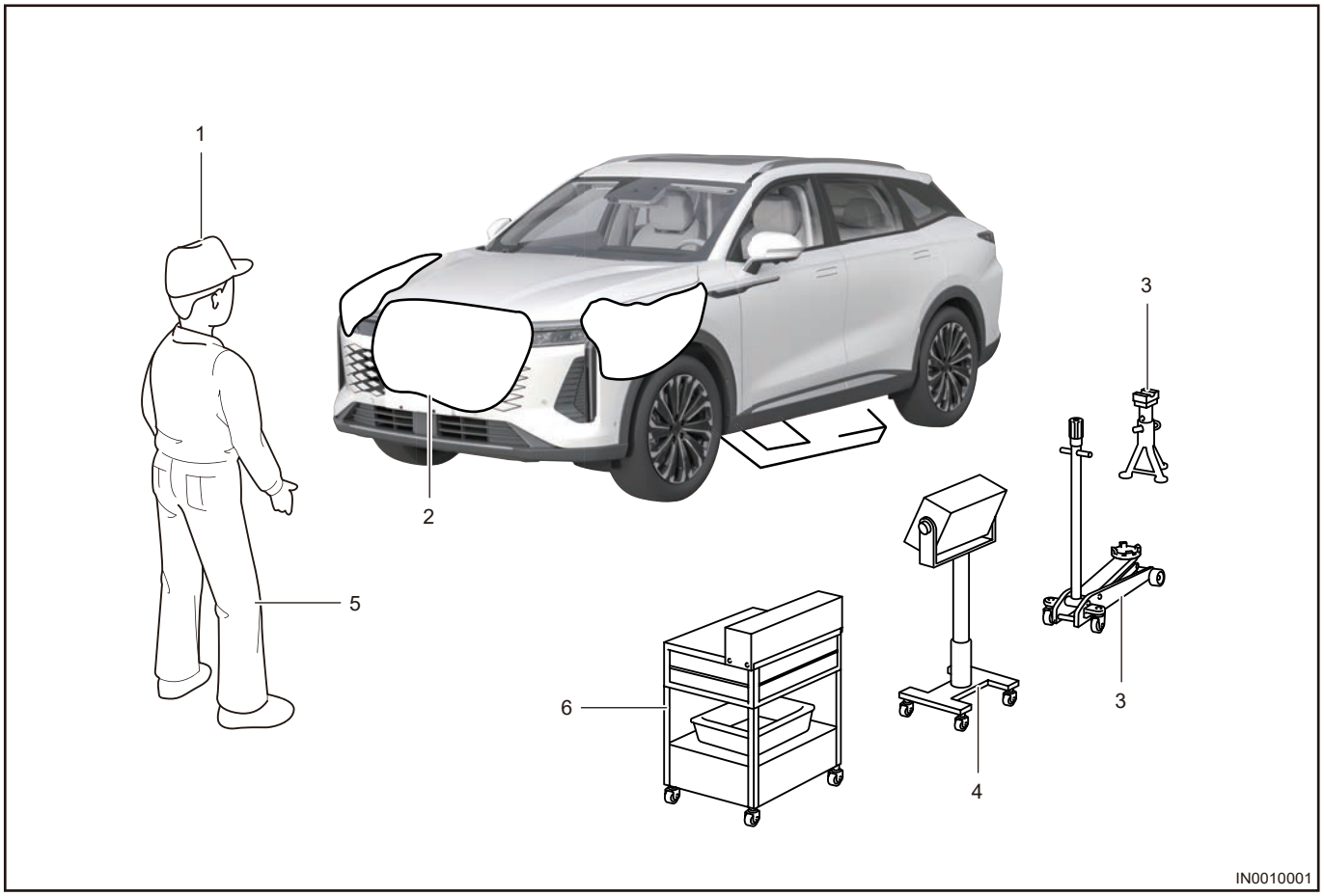
CONTENTS

1.2 VEHICLE INSPECTION

1 Preparation before Vehicle Inspection

1.1 Vehicle Inspection Schematic Diagram



1	Attire	• Always wear a clean uniform. • A hat and safety shoes must be worn.
2	Vehicle Protection	• Before starting work, prepare radiator grille cover, wing cover, seat cover and floor mat.
3	Safety Operation	• When working with two or more persons, be sure to check safety each other. • When working with engine running, make sure to provide ventilation for exhausting gas in the workshop. • When repairing high temperature, high pressure, rotating, moving, or vibrating parts, be sure to wear appropriate safety equipment and take extra care not to injure yourself or others. • When jacking up vehicle, be sure to support specified location with a safety stand. • Use appropriate safety equipment to lift vehicle.
4	Preparation for Tools and Measuring Gauge	• Before starting work, prepare a tool stand, special tools, gauge, oil and replacement parts.

