ELECTRONIC PARKING BRAKE SYSTEM

ELECTRONIC PARKING BRAKE SYSTEM (EPB)

Warning and Precautions

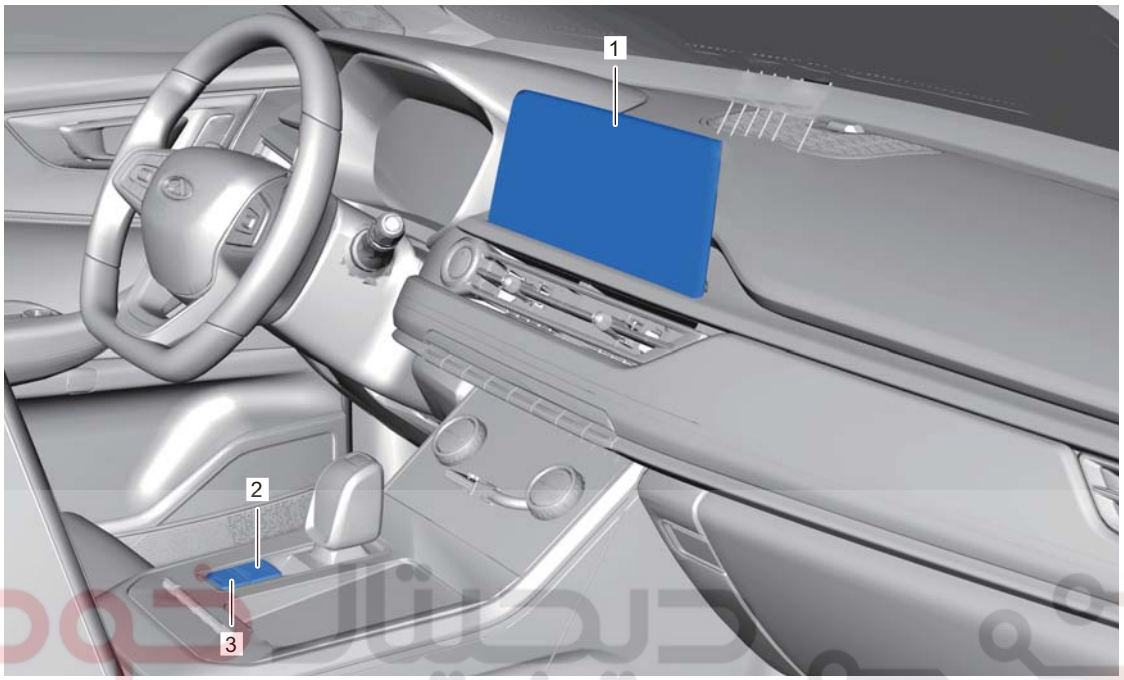
Precautions

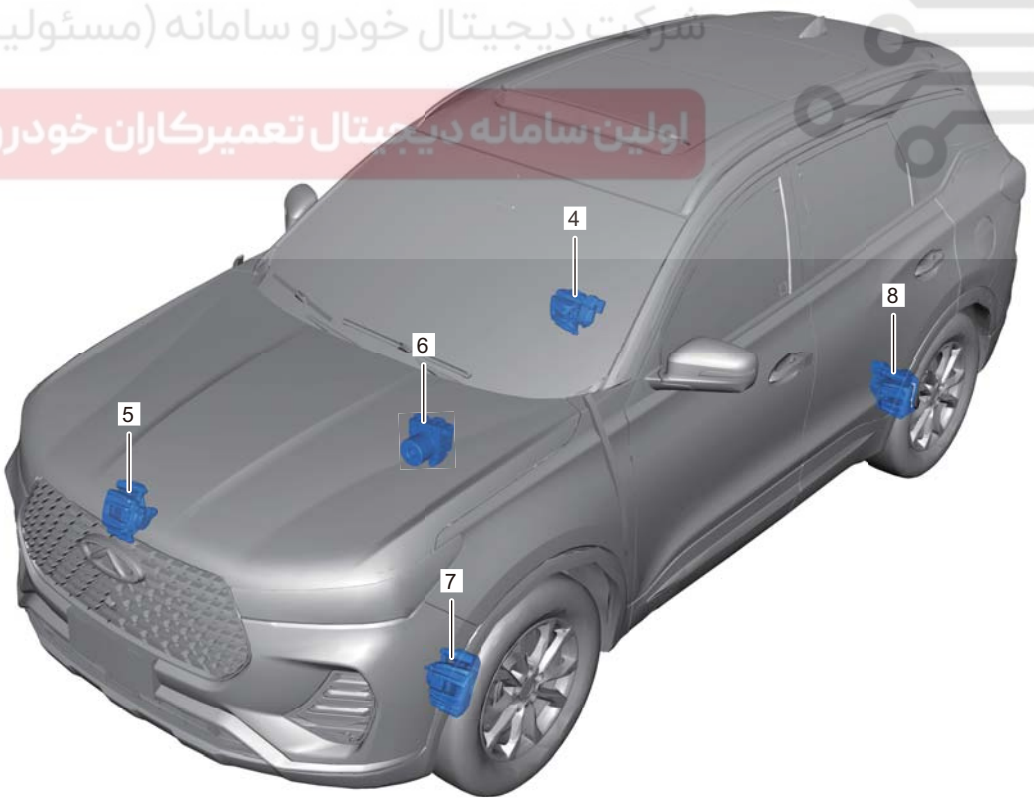
In order to avoid dangerous operation and vehicle damage before repair for this section, always follow the instructions below.

- When performing electrical equipment diagnosis and test, always refer to circuit diagram for related circuit and component information.
- If parking brake cannot be released by parking brake switch manually or automatically on a slope, please try to tow vehicle to a level road or place obstacles such as stoppers in front of or rear of front wheels respectively to prevent wheel rolling, avoiding coasting accident after releasing parking brake.
- When removing and installing steering system, suspension system, brake, tire, etc., it is necessary to turn off power supply of EPS (vehicle power supply is turned off), so as to avoid reverse impact, resulting in EPS internal protection circuit breakdown.

System Overview

System Components Diagram



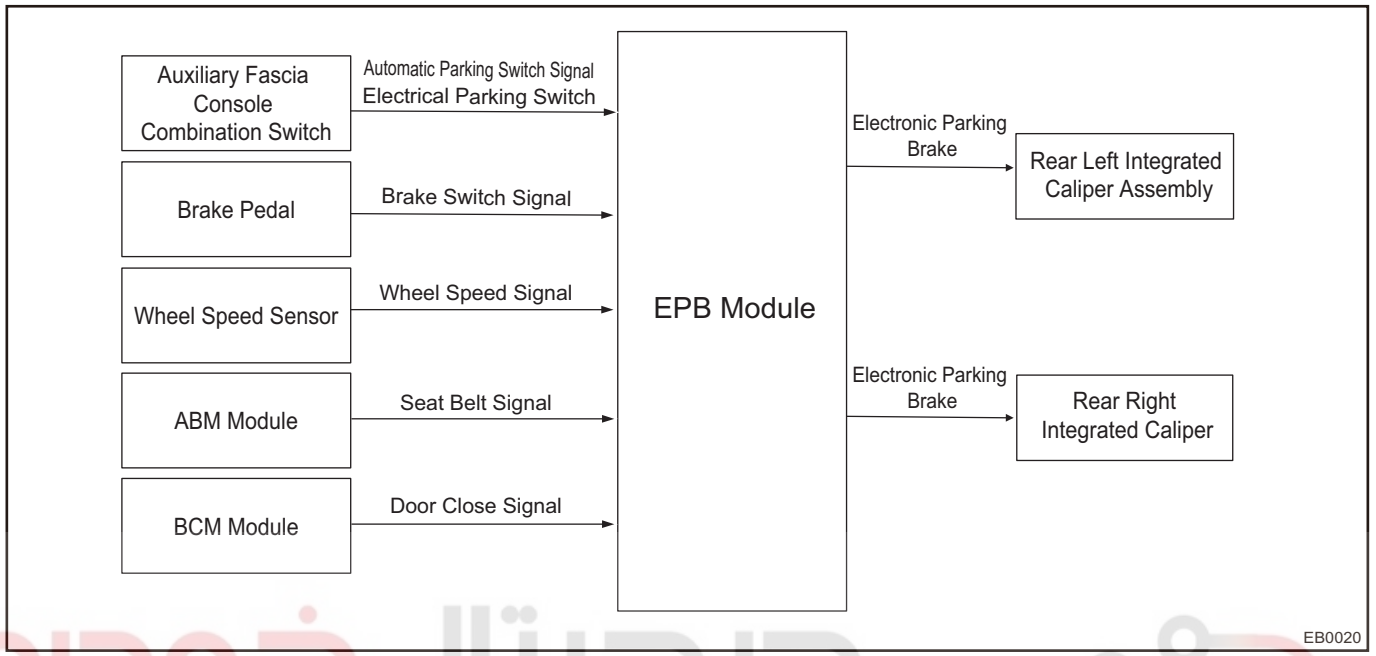


EB0010

1	Instrument Cluster	5	Front Right Brake Caliper Assembly
2	Electrical Parking Brake Switch	6	EPB Module Assembly

3	Automatic Parking Switch	7	Front Left Brake Caliper Assembly
4	Rear Right Integrated Caliper Assembly	8	Rear Left Integrated Caliper Assembly

System Schematic Diagram



EPB module assembly collects seat belt signal and door closed signal via CAN line, and collects electric parking switch signal, automatic parking switch signal, brake switch signal and wheel speed signal via hard-wire connection. Then, integrated caliper assembly operates according to data requirements analysis.

System Function

Electronic Parking Brake System (EPB)

Electronic Parking Brake System (EPB) integrates temporary braking while driving with long-term parking braking after stopping. Therefore, vehicle can be stopped through electronic parking brake operation instead of traditional manual operation.

- Manual parking brake application

When engine starts or ENGINE START STOP switch is in ON mode while vehicle is stationary, pull up the electronic parking switch, the red electronic parking brake system indicator on instrument cluster and indicator on electronic parking switch come on, which indicates parking brake function is operating.

Turn ENGINE START STOP switch to OFF, and Electronic Parking Brake (EPB) achieves parking brake automatic application function.

- Manual parking brake releasing

When engine starts or ENGINE START STOP switch is in ON mode while depressing brake pedal, press the electronic parking switch manually, the red electronic parking brake system indicator on instrument cluster and indicator on electronic parking switch go off, which indicates parking brake function is released.

- Automatic releasing

Fasten driver side seat belt, close driver side door. Depress accelerator pedal when vehicle is in D or R position on a level ground. Then electronic parking brake will be released automatically and red electronic parking brake system indicator on instrument cluster goes off.

If shift to D or R position when vehicle is stooped on a slope, it is necessary to depress accelerator pedal deeply and automatic parking brake is released only when drive force is greater than the force in coasting direction.

Caution:

- Electronic parking brake system (EPB) and automatic parking system (AUTO HOLD) are unavailable when battery is depleted.
- If parking brake is applied or released while depressing the brake pedal, brake pedal may move up or down slightly, just depress brake pedal firmly.
- Fasten driver side seat belt and close driver side door when electronic parking brake is released automatically. Otherwise, automatic parking brake releasing conditions are not met.
- While electronic parking brake is applied or released, a "fizz" sound may be heard from rear of vehicle, which is generated during parking brake operation. This is normal, please rest assured use.
- If vehicle coasts after stopping for a while, for safety, system will increase parking brake force automatically, to make vehicle stationary; during the process of increasing parking brake force, system will produce a certain operating sound, which is normal.
- With engine starting or ENGINE START STOP switch turned to ON, if parking brake can not be released manually by depressing brake pedal, depress accelerator pedal and press electronic parking brake switch to release parking brake. Use this method only when parking brake can not be released manually by depressing brake pedal. Please take care when using this method.

Warning:

To prevent vehicle from moving accidentally, after EPB operates when vehicle is stopped or leaving vehicle, both red electronic parking brake system indicator on instrument cluster and electronic parking switch indicator come on for a while and then go off. At the moment, observe if the indicators come on to make sure that electronic parking brake is applied successfully.

Automatic Parking Function (AUTO HOLD)

Electronic parking brake system (EPB) has extended basic parking function to automatic parking function (AUTO HOLD). With AUTO HOLD enabled, driver does not have to depress brake pedal for long time when stopping vehicle, automatic parking can be used to avoid unnecessary moving (such as coasting).

- Automatic parking operating condition

Start the engine, close driver side door and fasten driver side seat belt.

- Turn on automatic parking

When automatic parking conditions are met, press automatic parking button and indicator on automatic parking button comes on, which indicates automatic parking function is turned on.

- Activate automatic parking

With automatic parking function turned on, vehicle stops from moving status after depressing brake pedal, automatic parking function is activated and green automatic parking system indicator on instrument cluster comes on.

When vehicle is stationary and depressing brake pedal, while automatic parking function is turned on and automatic parking conditions are met, automatic parking function is enabled and green automatic parking system indicator on instrument cluster comes on.

- Turn off automatic parking

With automatic parking function turned on, press automatic parking button to turn off automatic parking function and indicator on automatic parking button goes off, which indicates vehicle has exited automatic parking function.

With automatic parking function activated, press automatic parking button to turn off automatic parking function. Both green automatic parking system indicator on instrument cluster and indicator on automatic parking button go off, which indicates vehicle has exited automatic parking function and turned to parking brake function.

- Release automatic parking

Automatic parking releasing method is the same as that of electronic parking, including manual and automatic releasing operations.

Caution:

- Be sure to turn automatic parking function off before driving into car washing room.
- Be sure to observe safety regulations to park the vehicle properly, avoid hurting yourself and pedestrian.

- Slowly depress the accelerator pedal, as it is normal that there is delay for the automatic releasing of automatic parking.
- After engine starts, automatic parking system can not be entered if driver side seat belt is unfastened or driver side door is not closed.
- When automatic parking function is activated, open driver side door or unfasten driver side seat belt, then automatic parking turns to electronic parking.
- For MT model, fully depress the clutch pedal and shift to D/R position and then depress accelerator pedal to release automatic parking. If vehicle is driving on a uphill slope, it is suggested to depress accelerator pedal under half-linkage state to perform hill starting.
- With automatic parking turned on, when vehicle is stopped moving by brake and kept in stationary state, automatic parking system will apply parking brake automatically while transmission is in D or R position. It is suggested to shift to N in short time parking, and shift to P in long time parking.
- With automatic parking function turned on, when opening driver side door or unfastening driver side seat belt, it will exit automatic parking function. When driver side door is closed or driver side seat belt is fastened again, automatic parking function is turned on again.

Warning:

To prevent vehicle from moving accidentally, when vehicle is in automatic parking status, it is necessary to confirm the gear position before starting vehicle by depressing accelerator pedal.

Sudden braking function

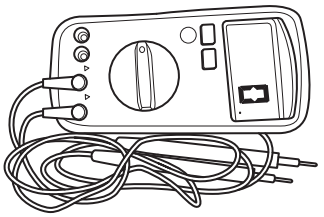
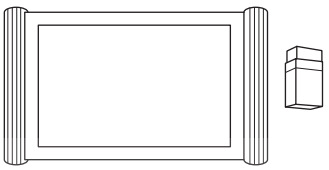
If foot brake is faulty, pull up and hold the electronic parking switch to forcibly apply brake through parking brake. The red electronic parking system indicator on instrument cluster flashes during sudden braking. To exit sudden braking, release the electronic parking switch.

Warning:

- When sudden braking function is triggered, a "drone" sound will be heard, it is normal.
- During sudden braking, electronic parking performs braking operation in a constant deceleration, which may be different from driver's expected deceleration and the braking distance may be different as well.
- Use this function with caution during normal driving. Prevent other passengers from touching this switch by mistake while driving. Otherwise it may lead to an accident.
- Turn on sudden braking function only when the foot brake is faulty or brake pedal is stuck. Because Electronic Stability Program (ESP) system and its component can not exceed the physical limit of road adhesion. Turning on sudden braking function when driving on a curve, dangerous road area, heavy traffic road or in bad weather may lead to drift, sideslip or pull. Beware of accident.

