

DOOR LOCK

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

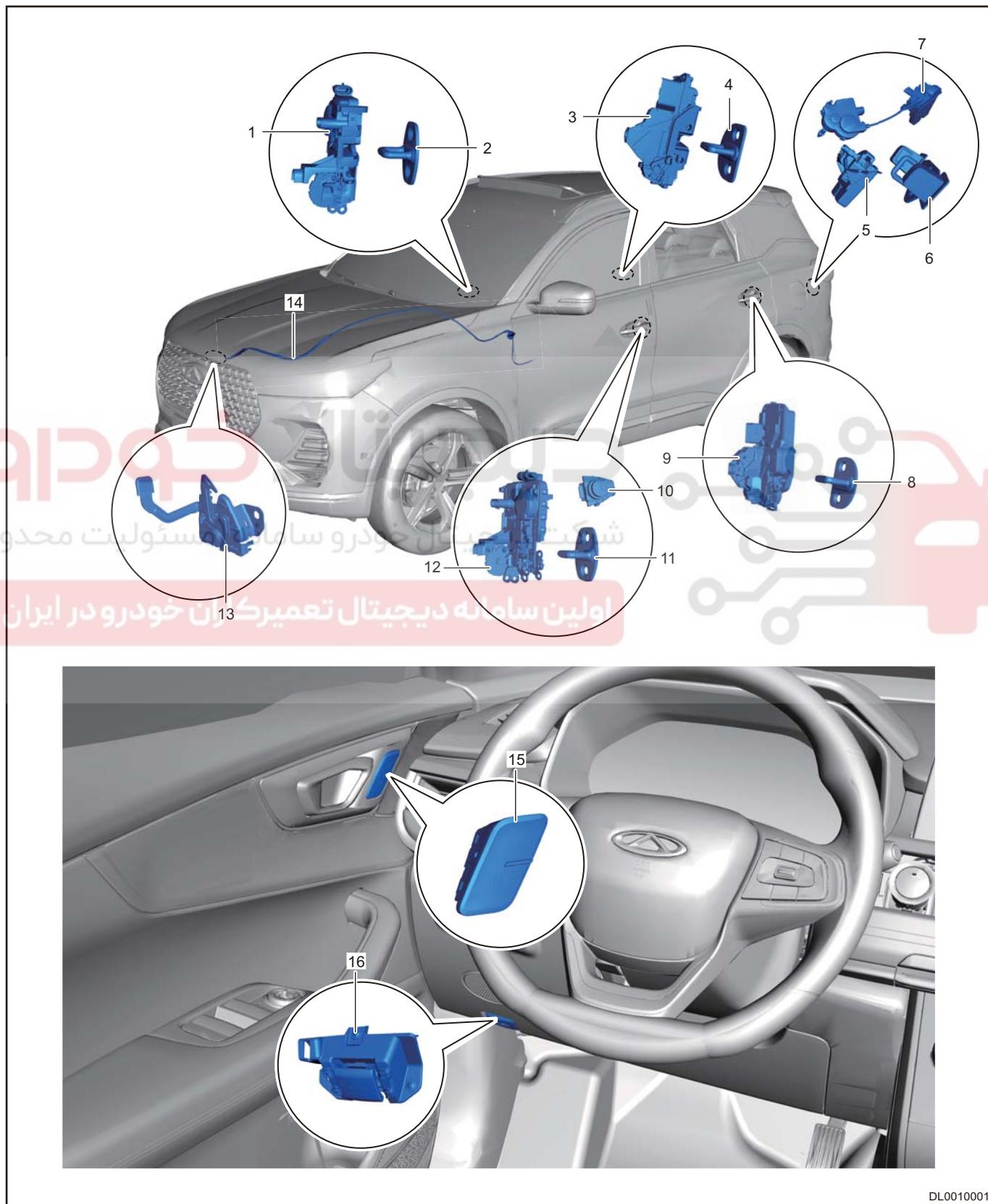
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GENERAL INFORMATION

Overview

Description



1 - Front Right Door Lock Assembly	2 - Right Door Lock Striker
3 - Rear Right Door Lock Assembly	4 - Rear Right Door Lock Striker
5 - Back Door Lock Assembly	6 - Back Door Lock Striker Assembly
7 - Back Door Lock Self-engage Mechanism and Self-engage Back Door lock Assembly (High Configuration)	8 - Rear Left Door Lock Striker
9 - Rear Left Door Lock Assembly	10 - Door Lock Cylinder
11 - Left Door Lock Striker	12 - Front Left Door Lock Assembly
13 - Engine Hood Lock Assembly	14 - Engine Hood Lock Cable Assembly
15 - Central Control Lock Switch	16 - Engine Hood Grip Assembly

Anti-theft Management

Fortifying mode

Trigger conditions:

1. IGN = OFF (it is not in IGN ON or ACC);
2. Four doors & two covers are closed;
3. BCM receives remote control lock command.

BCM feedback when fortifying mode is entered:

1. Turn signal light flashes once (turn on for 500 ms) and sends the corresponding LHTurnsignalSts and RHTurnsignalSts;
2. Theft deterrent indicator is continuous flash at frequency of 100ms, 1900ms.
3. Actuate the anti-theft horn 50 ms and high and low pitched horns 15 ms.

Fortifying failure mode

Trigger conditions:

1. IGN = OFF;
2. Any of four doors & two covers is opened;
3. BCM receives remote control lock command.

BCM light feedback when fortifying failure mode is entered:

1. Turn signal light flashes two times (flashing for 500 ms, interval time is 1s) and sends the corresponding LHTurnsignalSts and RHTurnsignalSts signals.

When entering fortifying failure mode: If four doors are closed and any of the two covers is opened, BCM will perform central control lock command once; If two covers are closed and any of the doors is opened, BCM will perform central control lock command and then perform unlock command (the interval time is 500 ms).

Intrusion mode

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Trigger conditions: BCM will enter to alarm status after the following conditions are met when the vehicle is in fortifying mode:

1. Doors or engine hood is opened;
2. Key is turned to IGN ON;
3. Luggage compartment is opened forcibly.

After entering to intrusion mode, BCM feedback the conditions within one alarm cycle (30 s):

1. Anti-theft horn (high and low pitched horns sound at frequency of 500 ms ON and 500 ms OFF) operates for 28 ± 2 s, pause for 5s;
2. Left and right turn signal lights flash 28s at frequency of 75 times/min (400 ms on, 400 ms off) and pause for 5s, and send the corresponding LHTurnsignalSts and RHTurnsignalSts;
3. Theft deterrent indicator is continuous flash at frequency of 100ms on, 200ms off, 100ms on, 600ms off.

Four doors & two covers and IGN ON illegal activation action are alarm trigger sources;

1. In the same alarm source, a single trigger source can trigger 3 alarm cycles at most;

2. In multiple alarm trigger sources, BCM can trigger 8 alarm cycles at most (after 8 alarm cycles, the sound and light alarm will stop);
3. If the intrusion ends, BCM will stop alarm after the current alarm cycle. If the same alarm source is triggered again after the alarm is over, BCM will perform the remaining alarm cycles.
4. If the four doors & two covers are closed at the end of the alarm, BCM will enter fortifying mode.

Fortifying deactivation mode

Activation conditions: Vehicle is in alarm mode; BCM receives RF unlock command or BCM detects IMMOCodeWarningLightSts=0 for 1 s continuously after the key is switched to IGN ON for 2 seconds. When the alarm is released: vehicle exits anti-theft function mode; anti-theft horn (high and low pitched horns (if equipped)) stops working, and the turn signal light stops flashing.

After alarm is released, if key is not in IGN ON, anti-theft indicator light still flashes at a frequency of 100ms on, 200ms off, 100ms on and 600ms off; if the key is in IGN ON, anti-theft indicator light stops flashing.

Pre-rearming mode

Trigger conditions:

1. Vehicle is in fortifying mode;
2. BCM receives remote control unlock command.

BCM feedback when fortifying mode is released:

1. Theft deterrent indicator turns off immediately;
2. Turn signal light flashes 2 times at frequency of 500 ms on and 500 ms off, and sends the corresponding LHTurnsignalSts and RHTurnsignalSts.

Within 30 ± 2 s after fortifying mode is released:

1. If any of all doors, engine hood or luggage compartment are open, BCM exits anti-theft mode;
2. If all doors, engine hood and luggage compartment are always closed, BCM will lock automatically and enter the fortifying state after 30 s, and anti-theft indicator will flash at the frequency of 100 ms on and 1900 ms off.

Luggage compartment opening mode

Trigger conditions:

1. Vehicle is in fortifying mode;
2. BCM receives remote control luggage compartment open command for more than 1.5 s;

BCM feedback when luggage compartment opening mode is triggered:

1. Turn signal light illuminates and sends the corresponding LHTurnsignalSts and RHTurnsignalSts;
2. Luggage compartment is open and no alarm is triggered.

Then close the luggage compartment, vehicle returns to the fortifying state, and if there is no legal key, the trunk switch cannot open trunk.

After using remote control to open the luggage compartment: After BCM receives remote control lock command, vehicle will immediately lock and return to fortifying state, but the turn signal light prompts fortifying failure.

After using remote control to open the luggage compartment and close it again: After BCM receives remote control lock command, vehicle will immediately lock and return to fortifying state, but the turn signal light prompts fortifying successfully. If there is no registered key after the luggage compartment closed, the switch will not open the luggage compartment.

Luggage Compartment Opening Management (Without PLG)

When the central control lock is in unlock state

When the luggage compartment opening switch is activated, the luggage compartment opens

When the central control lock is in lock state

Luggage compartment is opened

1. IGN OFF

2. BCM receives RF luggage compartment open command for more than 1.5s. Turn signal light illuminates and sends the corresponding LHTurnsignalSts and RHTurnsignalSts; the luggage compartment opens
3. After opening the luggage compartment by remote control and close it manually, if there is no registered key (PKE), the luggage compartment will not open by the luggage compartment button.

Warning:

When luggage compartment is opened, the luggage compartment light turns on.

When luggage compartment is opened, the actuate time of motor is 200 ms.

When the vehicle speed reaches 10km/h, the luggage compartment will not be opened (please note that the ignition remains in IGN while testing - BSM is 15 nodes).

Luggage Compartment Opening Management (With PLG)

When the vehicle is in fortifying deactivation mode:

When the luggage compartment switch is activated, the luggage compartment opens/closes; turn signal light flashes twice, 200ms ON - 200ms OFF.

During the process of opening / closing the back door, press the remote control briefly to stop the current action of the back door.

Global fortifying

1. Press GlobaSW and meet the following conditions, BCM performs vehicle fortifying:
2. IGN OFF;
3. Four doors and engine hood are closed;
4. Back door lock is locked within 10s

When the vehicle is in fortifying mode:

Luggage compartment opening / closing

1. IGN OFF/ACC position;
2. BCM receives remote control luggage compartment command for more than 1.5s;
3. Turn signal light flashes twice, 200ms ON - 200ms OFF

During the process of opening / closing the back door, press the remote control briefly to stop the current action of the back door.

After back door is closed, the vehicle returns to fortifying state.

Central Control Lock

Central control lock activation conditions:

1. Close all four doors;
2. Vehicle is not in anti-theft state;
3. Central control lock locked switch is activated.

Central control unlock activation conditions:

1. Central control lock unlocked switch is activated;
2. Vehicle is not in anti-theft state;

Mechanical lock locked/unlocked activation conditions:

1. Central control lock or mechanical lock locked switch is activated;
2. Vehicle is not in anti-theft state;

Auto unlock (if equipped) activation conditions:

1. Vehicle speed is 0km/h;
2. Door lock is locked;
3. Key is switched to OFF from other positions.
4. The bench testing needs to ensure that there is no speed signal after IGN is turned off.

Collision unlock: After BCM receives CrashOutputSts ≠ 00 CAN signal when IGN ON:

1. BCM performs central control unlocking twice and the interval time is 1 second (regardless of the door state); locking is prohibited; key is switched to OFF, prohibit locking is canceled.
2. BCM receives unlocking or locking command twice in 1 second and the second time will be ignored.
3. BCM is powered on again after powered off, BCM has no lock or unlock action.
4. For remote control lock and unlock function, please refer to lock and unlock contents in anti-theft management.

Electric Child Protection Lock

When power on for the first time, confirm the lock status first, the switch backlight shall be consistent with the lock status, and the prompt status information is consistent after the instrument cluster is powered on. When IGN ON, the child protection lock can be operated through the switch. After operation, the lock status, instrument cluster prompt and switch backlight are consistent.

The operation of the child protection lock can be performed within two minutes after IGN OFF. If any front doors is opened, the timing will be interrupted and the operation cannot be performed.

After receiving CrashOutputSTS \neq 00 or hard wire collision signal, perform two unlocking actions with a time interval of 1s. At this time, the operation cannot be performed until the power is off.

Simultaneously or alternately operate the door lock and the child protection lock for many times, the functions are normal.