1.3 RAISING VEHICLE

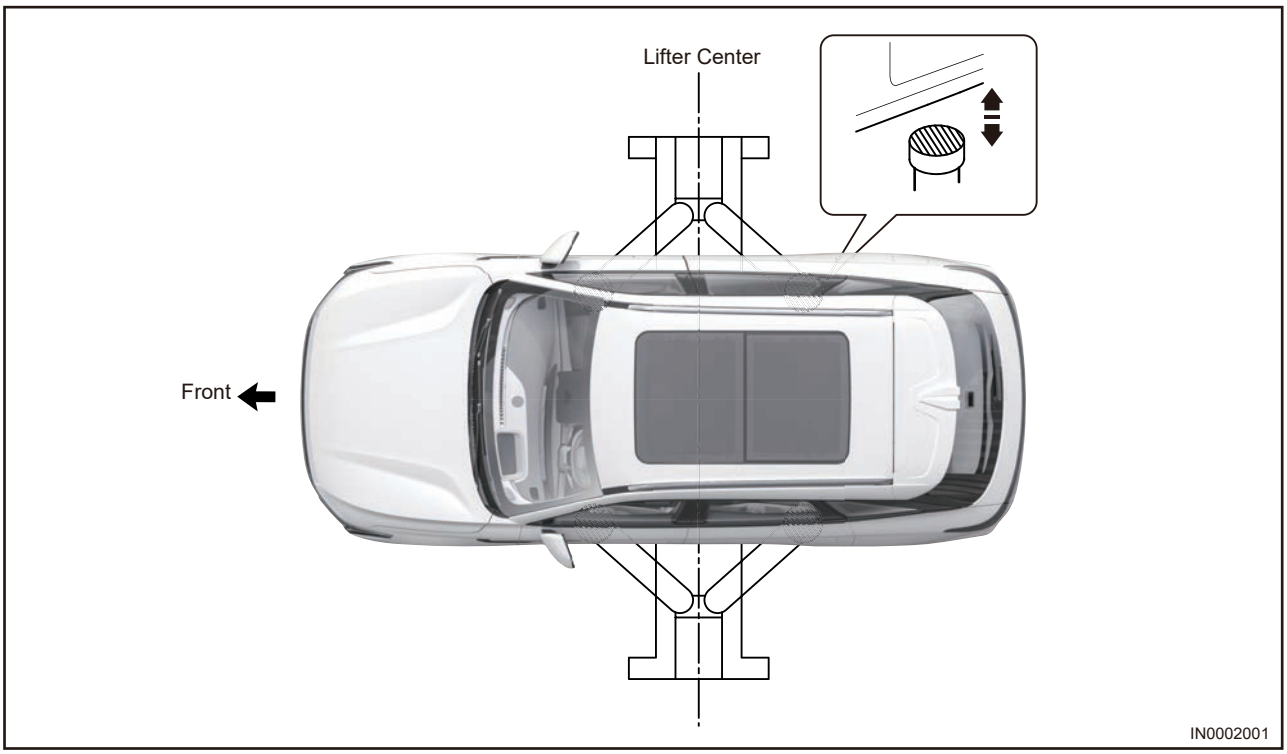
1 Raising Vehicle

1.1 Swing Arm Type Lift

⚠ Caution

Precautions for using a swing arm type lift

- **Follow safety procedures described in the instruction manual.**
- **Keep vehicle stable when using a lift to prevent vehicle from tilting during operation. Stabilize vehicle by adjusting the length of lift arm and vehicle position.**



Care must be taken when jacking up and supporting vehicle; Be sure to jack up and support vehicle at proper locations.
Sometimes, similar illustrations may be used. In this case, minor details may be different from actual vehicle.

1.2 Plate Type Lift

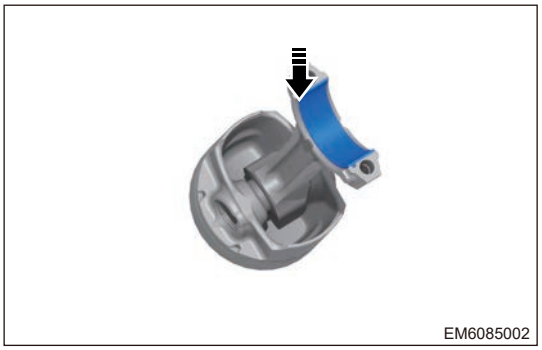
⚠ Caution

Precautions for using a plate type lift

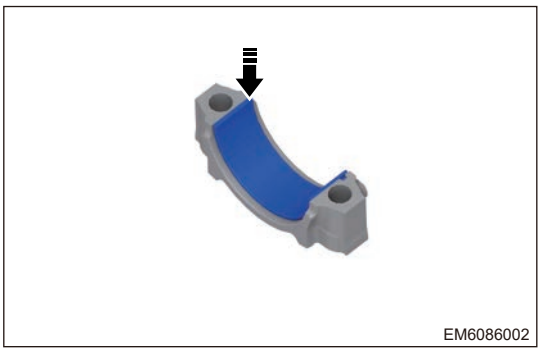
- **Follow safety procedures described in the instruction manual.**
- **Use plate type lift attachments (rubber lifting blocks) on the plate surface.**

