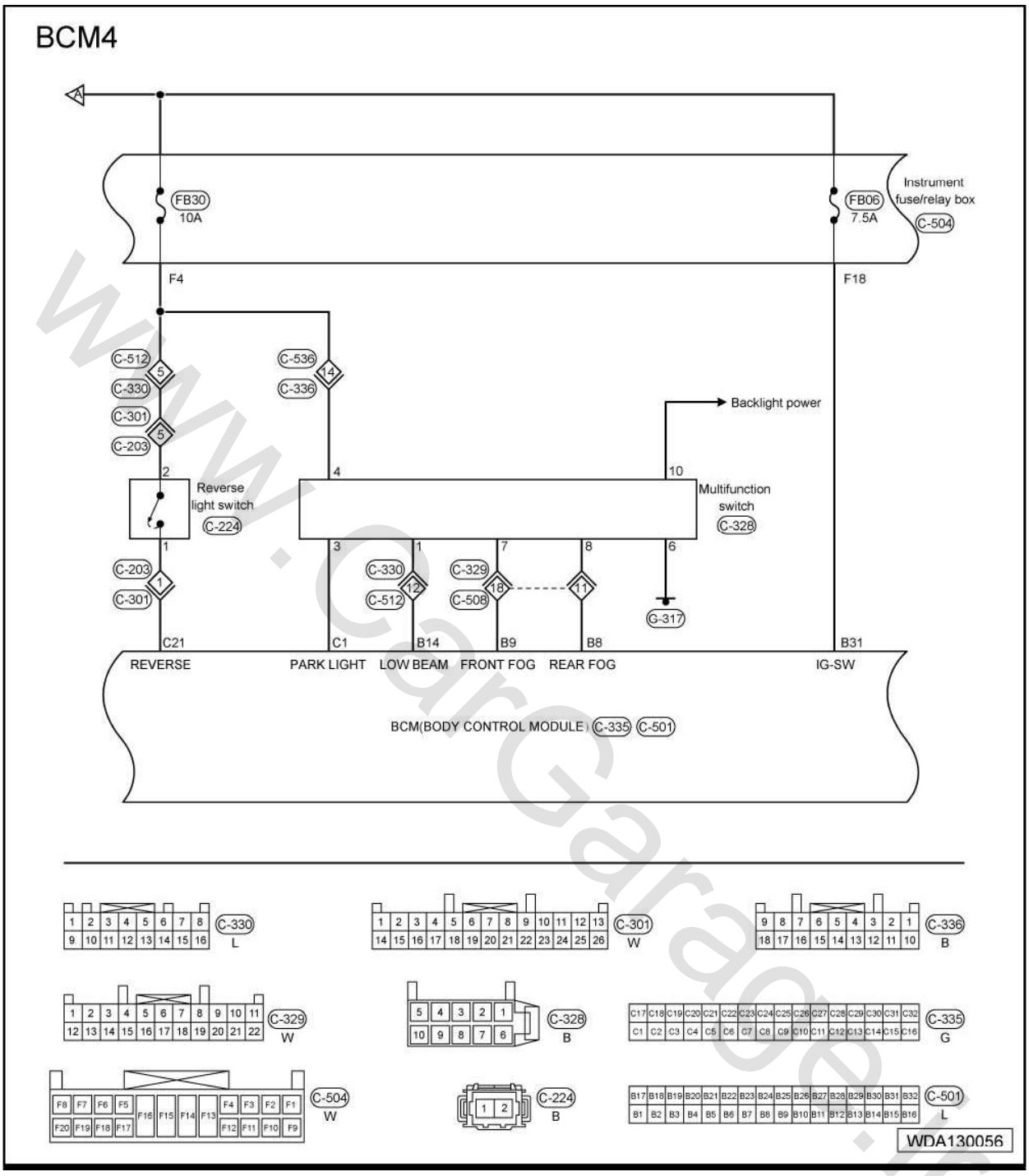
Body control module (BCM) circuit diagrams (page 2)



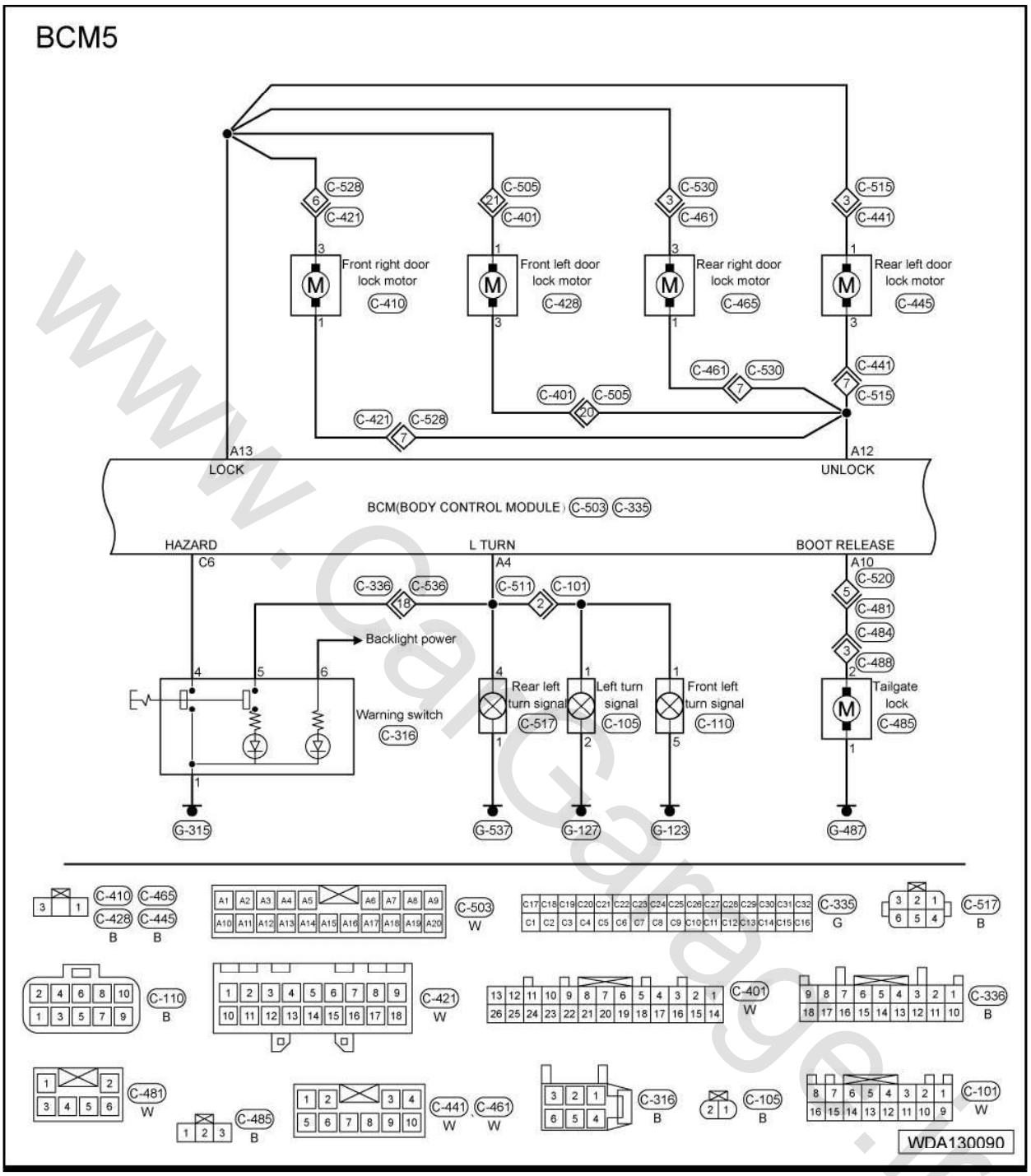
Body control module (BCM) circuit diagrams (page 3)



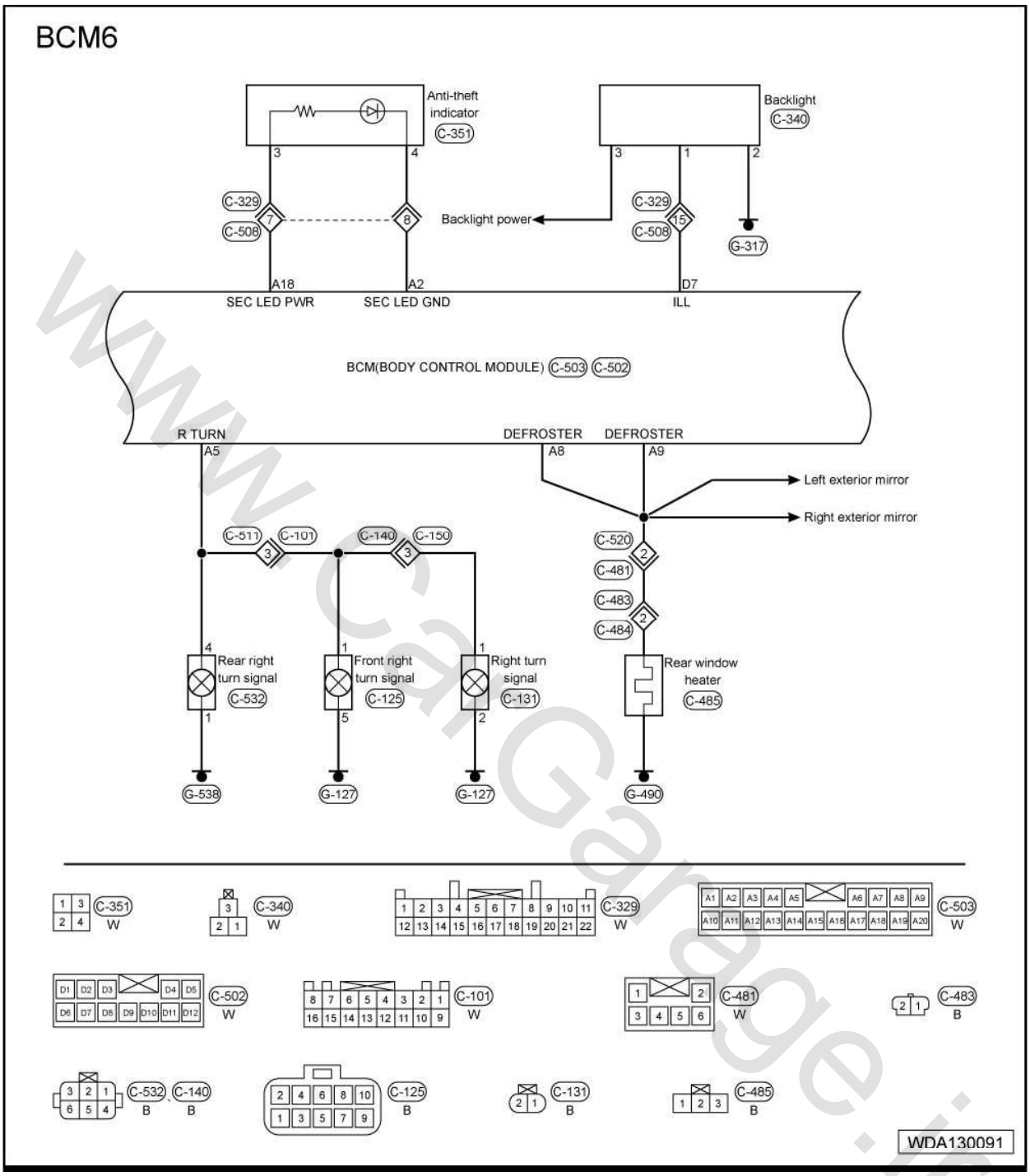
Body control module (BCM) circuit diagrams (page 4)



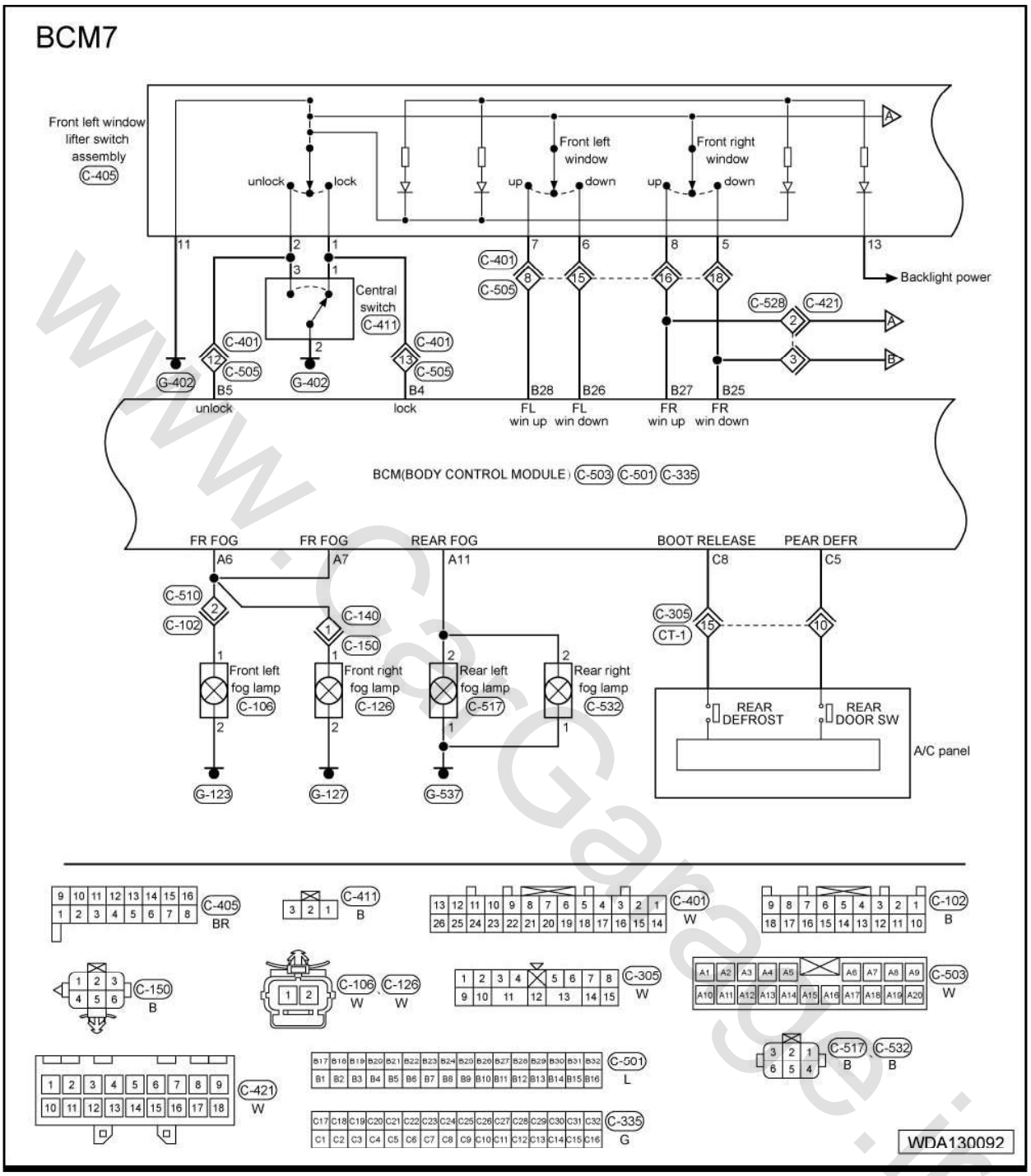
Body control module (BCM) circuit diagrams (page 5)



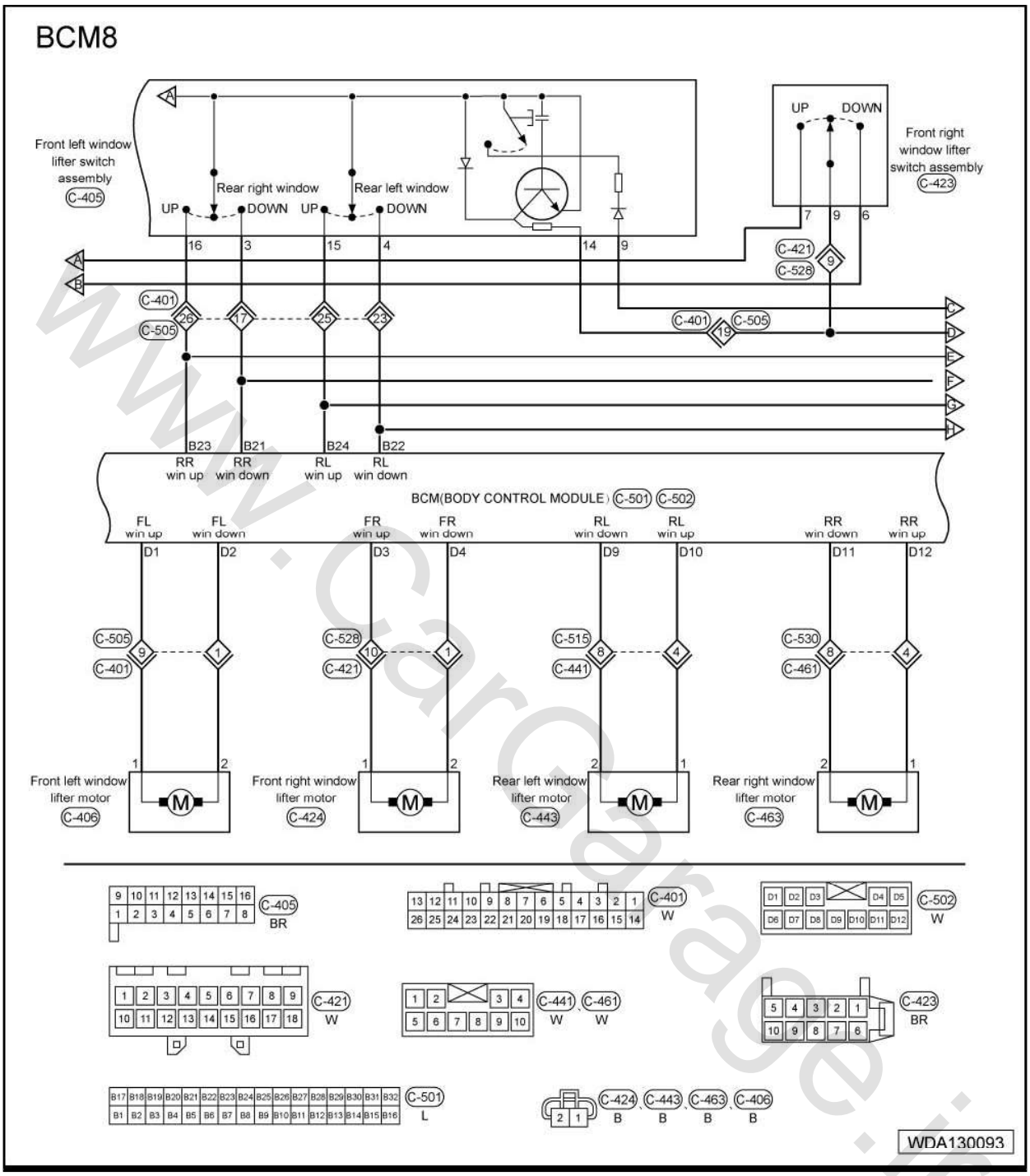
Body control module (BCM) circuit diagrams (page 6)



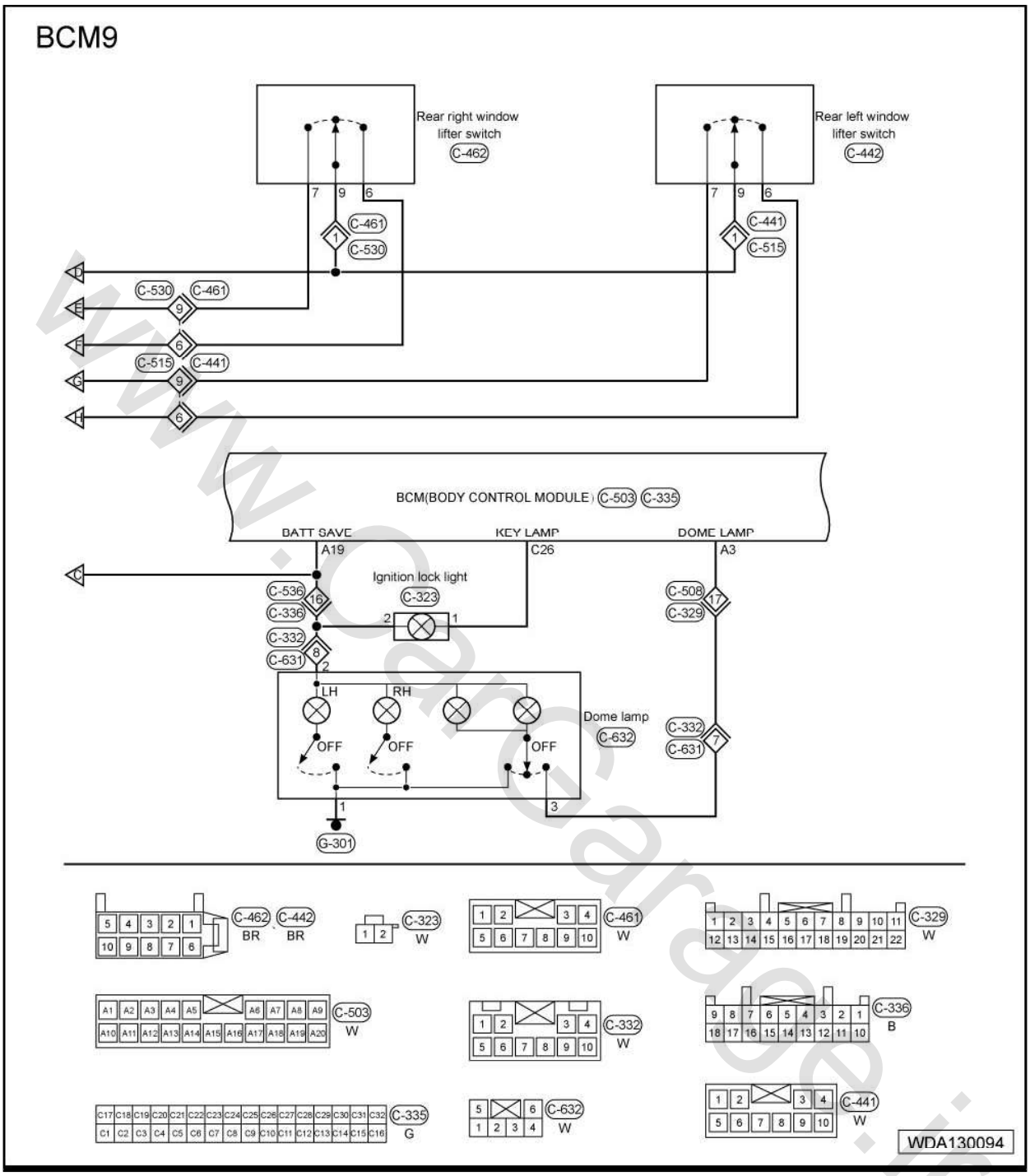
Body control module (BCM) circuit diagrams (page 7)



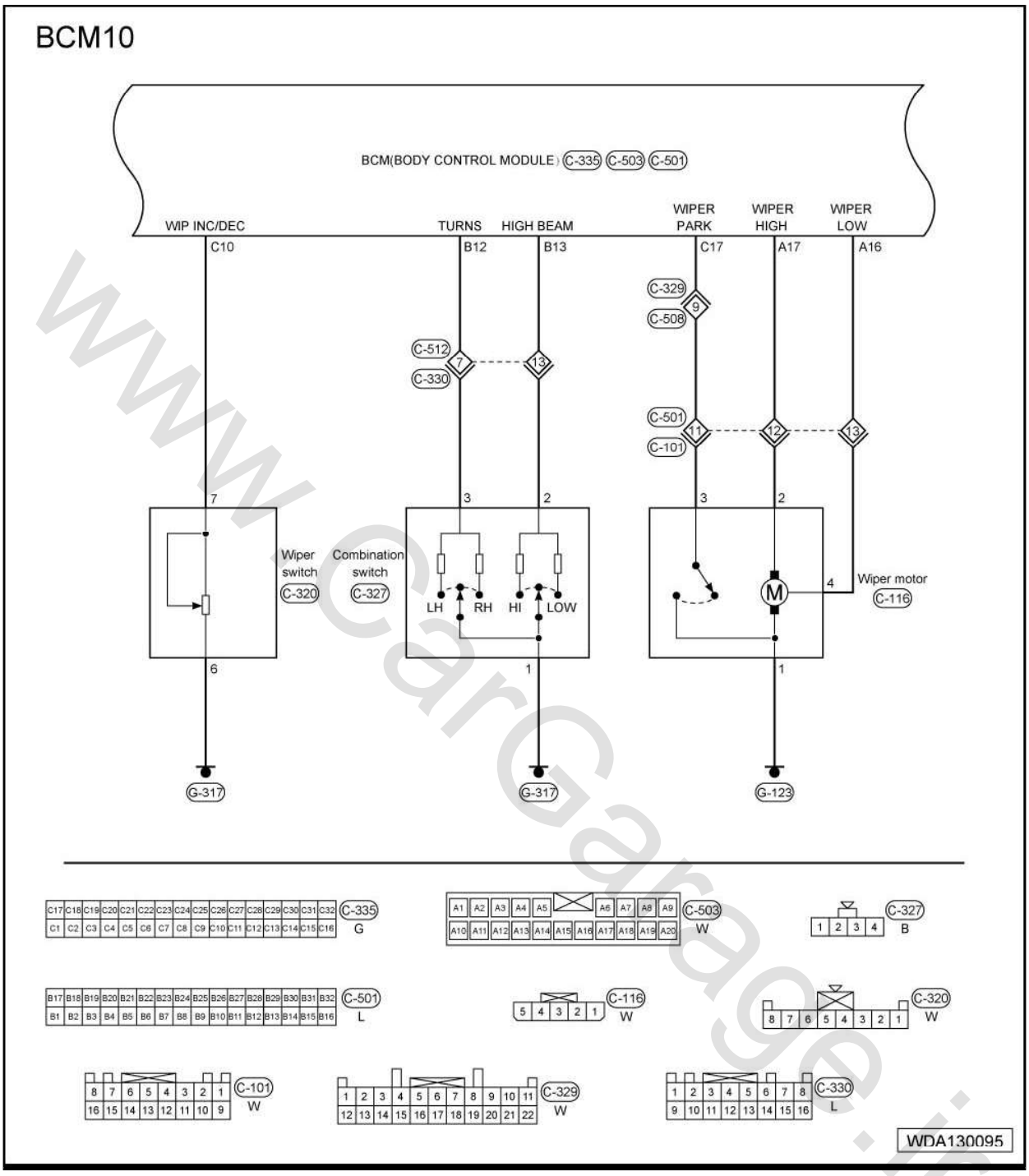
Body control module (BCM) circuit diagrams (page 8)



Body control module (BCM) circuit diagrams (page 9)

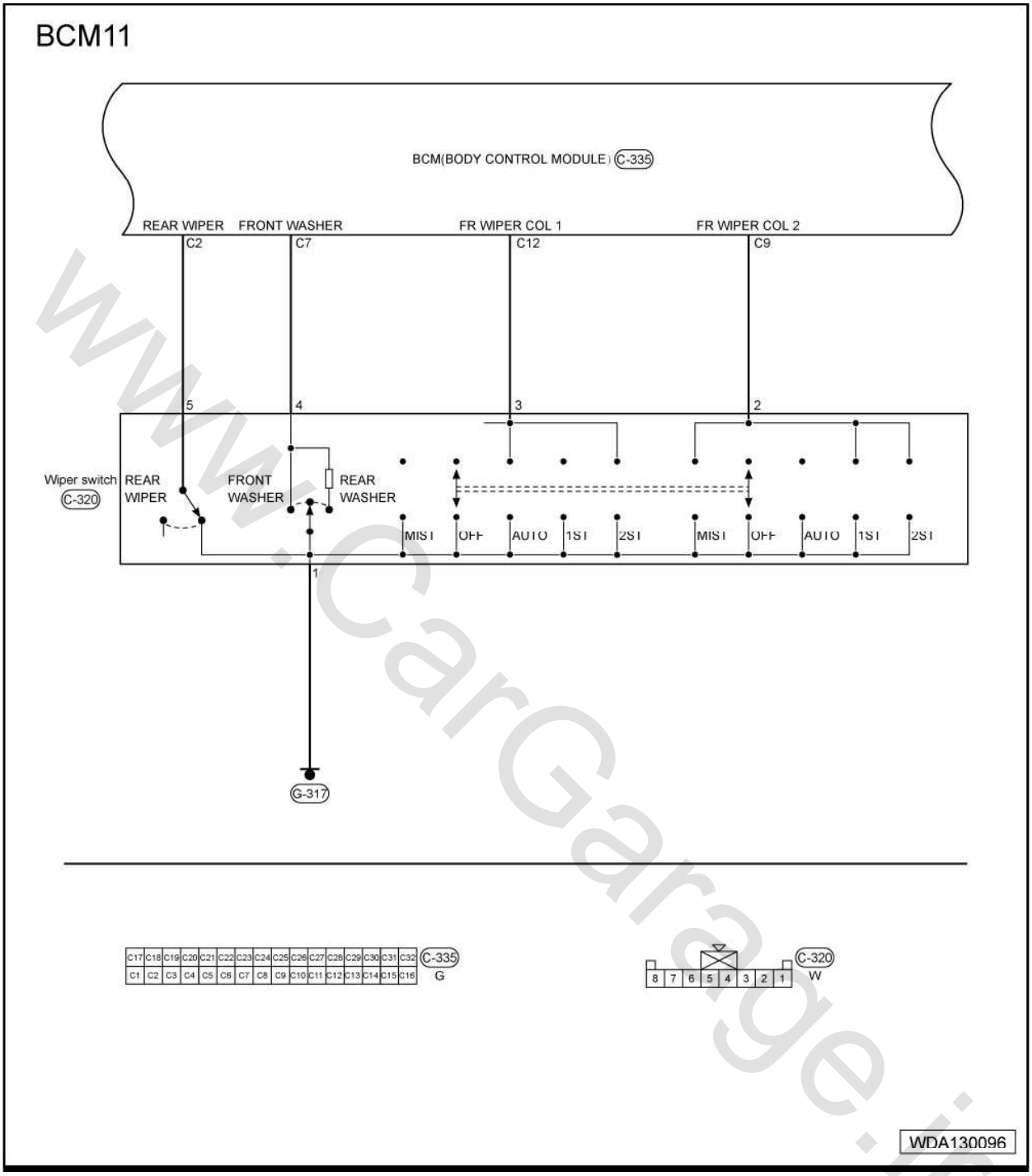


Body control module (BCM) circuit diagrams (page 10)

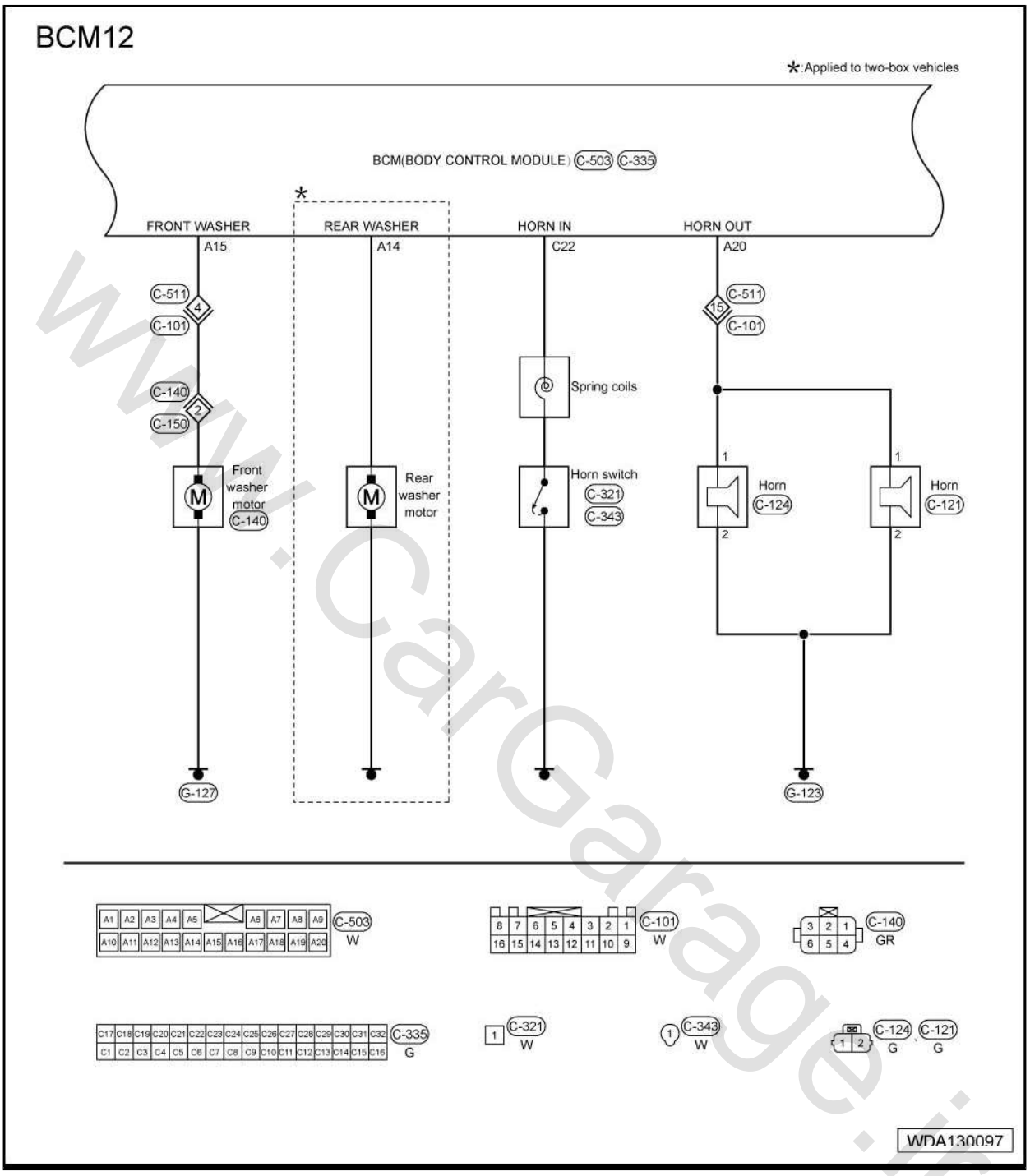


Body control module (BCM) circuit diagrams (page 11)

07



Body control module (BCM) circuit diagrams (page 12)



Body control module (BCM) circuit diagrams (page 13)

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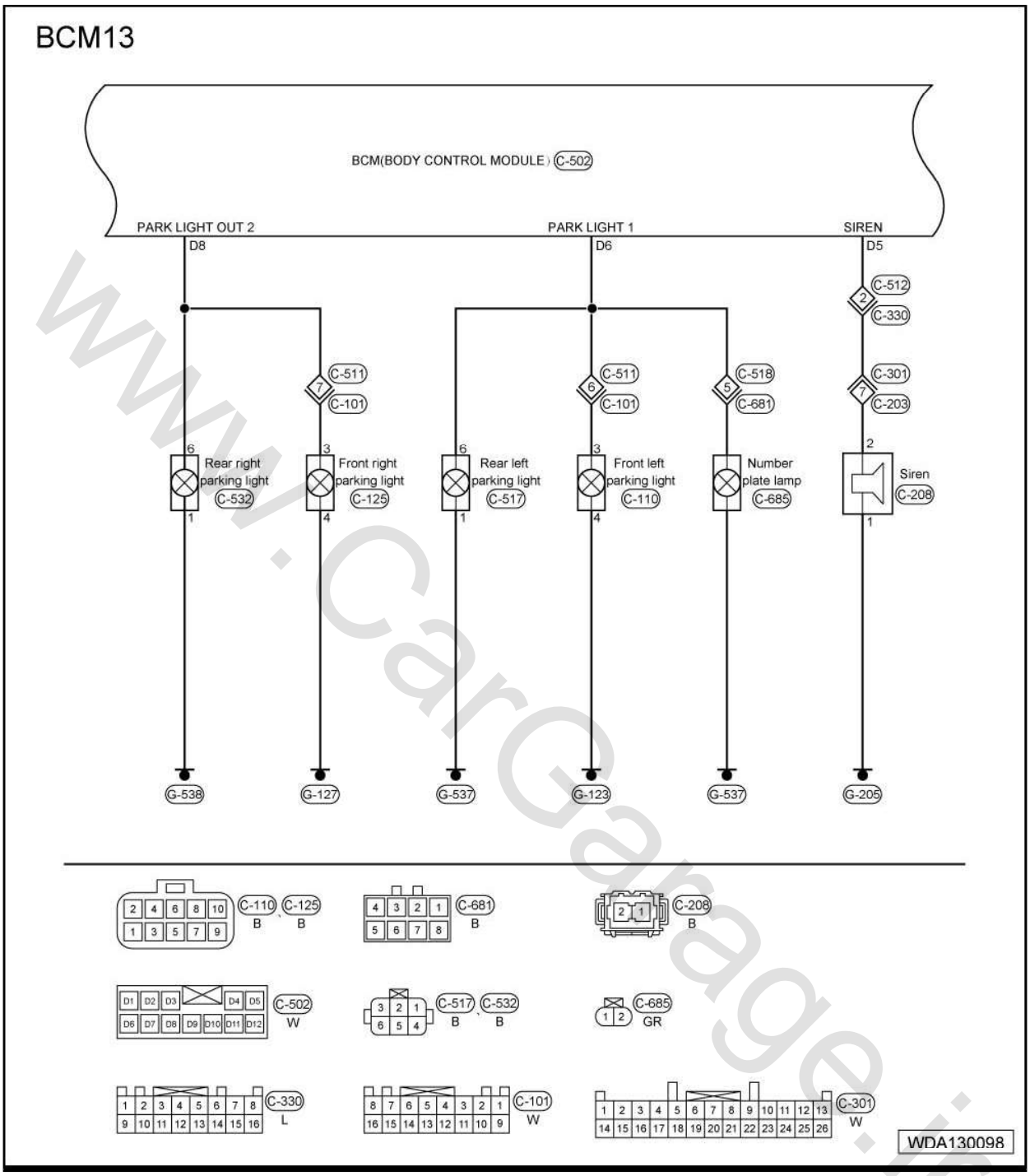
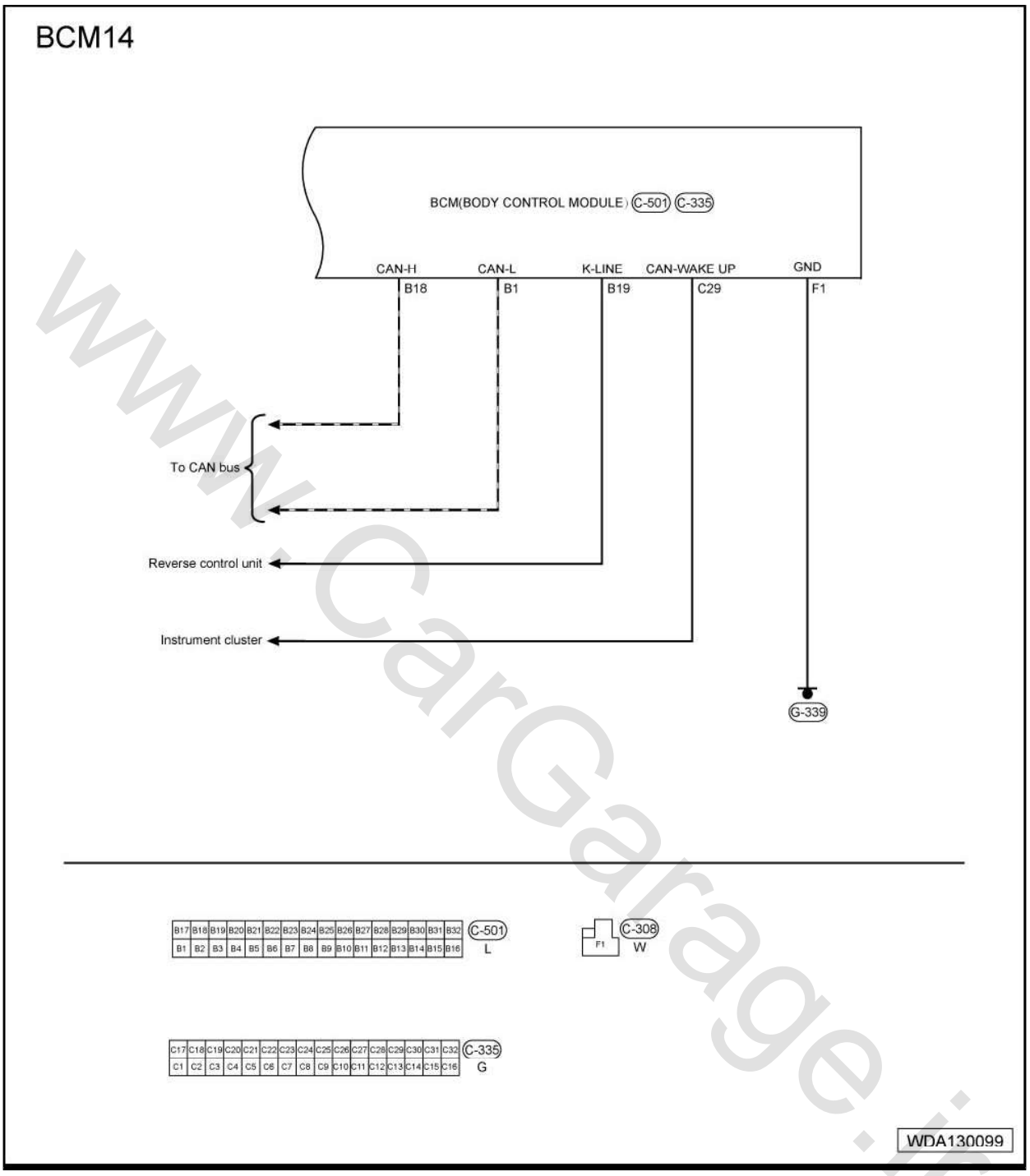


Body control module (BCM) circuit diagrams (page 14)



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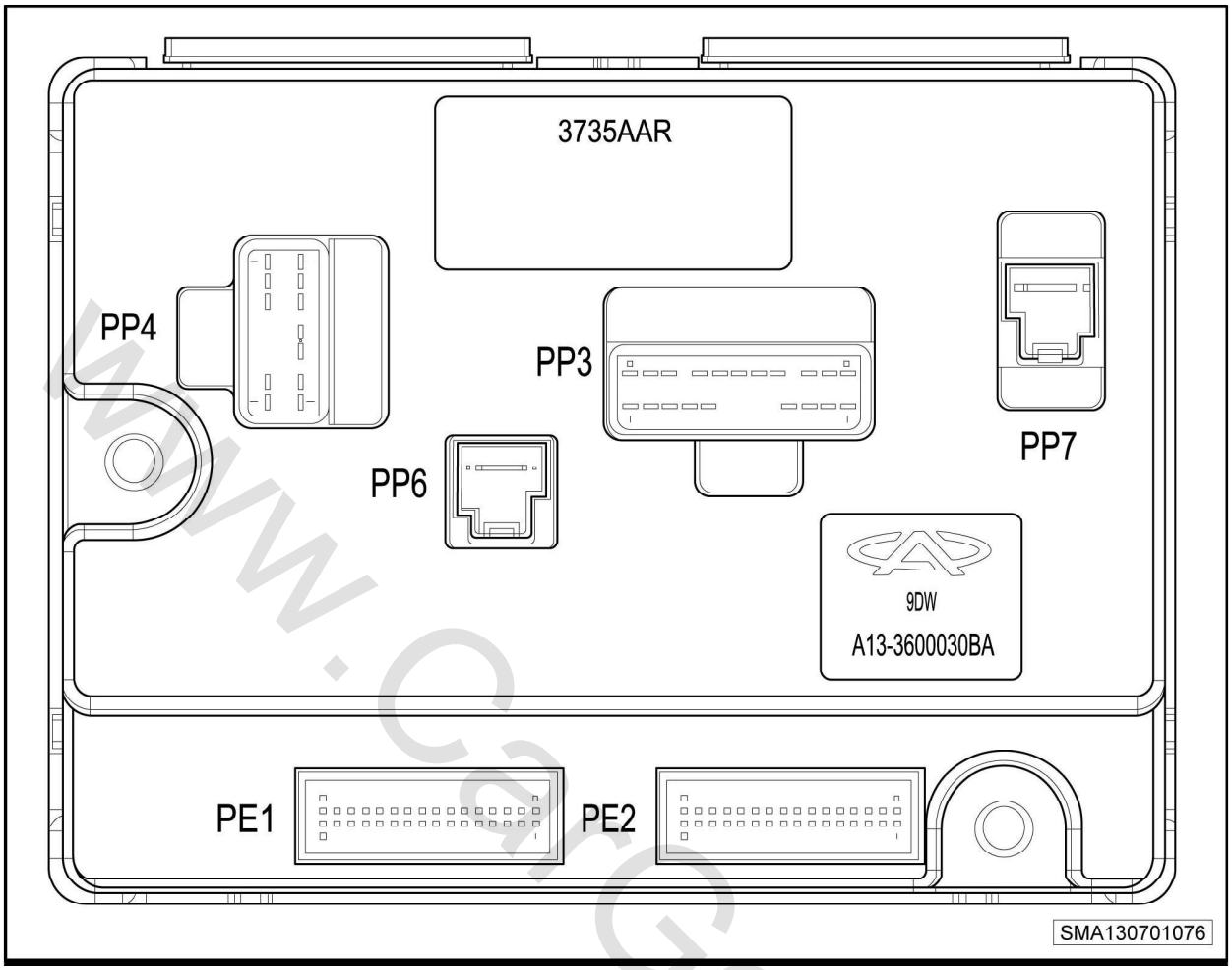
6.3 Definition of the body control module (BCM) pins



PP3: 20-pin connector of the body control module (BCM)

Pin No.	Function	Pin No.	Function
A1	Rear wiper output	A11	Rear fog lamp output
A2	Safety indicator output	A12	Unlock output
A3	Interior light output	A13	Lock output
A4	Left turn signal output	A14	Rear washer output
A5	Right turn signal output	A15	Front washer output
A6	Fog lamp output	A16	Wiper low speed output
A7	Fog lamp output	A17	Wiper high speed output
A8	Defroster output	A18	Safety indicator output
A10	Trunk releasing signal output	A20	Horn output

PP4: 12-pin connector of the body control module (BCM)

Pin No.	Function	Pin No.	Function
D1	Front left window up output	D7	Instrument lighting output
D2	Front left window down output	D8	Parking light/position lamp output

Pin No.	Function	Pin No.	Function
D3	Front right window up output	D9	Rear left window down output
D4	Front right window down output	D10	Rear left window up output
D5	Anti-theft horn output	D11	Rear right window down output
D6	Parking light/position lamp output	D12	Rear right window up output

PE1: 32-pin connector of the body control module (BCM)

Pin No.	Function	Pin No.	Function
C1	Parking light/position lamp input	C17	Wiper stop position input
C2	Rear wiper input	C18	—
C3	—	C19	Trunk contact switch input
C4	Rear right door open input	C20	Rear left door ajar switch input
C5	Rear defroster input	C21	Reverse gear input
C6	Hazard warning lamp input	C22	Horn input
C7	Front washer input	C23	Key lock output
C8	Trunk releasing input	C24	Low beam output
C9	Front wiper input	C25	Rear wiper stop position input
C10	Wiper intermittent regulator input	C26	Key lighting output
C11	—	C27	—
C12	Front wiper input	C28	High beam output
C13	—	C29	CAN wake up
C14	—	C30	—
C15	—	C31	—
C16	—	C32	—

PE2: 32-pin connector of the body control module (BCM)

Pin No.	Function	Pin No.	Function
B1	CAN (low speed)	B17	—
B2	—	B18	CAN (high speed)
B3	—	B19	LIN
B4	Lock input	B20	LIN
B5	Unlock input	B21	Rear right window down input
B6	Front passenger's side door ajar switch input	B22	Rear left window down input

Pin No.	Function	Pin No.	Function
B7	Driver's side door ajar switch input	B23	Rear right window up input
B8	Rear fog lamp input	B24	Rear left window up input
B9	Front fog lamp input	B25	Front right window down input
B10	Key insertion	B26	Front left window down input
B11	Front wiper stop position input	B27	Front right window up input
B12	Steering input	B28	Front left window up input
B13	High beam input	B29	—
B14	Low beam input	B30	—
B15	ACC input	B31	IGN input
B16	—	B32	—

PP6: 1 pin connector of the body control module (BCM)

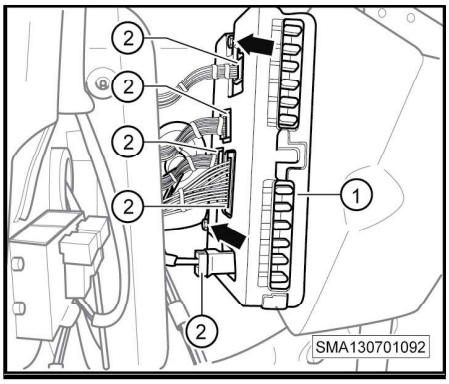
Pin No.	Function
E1	Grounding

PP7: 1 pin connector of the body control module (BCM)

Pin No.	Function
F1	BCM power supply

6.4 Removing and installing the body control module(BCM)

Removal



1. Switch off all electrical equipment and disconnect the battery negative cable.
2. Remove the base guard from the driver's side dashboard.=> refer to page 764
3. Disconnect the BCM connectors (-2-).
4. Remove the BCM fixing bolts (-arrow-).
5. Remove the BCM (-1-).

Installation

Installation shall follow the reverse sequence of the removal procedure.

7 Diagnosis and inspection of the body control module (BCM)

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7.1 Diagnosis and inspection of sporadic DTC faults

If the sporadic DTC faults occur, please check the following items:

- Check if the connector of the DTC-related actuator or sensor is properly installed.
- Check the connector pins of the actuator or sensor for leakage and corrosion.
- Check the leads for bending or squeezing.
- Check the sensor for dirt or damage.
- Check if the routing of wiring harness is correct and proper.

7.2 Checking earth connection

A good earth connection is prerequisite for ensuring the normal operation of the circuit. If the earth terminal of the circuit is always exposed to the wet and dusty environment, the metal of the earth terminal will corrode and affect the circuit smoothness, thus causing various electrical system malfunctions. As the control circuit is very sensitive, the loosened or corroded wires may significantly affect the transmission of various signals in the electronic control circuit. Therefore, please note the followings when inspecting:

- Replace the earth bolts or nuts.
- Check the earth terminal and coil for corrosion.
- Clean and polish the earth terminal and coil when necessary to ensure good contact.
- Check if there is any accessory interfering with the earth circuit.