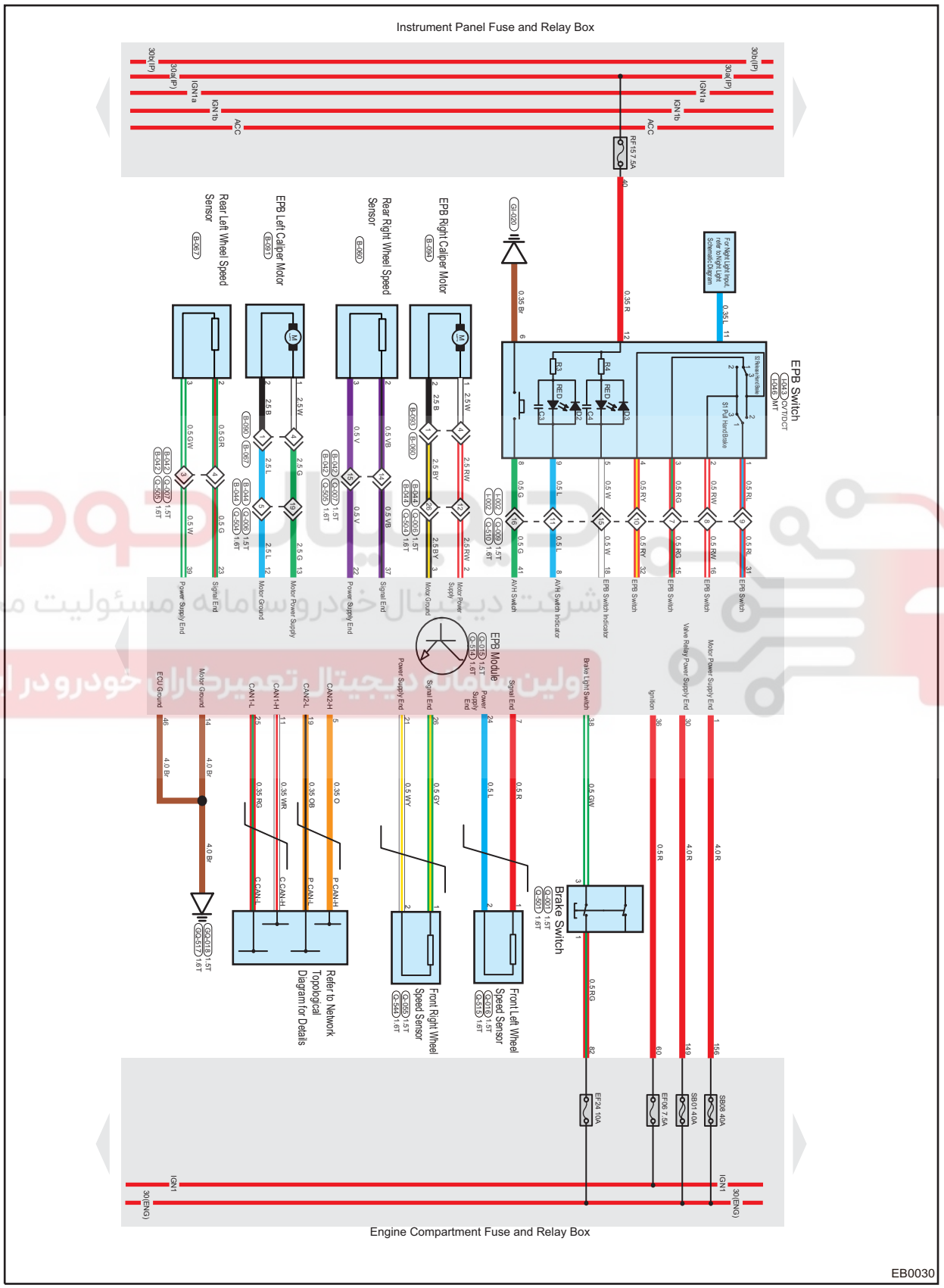
Special Tools and Equipment

General Tools

Tool Name	Tool Drawing
Digital Multimeter	 RCH0002006
Diagnostic Tester	 RCH0001006

System Circuit Diagram

Electronic Parking Brake System (EPB)

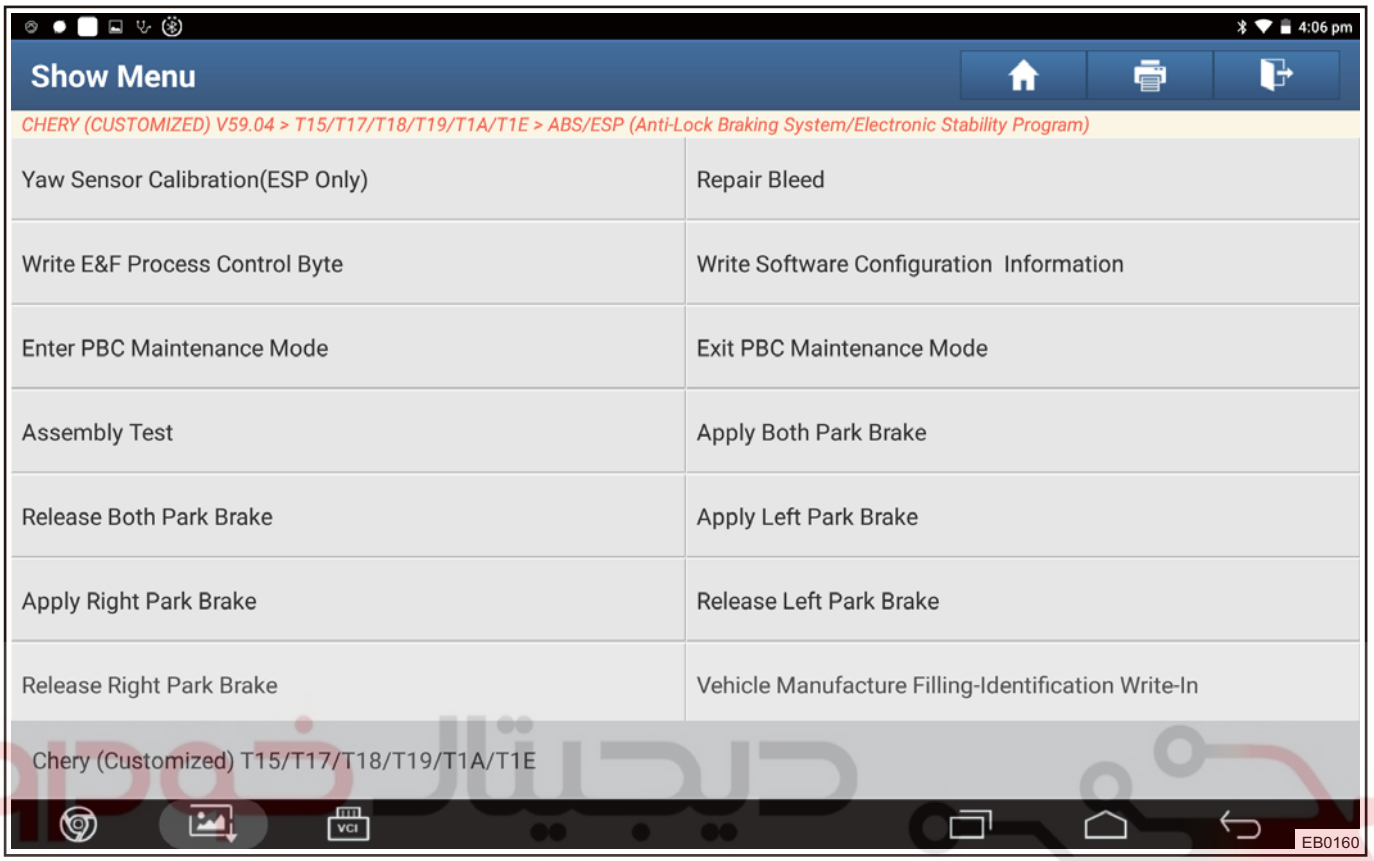


Diagnosis Information and Procedures

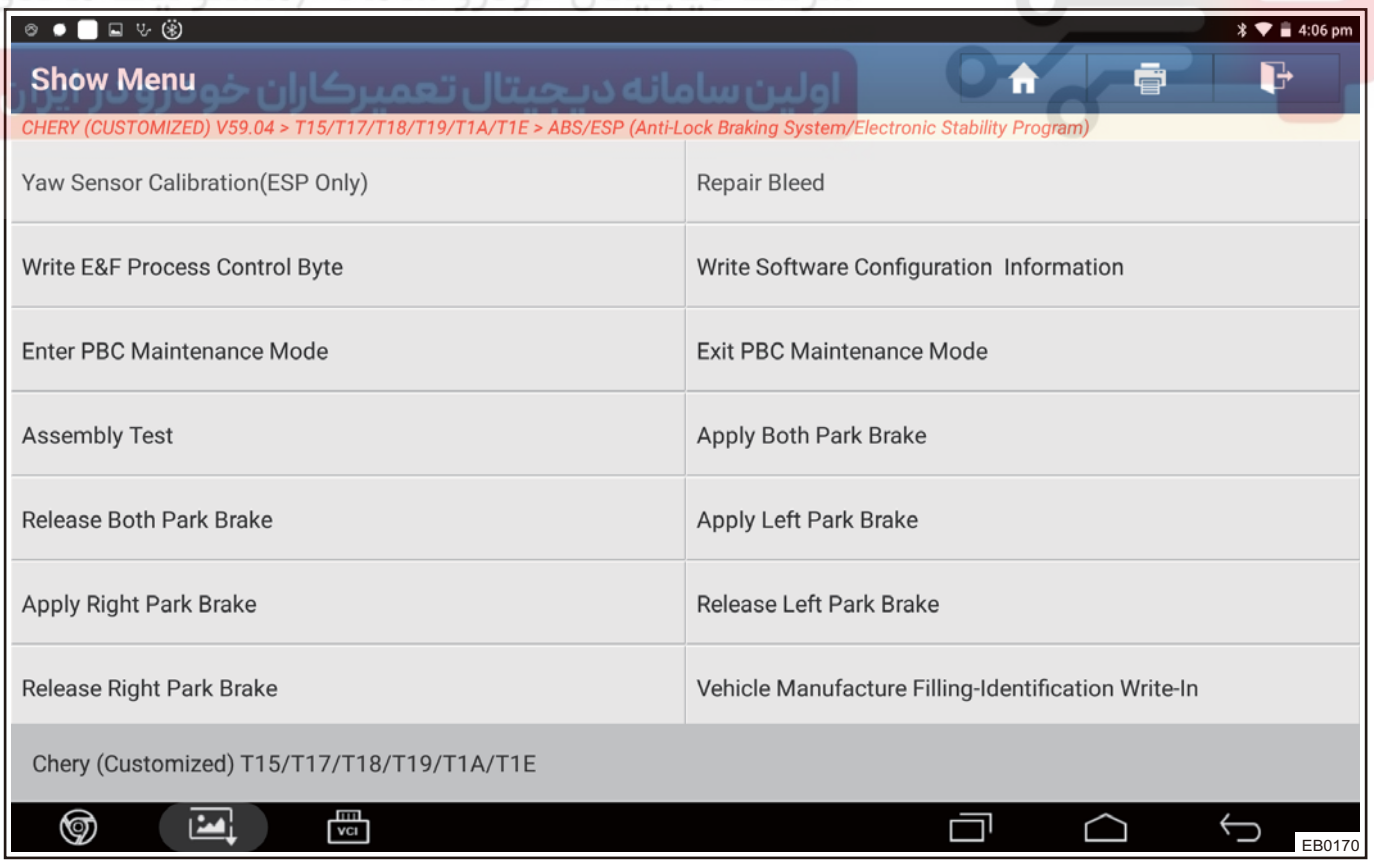
Special Function

1. Click "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)".
2. Click "Special Function".
3. Click "Assembly Test" to complete installation of related parts and perform assembly inspection.

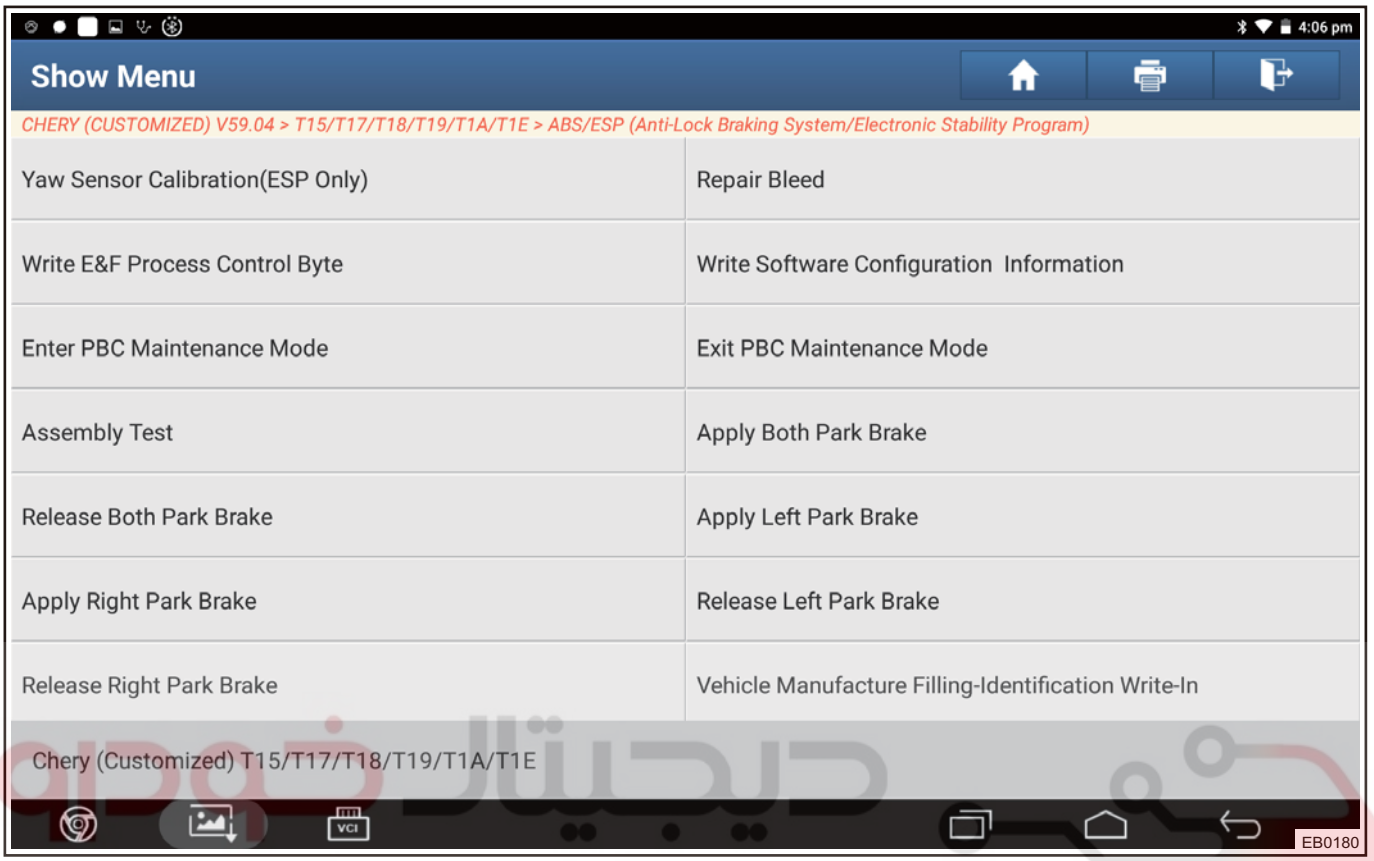
4. Click "Apply Both Park Brake" and perform active test.



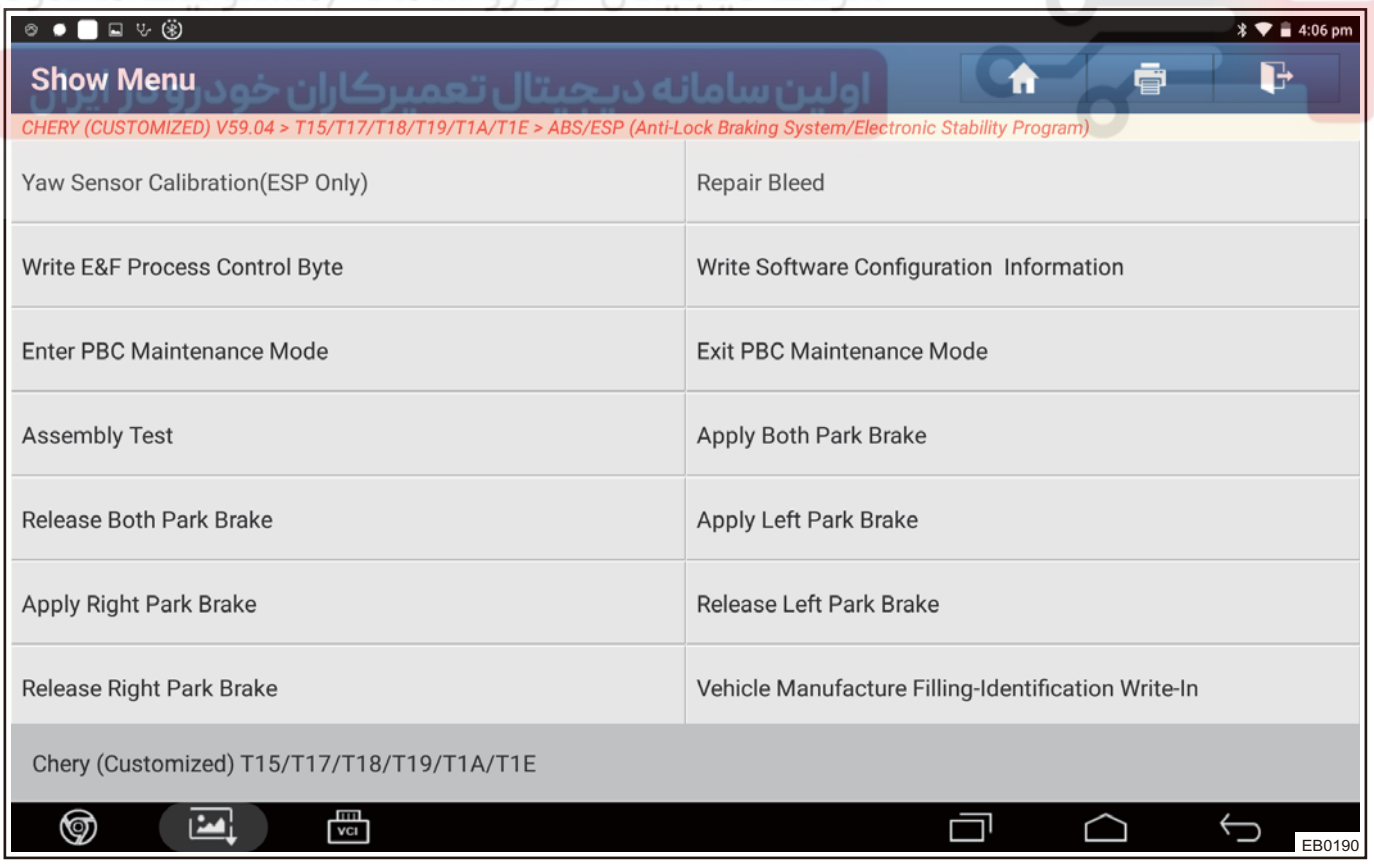
5. Click "Release Both Park Brake" and perform active test.