DTC	DTC Definition	Detection Condition	Possible Cause	Maintenance Advice
			valve control circuit is open 3. Canister vent valve control circuit power supply terminal is open or short to ground 4. Canister vent valve control circuit fuse is blown or damaged 5. Open or internal circuit damage in canister vent valve control circuit pin corresponding to ECU terminal	control circuit power supply terminal is open or short to ground 4. Canister vent valve control circuit fuse is blown or damaged 5. Open or internal circuit damage in canister vent valve control circuit pin corresponding to ECU terminal
P069100	Cooling Fan 1 Control Circuit Low	Drive channel self-diagnosis is malfunctioning	1. Cooling fan relay control circuit is short to ground 2. Cooling fan relay control pin corresponding to ECU terminal is short to ground	1. Cooling fan relay control circuit is short to ground 2. Cooling fan relay control pin corresponding to ECU terminal is short to ground
P069200	Cooling Fan 1 Control Circuit High	Drive channel self-diagnosis is malfunctioning	1. Cooling fan relay control circuit is short to power supply 2. Cooling fan relay control pin corresponding to ECU terminal is short to power supply	1. Cooling fan relay control circuit is short to power supply 2. Cooling fan relay control pin corresponding to ECU terminal is short to power supply
P048000	Cooling Fan 1 Control Circuit	Drive channel self-diagnosis is malfunctioning	1. Cooling fan relay control circuit is open 2. Cooling fan relay control circuit pin corresponding to ECU terminal is open	1. Connector looseness or poor contact 2. Cooling fan relay circuit signal terminal is open 3. Cooling fan relay is malfunctioning (fuse is blown or damaged) 4. Open or internal circuit damage in cooling fan relay pin corresponding to ECU terminal
P063400	Cooling Fan 1 Drive Chip Overheating	Drive channel self-diagnosis is malfunctioning	1. Cooling fan relay control circuit is short to power supply 2. Cooling fan relay control pin corresponding	1. Cooling fan relay control circuit is short to power supply 2. Whether there is a fault in internal chip of ECU

(26) Push out upper shell from connecting rod body slightly in direction of arrow to remove it.

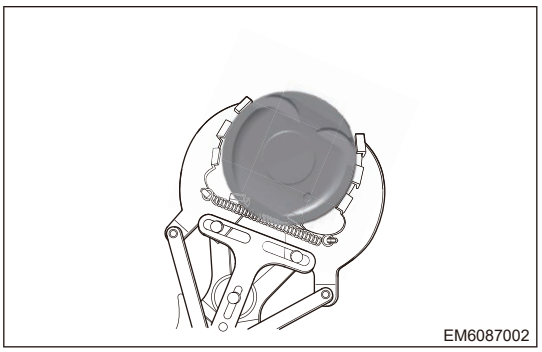


(27) Push out bearing lower shell slightly from connecting rod bearing cap in direction of arrow to remove it.



(28) Using a piston ring remover, remove first compression ring and second compression ring.

Hint:
Before removing piston ring, check piston ring side clearance; If it is necessary to be reused, be sure to mark piston ring position.

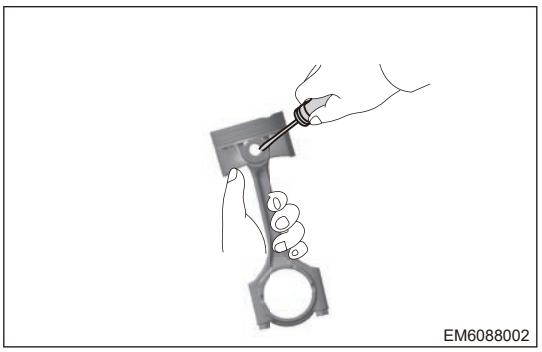


(29) Remove oil ring rail and expander.

(30) Using a flat tip screwdriver, pry out elastic circlips at both sides of piston pin carefully from notch.

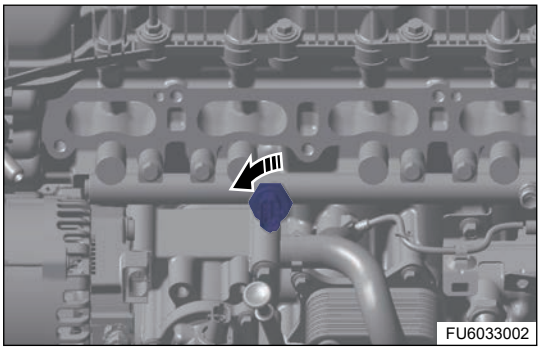
⚠ Caution

- **Elastic circlip has a large tensile force. Be careful during removal to prevent personal injury.**



(31) Remove the piston pin assembly.