7.3 Special tools

- X-431 diagnostic device
- Digital multimeter
- Adapter cable

7.4 Fault diagnosis (DTC)

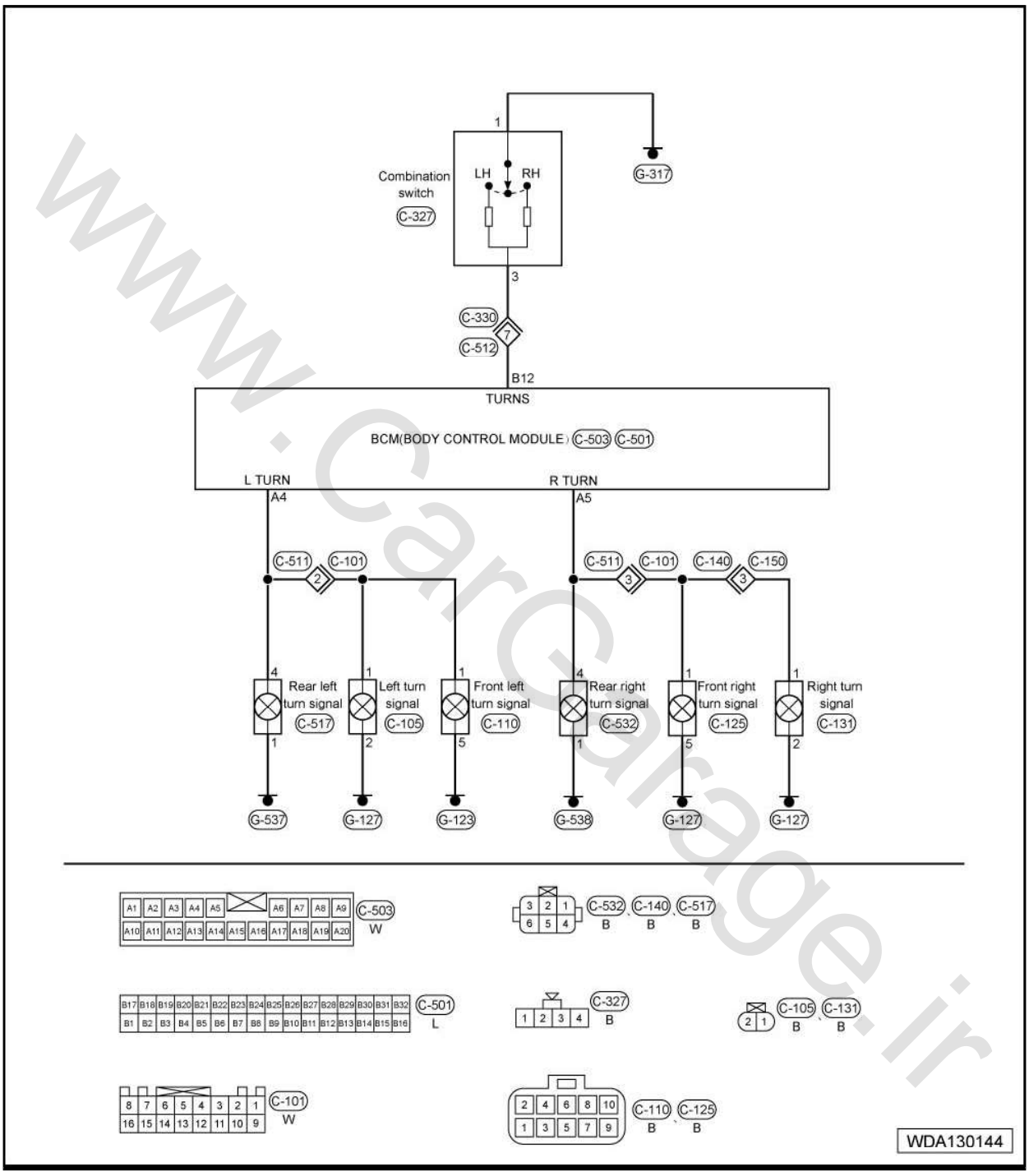
7.4.1 Body control module (BCM) fault diagnosis (DTC) list

DTC	Definition
B1001	Low current in the left turn output control circuit
B1002	Left turn output control circuit short to ground
B1004	Low current in the right turn output control circuit
B1005	Right turn output control circuit short to ground
B1045	Front fog lamp output control circuit open circuit
B1046	Low voltage in the front fog lamp output control circuit B
B1047	High voltage in the front fog lamp output control circuit
B1048	Rear fog lamp output control circuit open circuit
B1049	Low voltage in the rear fog lamp output control circuit
B1050	High voltage in the rear fog lamp output control circuit
B1063	Parking light/position lamp output control circuit open circuit
B1064	Low voltage in the parking light /position lamp output control circuit
B1065	High voltage in the parking light /position lamp output control circuit
B1102	Low voltage in the front roof lamp output control circuit
B1103	High voltage in the front roof lamp output control circuit
B1220	Low current in the central locking output control circuit
B1221	High current in the central locking output control circuit B1
B1224	High current in the central unlocking output control circuit
B1276	Front wiper high speed output control circuit open circuit
B1277	Low voltage in the front wiper high speed output control circuit
B1278	High voltage in the front wiper high speed output control circuit
B1279	Front wiper low speed output control circuit open circuit
B1280	Low voltage in the front wiper low speed output control circuit
B1281	High voltage in the front wiper low speed output control circuit
B1283	Low voltage in the front washer output control circuit
B1284	High voltage in the front washer output control circuit
B1285	Horn output control circuit open circuit
B1286	Low voltage in the horn output control circuit
B1287	High voltage in the horn output control circuit

DTC	Definition
B1288	Rear defroster output control circuit open circuit
B1289	Low voltage in the rear defroster output control circuit
B1290	High voltage in the rear defroster output control circuit
B1350	Low current in the front left window up output control circuit
B1353	Low current in the front left window down output control circuit
B1356	Low current in the front right window up output control circuit
B1359	Low current in the front right window down output control circuit
B1361	Low current in the rear left window up output control circuit
B1363	Low current in the rear left window down output control circuit
B1365	Low current in the rear right window up output control circuit
B1367	Low current in the rear right window down output control circuit
B1397	Low voltage in the anti-theft horn output control circuit
B1398	High voltage in the anti-theft horn output control circuit
B1400	Low battery voltage
B1401	High battery voltage
B2311	Trunk releasing output control circuit open circuit
B2312	High voltage in the trunk releasing output control circuit
B2313	Low voltage in the trunk releasing output control circuit

7.4.2 B1001 - Low current in the left turn output control circuit

B1002 - Left turn output control circuit short to ground
B1004 - Low current in the right turn output control circuit
B1005 - Right turn output control circuit short to ground



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A4	Left turn signal output	The ignition switch in the ON position with the left turn signal switched on	Intermittent change between 0V and 12V

BCM pin	Function	Condition	Value (DC voltage range)
A5	Right turn signal output	The ignition switch in the ON position with the right turn signal switched on	Intermittent change between 0V and 12V

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1001	Low current in the left turn output control circuit	The ignition switch in the OFF position - push the front roof lamp switch to the "DOOR" position, close all the doors and press the "lock/unlock" button on the remote key entry (RKE)	Left turn signal control circuit short or open circuit detected by the BCM	• Failure of the left turn signal • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the turn signal switch
B1002	Left turn output control circuit short to ground			
B1004	Low current in the right turn output control circuit		Right turn signal control circuit short or open circuit detected by the BCM	• Failure of the right turn signal • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the turn signal switch
B1005	Right turn output control circuit short to ground			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures. If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

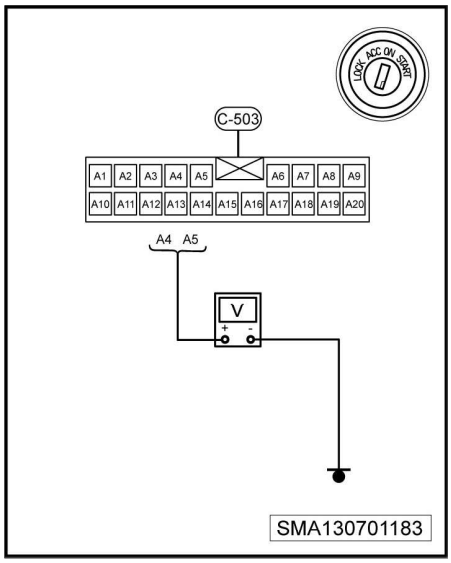
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the power supply line of the turn signal connector is normal.
   - If yes, go to step 2.
   - If not, go to step 4.

2. Check if the ground line of the turn signal electrical connector is normal.
   - If yes, go to step 3.
   - If not, repair the ground line. ■

3. Measure the resistance values of the turn signal bulbs and verify if the rated voltage and power of the turn signal bulbs are normal.
   - If yes, go to step 4.
   - If not, replace the turn signal bulbs. ■

4. Turn on the turn signal switch and check if the voltage between the pins A4/A5 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the turn signal has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.



5. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 6. ■
   - If not, repair the faulty line.

6. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, locate fault causes from other symptoms.
   - If not, the fault has been rectified. ■

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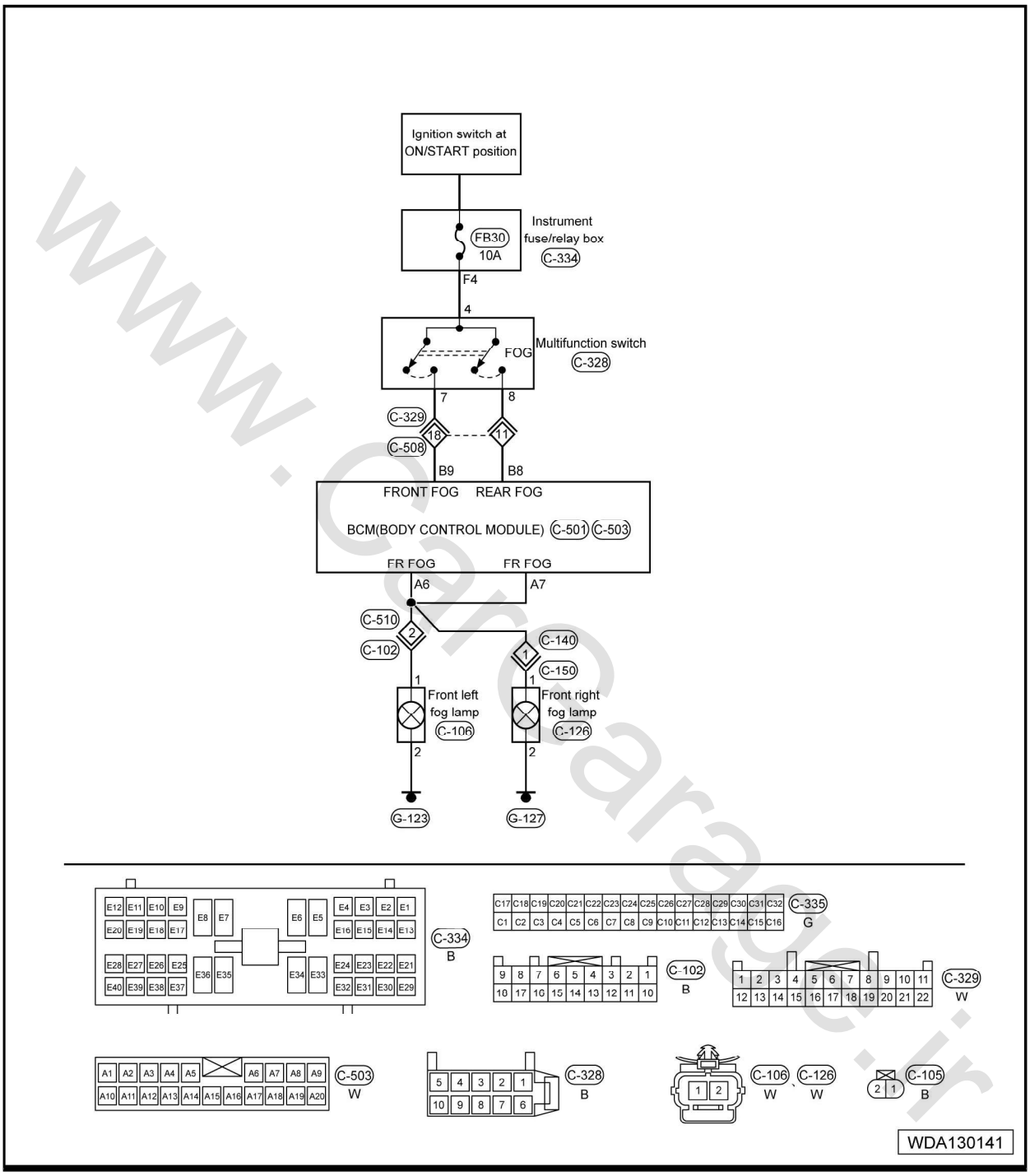
7.4.3 B1045 - Front fog lamp output control circuit open circuit

B1046 - Low voltage in the front fog lamp output control circuit
B1047 - High voltage in the front fog lamp output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A6	Fog lamp output	The ignition switch in the ON position with the fog lamp switched on	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
A7	Fog lamp output	The ignition switch in the ON position with the fog lamp switched on	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1045	Front fog lamp output control circuit open circuit	The ignition switch in the ON position The front fog lamp switch in the ON position	Front fog lamp control circuit short or open circuit detected by the BCM	• Failure of the fog lamp • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the fog lamp switch
B1046	Low voltage in the front fog lamp output control circuit			
B1047	High voltage in the front fog lamp output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

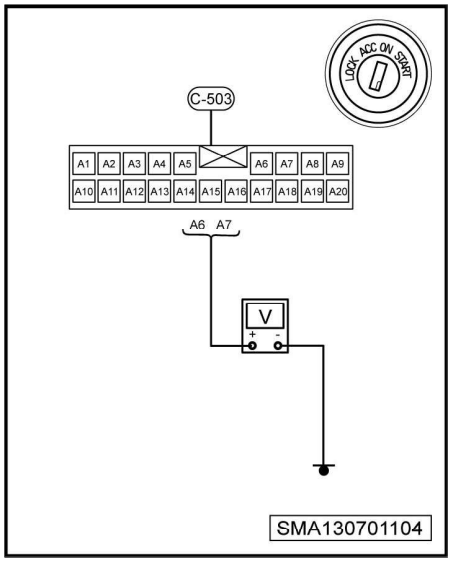
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the fog lamp line of the front fog lamp connector is normal.
   - If yes, go to step 2.
   - If not, go to step 4.
2. Check if the ground line of the front fog lamp connector is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the front fog lamp ground line. ■

3. Measure the resistance values of the front fog lamp bulbs and verify if the rated voltage and power of the front fog lamp bulbs are normal.
   - If yes, go to step 4.
   - If not, replace the front fog lamp bulbs. ■

4. Turn on the front fog lamp switch and check if the voltage between the pins A6/A7 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the front fog lamp has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.

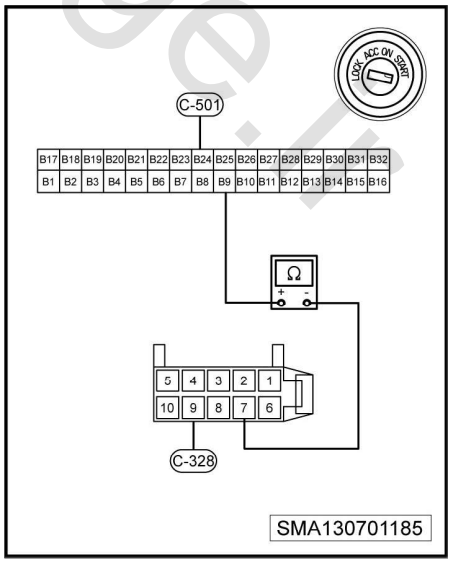


5. Check if the front fog lamp fuse FB30 is damaged.
   - If yes, replace the fuse with the same specification. ■
   - If not, go to step 6.

6. Check if the circuit between the pin 4 of the multi-functional switch connector C-328 and the power supply terminal is normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■

7. Check if the line between the pin B9 of the BCM connector C-501 and the pin 7 of the multi-functional switch connector C-328 is normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

8. Check if the multi-functional switch is normal.
   - If yes, go to step 9.
   - If not, repair or replace the multi-functional switch. ■



9. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 10.
   - If not, repair the faulty line. ■

10. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, locate fault causes from other symptoms.
   - If not, the fault has been rectified. ■

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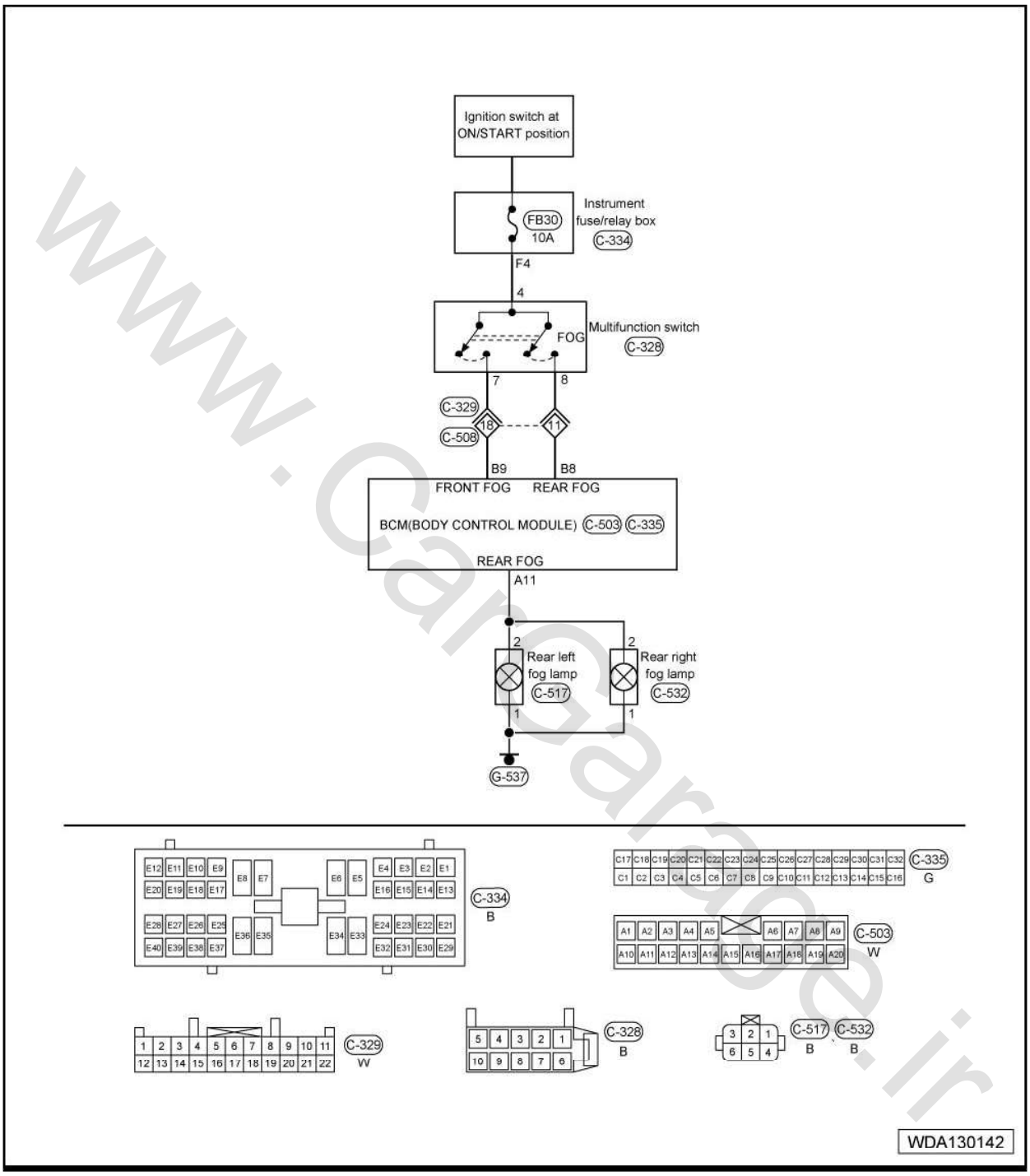
7.4.4 B1048 - Rear fog lamp output control circuit open circuit

B1049 - Low voltage in the rear fog lamp output control circuit
B1050 - High voltage in the rear fog lamp output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A011	Fog lamp output	The ignition switch in the ON position with the rear fog lamp switched on	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1048	Rear fog lamp output control circuit open circuit	The ignition switch in the ON position The rear fog lamp switch in the ON position	Rear fog lamp control circuit short or open circuit detected by the BCM	• Failure of the fog lamp • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the fog lamp switch
B1049	Low voltage in the rear fog lamp output control circuit			
B1050	High voltage in the rear fog lamp output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

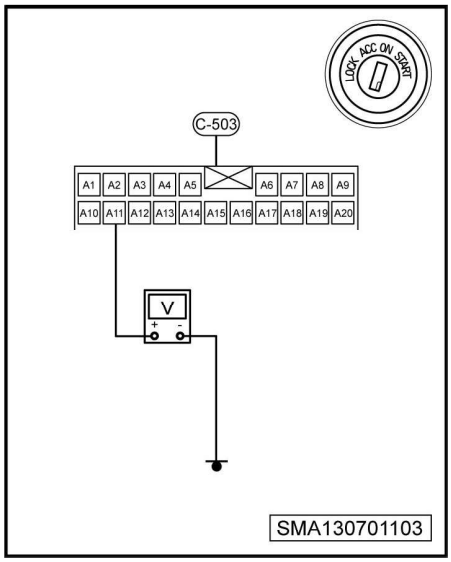
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the fog lamp line of the rear fog lamp connector is normal.
   - If yes, go to step 2.
   - If not, go to step 4.

2. Check if the ground line of the rear fog lamp connector is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the rear fog lamp ground line. ■

3. Measure the resistance values of the rear fog lamp bulbs and verify if the rated voltage and power of the rear fog lamp bulbs are normal.
   - If yes, go to step 4.
   - If not, replace the rear fog lamp bulbs. ■

4. Turn on the rear fog lamp switch and check if the voltage between the pin A11 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the rear fog lamp has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.



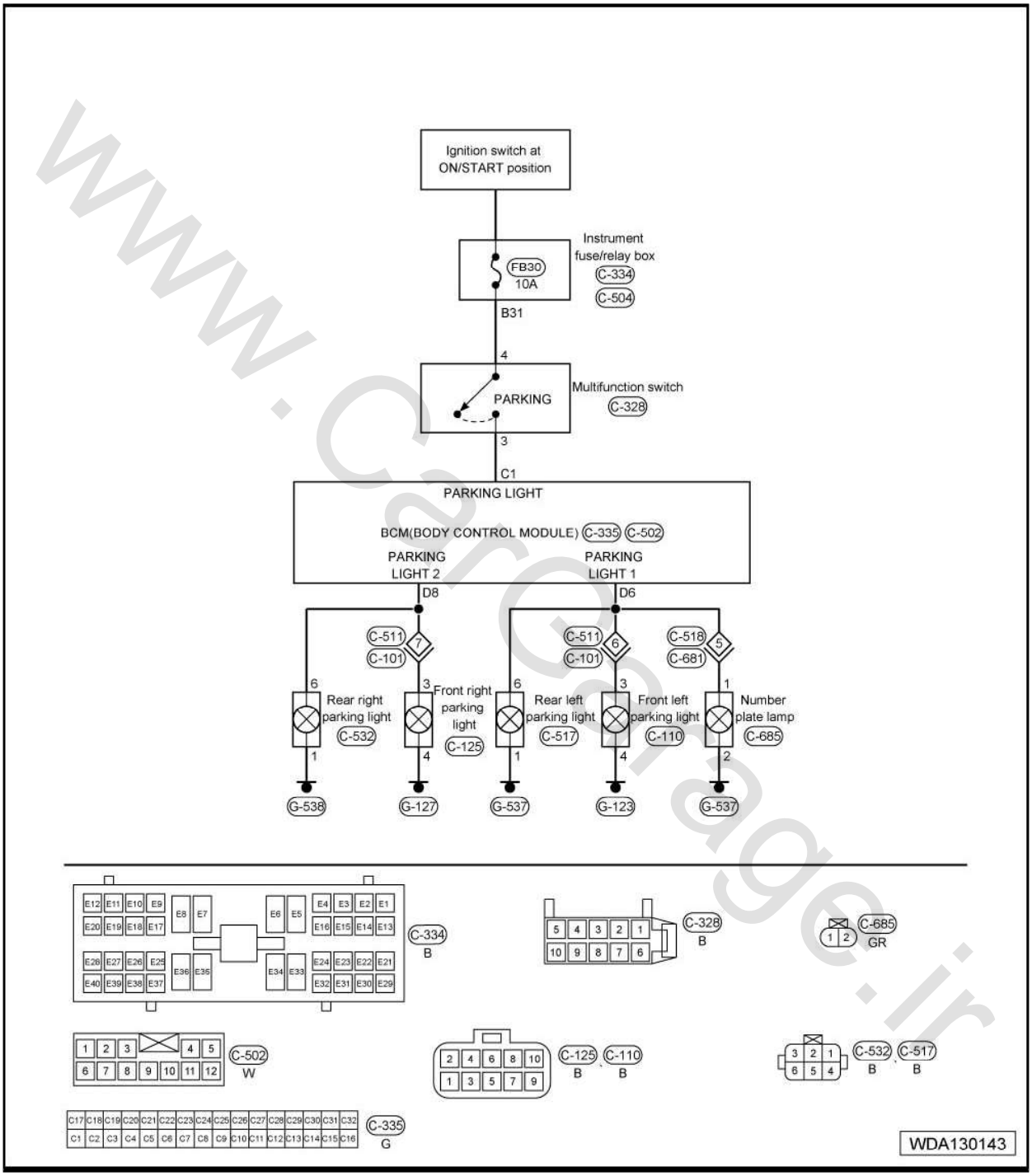
5. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, locate fault causes from other symptoms.
   - If not, the fault has been rectified. ■

7.4.5 B1063 - Parking light/position lamp output control circuit open circuit

B1064 - Low voltage in the parking light/position lamp output control circuit

B1065 - High voltage in the parking light/position lamp output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
D6	Parking light/position lamp output	The ignition switch in the ON position with the	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
D8	Parking light/position lamp output	parking light/position lamp switched on	

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1063	Parking light/position lamp output control circuit open circuit	The ignition switch in the ON position The parking light/position lamp switch in the ON position	Parking light control circuit short or open circuit detected by the BCM	• Failure of the parking light/position lamp • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the parking light/position lamp switch
B1064	Low voltage in the parking light /position lamp output control circuit			
B1065	High voltage in the parking light /position lamp output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

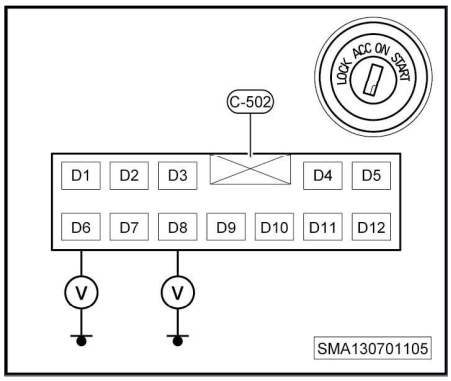
1. Check if the parking light/position lamp line of its connector is normal.
   - If yes, go to step 2.
   - If not, go to step 4.

2. Check if the ground line of the parking light/position lamp connector is normal.
   - If yes, go to step 3.

- If not, repair the fault such short circuit or virtual connection existing in the parking light/position lamp ground line. ■

3. Measure the resistance values of the parking light/position lamp bulbs and verify if the rated voltage and power of the parking light/position lamp bulbs are normal.
   - If yes, go to step 4.
   - If not, replace the parking light/position lamp bulbs. ■

4. Turn on the parking light/position lamp switch and check if the voltage between the pins D6/D8 of the BCM connector C-502 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the parking light/position lamp has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.

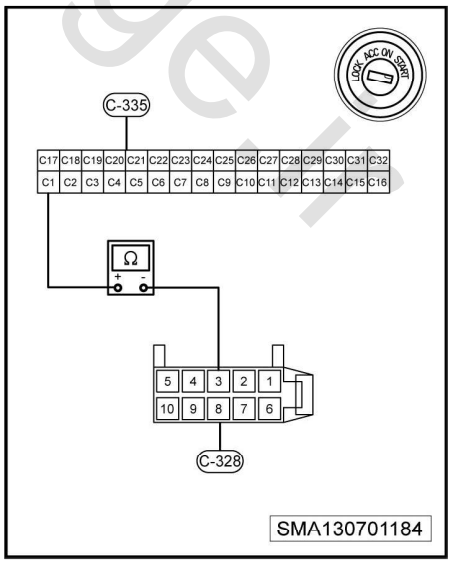


5. Check if the front fog lamp fuse FB30 is damaged.
   - If yes, replace the fuse with the same specification. ■
   - If not, go to step 6.

6. Check if the circuit between the pin 4 of the multi-functional switch connector C-328 and the power supply terminal is normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■

7. Check if the line between the pin C1 of the BCM connector C-335 and the pin 3 of the multi-functional switch connector C-328 is normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

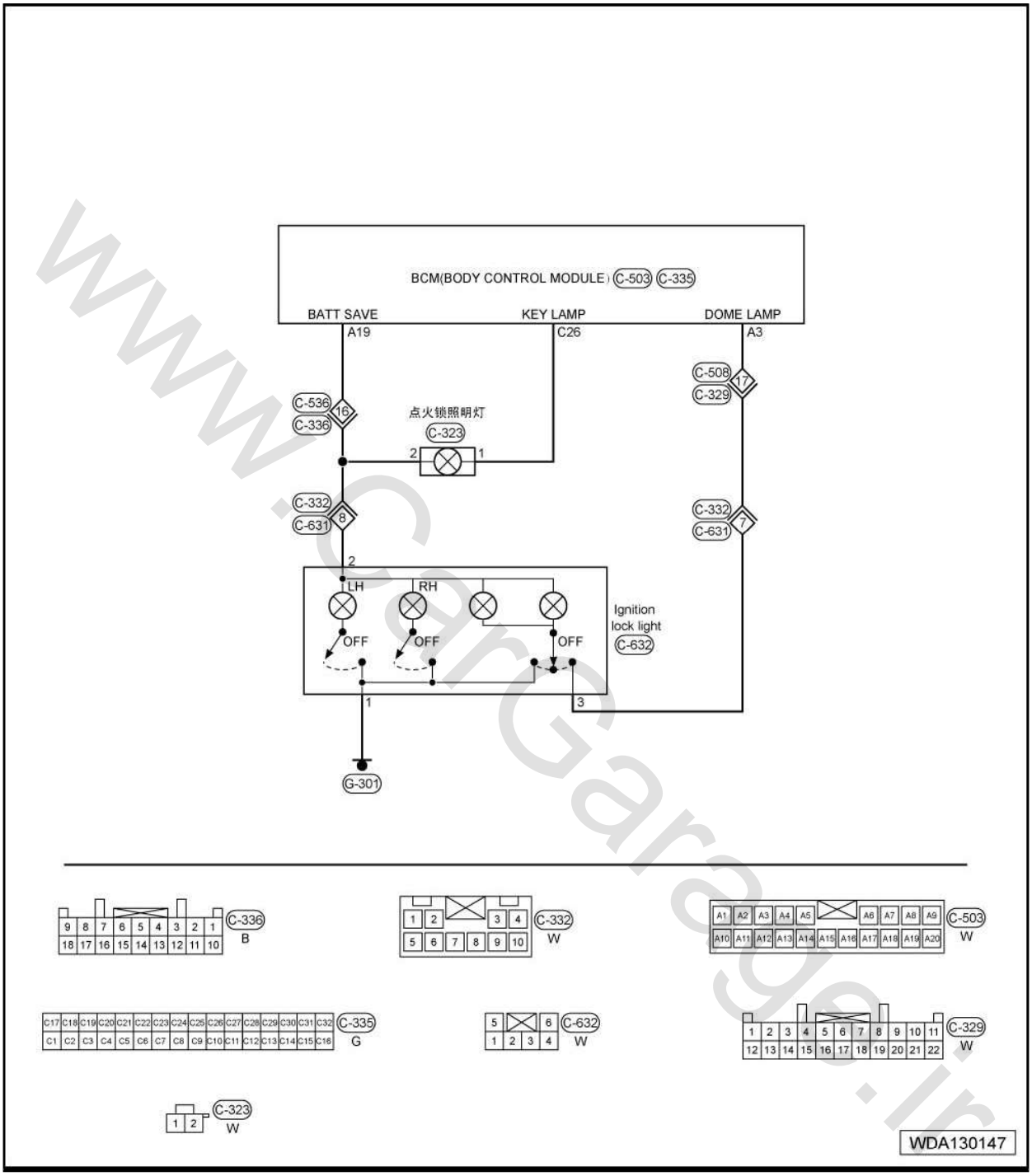
8. Check if the multi-functional switch is normal.
   - If yes, go to step 9.
   - If not, repair or replace the multi-functional switch. ■



9. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 10.
   - If not, repair the faulty line. ■

10. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, locate fault causes from other symptoms.
   - If not, the fault has been rectified. ■

7.4.6 B1102 - Low voltage in the roof lamp output control circuit
B1103 - High voltage in the roof lamp output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A19	Battery energy-saving protection output	The ignition switch in the ON position with the roof lamp switched on	Battery voltage
A3	Interior light output	The ignition switch in the ON position with the roof	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
		lamp switched on and door open	

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1102	Low voltage in the roof lamp output control circuit	The ignition switch in the ON position The roof lamp switch in the "DOOR" position The door(s) open	Roof lamp control circuit short or open circuit detected by the BCM	• Failure of the roof lamp • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the roof lamp switch
B1103	High voltage in the roof lamp output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

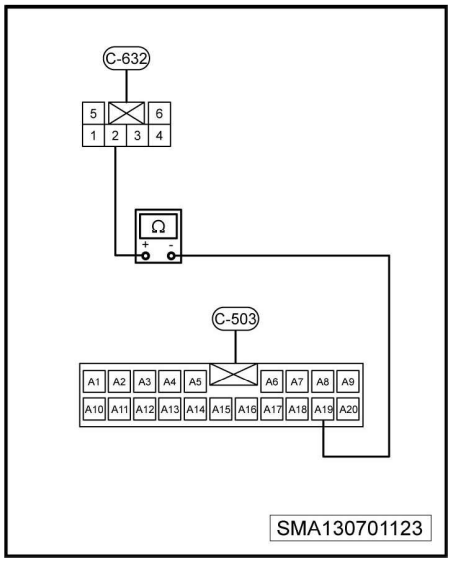
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the line between the pin 2 of the roof lamp connector C-632 and the pin A19 of the BCM connector C-503 is conducted.
   - If yes, go to step 2.
   - If not, go to step 4.

2. Check if the ground line of the roof lamp connector is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the roof lamp ground line. ■

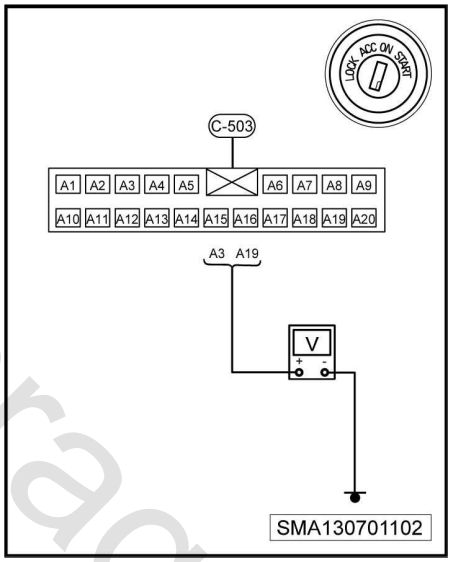
3. Measure the resistance values of the roof lamp bulbs and verify if the rated voltage and power of the roof lamp bulbs are normal.
   - If yes, go to step 4.
   - If not, replace the roof lamp bulbs. ■



4. Check if the voltage between the pin A19 of the BCM connector C-503 and the ground is battery voltage. Open the doors and check if the voltage between the pin A3 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the roof lamp has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.

5. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

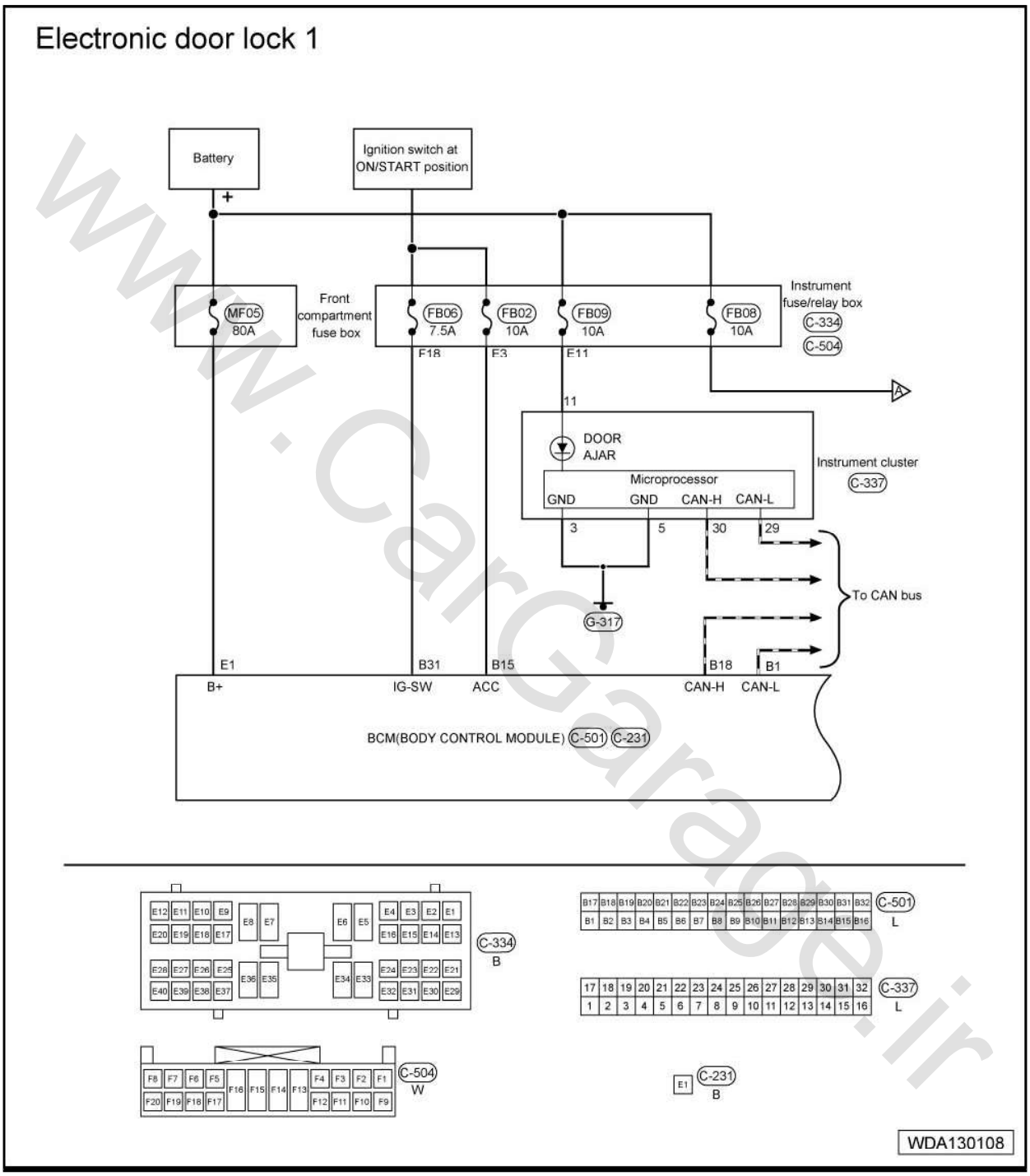
6. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, locate fault causes from other symptoms.
   - If not, the fault has been rectified. ■

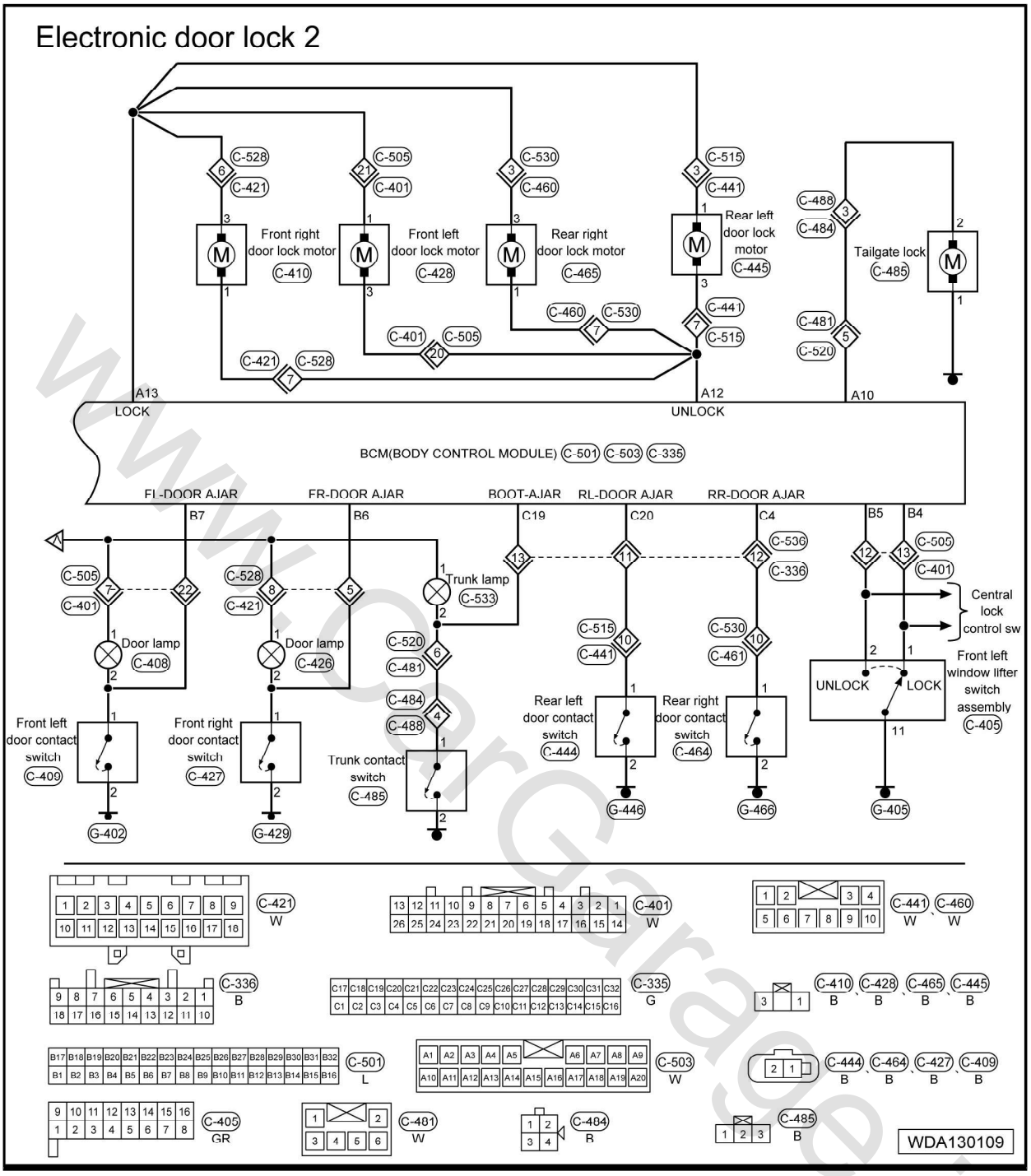


07

7.4.7 B1220 - Low current in the central locking output control circuit

B1221 - High current in the central locking output control circuit
B1223 - Low current in the central unlocking output control circuit
B1224 - High current in the central unlocking output control circuit





Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A12	Unlock output	The central door lock switch or key switch in the UNLOCK position	Battery voltage
A13	Lock output	The central door lock switch or key switch in the LOCK position	Battery voltage
B4	Lock input	Electrical system energized	Battery voltage
B5	Unlock input		Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1220	Low current in the central locking output control circuit	The central door lock switch or key switch in the LOCK position	Central door lock control circuit short or open circuit detected by the BCM	• Failure of the door lock motor • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the central door lock switch or key switch
B1221	High current in the central locking output control circuit			
B1223	Low current in the central unlocking output control circuit	The central door lock switch or key switch in the UNLOCK position		
B1224	High current in the central unlocking output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

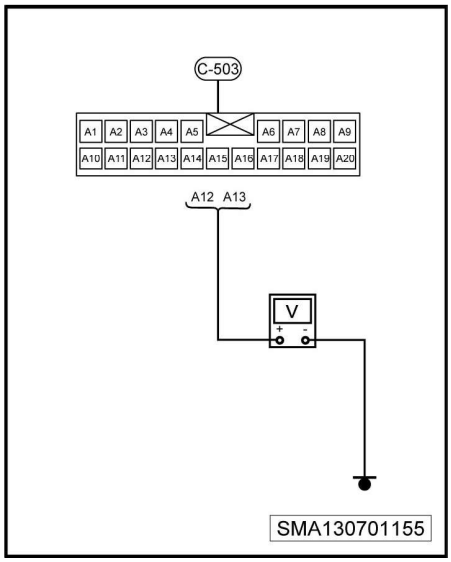
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

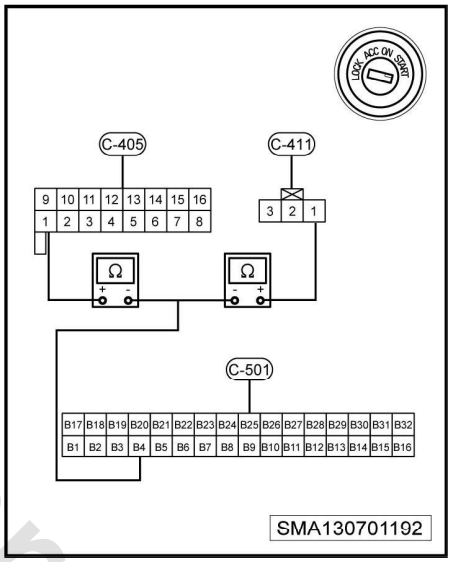
1. Check if the power supply line and the ground line (locking and unlocking have opposite electrodes) of the central lock connector are normal when the central lock switch is locked and unlocked respectively.
   - If yes, go to step 2.
   - If not, go to step 3.

2. Measure the resistance values of the central lock motors of the four doors and check if the power supply line is normal.
   - If yes, go to step 3.
   - If not, replace the central lock motors. ■

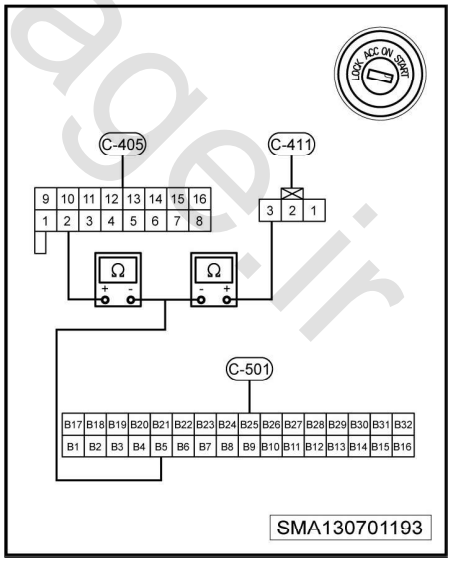
3. Check if the power supply line and the ground line of the pins A12 and A13 of the BCM connector C-503 are normal when the central lock switch is locked and unlocked respectively.
   - If yes, check if the line between the pins A12 and A13 of the BCM connector C-503 and the central lock motors of the four doors has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 4.



4. Check if the line between the pin B4 of the BCM connector C-501 and the pin 1 of the central door lock key switch connector C-411 and the pin 1 of the central door lock connector C-405 is normal.
   - If yes, go to step 5.
   - If not, go to step 7.



5. Check if the line between the pin B5 of the BCM connector C-501 and the pin 3 of the central door lock key switch connector C-411 and the pin 2 of the central door lock connector C-405 is normal.
   - If yes, go to step 6.
   - If not, go to step 7.



6. Check if the ground line between the the central door lock key switch connector and the central door lock switch is normal.

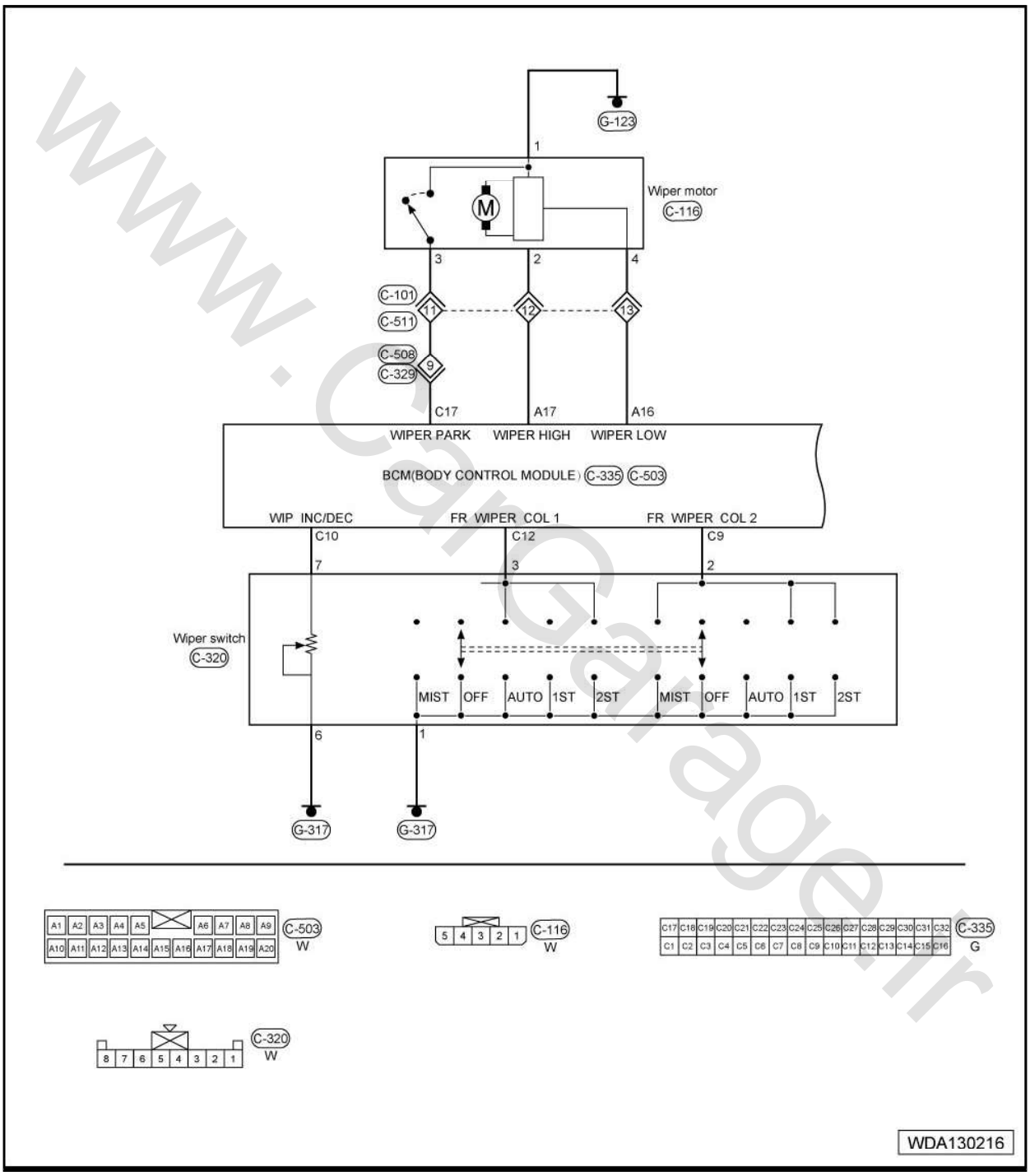
- If yes, check if the central door lock key switch and the central door lock switch have any malfunctions. ■
- If not, go to step 7.

7. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

8. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

7.4.8 B1276 - Front wiper high speed output control circuit open circuit

B1277 - Low voltage in the front wiper high speed output control circuit
B1278 - High voltage in the front wiper high speed output control circuit
B1279 - Front wiper low speed output control circuit open circuit
B1280 - Low voltage in the front wiper low speed output control circuit
B1281 - High voltage in the front wiper low speed output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A16	Wiper low speed output	The ignition switch in the	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
		ACC/ON position The wiper switch in the ON position	
A17	Wiper high speed output	The ignition switch in the ACC/ON position The wiper switch in the ON position	Battery voltage

Checking the line between the body control module (BCM) and the wiper switch

BCM pin	Function	Condition	Value (DC voltage range)
C9	Front wiper input	The ignition switch in the ACC/ON position	Battery voltage
C12	Front wiper input		Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1276	Front wiper high speed output control circuit open circuit	The ignition switch in the ACC/ON position The front wiper switch in the ON position	Front wiper output control circuit short or open circuit detected by the BCM	• Failure of the wiper motor • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the wiper switch
B1277	Low voltage in the front wiper high speed output control circuit			
B1278	High voltage in the front wiper high speed output control circuit			
B1279	Front wiper low speed output control circuit open circuit			
B1280	Low voltage in the front wiper low speed output control circuit			
B1281	High voltage in the front wiper low speed output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.

- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

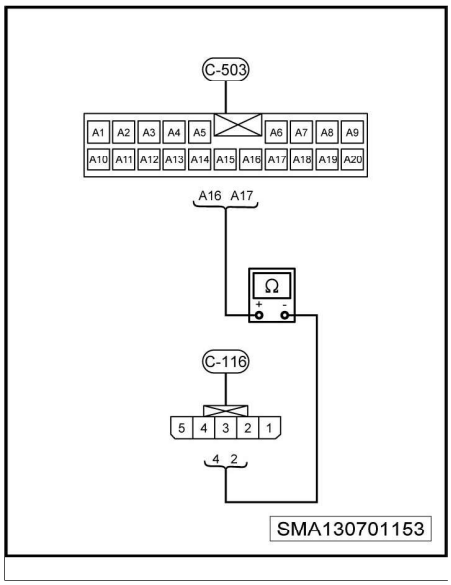
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

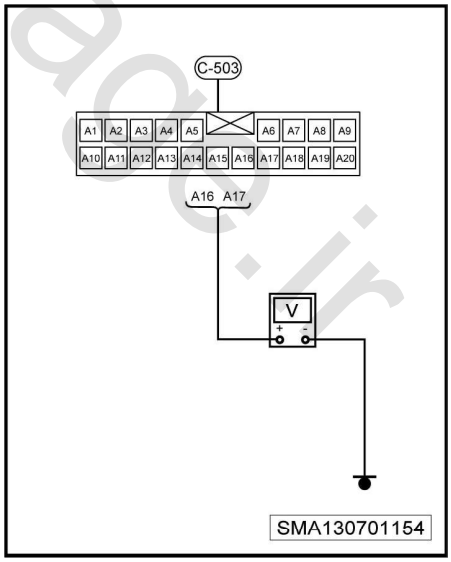
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the line between the pins 2 and 4 of the wiper motor connector C-116 and the pins A17 and A16 of the BCM connector C-503 is normal.
   - If yes, go to step 2.
   - If not, go to step 4.



2. Check if the ground line of the wiper motor connector is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the wiper motor ground line. ■
3. Measure the resistance value of the front wiper motor and check if the high speed and low speed of the motor are normal.
   - If yes, go to step 4.
   - If not, replace the front wiper motor. ■

4. Check if the voltage between the pin A17 of the BCM connector C-503 and the ground is battery voltage. Check if the voltage between the pin A16 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the roof lamp has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.

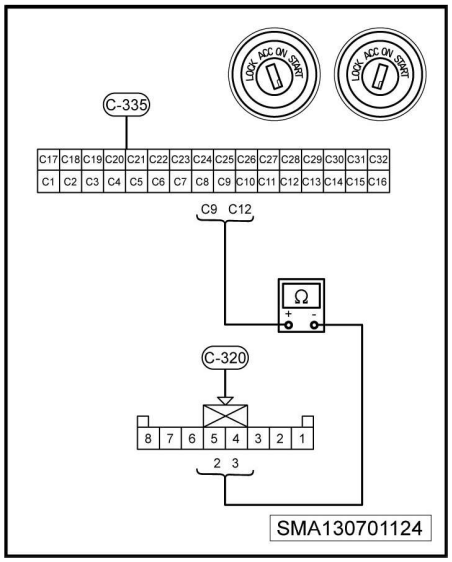


5. Check if the line between the pin C9 of the BCM connector C-335 and the pin 2 of the wiper switch connector C-320 is normal. Check if the line between the pin C12 of the BCM connector C-335 and the pin 3 of the wiper switch connector C-320 is normal.
   - If yes, go to step 6.
   - If not, go to step 7.

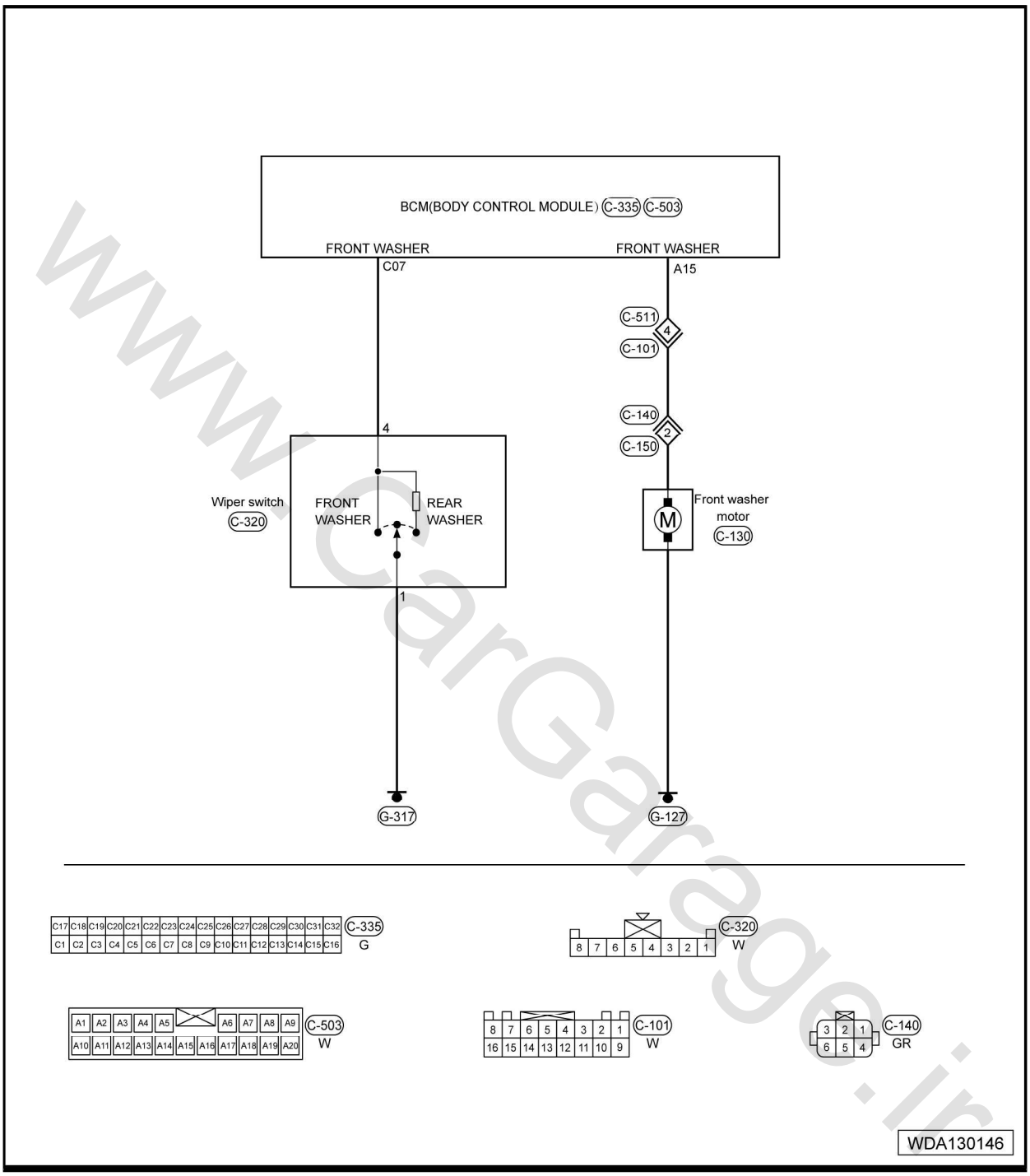
6. Check if the ground line of the wiper switch is normal.
   - If yes, check if the wiper switch is faulty. ■
   - If not, go to step 7.

7. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

8. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■



7.4.9 B1283 - Low voltage in the front washer output control circuit
B1284 - Hight voltage in the front washer output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A15	Front washer output	The ignition switch in the ACC/ON position The washer switch in the ON position	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
C7	Front washer input	The ignition switch in the ACC/ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1283	Low voltage in the front washer output control circuit	The ignition switch in the ACC/ON position The washer switch in the ON position	Washer output control circuit short or open circuit detected by the BCM	• Failure of the washer motor • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the washer switch
B1284	High voltage in the front washer output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

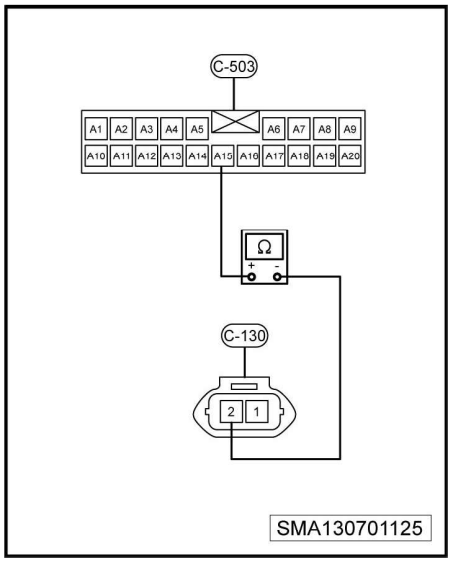
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

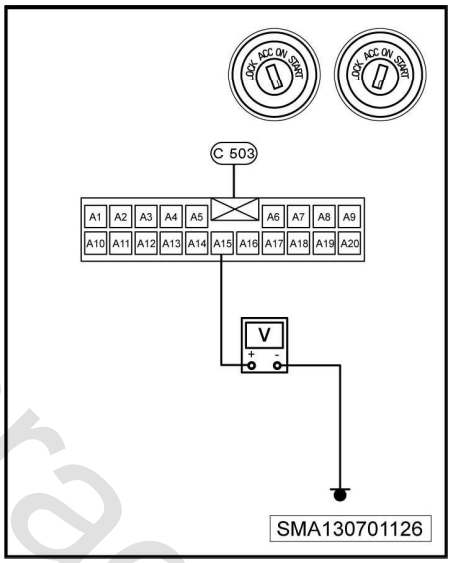
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

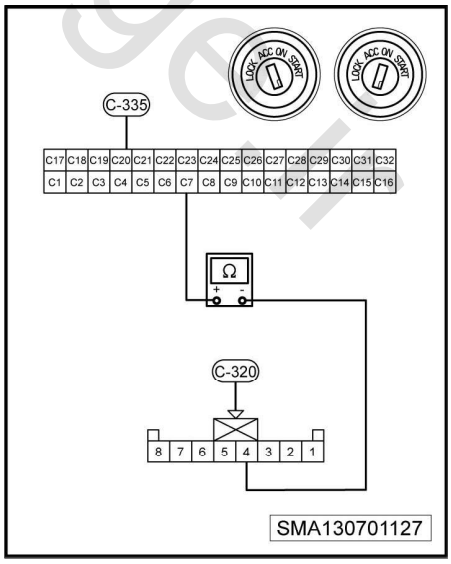
1. Check if the line between the pin A15 of the BCM connector C-503 and the pin 2 of the washer motor connector C-130 is normal.
   - If yes, go to step 2.
   - If not, go to step 4.
2. Check if the ground line of the washer motor is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the washer motor ground line. ■
3. Measure the resistance value of the washer motor and check if the motor is normal.
   - If yes, go to step 4.
   - If not, replace the washer motor. ■



4. Turn on the washer switch and check if the voltage between the pin A15 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the washer motor has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.



5. Check if the line between the pin C7 of the BCM connector C-335 and the pin 4 of the washer switch connector C-320 is normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■



6. Check if the ground line of the washer switch is normal.
   - If yes, go to step 7.
   - If not, repair the fault such as short circuit or virtual connection existing in the washer switch ground line. ■

7. Check if the washer switch is normal.
   - If yes, go to step 8.
   - If not, repair or replace the washer switch. ■

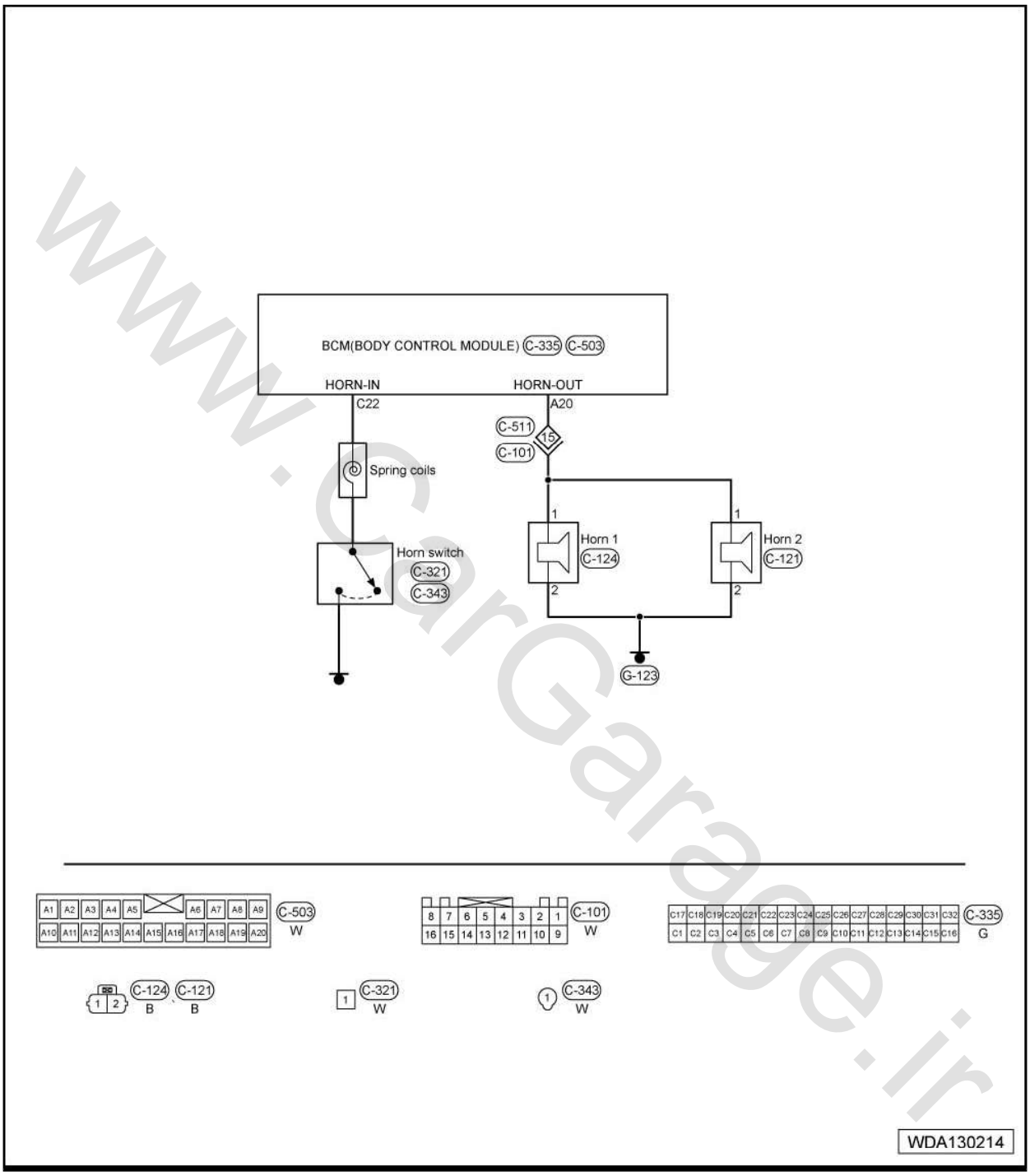
8. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 9.
   - If not, repair the faulty line. ■

9. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

7.4.10 B1285 - Horn output control circuit open circuit

B1286 - Low voltage in the horn output control circuit

B1287 - High voltage in the horn output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A20	Horn output	The horn switch in the ON position	Battery voltage
C22	Horn input	Electrical equipment energized	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1285	Horn output control circuit open circuit	The horn switch in the ON position	Horn output control circuit short or open circuit detected by the BCM	• Failure of the horn • Failure of the wiring harness or the connector • Failure of the BCM • Failure of the horn switch
B1286	Low voltage in the horn output control circuit			
B1287	High voltage in the horn output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds and carry out the respective function tests.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

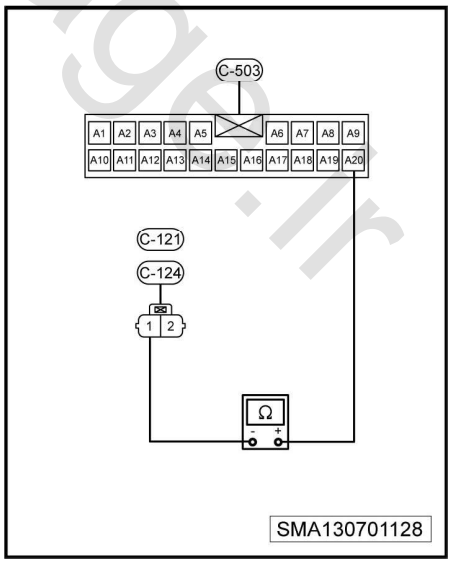
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

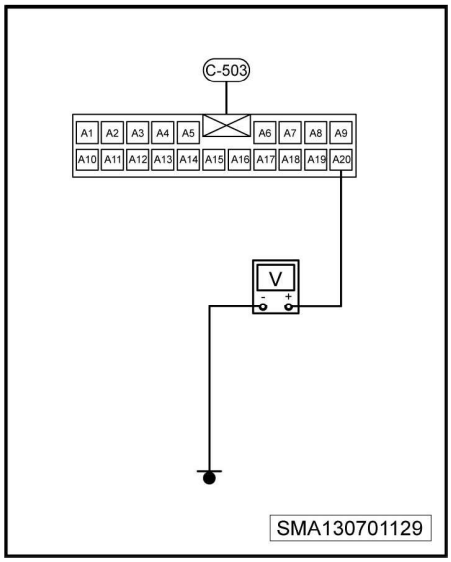
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the line between the pin A20 of the BCM connector C-503 and the pin 1 of the horn switch connector C-121 is normal.
   - If yes, go to step 2.
   - If not, go to step 4.
2. Check if the ground line of the horn is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the horn ground line. ■
3. Measure the resistance value of the horn and check if the horn is normal.
   - If yes, go to step 4.
   - If not, replace the horn. ■



4. Turn on the horn switch and check if the voltage between the pin A20 of the BCM connector C-503 and the ground is battery voltage.
   - If yes, check if the power circuit between the BCM and the horn has the failures of earthing, short circuit, open circuit, over resistance value and virtual connection. ■
   - If not, go to step 5.



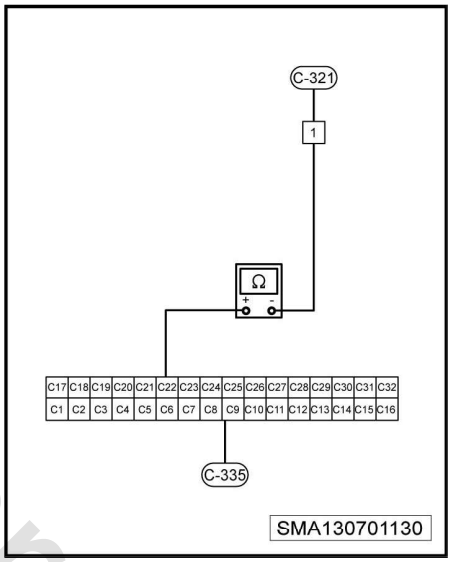
5. Check if the line between the pin C22 of the BCM connector C-335 and the horn switch connector C-321 is normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Check if the horn switch is normal.
   - If yes, go to step 7.
   - If not, repair or replace the horn switch. ■

7. Check if the spring coil is normal.
   - If yes, go to step 8.
   - If not, repair or replace the spring coil. ■

8. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 9.
   - If not, repair the faulty line. ■

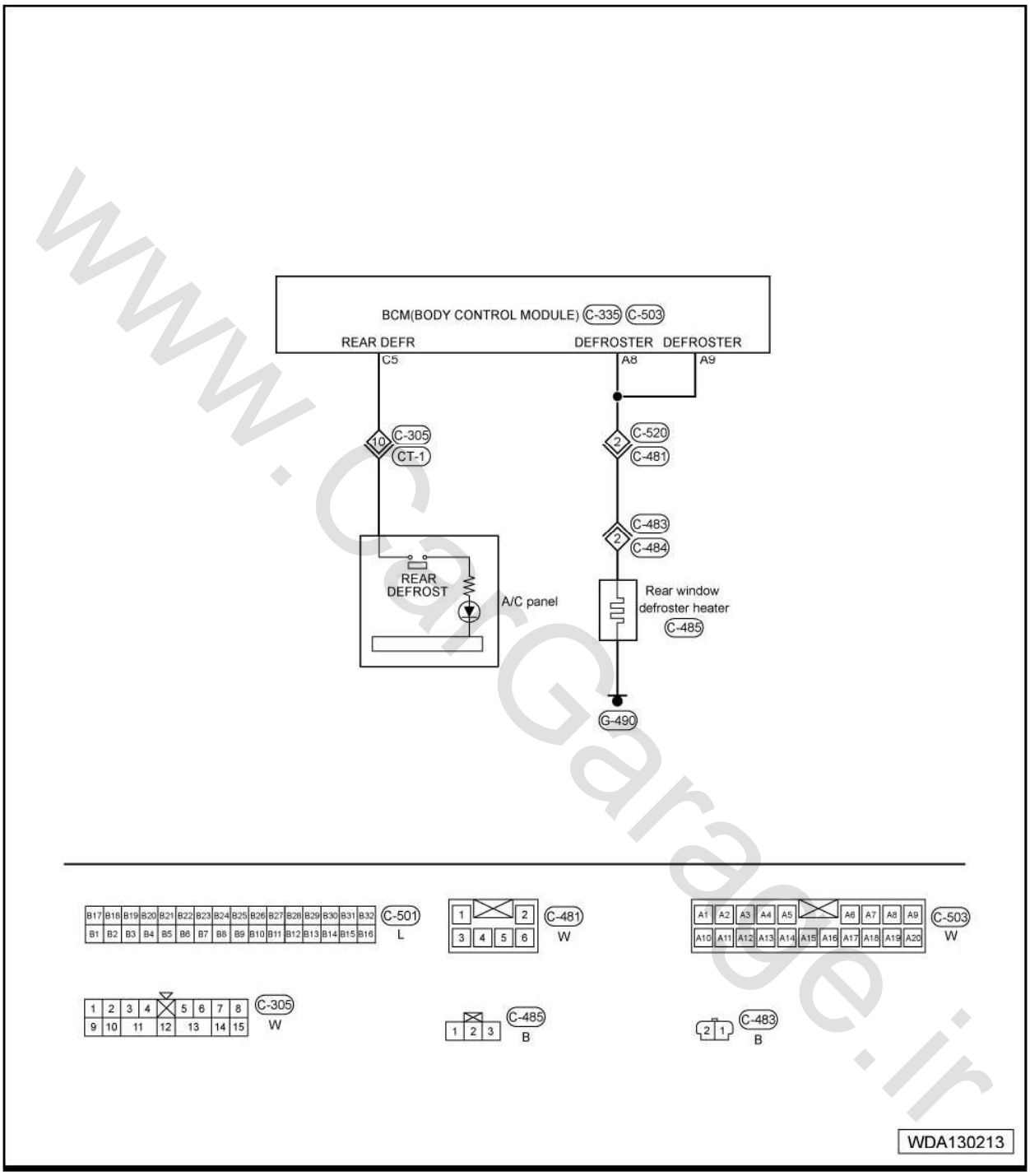
9. Replace the BCM, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■



7.4.11 B1288 - Rear defroster output control circuit open circuit

B1289 - Low voltage in the rear defroster output control circuit

B1290 - High voltage in the rear defroster output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A8	Defroster output	The ignition switch in the ACC or ON position The washer switch in the ON position	Battery voltage
A9	Defroster output		Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
C5	Rear defroster input	The ignition switch in the ACC or ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1288	Rear defroster output control circuit open circuit	The ignition switch in the ACC or ON position The defroster switch in the ON position	The rear defroster output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the defroster switch
B1289	Low voltage in the rear defroster output control circuit			
B1290	High voltage in the rear defroster output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch, turn it on again after 3 to 5 seconds, and carry out the corresponding function test.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

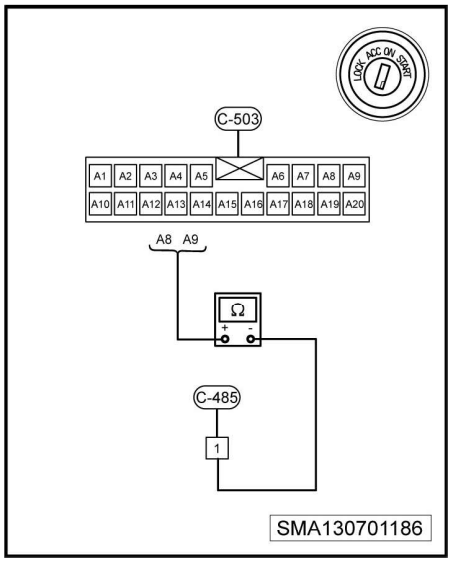
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

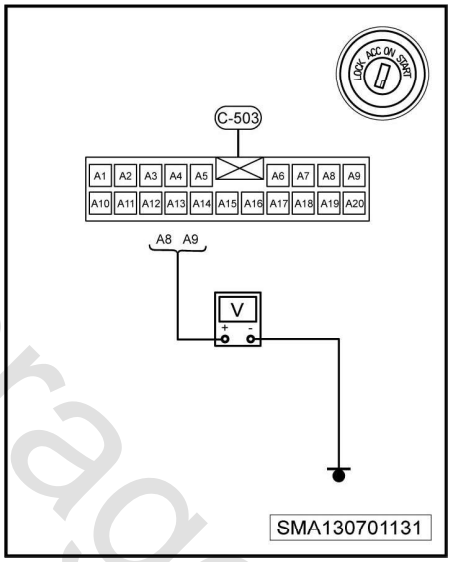
1. Check if the line between the pins A8, A9 of the body control module connector C-503 and the pin 1 of the rear window defroster heater connector C-485 is normal.
   - If yes, go to step 2.
   - If not, go to step 4.

2. Check if the rear window defroster heater ground line is normal.
   - If yes, go to step 3.
   - If not, repair the fault such as short circuit or virtual connection existing in the rear window defroster heater ground line. ■

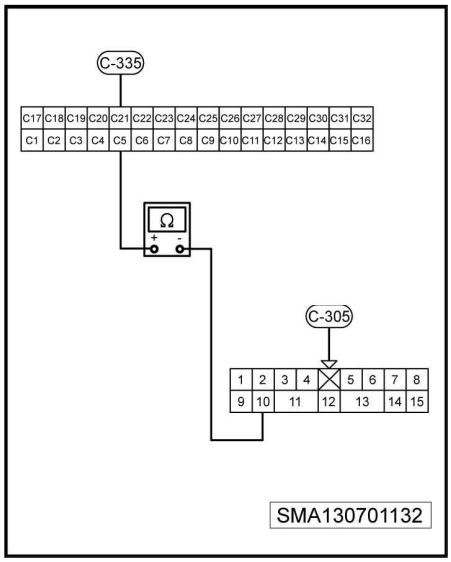
3. Measure the resistance value of the rear window defroster heater and check if the rear window defroster heater has any breakpoint.
   - If yes, repair or replace it. ■
   - If not, go to step 4.



4. Turn on the defroster switch and check if the voltage between the pins A8, A9 of body control module connector C-503 and the ground is the battery voltage.
   - If yes, check if the power lines between the body control module and the rear window defroster heater have the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.



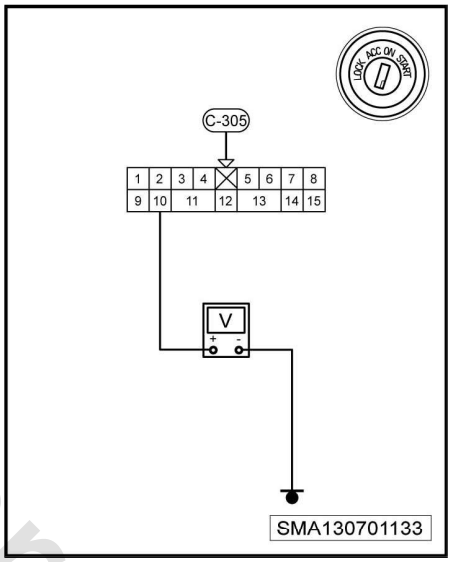
5. Check if the line between the pin C5 of the body control module connector C-335 and the pin 10 of the A/C control module connector C-305 is normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■



6. Turn on the defroster switch and check if the pin 10 of the A/C control module connector C-305 has voltage output.
   - If yes, go to step 7.
   - If not, replace the A/C control module. ■

7. Check if the power supply line and the ground line of the BCM are normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

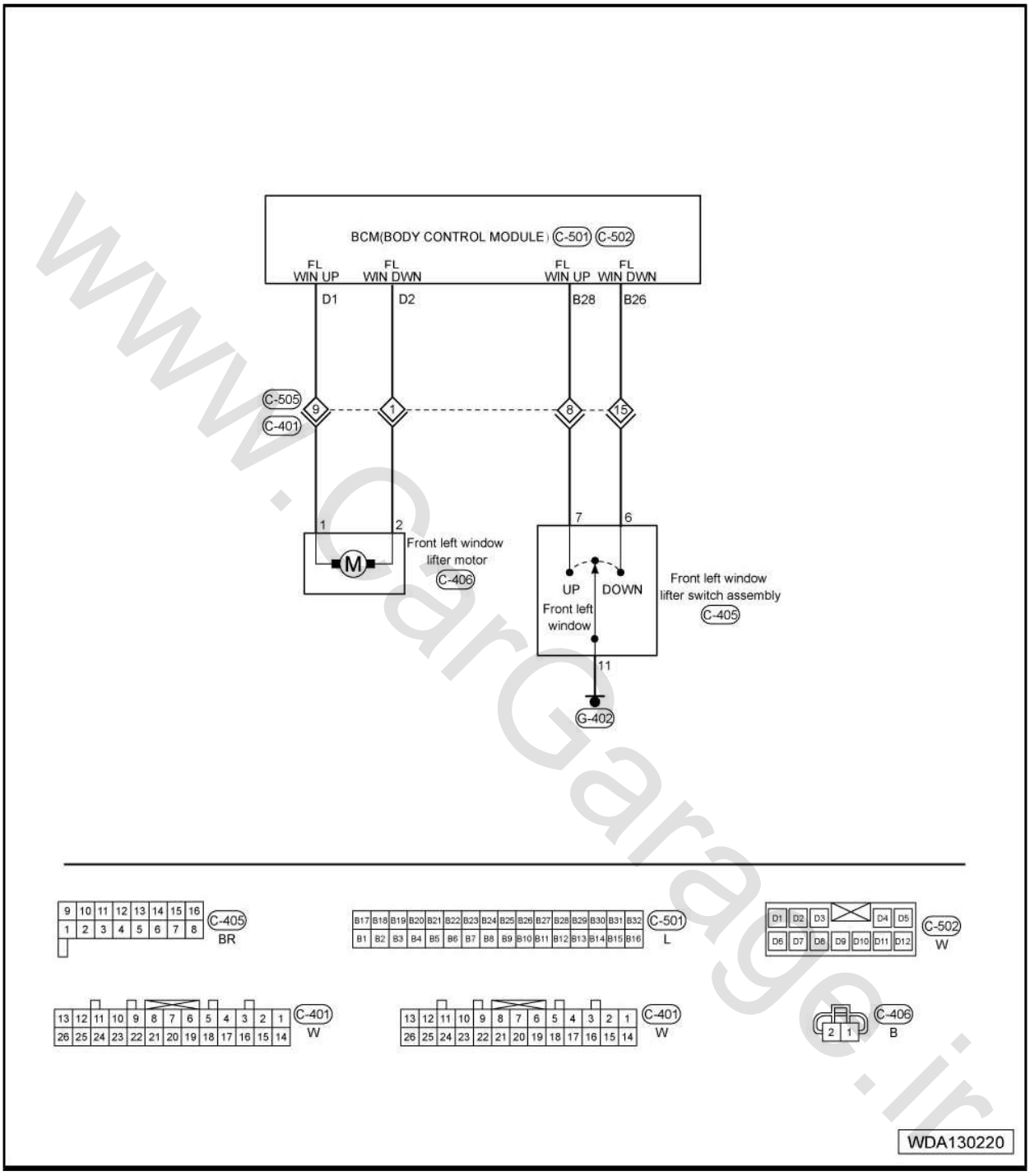
8. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■



07

7.4.12 B1350 – Low current in the front left window up output control circuit

B1353 – Low current in the front left window down output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
D1	Front left window up output	The ignition switch in the ACC or ON position The window lifter switch in the UP position	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
D2	Front left window down output	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position	
B26	Front Left window down input	The ignition switch in the ACC or ON position	Battery voltage
B28	Front left window up input	The ignition switch in the ACC or ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1350	Low current in the front left window up output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the UP position	The front left window output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the window lifter switch • Failure of the window lifter motor
B1353	Low current in the front left window down output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position		

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch, turn it on again after 3 to 5 seconds, and carry out the corresponding function test.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

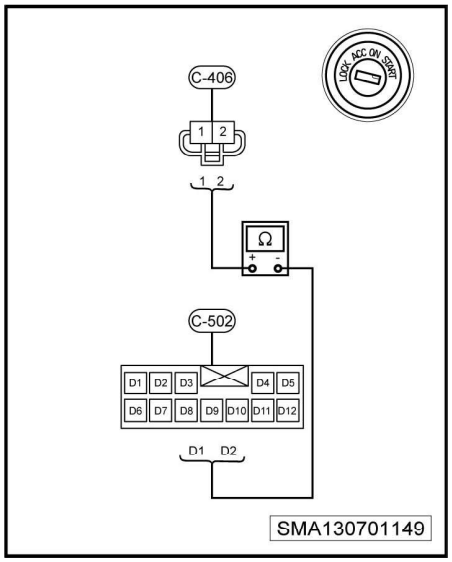
Diagnosis procedures:

07

Note

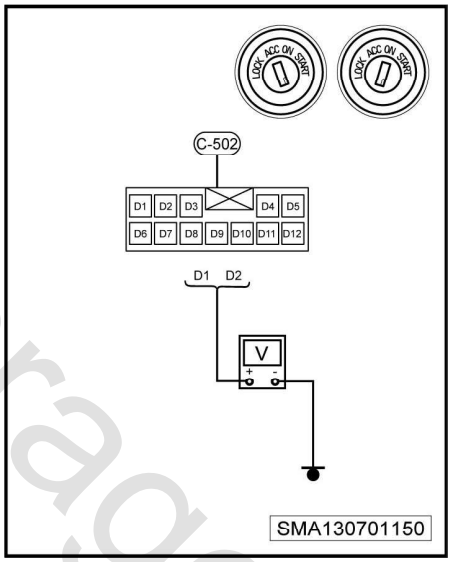
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the lines between the pins D1, D2 of the body control module connector C-502 and the pins 1, 2 of the front left window lifter motor connector C-406 are normal.
   - If yes, go to step 2.
   - If not, go to step 3 and 4.



2. Measure the resistance value of the window lifter motor and carry out the power supply test (up and down operations have opposite electrodes) to check if the window lifter motor is normal.
   - If yes, go to step 3.
   - If not, replace the front left window lifter motor. ■

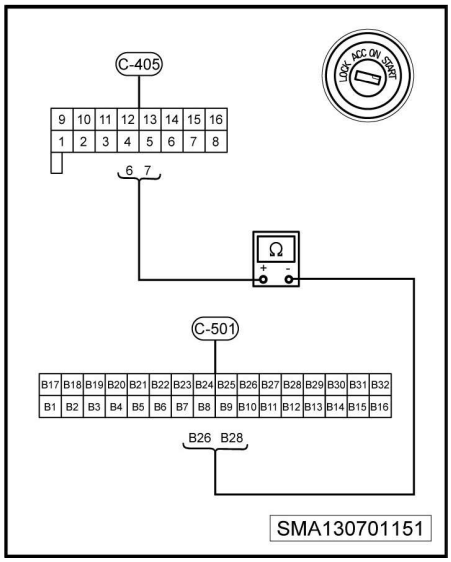
3. Turn the front left window lifter switch to the UP position and check if the voltage between the pin D1 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D1 of the body control module connector C-502 and the front left window lifter motor has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.



4. Turn the front left window lifter switch to the DOWN position and check if the voltage between the pin D2 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D2 of the body control module connector C-502 and the front left window lifter motor has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 6.

5. Check if the line between the pin B28 of the body control module connector C-501 and the pin 7 of the front left window lifter switch assembly connector C-405 is normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Check if the line between the pin B26 of the body control module connector C-501 and the pin 6 of the front left window lifter switch assembly connector C-405 is normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■

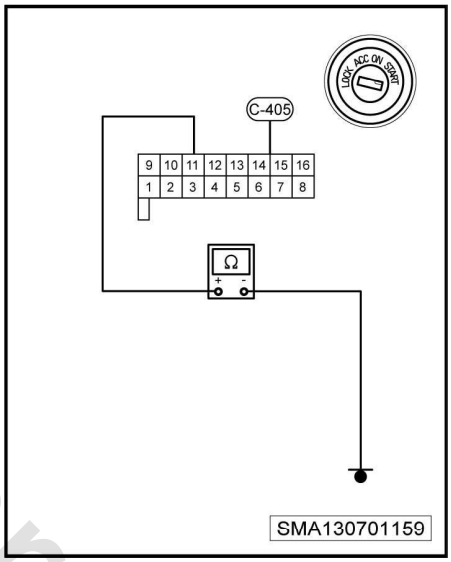


7. Check if the line between the pin 11 of the front left window lifter switch assembly connector C-405 and the ground is normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

8. Check if the front left window lifter switch assembly is normal.
   - If yes, repair or replace the front left window lifter switch assembly. ■
   - If not, go to step 9.

9. Check if the power supply line and the ground line of BCM are normal.
   - If yes, go to step 10.
   - If not, repair the faulty line. ■

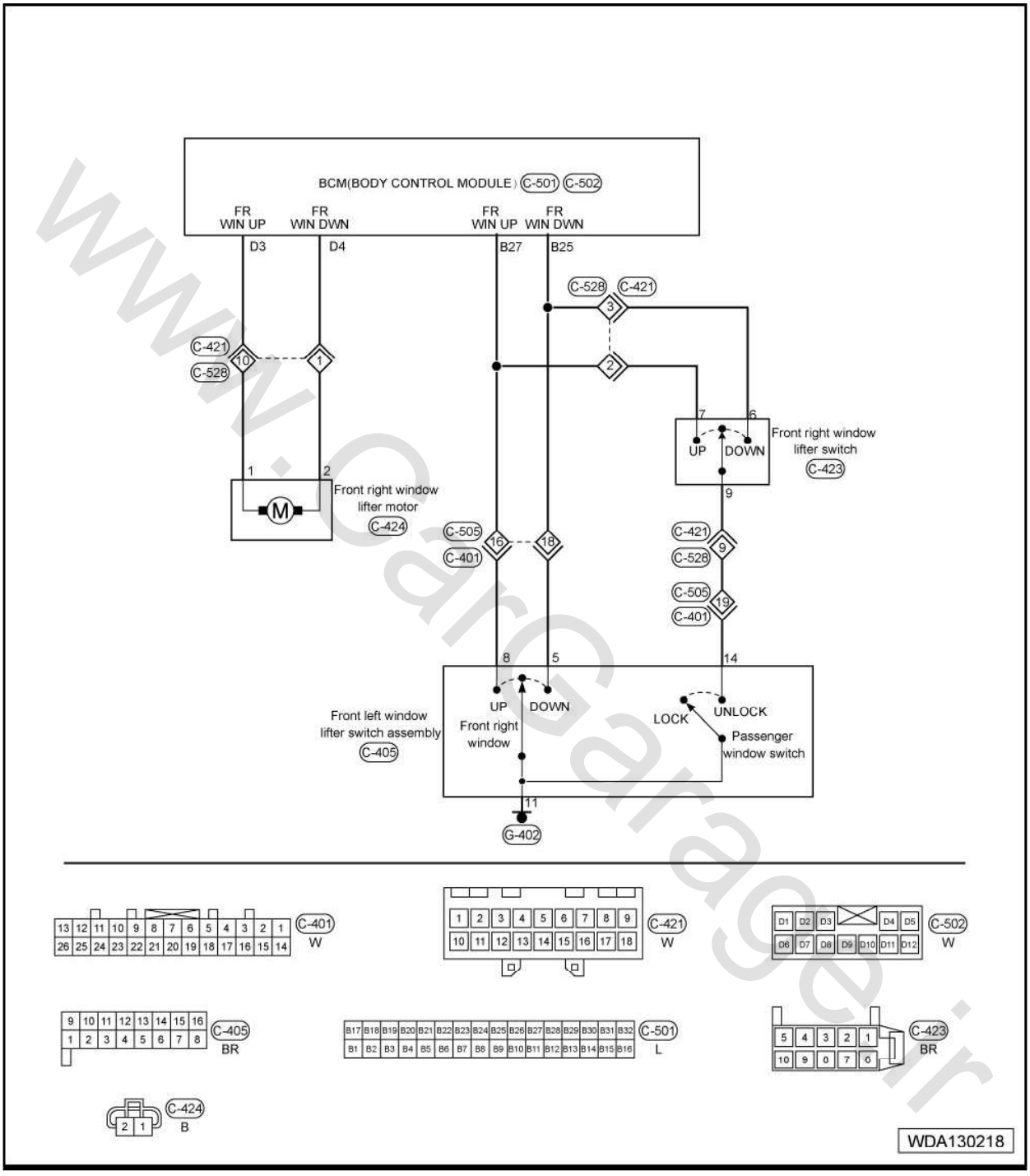
10. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
    - If yes, find the fault cause from other symptoms.
    - If not, the fault has been rectified. ■



07

7.4.13 B1356 – Low current in the front right window up output control circuit

B1359 – Low current in the front right window down output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
D3	Front right window up output	The ignition switch in the ACC or ON position	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
		The window lifter switch in the UP position	
D4	Front right window down output	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position	
B25	Front right window down input	The ignition switch in the ACC or ON position	Battery voltage
B27	Front right window up input	The ignition switch in the ACC or ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1356	Low current in the front right window up output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the UP position	The front right window output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the window lifter switch • Failure of the window lifter motor
B1359	Low current in the front right window down output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position		

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch, turn it on again after 3 to 5 seconds, and carry out the corresponding function test.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

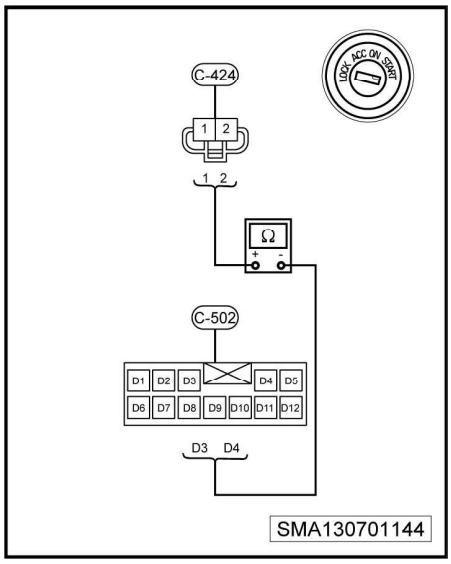
Diagnosis procedures:

07

Note

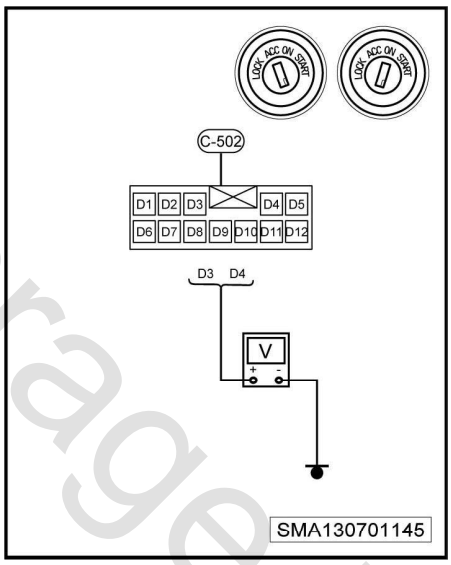
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the lines between the pins D3, D4 of the body control module connector C-502 and the pins 1, 2 of the front left window lifter motor connector C-424 are normal.
   - If yes, go to step 2.
   - If not, go to step 3 and 4.



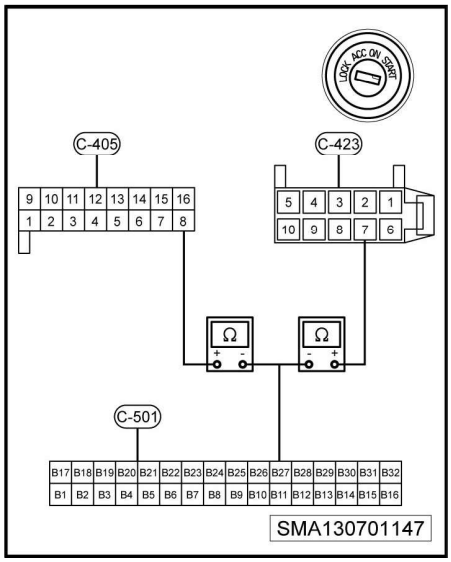
2. Measure the resistance value of the window lifter motor and carry out the power supply test (up and down operations have opposite electrodes) to check if the window lifter motor is normal.
   - If yes, go to step 3.
   - If not, replace the front right window lifter motor. ■

3. Turn the front right window lifter switch to the UP position and check if the voltage between the pin D3 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D3 of the body control module connector C-502 and the front right window lifter motor has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.

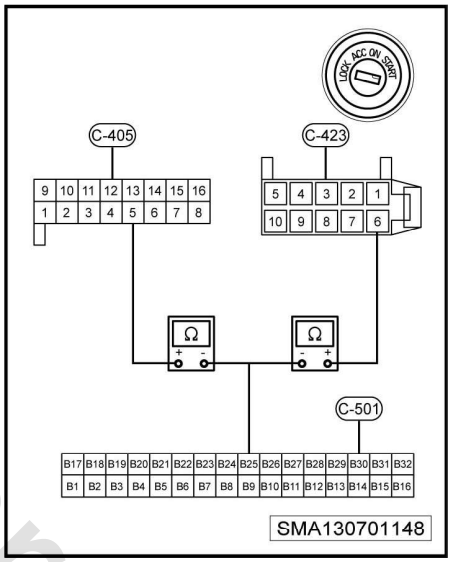


4. Turn the front right window lifter switch to the DOWN position and check if the voltage between the pin D4 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D4 of the body control module connector C-502 and the front right window lifter motor has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 6.

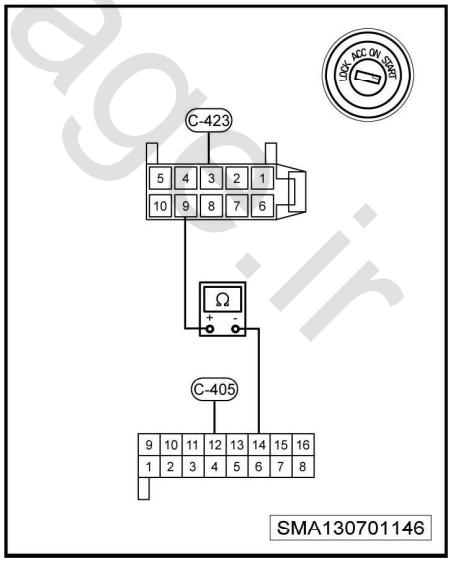
5. Check if the lines between the pin B27 of the body control module connector C-501 and the pin 8 of the front left window lifter switch assembly connector C-405 and the pin 7 of the front right window lifter switch connector C-423 are normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■



6. Check if the lines between the pin B25 of the body control module connector C-501 and the pin 5 of the front left window lifter switch assembly connector C-405 and the pin 6 of the front right window lifter switch connector C－423 are normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■



7. Check if the line between the pin 14 of the front left window lifter switch assembly connector C-405 and the pin 9 of the front right window lifter switch assembly connector C-423 is normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

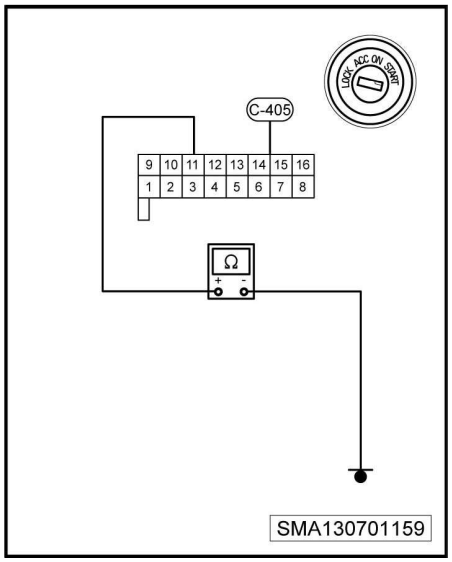


8. Check if the line between the pin 11 of the front left window lifter switch assembly connector C-405 and the ground is normal.
   - If yes, go to step 9.
   - If not, repair the faulty line. ■

9. Check if the front left window lifter switch assembly is normal.
   - If yes, repair or replace the front left window lifter switch assembly. ■
   - If not, go to step 10.

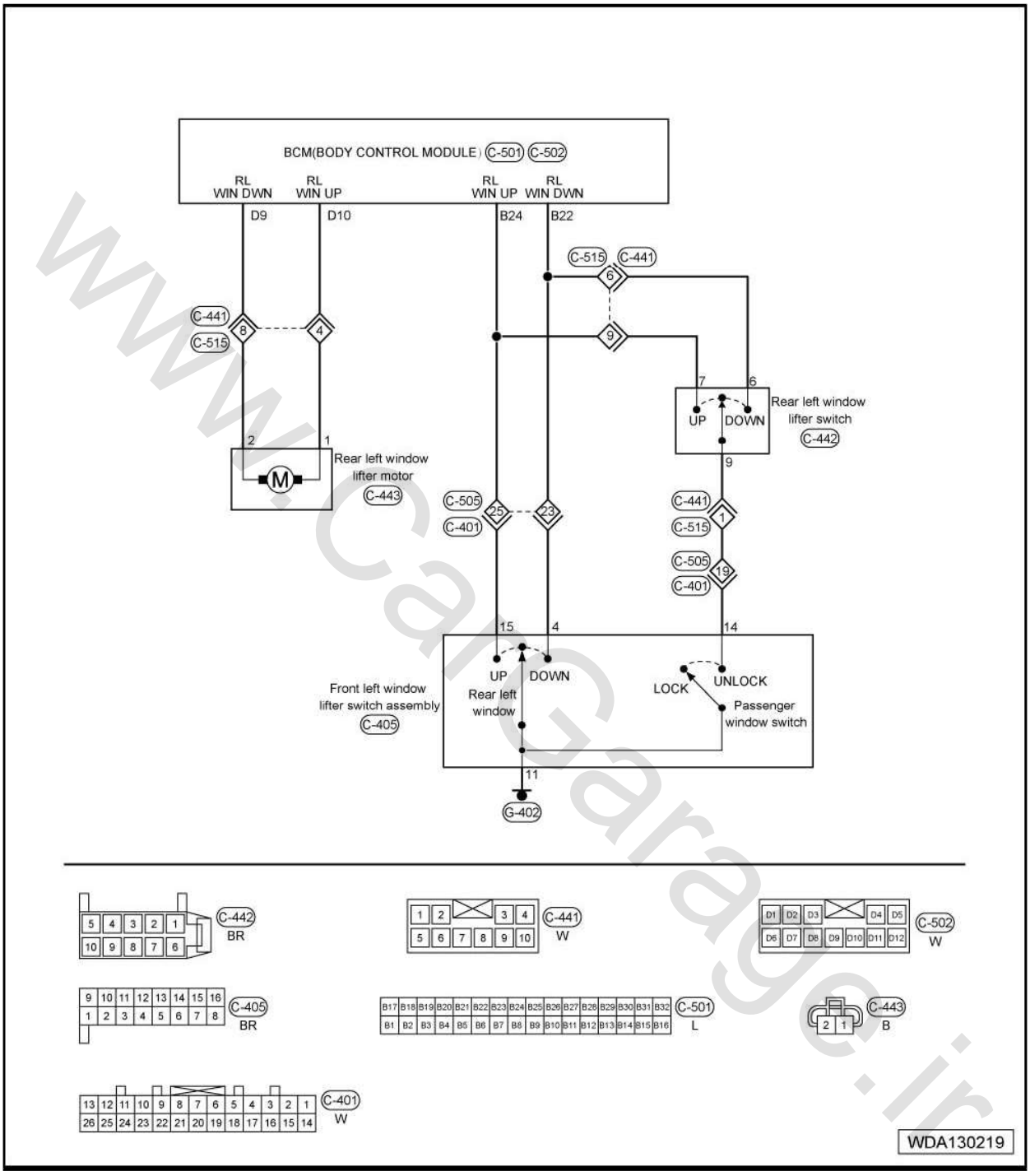
10. Check if the power supply line and the ground line of BCM are normal.
    - If yes, go to step 11.
    - If not, repair the faulty line. ■

11. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
    - If yes, find the fault cause from other symptoms.
    - If not, the fault has been rectified. ■



7.4.14 B1361 – Low current in the rear left window up output control circuit

B1363 – Low current in the rear left window down output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
D9	Rear left window up output	The ignition switch in the ACC or ON position The window lifter switch in the UP position	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
D10	Rear left window down output	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position	
B22	Rear left window down input	The ignition switch in the ACC or ON position	Battery voltage
B24	Rear left window up input	The ignition switch in the ACC or ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1351	Low current in the rear left window up output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the UP position	The rear left window output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the window lifter switch • Failure of the window lifter motor
B1353	Low current in the rear left window down output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position		

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch, turn it on again after 3 to 5 seconds, and carry out the corresponding function test.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

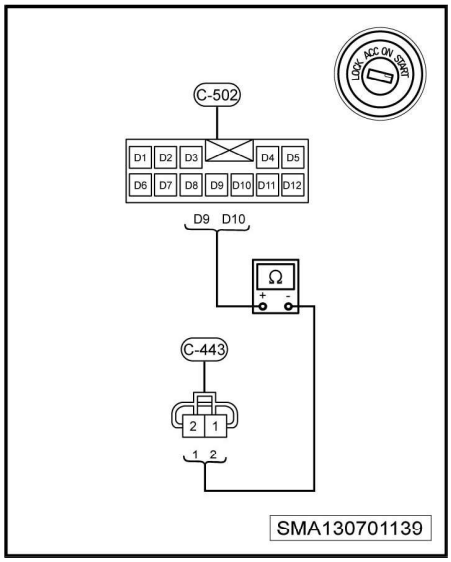
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

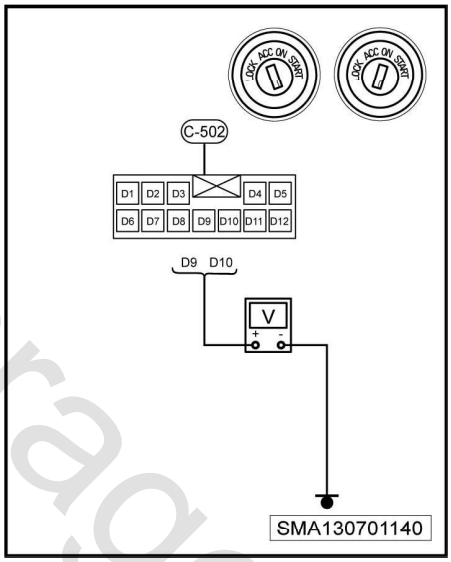
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the lines between the pins D9, D10 of the body control module connector C-502 and the pins 1, 2 of the rear left window lifter motor connector C-443 are normal.
   - If yes, go to step 2.
   - If not, go to step 3 and 4.