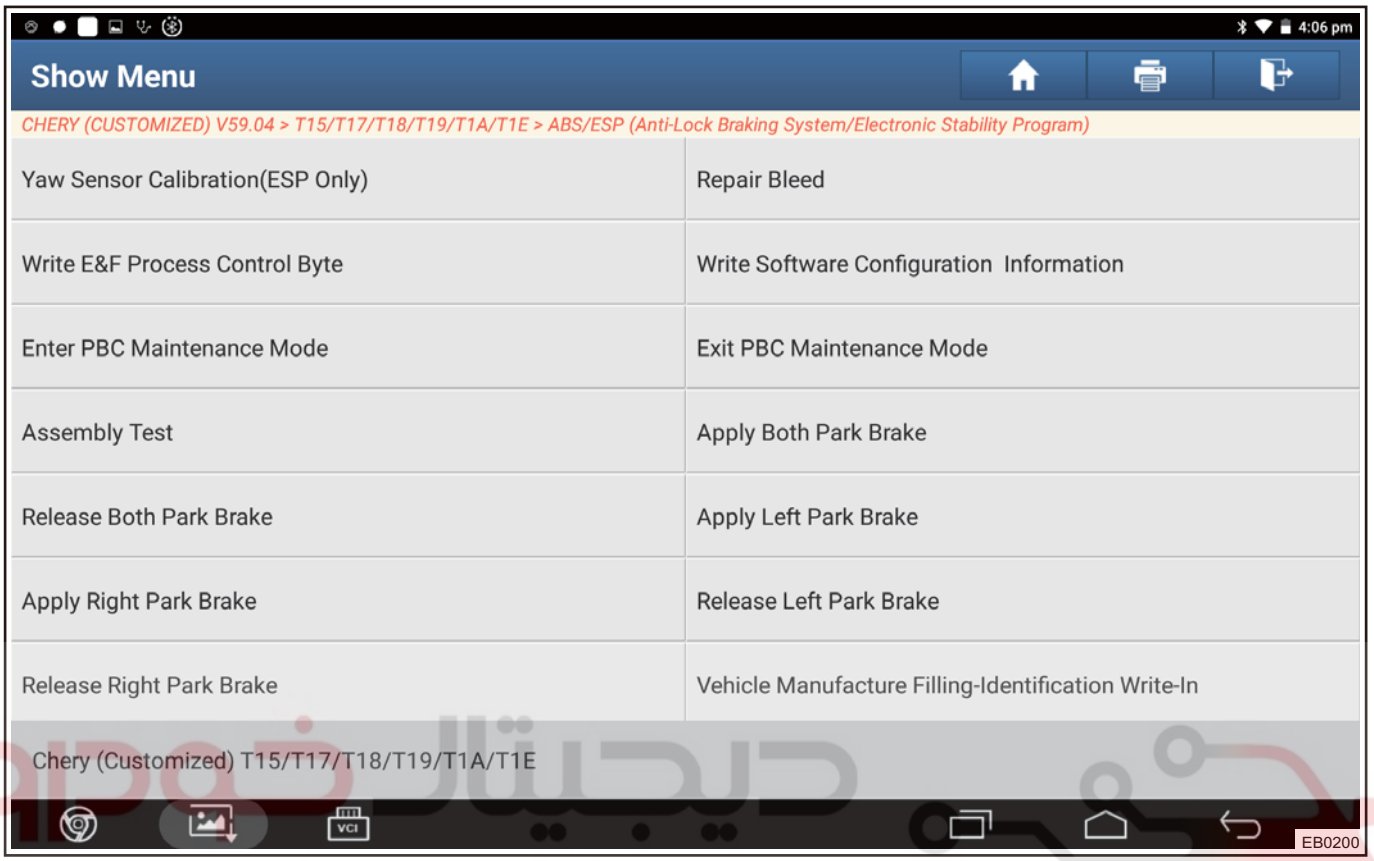
6. Click "Apply Left Park Brake" and perform active test.



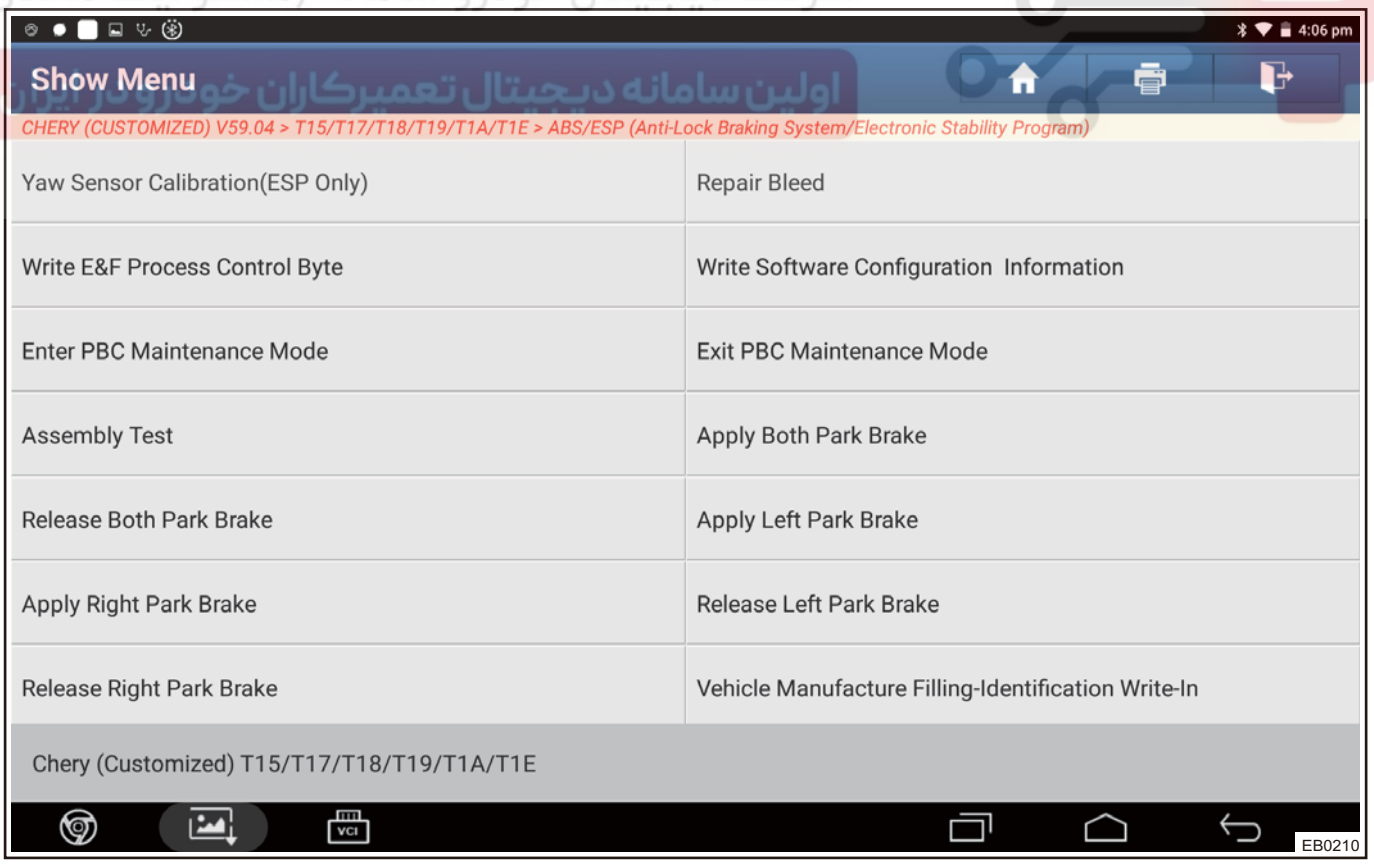
7. Click "Apply Right Park Brake" and perform active test.



8. Click "Release Left Park Brake" and perform active test.



9. Click "Release Right Park Brake" and perform active test.



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	Possible Cause
EPB malfunction light comes on	Electronic control execution unit
	EPB module assembly
Unable to release/apply parking brake	Wire harness fault
	Fuse malfunctions
	Electronic control execution unit
	Wheel speed signal failure
	EPB module assembly
Switch failure	Switch malfunction
	Wire harness fault
	Fuse malfunctions
	EPB module
CAN network failure	Fuse
	Wire harness fault
	Central gateway (CGW)
	EPB module assembly

Diagnosis Procedure

Hint:

Use following procedures to troubleshoot the EPB system.

1	**Vehicle brought to workshop**

NEXT

2	**Check battery voltage**

Check if battery voltage is normal.

OK

Standard voltage: Not less than 12 V.

Result

Result	Go to
OK	A
NG	B

B → **Replace battery**

A

3	**Customer problem analysis**

NEXT

4	Read DTCs

Result

Result	Go to
DTC exists	A
No DTC	B

B → Repair according to Problem Symptoms Table

A

5	Read DTCs (current DTC and history DTC)

Result

Result	Go to
DTC exists	A
No DTC	B

B → Troubleshoot according to intermittent DTC Troubleshooting

A

6	Repair according to Diagnostic Trouble Code (DTC) Chart

NEXT

7	Adjust, repair or replace

NEXT

8	Conduct test and confirm malfunction has been repaired

NEXT → End

DTC Confirmation Procedure

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

- Turn ENGINE START STOP switch to OFF.
- Connect diagnostic tester (the latest software).
- Turn ENGINE START STOP switch to ON.
- Use the diagnostic tester to record and clear DTCs stored in system.
- Turn ENGINE START STOP switch to OFF and wait several seconds.
- Turn ENGINE START STOP switch to ON and check the DTCs in system again.
- If DTC is detected, it indicates current malfunction.
- If no DTC is detected, malfunction indicated by the DTC is intermittent.

Intermittent DTC Troubleshooting

- Check if connector is loose.

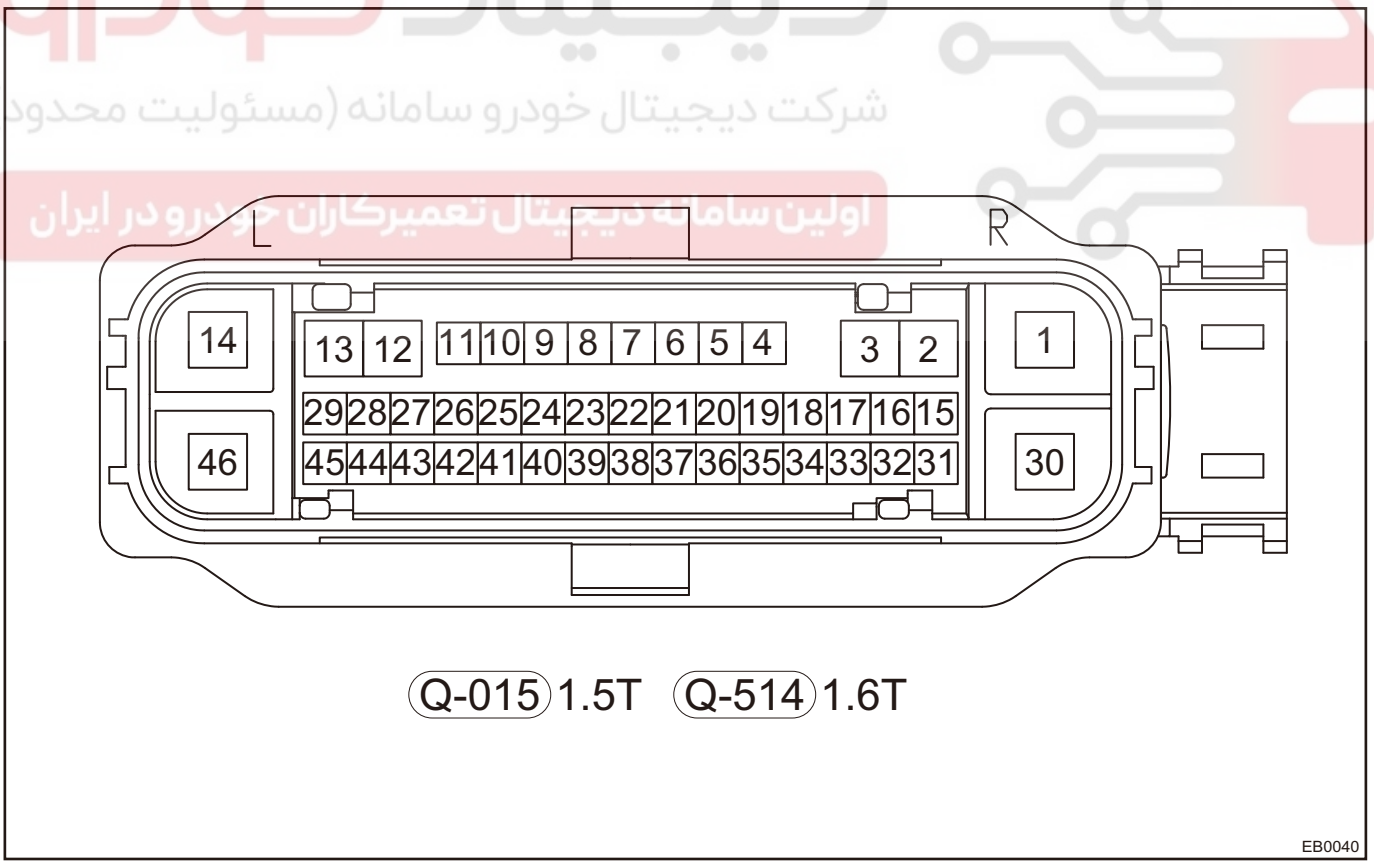
- Check if wire harness is worn, pierced, pinched or partially broken.
- Wiggle related wire harness and connector and observe if signal in related circuit is interrupted.
- If possible, try to duplicate conditions under which DTC was set.
- Look for data that has changed or DTC to reset during wiggle test.
- Check 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

Ground points are very important to the proper operation of circuits. Ground points are often exposed to moisture, dirt and other corrosive environments. Corrosion (rust) may increase load resistance. This situation may change the way in which a circuit works. Circuits are very sensitive to proper grounding. A loose or corroded ground can affect the control circuit. Check the ground points as follows:

- Remove ground bolt or nut.
- Check all contact surfaces for tarnish, dirt and rust, etc.
- Clean as necessary to ensure that contact is in good condition.
- Reinstall ground bolt or nut securely.
- Check if add-on accessories interfere with ground circuit.
- If several wire harnesses are crimped into one ground terminal, check for proper crimps. Make sure that all wire harnesses are clean and securely fastened while providing a good ground path.

EPB Module Assembly Terminal List



Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
1	Motor Power Supply End (Positive)	24	Front Left Wheel Speed Sensor Power Supply
2	Right Caliper Motor Power Supply Wire	25	CAN2 L
3	Right Caliper Motor Ground Wire	26	Front Right Wheel Speed Sensor Signal Wire

Terminal No.	Terminal Definition	Terminal No.	Terminal Definition
4	/	27	/
5	CAN H	28	/
6	/	29	/
7	Front Left Wheel Speed Sensor Signal Wire	30	Power Supply
8	AUTO HOLD Switch Indicator	31	EPB Switch Pin 1
9	Vehicle Speed Output	32	EPB Switch Pin 4
10	HDC Switch Indicator	33	/
11	CAN2 H	34	Front Right Wheel Speed Output
12	Left Caliper Motor Ground Wire	35	/
13	Left Caliper Motor Power Supply Wire	36	Ignited
14	Motor Ground	37	Rear Right Wheel Speed Sensor Signal Wire
15	EPB Switch Pin 3	38	Brake Switch
16	EPB Switch Pin 6	39	Rear Left Wheel Speed Sensor Power Supply Wire
17	HDC Switch	40	/
18	EPB Switch Indicator	41	AUTO HOLD Switch
19	CAN L	42	/
20	/	43	ESP_OFF Switch
21	Front Right Wheel Speed Sensor Power Supply	44	/
22	Rear Right Wheel Speed Sensor Power Supply	45	/
23	Rear Left Wheel Speed Sensor Signal Wire	46	ECU Ground

Diagnostic Trouble Code (DTC) Chart

DTC	DTC Definition
C1800-19	Left Actuator - Circuit Current Above Threshold-Circuit Current Above Threshold
C1800-72	Left Actuator - Release Failed-Actuator Stuck Open
C1800-73	Left Actuator - Apply Failed-Actuator Stuck Closed
C1800-91	Left Actuator - Wrong Operating Characteristics Detect-Parametric
C1800-92	Left Actuator - High Mechanical Resistance-Performance or Incorrect Operation
C1800-93	Left Actuator - No Motor Start Detected-No Operation
C1800-97	Left Actuator - Action Limited-Component or System Operation Obstructed or Blocked
C1801-19	Right Actuator - Circuit Current Above Threshold-Circuit Current Above Threshold
C1801-72	Right Actuator -Release Failed-Actuator Stuck Open
C1801-73	Right Actuator - Apply Failed-Actuator Stuck Closed
C1801-74	Right Actuator - Actuator Slipping (Apply TimeOut)-Actuator Slipping
C1801-91	Right Actuator - Wrong Operating Characteristics Detect-Parametric
C1801-92	Right Actuator - High Mechanical Resistance-Performance or Incorrect Operation
C1801-93	Right Actuator - No Motor Start Detected-No Operation
C1801-97	Right Actuator - Action Limited-Component or System Operation Obstructed or Blocked
C1802-16	Supply Voltage - Low Voltage-Circuit Voltage Below Threshold
C1802-17	Supply Voltage - Over Voltage-Circuit Voltage Above Threshold
C1802-44	PBC EEPROM Fault-Data Memory Failure
C1803-95	Assembly Test-Incorrect Assembly
C1804-53	Maintenance Mode-Deactivated
C1805-94	Hydric Support Failed-Unexpected Operation
C1806-01	EPB Button Line Failure-General Electrical Failure
C1806-04	EPB Button Always Pushed or Pulled-System Internal Failure
C1824-01	EPB Left Actuator Electrical Failure-General Electrical Failure
C1825-01	EPB Right Actuator Electrical Failure-General Electrical Failure

DTC	DTC Definition
C1822-00	EPB Left Actuator Failure-No Sub Type Information
C1821-00	EPB Right Actuator Failure-No Sub Type Information
C1824-1E	EPB Left Actuator Shunt On Line or ECU-Circuit Resistance Out of Range
C1825-1E	EPB Right Actuator Shunt On Line or ECU-Circuit Resistance Out of Range
C1830-00	EPB Left Actuator CAT-No Sub Type Information
C1833-00	EPB Right Actuator Unintended Run-No Sub Type Information
C1831-00	EPB Right Actuator CAT-No Sub Type Information
C186D-44	SupervisionFail-Data Memory Failure
C1832-00	EPB Left Actuator Unintended Run-No Sub Type Information
C1806-16	EPB Button Under Voltage-Circuit Voltage Below Threshold
C1823-00	EPB Motor Enable Line Violation-No Sub Type Information
C1823-00	EPB Motor Enable Line Violation-No Sub Type Information
C1807-98	Disc Over Heat-Component or System Over Temperature
C1826-01	EPB Actuator Driver Gen Electrical Failure-General Electrical Failure
C1808-12	Circuit Short To Battery of Left Rear caliper-Circuit Short To Battery
C1808-11	Circuit Short To Ground of Left Rear caliper-Circuit Short To Ground
C1808-13	Circuit Open of Left Rear caliper-Circuit Open
C1815-12	Circuit Short To Battery of Right Rear caliper-Circuit Short To Battery
C1815-11	Circuit Short To Ground of Right Rear caliper-Circuit Short To Ground
C1815-13	Circuit Open of Right Rear caliper-Circuit Open
C156B-00	EPBASIC_GenericError-No Sub Type Information
C1546-04	EPB_SupplyFault-System Internal Failure

DTC	C1802-16	Supply Voltage - Low Voltage-Circuit Voltage Below Threshold

Description

DTC	DTC Definition	Possible Cause
C1802-16	Supply Voltage - Low Voltage-Circuit Voltage Below Threshold	• Battery voltage is too low or battery is damaged • ECU internal fault

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

1	Check battery voltage

Standard voltage: Not less than 12 V.