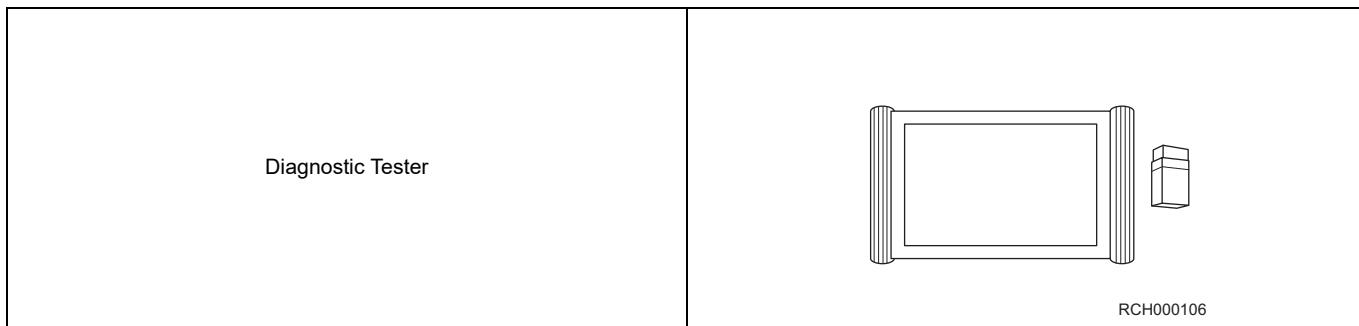
Specifications

Torque Specifications

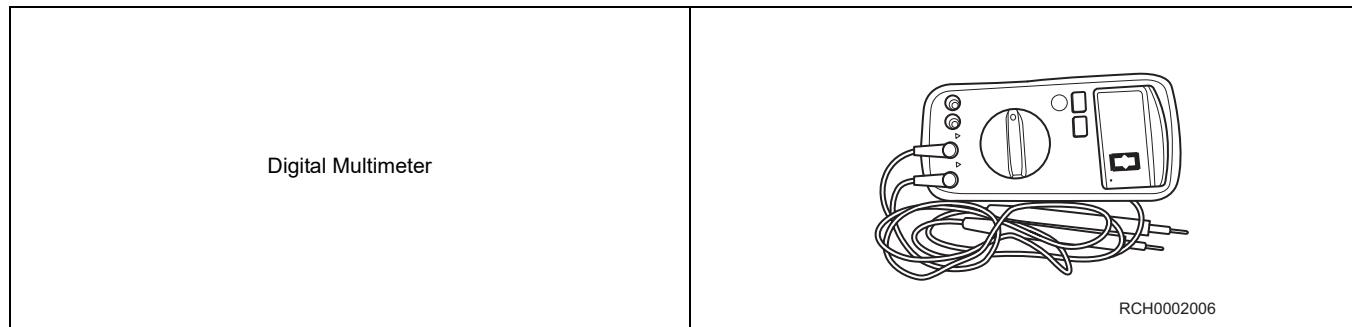
Description	Torque (N·m)
Engine Hood Lock Assembly Fixing Nut	10 \pm 1.5
Front Door Lock Assembly Fixing Screw	9 \pm 1
Front Door Key Cylinder Assembly Fixing Screw	5 \pm 1
Front Door Lock Striker Assembly Fixing Screw	23 \pm 2
Rear Door Lock Assembly Fixing Screw	9 \pm 1
Rear Door Lock Striker Assembly Fixing Screw	23 \pm 2
Back Door Lock Assembly Fixing Screw	10 \pm 1
Back Door Lock Striker Assembly Fixing Screw	23 \pm 2
Front Door Outside Handle Fixing Screw	5 \pm 1

Tools

Special Tool



General Tool



DIAGNOSIS & TESTING

Problem Symptoms Table

Hint:

Use symptoms table below to help determine cause of problem. Check each suspected area in sequence. Repair, replace or adjust faulty components as necessary.

Symptom	Suspected Area
All door lock/unlock functions do not operate	Body control module (BCM) fuse
	Power door unlock/lock switch button
	Front left door lock assembly
	Other door lock assemblies
	Wire harness or connector
Only driver side door lock/unlock function does not operate	Body control module (BCM)
	Power door unlock/lock switch button
	Front left door lock assembly
	Wire harness or connector
	Body control module (BCM)
Only front passenger side door lock/unlock function does not operate	Front right door lock assembly
	Wire harness or connector
	Body control module (BCM)
Only Rear Left Door Lock/Unlock Function does not Operate	Rear left door lock assembly
	Wire harness or connector
	Body control module (BCM)
Only rear right door lock/unlock function does not operate	Rear right door lock assembly
	Wire harness or connector
	Body control module (BCM)
Only back door open/close function does not operate	Back door lock assembly
	Wire harness or connector
	Body control module (BCM)

Wireless Door Lock Control System:

Symptom	Suspected Area
Only wireless control function does not operate	Wireless key battery
	Anti-theft match
	Wire harness or connector
	Body control module (BCM)

DTC Confirmation Procedure

Confirm that battery voltage before performing following procedures.

- Turn ENGINE START STOP switch to OFF.
- Connect diagnostic tester (the latest software) to Data Link Connector (DLC).
- Turn ENGINE START STOP switch to ON.
- Use diagnostic tester to record and clear DTCs stored in power door lock control system.
- Turn ENGINE START STOP switch to OFF and wait several seconds.
- Turn ENGINE START STOP switch to ON, and then select read DTC.
- If DTC is detected, it indicates current malfunction. Go to diagnosis procedure - Step 1.
- If no DTC is detected, malfunction indicated by the DTC is intermittent.

Intermittent DTC Troubleshooting

If malfunction is intermittent, perform the followings:

- Check if connector is loose.
- Check if wire harness is worn, pierced, pinched or partially broken.
- Monitor diagnostic tester (the latest software) data that is related to this circuit.
- Wiggle related wire harnesses and connectors and observe if signal is interrupt in related circuit.
- If possible, try to duplicate the conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.
- Look for broken, bent, protruded or corroded terminals.
- Check and clean all wire harness connectors and ground parts related to DTC.
- If multiple trouble codes were set, refer to circuit diagrams to look for any common ground circuit or power supply circuit applied to DTC.
- Refer to any Technical Bulletin that may apply to this malfunction.

Ground Inspection

Groundings are very important to entire circuit system, which are normal or not can seriously affect the entire circuit system. Ground connections are often exposed to moisture, dirt and corrosive elements.

Corrosion (rust) can increase resistance which will change the way in which a circuit works.

Electrical control circuits are very sensitive to proper grounding. A loose or corroded ground can affect the control circuit. Perform the followings to check ground connections:

1. Remove the ground nut.
2. Check all contact surfaces for tarnish, dirt and rust, etc.
3. Clean as necessary to ensure that contacting is in a good condition.
4. Reinstall the ground nut securely.
5. Check if add-on accessories interfere with ground circuit.
6. If several wire harnesses are crimped into one ground eyelet terminal, check if they are installed correctly. Make sure that all wire harnesses are clean and securely fastened while providing a good ground path.

Diagnosis Procedure**Hint**

Use following procedures to troubleshoot the door lock system.

1	Vehicle brought to workshop
---	-----------------------------

Result

Go to

NEXT



2	Check battery voltage
---	-----------------------

Check if battery voltage is normal.

OK

Standard voltage: Not less than 12 V.

Result

Go to

OK

NG





3	Customer problem analysis
---	---------------------------

Result

Go to

NEXT




4	Read DTCs
---	-----------

Result

Go to

DTC

No DTC





5 | Read the DTCs (current DTC and history DTC)

Result

Go to

Current DTC

History DTC

History DTC

Troubleshoot according to Intermittent
DTC Troubleshooting procedure

Current DTC

6 | Repair according to Diagnostic Trouble Code (DTC) Chart

Result

Go to

NEXT

NEXT

7 | Adjust, repair or replace

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NEXT

8 | Conduct test and confirm malfunction has been repaired

Result

Go to

NEXT

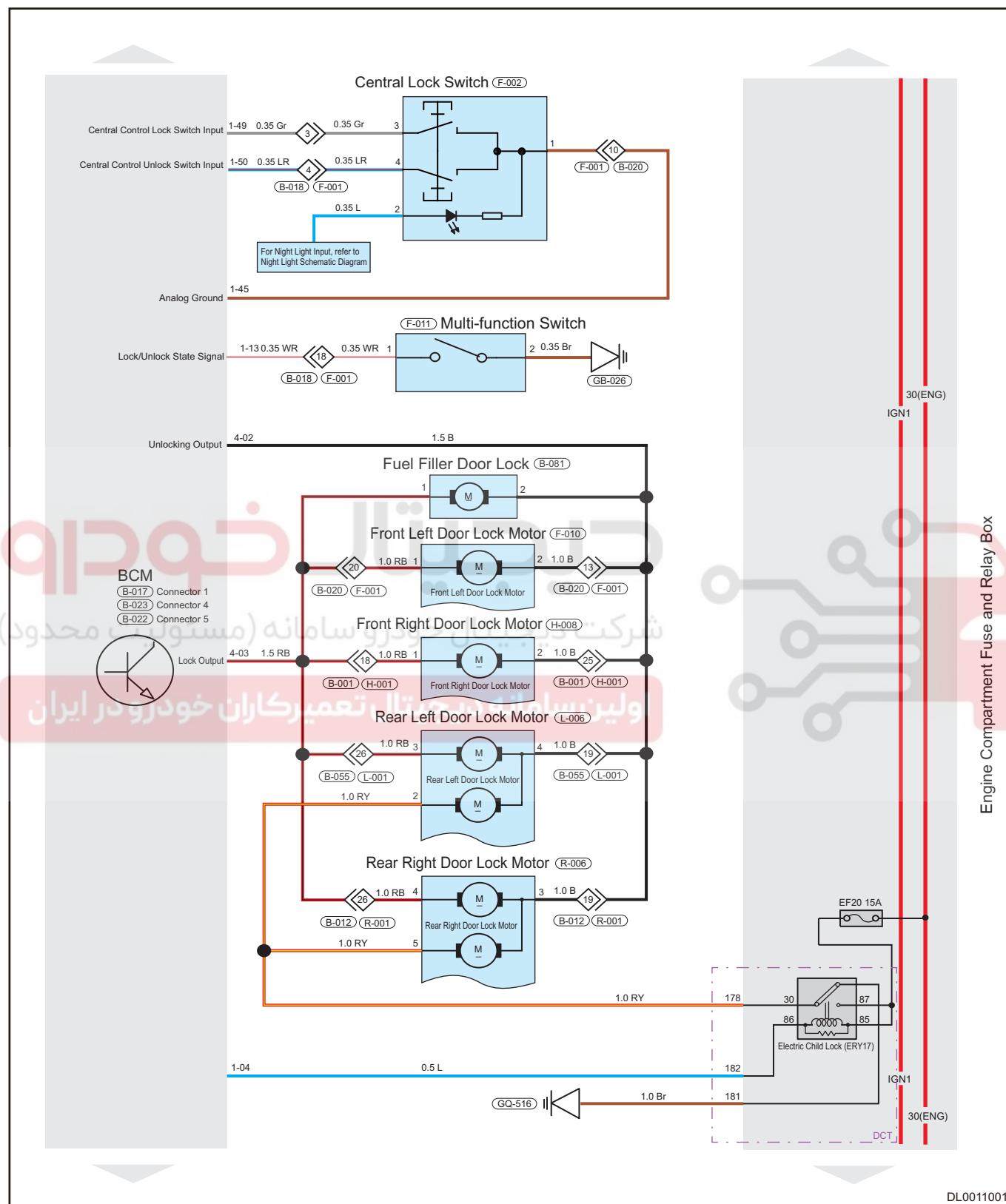
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NEXT

End

All Door Lock/Unlock Functions do not Operate

Circuit Diagram

**Caution:**

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

1 Using the diagnostic tester to perform active test

(a) Use the diagnostic tester to perform active test (door lock).

Result

Go to

OK

NG

NG**Go to step 3****OK****2 Check driver side door lock/unlock operation**

(a) Using door control switch on window regulator main switch cannot immediately lock/unlock all doors.

Result

Go to

NG

OK

OK**Replace BCM assembly****NG****3 Check fuse**

(a) Turn ENGINE START STOP switch to ON.
 (b) Check if the power supply fuses of RF01 and RF26 in the instrument panel fuse and relay box are fused.
 (c) Check if the power supply fuses of EF21, EF11, EF10, EF16, SB02 and SB04 in the engine compartment fuse and relay box are fused.

Result

Go to

OK

NG

46**NEXT****Replace fuse****NEXT****4 Check body control module power supply and ground circuit**

(a) Disconnect negative battery cable, and turn ENGINE START STOP switch to OFF.

- (b) Disconnect body control module connectors B-021 and I-007.
- (c) Using ohm band of multimeter, check for continuity between power supply wire harness B-021 (310) - engine compartment fuse and relay box (152) terminal; I-007 (217) - instrument panel fuse and relay box fuse RF01 (7) terminal; I-007 (205) - instrument panel fuse and relay box fuse RF26 (58) terminal separately.

OK

Multimeter Connection	Condition	Normal Condition
B-021 (310) - Engine compartment fuse and relay box (152)	Always	$\leq 1 \Omega$
I-007 (217) - Instrument panel fuse and relay box RF01 (7)	Always	$\leq 1 \Omega$
I-007 (205) - Instrument panel fuse and relay box RF26 (58)	Always	$\leq 1 \Omega$

Result

Go to
OK
NG



5	Check central control lock switch
----------	--

- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect central control switch connector, and replace central control switch assembly with a new one.
- (c) Press central control switch manually, check if door lock operates.

