

SQRE4T15B EMISSION CONTROL SYSTEM

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

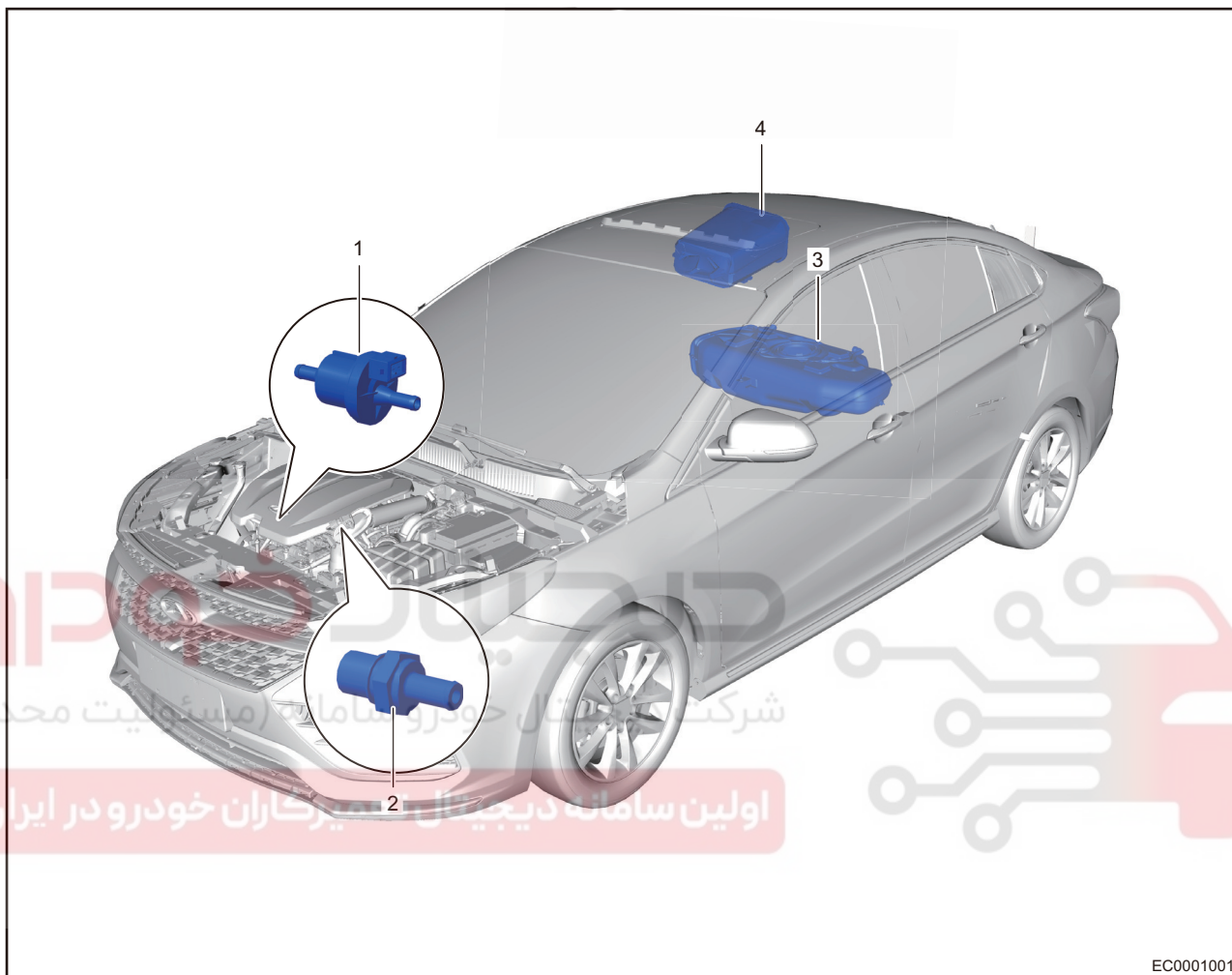
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GENERAL INFORMATION

Overview

Description



1 - Activated Charcoal Canister Solenoid Valve	2 - PCV Valve
3 - Fuel Tank Assembly	4 - Activated Charcoal Canister Assembly