Result

Result	Go to
OK	A
NG	B

B → **Repair charging system/replace battery**

A

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1802-17	Supply Voltage - Over Voltage-Circuit Voltage Above Threshold

Description

DTC	DTC Definition	Possible Cause
C1802-17	Supply Voltage - Over Voltage-Circuit Voltage Above Threshold	• Battery voltage is too high or battery is damaged • ECU internal fault

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

1	Check battery voltage

Standard voltage: Not higher than 16.5 V.

Result

Result	Go to
OK	A
NG	B

B → Repair charging system

A

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

B → Replace EPB module assembly

A → System operates normally

DTC	C1803-95	Assembly Test-Incorrect Assembly

Description

DTC	DTC Definition	Possible Cause
C1803-95	Assembly Test-Incorrect Assembly	• Assembly test is not performed • Power is not turned off normally after performing assembly test

Caution:

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

1	Perform assembly test

Turn off power normally after performing assembly test using diagnostic tester.

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.

(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.

(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1804-53	Maintenance Mode-Deactivated

Description

DTC	DTC Definition	Possible Cause
C1804-53	Maintenance Mode-Deactivated	Enter service mode and not exit

Caution:

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

1	Perform assembly test

Turn off power normally after exiting service mode using diagnostic tester.

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

37

Result

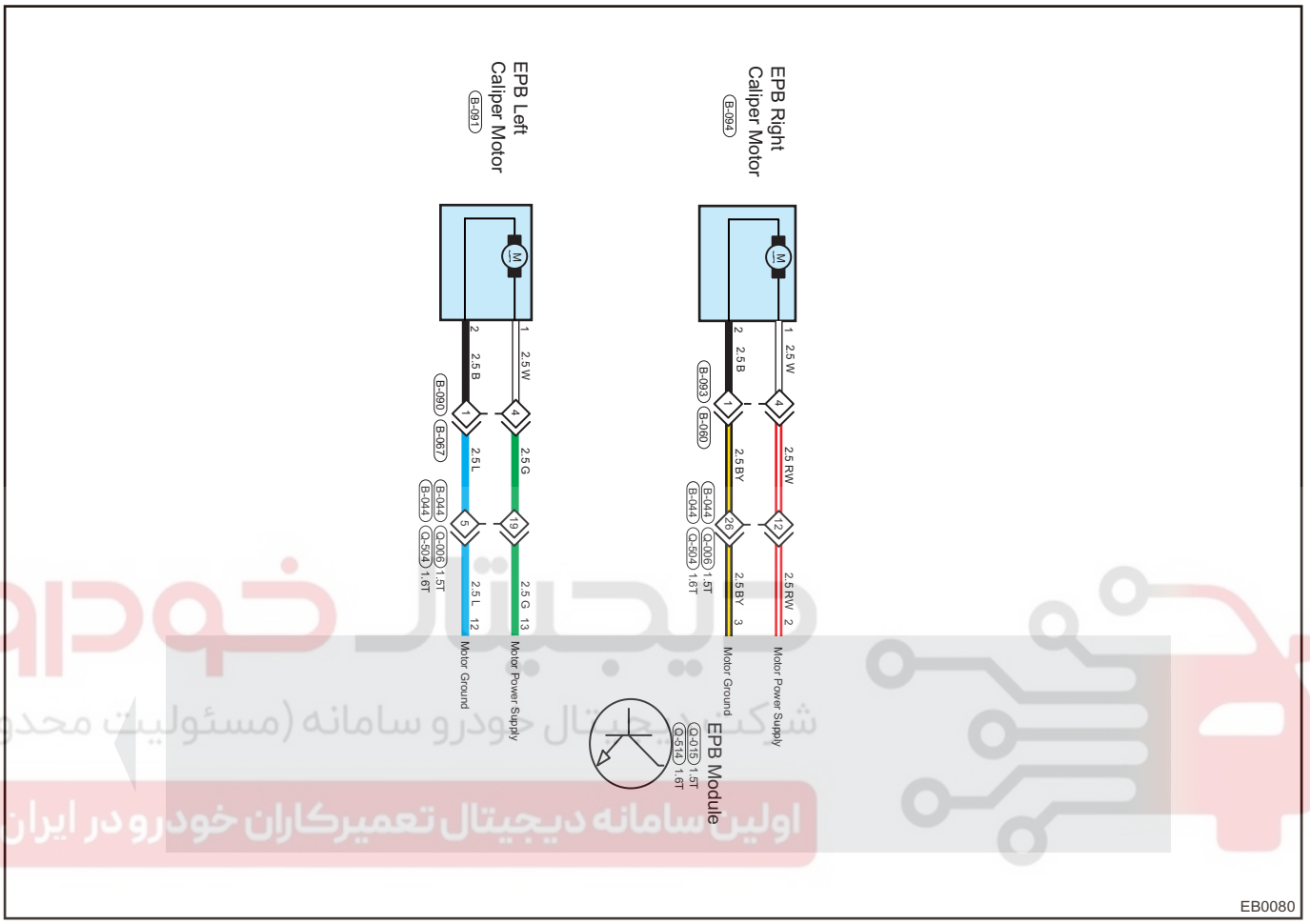
Result	Go to
OK	A
NG	B

B → Replace EPB module assembly

A → System operates normally

DTC	C1826-01	EPB Actuator Driver Gen Electrical Failure-General Electrical Failure

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1826-01	EPB Actuator Driver Gen Electrical Failure-General Electrical Failure	• Electronic control execution unit • ECU internal fault

Caution:

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

1	Perform electronic control execution unit active test

Perform rear left/right brake caliper active test using diagnostic tester.

Result

Result	Go to
OK	A
NG	B

B	Replace electronic control execution unit

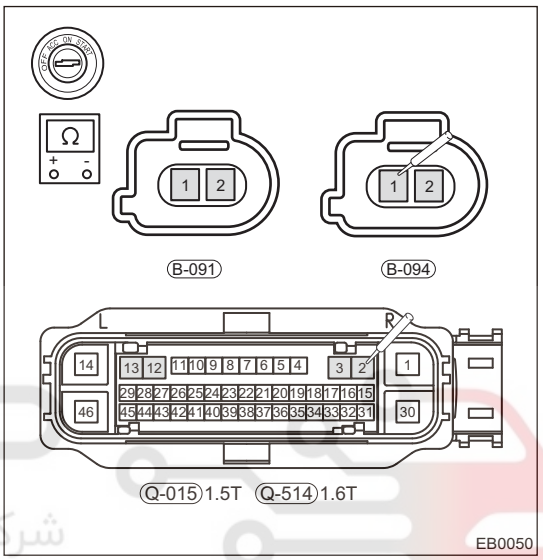
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

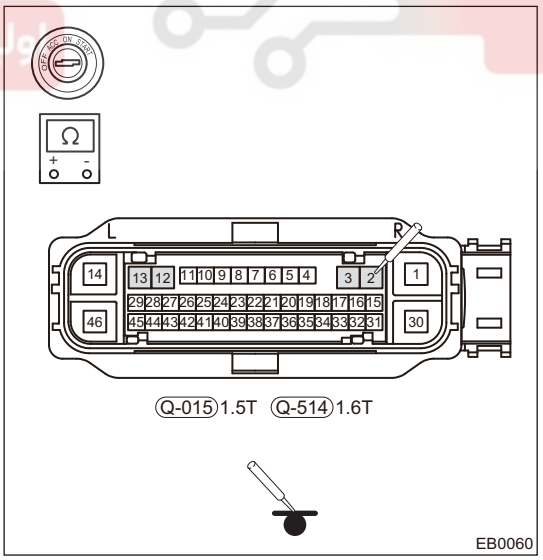
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞

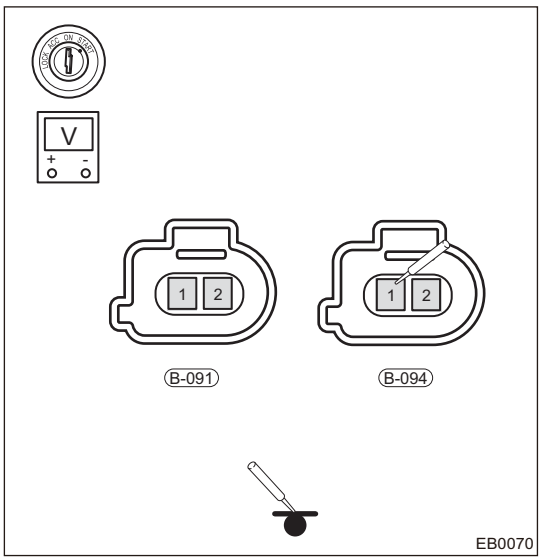


(i) Connect the negative battery cable.
(j) Turn ENGINE START STOP switch to ON.

(k) Using a digital multimeter, check if voltage between electronic control execution unit connector B-091 (1), B-091 (2),B-094 (1), B-094 (2) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
B-091 (1) - Body ground	0 V
B-091 (2) - Body ground	0 V
B-094 (1) - Body ground	0 V
B-094 (2) - Body ground	0 V



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

37

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1807-98	Disc Over Heat-Component or System Over Temperature

Description

DTC	DTC Definition	Possible Cause
C1807-98	Disc Over Heat-Component or System Over Temperature	• Electronic control execution unit • ECU internal fault

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

1	Perform electronic control execution unit active test

(a) Perform rear left/right brake caliper active test using diagnostic tester.
Result

Result	Go to
OK	A
NG	B

B → Replace electronic control execution unit

A

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

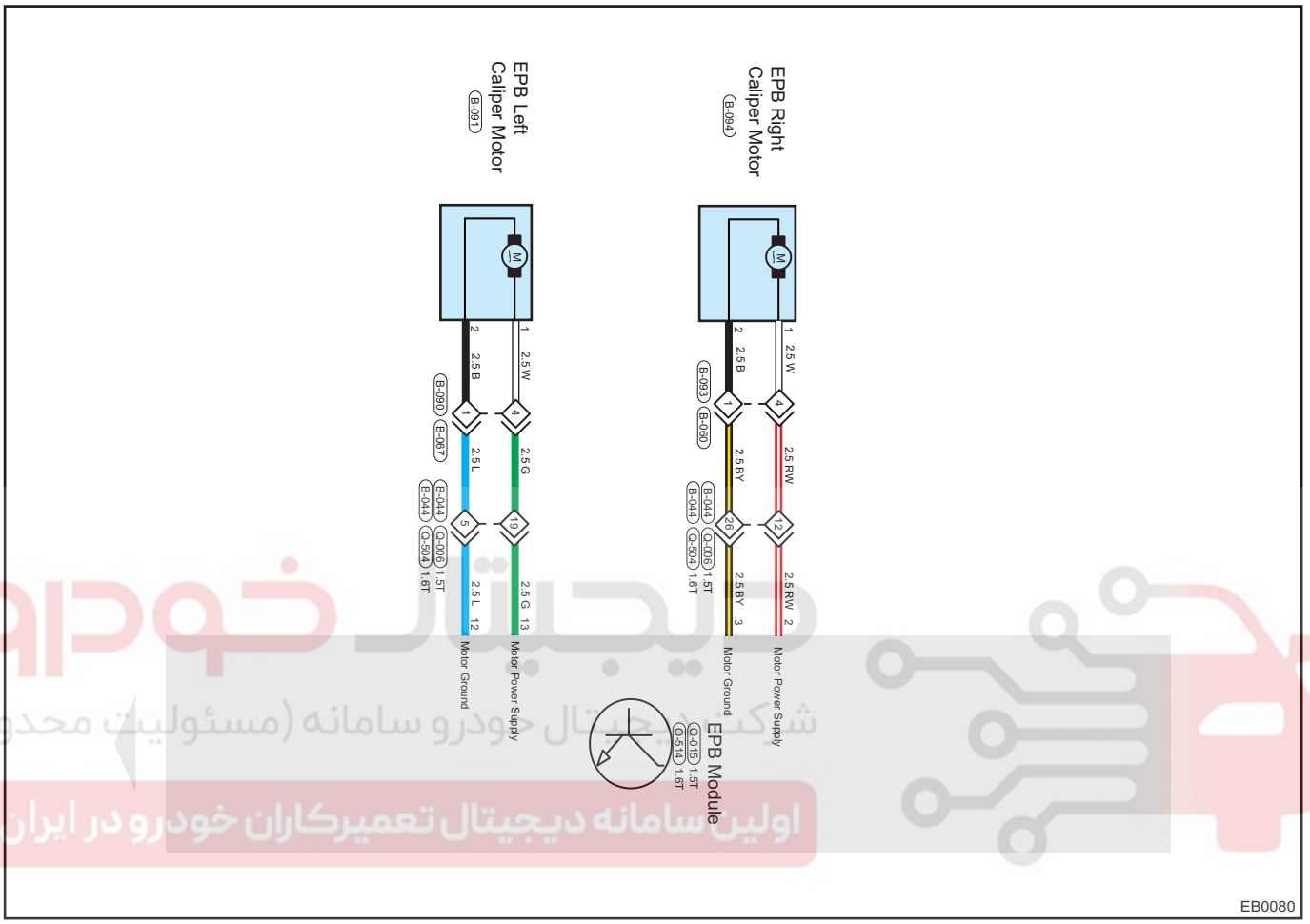
Result	Go to
OK	A
NG	B

B → Replace EPB module assembly

A → System operates normally

DTC	C1823-00	EPB Motor Enable Line Violation-No Sub Type Information

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1823-00	EPB Motor Enable Line Violation-No Sub Type Information	• Electronic control execution unit • ECU internal fault

Caution:

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

1	Perform electronic control execution unit active test

(a) Perform rear left/right brake caliper active test using diagnostic tester.

Result

Result	Go to
OK	A
NG	B

B	Replace electronic control execution unit

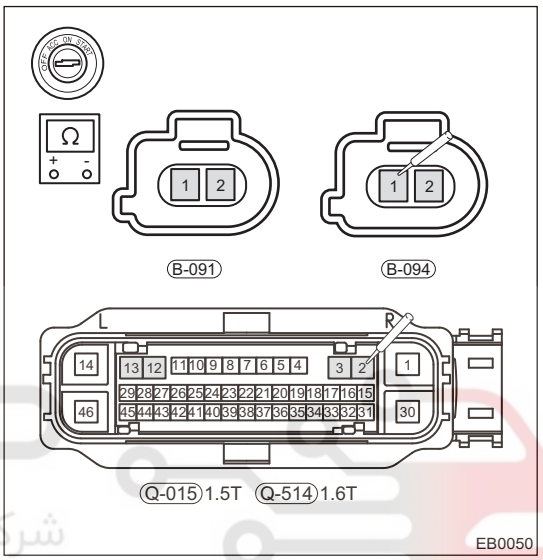
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



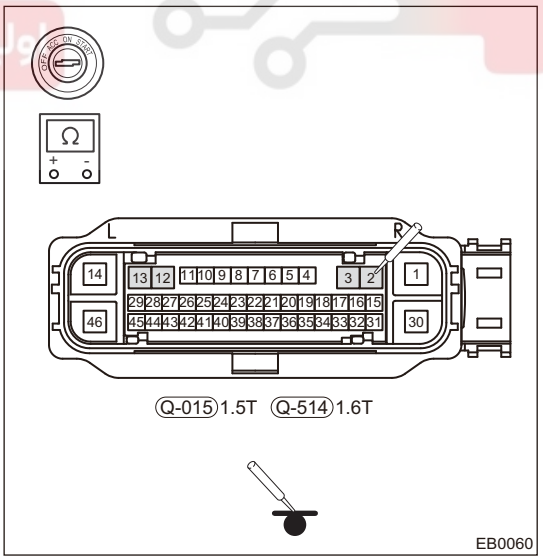
(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞

Result

Result	Go to
OK	A
NG	B



B → **Repair/replace related wire harness and connector**

A

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

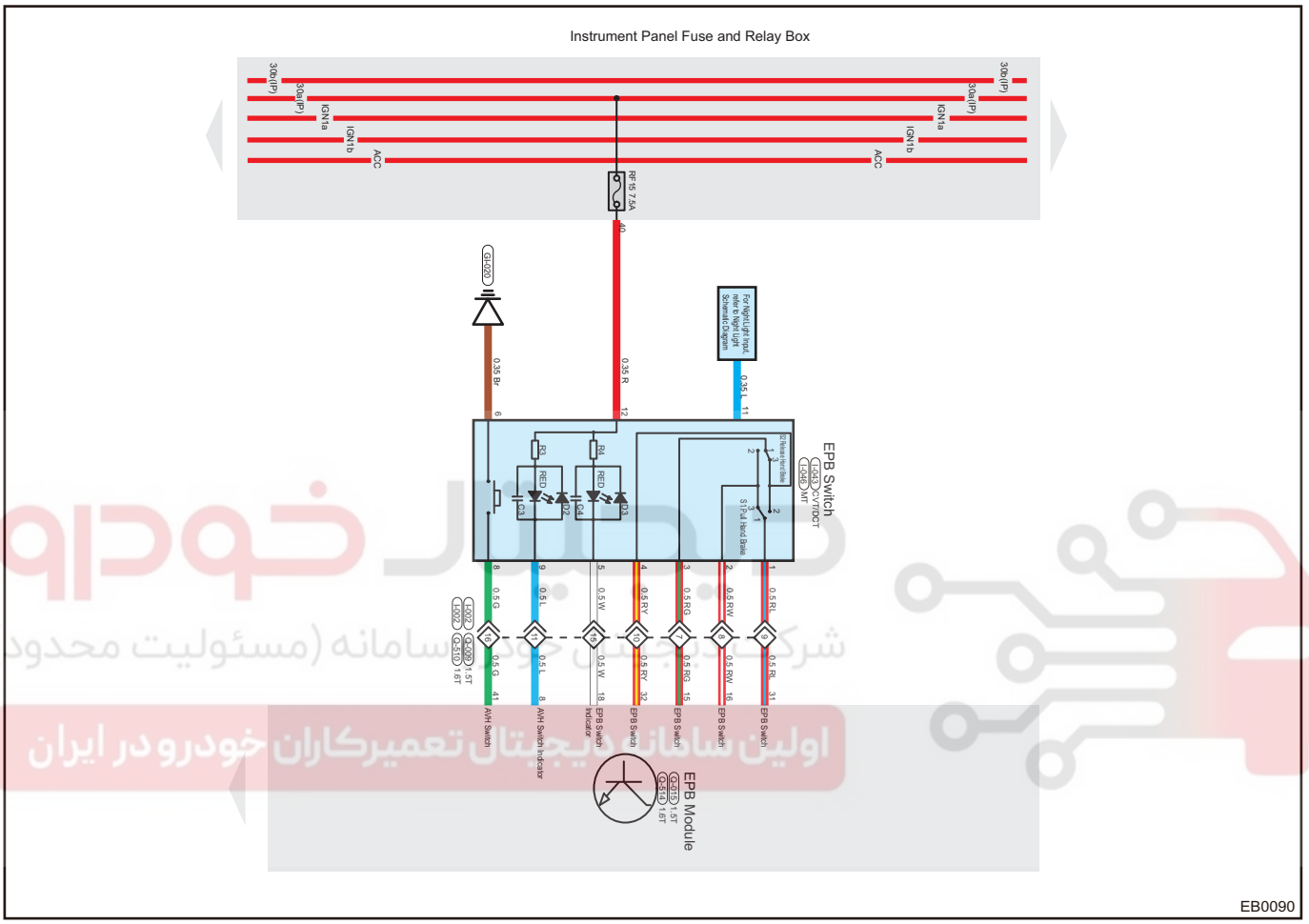
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1806-01	EPB Button Line Failure-General Electrical Failure

DTC	C1806-16	EPB Button Under Voltage-Circuit Voltage Below Threshold

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1806-01	EPB Button Line Failure-General Electrical Failure	• EPB switch failure • ECU internal fault
C1806-16	EPB Button Under Voltage-Circuit Voltage Below Threshold	

Caution:

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

1	Check battery voltage

Standard voltage: Not less than 12 V.

Result

Result	Go to
OK	A
NG	B

B → **Repair charging system/replace battery**

A

2	Check EPB switch

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB switch connector I-043/I-046.
(d) Check if EPB switch is stuck or pushed in by other objects.
(e) When EPB switch is not pressed, using a digital multimeter, check if continuity between EPB switch (1), (2), (3) and (4) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
EPB switch (2) - EPB switch (1)	⩽ 1 Ω
EPB switch (4) - EPB switch (3)	⩽ 1 Ω

(f) When EPB switch is pressed, using a digital multimeter, check if continuity between EPB switch (1) and (3) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
EPB switch (3) - EPB switch (1)	⩽ 1 Ω

(g) When EPB switch is pulled, using a digital multimeter, check if continuity between EPB switch (2) and (4) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
EPB switch (2) - EPB switch (4)	⩽ 1 Ω

Result

Result	Go to
OK	A
NG	B

B → **Replace EPB switch**

A

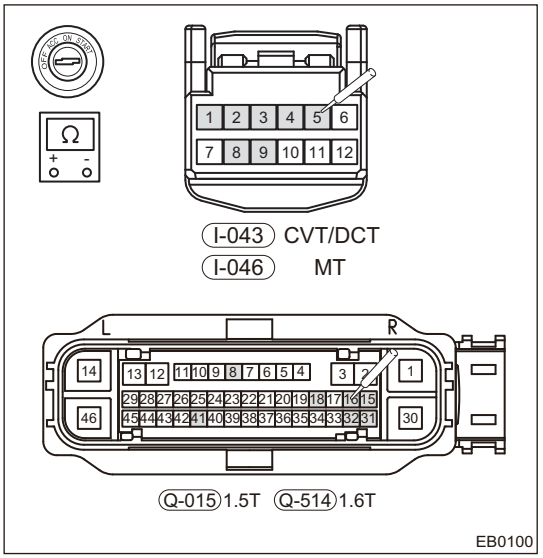
3	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect the EPB switch connector I-043/I-046.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.

(g) Using a digital multimeter, check if continuity between EPB module assembly connectors Q-015/Q-514 (31), Q-015/Q-514 (16), Q-015/Q-514 (15), Q-015/Q-514 (32), Q-015/Q-514 (18), Q-015/Q-514 (8), Q-015/Q-514 (41) and EPB switch connectors I-043/I-046 (1), I-043/I-046 (2), I-043/I-046 (3), I-043/I-046 (4), I-043/I-046 (5), I-043/I-046 (9), I-043/I-046 (8) is normal according to the table below.

OK

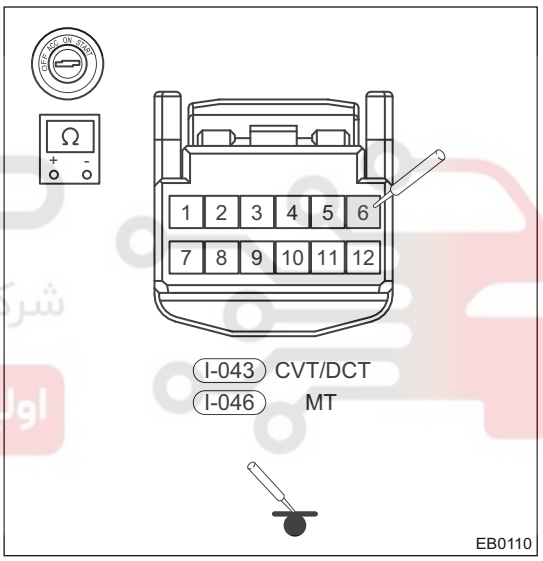
Multimeter Connection	Specified Condition
Q-015/Q-514 (31) - I-043/I-046 (1)	⩽ 1 Ω
Q-015/Q-514 (16) - I-043/I-046 (2)	⩽ 1 Ω
Q-015/Q-514 (15) - I-043/I-046 (3)	⩽ 1 Ω
Q-015/Q-514 (32) - I-043/I-046 (4)	⩽ 1 Ω
Q-015/Q-514 (18) - I-043/I-046 (5)	⩽ 1 Ω
Q-015/Q-514 (8) - I-043/I-046 (9)	⩽ 1 Ω
Q-015/Q-514 (41) - I-043/I-046 (8)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB switch connector I-043/I-046 (6) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
I-043/I-046 (6) - Body ground	⩽ 1 Ω



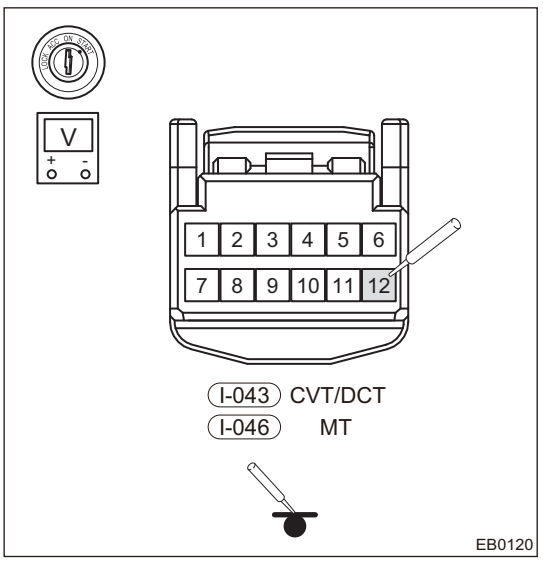
(i) Using a digital multimeter, check if voltage between EPB switch connector I-043/I-046 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
I-043/I-046 (12) - Body ground	Not less than 12V

Result

Result	Go to
OK	A
NG	B



B → **Repair/replace related wire harness and connector**

A

4	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

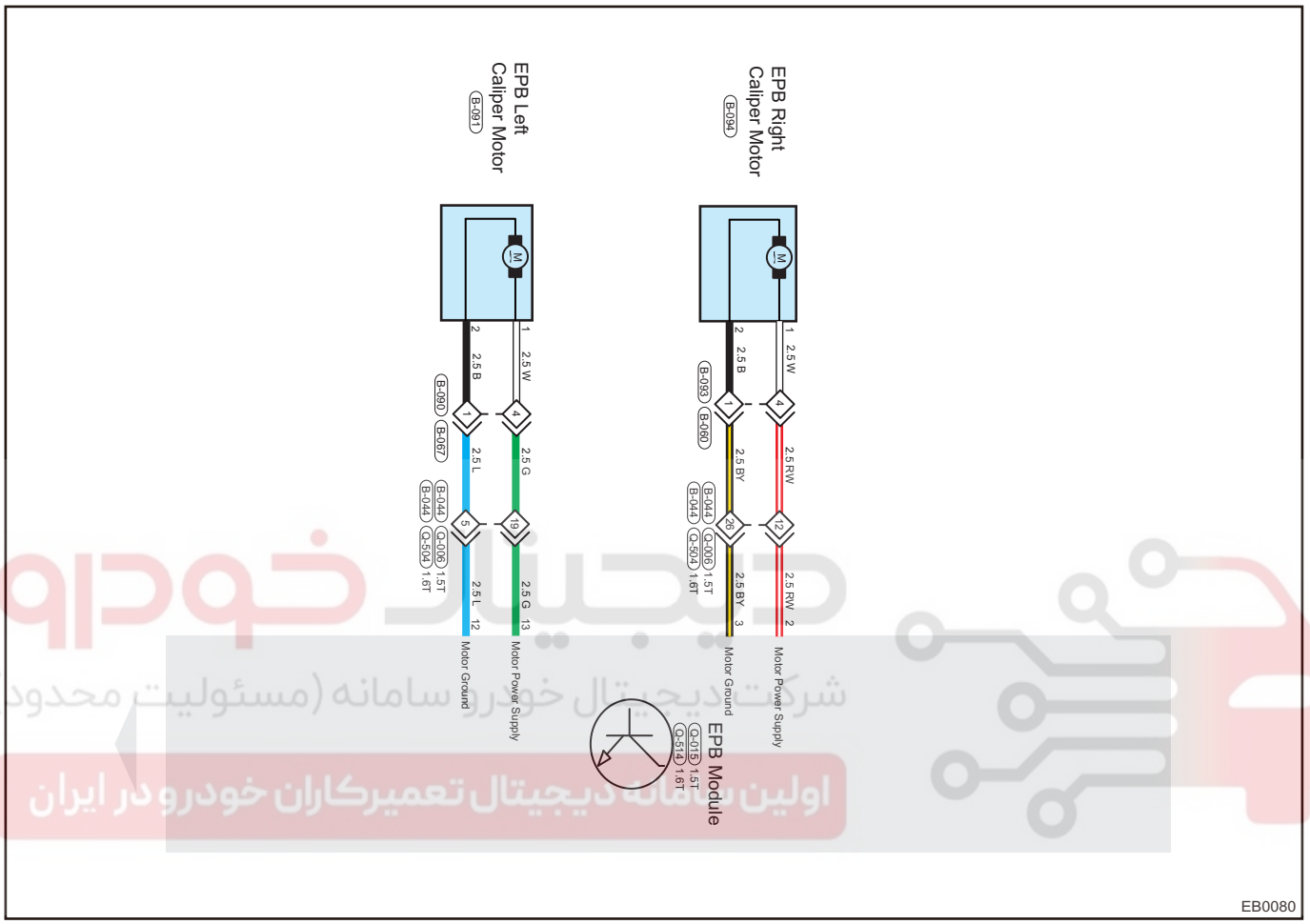
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1830-00	EPB Left Actuator CAT-No Sub Type Information

DTC	C1831-00	EPB Right Actuator CAT-No Sub Type Information

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1830-00	EPB Left Actuator CAT-No Sub Type Information	• Electronic control execution unit • ECU internal fault
C1831-00	EPB Right Actuator CAT-No Sub Type Information	

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

1	Perform electronic control execution unit active test

(a) Perform rear left/right brake caliper active test using diagnostic tester.
Result

Result	Go to
OK	A
NG	B

B → **Replace electronic control execution unit**

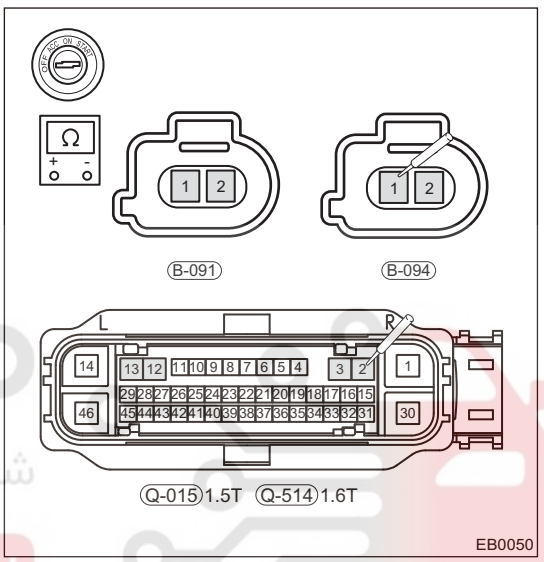
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

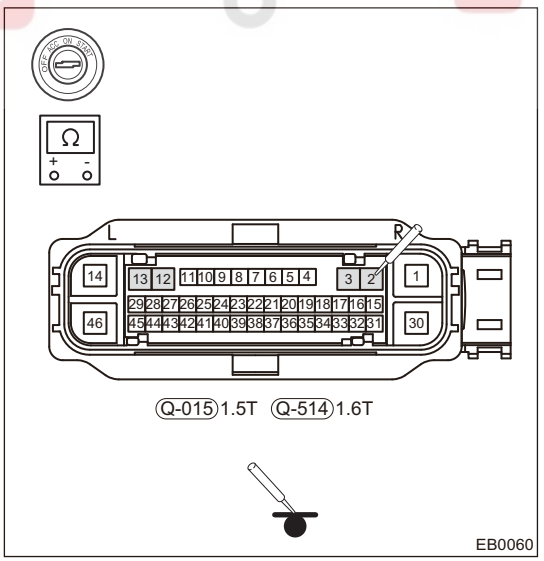
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

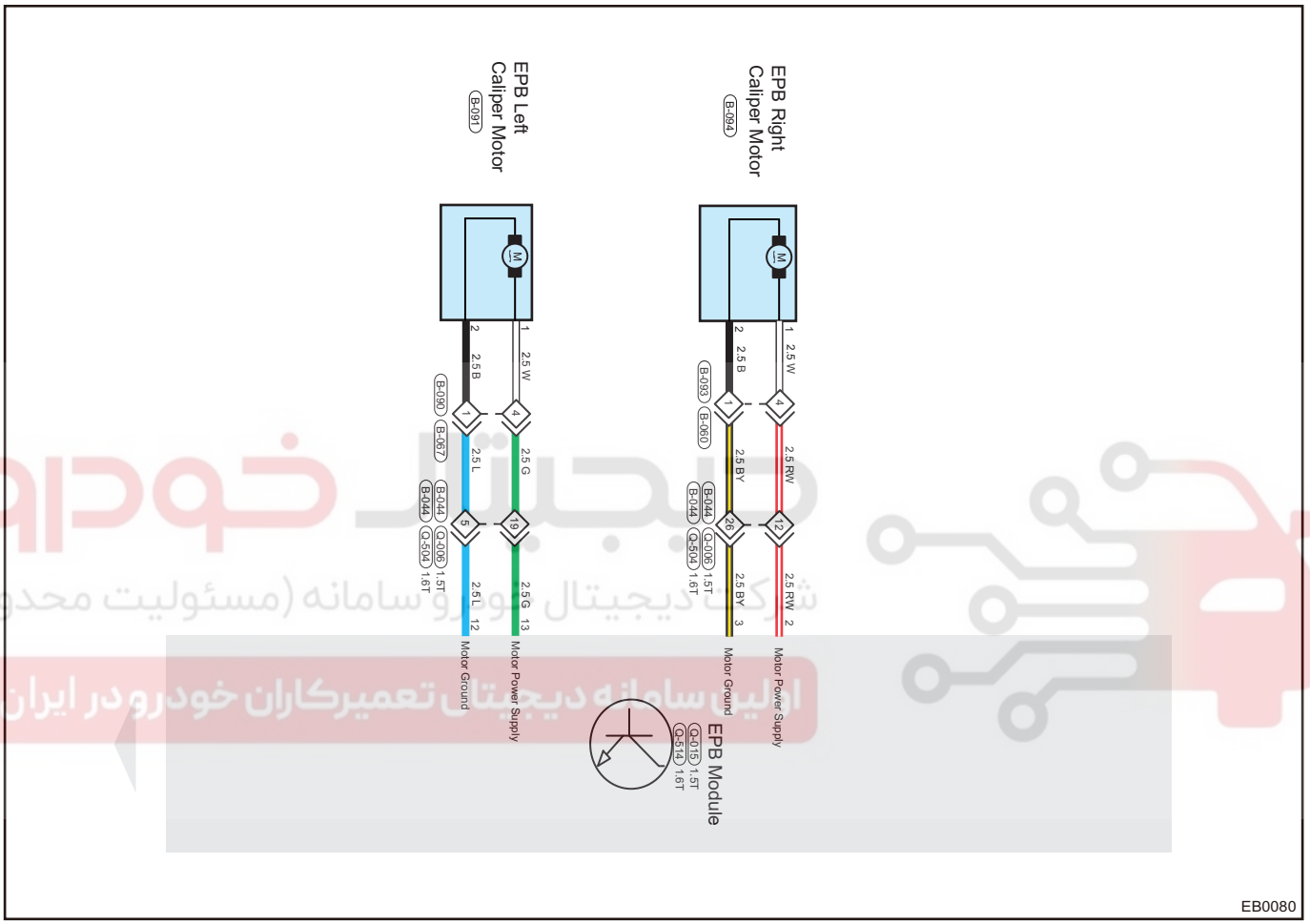
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1800-97	Left Actuator - Action Limited-Component or System Operation Obstructed or Blocked

DTC	C1801-97	Right Actuator - Action Limited-Component or System Operation Obstructed or Blocked

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1800-97	Left Actuator - Action Limited-Component or System Operation Obstructed or Blocked	• Electronic control execution unit failure • Dynamic park
C1801-97	Right Actuator - Action Limited-Component or System Operation Obstructed or Blocked	

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

1	Perform electronic control execution unit active test

(a) Perform rear left/right brake caliper active test using diagnostic tester.