Result

Go to
OK
NG



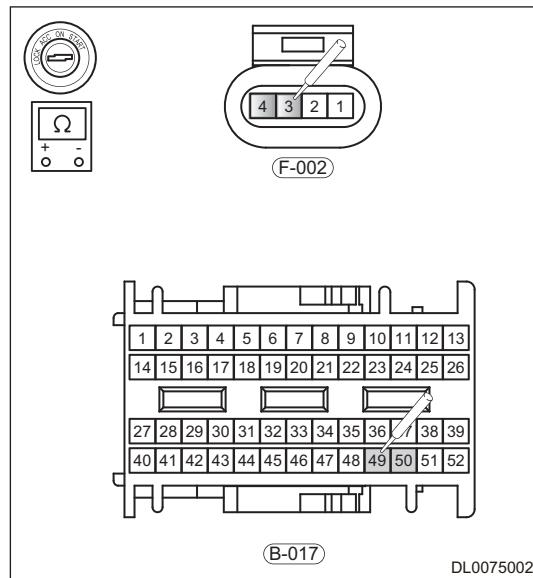
6	Check central control switch circuit
----------	---

- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect BCM connector B-017 and central control lock switch F-002.

(c) Using ohm band of multimeter, check for continuity between B-017 (149) - F-002 (3) and B-017 (150) - F-002 (4) separately.

Specified Condition

Digital Multimeter	Condition	Normal Condition
B-017 (149) - F-002 (3)	Always	$\leq 1 \Omega$
B-017(150) - F-002(4)		$\leq 1 \Omega$



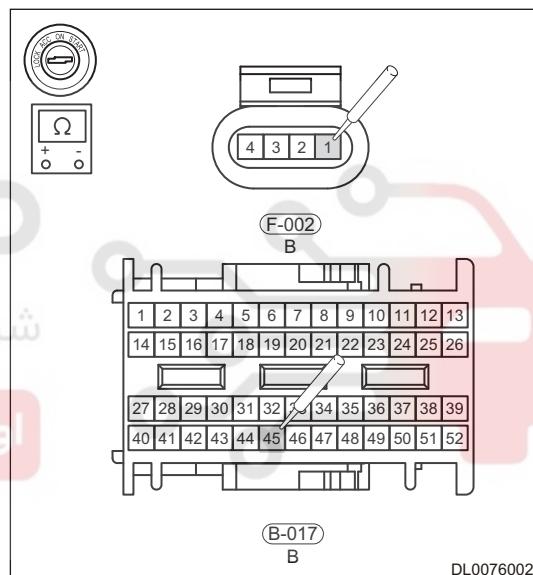
(d) Using ohm band of multimeter, check for continuity between central control lock switch F-002 (1) - Analog ground B-017 (1-45).

Digital Multimeter	Condition	Specified Condition
F-002(1) - B-017 (1-45)	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

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Repair or replace central control switch related wire harness

OK

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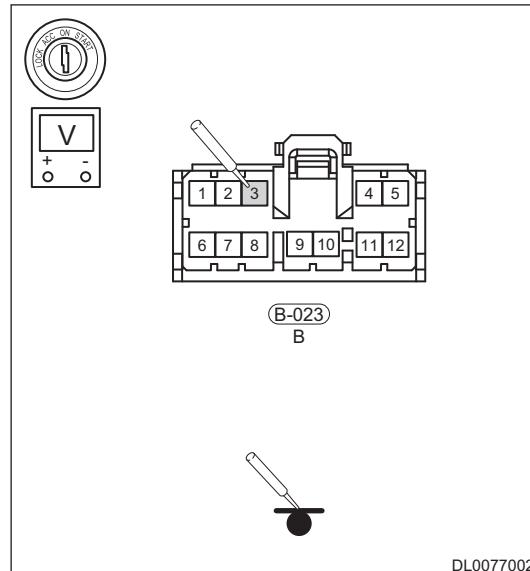
7 Check BCM lock/unlock terminals voltage

(a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the BCM connector B-023.
 (c) Then turn ENGINE START STOP switch to ON.

(d) Press central control lock switch, check voltage between BCM B-023 (403) terminal and body ground with voltage band of multimeter.

Specified Condition

Digital Multimeter	Condition	Normal Condition
B-023 (403) - Body ground	ENGINE START STOP switch ON	Not less than 12 V



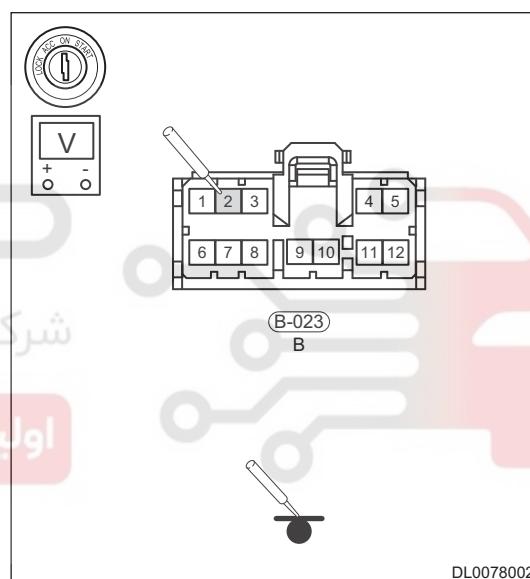
(e) Press central control unlock switch, check voltage between B-023 (402) terminal and body ground with voltage band of multimeter.

Specified Condition

Digital Multimeter	Condition	Normal Condition
B-023 (402) - Body ground	ENGINE START STOP switch ON	Not less than 12 V

Result

Go to
OK
NG



NG

Replace BCM controller assembly

OK

46

8

Check door lock wire harness and connector

- Turn ENGINE START STOP switch to OFF.
- Disconnect the negative battery cable.
- Disconnect the BCM connector B-023.
- Using ohm band of multimeter, check for continuity between lock output B-023 (403) terminal and wire harness connector B-020 (20).
- Using ohm band of multimeter, check for continuity between unlock output B-023 (402) terminal and wire harness connector F-001 (13).

Specified Condition

Digital Multimeter	Condition	Normal Condition
B-023 (403) - B-020 (20)	Always	$\leq 1 \Omega$
B-023 (402) - F-001 (13)	Always	$\leq 1 \Omega$

Result

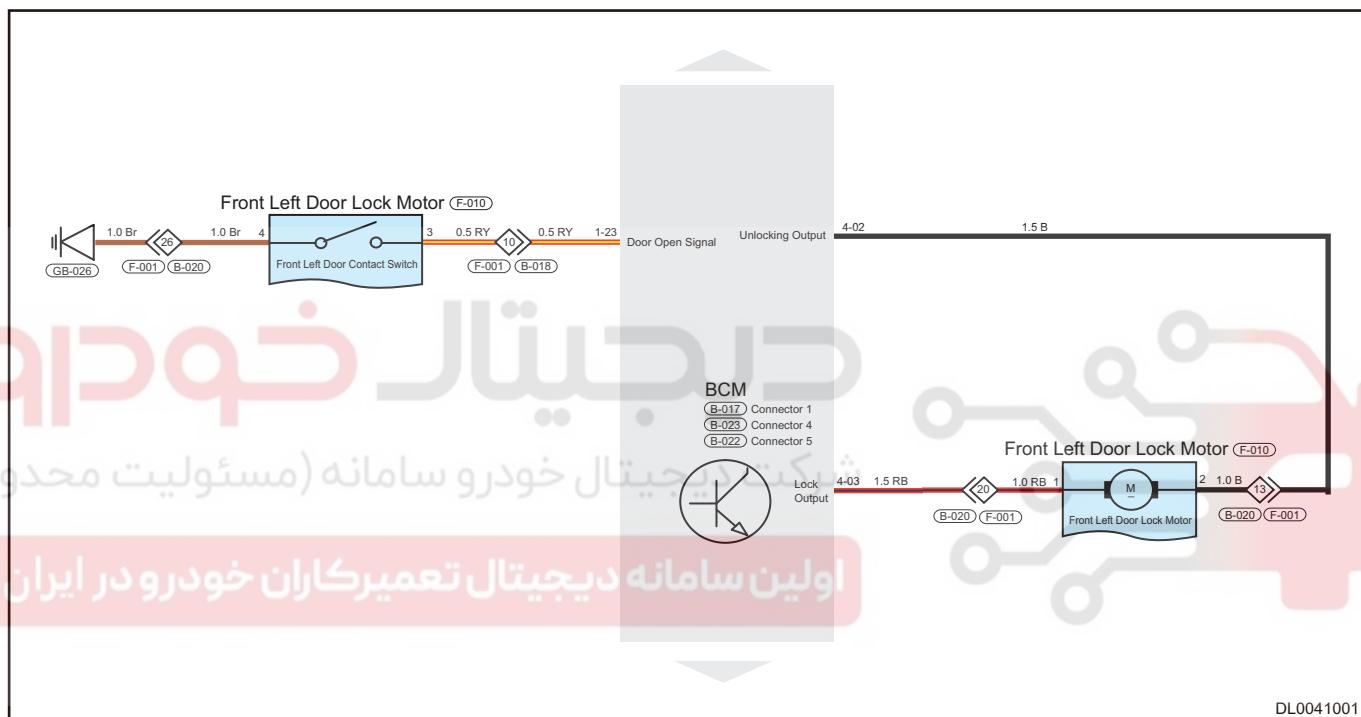
Go to
OK
NG

OK

Connector is normal

NG

Repair or replace wire harness and connector

Only Driver Side Door Lock/Unlock Function does not Operate**Circuit Diagram****Problem causes:**

- Front left door lock assembly
- Wire harness or connector

Caution:

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

46

1 Check front left door lock motor

- Turn ENGINE START STOP switch to OFF.
- Disconnect the door lock motor connector.
- Apply voltage no less than 12 V to door lock motor, and check if door lock motor operates.

Result

Go to
OK
NG

NG

Replace front left door lock assembly

OK

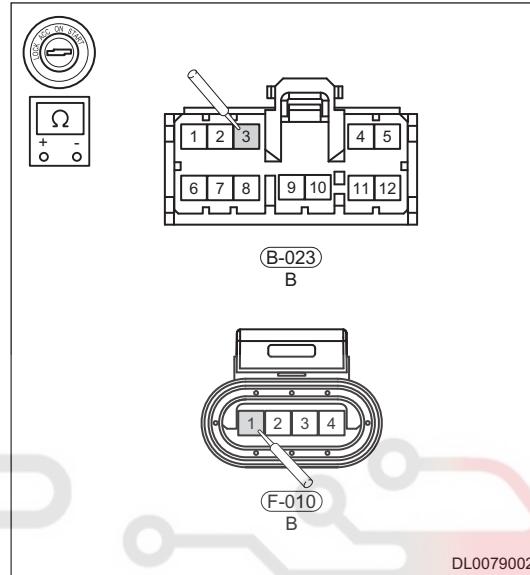
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Check front left door lock motor wire harness and connector

- Turn ENGINE START STOP switch to OFF.
- Disconnect the negative battery cable.
- Using ohm band of multimeter, check for continuity between BCM lock output B-023 (403) terminal and front left door lock motor connector F-010 (1).

OK

Digital Multimeter	Condition	Normal Condition
B-023(403) - F-010(1)	Always	$\leq 1 \Omega$

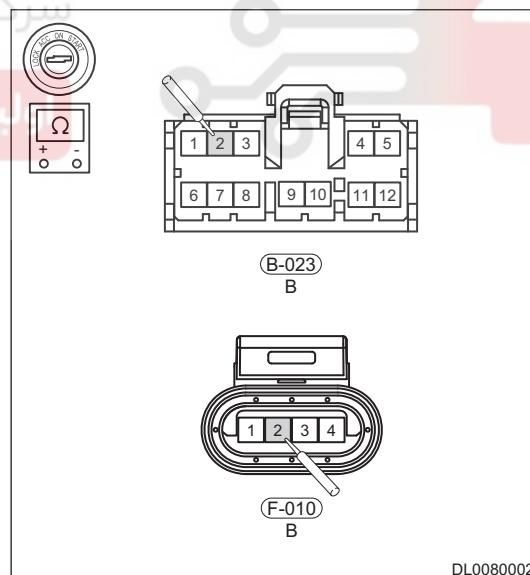


DL0079002

- Using ohm band of multimeter, check for continuity between BCM unlock output B-023 (402) terminal - F-010 (2).

OK

Digital Multimeter	Condition	Normal Condition
B-023(402) - F-010(2)	Always	$\leq 1 \Omega$



DL0080002

NG

Repair or replace front left door lock related wire harness

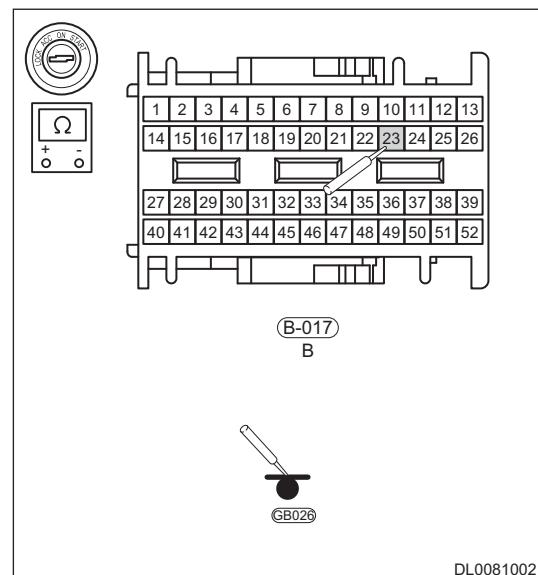
OK

3

Check front left door lock contact switch signal circuit

- Turn ENGINE START STOP switch to OFF.