Operation

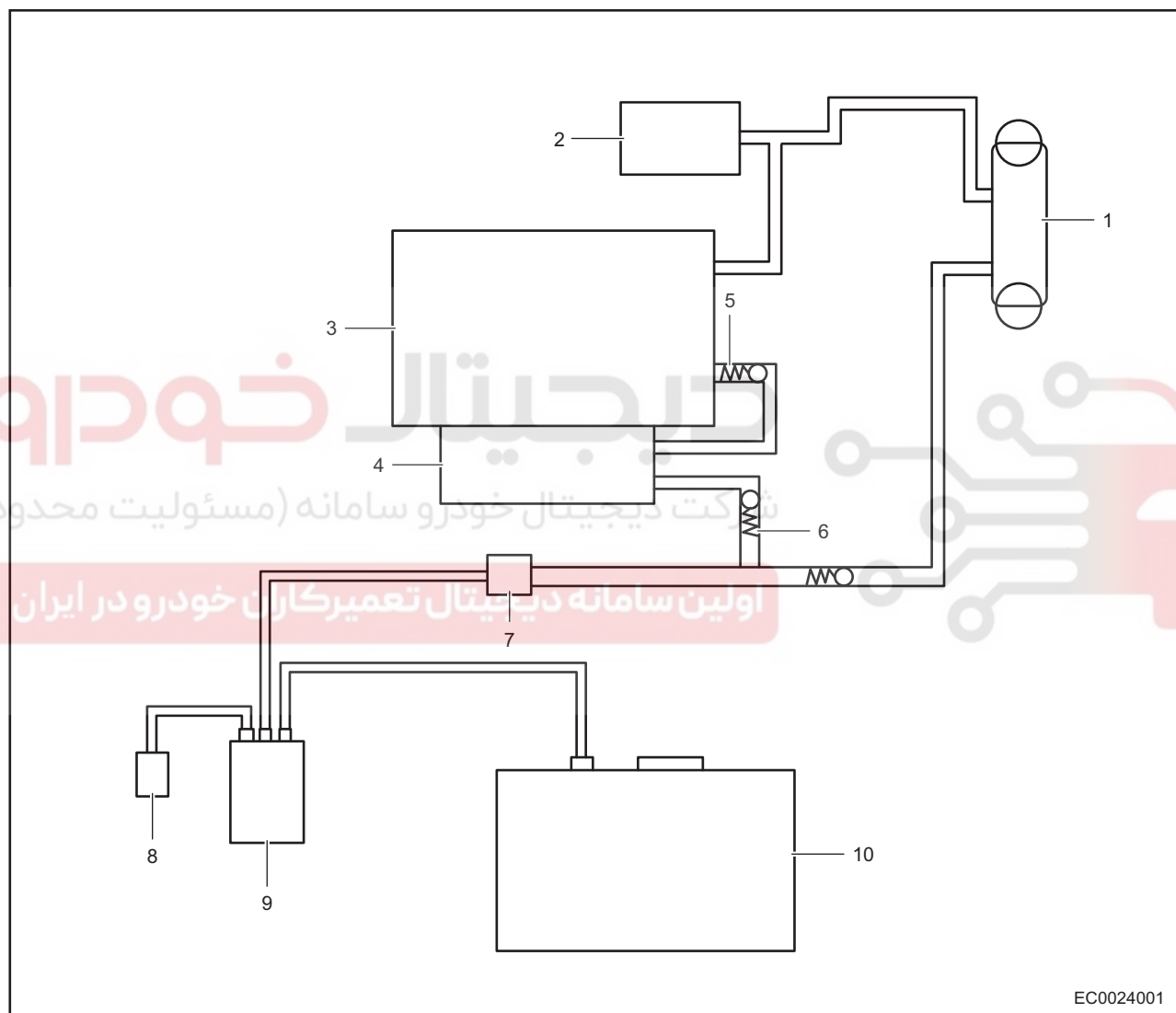
- Emission control system recovers and burns fuel vapor to prevent the vapor in fuel tank from being discharged into the atmosphere. It monitors the oxygen content in exhaust gas, so as to guarantee the maximum efficiency of catalytic converter assembly in converting the HC, CO and NOx in exhaust gas. Activated charcoal canister assembly plays an important role in the emission control system and it is used to absorb and filter moisture and fuel vapor. Fresh air enters the bottom of activated charcoal canister assembly while fuel vapor enters the top of activated charcoal canister through fuel vapor pipe. When engine stops operating, the fuel vapor and fresh air will be stored in the activated charcoal canister assembly. When engine operation canister solenoid valve opens, the fuel vapor will enter intake manifold and burns in the cylinder.
- Oxygen sensor consists of upstream oxygen sensor and downstream oxygen sensor. Upstream oxygen sensor and downstream oxygen sensor are installed on precatalytic converter assembly. Oxygen sensor can detect the oxygen content in exhaust gas, and determine whether combustible air-fuel mixture is completely burnt out or not, so as to guarantee the maximum efficiency of catalytic converter assembly in converting the HC, CO and NOx in exhaust gas.