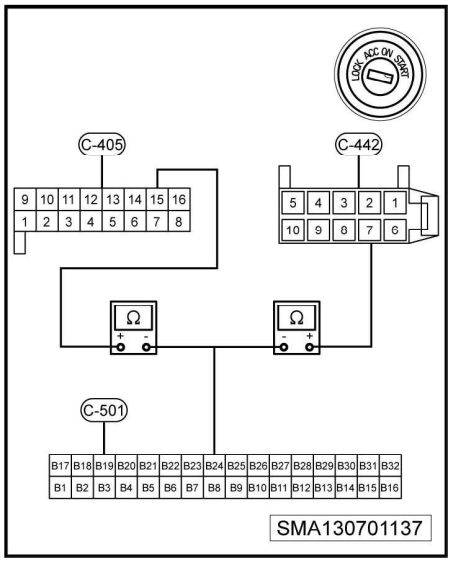
2. Measure the resistance value of the window lifter motor and carry out the power supply test (up and down operations have opposite electrodes) to check if the window lifter motor is normal.
   - If yes, go to step 3.
   - If not, replace the rear left window lifter motor. ■

3. Turn the rear left window lifter switch to the UP position and check if the voltage between the pin D10 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D10 of the body control module connector C-502 and the rear left window lifter motor connector C-443 has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.

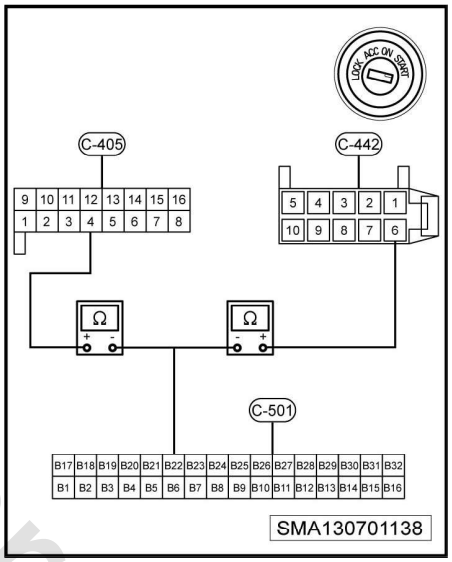


4. Turn the rear left window lifter switch to the DOWN position and check if the voltage between the pin D9 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D9 of the body control module connector C-502 and the rear left window lifter motor connector C-443 has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 6.

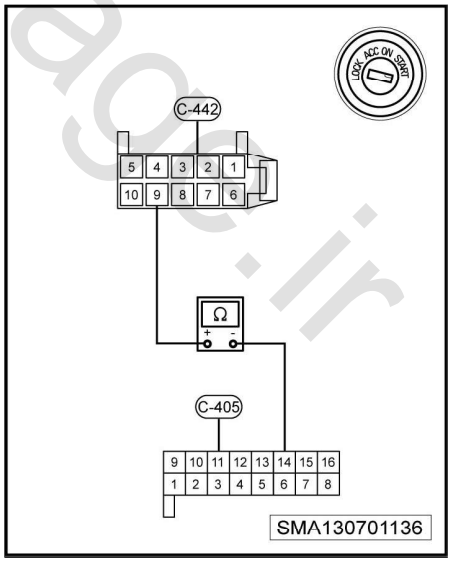
5. Check if the lines between the pin B24 of the body control module connector C-501 and the pin 15 of the front left window lifter switch assembly connector C-442 and the pin 7 of the rear left window lifter switch connector C－462 are normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■



6. Check if the lines between the pin B22 of the body control module connector C-501 and the pin 4 of the front left window lifter switch assembly connector C-405 and the pin 6 of the rear left window lifter switch connector C－422 are normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■



7. Check if the line between the pin 14 of the front left window lifter switch assembly connector C-405 and the pin 9 of the rear left window lifter switch assembly connector C-442 is normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

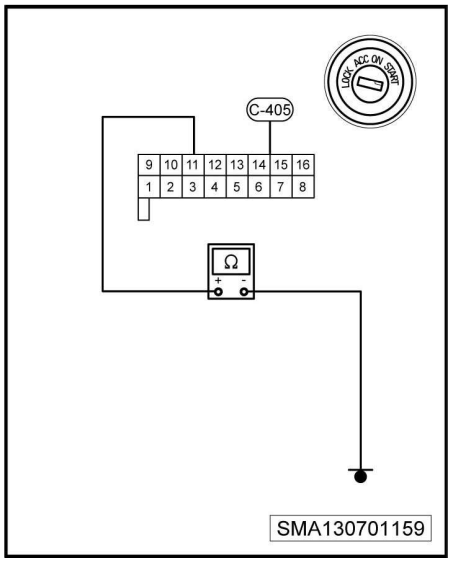


8. Check if the line between the pin 11 of the front left window lifter switch assembly connector C-405 and the ground is normal.
   - If yes, go to step 9.
   - If not, repair the faulty line. ■

9. Check if the front left window lifter switch assembly is normal.
   - If yes, repair or replace the front left window lifter switch assembly. ■
   - If not, go to step 10.

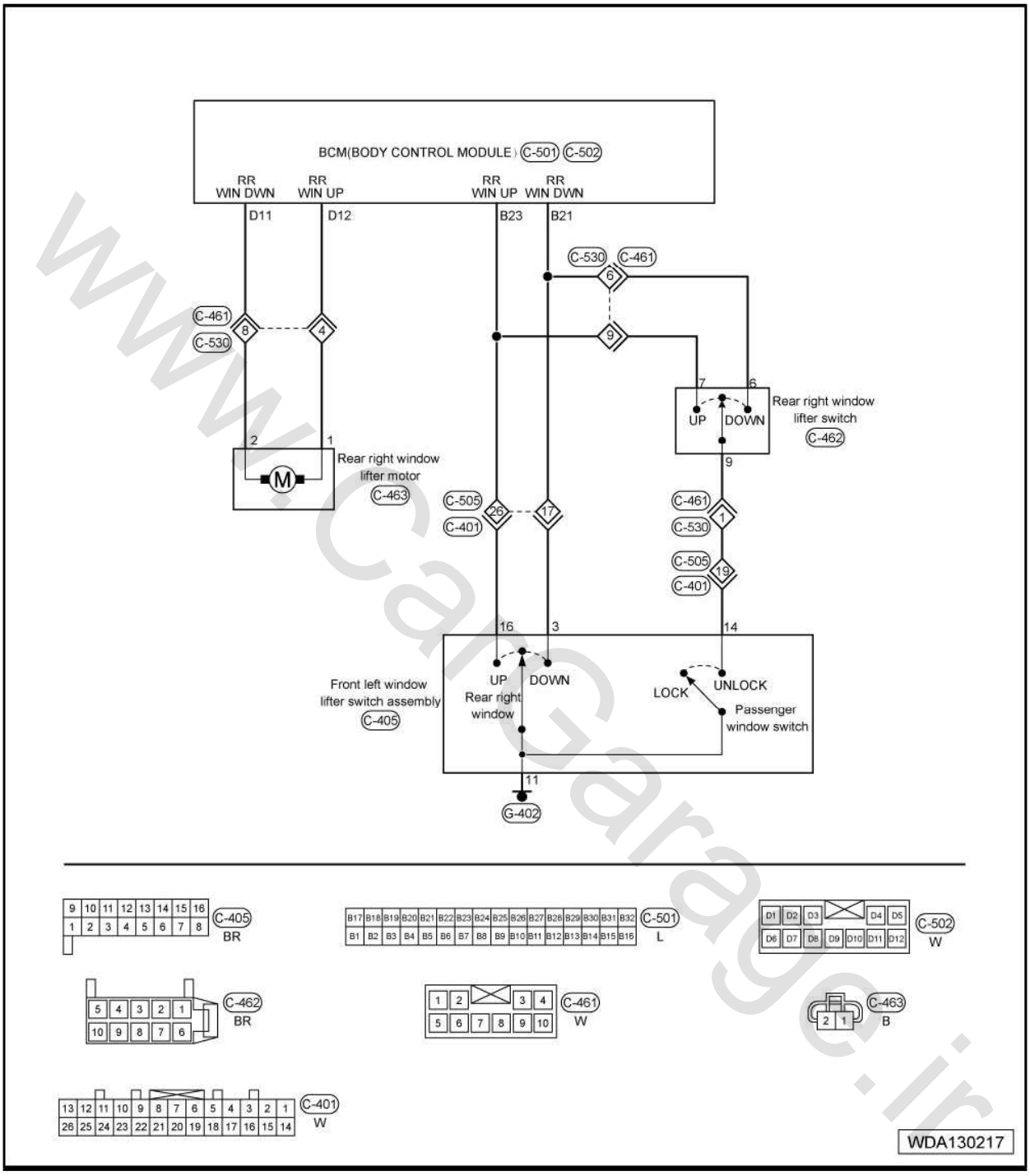
10. Check if the power supply line and the ground line of BCM are normal.
    - If yes, go to step 11.
    - If not, repair the faulty line. ■

11. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
    - If yes, find the fault cause from other symptoms.
    - If not, the fault has been rectified. ■



7.4.15 B1365 – Low current in the rear right window up output control circuit

B1367 – Low current in the rear right window down output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
D11	Rear right window up output	The ignition switch in the ACC or ON position The window lifter switch in the UP position	Battery voltage

BCM pin	Function	Condition	Value (DC voltage range)
D12	Rear right window down output	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position	
B21	Rear right window down input	The ignition switch in the ACC or ON position	Battery voltage
B23	Rear right window up input	The ignition switch in the ACC or ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1365	Low current in the rear right window up output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the UP position	The rear right window output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the window lifter switch • Failure of the window lifter motor
B1367	Low current in the rear right window down output control circuit	The ignition switch in the ACC or ON position The window lifter switch in the DOWN position		

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch, turn it on again after 3 to 5 seconds, and carry out the corresponding function test.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

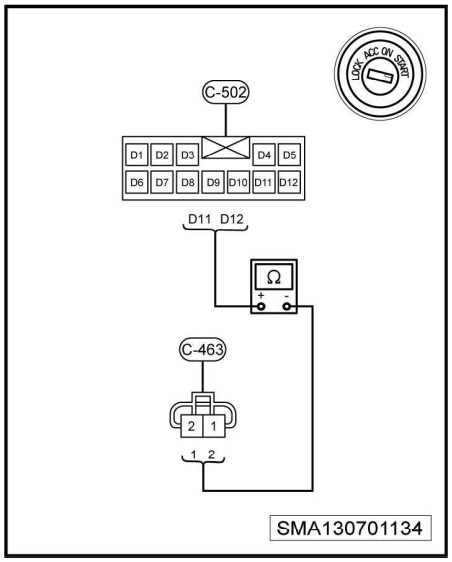
Diagnosis procedures:

07

Note

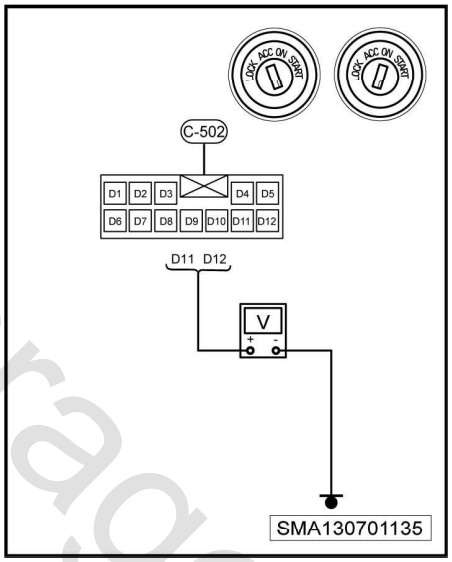
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the lines between the pins D11, D12 of the body control module connector C-502 and the pins 1, 2 of the rear right window lifter motor connector C-463 are normal.
   - If yes, go to step 2.
   - If not, go to step 3 and 4.



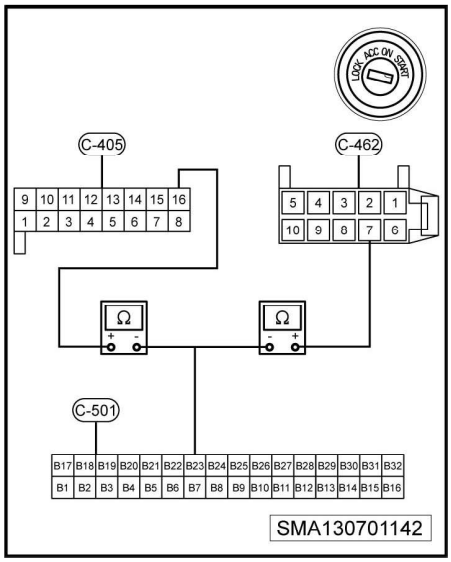
2. Measure the resistance value of the window lifter motor and carry out the power supply test (up and down operations have opposite electrodes) to check if the window lifter motor is normal.
   - If yes, go to step 3.
   - If not, replace the rear right window lifter motor. ■

3. Turn the rear right window lifter switch to the UP position and check if the voltage between the pin D12 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D12 of the body control module connector C-502 and the rear right window lifter motor connector C-463 has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.

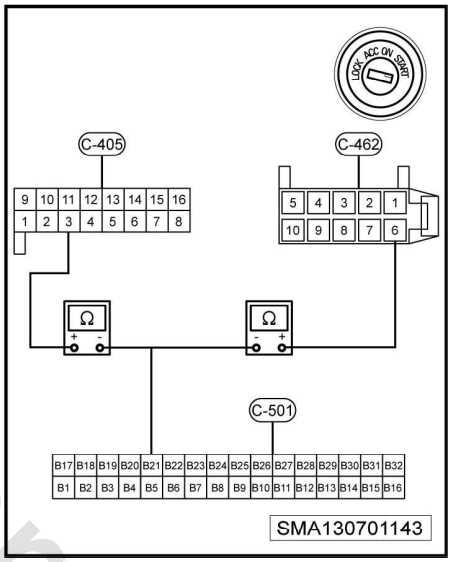


4. Turn the rear right window lifter switch to the DOWN position and check if the voltage between the pin D11 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D11 of the body control module connector C-502 and the rear right window lifter motor connector C-463 has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 6.

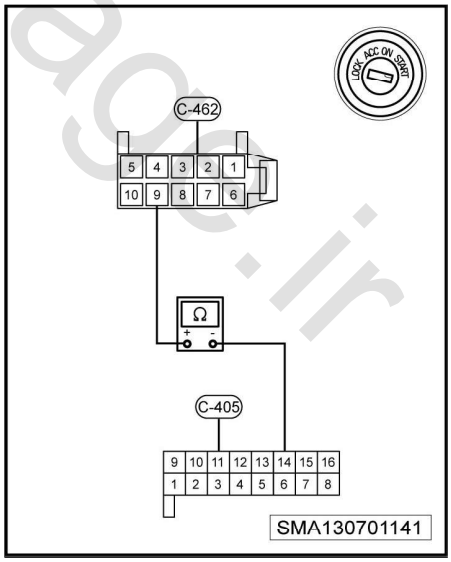
5. Check if the lines between the pin B23 of the body control module connector C-501 and the pin 16 of the front left window lifter switch assembly connector C-405 and the pin 7 of the rear right window lifter switch connector C-462 are normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■



6. Check if the lines between the pin B21 of the body control module connector C-501 and the pin 3 of the front left window lifter switch assembly connector C-405 and the pin 6 of the rear right window lifter switch connector C-462 are normal.
   - If yes, go to step 7.
   - If not, repair the faulty line. ■



7. Check if the line between the pin 14 of the front left window lifter switch assembly connector C-405 and the pin 9 of the rear right window lifter switch assembly connector C-462 is normal.
   - If yes, go to step 8.
   - If not, repair the faulty line. ■

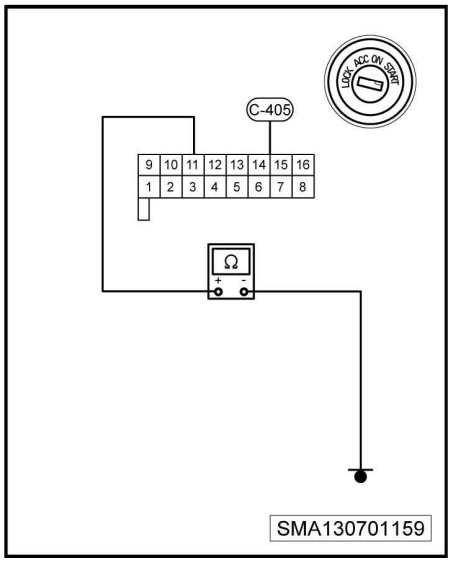


8. Check if the line between the pin 11 of the front left window lifter switch assembly connector C-405 and the ground is normal.
   - If yes, go to step 9.
   - If not, repair the faulty line. ■

9. Check if the front left window lifter switch assembly is normal.
   - If yes, repair or replace the front left window lifter switch assembly. ■
   - If not, go to step 10.

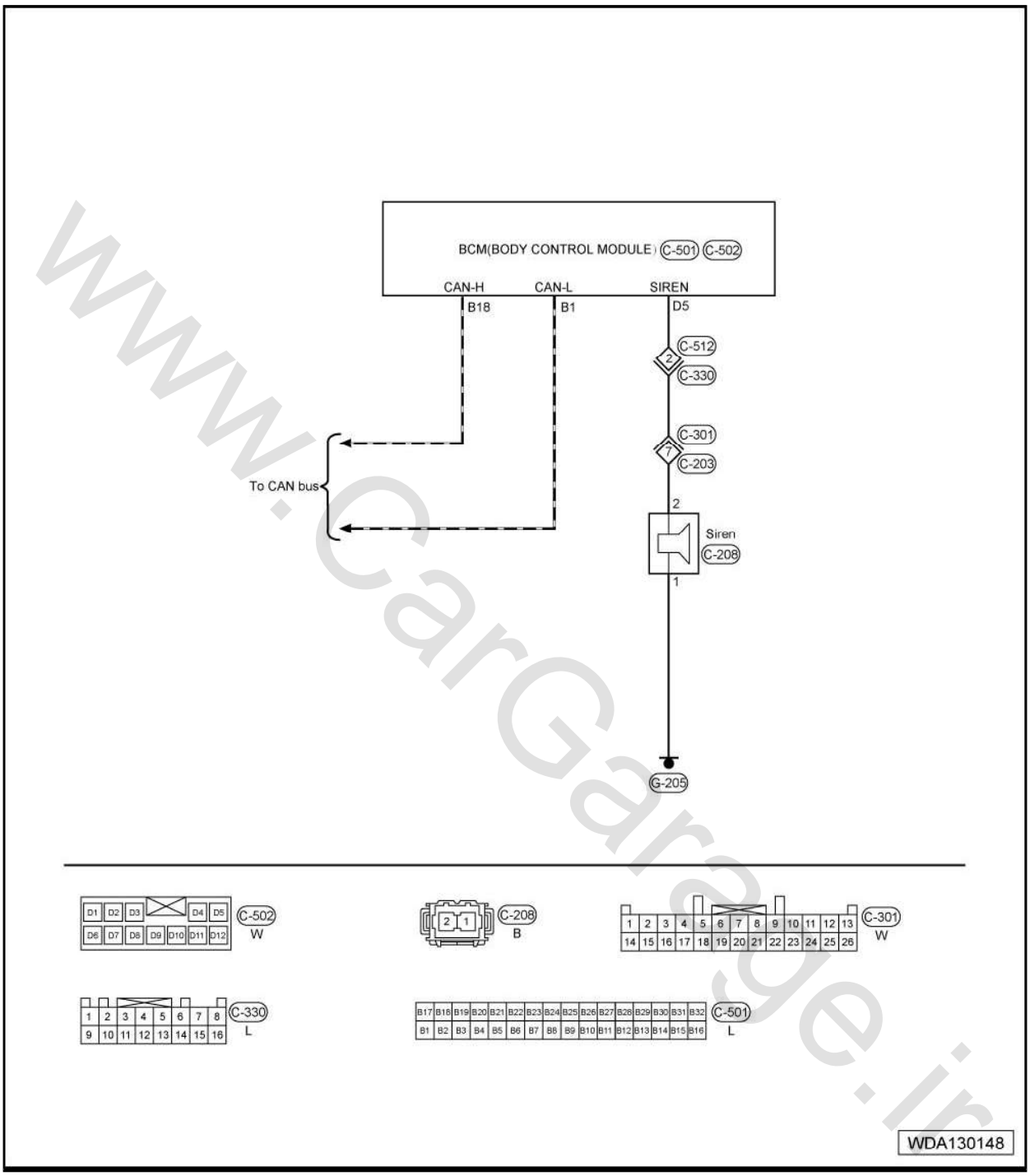
10. Check if the power supply line and the ground line of BCM are normal.
    - If yes, go to step 11.
    - If not, repair the faulty line. ■

11. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
    - If yes, find the fault cause from other symptoms.
    - If not, the fault has been rectified. ■



7.4.16 B1397 - Low voltage in the anti-theft horn output control circuit

B1398 - High voltage in the anti-theft horn output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
D5	Anti-theft horn output	The ignition switch in the ACC or ON position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1397	Low voltage in the anti-theft horn output control circuit	The ignition switch in the ACC or ON position	The anti-theft horn output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the anti-theft horn
B1398	High voltage in the anti-theft horn output control circuit	The ignition switch in the ACC or ON position		

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch, turn it on again after 3 to 5 seconds, and carry out the corresponding function test.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

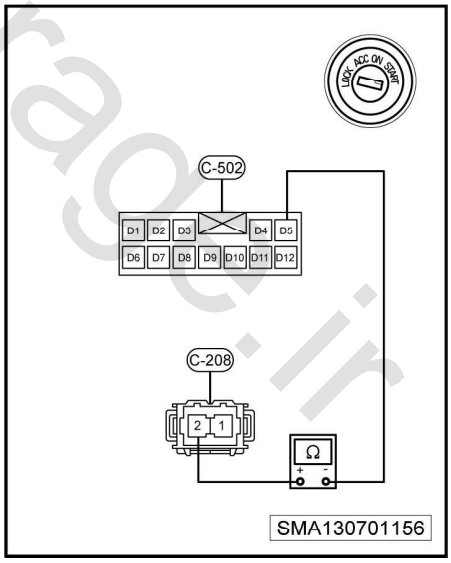
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

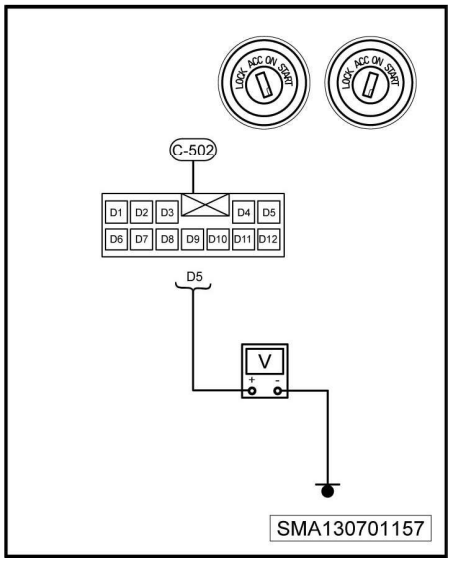
1. Check if the line between the pin D5 of the body control module connector C-502 and the pin 2 of the anti-theft horn connector C-208 is normal.
   - If yes, go to step 2.
   - If not, go to step 3.
2. Check if the line between the pin 1 of the anti-theft horn connector C-208 and the ground is normal.
   - If yes, go to step 3.
   - If not, repair the faulty line. ■
3. Measure the resistance value of the anti-theft horn and carry out the power supply test to check if the anti-theft horn is normal.
   - If yes, go to step 4.
   - If not, replace the anti-theft horn. ■



4. Check if the voltage between the pin D5 of body control module connector C-502 and the ground is the battery voltage.
   - If yes, check if the line between the pin D5 of the body control module connector C-502 and the anti-theft horn has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.

5. Check if the power supply line and the ground line of BCM are normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■



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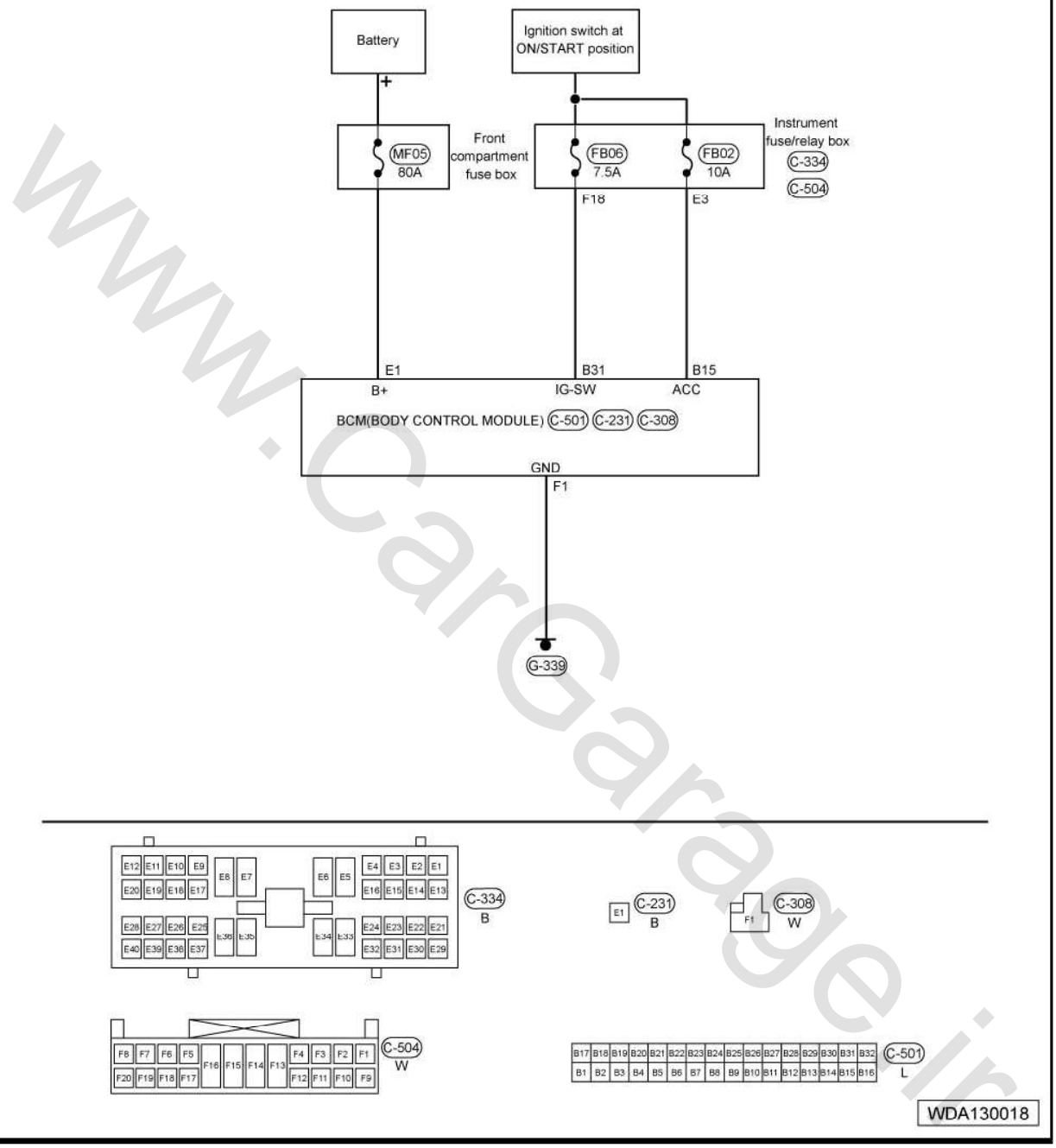
7.4.17 B1400 Low battery voltage

B1401 High battery voltage

Circuit diagram



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1400	Low battery voltage	Power on	Low or high body control module (BCM) output voltage detected	• Failure of the wiring harnesses or connector • Failure of BCM
B1401	High battery voltage			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

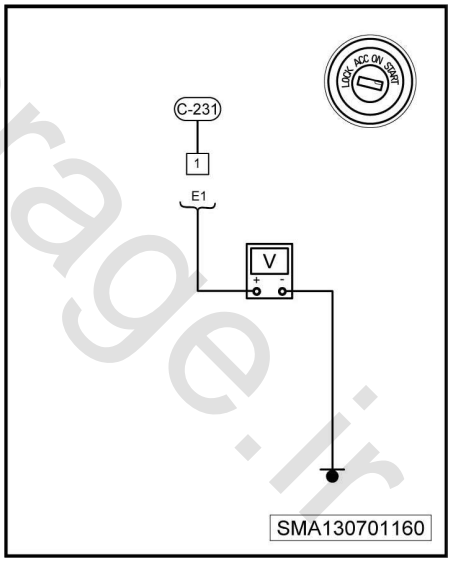
Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. When the body control module has a fault, check if the battery voltage is excessive or not.
   - If yes, check if the fault is caused by the battery or the charging system. ■
   - If not, go to step 3.

2. Check if the voltage between the pin E1 of body control module connector C-231 and the ground is the battery voltage.
   - If yes, go to step 3.
   - If not, check if the line between the pin E1 of the body control module connector C-231 and the battery power supply has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■



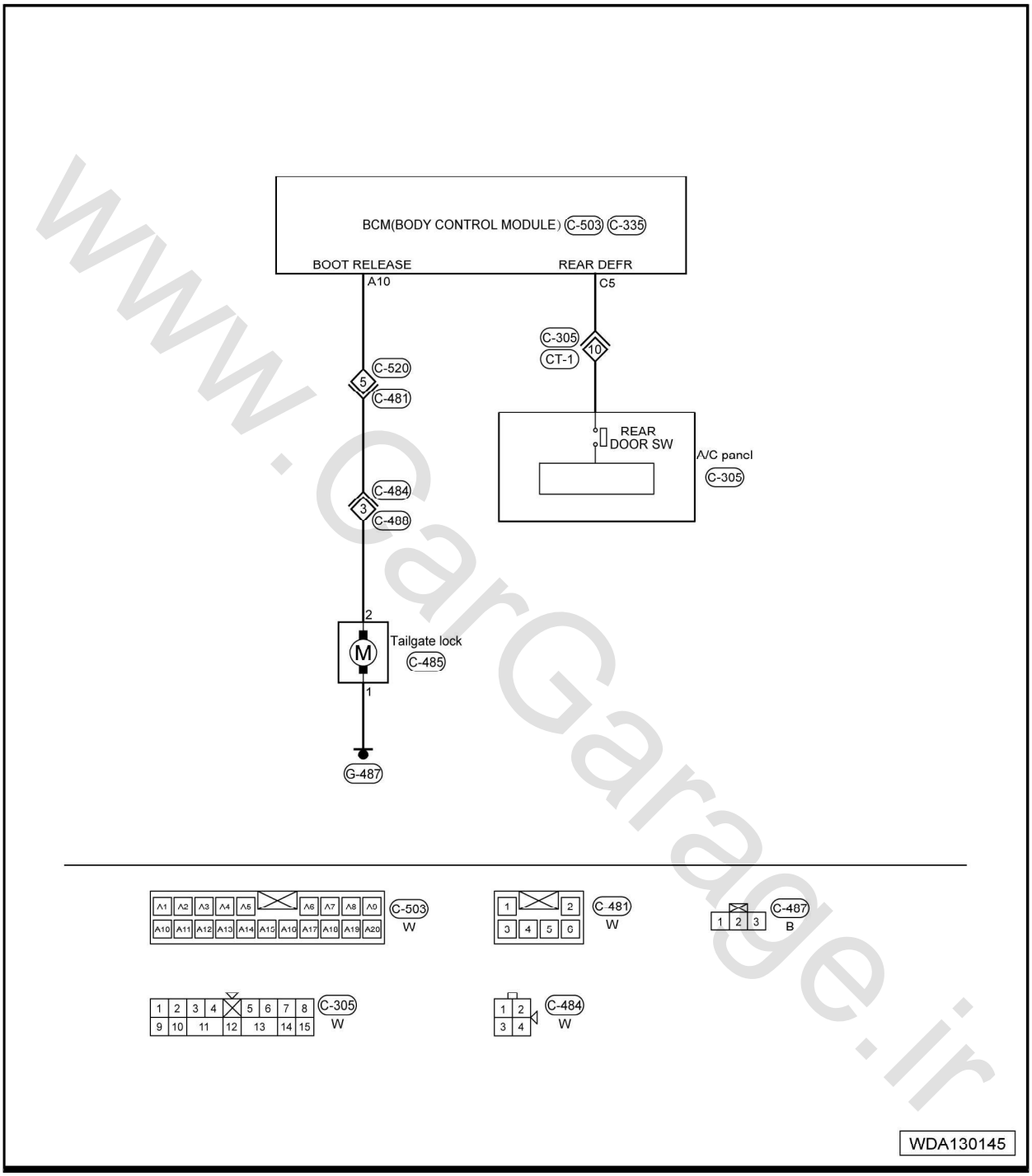
3. Check if the ground line of BCM is normal.
   - If yes, go to step 4.
   - If not, repair the faulty line. ■

4. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

7.4.18 B2311 – Trunk releasing output control circuit open circuit

B2313 – Low voltage in the trunk releasing output control circuit

B2312 – High voltage in the trunk releasing output control circuit



Checking the voltage between the body control module (BCM) and the grounding

BCM pin	Function	Condition	Value (DC voltage range)
A10	Body control module energized	Power on	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B2311	Trunk releasing output control circuit open circuit	The ignition switch in the ACC or ON position Trunk lid lock switch in the ON position	The trunk releasing output control circuit short or open circuit detected by the body control module (BCM)	• Failure of the wiring harnesses or connector • Failure of BCM • Failure of the luggage compartment motor
B2312	High voltage in the trunk releasing output control circuit			
B2313	Low voltage in the trunk releasing output control circuit			

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

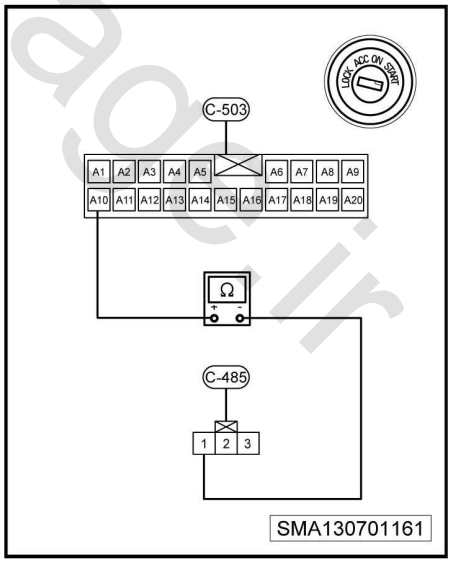
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the line between the pin A10 of the body control module connector C-503 and the pin 1 of the trunk lid lock motor connector C-485 is normal.
   - If yes, go to step 2.
   - If not, go to step 3.

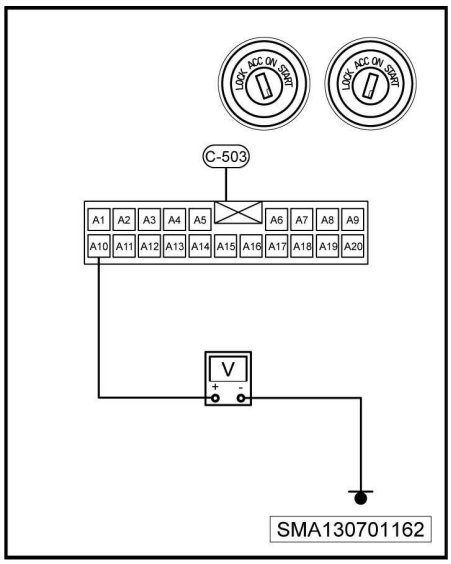


2. Check if the line between the trunk lid lock motor connector C-485 and the ground is normal.
   - If yes, go to step 3.

- If not, repair the faulty line. ■

3. Measure the resistance value of the trunk lid lock motor and carry out the power supply test to check if the trunk lid lock motor is normal.
   - If yes, go to step 4.
   - If not, replace the trunk lid lock motor. ■

4. Turn on the trunk lid lock switch and check if the voltage between the pin A10 of body control module connector C-503 and the ground is the battery voltage.
   - If yes, check if the line between the pin A10 of the body control module connector C-503 and the trunk lid lock motor has the following faults such as grounding, short circuit, open circuit, excessive resistance and virtual connection. ■
   - If not, go to step 5.



5. Check if the ground line of BCM is normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Replace the body control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

8 Alarm System

8.1 General information

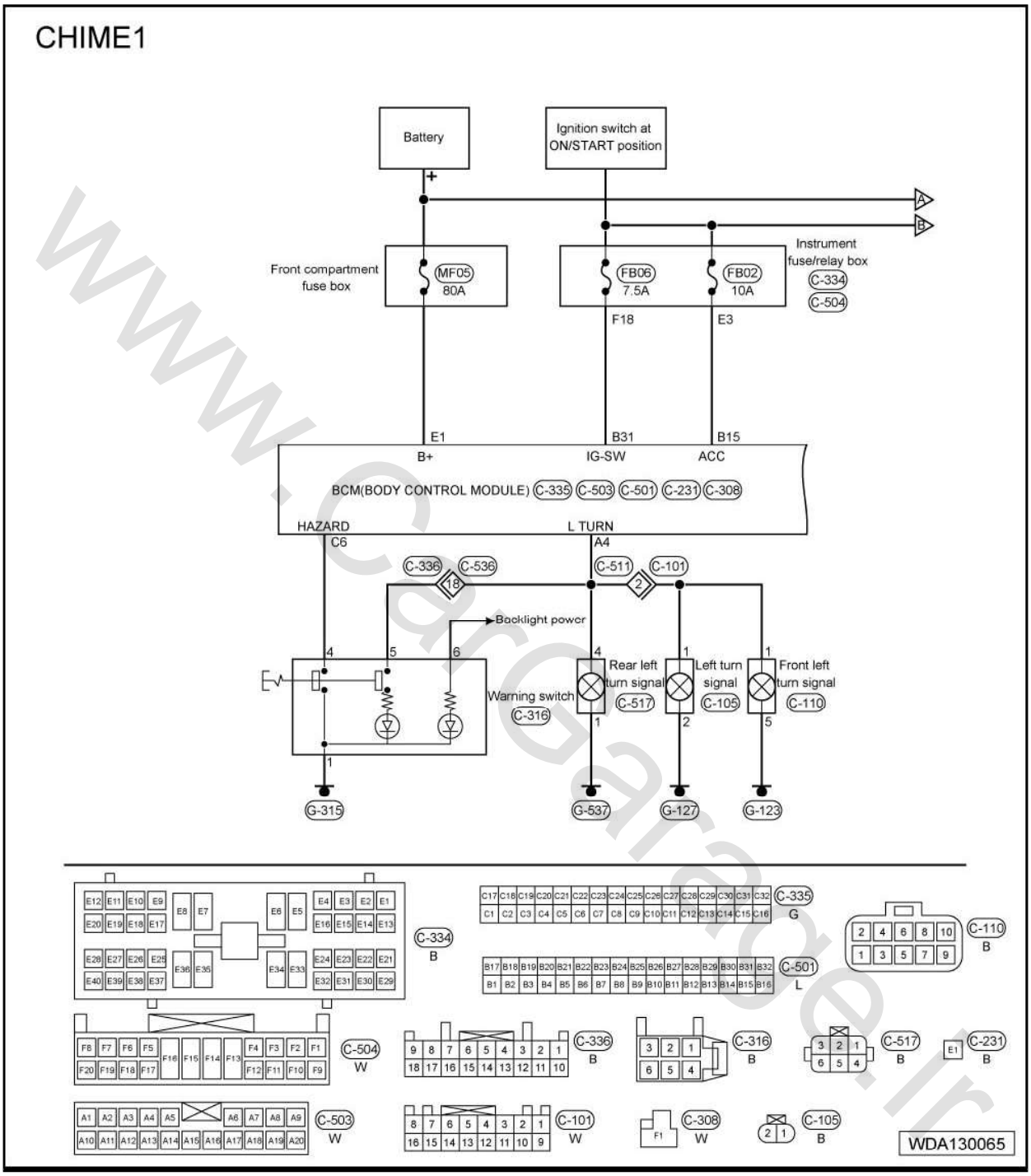
8.1.1 Description

The alarm system warns the driver with flashing lights and audible alarms in case of any malfunction or problem occurring to the vehicle. It checks the vehicle conditions through sensors and switches and activates the indicators on the instrument cluster to flash and the buzzer to produce warning tones. The buzzer is integrated into the instrument cluster. The system will give the corresponding warnings under the following conditions:

- The turn signal turned on
- The hazard warning lamp switch pressed
- Unfastened seat belt
- Low fuel level
- Low oil pressure
- Low brake fluid level
- Unlocked door
- Failure of the charging system
- Failure of the engine
- Failure of the airbag system
- Low coolant level
- Failure of the anti-theft control module
- Engine overheating

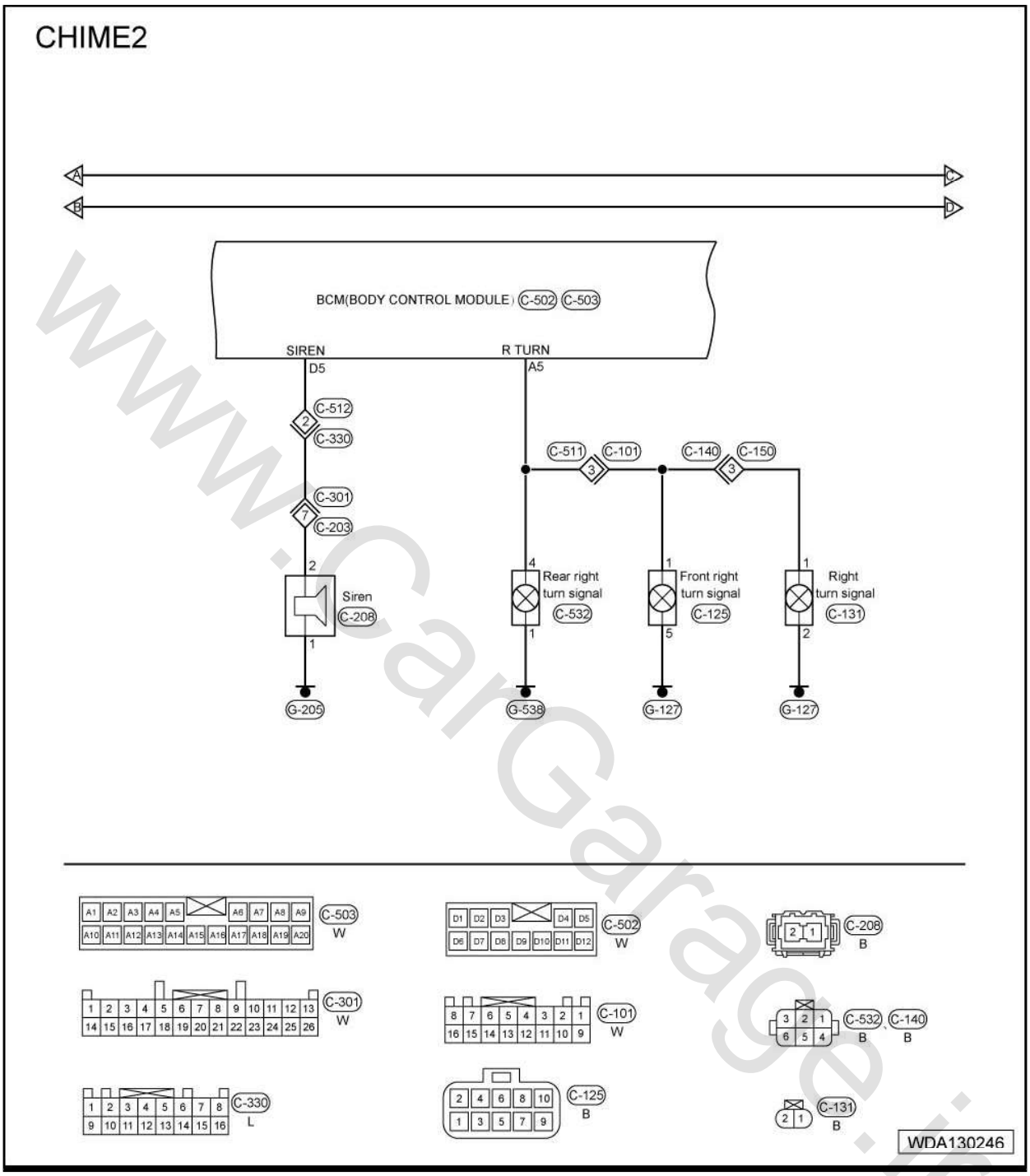
8.2 Circuit diagrams

Alarm system (page 1)

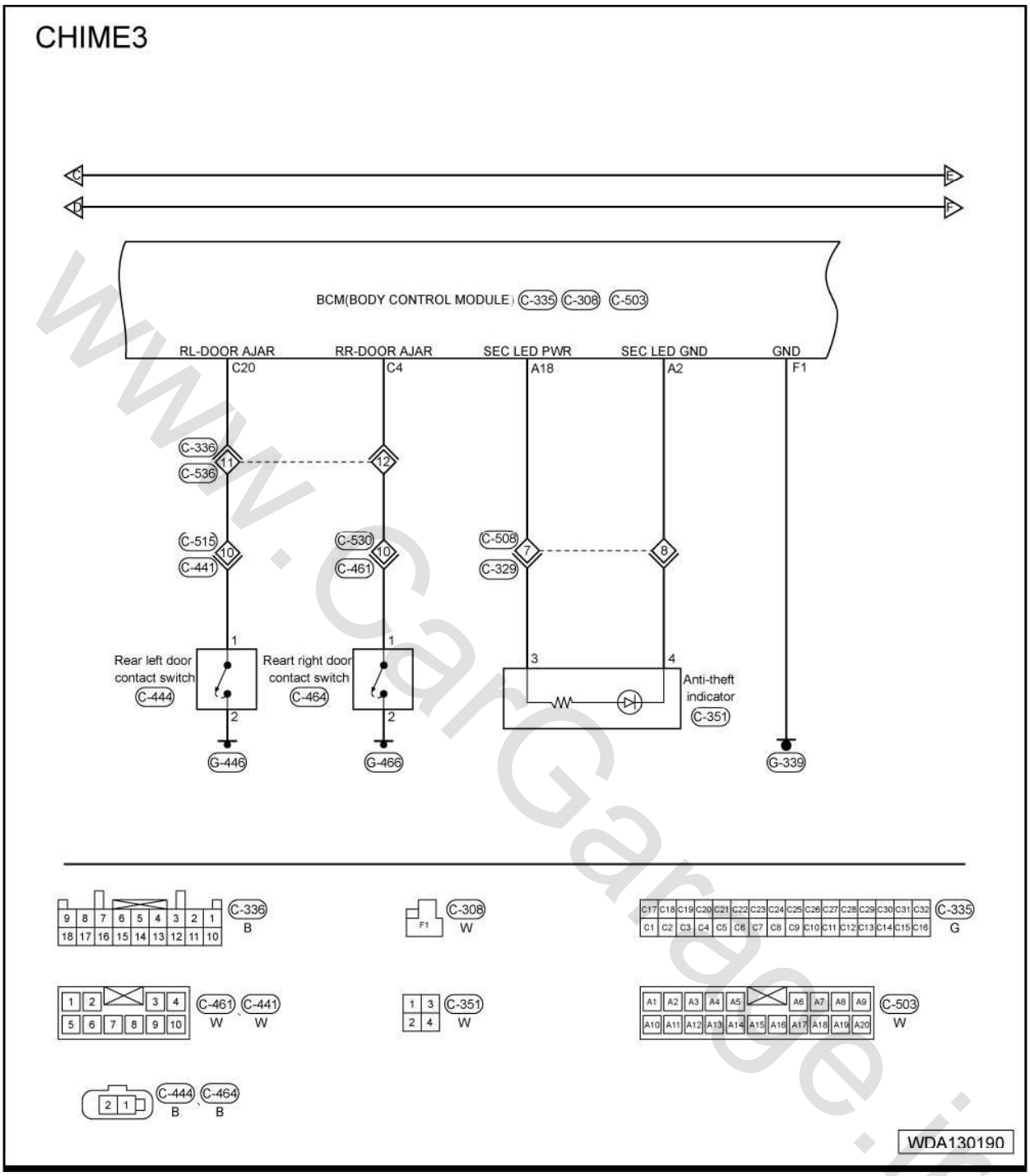


Alarm system (page 2)