Result

Result	Go to
OK	A
NG	B

B → **Replace electronic control execution unit**

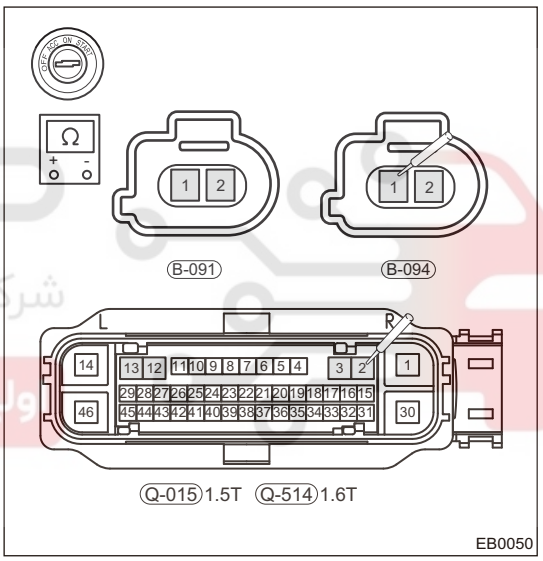
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



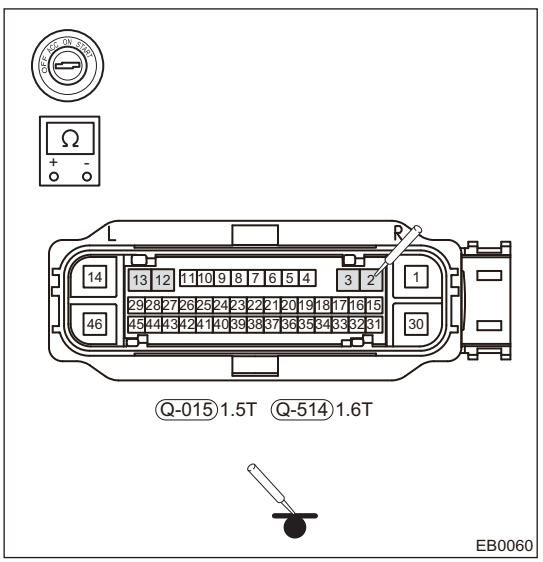
(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞

Result

Result	Go to
OK	A
NG	B



B → **Repair/replace related wire harness and connector**

A

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

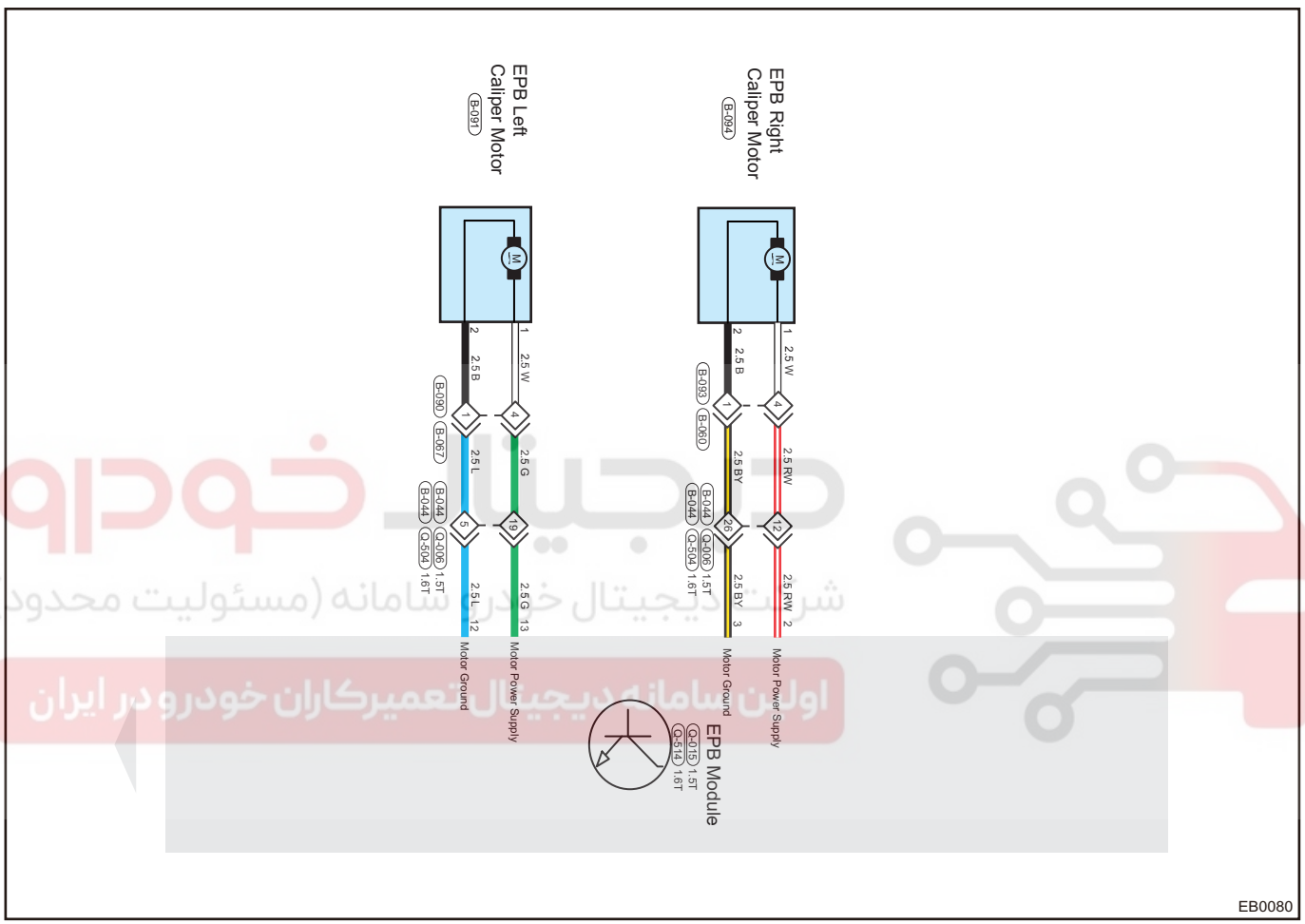
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1832-00	EPB Left Actuator Unintended Run-No Sub Type Information

DTC	C1833-00	EPB Right Actuator Unintended Run-No Sub Type Information

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1832-00	EPB Left Actuator Unintended Run-No Sub Type Information	ECU internal fault
C1833-00	EPB Right Actuator Unintended Run-No Sub Type Information	

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

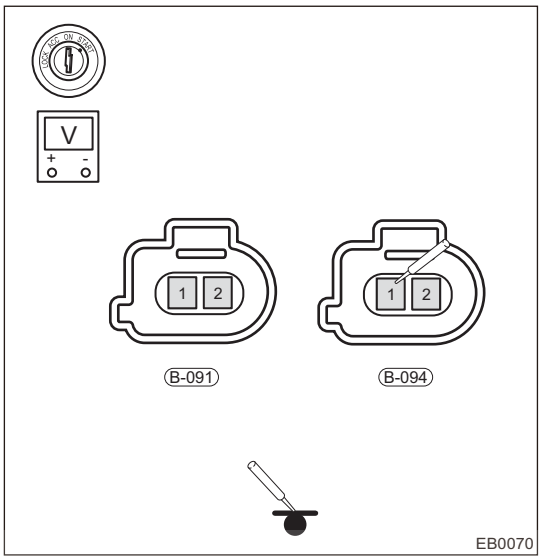
1	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect electronic control execution unit connector B-091, B-094.

(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Connect the negative battery cable.
(h) Turn ENGINE START STOP switch to ON.
(i) Using a digital multimeter, check if voltage between electronic control execution unit connector B-091 (1), B-091 (2),B-094 (1), B-094 (2) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
B-091 (1) - Body ground	0 V
B-091 (2) - Body ground	0 V
B-094 (1) - Body ground	0 V
B-094 (2) - Body ground	0 V



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

37

A

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

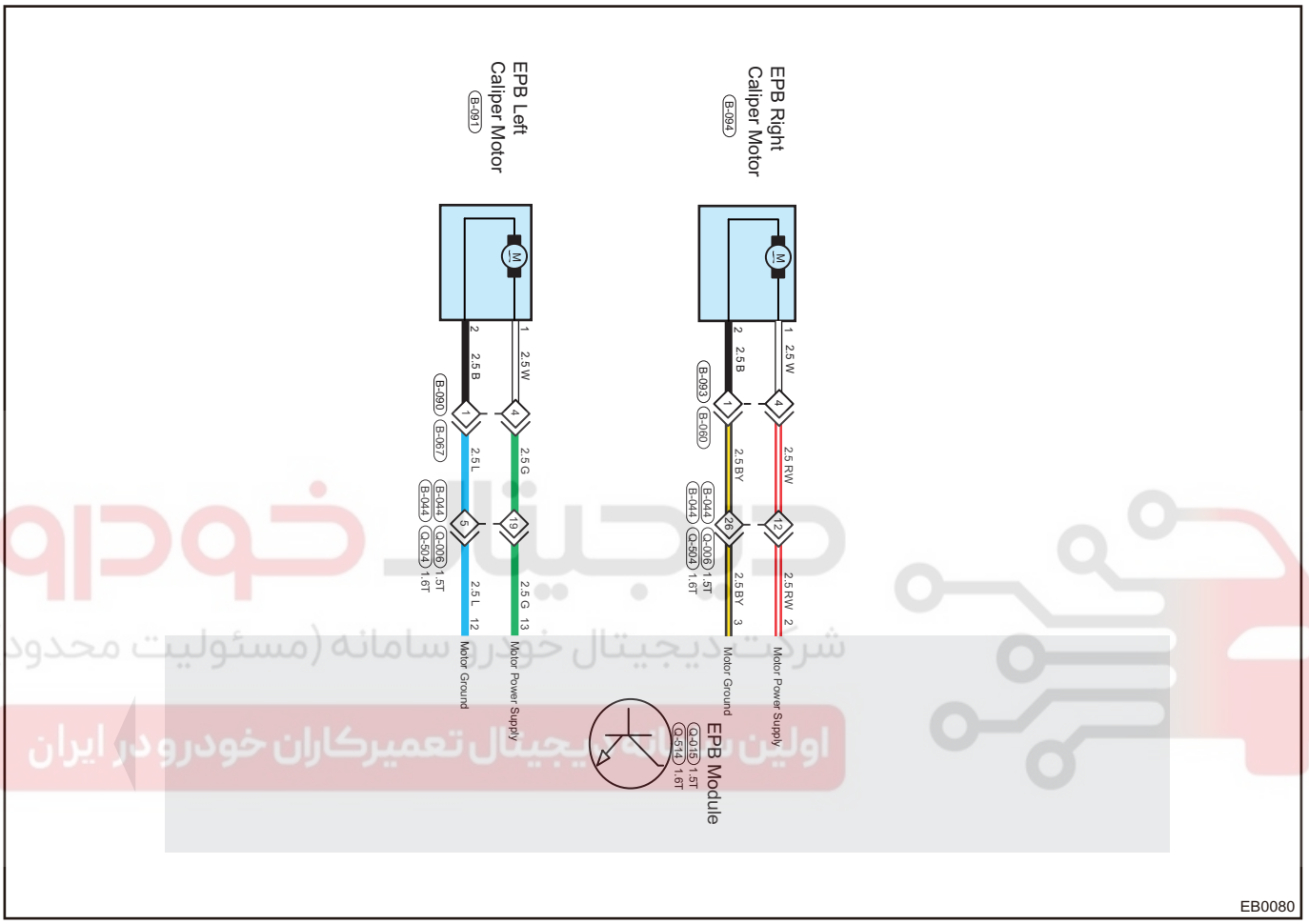
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1800-73	Left Actuator - Apply Failed-Actuator Stuck Closed

DTC	C1801-73	Right Actuator - Apply Failed-Actuator Stuck Closed

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1800-73	Left Actuator - Apply Failed-Actuator Stuck Closed	• System voltage is low • Electronic control execution unit internal resistance is too big
C1801-73	Right Actuator - Apply Failed-Actuator Stuck Closed	

Caution:

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

1	Check battery voltage

Standard voltage: Not less than 12 V.

Result

Result	Go to
OK	A
NG	B

B → Repair charging system/replace battery

A

2 Check electronic control execution unit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left/right electronic control execution unit connector B-091, B-094.
(d) Using a digital multimeter, check if resistance between electronic control execution unit (1) and (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Electronic control execution unit (1) - Electronic control execution unit (2)	1.1 Ω-1.6 Ω

Result

Result	Go to
OK	A
NG	B

B → Replace electronic control execution unit

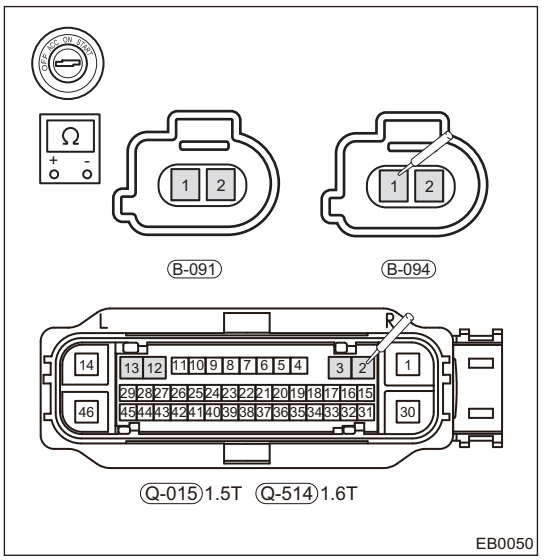
A

3 Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

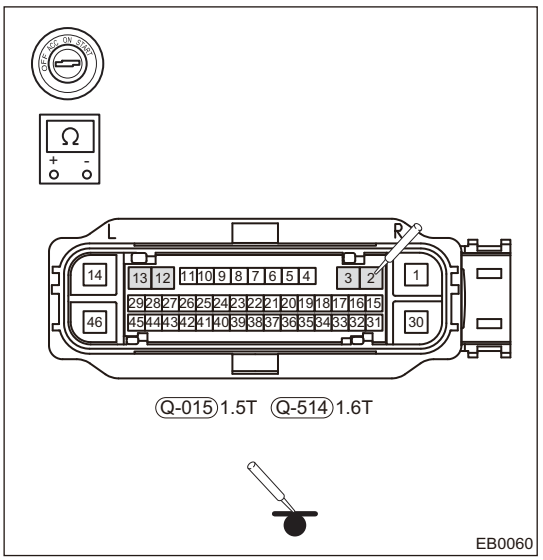
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

37

4 Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.

(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.