Specifications

Torque Specifications

Description	Torque (N·m)
Coupling Bolt Between Activated Charcoal Canister Assembly and Body	5 ± 1
Upstream Oxygen Sensor	45 ± 5
Downstream Oxygen Sensor	45 ± 5
PCV Valve Tightening Torque	4 ± 1

Emission Control System Schematic Diagram

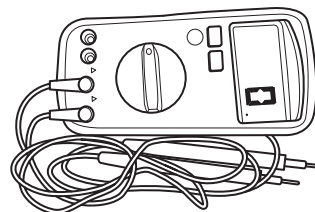


1 - Intake Hose	2 - Turbocharger
3 - Engine	4 - Intake Manifold
5 - PCV Valve	6 - Check Valve
7 - Charcoal Canister Solenoid Valve	8 - Charcoal Canister Filter
9 - Charcoal Canister	10 - Fuel Tank

Tool

General Tool

Digital Multimeter



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DIAGNOSIS & TESTING

Diagnosis Content

Leakage Inspection

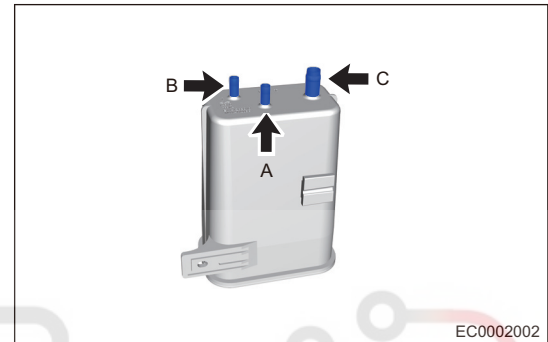
Visually check that hoses and connections have no leaks or damage.

Caution:

- Removal of engine oil dipstick, filler cap, PCV hose and other components or other problems in them may cause the engine to run improperly. Air suction caused by disconnections, looseness or cracks in intake system pipes related to throttle assembly will result in engine failure or abnormal operation. Replace the parts as necessary.

Activated Charcoal Canister Inspection

1. Close port C and blow compressed air into port A, check that air flows from port B. If result is not as specified, replace the canister.



2. Close port C and blow compressed air into port B, check that air flows from port A. If result is not as specified, replace the canister.

Fuel Tank Cap Assembly Inspection

1. Visually check that fuel tank cap assembly is not deformed or damaged.
2. If result is not as specified, replace the fuel tank cap assembly.