(b) Disconnect the BCM B-017 connector.
 (c) Using ohm band of multimeter, check for continuity between B-017 (123) terminal - front left door contact switch ground point GB-026.



OK

Digital Multimeter	Condition	Normal Condition
B-017 (123) - GB-026	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

OK

End

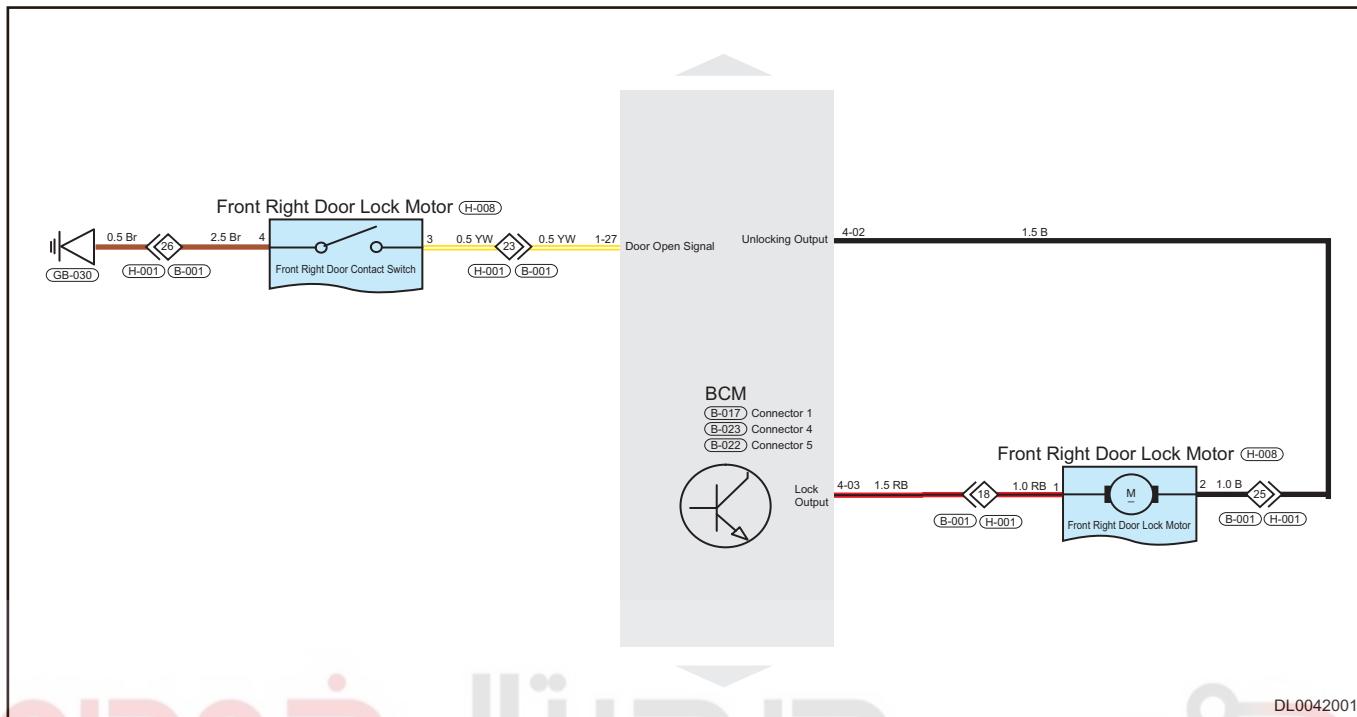
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Repair or replace front left door lock contact switch ground wire harness



Only Front Right Door Lock/Unlock Function does not Operate

Circuit Diagram



DL0042001

Problem causes:

- Front right door lock assembly.
- Wire harness or connector.

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1 Check front right door lock motor

- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect the door lock motor connector.
- (c) Apply voltage no less than 12 V to door lock motor, and check if door lock motor operates.

Result

Go to
OK
NG

46

NG

Replace front right door lock assembly

OK

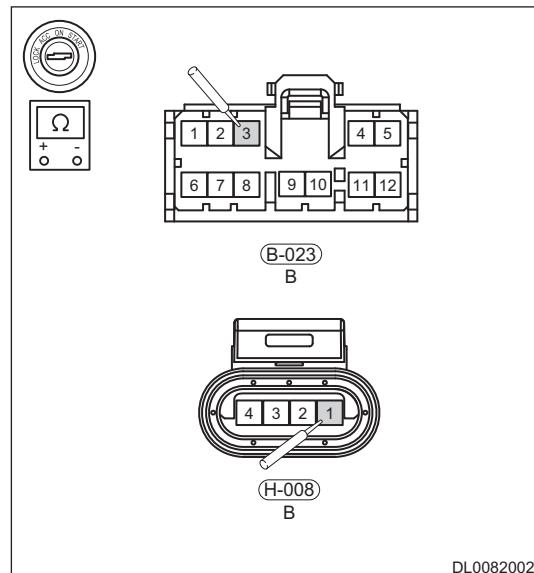
2 Check front right door lock motor wire harness and connector

- (a) Turn ENGINE START STOP switch to OFF.
- (b) Disconnect the negative battery cable.

(c) Using ohm band of multimeter, check for continuity between BCM lock output B-023 (403) terminal and front right door lock motor connector H-008 (1).

OK

Digital Multimeter	Condition	Normal Condition
B-023 (403) - H-008 (1)	Always	$\leq 1 \Omega$



DL0082002

(d) Using ohm band of multimeter, check for continuity between BCM unlock output B-023 (402) terminal - H-008 (2).

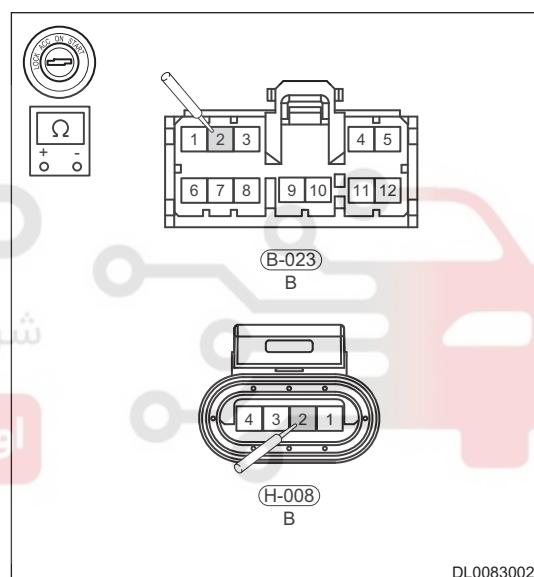
OK

Digital Multimeter	Condition	Normal Condition
B-023 (402) - H-008 (2)	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

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DL0083002

NG

Repair or replace front right door lock related wire harness

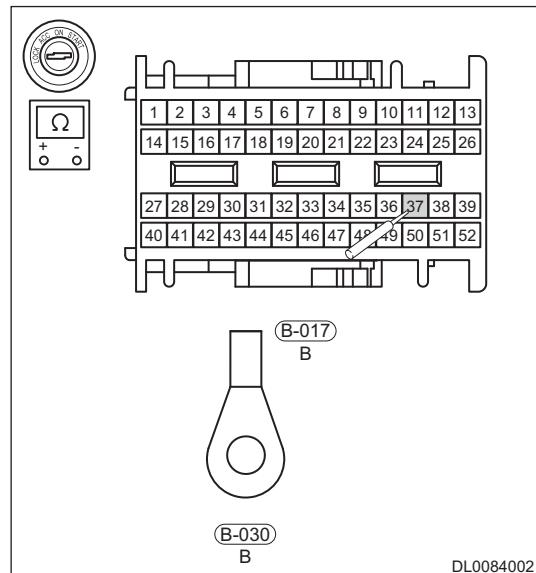
OK

3 Check front right door lock contact switch signal circuit

(a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the BCM B-017 connector.

46

(c) Using ohm band of multimeter, check for continuity between B-017 (137) terminal - front right door contact switch ground point GB-030.

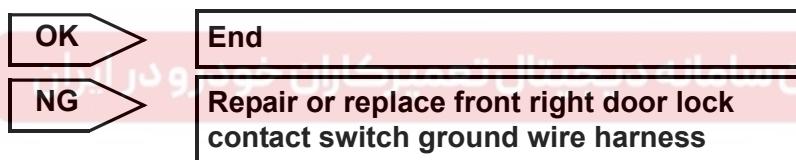


OK

Digital Multimeter	Condition	Normal Condition
B-017 (137) - GB-030	Always	$\leq 1 \Omega$

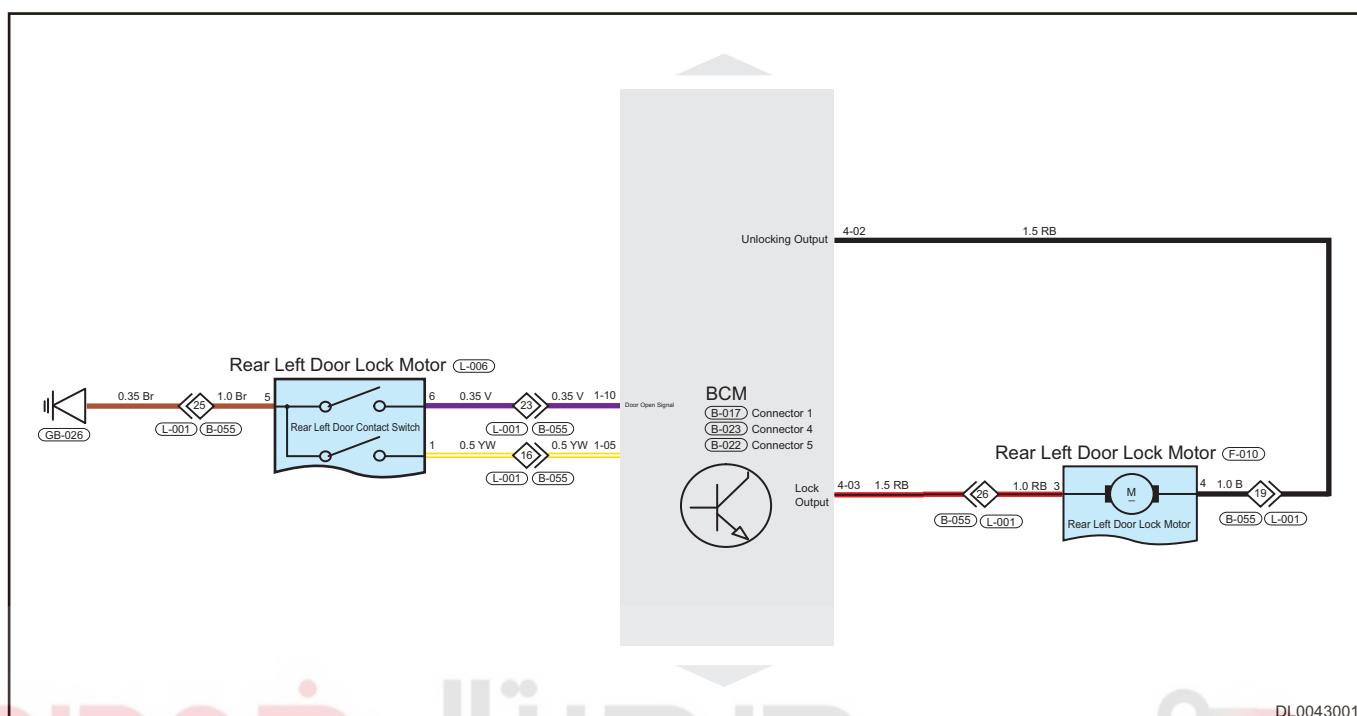
Result

Go to
OK
NG



Only Rear Left Door Lock/Unlock Function does not Operate

Circuit Diagram



Problem causes:

- Rear left door lock assembly
- Wire harness or connector

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

1	Check rear left door lock motor
---	---------------------------------

- Turn ENGINE START STOP switch to OFF.
- Disconnect the door lock motor connector.
- Apply voltage no less than 12 V to door lock motor, and check if door lock motor operates.

Result

Go to
OK
NG

NG

Replace rear left door lock assembly

OK

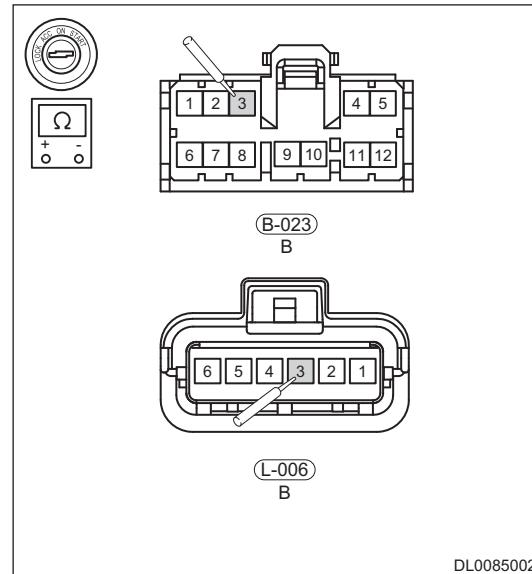
2	Check front left door lock motor wire harness and connector
---	---

- Turn ENGINE START STOP switch to OFF.
- Disconnect the negative battery cable.