(7) Removal fuel rail pressure sensor counterclockwise in direction of arrow as shown in illustration.



■ **Inspection**

Use ohm band of multimeter to measure resistance among 3 pins of fuel rail pressure sensor (pay attention to the positive and negative orders).

Sensor Pin (corresponding to positive and negative poles of multimeter in front-and-rear sequence)	Normal Value
1-2	301 ± 100 kΩ
1-3	24 ± 1 kΩ
2-1	∞
2-3	∞
3-1	24 ± 1 kΩ
3-2	301 ± 100 kΩ

■ **Installation**

(1) Install the fuel rail pressure sensor.
(2) Install the fuel rail injector sound insulator.
(3) Install the intake manifold assembly.

4.10 Low Pressure Fuel Pressure Sensor

■ **Removal**

⚠ Warning

- **Before operating the fuel supply system, please touch the vehicle body to discharge static electricity; failure to do so will cause a fire, even result in an explosion.**
- **When operating the fuel supply system, work area should be in good ventilation and keep fire sources or open flames away from the work area, in which fire extinguisher should be equipped.**

(1) Release the high pressure fuel system pressure.
(2) Turn off all electrical equipment and ENGINE START STOP switch.
(3) Disconnect the negative battery cable.

Hint:
When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

1	Confirm and clear DTCs

(a) Connect the diagnostic tester to the vehicle; Clear DTC and turn off ENGINE START STOP switch.
(b) Turn ENGINE START STOP switch to ON and check if DTC occurs again.

No → **System is normal and there is no fault**

Yes

2	Check related wire harness and connector

(a) Check if wire harnesses are worn, pierced, pinched or partially broken.
(b) Check for broken, bent, protruded or corroded terminals.

NG → **Repair or replace wire harness or connector as needed**

OK

3	Refresh TCU

(a) Initialize TCU and rewrite TCU program.
(b) Check if the same DTC appears.

No → **Perform initialization learning**

Yes → **Replace TCU module and perform matching learning**

DTC	P0603-00	Nonvolatile Memory Internal Checksum Error
DTC	P0604-00	RAM Reading/Writing Error
DTC	P0605-00	Refresh ROM Internal Checksum Error

■ DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing the following procedures.

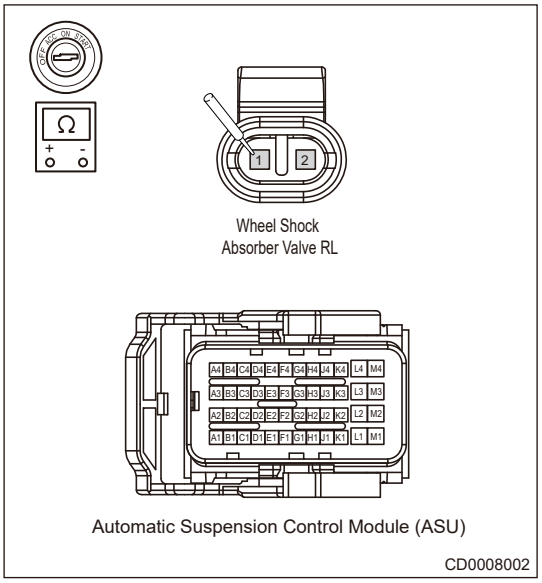
- Turn ENGINE START STOP switch to ON.
- Connect diagnostic tester (the latest software) to Data Link Connector (DLC).
- Confirm that malfunction is current, and carry out diagnostic test and repair procedures.
- If DTC cannot be cleared, malfunction is current.
- Only use a digital multimeter to measure voltage of electronic system.
- Refer to any Technical Bulletin that may apply to this malfunction.
- Visually check the related wire harness.
- Check and clean all Transmission Control Unit (TCU) ground related to latest DTC.
- If multiple trouble codes were set, use circuit diagrams and look for any common ground circuit or power supply circuit applied to DTC.

Hint:
When performing circuit diagnosis and test, always refer to the circuit diagram for specific circuit and component information.

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery.
(c) Disconnect suspension control module connector, and disconnect rear left shock absorber connector.
(d) Check if wire harnesses are worn, pierced, pinched or partially broken.
(e) Check for broken, bent, protruded or corroded terminals.
(f) Check if related connector pins are in good condition.
(g) Check for continuity (using a digital multimeter) between rear left shock absorber connector terminal and suspension control module connector (connected terminal).