ON-VEHICLE SERVICE

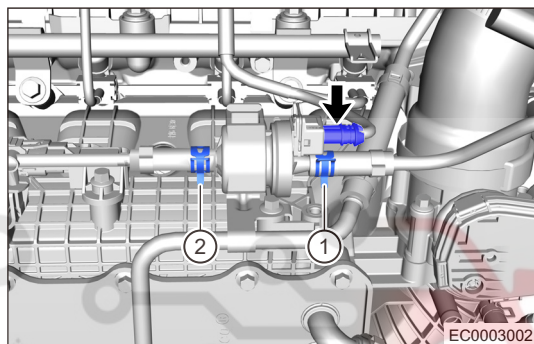
Canister Solenoid Valve

Removal

Warning/Caution/Hint

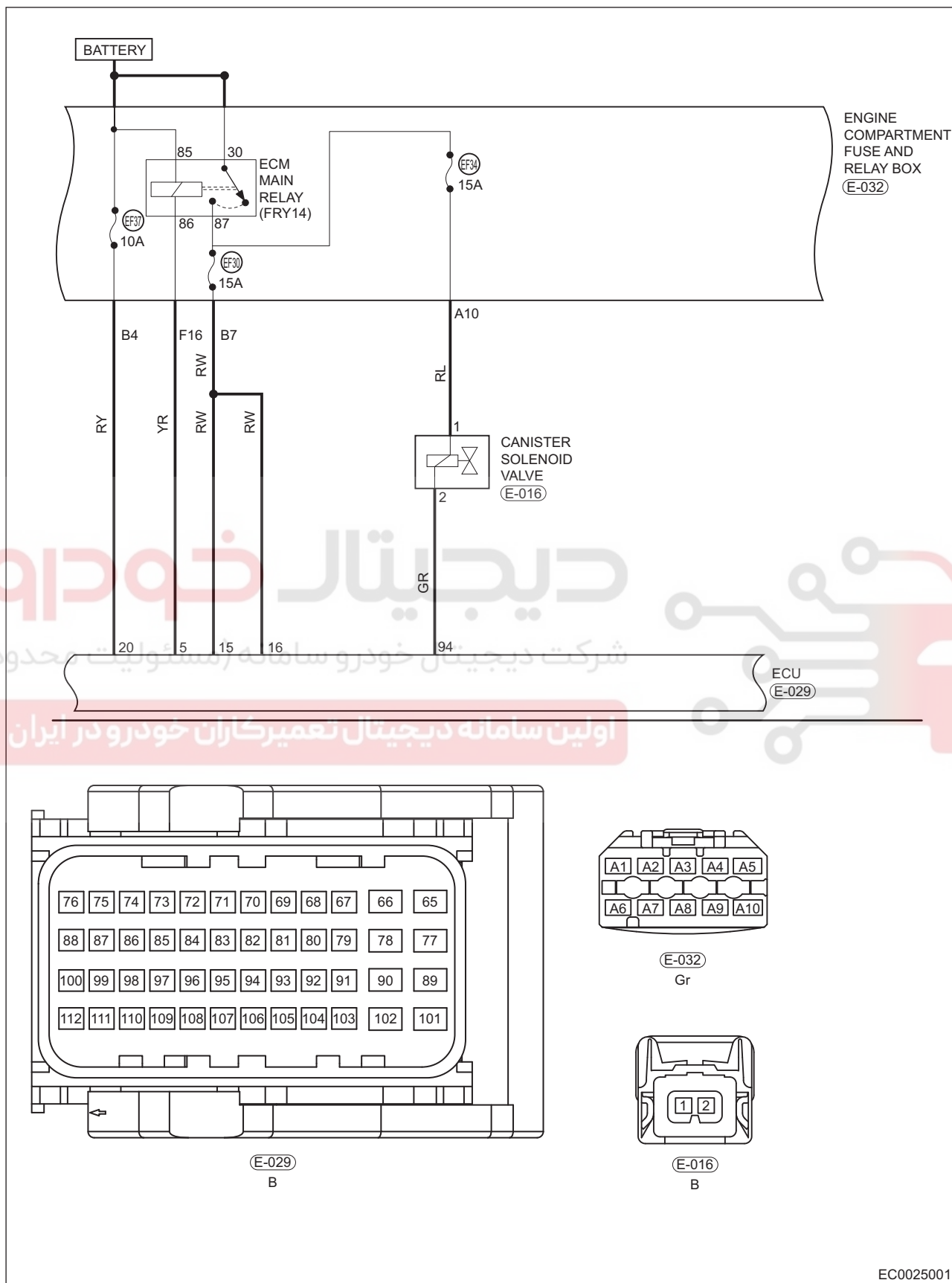
Caution:

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
 - Try to prevent body paint surface from being scratched during removal and installation.
 - Before removal, mark the fuel vapor pipe V assembly and charcoal canister solenoid valve outlet pipes to avoid confusion.
1. Turn off all electrical equipment and the ENGINE START STOP switch.
 2. Disconnect the negative battery cable.
 3. Remove the engine trim cover.
 4. Remove the charcoal canister solenoid valve.
 - (a) Disconnect the charcoal canister solenoid valve connector (arrow).
 - (b) Loosen the elastic clamp (1), (2) and disconnect the connection between fuel vapor pipe V assembly and charcoal canister solenoid valve outlet pipes.
 - (c) Remove the charcoal canister solenoid valve assembly from water outlet pipe set.



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Charcoal Canister Solenoid Valve Circuit Diagram



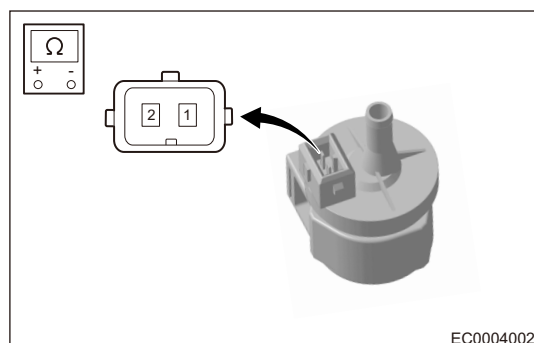
Inspection

1. Inspect the resistance of ignition coil primary winding.
 - (a) Measure the resistance between 2 terminals of charcoal canister solenoid valve with a digital multimeter.