(c) Using ohm band of multimeter, check for continuity between BCM lock output B-023 (403) terminal and rear left door lock motor connector L-006 (3).

OK

Digital Multimeter	Condition	Normal Condition
B-023 (403) - L-006 (3)	Always	$\leq 1 \Omega$



(d) Using ohm band of multimeter, check for continuity between BCM unlock output B-023 (402) terminal - L-006 (4).

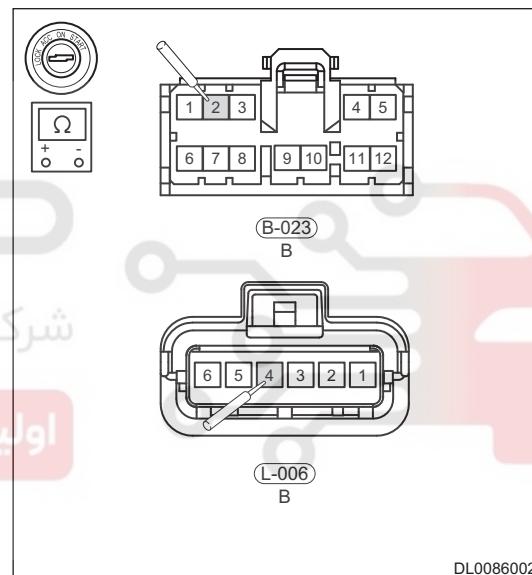
OK

Digital Multimeter	Condition	Normal Condition
B-023 (402) - L-006 (4)	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

اولین سامانه دیجیتال تعمیر کاران خودرو در ایران



46

NG

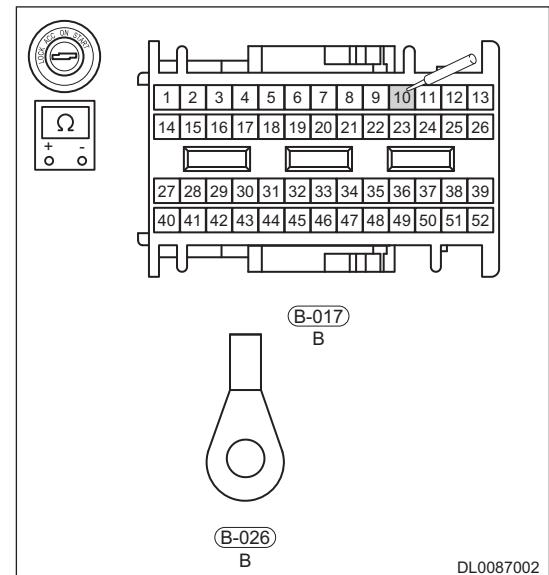
Repair or replace rear left door lock related wire harness

OK

3

Check rear left door lock contact switch signal circuit

- Turn ENGINE START STOP switch to OFF.
- Disconnect the BCM B-017 connector.
- Using ohm band of multimeter, check for continuity between B-017 (110) terminal - rear left door contact switch ground point GB-026.



DL0087002

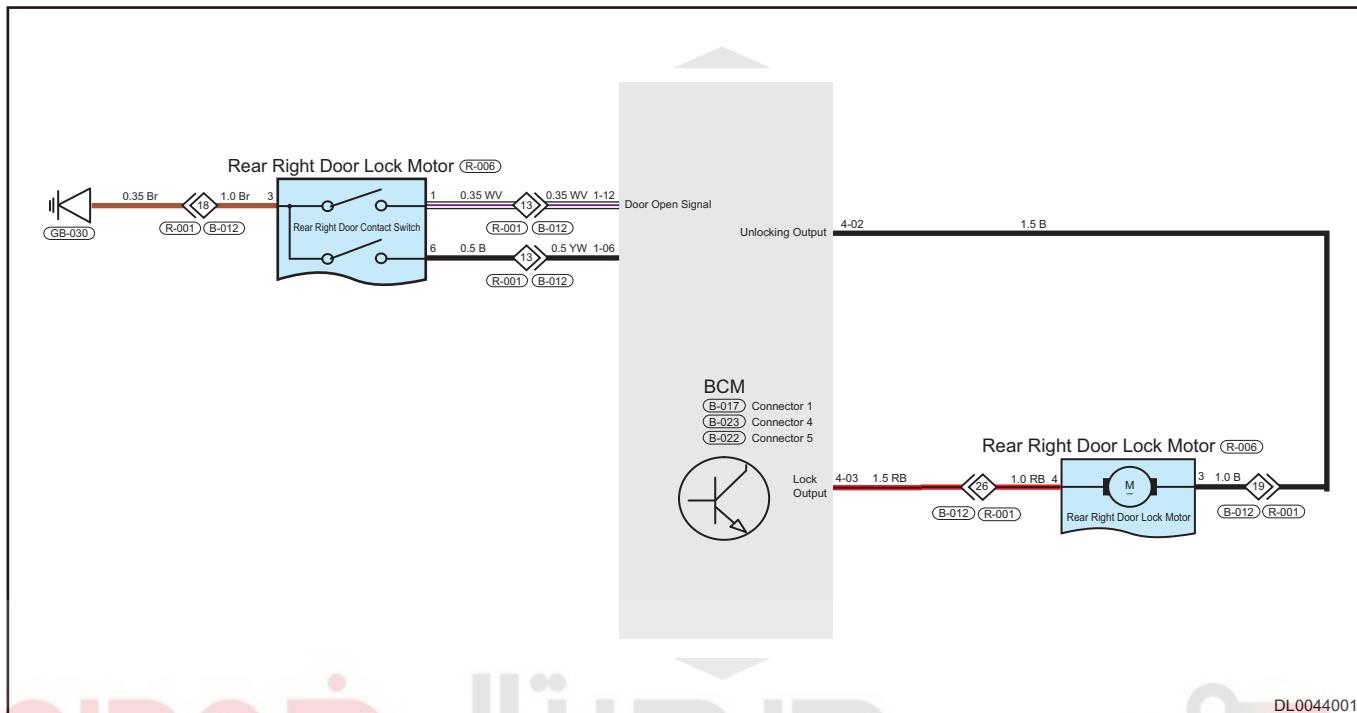
OK

Digital Multimeter	Condition	Normal Condition
B-017 (110) - GB-026	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

OK**End****NG****Repair or replace rear left door lock contact switch ground wire harness**

Rear Right Door Lock/Unlock Function does not Operate**Circuit Diagram**

DL0044001

Problem causes:

- Rear right door lock assembly.
- Wire harness or connector.

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

1 Check rear right door lock motor

(a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the door lock motor connector.
 (c) Apply voltage no less than 12 V to door lock motor, and check if door lock motor operates.

Result

Go to
OK
NG

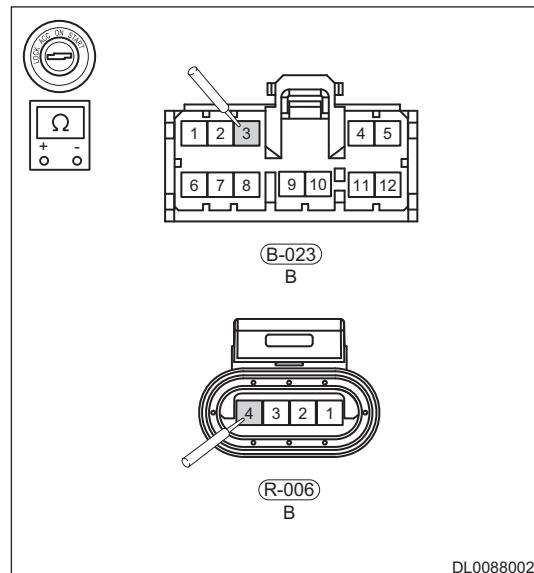
NG**Replace rear right door lock assembly****OK****2****Check rear right door lock motor wire harness and connector**

(a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the negative battery cable.

(c) Using ohm band of multimeter, check for continuity between BCM lock output B-023 (403) terminal and rear right door lock motor connector R-006 (4).

OK

Digital Multimeter	Condition	Normal Condition
B-023 (403) - R-006 (4)	Always	$\leq 1 \Omega$



(d) Using ohm band of multimeter, check for continuity between BCM unlock output B-023 (402) terminal - R-006 (3).

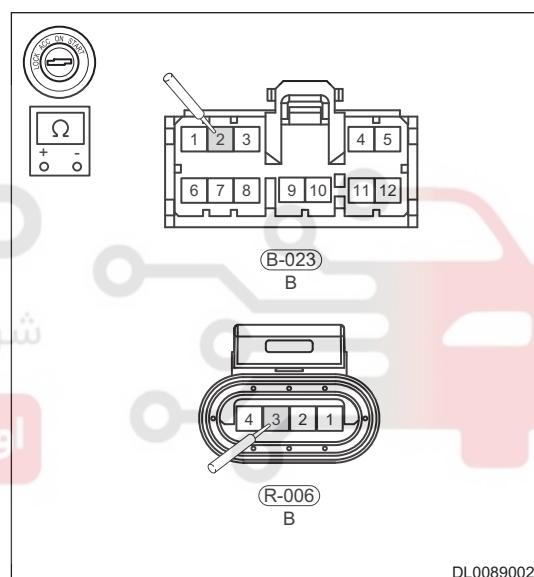
OK

Digital Multimeter	Condition	Normal Condition
B-023 (402) - R-006 (3)	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



NG

Repair or replace rear right door lock related wire harness

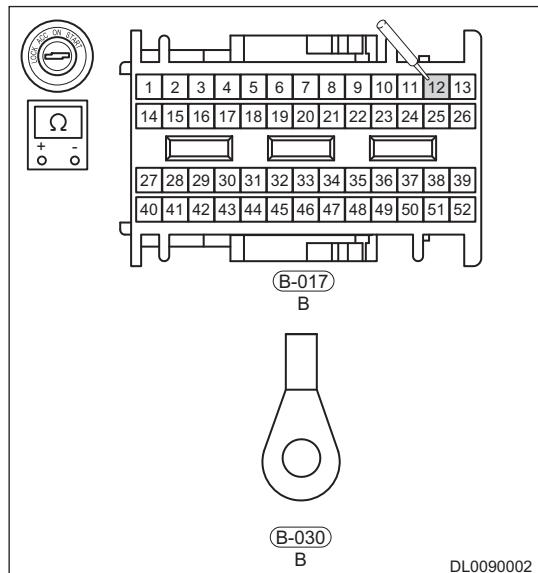
OK

46

3 Check rear right door lock contact switch signal circuit

(a) Turn ENGINE START STOP switch to OFF.
 (b) Disconnect the BCM B-017 connector.

(c) Using ohm band of multimeter, check for continuity between B-017 (112) terminal - rear right door contact switch ground point GB-030.

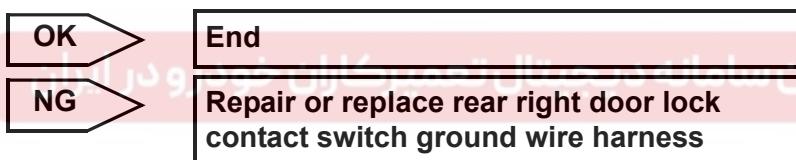


OK

Digital Multimeter	Condition	Normal Condition
B-017 (112) - GB-030	Always	$\leq 1 \Omega$