07

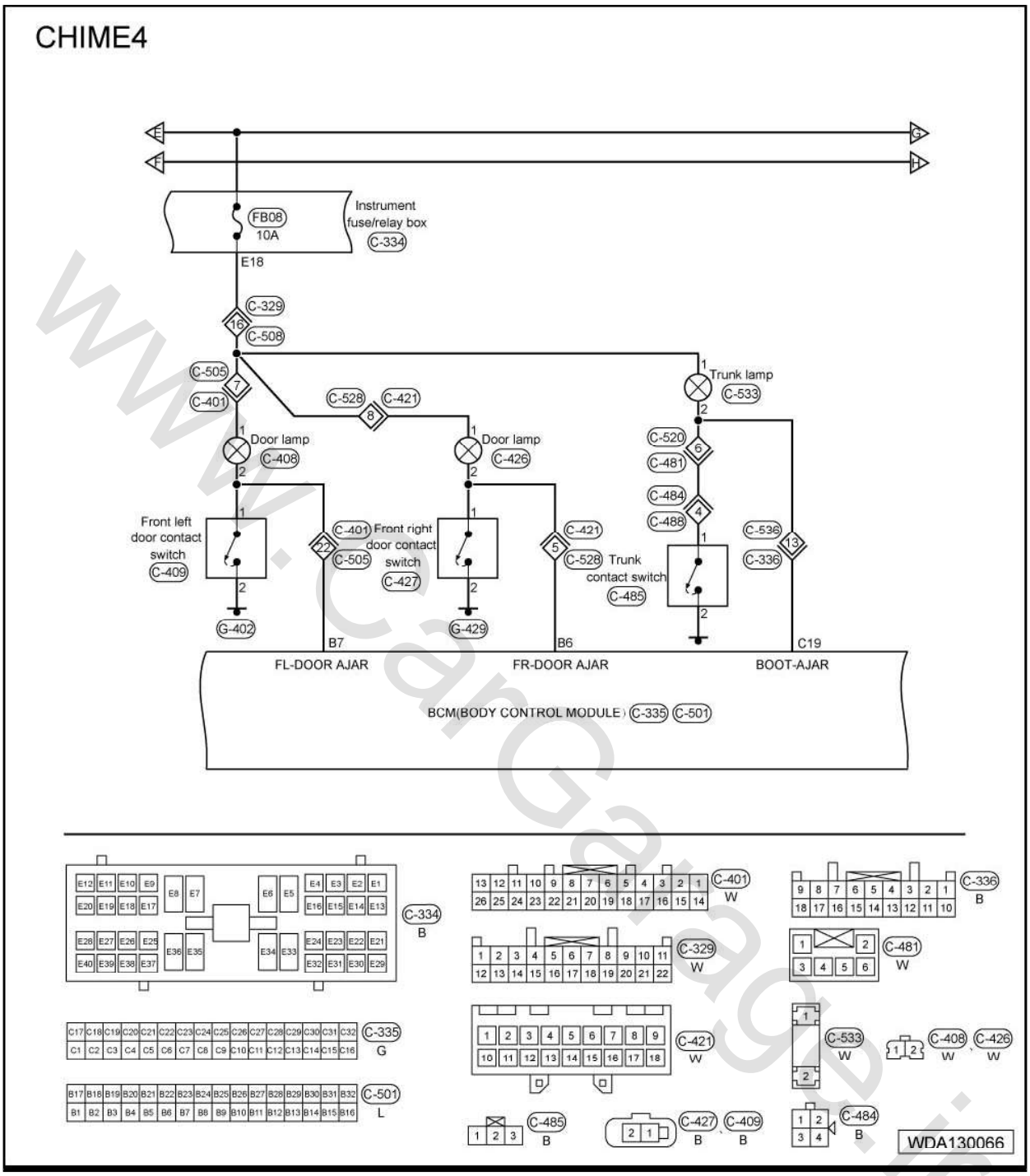


Alarm system (page 3)

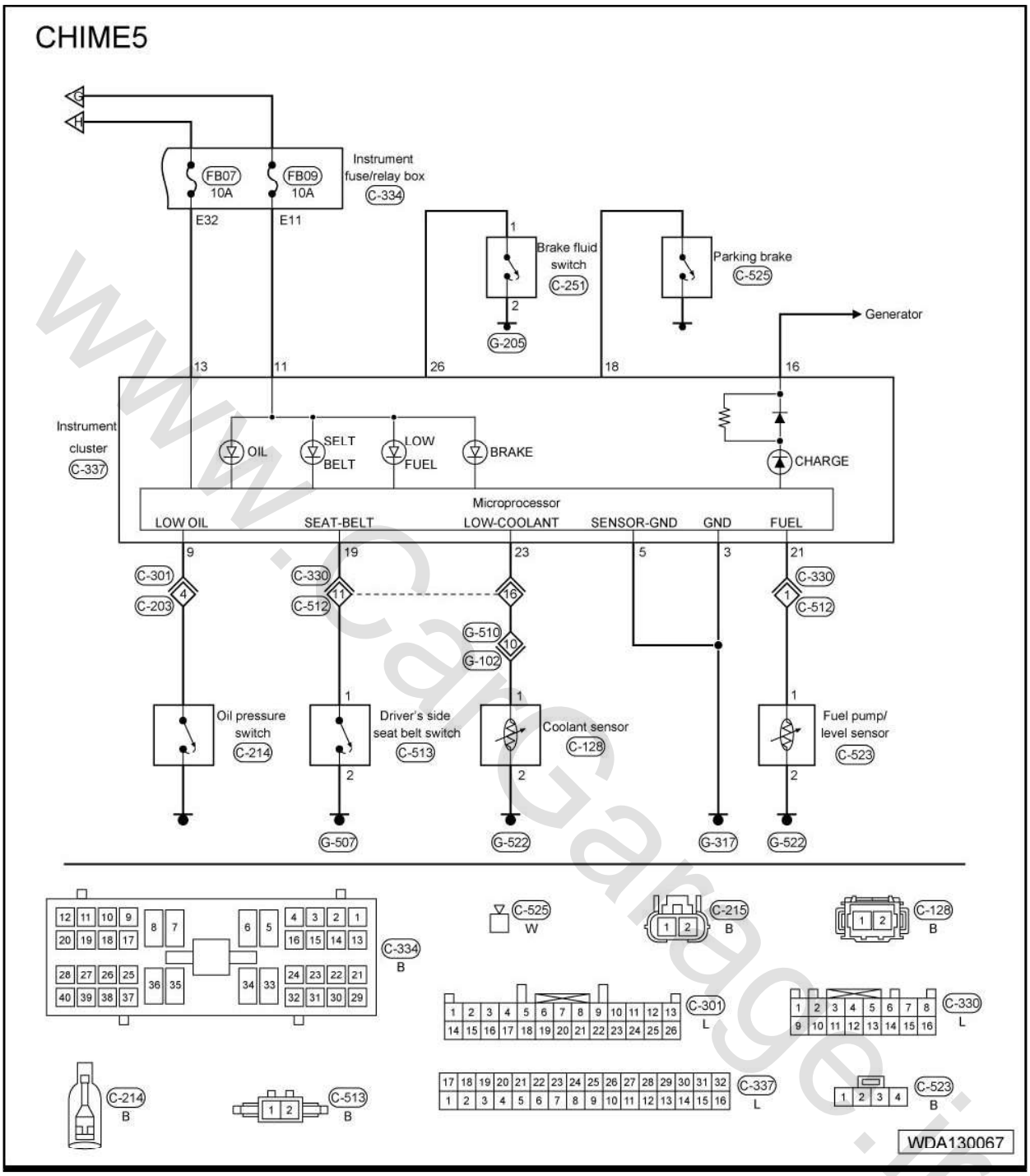


Alarm system (page 4)

07



Alarm system (page 5)



9 Interior Lights

07

9.1 General information

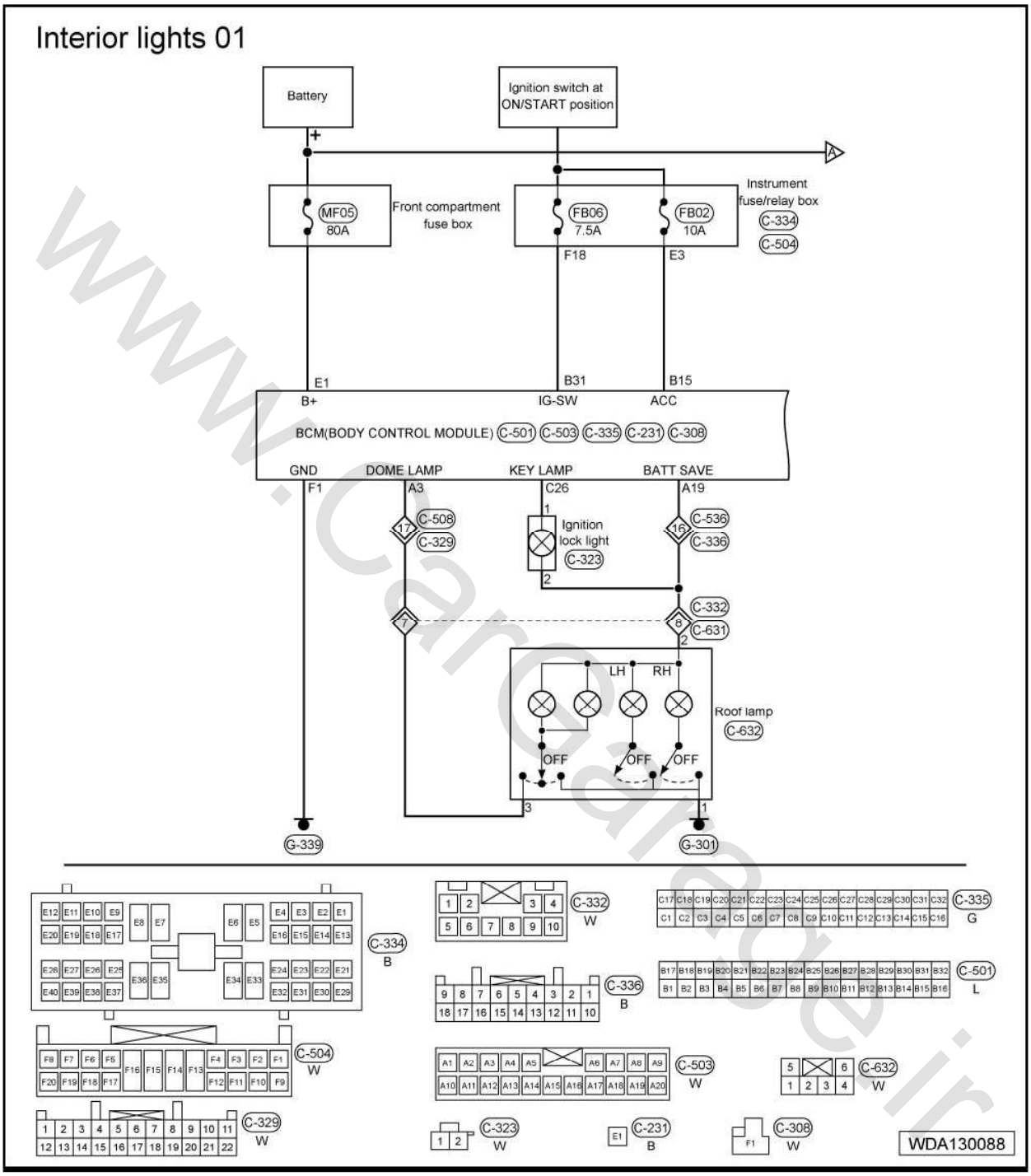
9.1.1 Description

Interior lights are controlled by the body control module (BCM) and consist of the following:

- Front roof lamp
- Backlight adjustment switch
- Instrument cluster
- Combination switch
- Hazard warning lamp switch lighting
- Cigarette lighter (lighting)
- Radio
- Door lock remote control switch lighting
- Power window main switch lighting
- Front power window switch lighting
- Rear power window switch lighting
- Trunk lamp

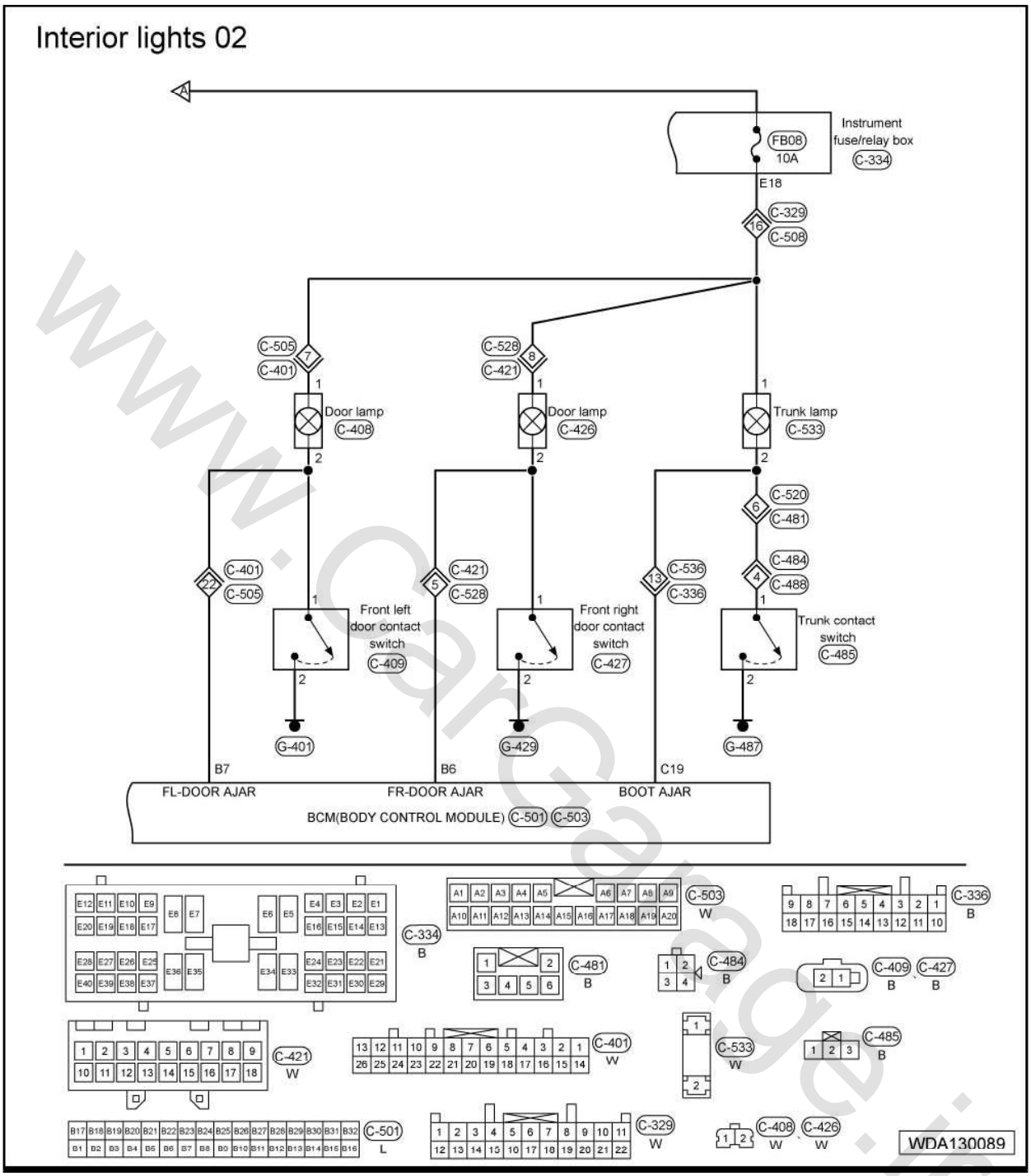
9.2 Circuit diagrams

Interior lights (page 1)



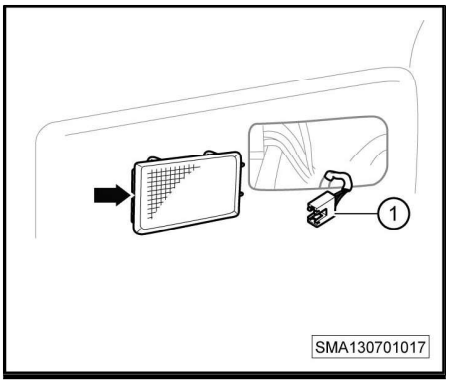
Interior lights (page 2)

07



9.3 Removing and installing the trunk lamp

Removal



1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Lever out the trunk lamp from the luggage compartment side trim (-arrow-) with the tools.
3. Disconnect the trunk lamp connector (-1-) and replace the trunk lamp.

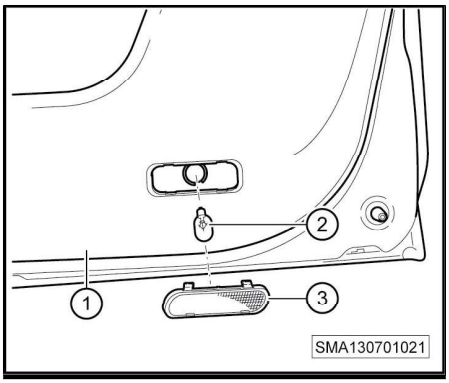
Installation

Installation shall follow the reverse sequence of the removal procedure.

9.4 Removing and installing the courtesy light bulbs

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Lever out the courtesy light cover (-3-) from the door trim (-1-).
3. Pull out the courtesy light bulbs (-2-) from the light holder and replace them.

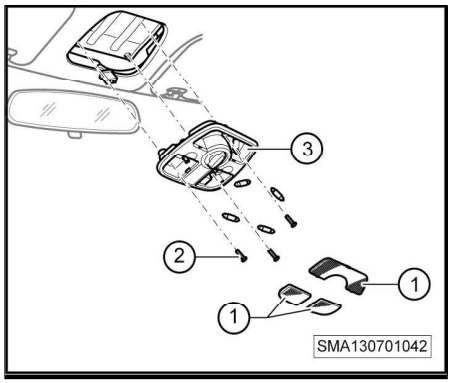


Installation

Installation shall follow the reverse sequence of the removal procedure.

9.5 Removing and installing the front roof lamp

Removal



1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Lever out the front roof lamp cover (-1-) carefully and remove the 4 bulbs.
3. Unscrew the 3 fixing screws (-2-) inside the front roof lamp, lever out the front roof lamp assembly (-3-) from the roof, and disconnect the front roof lamp connector.

Installation

Installation shall follow the reverse sequence of the removal procedure.

10 Exterior Lights

07

10.1 General information

10.1.1 Description

Exterior lights consist of the following:

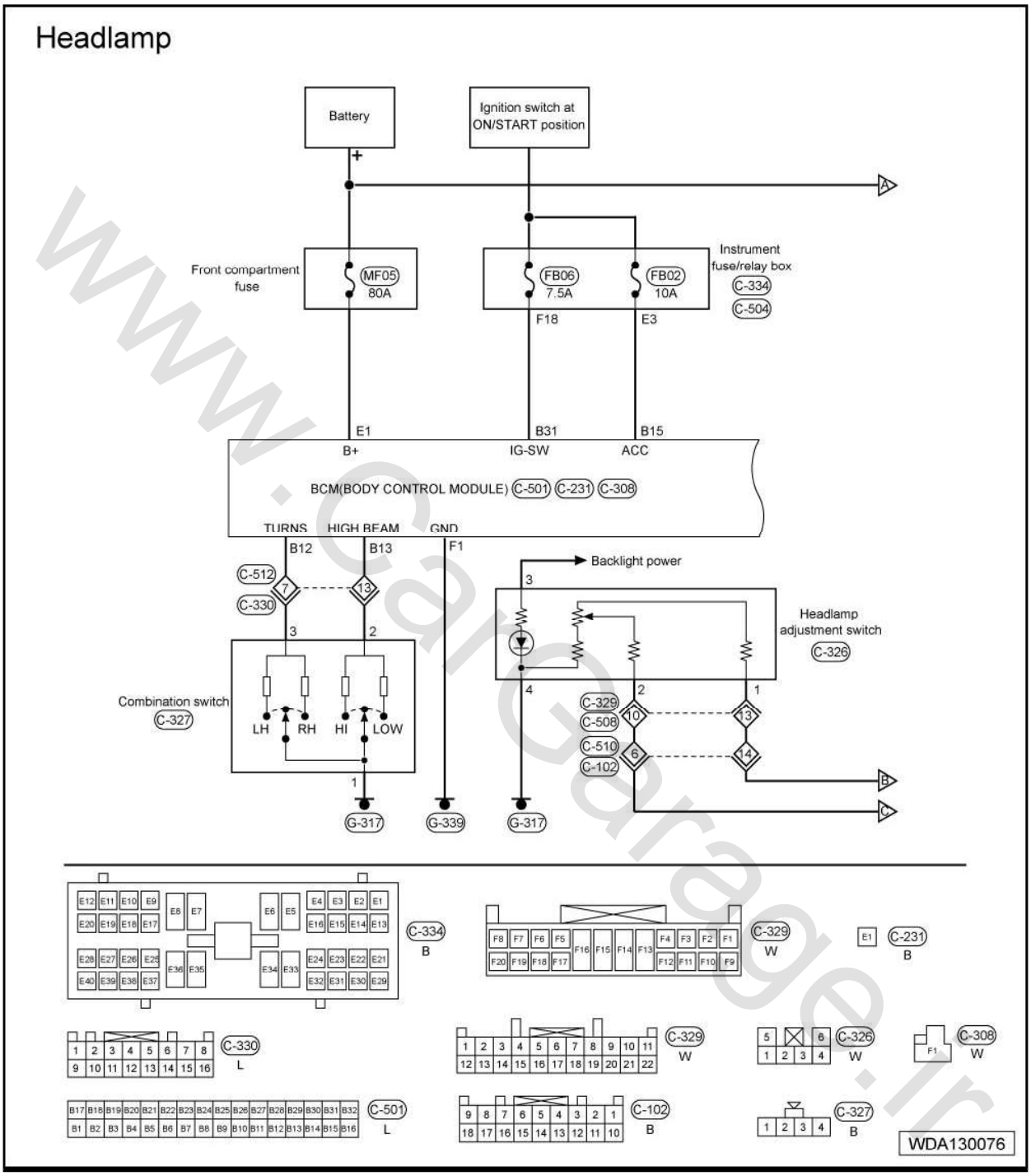
- Headlamp
- Turn signal
- Fog lamp
- Brake lamp
- Reversing light
- Number plate lamp

The power is supplied as follows:

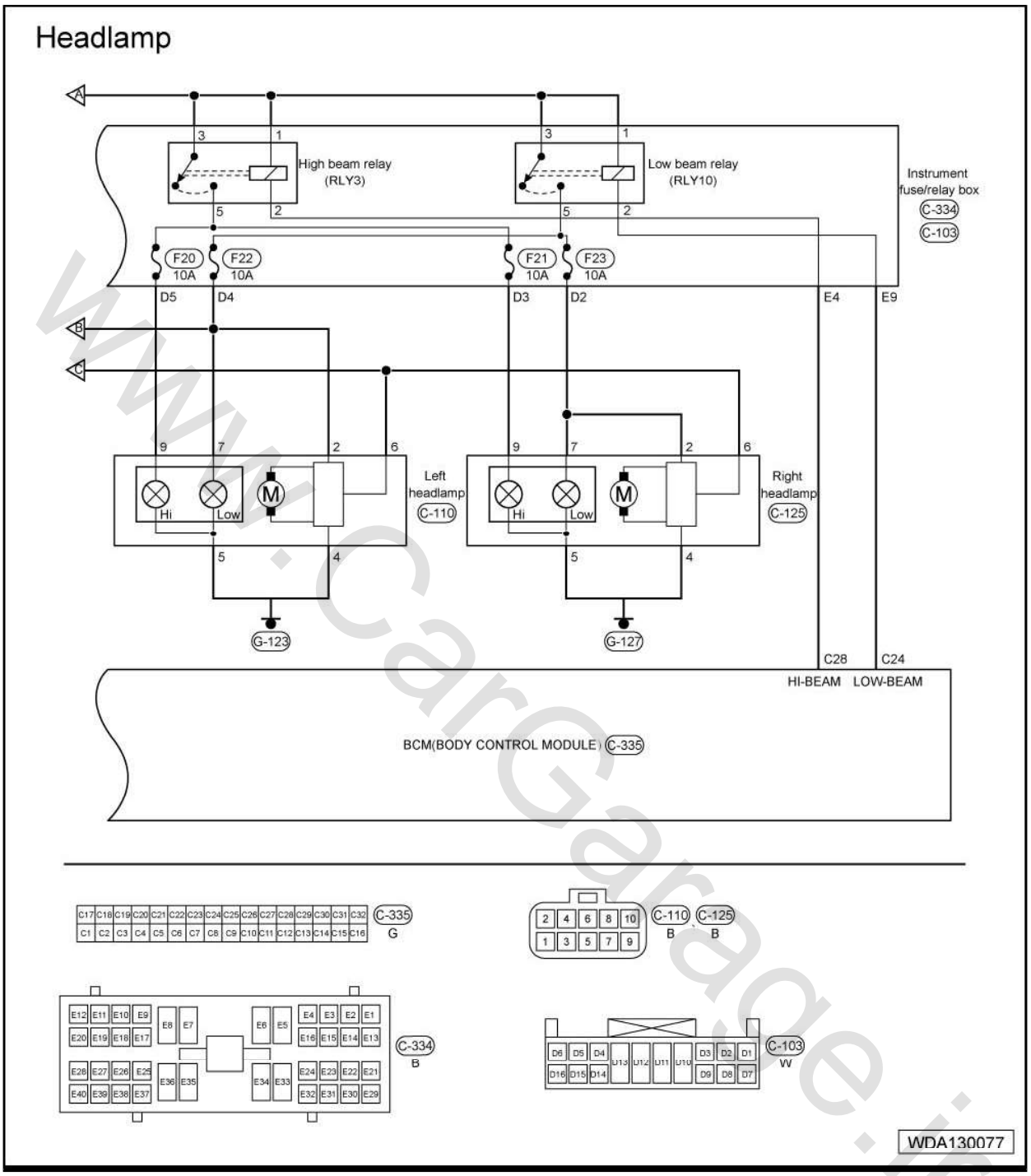
- Headlamp: When the headlamp switch is turned on and the high beam or low beam relay works, the power supply is supplied to the fuse beneath the dashboard via the relay before supplying the headlamp through the fuse.
- Turn signal switch: When the ignition switch is in the ON position and the turn signal switch is pulled up or down, the power supply transmits power to the left or right turn signal.
- Hazard warning lamp switch: When the switch is in the ON position, the power supply transmits power to all turn signals.
- Fog lamp: When the front/rear fog lamp switch is in the ON position, the power supply transmits power to the fog lamps.
- Brake lamp: When the brake pedal is depressed, the power supply transmits power to the brake lamp through the brake switch.
- Reversing light: When the shift lever is in the R position and the reversing switch is turned on, the power supply transmits power to the reversing light.

10.2 Circuit diagrams

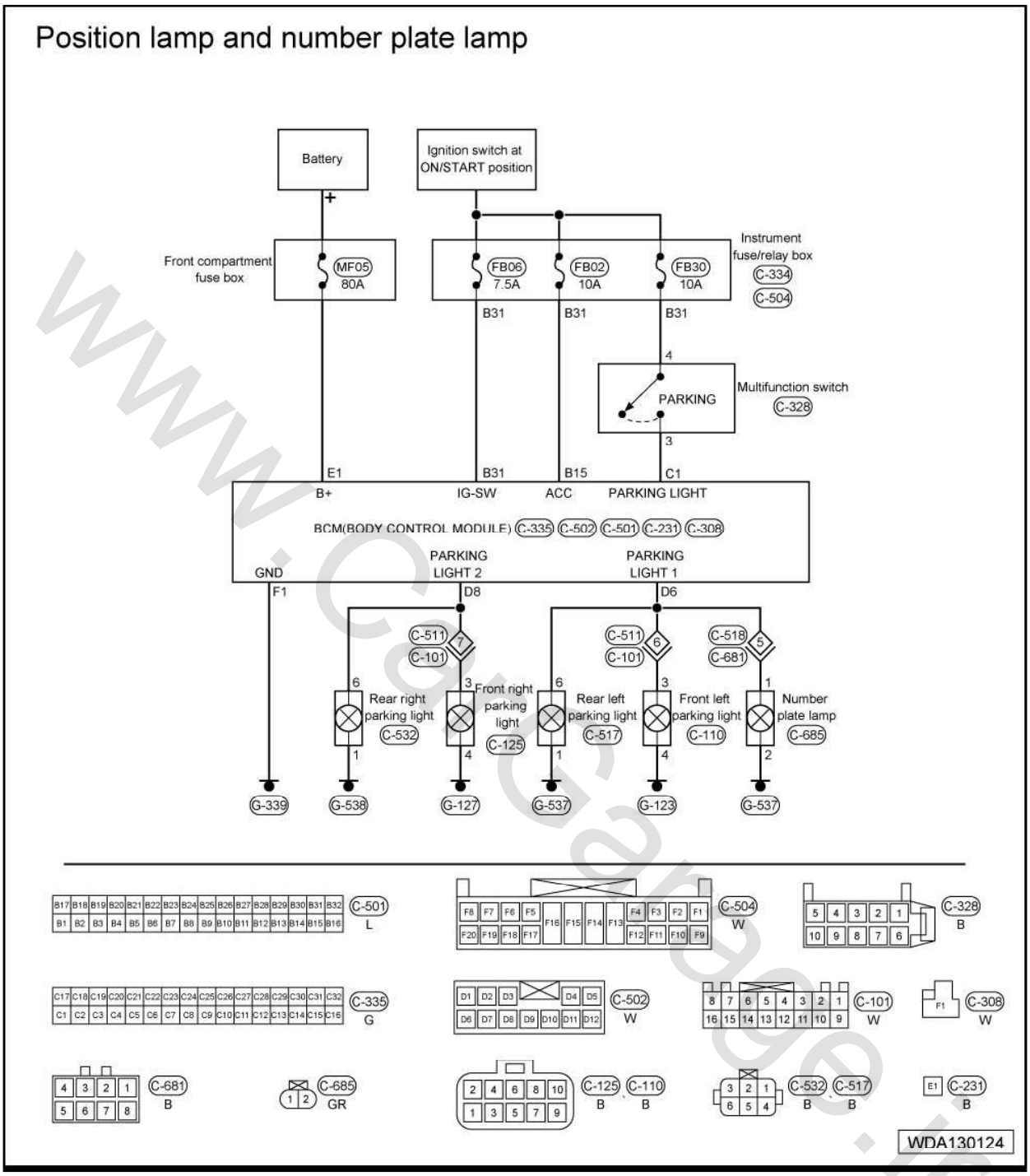
Headlamp (page 1)



Headlamp (page 2)

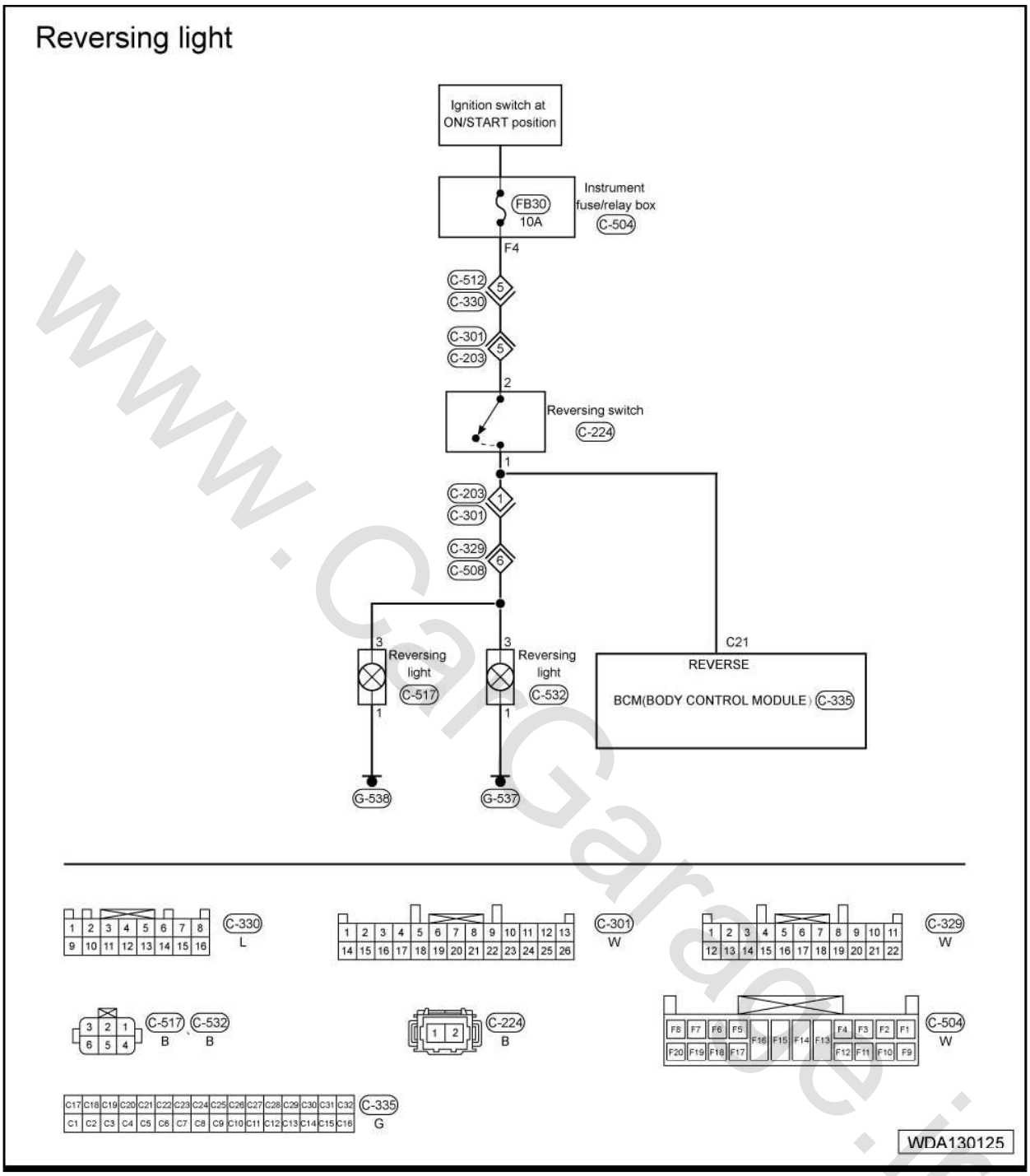


Position lamp and number plate lamp (page 1)

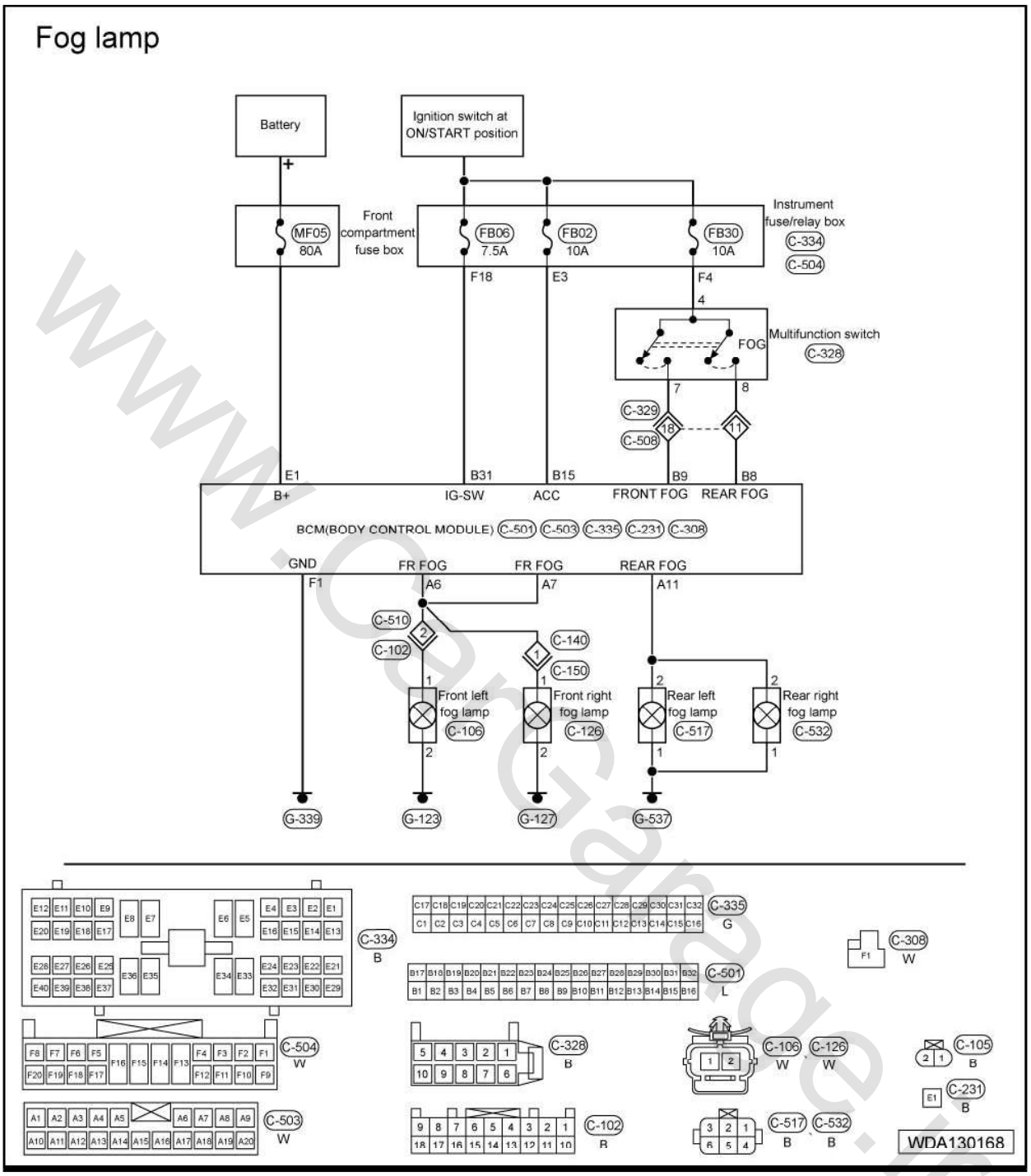


Reversing light (page 1)

07

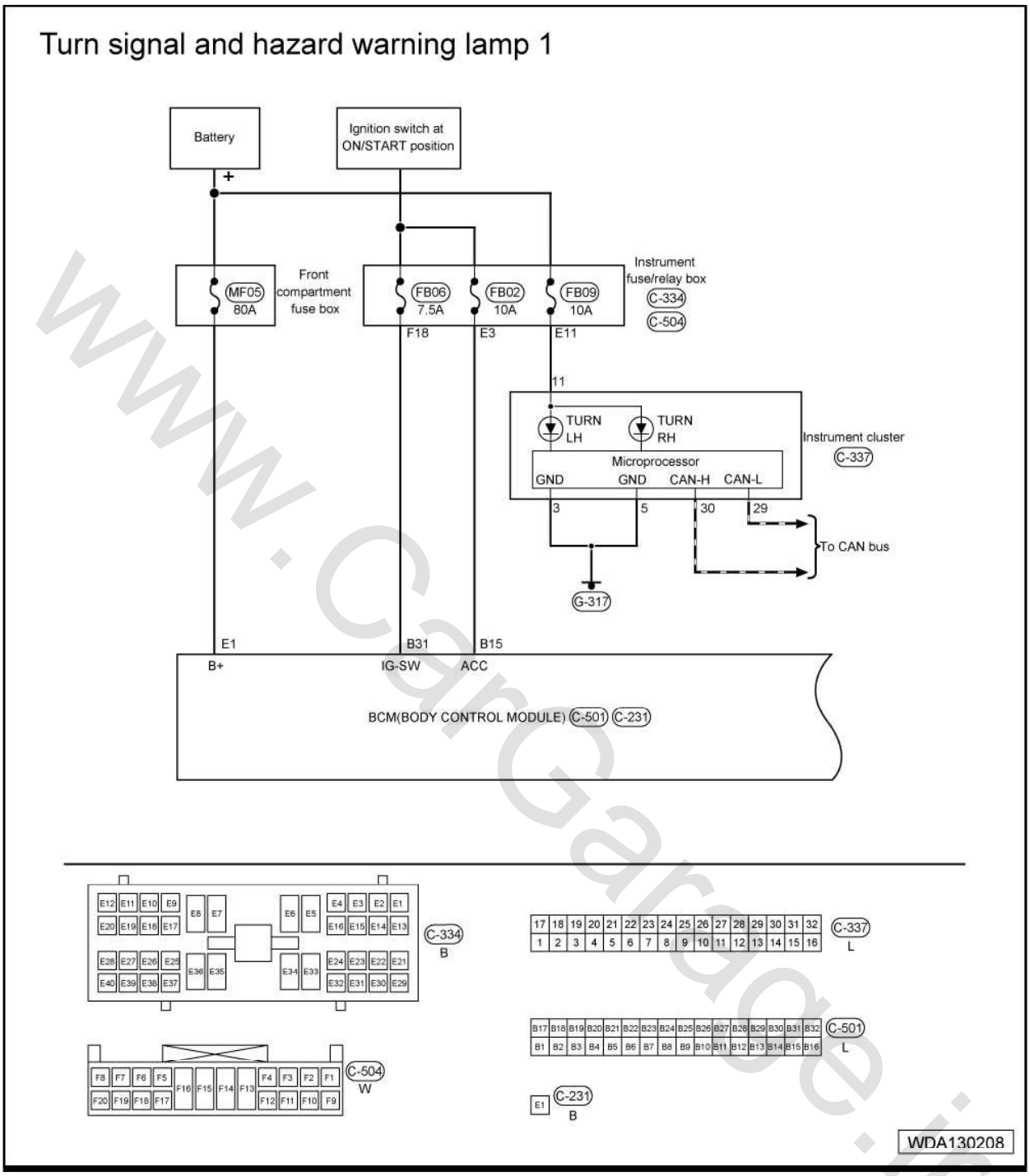


Fog lamp (page 1)



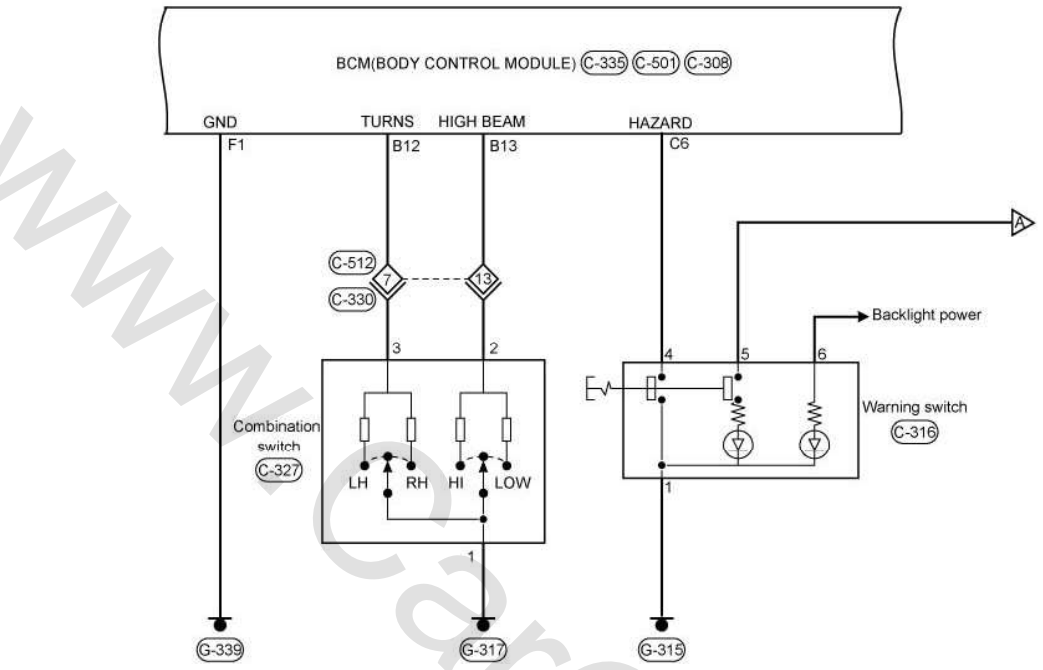
Turn signal and hazard warning lamp (page 1)

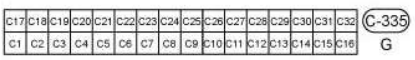
07

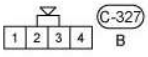


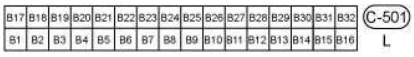
Turn signal and hazard warning lamp (page 2)

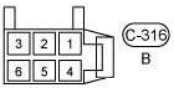
Turn signal and hazard warning lamp 2











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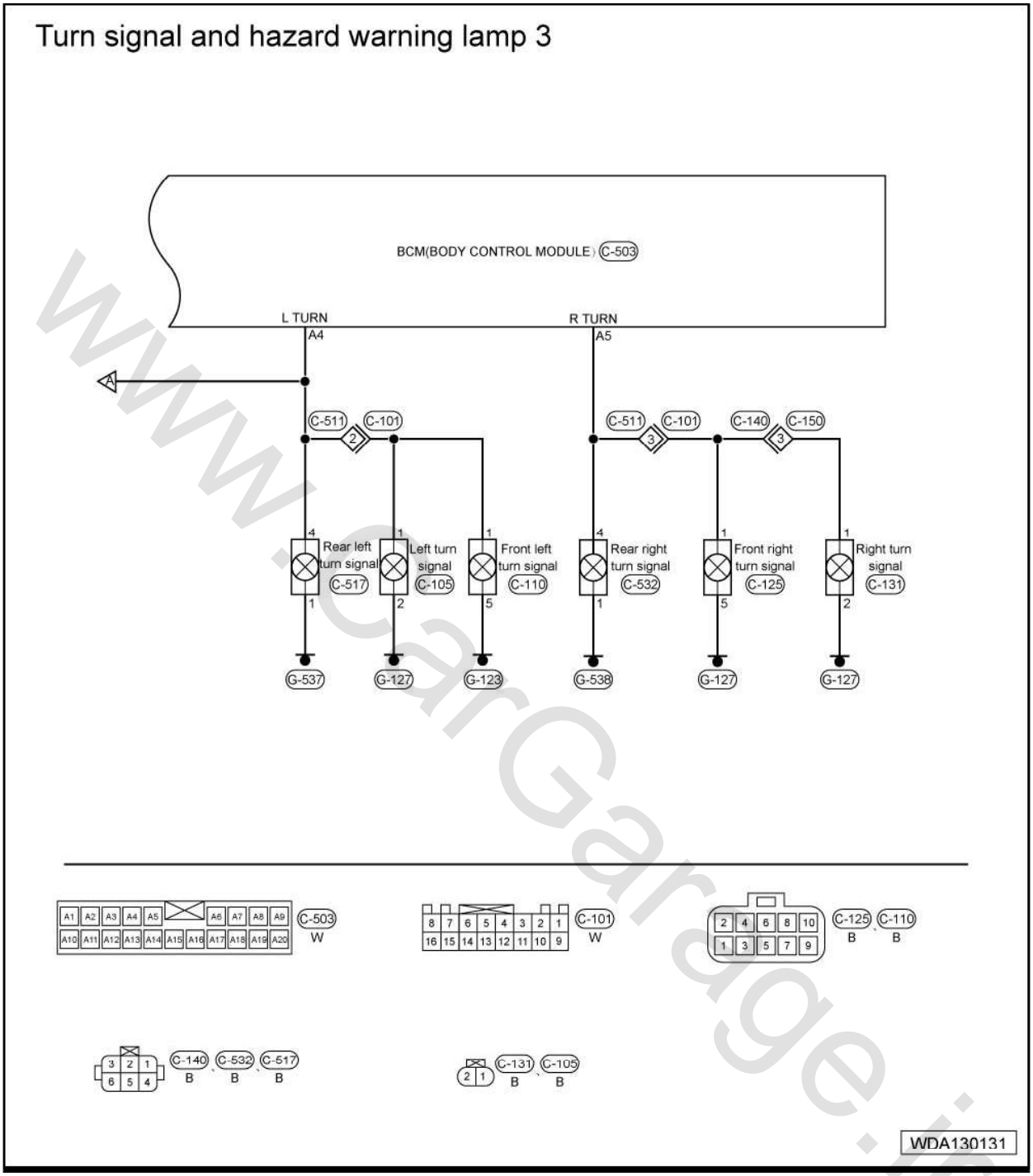
Turn signal and hazard warning lamp (page 3)

07

Turn signal and hazard warning lamp 3

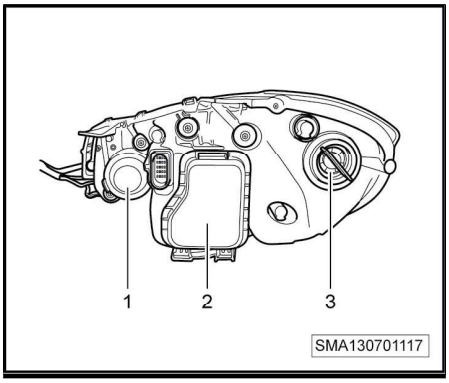


10.3 Headlamp

10.3.1 Removing and installing the headlamp

The right figure shows the lamps at the rear of the headlamp:

1. High beam headlamp/parking light/position lamp
2. Low beam headlamp
3. Turn signal



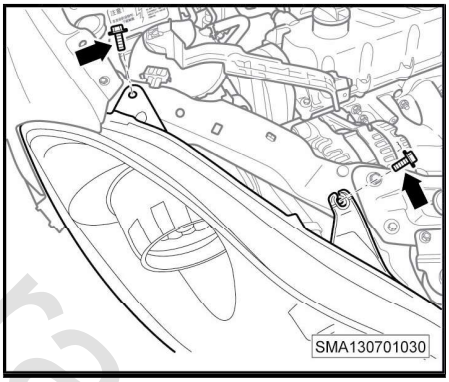
Note

- The removal and installation procedures of the left headlamp are the same as that of the right one. The method of removing and installing the right headlamp is taken as an example here.

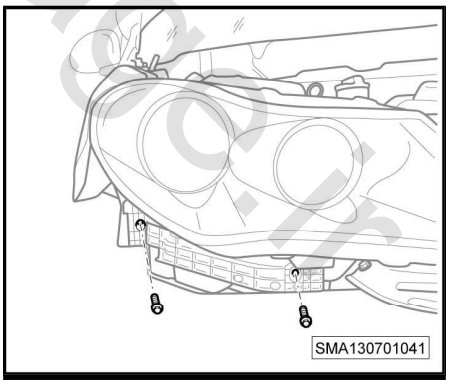
Two-box model

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Remove the front bumper .=> refer to page 838
3. Unscrew the headlamp assembly fixing bolt (-arrow-).



4. Unscrew the headlamp lower fixing bolts.
5. Remove the headlamp assembly and disconnect the headlamp connector.



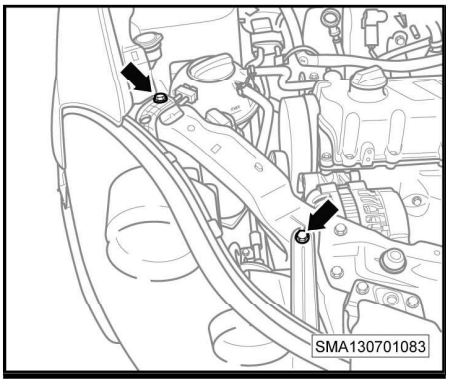
Installation

Installation shall follow the reverse sequence of the removal procedure.

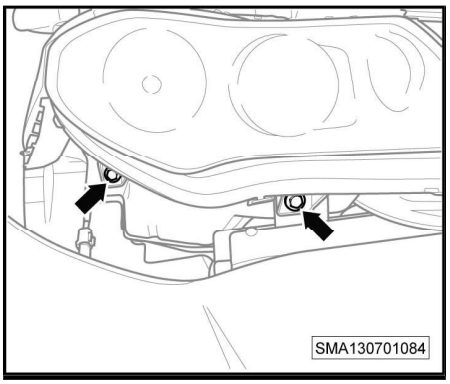
Three-box model

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Remove the front bumper .=> refer to page 838
3. Unscrew the headlamp fixing bolts (-arrow-).



4. Unscrew the headlamp lower fixing bolts (-arrow-).
5. Remove the headlamp assembly and disconnect the headlamp connector.



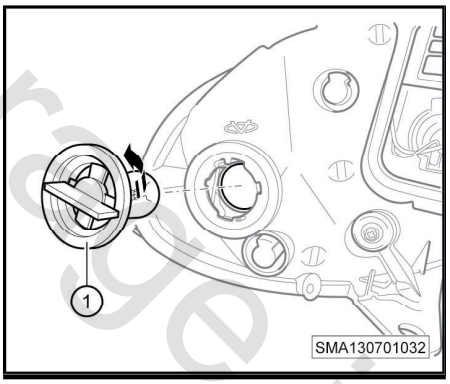
Installation

Installation shall follow the reverse sequence of the removal procedure.

10.3.2 Removing and installing the turn signal bulbs

Removal

1. Remove the headlamp .
2. Unscrew the holder of turn signal (− 1 −) in the (-arrow-) direction.
3. Unscrew the bulb anticlockwise and replace it.



Installation

Installation shall follow the reverse sequence of the removal procedure.

Turn signal bulb specification: 21 W

10.3.3 Removing and installing the low beam bulbs

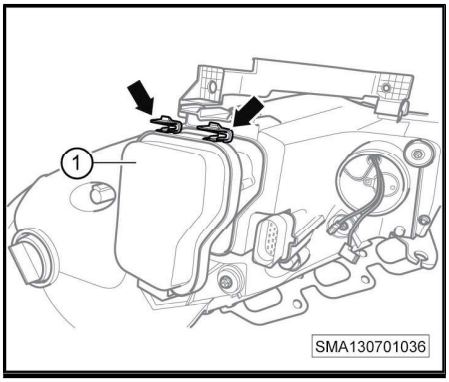
Note

- The removal and installation procedures of the low beam bulbs are the same as that of the high beam ones. The method of removing the low beam bulbs is taken as an example here.