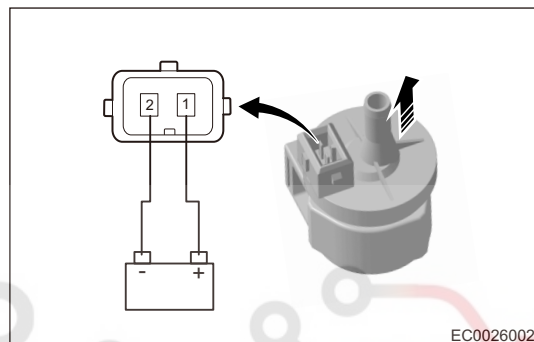
Measurement Temperature	Specification (Ω)
20°C	26 $\pm$ 4

Hint:

If resistance is not as specified, replace the charcoal canister solenoid valve assembly.



2. Check if the charcoal canister solenoid valve opens normally and is blocked.
 - (a) Connect the positive battery (+) to charcoal canister solenoid valve pin (1) and connect the negative battery (-) to charcoal canister solenoid valve pin (2). Check if the canister solenoid valve opens. After it opened, bleed air into direction of charcoal canister solenoid valve (arrow), and air flows easily.



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Installation

1. Installation is in the reverse order of removal.

Caution:

- Positioning distance from hose end to elastic clamp is 3 to 5 mm.

Activated Charcoal Canister Assembly

Removal

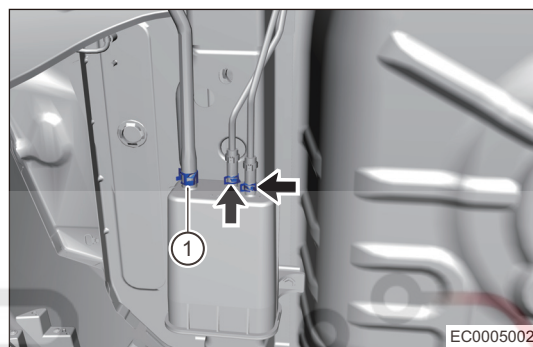
Warning/Caution/Hint

Caution:

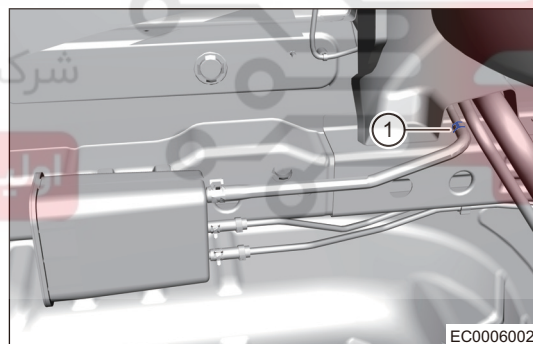
- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.
- Before removal, mark the fuel vapor hose II, fuel vapor hose III and charcoal canister breather pipe to avoid confusion.

1. Turn off all electrical equipment and the ENGINE START STOP switch. Wait until engine cools down
2. Disconnect the negative battery cable.
3. Remove the rear right wheel house protector (See page 51-24).
4. Remove the activated charcoal canister assembly.

- (a) Loosen 2 elastic clamp (arrow), disconnect connection between fuel vapor pipe and activated charcoal canister assembly. Loosen elastic clamp (1), disconnect connection between charcoal canister breather pipe and activated charcoal canister assembly.



- (b) Loosen elastic clamp (1) and remove the charcoal canister breather pipe from filler tube assembly.



- (c) Remove the coupling bolts (arrow) between activated charcoal canister assembly and body.

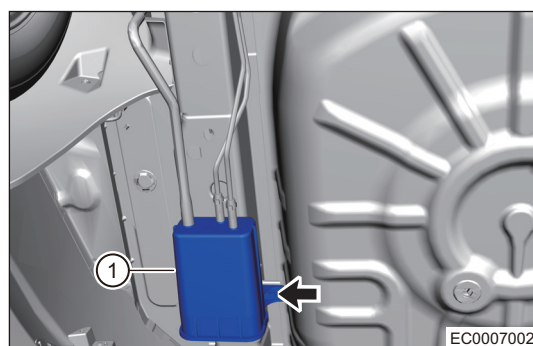
Tightening torque

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

- (d) Remove the activated charcoal canister assembly (1) from body bracket.