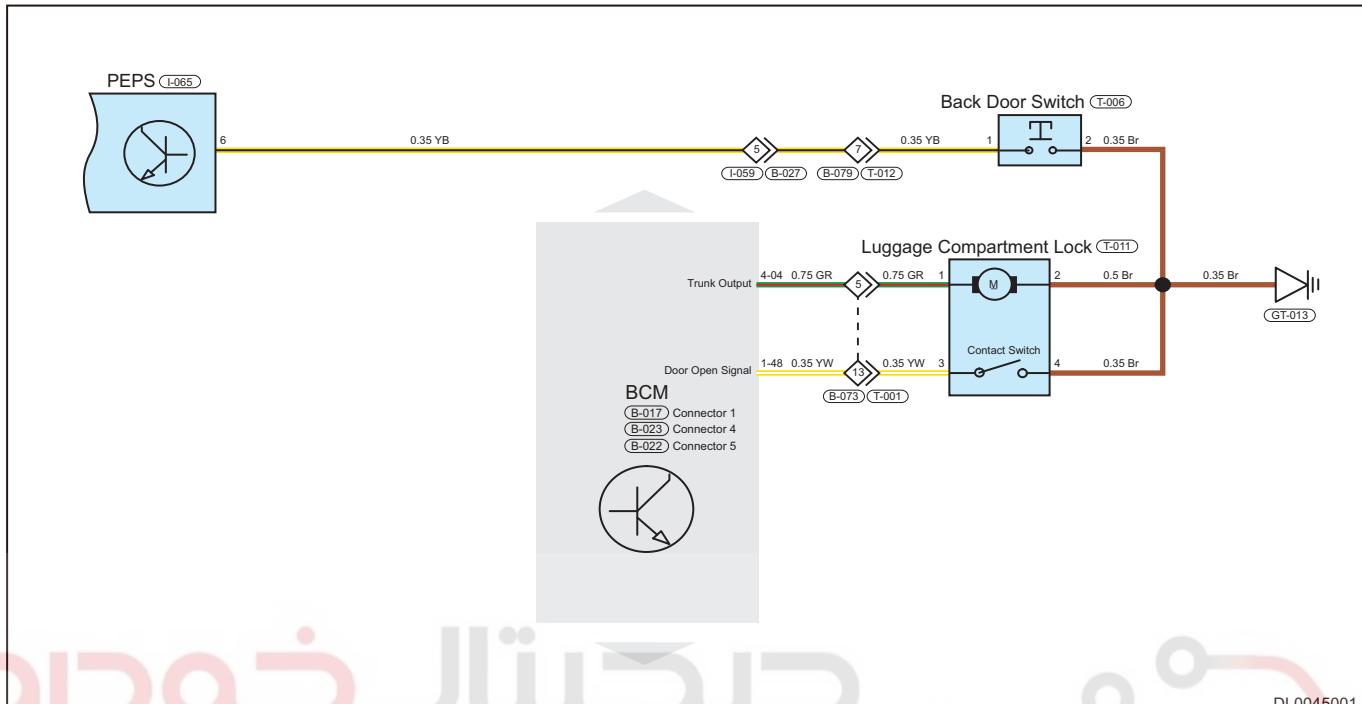
Result

Go to
OK
NG



DTC	B1024-71	Trunk Lock Control Circuit-Actuator Stuck
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Circuit Diagram



DL0045001

Description

DTC No.	DTC Definition	DTC Detection Condition	Possible Cause
B1024-71	Trunk Lock Control Circuit-Actuator Stuck	ENGINE START STOP switch ON	<ul style="list-style-type: none"> • Back door lock assembly • Wire harness or connector • Body Control Module (BCM)

Caution:

When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.

Procedure

1 Check back door lock assembly

(a) Check the back door lock assembly.

Result

Go to
OK
NG

NG

Replace back door lock assembly

OK

2 Check BCM unlock output voltage

Use circuit diagram as a guide to perform following procedures:

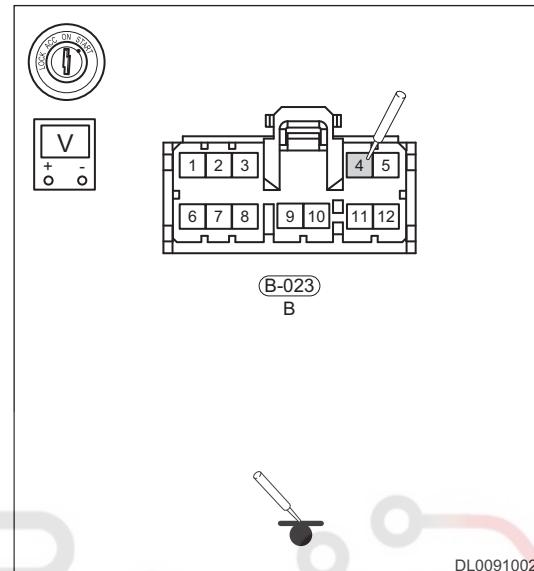
- Turn ENGINE START STOP switch to ON.
- Ensure the BCM power supply fuse and power supply circuit are normal.
- Disconnect the BCM connector B-023.
- Press back door unlock switch, check voltage between BCM B-023 (404) and body ground with voltage band of multimeter.

Normal Condition

Multimeter Connection	Condition	Normal Condition
B-023 (404) - Body ground	Switch ON	Not less than 12 V

Result

Go to
OK
NG



NG

Replace BCM control module assembly

OK

3 Check back door lock motor unlock power supply wire harness

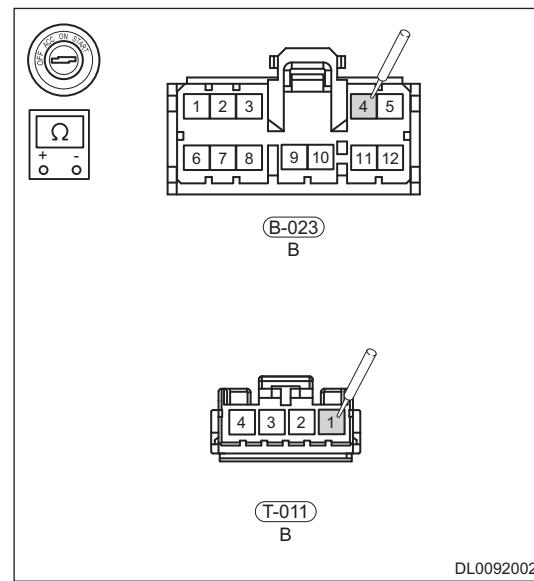
- Turn ENGINE START STOP switch to OFF.
- Disconnect BCM connector B-023 and back door lock connector T-011.
- Using ohm band of multimeter, check for continuity between B-023 (404) terminal and T-011 (1) terminal.

Normal Condition

Multimeter Connection	Condition	Normal Condition
B-023 (404) - T-011 (1)	Always	$\leq 1 \Omega$

Result

Go to
OK
NG



NG

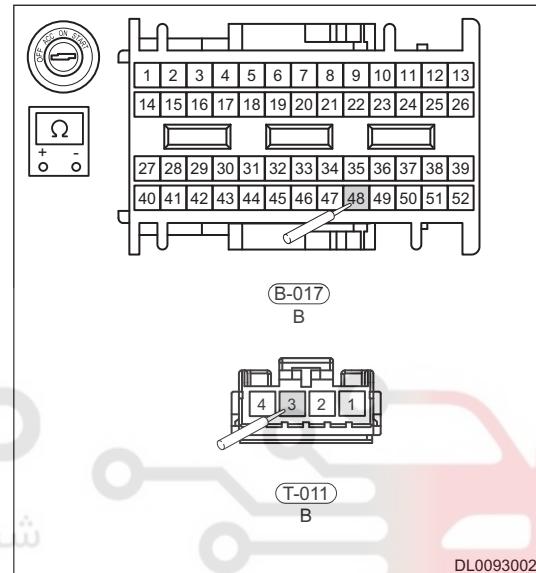
Repair or replace back door lock wire harness

OK

4

Check door open signal and door lock motor ground circuit

- Turn ENGINE START STOP switch to OFF.
- Disconnect BCM connector B-017 and back door lock connector T-011.
- Using ohm band of multimeter, check for continuity between B-017 (148) terminal and back door lock T-011 (3) terminal.



- Using ohm band of multimeter, check for continuity between T-011 (2) terminal and ground point GT-013.

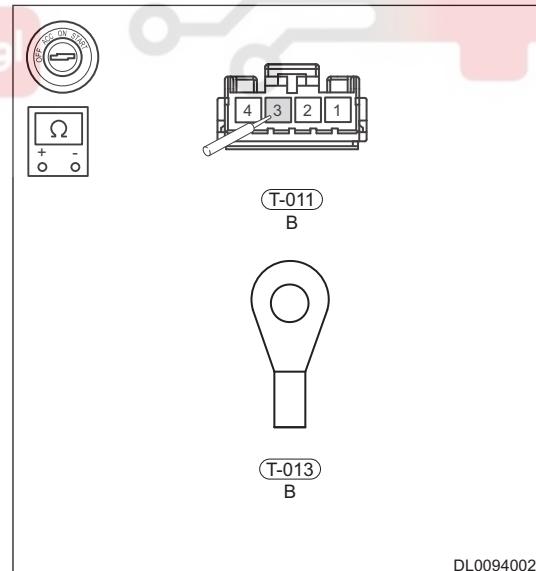
Normal Condition

Multimeter Connection	Condition	Normal Condition
B-017 (148) - T-011 (3)	Always	$\leq 1 \Omega$
T-011 (2) - GT-013	Always	$\leq 1 \Omega$

Result

Go to
OK
NG

46



OK

Replace back door lock motor assembly

NG

Replace back door lock ground wire harness

ON-VEHICLE SERVICE

Engine Hood Lock Assembly

Removal

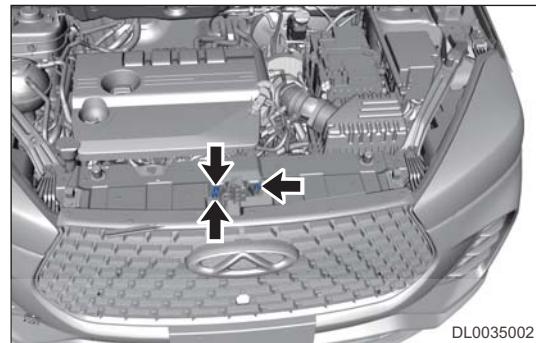
Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing engine hood lock assembly.
- Try to prevent body paint surface from being scratched when removing engine hood lock assembly.

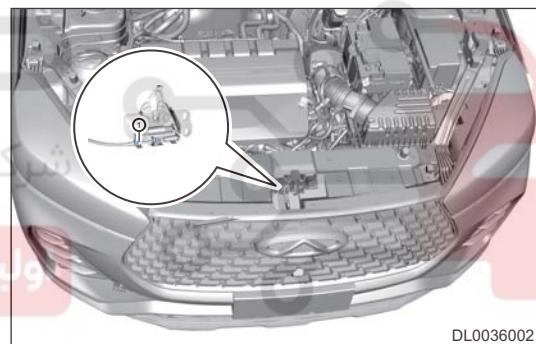
- Remove the engine compartment trim cover assembly.
- Remove the engine hood lock assembly.
- (a) Remove 3 fixing nuts (arrow) from engine hood lock assembly.

Tightening torque

$10 \pm 1.5 \text{ N}\cdot\text{m}$



- (b) Disengage the engine hood cable assembly (1) from slot and remove the engine hood lock assembly.



Installation

Warning/Caution/Hint

- Check if engine hood operates properly, after installing engine hood lock assembly.

- Installation is in the reverse order of removal.

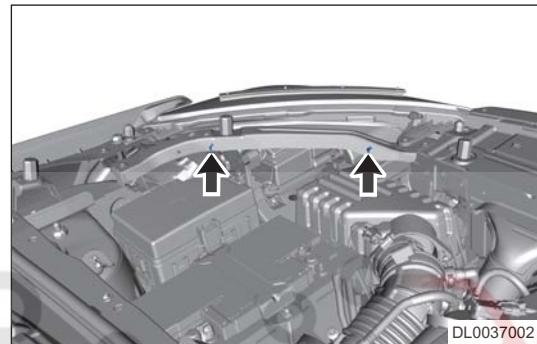
Engine Hood Cable Assembly

Removal

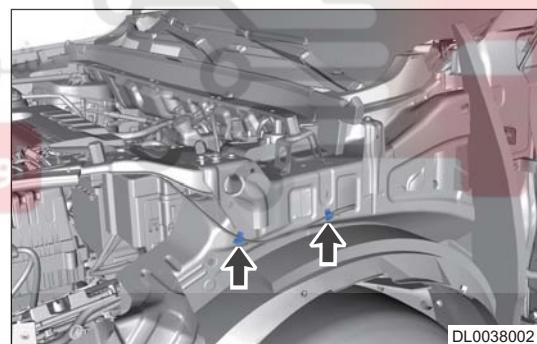
Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing engine hood cable assembly.
- Prevent interior and body paint from being scratched, when removing engine hood cable assembly.

- Turn off all electrical equipment and ENGINE START STOP switch.
- Disconnect the negative battery cable.
- Remove the engine compartment trim cover assembly.
- Remove the wing assembly.
- Remove the engine hood lock assembly.
- Remove the engine hood cable assembly.
 - Disengage fixing clips (arrow) of engine hood cable assembly.

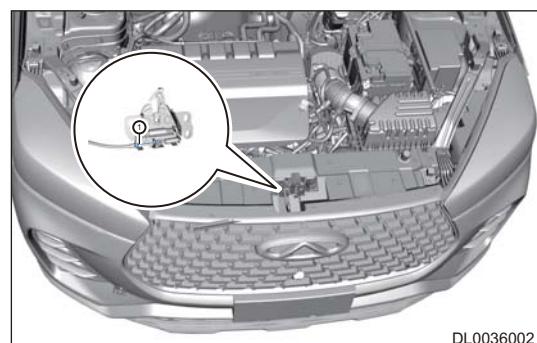


DL0037002



DL0038002

- Disengage the engine hood cable assembly (1) from slot and remove the engine hood lock assembly.



DL0036002

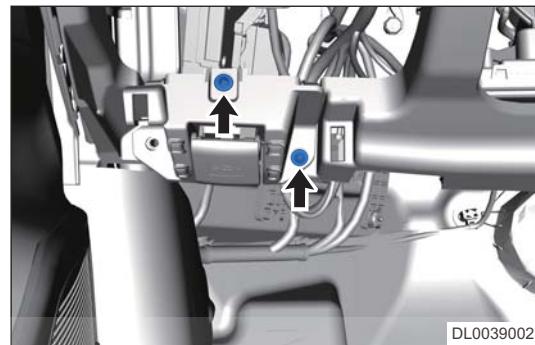
- Remove the instrument panel lower left protector assembly.