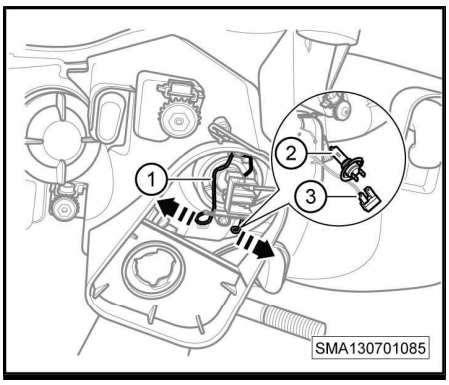
Two-box model

Removal

1. Press the fixing clip of the low beam waterproof cover (-arrow-) at the rear of the headlamp and remove the waterproof cover (-1-).



2. Loosen the fixing clamp spring (-1-) at the rear of the headlamp in the (-arrow-) direction and remove the lamp holder.
3. Disconnect the bulb connector (-3-) and replace the low beam bulb (-2-).



Installation

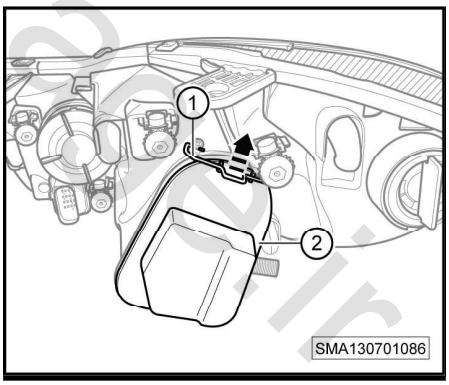
Installation shall follow the reverse sequence of the removal procedure.

High beam/low beam bulb specification: 55 W

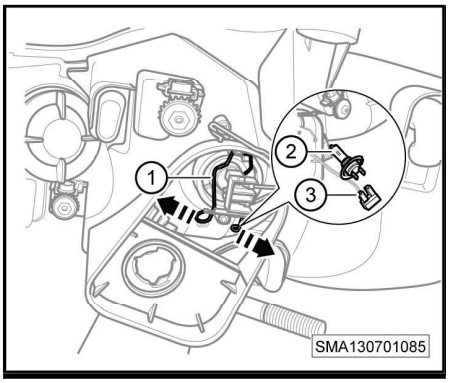
Three-box model

Removal

1. Loosen the fixing clamp spring (-1-) of the low beam waterproof cover at the rear of the headlamp in the (-arrow-) direction and remove the waterproof cover (-2-).



2. Loosen the fixing clamp spring (-1-) in the (-arrow-) direction and remove the lamp holder.
3. Disconnect the bulb connector (-3-) and replace the bulb (-2-).



Installation

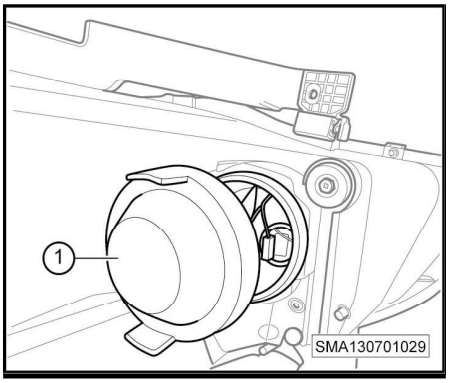
Installation shall follow the reverse sequence of the removal procedure.

High beam/low beam bulb specification: 55 W

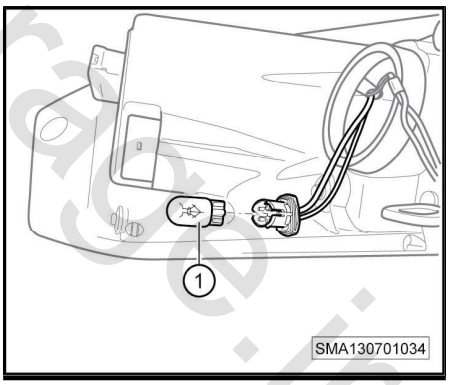
10.3.4 Removing and installing the parking light/position lamp bulbs

Removal

1. Remove the high beam waterproof cover (-1-) at the rear of the headlamp.



2. Unscrew the parking light/position lamp holder from the headlamp anticlockwise and take it out.
3. Pull out the bulb (-1-) from the lamp holder and replace it.



Installation

Installation shall follow the reverse sequence of the removal procedure.

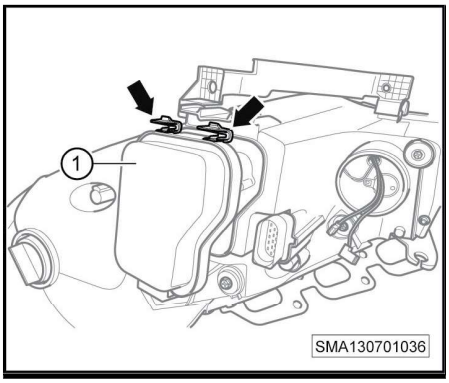
Parking light/position lamp bulb specification: 5 W

10.3.5 Removing and installing the low beam electric adjustment motor

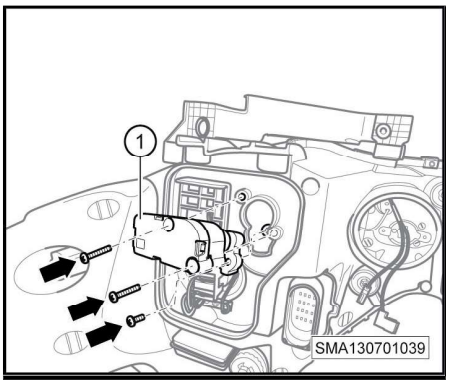
Two-box model

Removal

1. Remove the headlamp assembly .=> refer to page 1135
2. Loosen the fixing clip of the low beam waterproof cover (-arrow-) and remove the waterproof cover (-1-).



3. Unscrew the fixing screws of the low beam electric adjustment motor (-arrow-) and remove the adjustment motor (-1-).
4. Disconnect the adjustment motor connector.



Installation

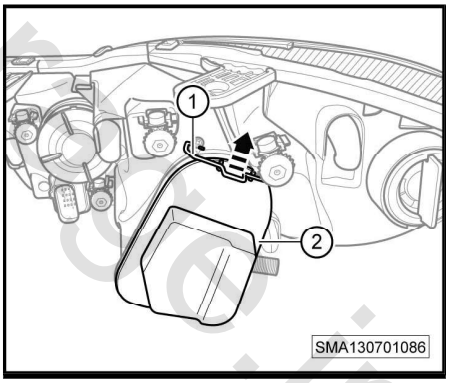
Installation shall follow the reverse sequence of the removal procedure.

Low beam electric adjustment motor specification: 5 W

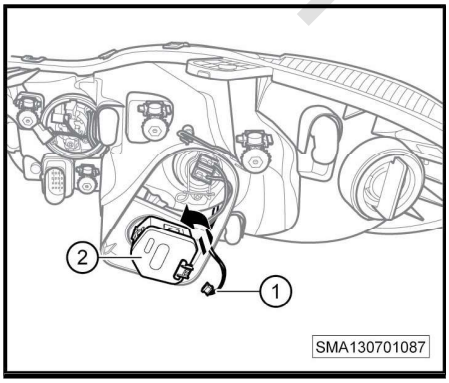
Three-box model

Removal

1. Remove the headlamp assembly.=> refer to page 1135
2. Loosen the fixing clamp spring of the low beam waterproof cover (-1-) in the (-arrow-) direction and remove the waterproof cover (-2-).



3. Disconnect the wiring harness connector of the low beam electric adjustment motor (-1-).
4. Unscrew and pull out the adjustment motor (-2-) in the (-arrow-) direction.



Installation

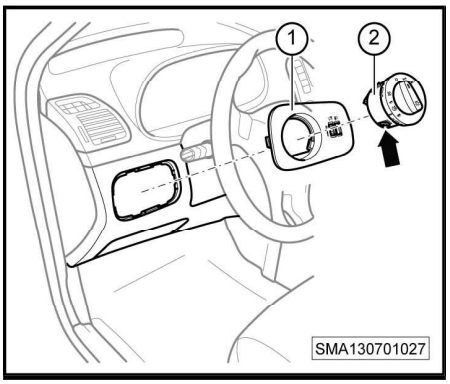
Installation shall follow the reverse sequence of the removal procedure.

Low beam electric adjustment motor specification: 5 W

10.3.6 Removing and installing the combination switch

Removal

1. Lever out the combination switch base (-1-) from the dashboard carefully with the tools and disconnect the switch wiring harness connector.
2. Press the fixing clip of the combination switch and push out the combination switch (-2-).



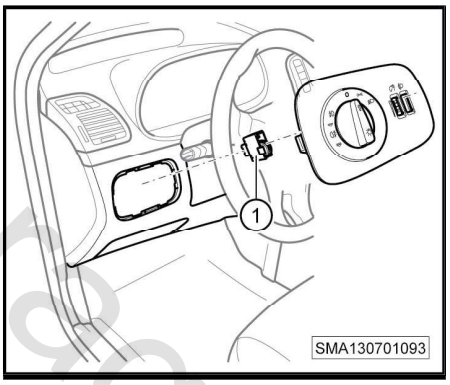
Installation

Installation shall follow the reverse sequence of the removal procedure.

10.3.7 Removing and installing the low beam height adjustment switch

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Lever out the combination switch panel assembly from the dashboard with tools.
3. Disconnect the low beam height adjustment switch connector.
4. Remove the adjustment switch (-1-) from the combination switch panel assembly.



Installation

Installation shall follow the reverse sequence of the removal procedure.

10.4 Tail lights

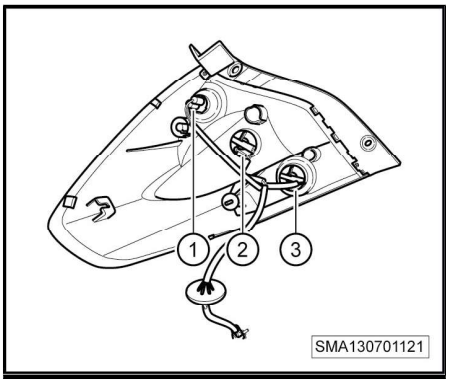
10.4.1 Removing and installing the tail lights

Note

- The lamps of the left tail light are in the same position as that of the right one. The left tail light is taken as an example here.

Two-box model

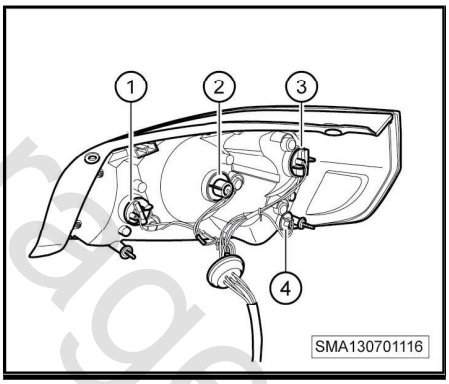
The right figure shows the lamps at the rear of the tail light:



1. Position lamp
   - Bulb specification: 5 W
2. Turn signal
   - Bulb specification: 21 W
3. Brake lamp
   - Bulb specification: 21 W

Three-box model

The right figure shows the lamps at the rear of the tail light:



1. Rear fog lamp
   - Bulb specification: 21 W
2. Turn signal
   - Bulb specification: 21 W
3. Brake/position lamp
   - Bulb specification: 5 W
4. Reversing light
   - Bulb specification: 21 W

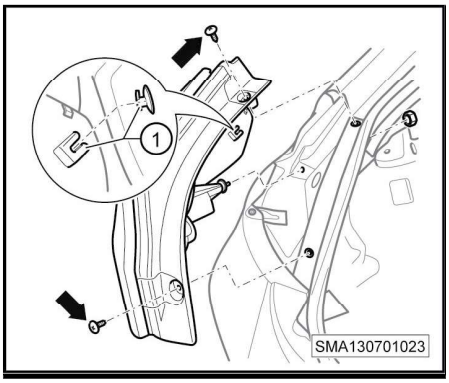
Note

- The removal procedures of the left tail light are the same as that of the right one. The method of removing the left tail light is taken as an example here.

Two-box model

Removal

1. Remove the luggage compartment side trim and disconnect the tail light connector.
2. Unscrew the fixing screws of the tail light assembly (-arrow-) and the fixing nuts.
3. Remove the tail light assembly. Pay attention to the fixing clip of the tail light assembly and the body (-1-).



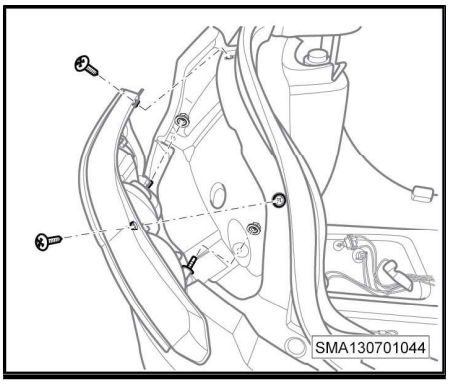
Installation

Installation shall follow the reverse sequence of the removal procedure.

Three-box model

Removal

1. Remove the luggage compartment side trim and disconnect the tail light connector.
2. Unscrew the fixing screws of the tail light assembly (-arrow-) and the fixing nuts.
3. Remove the tail light assembly.



Installation

Installation shall follow the reverse sequence of the removal procedure.

10.4.2 Removing and installing the reversing light, rear fog lamp, brake lamp and turn signal

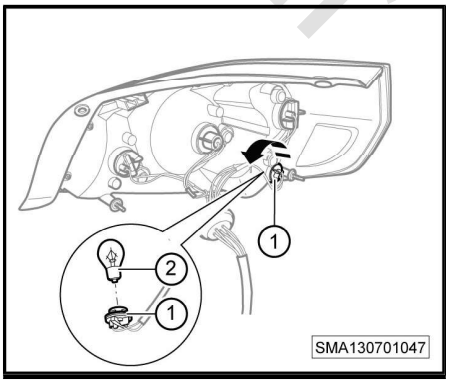
Three-box model

Note

- The removal procedures of the brake lamp, turn signal, rear fog lamp and reversing light of the three-box model are the same. The method of removing the reversing light is taken as an example here.

Removal

1. Remove the tail light assembly .
2. Unscrew the reversing light holder (-1-) in the (-arrow-) direction.
3. Remove the bulb (-2-) from the lamp holder (-1-).



Installation

Installation shall follow the reverse sequence of the removal procedure.

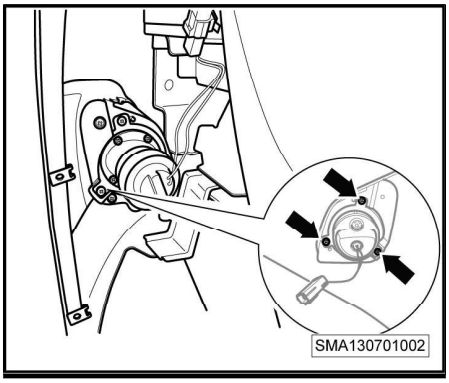
07

10.5 Front fog lamp

10.5.1 Removing and installing the front fog lamp

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Remove the front wheel trim .
3. Disconnect the front fog lamp wiring harness connector.
4. Unscrew the fixing screws of the front fog lamp assembly (-arrow-) and remove the front fog lamp.



Installation

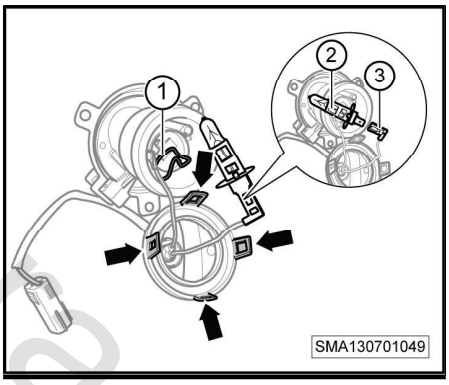
Installation shall follow the reverse sequence of the removal procedure.

10.5.2 Removing and installing the front fog lamp bulbs

Two-box model

Removal

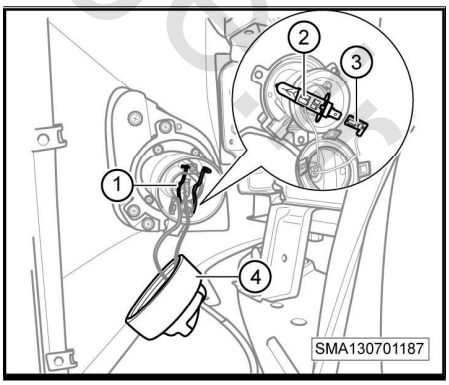
1. Remove the front fog lamp assembly .=> refer to page 998
2. Loosen the clip of the fog lamp waterproof cover (-arrow-) and remove the waterproof cover.
3. Loosen the fixing clamp spring of the front fog lamp holder (-1-).
4. Take the fog lamp out of the front fog lamp assembly.
5. Disconnect the fog lamp connector (-3-) and replace the fog lamp (-2-).



Three-box model

Removal

1. Remove the front wheel trim.
2. Remove the waterproof cover of the fog lamp (-4-).
3. Loosen the fixing clamp spring of the front fog lamp holder (-1-).
4. Take the fog lamp out of the front fog lamp assembly.
5. Disconnect the fog lamp connector (-3-) and replace the fog lamp (-2-).



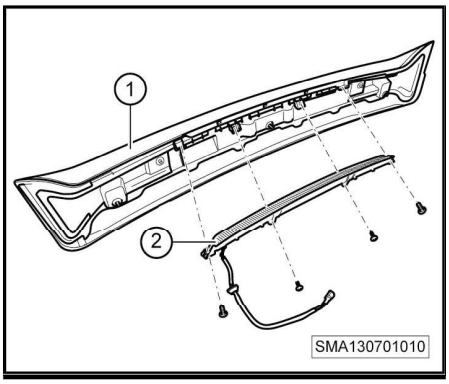
Installation

Installation shall follow the reverse sequence of the removal procedure.

10.6 Removing and installing the high-level brake lamp

Two-box model

Removal



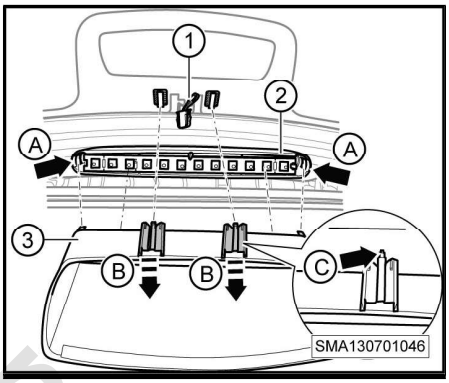
1. Remove the rear fender assembly (-1-).=> refer to page 857
2. Unscrew the fixing screws of the high-level brake lamp and remove the high-level brake lamp assembly (-2-) from the rear fender assembly.

Installation

Installation shall follow the reverse sequence of the removal procedure.

Three-box model

Removal



1. Press the fixing clip (-arrow A-), and remove the high-level brake lamp (-2-) from the brake lamp cover (-3-).
2. Disconnect the high-level brake lamp connector (-1-).
3. Press the fixing clip of the lamp cover (-arrow C-) and remove the cover (-3-) from the rear windshield in the (-arrow B-) direction.

Installation

Installation shall follow the reverse sequence of the removal procedure.

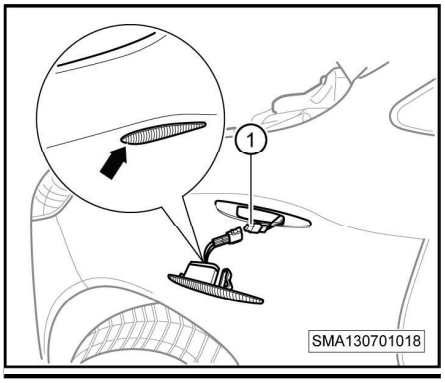
07

10.7 Turn signal and hazard warning lamp

10.7.1 Removing and installing the side turn signal

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Lever out the side turn signal (-arrow) from the fender with the tools.
3. Disconnect the side turn signal connector (-1-) and remove the side turn signal.



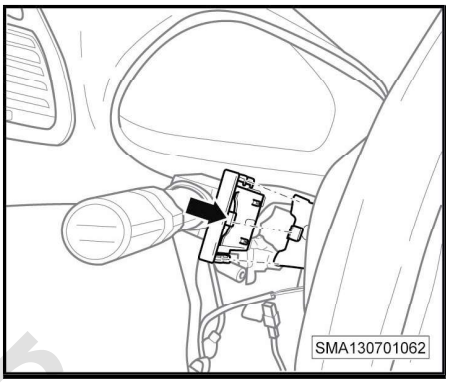
Installation

Installation shall follow the reverse sequence of the removal procedure.

10.7.2 Removing and installing the turn signal switch

Removal

1. Remove the steering column upper and lower covers .
2. Disconnect the turn signal switch connector.
3. Press the fixing clip of the turn signal switch (-arrow-) and remove the switch from the steering column.



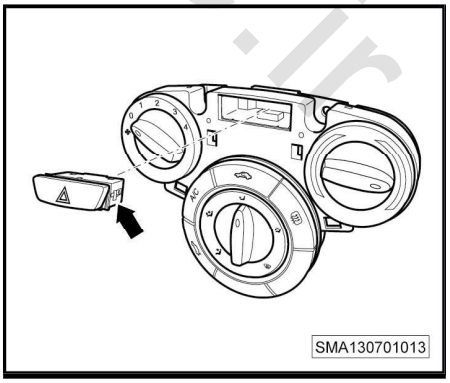
Installation

Installation shall follow the reverse sequence of the removal procedure.

10.7.3 Removing and installing the hazard warning lamp switch

Removal

1. Lever out the hazard warning lamp switch (-arrow-) from the A/C control panel with tools.
2. Disconnect the hazard warning lamp switch connector.

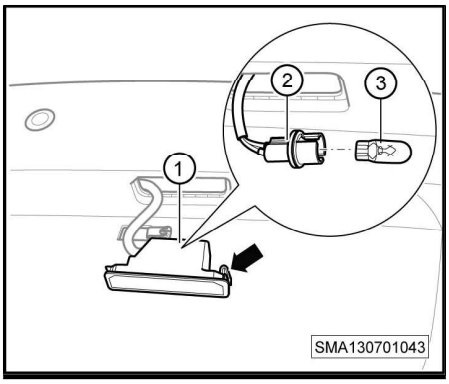


Installation

Installation shall follow the reverse sequence of the removal procedure.

10.8 Removing and installing the number plate lamp

Removal



1. Press the fixing clip of the number plate lamp (-arrow-) with the tools and lever out the number plate lamp assembly (-1-).
2. Unscrew the lamp holder (-2-) from the number plate lamp assembly.
3. Pull out the bulb (-3-) and replace it.

Installation

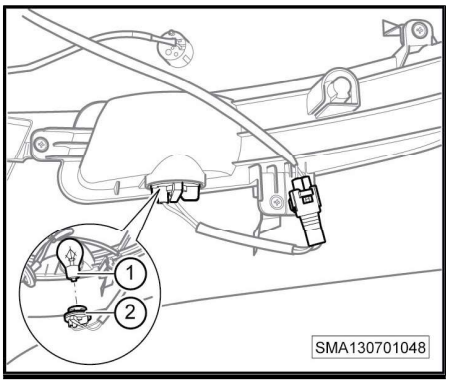
Installation shall follow the reverse sequence of the removal procedure.

10.9 Removing and installing the reversing light bulbs

Note

- The reversing lights of the two-box model are located at the right side of the rear bumper and the rear fog lamps are located at the left side of the rear bumper.

Removal



1. Remove the rear right wheel trim.
2. Unscrew the reversing light holder (-2-) from the reversing light assembly anticlockwise.
3. Unscrew the bulb (-1-) from the lamp holder (-2-).

Installation

Installation shall follow the reverse sequence of the removal procedure.

11 Power Windows

07

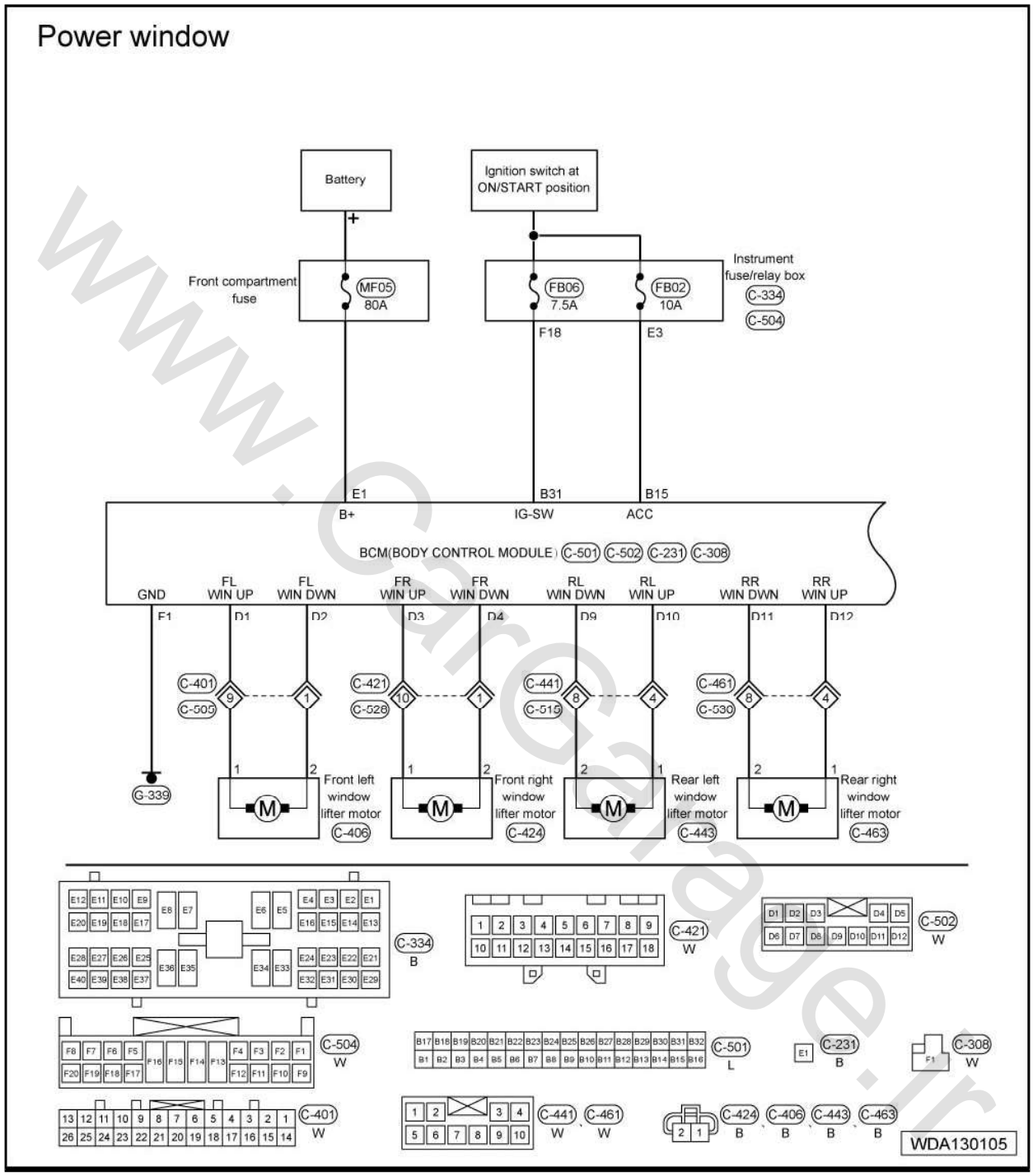
11.1 General information

11.1.1 Description

- Window lifter switch controls the current flow of the window lifter motor via the BCM so as to control the up or down movement of the power window.
- Each door has a window lifter switch. The driver's side door can be used to control the up or down movement and the lock of all power windows (when the power window safety switch on the driver's side door is pressed, all other doors' window lifter switches will be disabled).
- The window lifter motor is a permanent-magnet motor, which can modify the rotation direction of motor by changing the current direction.

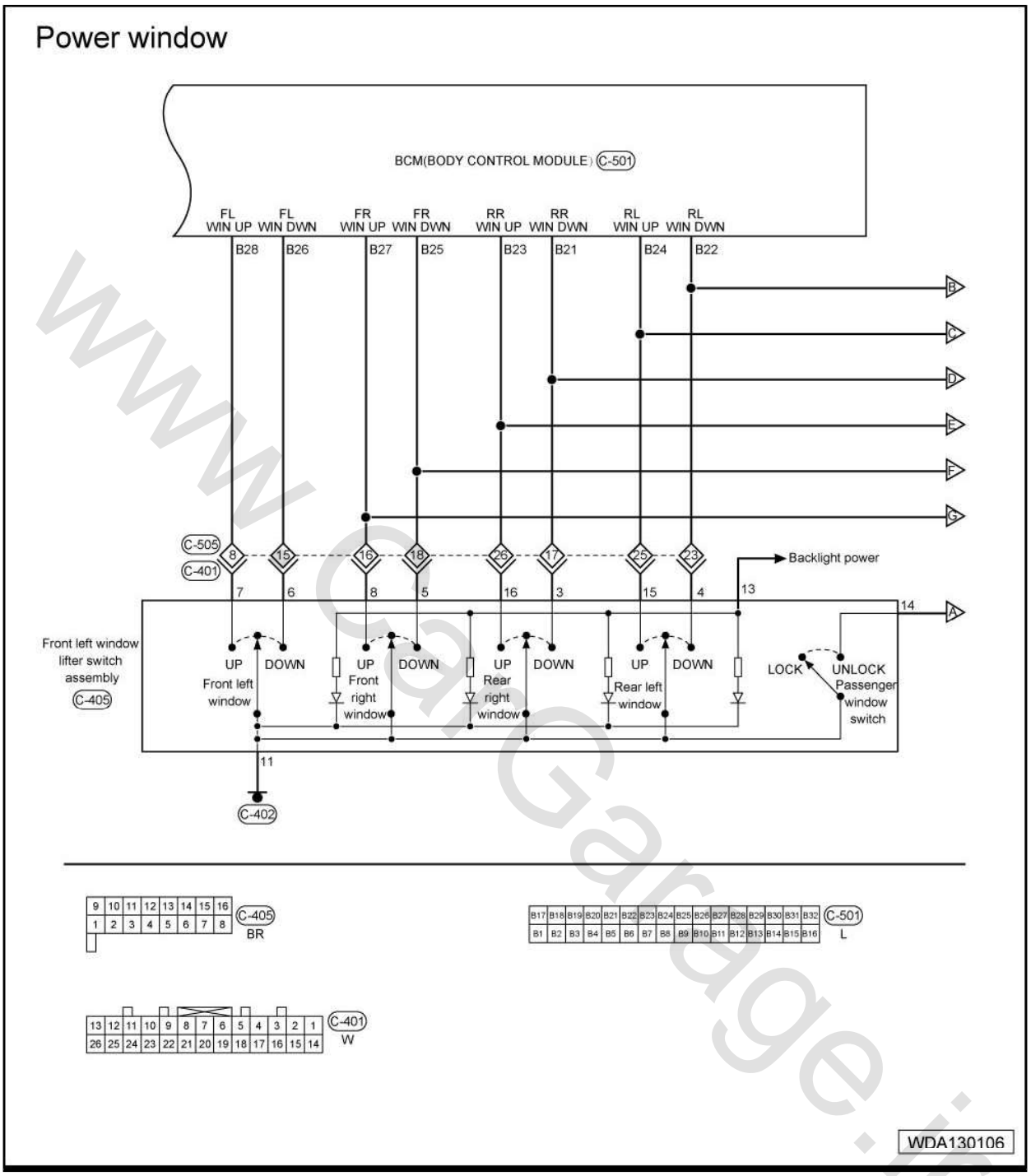
11.2 Circuit diagrams

Power windows (page 1)

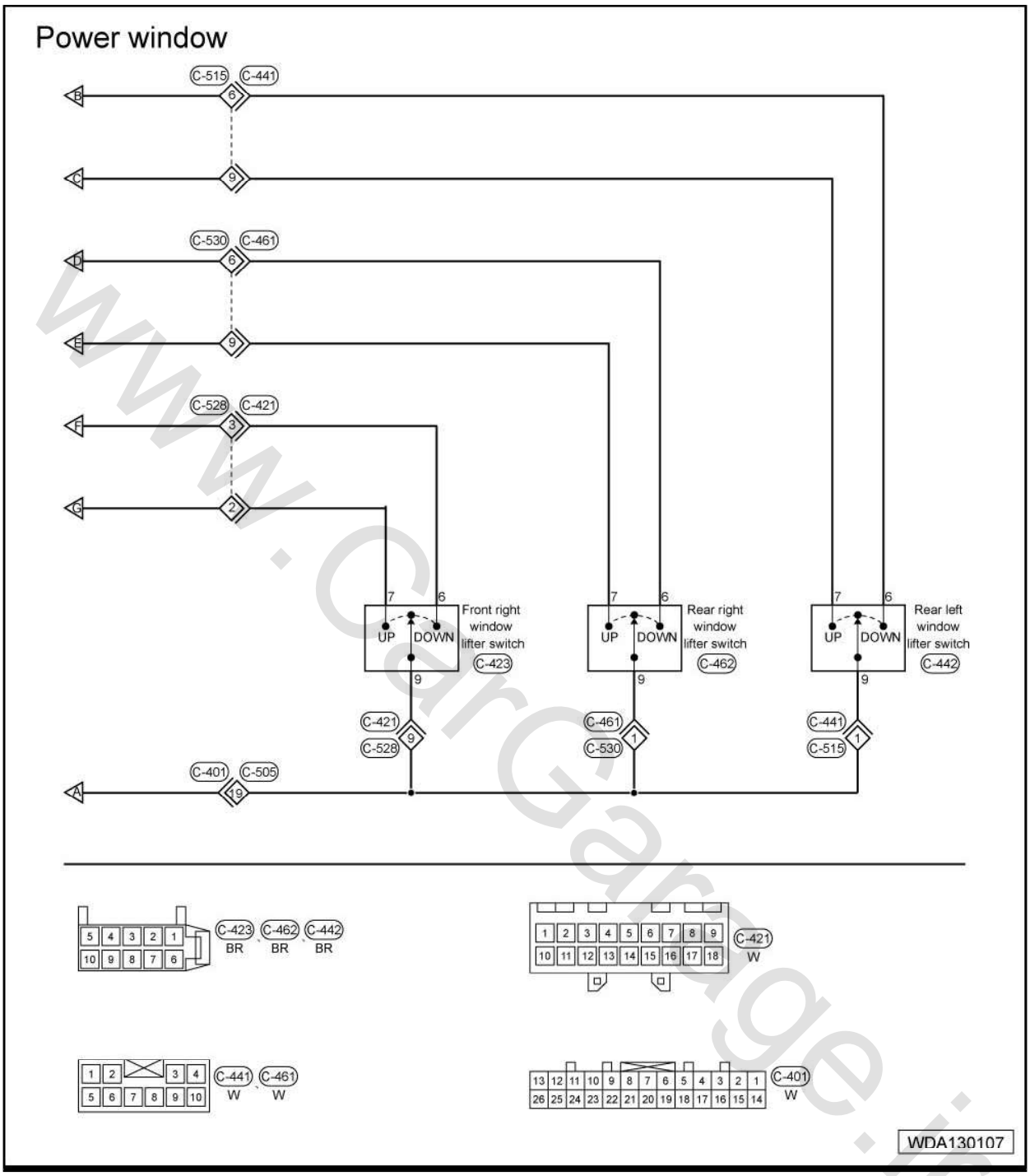


Power windows (page 2)

07



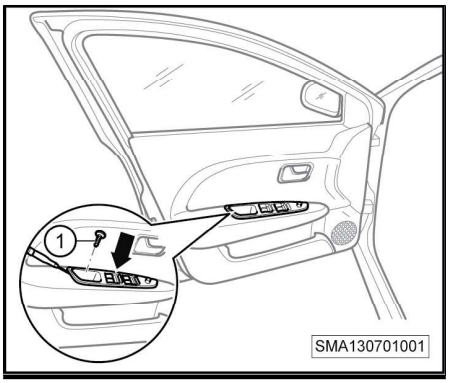
Power windows (page 3)



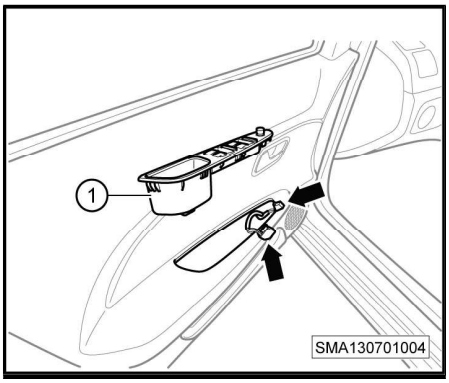
11.3 Removing and installing the power window main switch

Removal

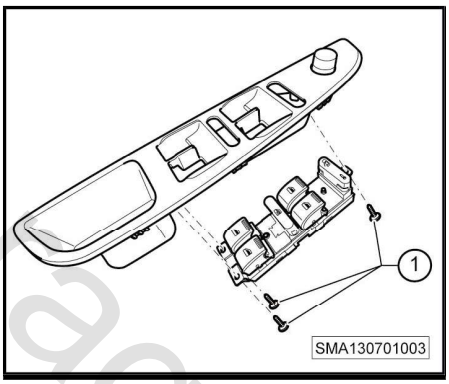
1. Lever out the decorative cover for the main switch screws carefully and unscrew the fixing screws of the main switch (-1-).
2. Lever out the main switch assembly (-arrow-) from the door trim with the tool.



3. Disconnect the main switch connector (-arrow-).
4. Remove the main switch assembly (-1-).



5. Unscrew the fixing screws of the main switch button (-1-).
6. Remove the main switch button.



Installation

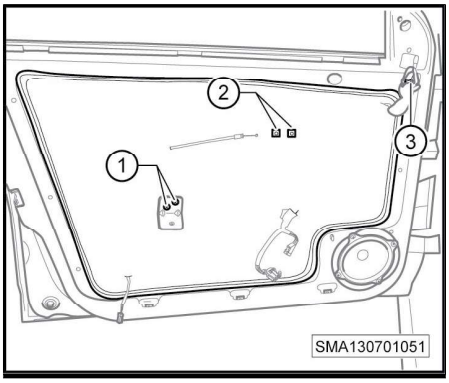
Installation shall follow the reverse sequence of the removal procedure.

11.4 Power window lifter motor

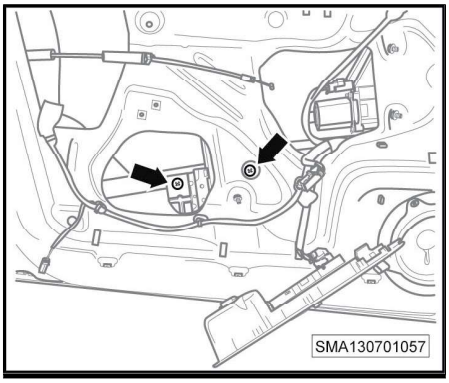
11.4.1 Removing and installing the front power window lifter motor

Removal

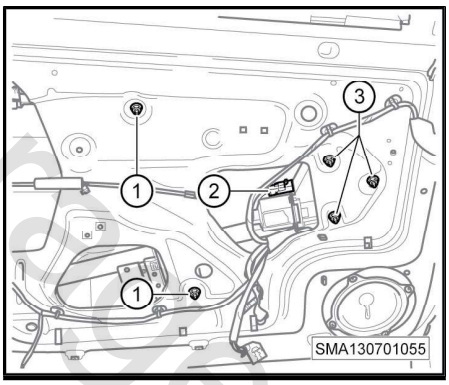
1. Turn off the ignition switch.
2. Remove the door interior trim .=> refer to page 764
3. Remove the front door triangular interior trim.
4. Unscrew the screws (-1-) and remove the main switch fixing parts.
5. Lever out the mounting tab for the inner pull handle fixing screws (-2-).
6. Disconnect the exterior mirror connector (-3-).
7. Remove the door dust cover.



8. Lower the window lifter.
9. Unscrew the fixing bolts of the windshield (-arrow-).
10. Remove the windshield.



11. Disconnect the window lifter motor connector (-2-).
12. Unscrew the fixing nuts of the window lifter rail (-1-).
13. Unscrew the fixing nuts of the window lifter motor (-3-).
14. Take out the window lifter rail along with the motor.



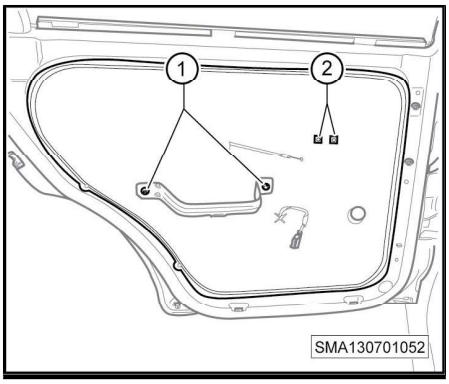
Installation

Installation shall follow the reverse sequence of the removal procedure.

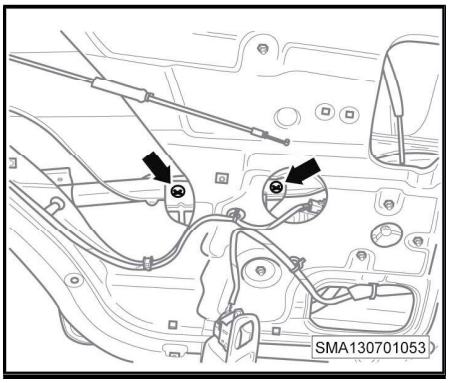
11.4.2 Removing and installing the rear power window lifter motor

Removal

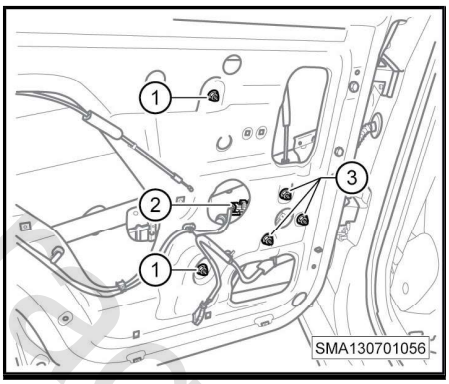
1. Turn off the ignition switch.
2. Remove the door interior trim .=> refer to page 768
3. Unscrew the screws (-1-) and remove the fixing parts.
4. Lever out the mounting tab for the inner pull handle fixing screws (-2-).
5. Remove the door dust cover.



6. Lower the window lifter.
7. Unscrew the fixing bolts of the windshield (-arrow-).
8. Remove the windshield.



9. Disconnect the window lifter motor connector (-2-).
10. Unscrew the fixing nuts of the window lifter rail (-1-).
11. Unscrew the fixing nuts of the window lifter motor (-3-).
12. Take out the window lifter rail along with the motor.

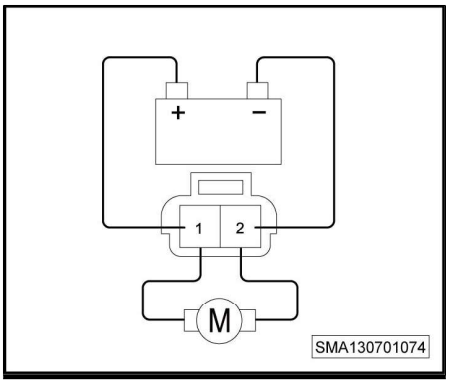


Installation

Installation shall follow the reverse sequence of the removal procedure.

11.4.3 Testing the power window lifter motor

Testing the motor down operation



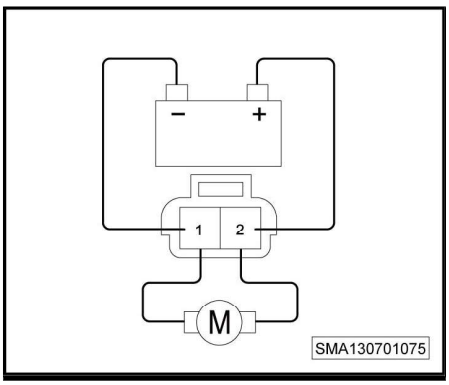
Connect the battery to the motor as shown in the figure.

Connect the positive pole of the battery to No.1 terminal of the motor

Connect the negative pole of the battery to No.2 terminal of the motor

The motor rotates anticlockwise, otherwise the motor assembly should be replaced.

Testing the motor up operation



Connect the battery to the motor as shown in the figure.

Connect the positive pole of the battery to No.2 terminal of the motor

Connect the negative pole of the battery to No.1 terminal of the motor

The motor rotates clockwise, otherwise the motor assembly should be replaced.

12 Exterior Mirror

07

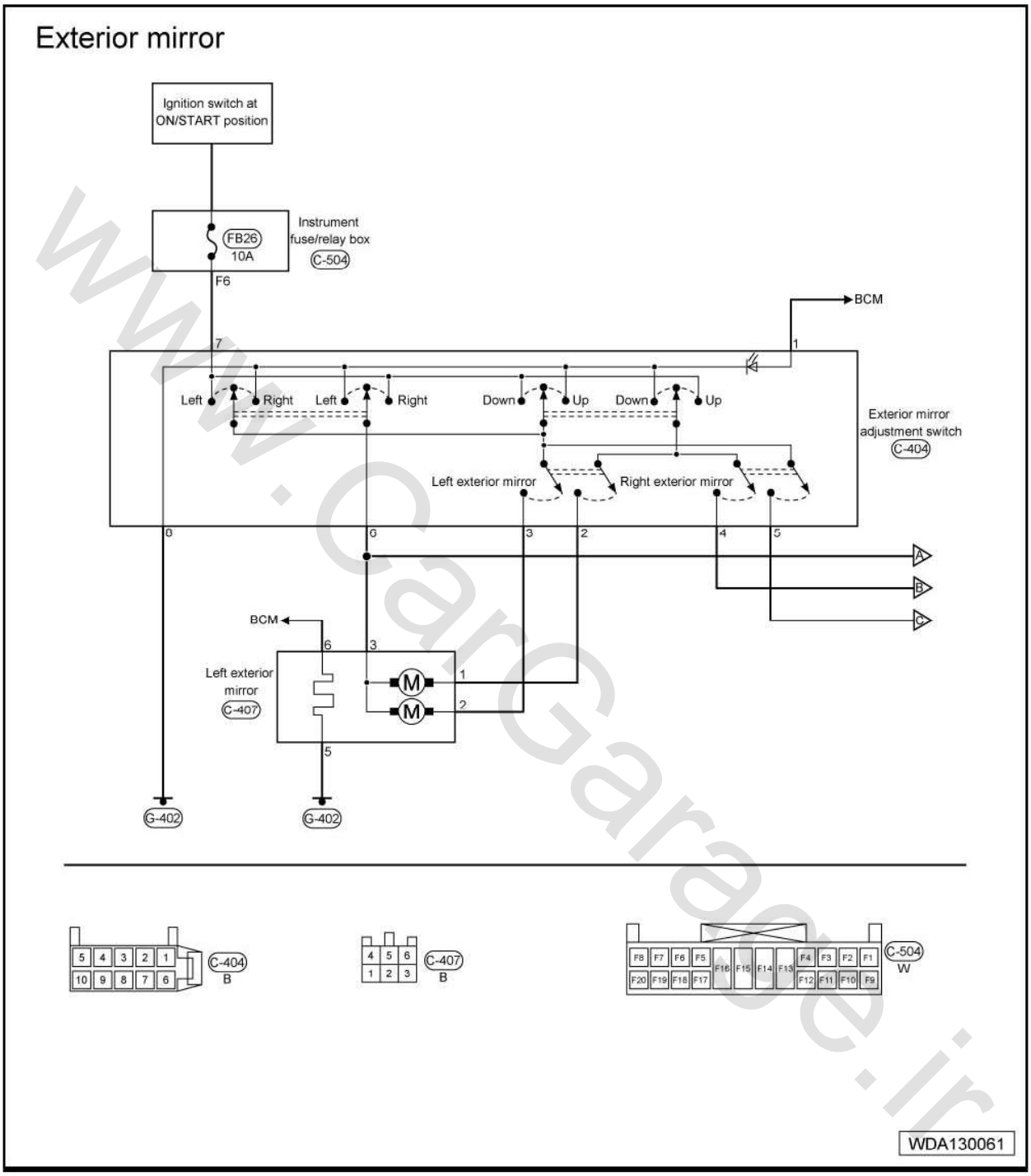
12.1 General information

12.1.1 Description

- The exterior mirror adjustment switch is installed on the power window main switch at the driver's side door trim. When the ignition switch is switched on, turn the exterior mirror adjustment switch to left or right to adjust the left or right exterior mirror. Select the exterior mirror to be adjusted and you can adjust the exterior mirror lens up and down by turning the rocker forward and backward; and left and right by turning the rocker left and right.
- When water vapor is found in the exterior mirror lens, turn on the window defroster switch and the lens will be heated by the heating wires installed on the lens to eliminate the vapor.

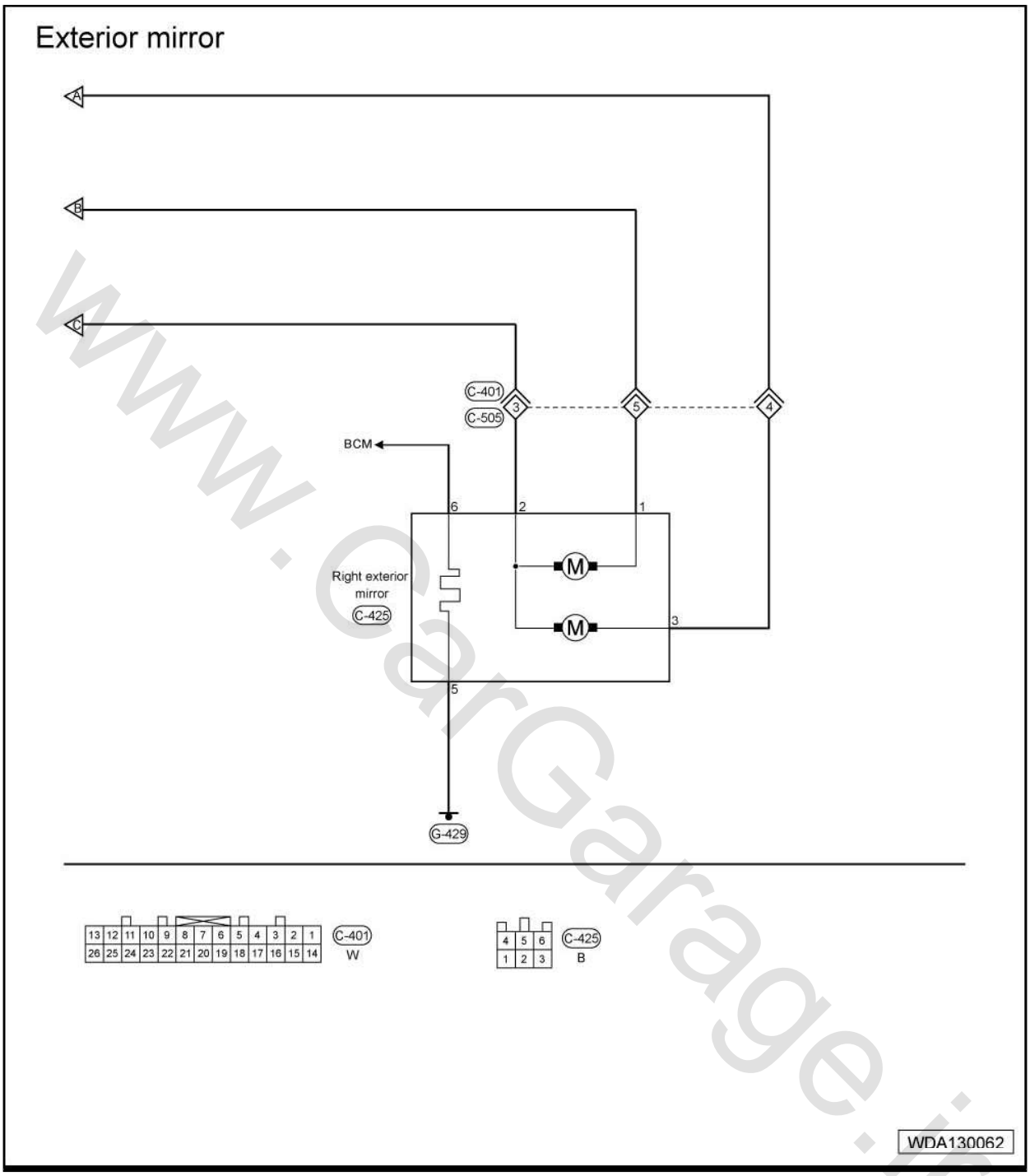
12.2 Circuit diagrams

Exterior mirror (page 1)



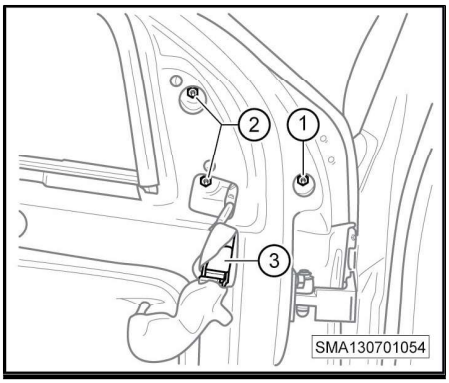
Exterior mirror (page 2)

07



12.3 Removing and installing the exterior mirror

Removal



1. Remove the front door interior trim. => refer to page 766
2. Remove the front door triangular trim.
3. Remove the protective cover for the exterior mirror fixing nuts (-1-) and unscrew the nuts.
4. Unscrew the fixing nuts of the exterior mirror (-2-) .
5. Disconnect the wiring harness connector (-3-).
6. Remove the exterior mirror.