(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

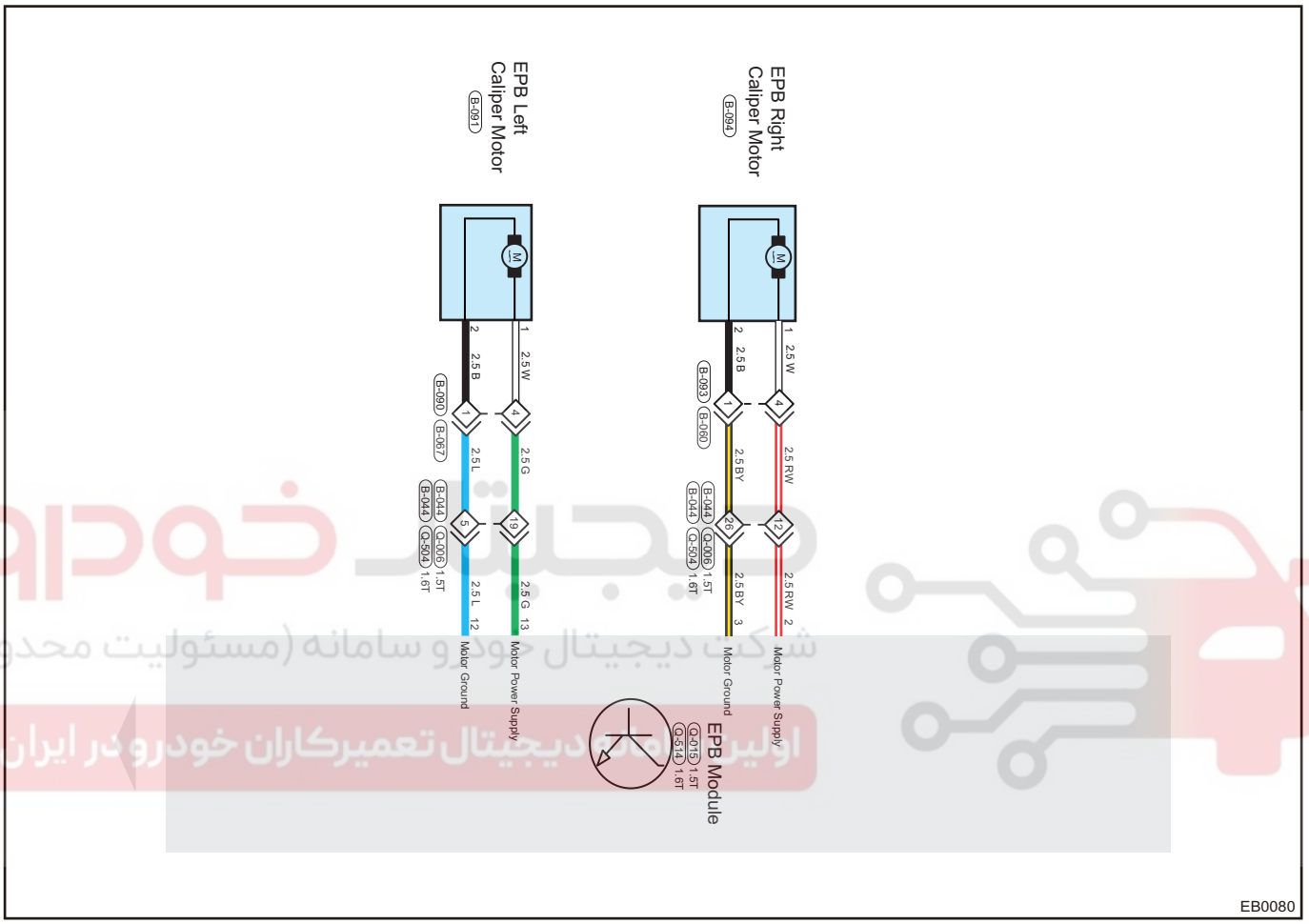
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1800-72	Left Actuator - Release Failed-Actuator Stuck Open

DTC	C1801-72	Right Actuator -Release Failed-Actuator Stuck Open

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1800-72	Left Actuator - Release Failed-Actuator Stuck Open	Electronic control execution unit internal mechanical malfunction
C1801-72	Right Actuator -Release Failed-Actuator Stuck Open	

Caution:

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

1	Check electronic control execution unit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left/right electronic control execution unit connector B-091, B-094.
(d) Using a digital multimeter, check if resistance between electronic control execution unit (1) and (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Electronic control execution unit (1) - Electronic control execution unit (2)	1.1 Ω-1.6 Ω

Result

Result	Go to
OK	A
NG	B

B → **Replace electronic control execution unit**

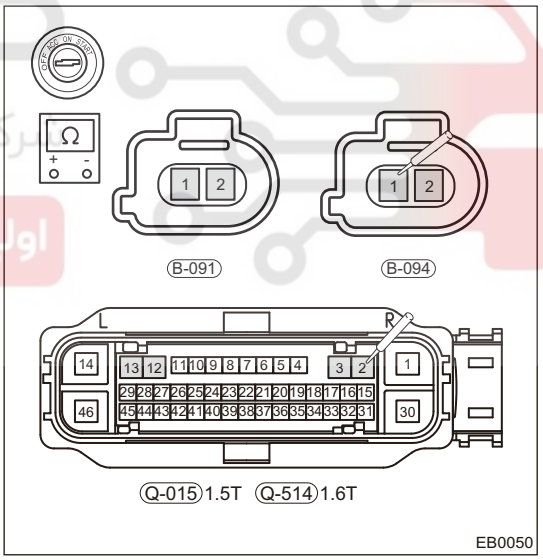
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

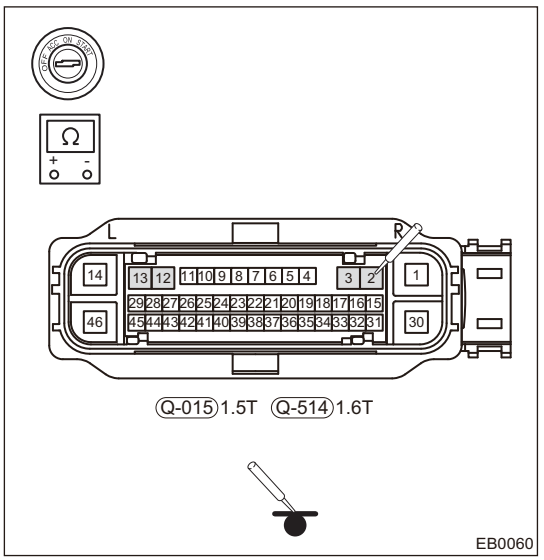
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

37

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

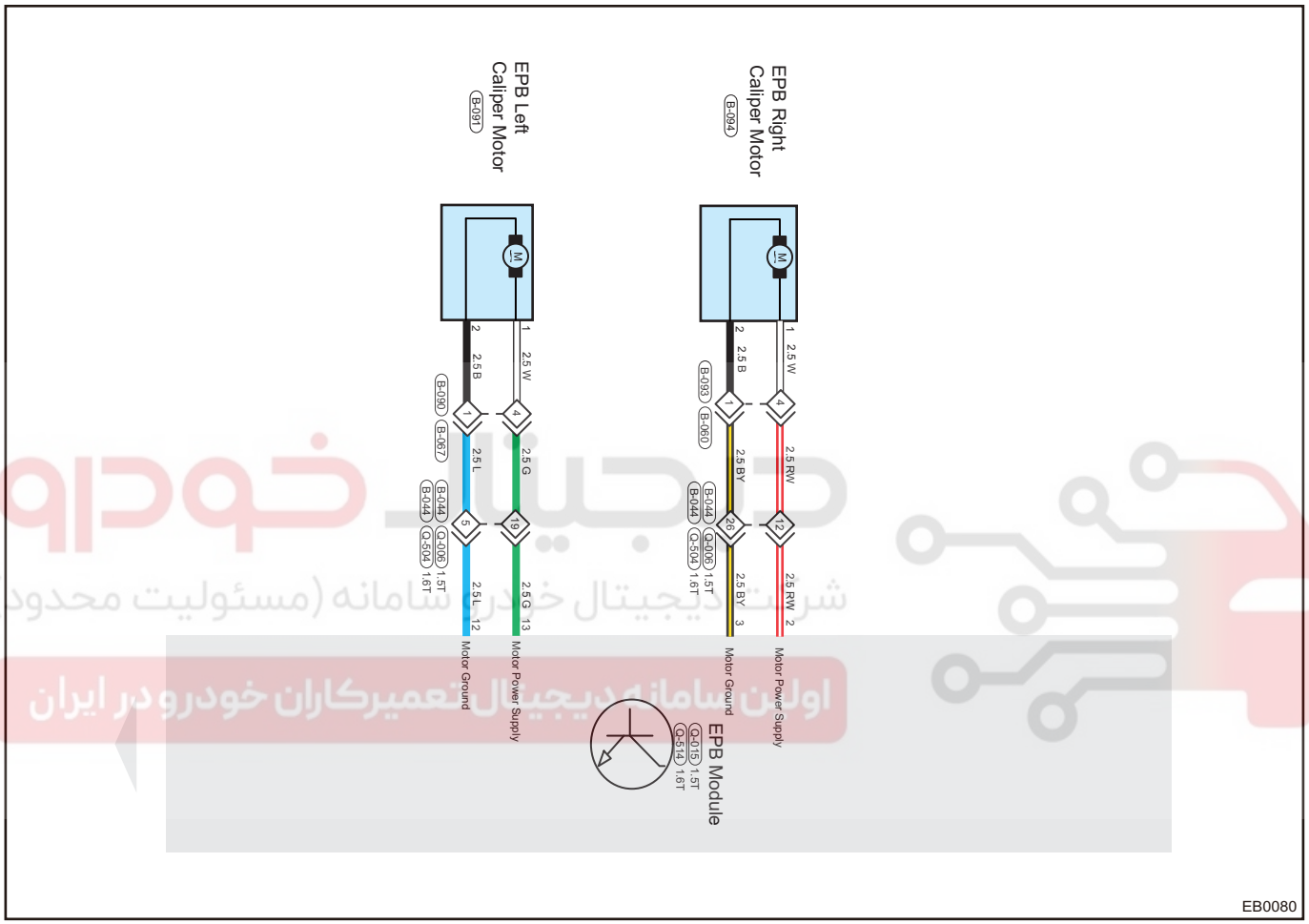
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1800-93	Left Actuator - No Motor Start Detected-No Operation

DTC	C1801-93	Right Actuator - No Motor Start Detected-No Operation

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1800-93	Left Actuator - No Motor Start Detected-No Operation	Electronic control execution unit internal resistance is too big
C1801-93	Right Actuator - No Motor Start Detected-No Operation	

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

1	Check electronic control execution unit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left/right electronic control execution unit connector B-091, B-094.

(d) Using a digital multimeter, check if resistance between electronic control execution unit (1) and (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Electronic control execution unit (1) - Electronic control execution unit (2)	1.1 Ω-1.6 Ω

Result

Result	Go to
OK	A
NG	B

B → **Replace electronic control execution unit**

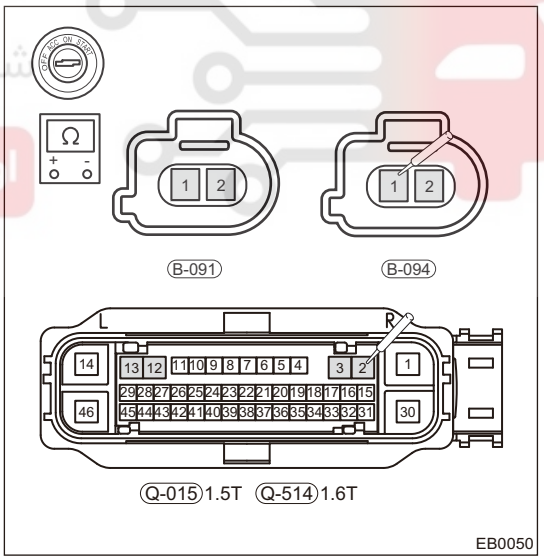
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

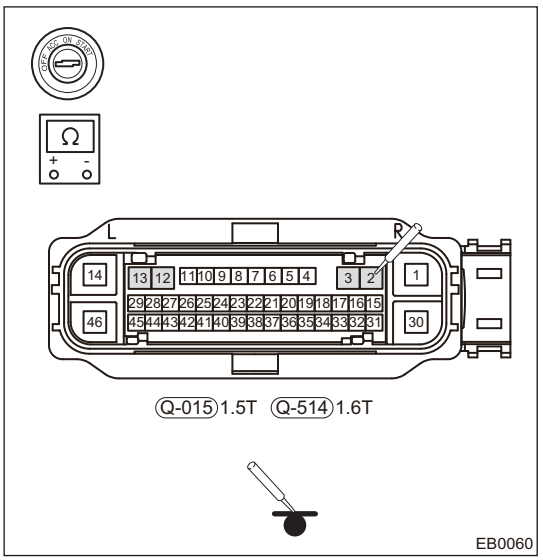
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

37

3 Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.

(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.

(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

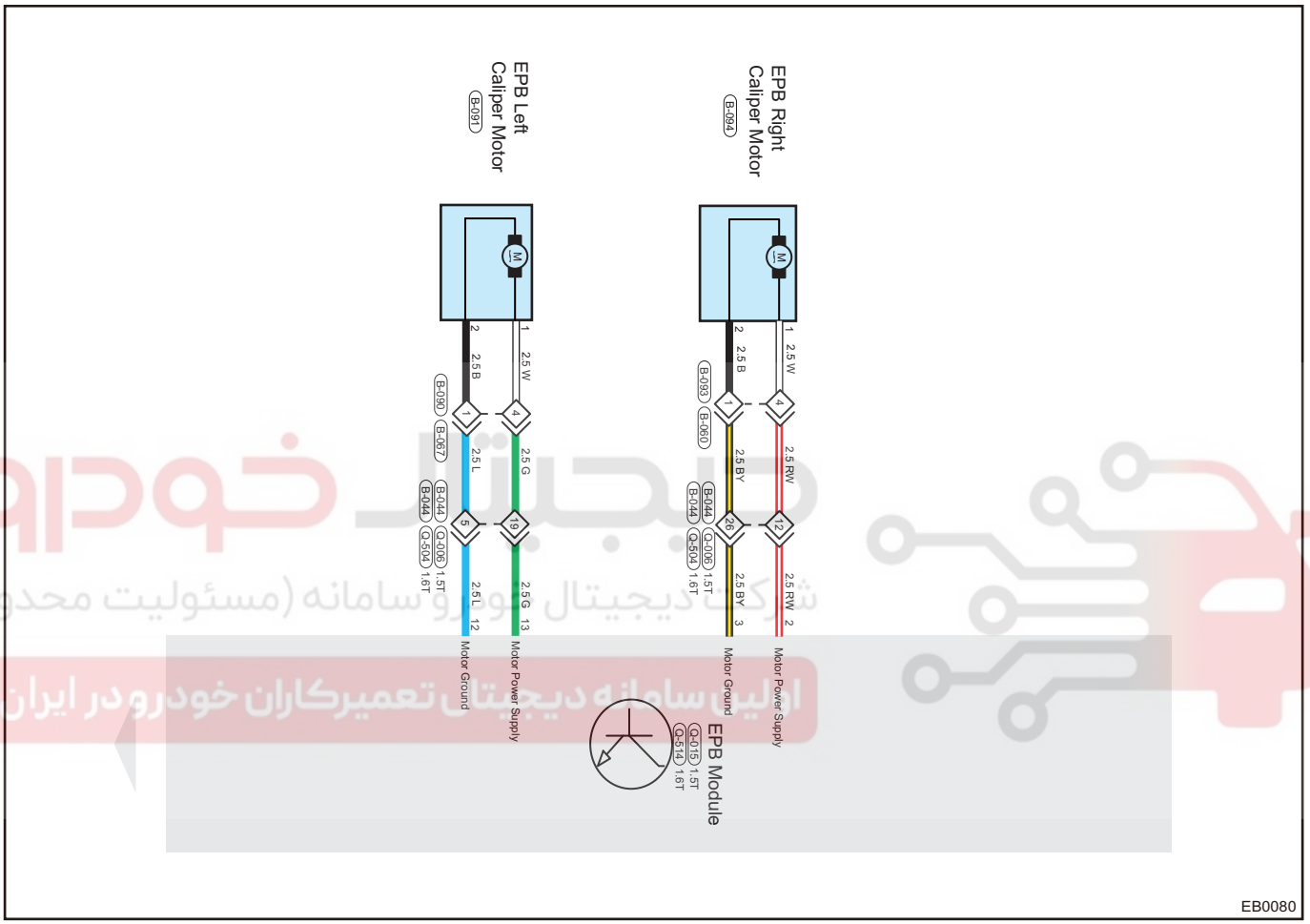
B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1800-19	Left Actuator - Circuit Current Above Threshold-Circuit Current Above Threshold

DTC	C1801-19	Right Actuator - Circuit Current Above Threshold-Circuit Current Above Threshold

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1800-19	Left Actuator - Circuit Current Above Threshold-Circuit Current Above Threshold	Short circuit in electronic control execution unit
C1801-19	Right Actuator - Circuit Current Above Threshold-Circuit Current Above Threshold	

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

1	Check electronic control execution unit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left/right electronic control execution unit connector B-091, B-094.

(d) Using a digital multimeter, check if resistance between electronic control execution unit (1) and (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Electronic control execution unit (1) - Electronic control execution unit (2)	1.1 Ω-1.6 Ω

Result

Result	Go to
OK	A
NG	B

B → **Replace electronic control execution unit**

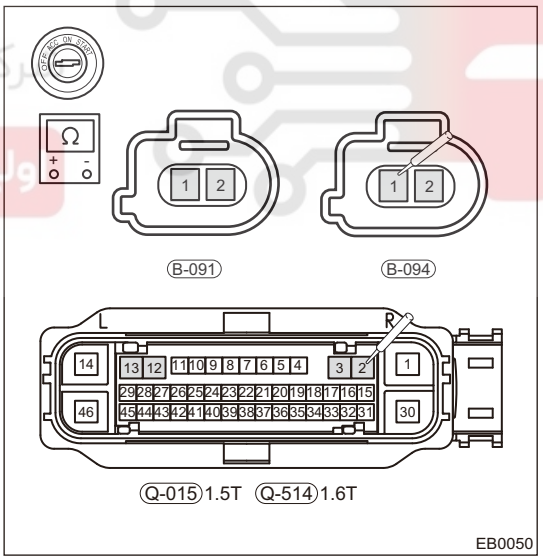
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

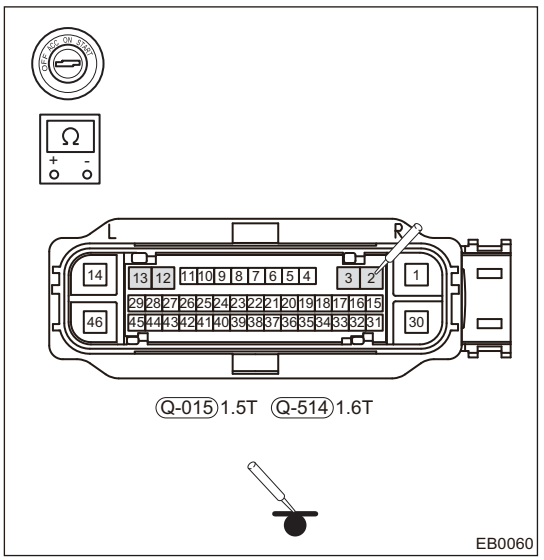
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

37

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1800-92	Left Actuator - High Mechanical Resistance-Performance or Incorrect Operation

DTC	C1801-92	Right Actuator - High Mechanical Resistance-Performance or Incorrect Operation

Description

DTC	DTC Definition	Possible Cause
C1800-92	Left Actuator - High Mechanical Resistance-Performance or Incorrect Operation	Electronic control execution unit mechanical malfunction
C1801-92	Right Actuator - High Mechanical Resistance-Performance or Incorrect Operation	

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

1	Perform electronic control execution unit active test

(a) Perform rear left/right brake caliper active test using diagnostic tester.