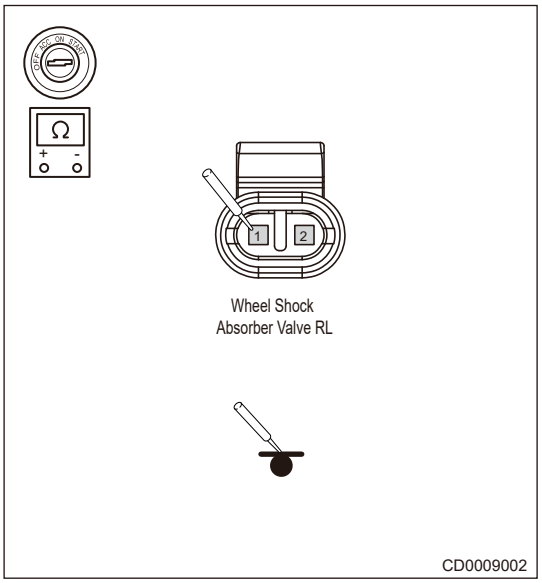
Standard Resistance

Multimeter Connection	Condition	Specified Condition
Rear left shock absorber connector terminal (1) - Suspension control module connector (- connected terminal)	Always	⩽ 1 Ω
Rear left shock absorber connector terminal (2) - Suspension control module connector (- connected terminal)	Always	⩽ 1 Ω



(h) Check for continuity (using a digital multimeter) between rear left shock absorber connector terminal and body ground.

Multimeter Connection	Condition	Specified Condition
Rear left shock absorber connector terminal (1) - Body ground	Always	∞
Rear left shock absorber connector terminal (2) - Body ground	Always	∞



NG → **Repair or replace wire harness or connector**

OK

2	Check the rear left shock absorber

- Check the rear left shock absorber valve internal for short to shock absorber case.

NG → **Replace the rear left shock absorber**

(a) Turn ENGINE START STOP switch to OFF.

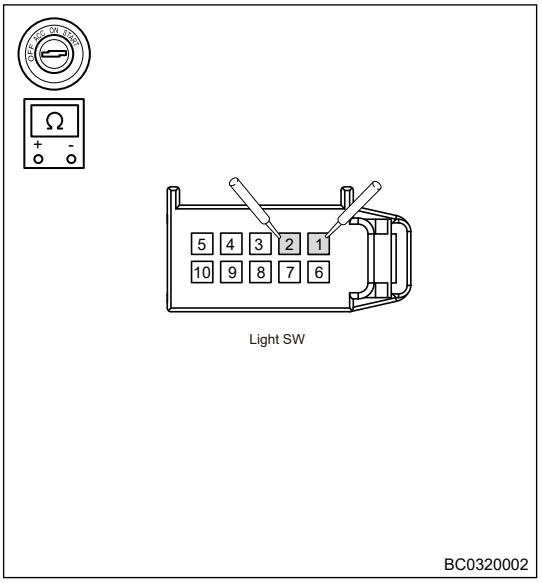
(b) Disconnect the negative battery cable.

(c) Disconnect EPB switch (integrated light switch) connector.

(d) Check if EPB switch is stuck or pushed in by other objects.

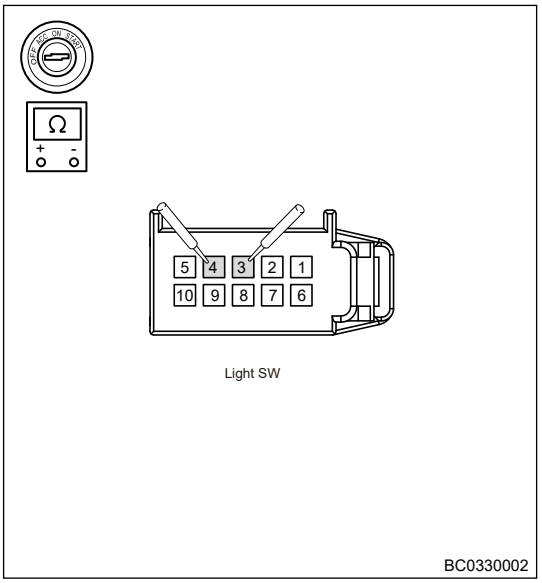
(e) Check for switch continuity when EPB switch is pulled.

Multimeter Connection	Condition	Specified Condition
Light switch (1) - Light switch (2)	Always	Less than 1 Ω



(f) Check for switch continuity when EPB switch is released.