(e) Remove 1 fixing bolt (arrow) from engine hood grip assembly.



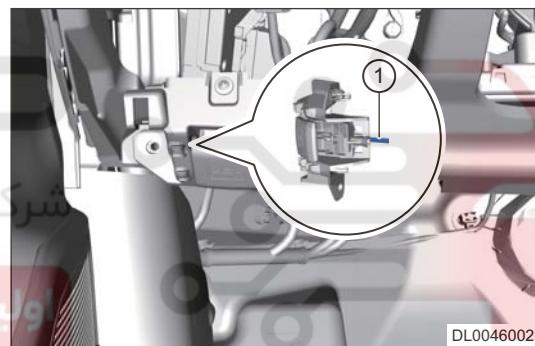
DL0040002

(f) Remove 2 fixing screws (arrow) from engine hood grip assembly.



DL0039002

(g) Disengage engine hood cable assembly (1) from engine hood grip assembly.



DL0046002

(h) Remove the engine hood cable assembly.

Installation

Warning/Caution/Hint

- Check if engine hood operates properly, after installing engine hood lock assembly.
- 1. Installation is in the reverse order of removal.

Front Door Lock Assembly

Removal

Warning/Caution/Hint

Caution:

- Be sure to wear necessary safety equipment to prevent accidents, when removing front door lock assembly.
- Try to prevent interior and body paint from being scratched, when removing front door lock assembly.

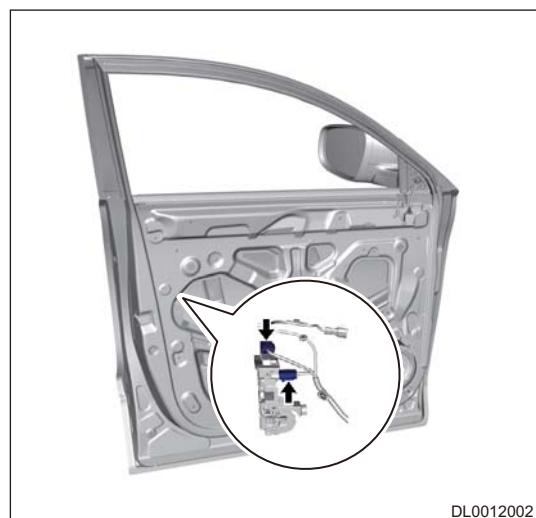
Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the front left door protective film assembly.
5. Remove the front left door glass rear guide rail assembly.
6. Remove the front left door lock assembly.
 - (a) Disengage cable fixing clip (arrow) carefully with an interior crow plate.



- (b) Disconnect the connector (arrow) from front left door lock assembly.



(c) Disconnect the clip (arrow) between front left door lock assembly and front door key cylinder lever.



DL0013002

(d) Disengage the front door outside push rod (arrow) from the slot of front door handle base.

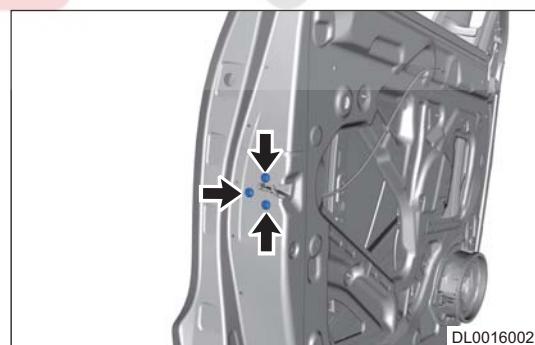


DL0014002

(e) Remove 3 fixing screws (arrow) from front door lock assembly, and remove the front door lock assembly.

Tightening torque

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



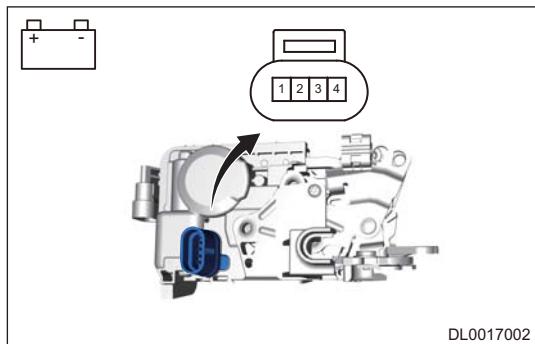
DL0016002

Inspection

1. Check the front door lock assembly (fastener assembly).

(a) Apply battery voltage to the terminals of front door lock assembly (fastener assembly) connector and check if front door lock assembly operates normally according to the table below.

Measurement Condition	Specified Condition
Battery positive (+) - Terminal 1 Battery negative (-) - Terminal 2	Locking
Battery positive (+) - Terminal 2 Battery negative (-) - Terminal 1	Unlocking



If result is not as specified, replace front door lock assembly.

Installation

Warning/Caution/Hint

- Check if connector is installed correctly, when installing front door lock assembly.
- Install the clips and cables in place, when installing front door lock assembly.
- Check if front door lock operates properly, after installing front door lock assembly.

- Installation is in the reverse order of removal.

دُخُولِ دِيْجِيْتَال

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Front Door Key Cylinder Assembly

Removal

Warning/Caution/Hint

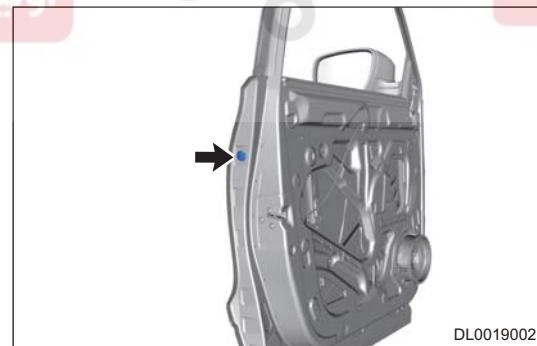
- Be sure to wear necessary safety equipment to prevent accidents, when removing front door key cylinder assembly.
- Try to prevent body paint surface from being scratched, when removing front door key cylinder assembly.

- Turn off all electrical equipment and ENGINE START STOP switch.
- Disconnect the negative battery cable.
- Remove the front left door inner protector assembly.
- Remove the front left door protective film assembly.
- Remove the front left door key cylinder assembly.
 - Disengage key cylinder lever (arrow).



DL0013002

- Remove the front door outside handle protective cover block cover (arrow).



DL0019002

- Loosen 1 fixing screw (arrow) from front door key cylinder assembly, and remove the front door key cylinder assembly and front door handle protective cover.

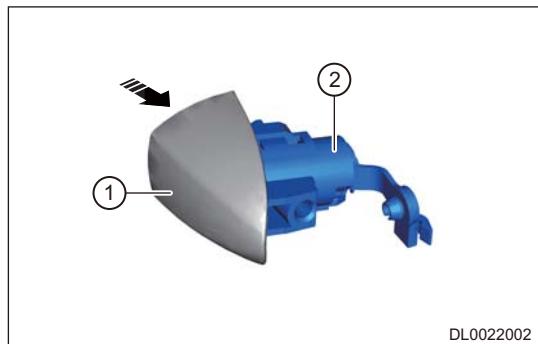
Tightening torque

$5 \pm 1 \text{ N}\cdot\text{m}$



DL0021002

(d) Insert the key into the hole on lock cylinder protective cover and carefully pry the lock cylinder cover or using a screwdriver wrapped with protective tape, disengage the claws (arrow) and separate the front door handle protective cover (1) from front door key cylinder assembly (2).



DL0022002

Installation

Warning/Caution/Hint

- Install the clip on the lever in place when installing front door key cylinder assembly.
- Check if front door key cylinder operates properly, after installing front door key cylinder assembly.

1. Installation is in the reverse order of removal.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Front Door Lock Striker Assembly

Removal

Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing front door lock striker assembly.
- Try to prevent body paint surface from being scratched, when removing front door lock striker assembly.

Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

1. Remove the front left door lock striker assembly

(a) Remove 2 fixing screws (arrow) from front door lock striker assembly, and remove the front left door lock striker assembly (1).

Tightening torque

$23 \pm 2 \text{ N}\cdot\text{m}$



Installation

Warning/Caution/Hint

- Before installation, lock striker position should be adjusted to ensure that lock cylinder of lock striker is engaged with lock body in the center line of lock mouth, ensure that the door is normally opened and closed.

1. Installation is in the reverse order of removal.

Rear Door Lock Assembly

Removal

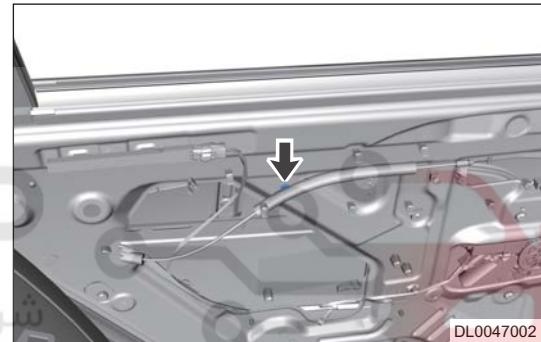
Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing rear door lock assembly.
- Try to prevent interior and body paint from being scratched, when removing rear door lock assembly.

Hint:

- Use same procedures for right and left sides.
- Procedures listed below are for left side.

- Turn off all electrical equipment and ENGINE START STOP switch.
- Disconnect the negative battery cable.
- Remove the rear left door inner protector assembly.
- Remove the rear left door protective film assembly.
- Remove the rear left door glass rear guide rail assembly.
- Remove the rear left door lock assembly.
 - Disengage cable fixing clip (arrow) carefully with an interior crow plate.



- Disconnect the connector (arrow) from rear door lock assembly.



دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکار خودرو در ایران

(c) Disengage the outside push rod (arrow) from the clip of rear door handle base.



DL0059002

(d) Remove 3 fixing screws (arrow) from rear door lock assembly, and remove the rear door lock assembly.

Tightening torque

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



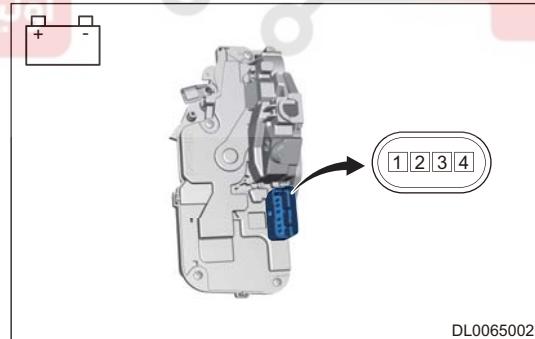
DL0064002

Inspection

1. Check the rear door lock assembly (fastener assembly)

(a) Apply battery voltage to the terminals of rear door lock assembly (fastener assembly) connector and check the operation of rear door lock assembly according to the table below.

Measurement Condition	Status
Battery positive (+) - Terminal 3 Battery negative (-) - Terminal 4	Locking
Battery positive (+) - Terminal 4 Battery negative (-) - Terminal 3	Unlocking



DL0065002

46

Installation

Warning/Caution/Hint

- Check if connector is installed correctly, when installing rear door lock assembly.
- Install the cable in place, when installing rear door lock assembly.
- Check if rear door lock operates properly, after installing rear door lock assembly.

- Installation is in the reverse order of removal.

Rear Door Lock Striker Assembly

Removal

Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing rear door lock striker.
- Try to prevent body paint surface from being scratched, when removing rear door lock striker.

Hint:

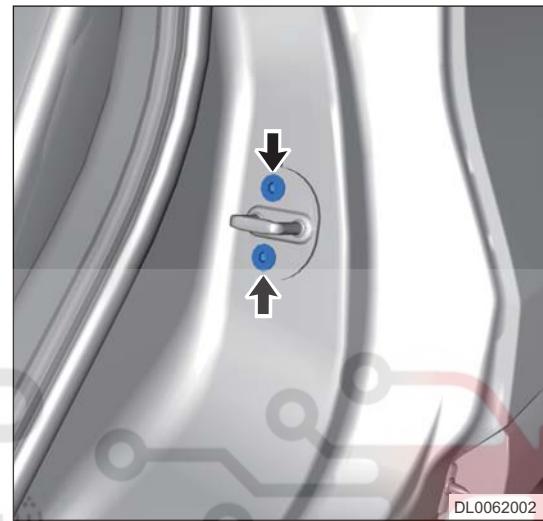
- Use same procedures for right and left sides.
- Procedures listed below are for left side.

1. Remove the rear left door lock striker assembly.

- Remove 2 fixing screws (arrow) from rear door lock striker, and remove the rear left door lock striker assembly.

Tightening torque

$23 \pm 2 \text{ N}\cdot\text{m}$



Installation

- Installation is in the reverse order of removal.

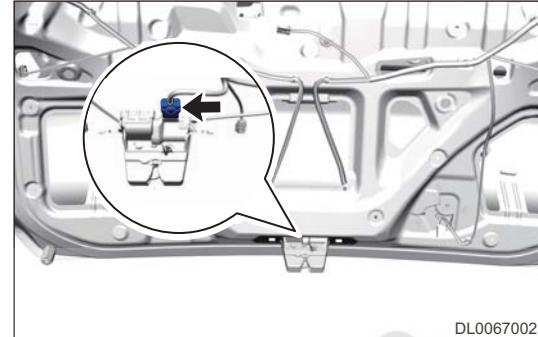
Back door lock assembly

Removal

Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing back door lock assembly.
- Try to prevent interior and body paint from being scratched, when removing back door lock assembly.