Installation

Installation shall follow the reverse sequence of the removal procedure.

13 Horn

07

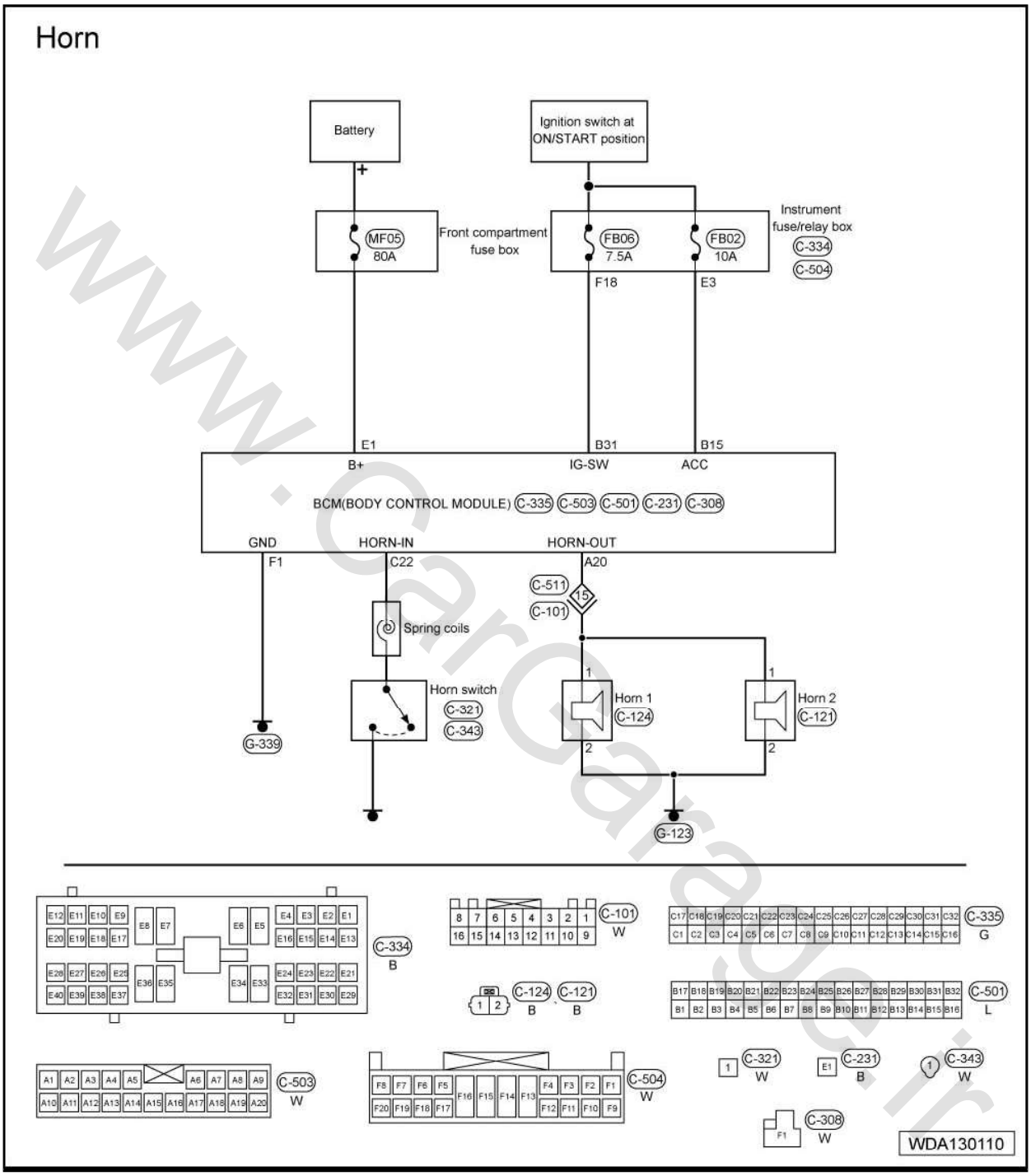
13.1 General information

13.1.1 Description

- Horn is a device that can produce sound by vibrating the metal diaphragm with the inside electromagnetic coil energized and deenergized constantly.
- This model comes with two horns.
- The horns are installed on the cross member behind the front intake grid.
- The horn switch is installed on the steering wheel.

13.2 Circuit diagram

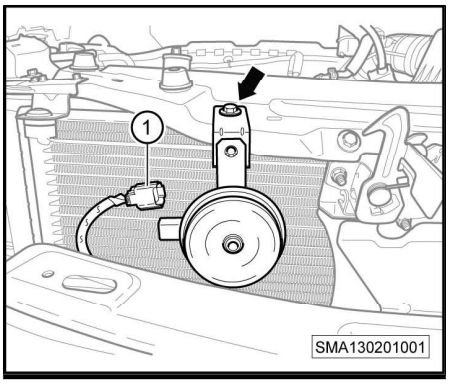
Horn (page 1)



13.3 Removing and installing the horn

Removal

1. Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable.
2. Remove the front intake grid .
3. Disconnect the horn wiring harness connector (-1-).
4. Unscrew the fixing bolts (-arrow-) and remove the horn.



Installation

Installation shall follow the reverse sequence of the removal procedure.

14 Wiper and Washer System

14.1 General Information

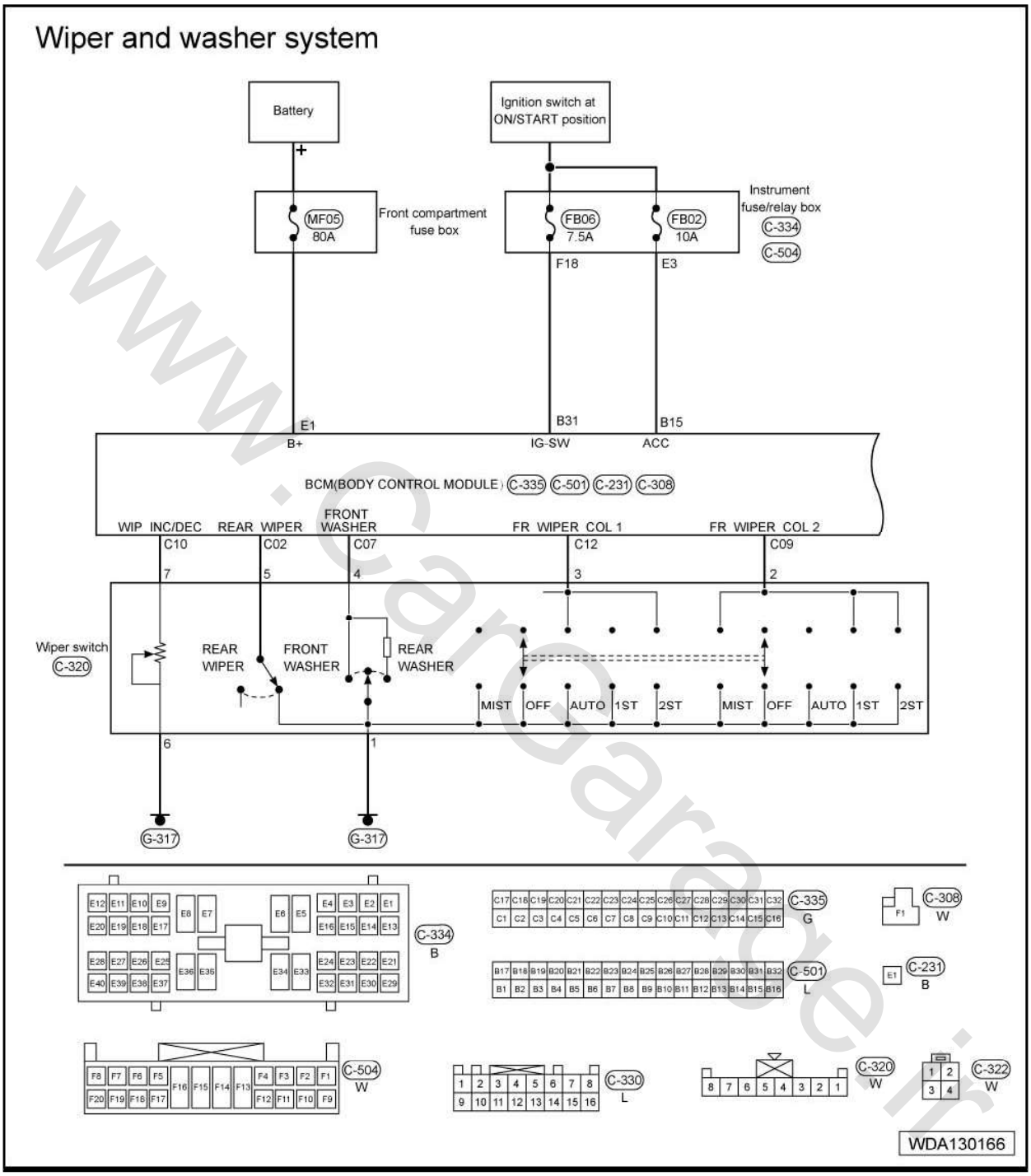
14.1.1 Description

The wiper and washer system serves to keep a clear vision by wiping off the raindrops on the windshield and rear window when it is raining. The system can remove the dirt on the windshield with the spray washer. This is an indispensable system for safe driving. It consists of the following components:

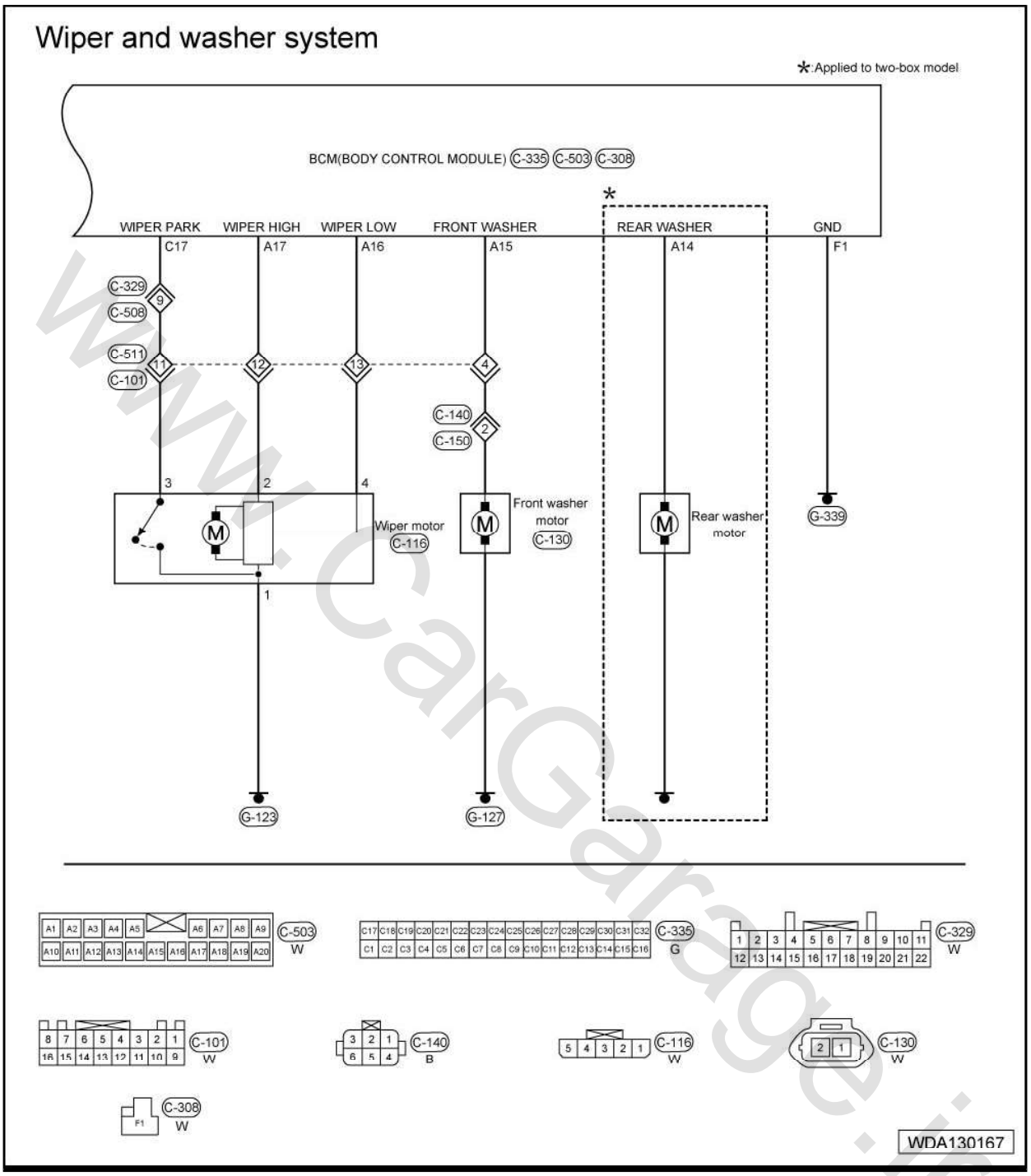
- Wiper motor
- Wiper arm
- Front wiper motor linkage
- Washer reservoir, washer pump
- Wiper switch

14.2 Circuit diagrams

Wiper and washer system (page 1)



Wiper and washer system (page 2)



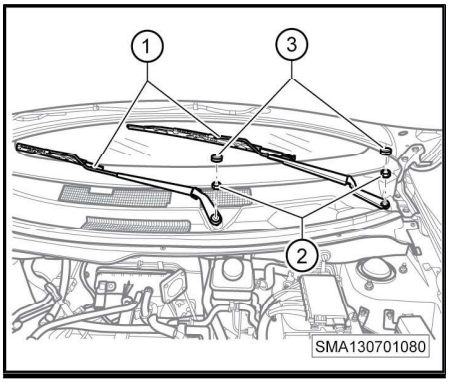
07

14.3 Front wiper

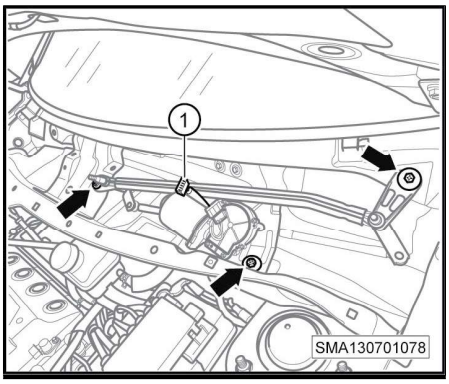
14.3.1 Removing and installing the front wiper motor

Removal

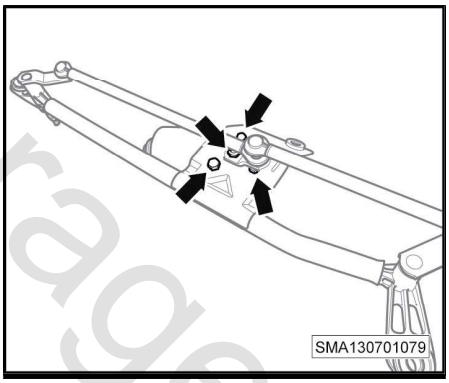
1. Lever out the decorative cover for front wiper arm nut (-3-) carefully.
2. Unscrew the fixing nuts of the wiper arm (-2-).
3. Remove the wiper blade and wiper arm (-1-) from the linkage.



4. Remove the water drain cover from the engine compartment .
5. Disconnect the wiring harness connector of the front wiper motor (-1-).
6. Unscrew the fixing bolts of the front wiper linkage (-arrow-).
7. Remove the linkage and wiper motor.



8. Unscrew the fixing bolts and nuts of the wiper motor (-arrow-).
9. Remove the front wiper motor.



Installation

Installation shall follow the reverse sequence of the removal procedure.

14.4 Rear wiper

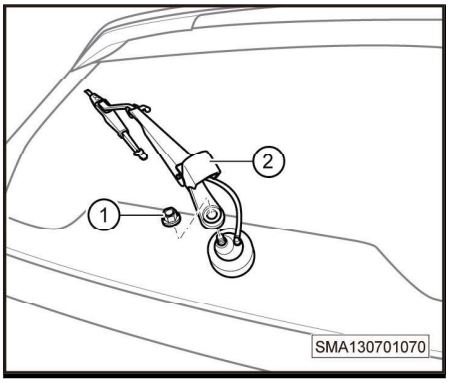
14.4.1 Removing and installing the rear wiper motor

Note

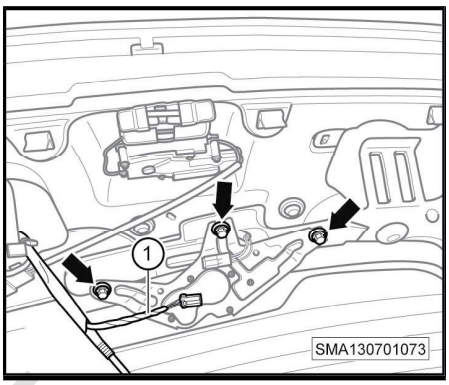
- Chery A13A model is equipped with the rear wiper and washer system.

Removal

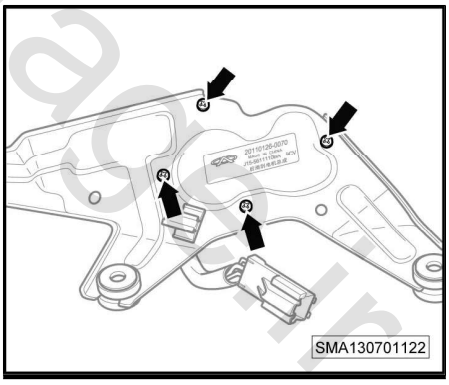
1. Lever out the cover for rear wiper arm nuts (-2-).
2. Unscrew the fixing nuts of the wiper arm (-1-).
3. Disconnect the washer fluid pipe.
4. Remove the wiper arm from the wiper motor.



5. Remove the trunk lid guard assembly .
6. Disconnect the wiring harness connector of the rear wiper motor (-1-).
7. Unscrew the fixing parts bolts of the rear wiper motor (-arrow-).
8. Remove the fixing parts and rear wiper motor assembly.



9. Unscrew the fixing bolts of the rear wiper motor (-arrow-).
10. Remove the rear wiper motor.



Installation

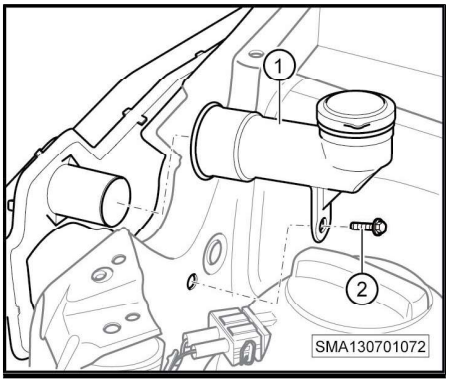
Installation shall follow the reverse sequence of the removal procedure.

14.5 Washer reservoir

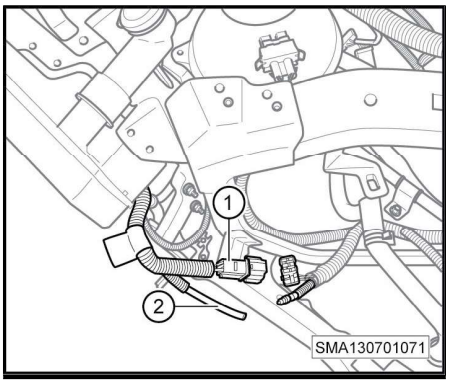
14.5.1 Removing and installing the washer reservoir

Removal

1. Remove the right headlamp.
2. Unscrew the fixing bolts (-2-) of the washer fluid filler (-1-).
3. Detach the washer fluid filler (-1-) from the washer reservoir.



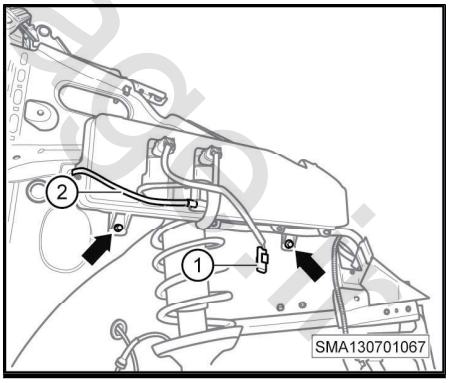
4. Disconnect the connector of the washer pump wiring harness and the front compartment wiring harness (-1-).
5. Disconnect the washer reservoir pipe (-2-).



Note

- For better display of the washer reservoir, the figure shows the status when the rear right fender is removed.

6. Remove the front right wheel trim.
7. Unscrew the washer reservoir lower fixing bolts (-arrow-).
8. Pull out the right turn signal connector (-1-).
9. Pull out the water outlet pipe of rear window washer motor (-2-) and remove the washer reservoir.

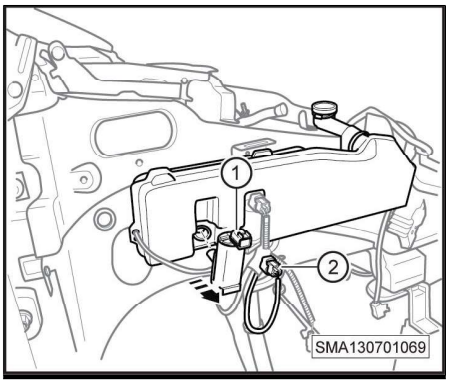


Installation

Installation shall follow the reverse sequence of the removal procedure.

14.5.2 Removing and installing the washer pump

Removal



1. Remove the front right fender.=> refer to page 842
2. Disconnect the washer pump wiring harness connector (-2-).
3. Pull out the washer pump guide.
4. Pull out the washer pump (-1-) from the washer reservoir in the (-arrow-) direction.

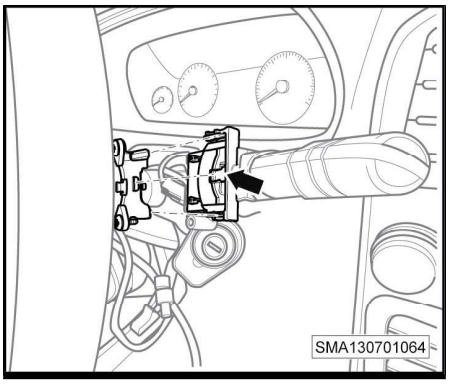
Installation

Installation shall follow the reverse sequence of the removal procedure.

14.6 Removing and installing the wiper switch

Removal

1. Remove the steering column upper and lower covers.
2. Disconnect the wiring harness connector of the wiper switch.
3. Press the fixing clip of the wiper switch (-arrow-) and remove the switch from the steering column.



Installation

Installation shall follow the reverse sequence of the removal procedure.

15 Rear Window Defroster

15.1 General information

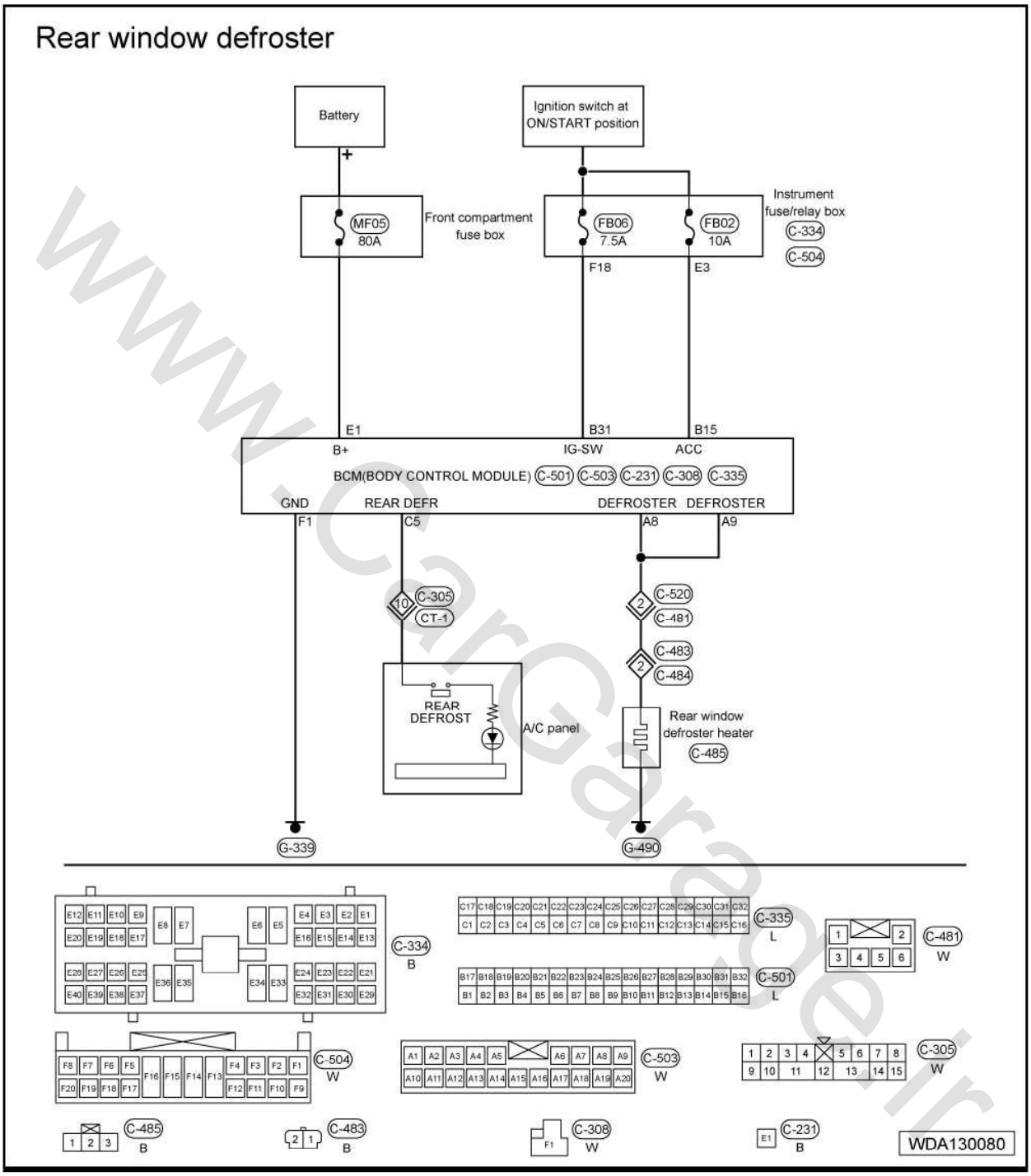
15.1.1 Description

- This function is used to remove frost, fog or water vapor on the rear windshield by heating the windshield with electric wires at the bottom of the rear windshield, thus to get a clearer vision.
- The rear window defroster function is controlled by the BCM. When the ignition switch is in the ACC position, turn on the defroster switch and the BCM will supply power to the rear window heating wires.

15.2 Circuit diagram

Rear window defroster system (page 1)

07



16 Anti-theft System

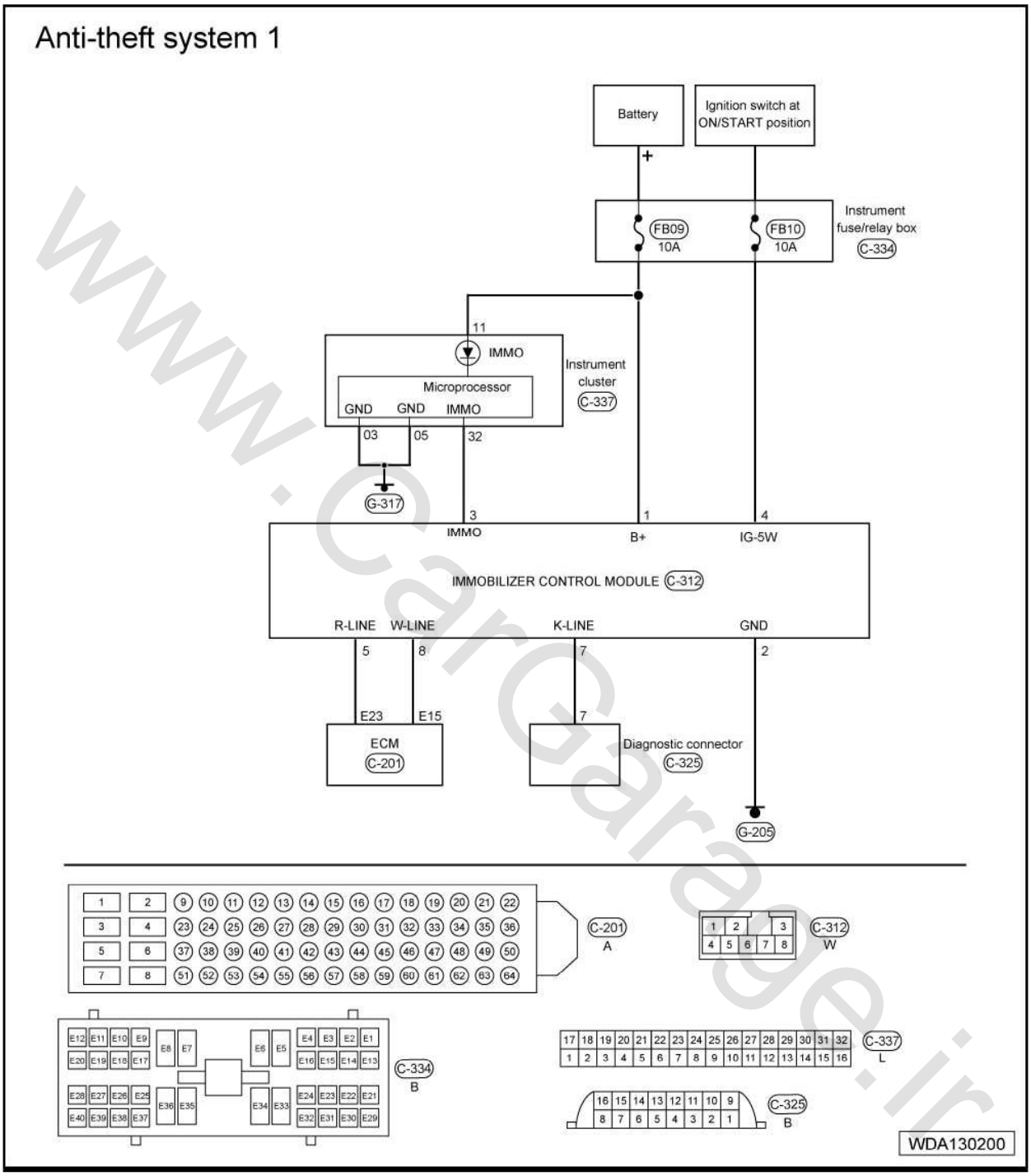
16.1 General information

16.1.1 Description

- The vehicle anti-theft system is controlled by the anti-theft control module and identifies through the anti-theft induction coil to prevent any improper ignition key from starting the engine.
- If the improper ignition key is inserted into the ignition switch, the anti-theft coil will sense the incorrect password and send signals to the anti-theft control module and the engine control module (ECM) to forbid the start of the engine for the anti-theft purpose.

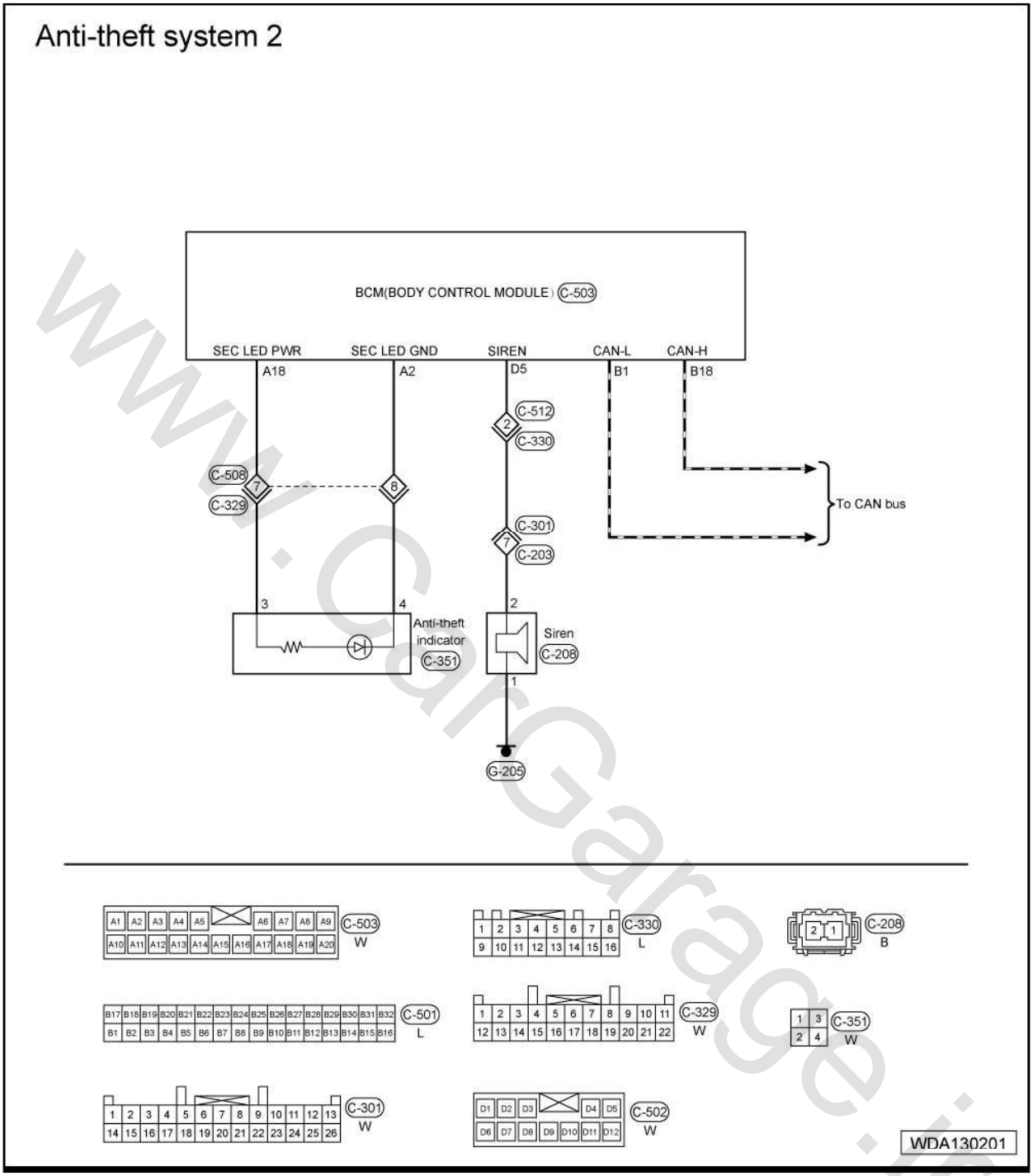
16.2 Circuit diagrams

Anti-theft system (447F+UAES) (page 1)



Anti-theft system (447F+UAES) (page 2)

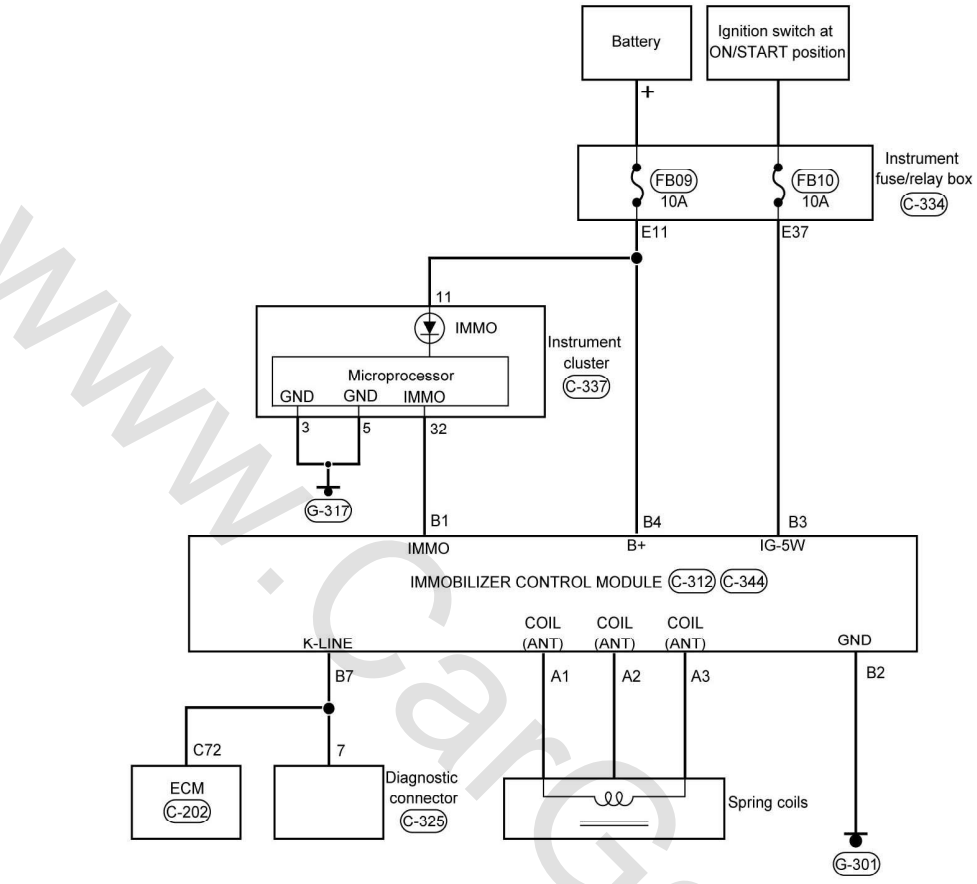
Anti-theft system 2

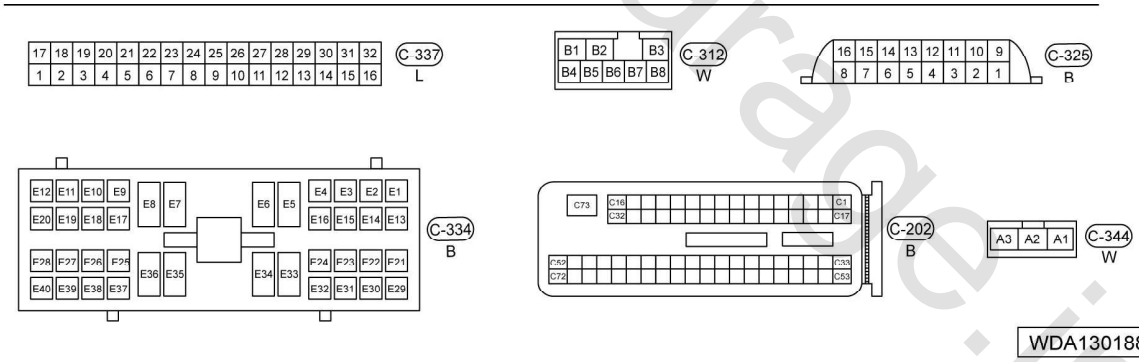


Anti-theft system (447F+DELPHI) (page 1)

07

Anti-theft system





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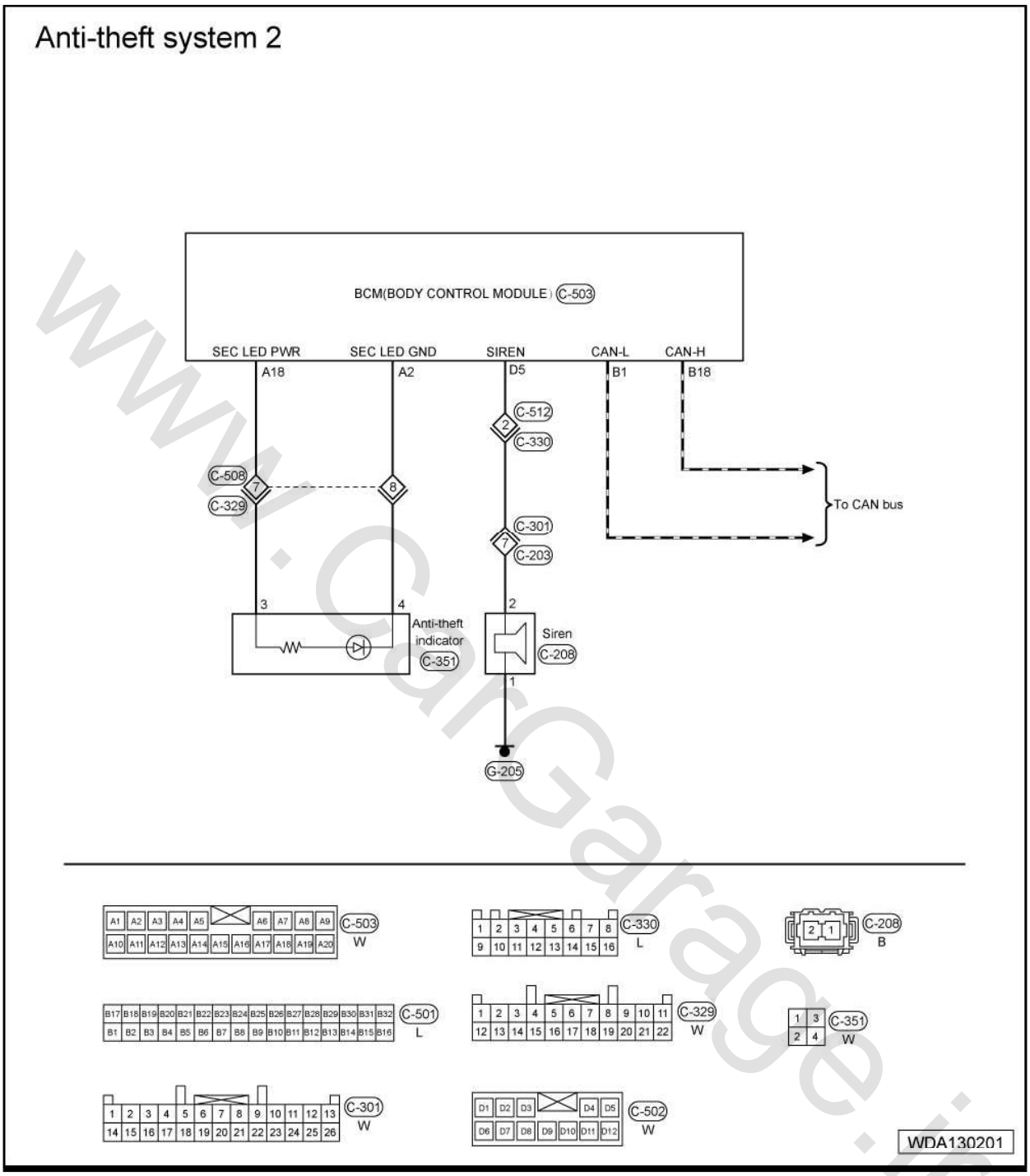
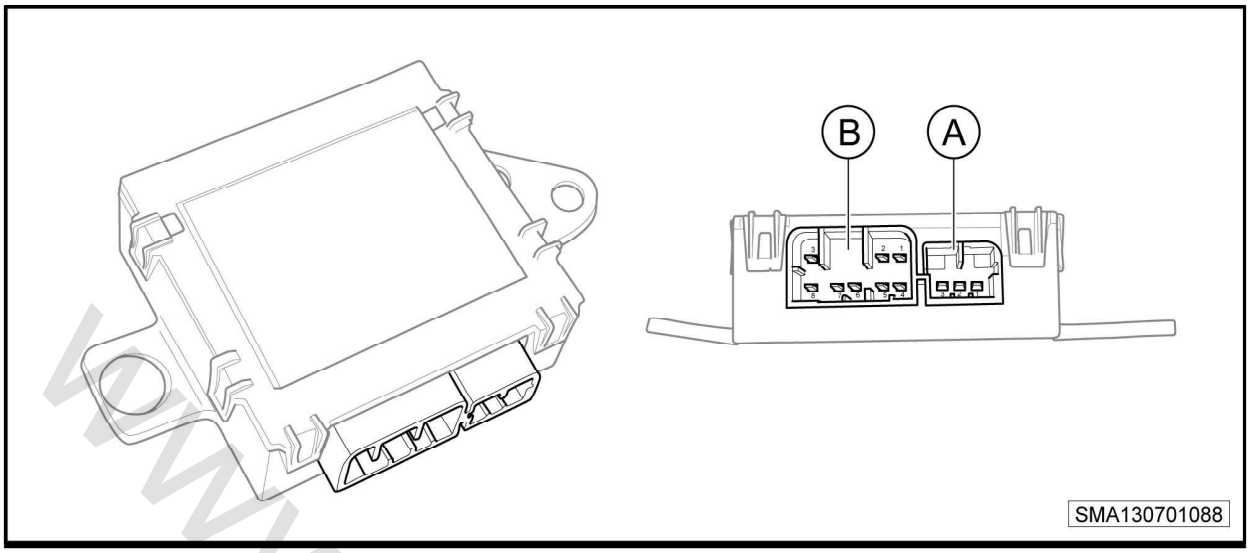
Anti-theft system (447F+DELPHI) (page 2)



16.3 Definition of the anti-theft control module pin



B: 8-pin connector of the anti-theft control module (447F+UAES control system)

Pin No.	Function	Pin No.	Function
1	KL30	5	EMS wake-up line
2	Ground	6	—
3	Anti-theft indicator	7	Diagnostic line
4	KL15	8	EMS communication port

A: 3-pin connector of the anti-theft control module (447F+DELPHI control system)

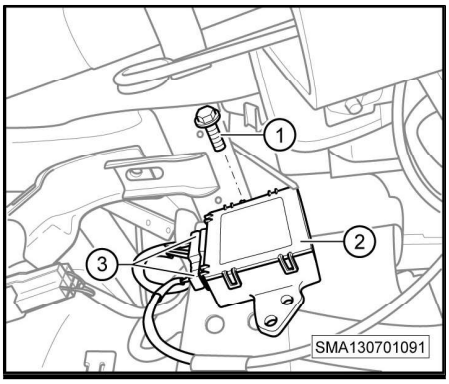
Pin No.	Function	Pin No.	Function
1	Anti-theft identification coil (positive)	3	Anti-theft identification coil (negative)
2	—		

B: 8-pin connector of the anti-theft control module (447F+UAES control system)

Pin No.	Function	Pin No.	Function
1	Warning lamp	5	—
2	Ground	6	—
3	KL15	7	Communication diagnostic connector
4	KL30	8	—

16.4 Removing and installing the anti-theft control module

Removal



1. Switch off all electrical equipment and disconnect the battery negative cable.
2. Remove the base guard of the driver's side dashboard => refer to page 832.
3. Pull out the anti-theft control module connector (-3-).
4. Unscrew the fixing bolts of the anti-theft control module (-1-).
5. Remove the anti-theft control module (-2-).

Installation

Installation shall follow the reverse sequence of the removal procedure.

16.5 Anti-theft system adaption

16.5.1 Key adaption

Caution

- Security code (PIN code) is only entered through a special diagnostic device of Chery. When entering, please note that the letters are case sensitive and the ECM will be locked permanently after the erroneous codes are entered consecutively for more than a certain number of times.

Key adaption procedures:

1. Connect the diagnostic connector of the diagnostic device to the diagnostic connector inside the cockpit.
2. Insert the key to be adapted into the ignition switch and turn it to the ON position.
3. Access the diagnostic device option menu and select "Anti-theft control" → "Adaption" → "Authorization code setting" → "Enter the security code" and then return to "Adaption" → "Enter the user authorization code".
4. Return to "Adaption" and select the menu "Clear the key list" to clear the previously lost key information.
5. Return to the "Adaption" and select the menu "Adapt the key" and perform the adaption operation according to the steps shown on the diagnostic device.
6. After adaption, turn off the ignition switch and turn it on again and start the engine to verify if the adaption is successful.

Remote control adaption procedures:

Note

- This function can be used to adapt 2 remote controls.

1. Connect the diagnostic connector of the diagnostic device to the diagnostic connector inside the cockpit.
2. Insert the key to be adapted into the ignition switch and turn it to the ON position.
3. Access the diagnostic device option menu and select "Body control module" → "Select the functions" → "Write the data flow" → "Erase all the remote control keys". Clear the previously lost key information.
4. Return to the "Select the functions" and select the menu "Key learning" and perform the adaption operation according to the steps shown on the diagnostic device.
5. After adaption, verify if the adaption is successful.

16.5.2 Anti-theft control adaption

Caution

- Security code (PIN code) is only entered through a special diagnostic device of Chery. When entering, please note that the letters are case sensitive and the ECM will be locked permanently after the erroneous codes are entered consecutively for more than a certain number of times.

Anti-theft control adaption procedures:

1. Turn off the ignition switch and replace the anti-theft control with a new one.
2. Insert the key into the ignition switch and turn it to the ON position.
3. Access the diagnostic device option menu and select "Anti-theft control" → "Adaption" → "Authorization code setting" → "Enter the security code" and then return to "Adaption" → "Enter the user authorization code".
4. Return to the "Adaption" and select the menu" Replace the anti-theft control" and perform the adaption operation according to the steps shown on the diagnostic device.

5. After the completion of the anti-theft control adaption, adapt the original keys one by one.

17 Diagnosis and Inspection of the Anti-theft System

17.1 Diagnosis and inspection of sporadic DTC faults

If the sporadic DTC faults occur, please check the following items:

- Check if the connector of the DTC-related actuator or sensor is properly installed.
- Check the connector pins of the actuator or sensor for leakage and corrosion.
- Check the leads for bending or squeezing.
- Check the sensor for dirt or damage.
- Check if the routing of wiring harness is correct and proper.

17.2 Checking earth connection

A good earth connection is prerequisite for ensuring the normal operation of the circuit. If the earth terminal of the circuit is always exposed to the wet and dusty environment, the metal of the earth terminal will corrode and affect the circuit smoothness, thus causing various electrical system malfunctions. As the control circuit is very sensitive, the loosened or corroded wires may significantly affect the transmission of various signals in the electronic control circuit. Therefore, please note the followings when inspecting:

- Replace the earth bolts or nuts.
- Check the earth terminal and coil for corrosion.
- Clean and polish the earth terminal and coil when necessary to ensure good contact.
- Check if there is any accessory interfering with the earth circuit.