Multimeter Connection	Condition	Specified Condition
Light switch (4) - Light switch (3)	Always	Less than 1 Ω



NG → **Replace light switch.**

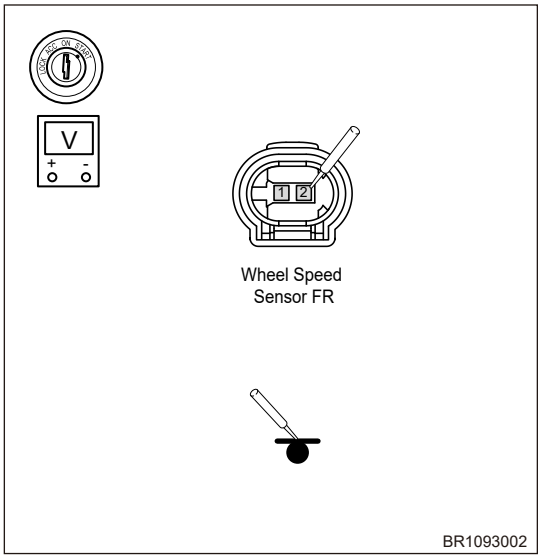
OK

3	**Check related wire harness and connector**

(h) Connect the negative battery terminal cable.
(i) Turn ENGINE START STOP switch to ON.
(j) Using a digital multimeter, check the voltage between front right wheel speed sensor connector terminals(1, 2) and body ground to check if front right wheel speed sensor is short to power supply according to the table below.

Standard Voltage

Multimeter Connection	Condition	Specified Condition
Front right wheel speed sensor connector (signal terminal) - Body ground	ENGINE START STOP switch ON	Approx. 0 V
Front right wheel speed sensor connector (power supply terminal) - Body ground	ENGINE START STOP switch ON	Approx. 5 V



NG → **Repair or replace wire harness between front right wheel speed sensor and ONE BOX control module assembly**

OK

4	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Start the engine.
(c) Check if the same DTCs are still output.