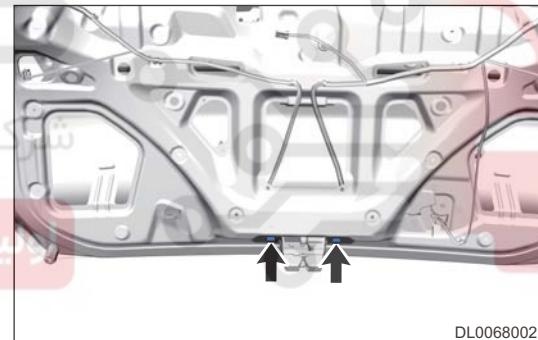
- Turn off all electrical equipment and ENGINE START STOP switch.
- Disconnect the negative battery cable.
- Remove the back door lower protector assembly.
- Remove the back door lock assembly.
 - Disconnect the connector (arrow) from back door lock assembly.



- Remove 2 fixing bolts (arrow) from back door lock assembly, and remove the back door lock assembly.

Tightening torque

$10 \pm 1 \text{ N}\cdot\text{m}$

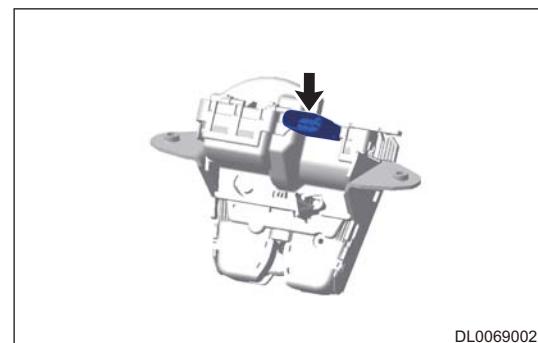


Inspection

- Check back door lock assembly
 - Using a digital multimeter, check for continuity between terminals of back door lock assembly according to the table below.

Measurement Condition	Status
Terminal 1 - Terminal 2	Locking
Terminal 1 - Terminal 3	Unlocking

If result is not as specified, replace the luggage compartment lock assembly.



Installation

Warning/Caution/Hint

- Check if connector is installed correctly, when installing back door lock assembly.
- Check if back door lock operates properly, after installing back door lock assembly.
- 1. Installation is in the reverse order of removal

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Back Door Lock Striker Assembly

Removal

Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing back door lock striker assembly.
- Try to prevent body paint surface from being scratched, when removing back door lock striker assembly.

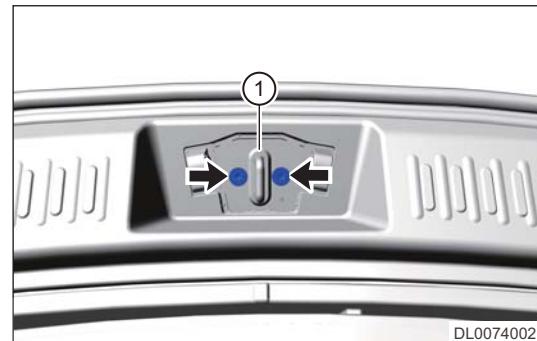
1. Remove the cover plug from back door lock striker assembly.

2. Remove the back door lock striker assembly.

(a) Remove 2 fixing screws (arrow) from back door lock striker assembly, and remove the back door lock striker assembly (1).

Tightening torque

$23 \pm 2 \text{ N}\cdot\text{m}$



Installation

1. Installation is in the reverse order of removal.



شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

Self-engage Back Door Lock Assembly

Removal

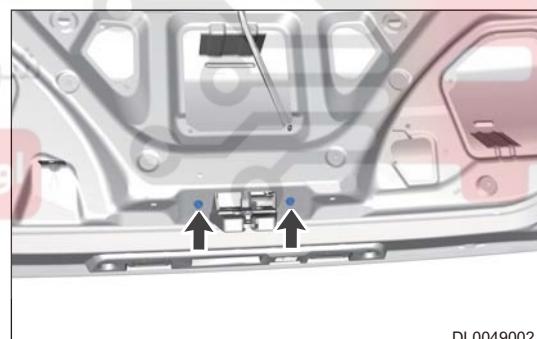
Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing self-engage back door lock assembly.
- Try to prevent interior and body paint from being scratched, when removing self-engage back door lock assembly.

- Turn off all electrical equipment and ENGINE START STOP switch.
- Disconnect the negative battery cable.
- Remove the back door lower protector assembly.
- Remove the back door self-engage mechanism assembly.
- Remove the self-engage back door lock assembly.
 - Disconnect the connector (arrow) from self-engage back door lock assembly.

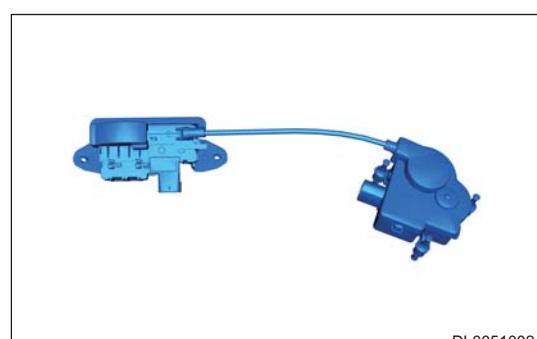


DL0048002



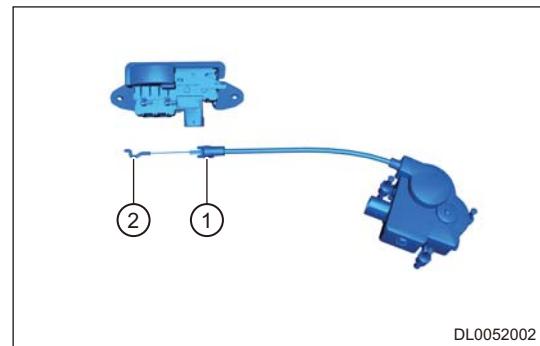
DL0049002

- Remove 2 fixing bolts (arrow) from self-engage back door lock assembly.



DL0051002

(d) Open dust boot, separate cable joint (1) and Z-end (2).



(e) Remove the self-engage back door lock assembly.

Installation

1. Installation is in the reverse order of removal.

دُخُل دِيْجِيْتَال

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



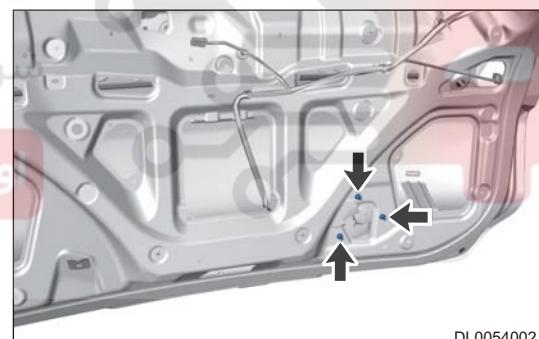
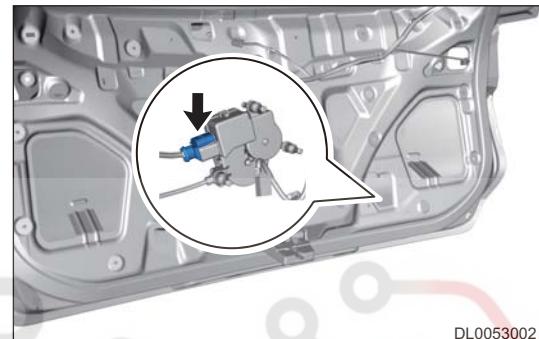
Back Door Lock Self-engage Mechanism Assembly

Removal

Warning/Caution/Hint

- Be sure to wear necessary safety equipment to prevent accidents, when removing back door lock self-engage mechanism assembly.
- Try to prevent interior and body paint from being scratched, when removing back door lock self-engage mechanism assembly.

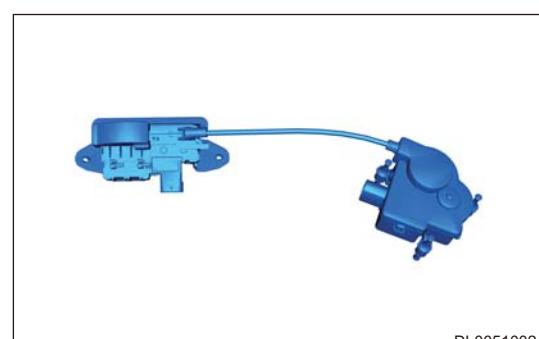
- Turn off all electrical equipment and ENGINE START STOP switch.
- Disconnect the negative battery cable.
- Remove the back door lower protector assembly.
- Remove the self-engage back door lock assembly.
- Remove the back door self-engage mechanism assembly.
 - Disconnect the connector (arrow) from back door lock self-engage mechanism assembly.



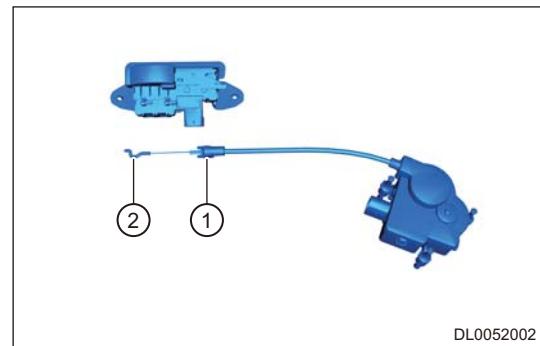
- Separate the back door lock self-engage mechanism assembly with 3 buffer blocks (arrow) from the back door sheet metal.

ولین سامانه دیجیتال تعمیرکاران خودرو در ایران

- Remove the self-engage back door lock assembly and back door lock self-engage mechanism assembly.



(d) Open dust boot, separate cable joint (1) and Z-end (2).



(e) Remove back door lock self-engage mechanism assembly.

Installation

1. Installation is in the reverse order of removal.

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Sensing Outside Handle

Sensing Outside Handle Lock/Unlock Principle

The door handle and the key are certified through radio communication; The door handle is capacitance sensing, when touching the sensing area with finger, the door handle senses the capacitance change, thus triggering the key search process.

Warning:

1. Handle antenna is short or open

The lock/unlock function of the handle on open or short side fails, PEPS will record DTC at this time.

After the fault is eliminated, it needs to be locked/unlocked through the wireless key, and then the function will be restored.

2. There is water, dirt or ice and snow in handle sensing area

The capacitance noise caused by water, dirt and ice and snow interferes with the capacitance detection of the handle antenna, causing the antenna to enter the self-protection mode, or shielding off the capacitance sensing function, resulting in the decrease of lock/unlock sensitivity, and the lock/unlock function is temporarily unavailable in severe cases.

Wipe the handle clean and wait for about 15s for the function to return to normal automatically; if the handle is frozen or water enters, wait for the water to be discharged.

3. The handle is continuously impacted by raindrops in rainy days

Under the impact of raindrops, the handle sensing capacitance will continuously sense the capacitance change. In order to avoid false triggering sensing, the handle antenna enters the rain mode. In this mode, the lock sensing time is longer, and the lock/unlock induction sensitivity is reduced.

When the impact of raindrop disappears, the function will return to normal automatically within 3 to 5 minutes later.

4. Electromagnetic interference or shield

Radio communication will be affected by the same frequency interference and shielding effect. If there is an interference source, it will interfere with the normal communication between wireless key and antenna; if the wireless key or handle is equipped with a decorative cover that contains metal ingredient, it will weaken the strength of the communication signal. In this case, the lock/unlock function has potential failure risk.

The function will recover automatically after the interference source is far away and the shield is eliminated.

Removal

Warning/Caution/Hint

- Be sure to wear safety equipment to prevent accidents, when removing sensing outside handle assembly.
- Try to prevent body paint surface from being scratched, when removing sensing outside handle assembly.

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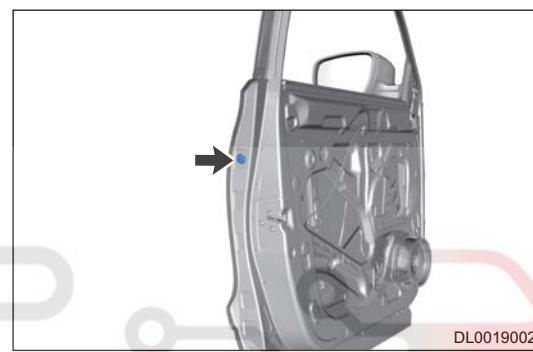
1. Turn off all electrical equipment and ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front left door inner protector assembly.
4. Remove the front left door protective film assembly.
5. Remove left outside handle assembly (take left side as an example).

(a) Disengage the clip (arrow) between front door lock assembly and front door key cylinder lever.



DL0013002

(b) Remove the front door outside handle protective cover block cover (arrow).



DL0019002

(c) Loosen 1 fixing screw (arrow) from front door key cylinder assembly, and remove the front door key cylinder and protective cover assembly.

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Tightening torque
 $5 \pm 1 \text{ N}\cdot\text{m}$



DL0021002

(d) Disconnect the front left outside handle wire harness connector (arrow).



DL0023002

(e) Remove the front left outside handle assembly.

Installation

1. Installation is in the reverse order of removal.