17.3 Special tools

- X-431 diagnostic device
- Digital multimeter
- Adapter cable

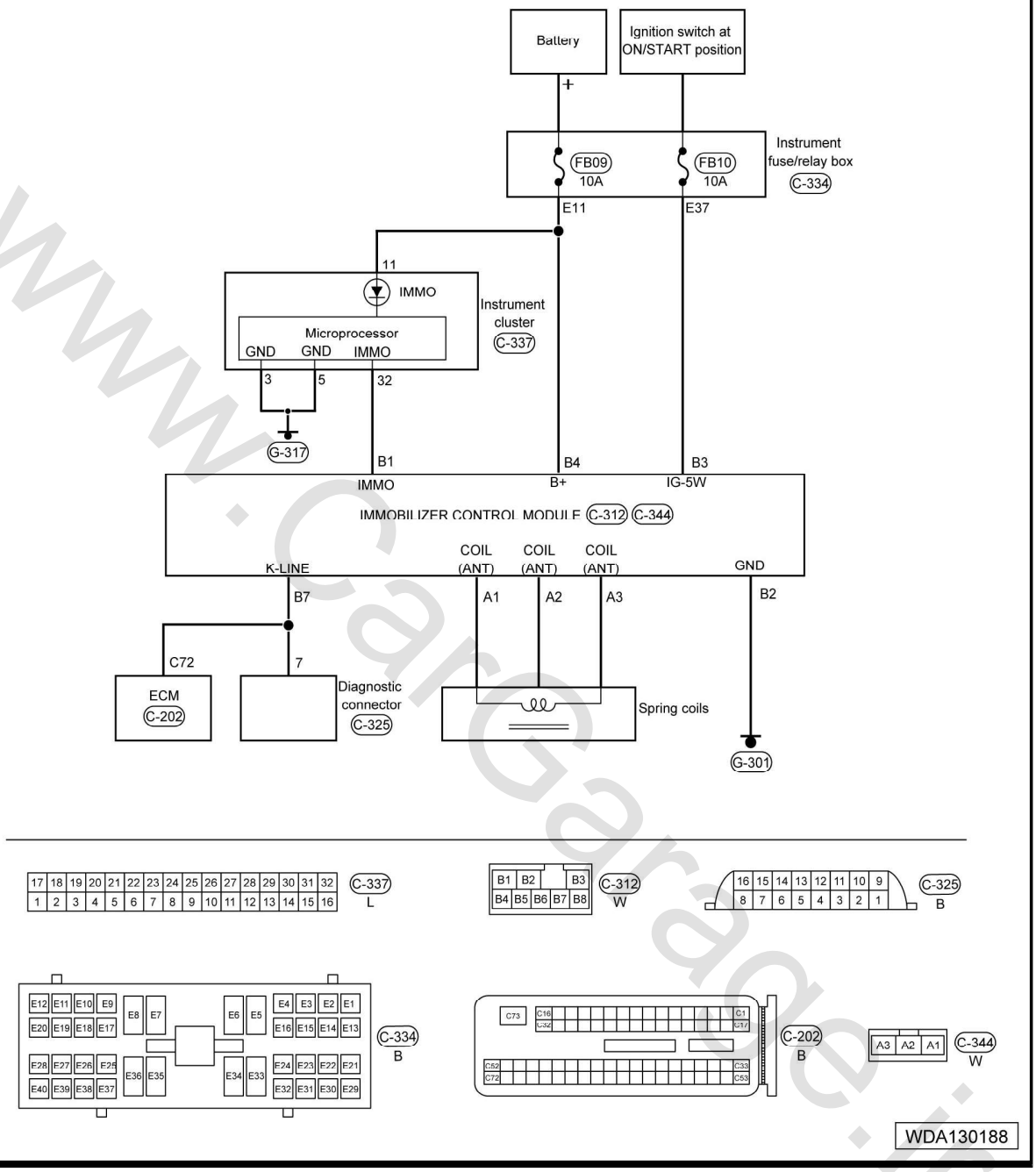
17.4 Fault diagnosis (DTC)

17.4.1 Anti-theft system diagnosis (DTC) list

DTC	Definition
B1001	Failure of the anti-theft control
B1005	K line short to ground
B1017	Failure of warning lamp output

17.4.2 B1001 Failure of the anti-theft control

Anti-theft system



Checking the voltage between the anti-theft control module and the grounding

Pin No.	Function	Condition	Value (DC voltage range)
B3	The anti-theft control energized	The ignition switch in the LOCK position	Battery voltage
B4	The anti-theft control energized	The ignition switch in the ON/START position	Battery voltage

Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1001	Failure of the anti-theft control	The ignition switch in the ON position or the START position	The anti-theft control module short or open circuit detected by the system	• Failure of the wiring harnesses or connector • Failure of the anti-theft control module

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

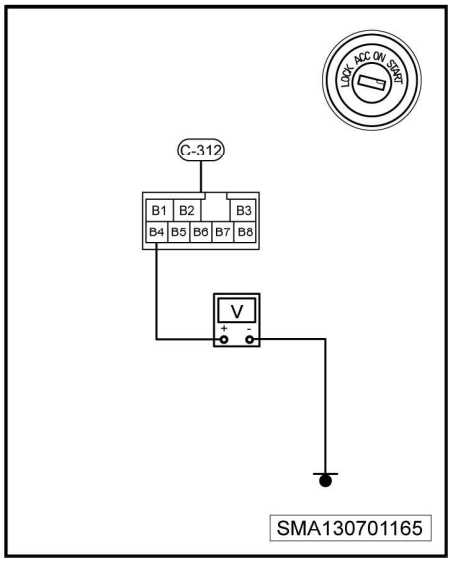
Diagnosis procedures:

Note

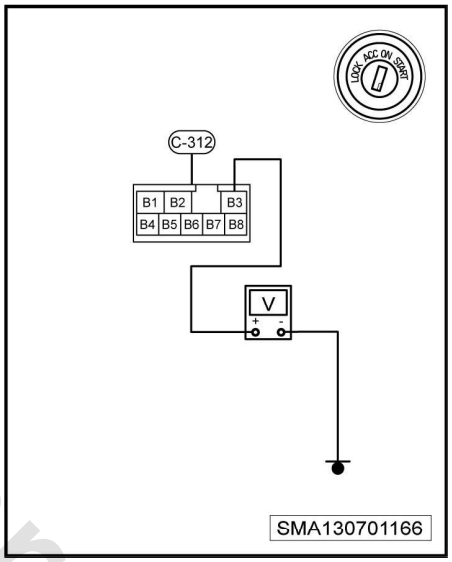
- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Check if the power supply fuse FB09/FB10 in the anti-theft control module has a fault.
   - If yes, replace the corresponding fuses. ■
   - If not, go to step 2.

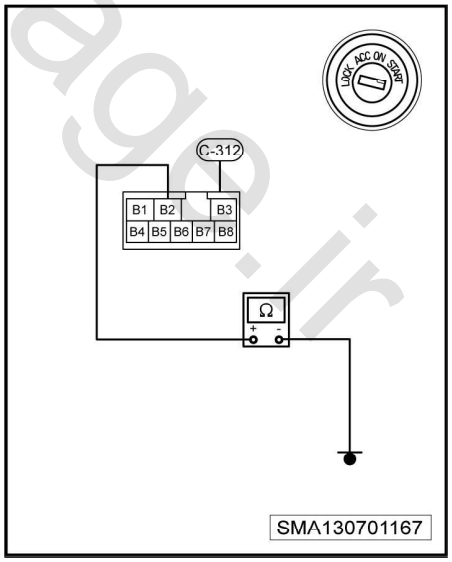
2. Check if the voltage between the pin B4 of the anti-theft control module connector C-312 and the ground is the battery voltage from the anti-theft control module connector side.
   - If yes, go to step 3.
   - If not, check if the power supply line of the pin B4 of the anti-theft control module connector C-312 has the following faults such as short circuit, open circuit, excessive resistance and virtual connection. ■



3. Turn the ignition switch to the ON/START position, and check if the voltage between the pin B3 of the anti-theft control module connector C-312 and the ground is the battery voltage from the anti-theft control module connector side.
   - If yes, go to step 4.
   - If not, check if the power supply line of the pin B3 of the anti-theft control module connector C-312 has the following faults such as short circuit, open circuit, excessive resistance and virtual connection. ■



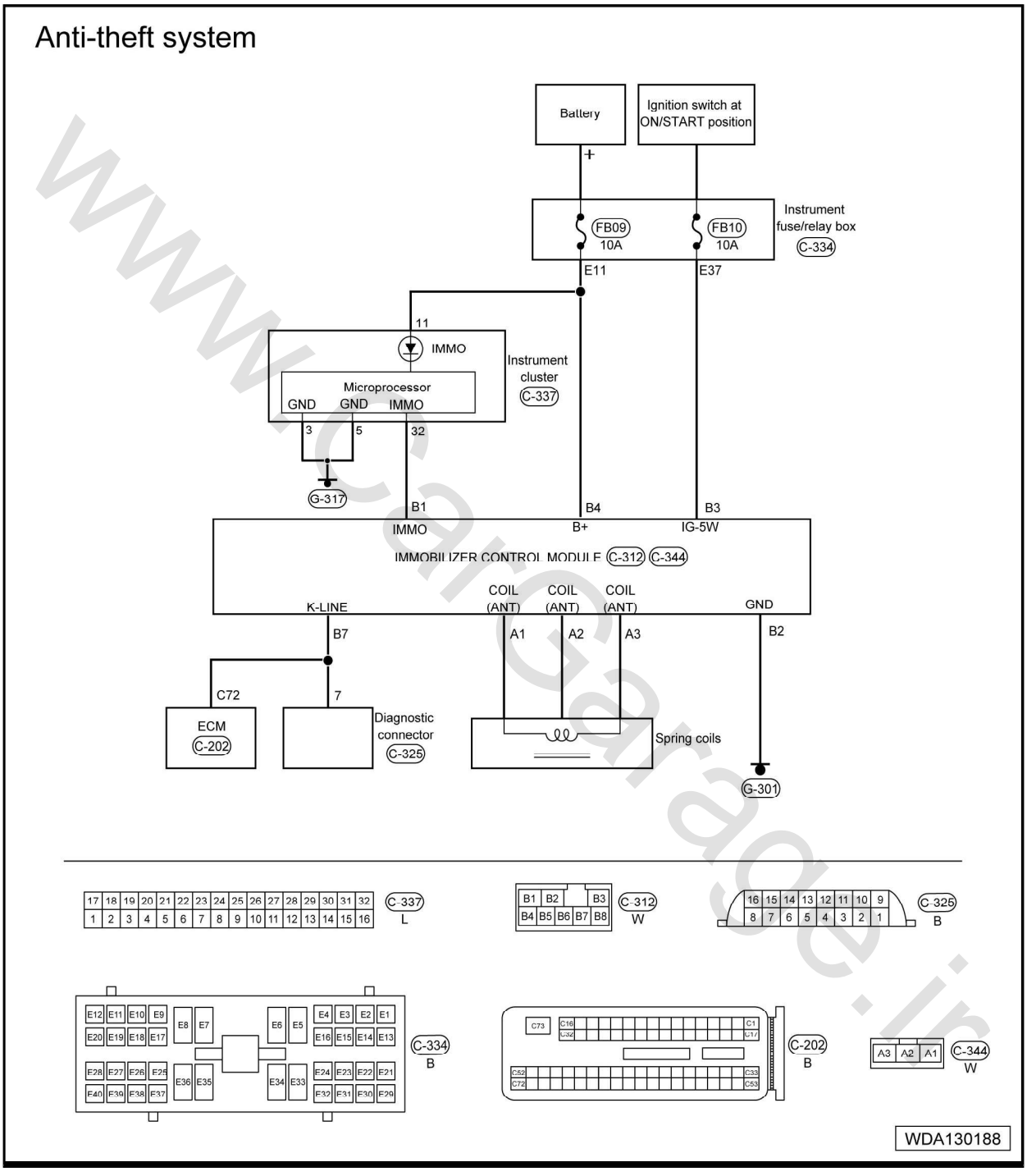
4. Check if the ground line of the pin B2 of the anti-theft control module connector C-312 is normal.
   - If yes, go to step 5.
   - If not, repair the faulty line. ■



5. Replace the anti-theft control module, carry out the function test again, and read the fault code to verify if it exists or not.

- If yes, find the fault cause from other symptoms.
- If not, the fault has been rectified. ■

17.4.3 B1005 K line open circuit to ground



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1005	K line open circuit to ground	The ignition switch in the ON/START position	The K line of anti-theft control module short or open	• Failure of the wiring harnesses or connector

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
			circuit detected by the engine control module	• Failure of the anti-theft control module

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

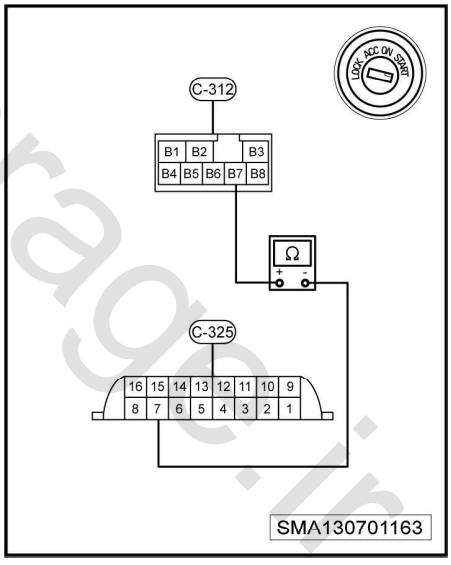
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

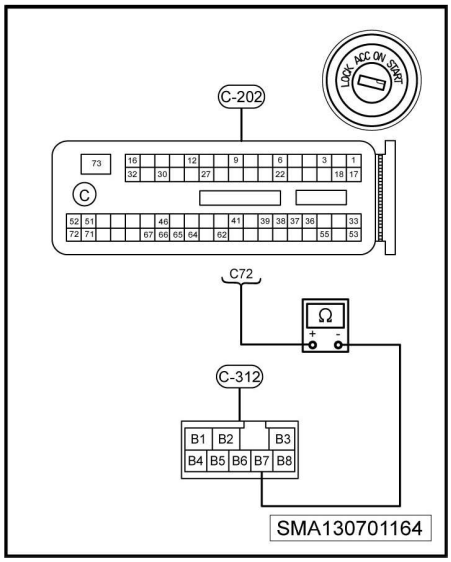
Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, and check if the lead between the pin B7 of the anti-theft control module connector C-312 and the pin 7 of the diagnostic connector C-325 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin B7 of the anti-theft control module connector C-312 and the pin 7 of the diagnostic connector C-325 has open circuit and repair or replace the defective lead. ■



2. Turn the ignition switch to the LOCK position, and check if the lead between the pin B7 of the anti-theft control module connector C-312 and the pin C72 of the engine control module connector C-202 is conducted.
   - If yes, go to step 3.
   - If not, check if the lead between the pin B7 of the anti-theft control module connector C-312 and the pin C72 of the engine control module connector C-202 has open circuit and repair or replace the defective lead. ■



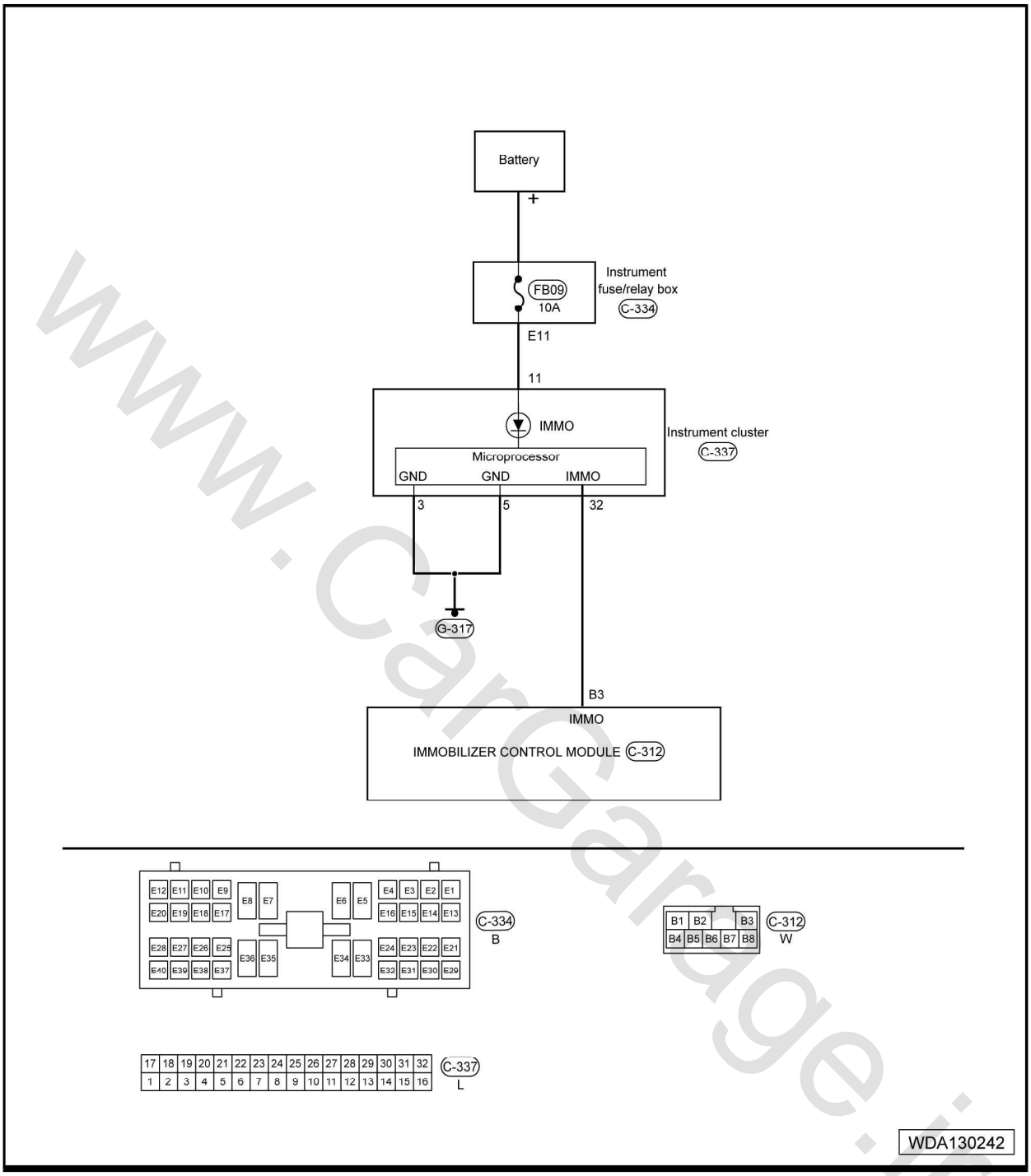
3. Check if the power supply line and the ground line of the anti-theft control module are normal.
   - If yes, go to step 4.
   - If not, repair the faulty line. ■

4. Replace the anti-theft control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, go to step 5.
   - If not, the fault has been rectified. ■

5. Check if the power supply line and ground line of the engine control module are normal.
   - If yes, go to step 6.
   - If not, repair the faulty line. ■

6. Replace the engine control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.
   - If not, the fault has been rectified. ■

17.4.4 B1017 Failure of warning lamp output



Fault code definition and fault causes

DTC	DTC definition	DTC test condition	DTC triggering condition	Possible causes
B1017	Failure of warning lamp output	The ignition switch in the ON/START position	The anti-theft indicator circuit short or open circuit detected by the instrument cluster	• Failure of the wiring harnesses or connector • Failure of the anti-theft control module • Failure of the instrument cluster

DTC test procedures:

Please confirm that the battery voltage is normal before performing the following procedures.

- Turn off the ignition switch.
- Connect the X-431 diagnostic device to the DLC and perform the test with the updated software.
- Turn on the ignition switch.
- Measure and clear the DTC with the diagnostic device.
- Turn off the ignition switch and turn it on again after 3 to 5 seconds.
- Measure the DTC with the diagnostic device.
- If a DTC is detected, it indicates that the vehicle is faulty, please perform corresponding diagnostic procedures.

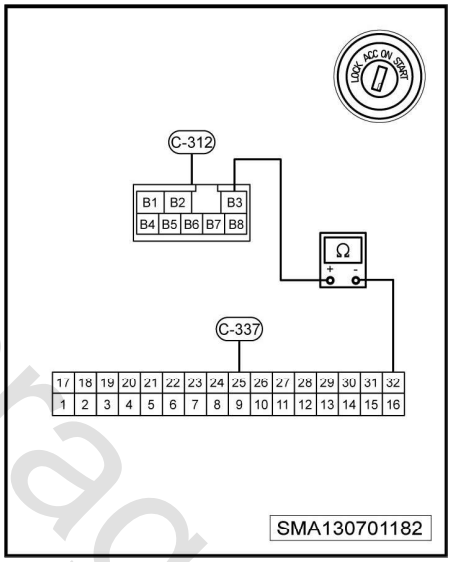
  If no DTC is detected, it indicates that the previously detected faults are sporadic. (Please refer to the chapters on the sporadic DTC and check faults)

Diagnosis procedures:

Note

- Please verify again if the DTC and its symptoms are present after fault is rectified.

1. Turn the ignition switch to the LOCK position, and check if the lead between the pin B3 of the anti-theft control module connector C-312 and the pin 32 of the instrument cluster connector C-337 is conducted.
   - If yes, go to step 2.
   - If not, check if the lead between the pin B3 of the anti-theft control module connector C-312 and the pin 32 of the instrument cluster connector C-337 has open or short circuit and repair or replace the defective lead. ■



2. Check if the power supply line and the ground line of the anti-theft control module are normal.
   - If yes, go to step 3.
   - If not, repair the faulty line. ■

3. Check if the power supply line and the ground line of the instrument cluster are normal.
   - If yes, go to step 4.
   - If not, repair the faulty line. ■

4. Replace the anti-theft control module, carry out the function test again, and read the fault code to verify if it exists or not.
   - If yes, find the fault cause from other symptoms.

- If not, the fault has been rectified. ■

18 Reversing Radar System

18.1 General information

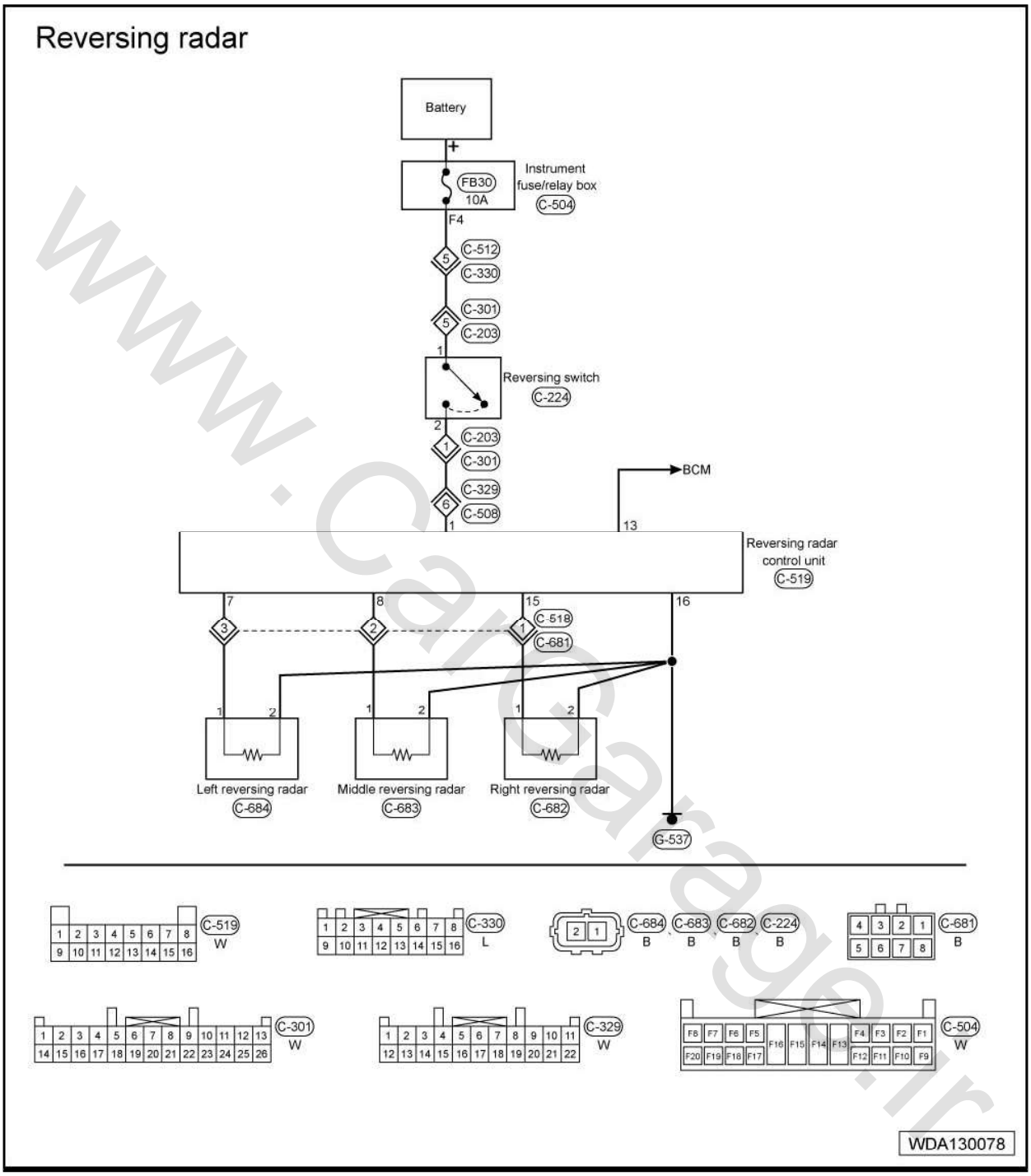
18.1.1 Description

- When the shift lever is in the R position, the reversing radar sensor will send the ultrasonic waves to detect objects near the vehicle and send out a warning tone. As the vehicle approaches the objects closer and closer, the warning tone frequency will be increased.
- Power supply transmits power to the reversing radar system via the reversing switch. When the shift lever is in the R position, turn on the reversing switch to activate the reversing radar control module. During this time, the reversing radar sensor will sense the obstacles while sending the signals to the reversing radar control module and it will send the distance message to the BCM through the LIN bus. Then the BCM will transmit it to the instrument cluster via the CAN bus. The instrument cluster controls the frequency of buzzer beeping to give a sound alert.

18.2 Circuit diagram

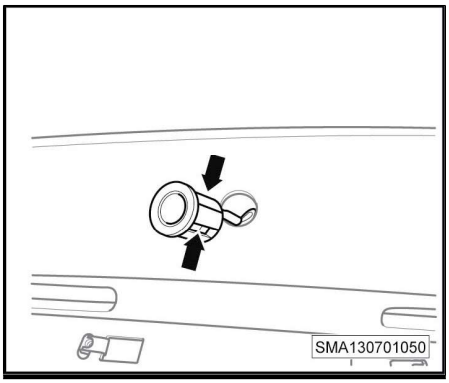
Reversing radar system (page 1)

07



18.3 Removing and installing the reversing radar sensor

Removal



1. Remove the rear bumper assembly => refer to page 848.
2. Pull out the reversing radar sensor connector.
3. Press the fixing clip of the reversing radar sensor (-arrow-) and push the sensor out of the bumper.

Installation

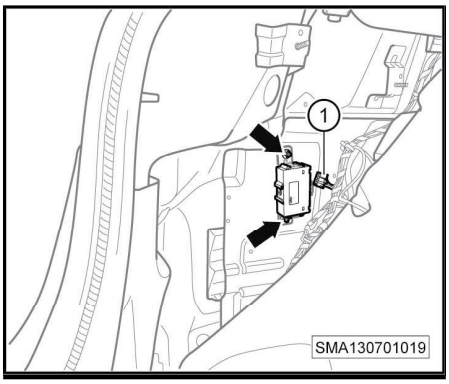
Installation shall follow the reverse sequence of the removal procedure.

18.4 Removing and installing the reversing radar control module

Two-box model

Removal

1. Remove the left luggage compartment trim => refer to page 783.
2. Disconnect the radar control module connector (-1-).
3. Unscrew the fixing bolts of the control module (-arrow-) and remove the control module.



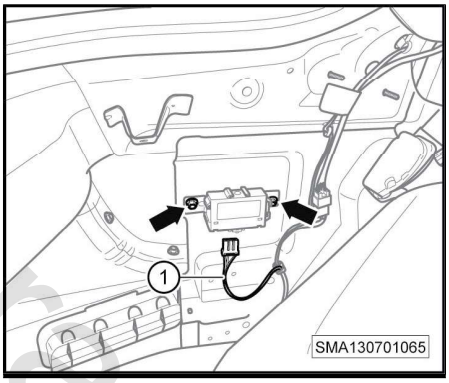
Installation

Installation shall follow the reverse sequence of the removal procedure.

Three-box model

Removal

1. Remove the left luggage compartment trim => refer to page 783.
2. Disconnect the radar control module connector (-1-).
3. Unscrew the fixing bolts of the control module (-arrow-) and remove the control module.



Installation

Installation shall follow the reverse sequence of the removal procedure.

19 Audio System

19.1 General information

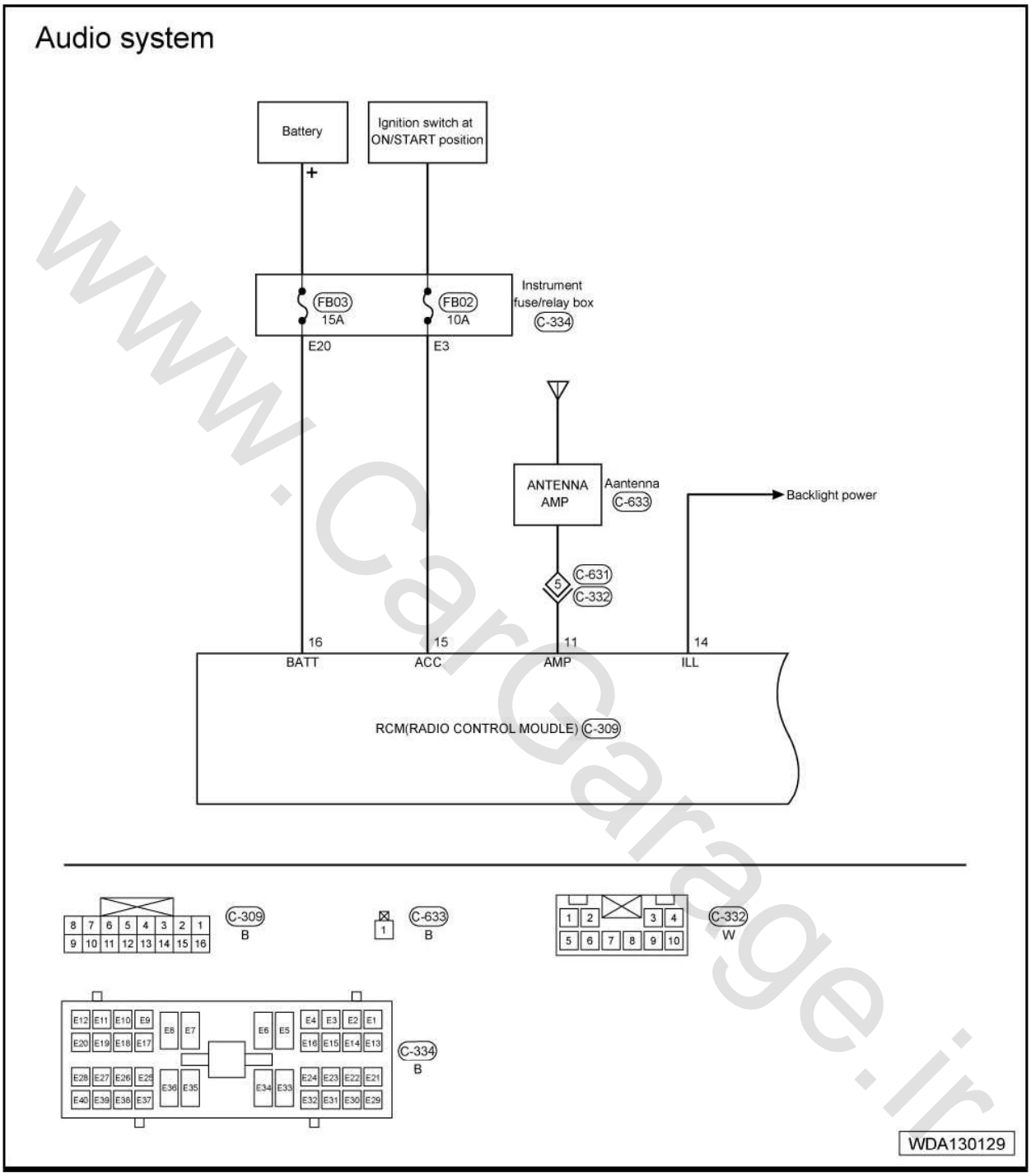
19.1.1 Description

Audio system is powered by the battery via the ignition switch. When the ignition switch is in the ACC position, the audio system can be switched on. The radio antenna receives the electrical wave signals of audio and transmits them to the audio system for processing. Then the sound will be produced by the speaker. The audio system consists of the following components:

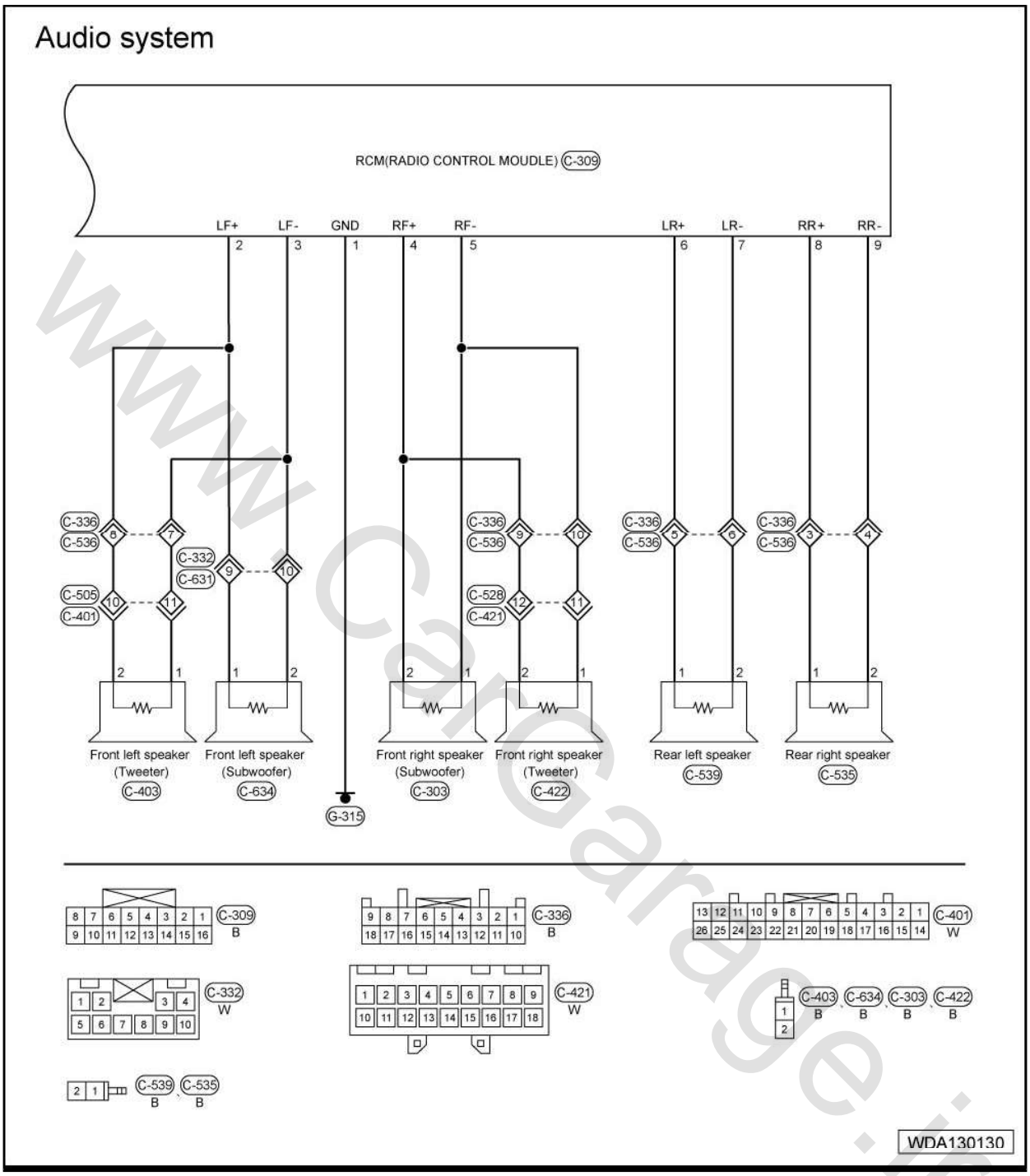
- Audio device
- Two front speakers
- Two A pillar tweeters
- Two rear speakers
- Radio antenna assembly

19.2 Circuit diagrams

Audio system (page 1)



Audio system (page 2)



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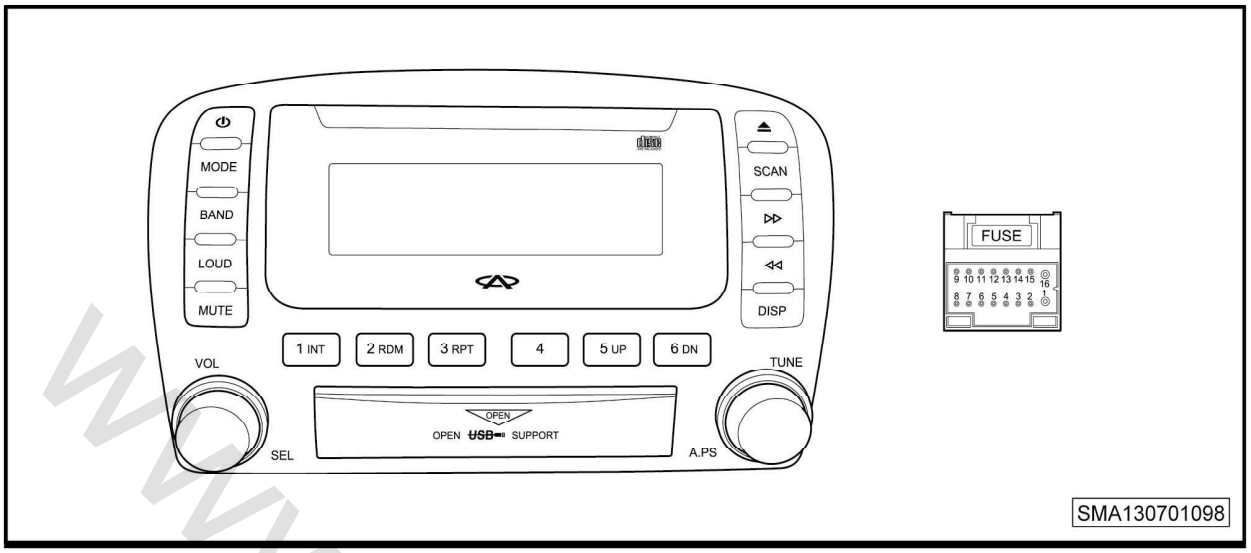
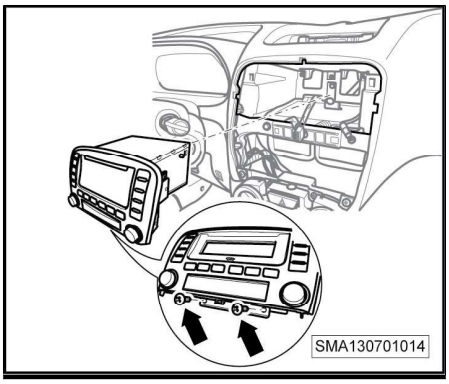
19.3 Definition of audio system module pin



Pin No.	Function	Pin No.	Function
1	Power supply	9	Rear right speaker (negative)
2	Front left speaker (positive)	10	Not used
3	Front left speaker (negative)	11	Automatic antenna
4	Front right speaker (negative)	12	Not used
5	Front right speaker (positive)	13	Steering wheel button signal
6	Rear left speaker (positive)	14	Backlight power
7	Rear left speaker (negative)	15	Power supply
8	Rear right speaker (positive)	16	Power supply

19.4 Removing and installing the radio

Removal



1. Remove the central control panel air outlet assembly .
2. Unscrew the lower fixing screws of the radio (-arrow-).
3. Remove the radio assembly and disconnect the radio connector.

Installation

Installation shall follow the reverse sequence of the removal procedure.

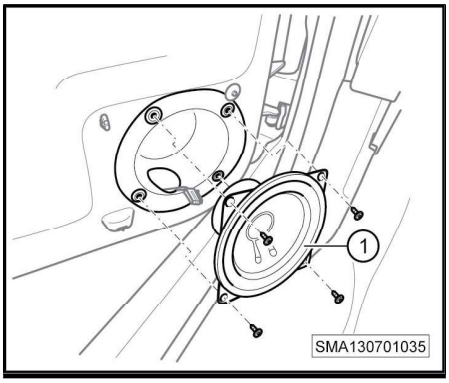
07

19.5 Speaker

19.5.1 Removing and installing the front speaker

Removal

1. Remove the front door interior trim assembly => refer to page 764.
2. Unscrew the fixing screws of the speaker (-1-).
3. Disconnect the speaker wiring harness connector and take out the speaker (-1-).



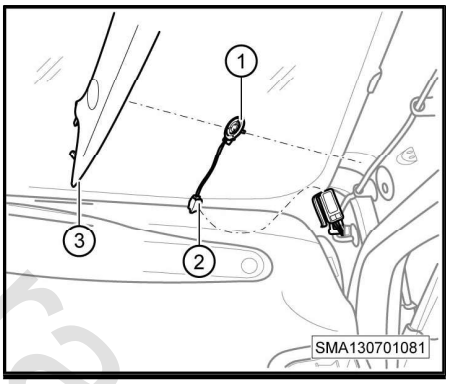
Installation

Installation shall follow the reverse sequence of the removal procedure.

19.5.2 Removing and installing the A pillar tweeter

Removal

1. Remove the A pillar upper trim .=> refer to page 771
2. Pull out the tweeter connector (-2-).
3. Carefully lever out the tweeter (-1-) from the A pillar upper trim (-3-).



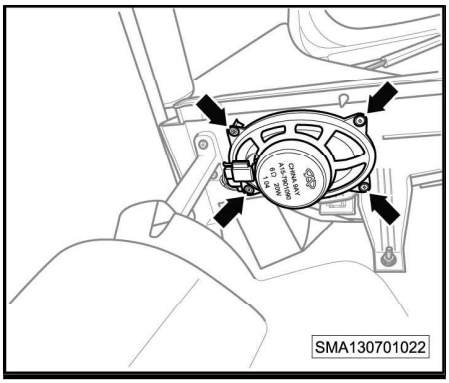
Installation

Installation shall follow the reverse sequence of the removal procedure.

19.5.3 Removing and installing the rear speaker

Removal

1. Disconnect the rear speaker connector.
2. Unscrew the screws of the speaker (-arrow-) and take out the rear speaker.

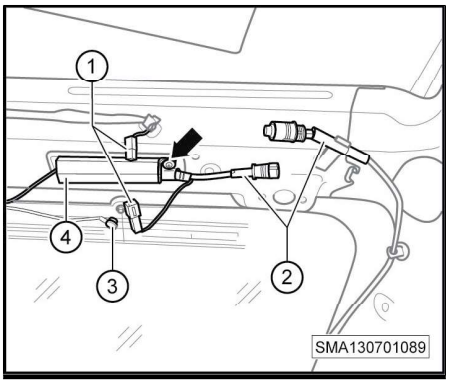


Installation

Installation shall follow the reverse sequence of the removal procedure.

19.6 Removing and installing the antenna amplifier

1. Remove the roof .
2. Disconnect the connector (-2-) between the amplifier and antenna.
3. Disconnect the antenna amplifier connector (-1-).
4. Disconnect the window antenna connector (-3-).
5. Unscrew the fixing screws of the amplifier (-arrow-) and remove the antenna amplifier.



Installation

Installation shall follow the reverse sequence of the removal procedure.

19.7 General fault diagnosis of the audio system

Caution

- The audio system is powered by a DC 12V power.
- Switch off all electrical equipment and the ignition switch, and disconnect the battery negative cable during the removal and installation of the components.
- During the use and maintenance of the audio system, pay attention to protecting the display.
- When inspecting the general faults of audio system, you shall carry out inspection in a nearby open area without obstacles.

How to carry out the fault diagnosis when no radio signal is received or the radio signal is very weak.

1. Check if the radio can receive the radio signals properly?
   - If yes, the audio system works properly.
   - If not, go to step 2.
2. Check if the antenna connector is inserted into the radio correctly?
   - If not, go to step 3.
   - If not, reinsert the antenna connector into the radio correctly.
3. Check if the antenna is conducted?
   - If yes, go to step 4.
   - If not, replace the antenna lead.
4. Check if the circuit between the central signal wire peripheral terminal and the audio device housing is conducted?
   - If yes, replace the antenna amplifier.
   - If not, replace the audio device.

How to carry out the fault diagnosis when there is noise in the radio.

1. Check the noise level of the audio system and verify if it can receive any radio signal properly?
   - If yes, go to step 2.
   - If not, the audio system works properly.
2. Check if the noise of radio is caused by the electrical wave interference?
   - If yes, the audio system works properly.
   - If not, replace the audio device.

If the CD eject button is pressed and the CD cannot removed from the driver, please carry out the fault diagnosis for this.

1. Press the CD eject button and check if the CD can be ejected properly?
   - If yes, it works properly.
   - If not, go to step 2.
2. Check if it can be fully ejected from the audio device and not jammed?

- If yes, go to step 3.
- If not, replace the audio device.

3. Check if the antenna is conducted?
   - If yes, replace the audio device.
   - If not, replace the CD.

How to carry out the fault diagnosis when the CD cannot be inserted normally.

1. Insert CD into the audio device and check if the same symptom occurs again?
   - If yes, it works properly.
   - If not, go to step 2.
2. Insert another CD and check if it can be inserted normally?
   - If yes, replace the CD.
   - If not, replace the audio device.

How to carry out the fault diagnosis when the CD play is interrupted.

1. Insert a CD and check if the same symptom occurs again?
   - If yes, go to step 2.
   - If yes, it works properly.
2. Check if the CD has any corrupted point?
   - If yes, insert a normal CD and check it again.
   - If not, go to step 3.
3. Check if the same symptom occurs again.
   - If yes, replace the audio device.
   - If yes, it works properly.

How to carry out the fault diagnosis when you cannot hear any sound.

1. Check if only one speaker cannot function normally?
   - If yes, go to step 2.
   - If not, go to step 5.
2. Check if the dead speaker is damaged?
   - If yes, replace the speaker and check it again.
   - If not, go to step 3.
3. Check if the speaker connector is connected with the speaker firmly?
   - If yes, go to step 4.
   - If not, check it again and this may be a temporary fault.
4. Remove the audio device connector and speaker connector, and check if they are conducted?
   - If yes, go to step 5.

- If not, repair the lead.

5. Check if the audio device connector is connected with the audio device firmly?
   - If yes, replace the audio device.
   - If not, reconnect the audio device connector and check it again.

How to carry out the fault diagnosis if the sound is low or distorted.

1. Check if all CDs have the symptom?
   - If yes, go to step 2.
   - If not, replace the CDs.
2. Check if the speakers are damaged?
   - If yes, replace the speakers.
   - If not, replace the audio device.

20 Cigarette Lighter

07

20.1 General information

20.1.1 Description

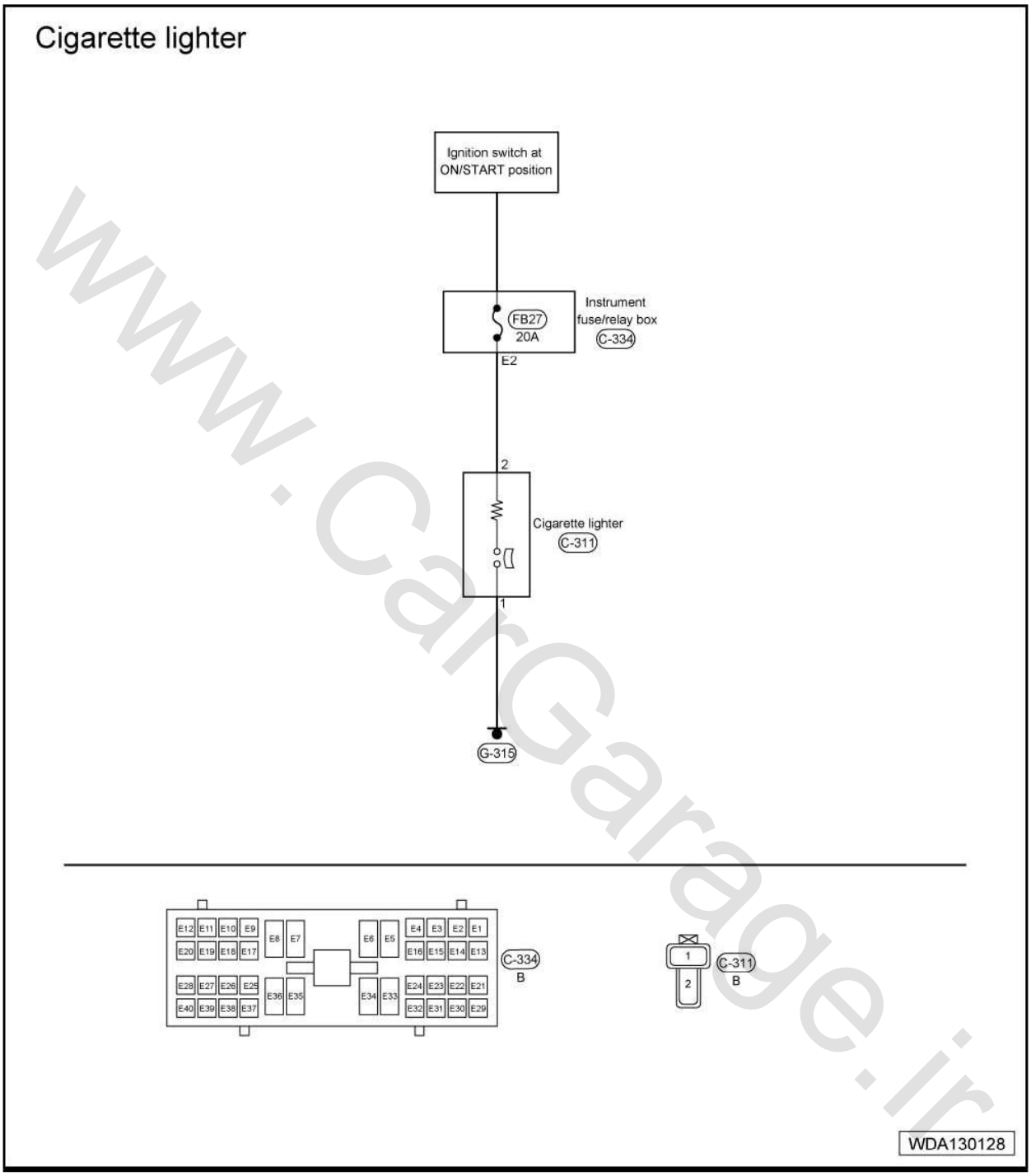
- The cigarette lighter is located under the console, next to the ashtray, which can be used as a 12V onboard socket.
- Turn the ignition switch to the ON position when using cigarette lighter socket.

Caution

- The rated voltage of the cigarette lighter socket is 12V DC. Do not use any electrical equipment whose voltage is beyond the rated voltage.

20.2 Circuit diagram

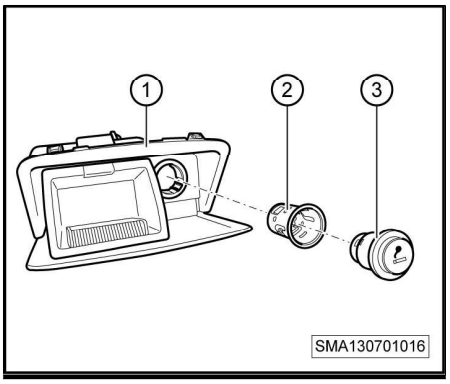
Cigarette lighter (page 1)



20.3 Removing and installing the cigarette lighter

Removal

1. Remove the ashtray assembly (-1-) from the front section of shift lever and disconnect the cigarette lighter connector.
2. Remove the cigarette lighter (-3-), press the fixing clip of the ashtray and lever out the cigarette lighter socket (-2-).



Installation

Installation shall follow the reverse sequence of the removal procedure.

21 CAN Bus

21.1 General information

21.1.1 Description

- CAN bus is the abbreviation of controller area network (CAN) and it is a multi-channel communication system divided into the CAN-H and CAN-L (high speed data cables and low speed data cables). The system is connected to different control modules inside the vehicle and simultaneously send and receive information data at a high speed, thus achieving mutual communication of each control module and sharing the overall vehicle information data timely and reliably.
- The data transmission of the controller area network (CAN) employs the international standardized serial communication protocol. Its data signals use variable pulse width modulation signals, the change of the signal voltage differences between the high and low speed CAN buses can generate data signals with different lengths and these signals are transmitted to each control module for processing.

21.2 Circuit diagram

CAN bus (page 1)