OK → **Conduct test and confirm malfunction has been repaired**

NG → **Replace ONE BOX module assembly**

DTC	C050E00	WSS RL Line GND
DTC	C050F00	WSS RL Line High

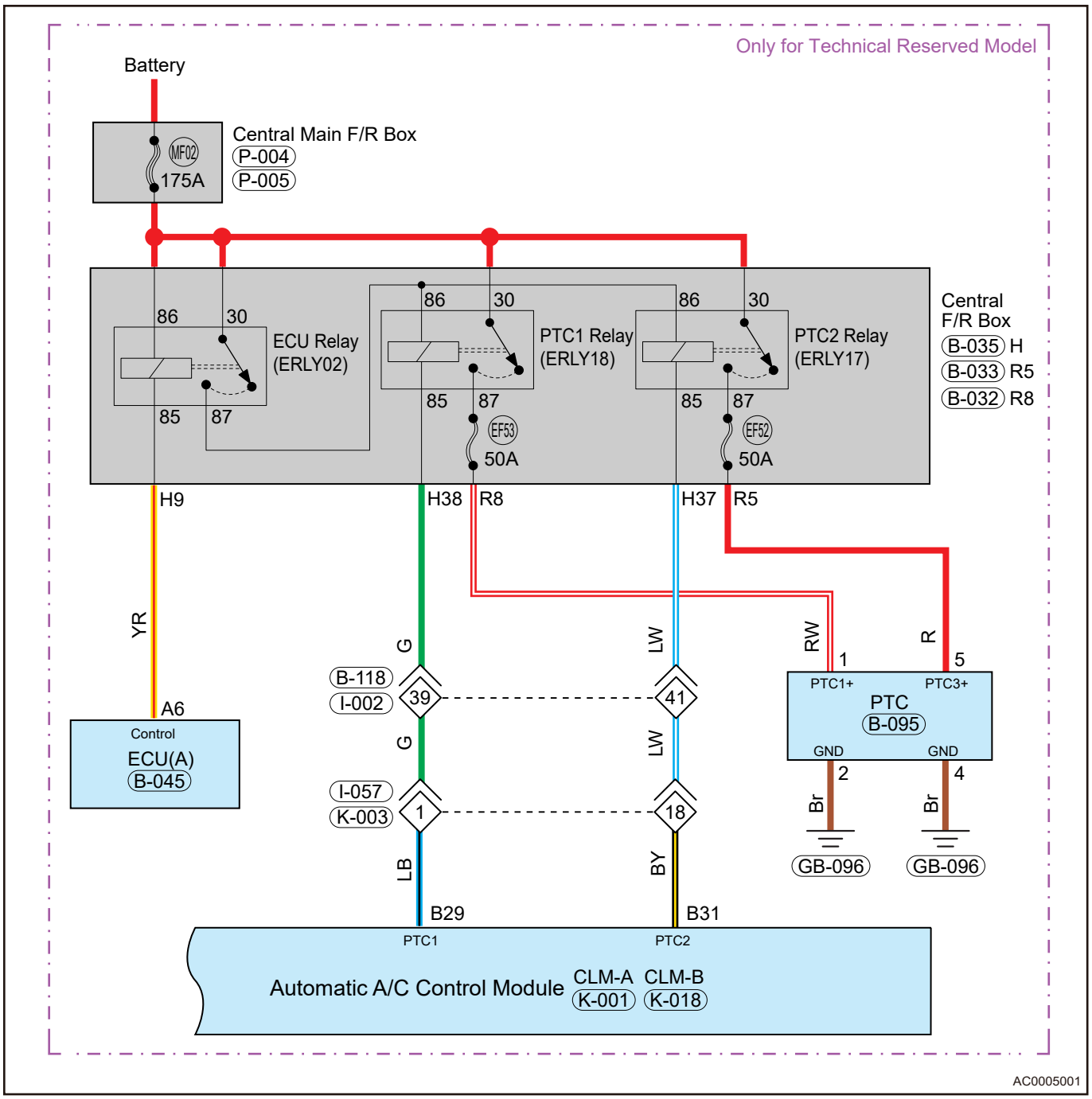
Description

DTC	DTC Definition	Possible Causes
C050E00	WSS RL Line GND	• Damage in wheel speed sensor or open in wire harness • Damage in wheel speed sensor or short in wire harness • Reverse connection • Water in connector
C050F00	WSS RL Line High	

■ DTC Confirmation Procedure

Confirm that battery voltage is not less than 12 V before performing following procedures.

• Turn ENGINE START STOP switch to OFF.


Only for Technical Reserved Model
Battery
MF02
175A
Central Main F/R Box
P-004
P-005
86
30
ECU Relay
(ERLY02)
85
87
PTC1 Relay
(ERLY18)
PTC2 Relay
(ERLY17)
EF53
50A
EF52
50A
Central
F/R Box
B-035 H
B-033 R5
B-032 R8
H9
H38
R8
H37
R5
YR
A6
Control
ECU(A)
B-045
G
LW
RW
R
1
5
B-118
I-002
39
41
PTC1+
PTC3+
PTC
B-095
GND
GND
2
4
Br
Br
I-057
K-003
1
18
GB-096
GB-096
LB
BY
B29
B31
PTC1
PTC2
Automatic A/C Control Module
CLM-A
K-001
CLM-B
K-018
AC0005001

NG → **Repair or replace wire harness or connector as needed**

OK

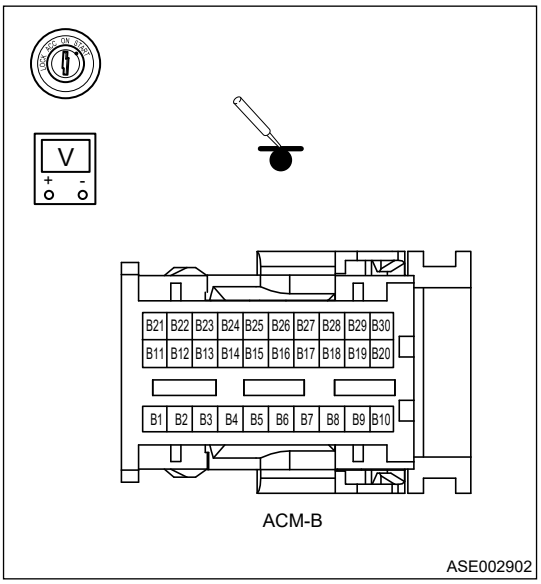
2	Check voltage between driver curtain shield airbag circuit and ground

(a) Turn ENGINE START STOP switch to ON.

(b) Using a multimeter, check voltage between airbag control module connector (connected driver curtain shield airbag terminal) and body ground.

(c) Perform the voltage inspection.

Multimeter Connection	Condition	Specified Condition
Airbag module (-connected driver curtain shield airbag +) - Body ground	ENGINE START STOP switch ON	0 V
Airbag module (-connected driver curtain shield airbag-) - Body ground	ENGINE START STOP switch ON	0 V



NG → **Repair or replace driver curtain shield airbag wire harness**

OK

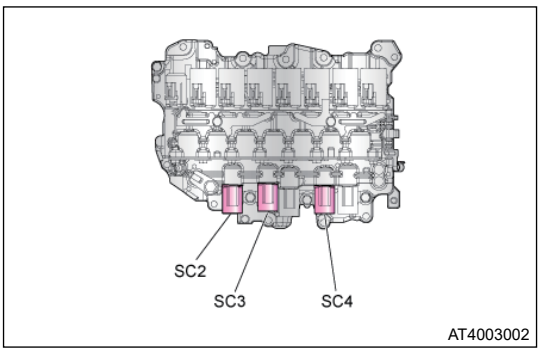
3	Check resistance between driver curtain shield airbag circuit and ground

(a) Turn ENGINE START STOP switch to OFF.

(b) Using a multimeter, check resistance between airbag control module connector (connected driver curtain shield airbag terminal) and body ground.

(c) Perform the resistance inspection.