Result

Result	Go to
OK	A
NG	B

B → Replace electronic control execution unit

A

2	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

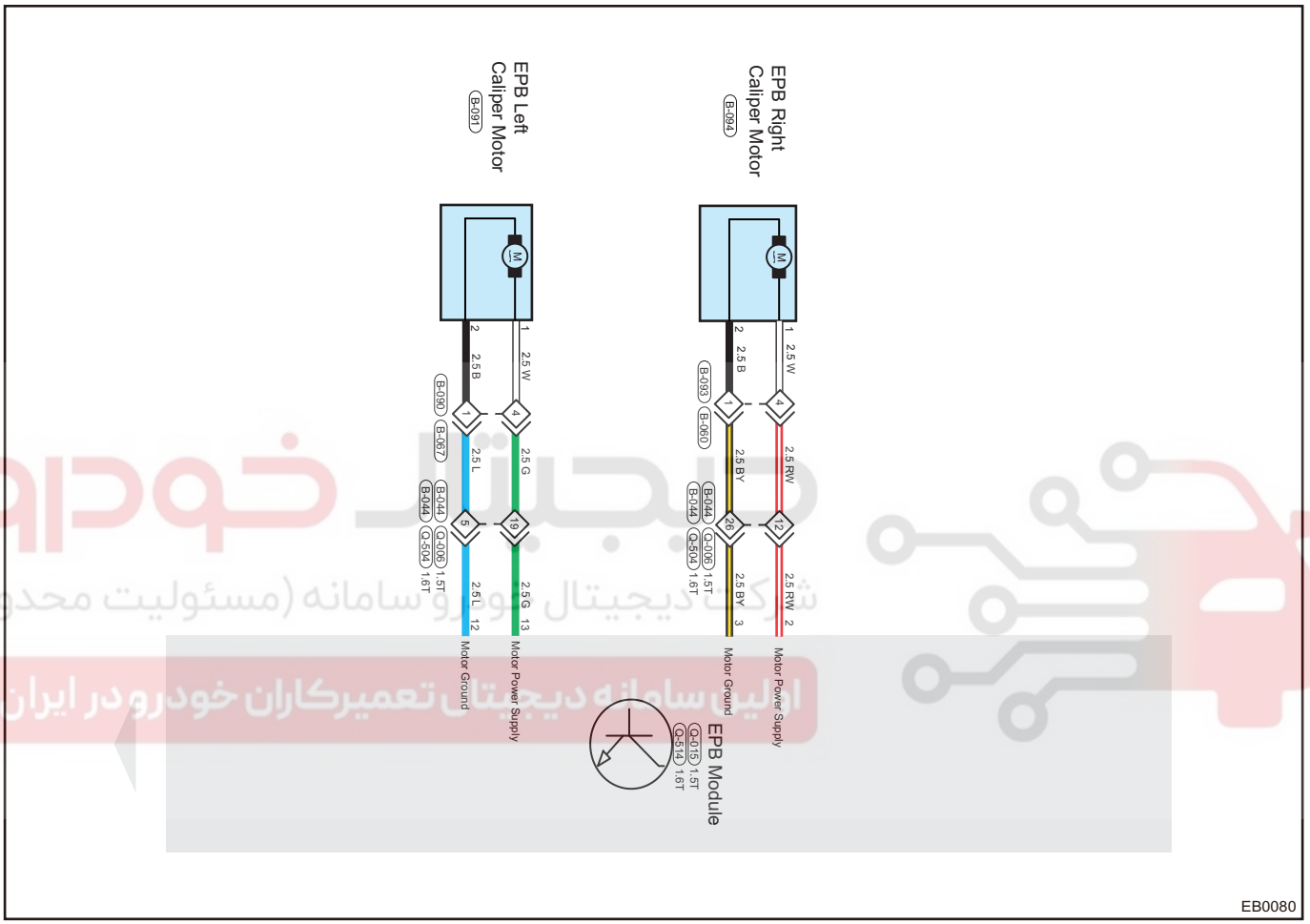
B → Replace EPB module assembly

A → System operates normally

DTC	C1800-91	Left Actuator - Wrong Operating Characteristics Detect-Parametric

DTC	C1801-91	Right Actuator - Wrong Operating Characteristics Detect-Parametric

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1800-91	Left Actuator - Wrong Operating Characteristics Detect-Parametric	Electronic control execution unit internal resistance is too big
C1801-91	Right Actuator - Wrong Operating Characteristics Detect-Parametric	

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

1	Check electronic control execution unit

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect left/right electronic control execution unit connector B-091, B-094.

(d) Using a digital multimeter, check if resistance between electronic control execution unit (1) and (2) is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Electronic control execution unit (1) - Electronic control execution unit (2)	1.1 Ω-1.6 Ω

Result

Result	Go to
OK	A
NG	B

B → **Replace electronic control execution unit**

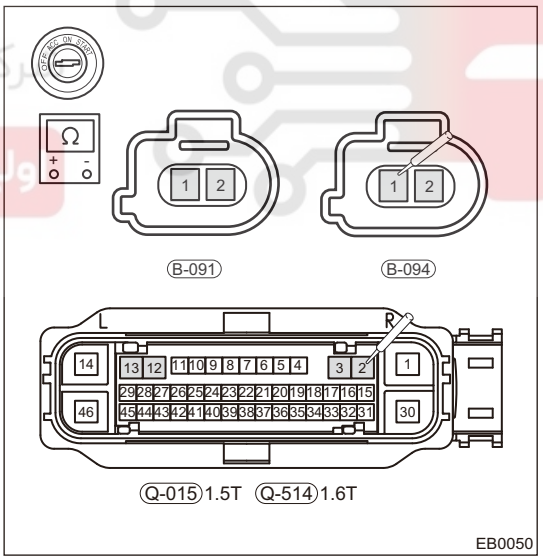
A

2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.
(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

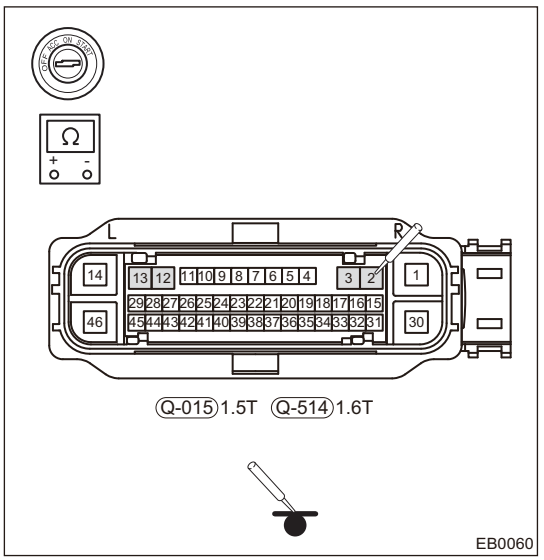
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



Result

Result	Go to
OK	A
NG	B

B → **Repair/replace related wire harness and connector**

A

37

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

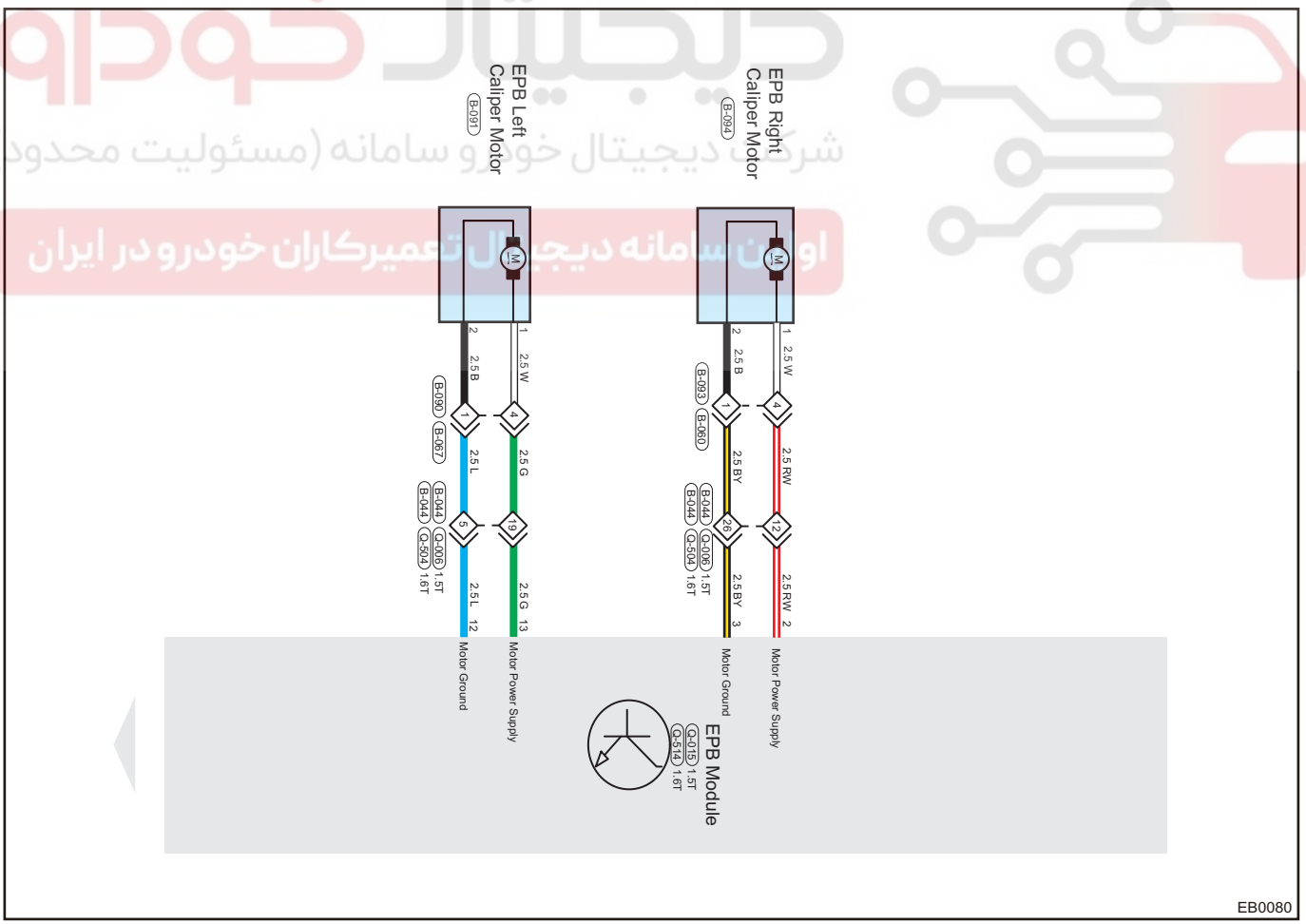
Result	Go to
OK	A
NG	B

B → **Replace EPB module assembly**

A → **System operates normally**

DTC	C1824-01	EPB Left Actuator Electrical Failure-General Electrical Failure
DTC	C1822-00	EPB Left Actuator Failure-No Sub Type Information
DTC	C1824-1E	EPB Left Actuator Shunt On Line or ECU-Circuit Resistance Out of Range
DTC	C1825-01	EPB Right Actuator Electrical Failure-General Electrical Failure
DTC	C1821-00	EPB Right Actuator Failure-No Sub Type Information
DTC	C1825-1E	EPB Right Actuator Shunt On Line or ECU-Circuit Resistance Out of Range

Circuit Diagram



Description

DTC	DTC Definition	Possible Cause
C1824-01	EPB Left Actuator Electrical Failure-General Electrical Failure	• Electronic control execution unit • ECU internal fault
C1822-00	EPB Left Actuator Failure-No Sub Type Information	
C1824-1E	EPB Left Actuator Shunt On Line or ECU-Circuit Resistance Out of Range	
C1825-01	EPB Right Actuator Electrical Failure-General Electrical Failure	
C1821-00	EPB Right Actuator Failure-No Sub Type Information	
C1825-1E	EPB Right Actuator Shunt On Line or ECU-Circuit Resistance Out of Range	

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

1	Perform electronic control execution unit active test

(a) Perform rear left/right brake caliper active test using diagnostic tester.
Result

Result	Go to
OK	A
NG	B

B → Replace electronic control execution unit

A

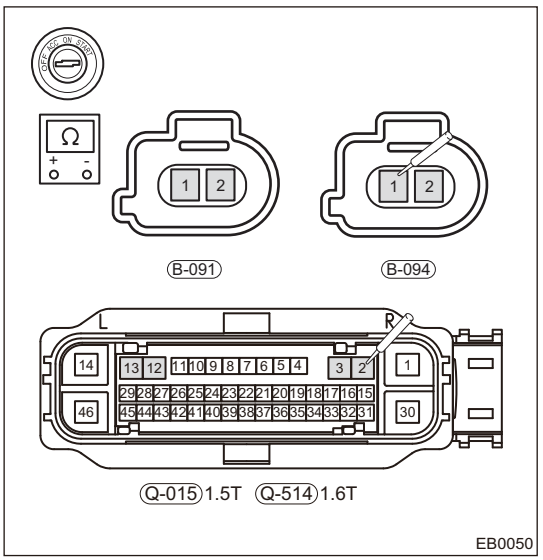
2	Check related wire harness and connector

(a) Turn ENGINE START STOP switch to OFF.
(b) Disconnect the negative battery cable.
(c) Disconnect the EPB module assembly connector Q-015/Q-514.
(d) Disconnect left/right electronic control execution unit connector B-091, B-094.
(e) Check if related wire harnesses are worn, pinched or broken.
(f) Check if related connector terminals are loose, broken, bent or corrosive.

(g) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and electronic control execution unit connector B-091 (1), B-091 (2), B-094 (1), B-094 (2) is normal according to the table below.

OK

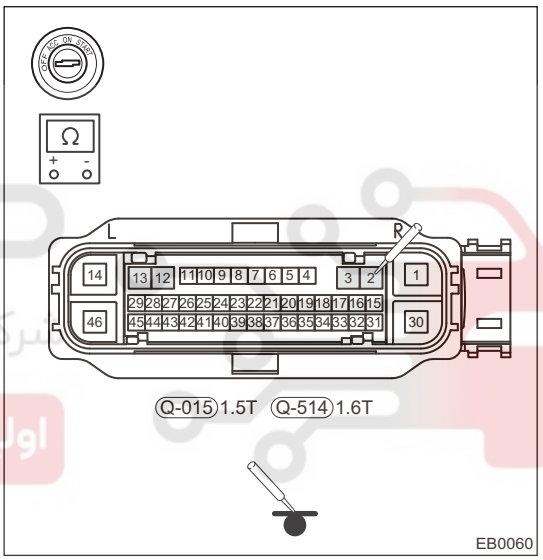
Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - B-094 (1)	⩽ 1 Ω
Q-015/Q-514 (3) - B-094 (2)	⩽ 1 Ω
Q-015/Q-514 (13) - B-091 (1)	⩽ 1 Ω
Q-015/Q-514 (12) - B-091 (2)	⩽ 1 Ω



(h) Using a digital multimeter, check if continuity between EPB module assembly connector Q-015/Q-514 (2), Q-015/Q-514 (3), Q-015/Q-514 (13), Q-015/Q-514 (12) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
Q-015/Q-514 (2) - Body ground	∞
Q-015/Q-514 (3) - Body ground	∞
Q-015/Q-514 (13) - Body ground	∞
Q-015/Q-514 (12) - Body ground	∞



(i) Connect the negative battery cable.

(j) Turn ENGINE START STOP switch to ON.

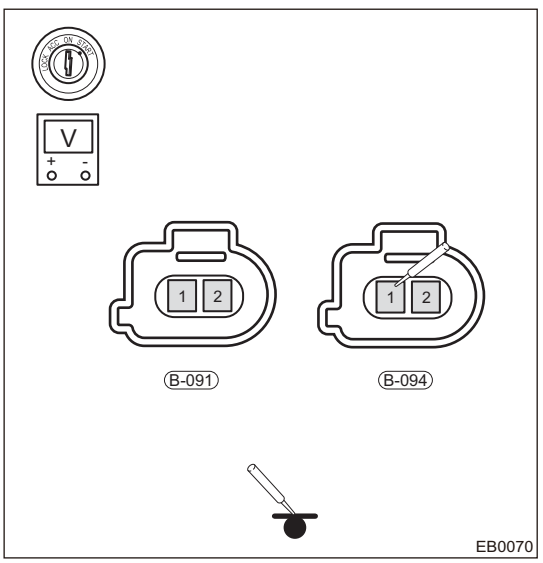
(k) Using a digital multimeter, check if voltage between electronic control execution unit connector B-091 (1), B-091 (2),B-094 (1), B-094 (2) and body ground is normal according to the table below.

OK

Multimeter Connection	Specified Condition
B-091 (1) - Body ground	0 V
B-091 (2) - Body ground	0 V
B-094 (1) - Body ground	0 V
B-094 (2) - Body ground	0 V

Result

Result	Go to
OK	A
NG	B



B → **Repair/replace related wire harness and connector**

A

3	Reconfirm DTCs

(a) Use diagnostic tester to clear DTCs.
(b) Read DTC in "ABS/ESP (Anti-lock Braking System/Electronic Stability Program)" again with diagnostic tester.
(c) Check if the same DTCs are still output.

Result

Result	Go to
OK	A
NG	B

B → **Replace EPB module assembly**

A → **System operates normally**

Inspection and Adjustment

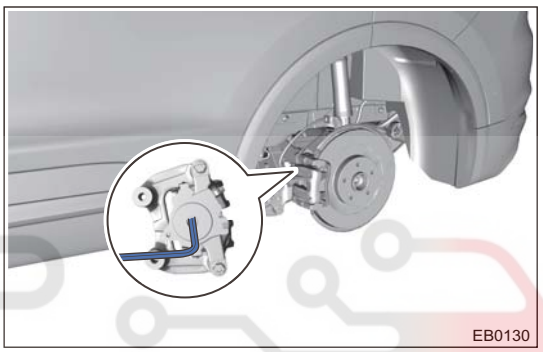
Electronic Parking Brake System (EPB) Emergency Release (Take left side as an example)

If parking brake cannot be released by parking brake switch manually or automatically due to unexpected circumstances (such as battery does not output voltage, electronic parking brake system failure, etc.) during using electronic parking brake system (EPB), you need to enable electronic parking brake system (EPB) emergency releasing function to release parking brake, please follow the following steps for specific methods:

Caution:

If parking brake cannot be released by parking brake switch manually or automatically on a slope, please try to tow vehicle to a level road or place obstacles such as stoppers in front of or rear of front wheels respectively to prevent wheel rolling, avoiding coasting accident after releasing parking brake.

1. Remove the rear left wheel.
2. Remove the electronic control execution unit.
3. Align inner hexagon with spline in rear left brake caliper body assembly, rotate 2-3 cycles clockwise (when operator faces spline) or stop until brake disc can rotate freely (it is normal that a large rotation force is needed due to vehicle parking brake condition).



4. The vehicle only loses parking brake function and does not affect normal braking function after releasing parking brake.