Multimeter Connection	Condition	Specified Condition
Airbag module (-connected driver curtain shield airbag +) - Body ground	ENGINE START STOP switch OFF	∞
Airbag module (-connected driver curtain shield airbag-) - Body ground	ENGINE START STOP switch OFF	∞



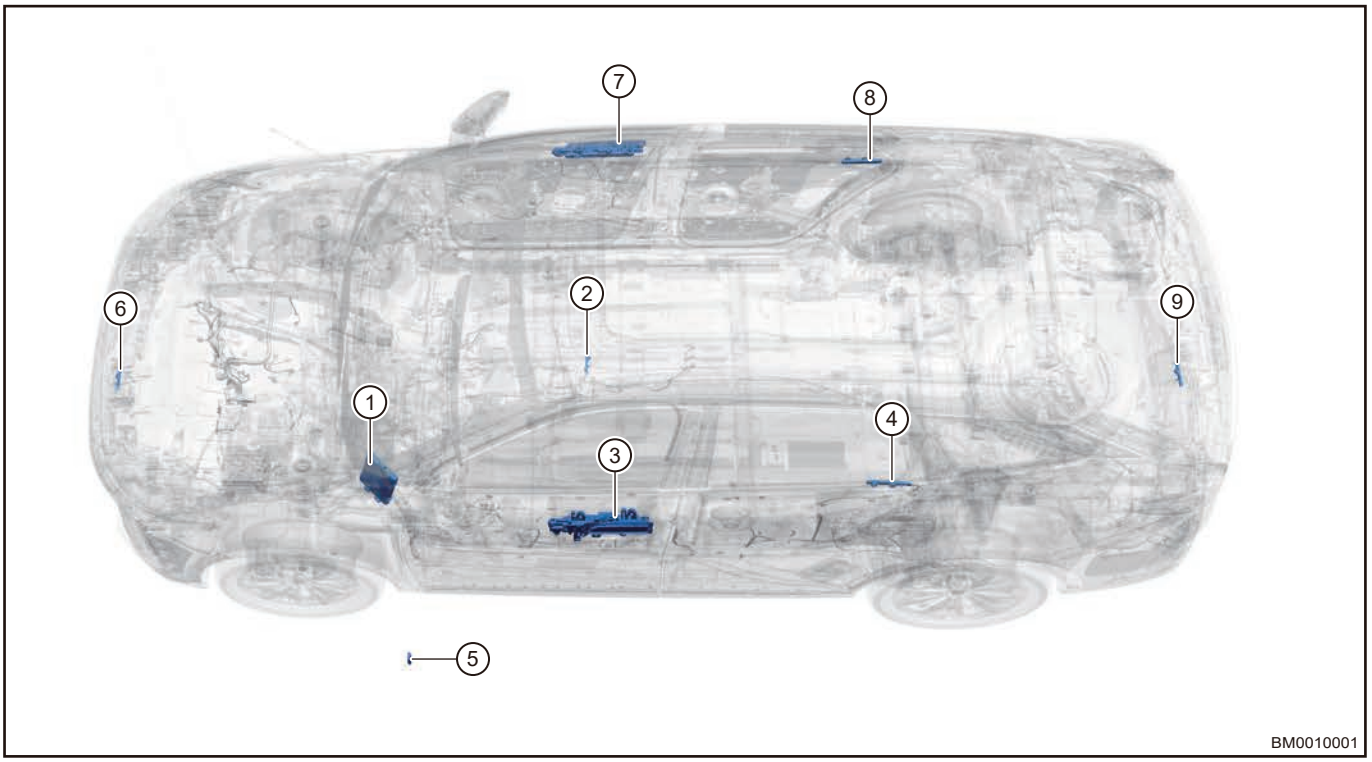
NG → **Repair or replace driver curtain shield airbag wire harness**

10.4 BODY DOMAIN CONTROL SYSTEM

1 System Overview

1.1 System Components Diagram

Body domain control system (BDM) is mainly composed of body domain control module, body domain control module bracket, multi-function low frequency antenna, remote controller, door handle sensor, and a high performance low frequency antenna. Body domain control module and bracket are installed below instrument panel driver side position. There are three multi-function low frequency antennas, which are installed on the bracket under the center passage cup holder, the rear bumper crossmember, and the front impact crossmember. The high performance low frequency antenna is installed on the rear left door and rear right door sheet metal. And there is no separate door handle sensor, which is only supplied through door handle assembly provided by the supplier.



1	Body Domain Control Module	6	Low Frequency Antenna (-Front Bumper)
2	Low Frequency Antenna (-Center Passage)	7	Door Handle Sensor (-Front Right Handle)
3	Door Handle Sensor (-Front Left Handle)	8	High Performance Low Frequency Antenna (Rear Right Door Panel)
4	High Performance Low Frequency Antenna (Rear Left Door Panel)	9	Low Frequency Antenna (-Rear Bumper)
5	Smart Key		

1.2 Function Description

(1) Integrated with PEPS function;
(2) Integrated with TPMS function;
(3) Integrated with window jam protection function (if the vehicle is equipped with jam protection function);