Caution:

- Positioning distance from hose end to elastic clamp is 3 to 5 mm.
- Unneeded activated charcoal canister assembly should be handled by the specialized department according to local laws and regulations. Never discard it at will.



Installation

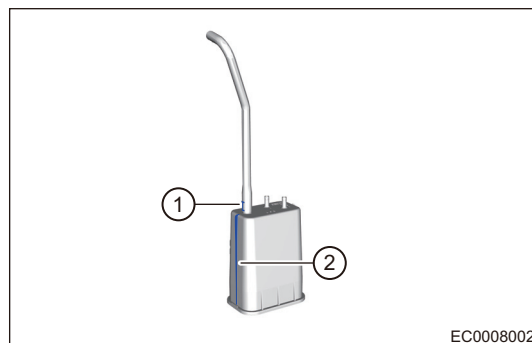
Warning/Caution/Hint

Caution:

- Positioning distance from hose end to elastic clamp is 3 to 5 mm.
- Installation is in the reverse order of removal.

Hint:

When installing charcoal canister breather pipe, be careful to align the white mark (1) on charcoal canister breather pipe with the side seam (2) of activated charcoal canister assembly.



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PCV valve

Removal

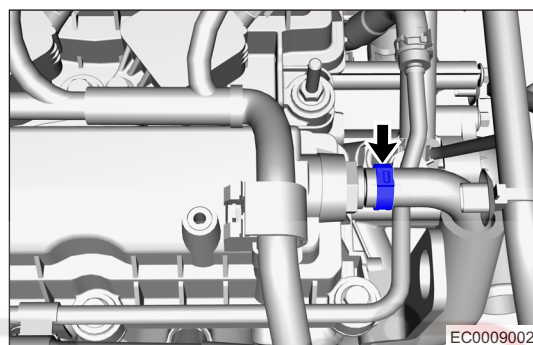
Warning/Caution/Hint

Caution:

- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the muffler assembly (See page 10-12).
5. Remove the PCV valve.

- (a) Loosen clamping ring (arrow) and disconnect connection between crankcase ventilation hose and PCV valve.



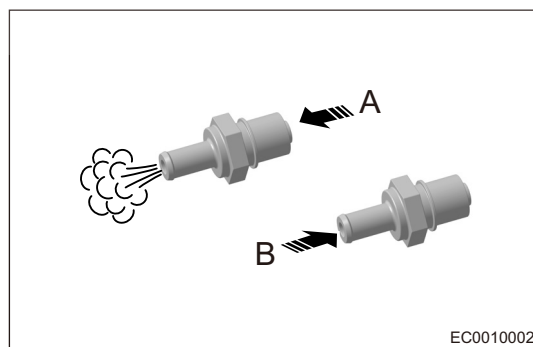
- (b) Loosen and remove the PCV valve from cylinder head cover.

Tightening torque

$4 \pm 1 \text{ N}\cdot\text{m}$

Inspection

1. Install a clean hose to PCV valve.
 2. Check the PCV valve operation.
- (a) Bleed air into the cylinder head cover side, and check that air A flows easily.



- (b) Blow air into the intake manifold side, and check that air B flows difficultly.

Hint:

- If result is not as specified, replace PCV valve.

Caution:

- DO NOT suck air through PCV valve. Petroleum substances inside the PCV valve are hazardous to your health.

3. Remove the clean hose from PCV valve.

Installation

Warning/Caution/Hint

Caution:

- Positioning distance from hose end to clamping ring is 3 to 5 mm.
1. Installation is in the reverse order of removal.

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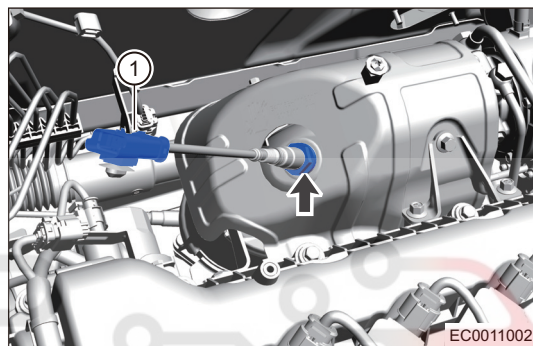
Upstream Oxygen Sensor

Removal

Warning/Caution/Hint

Caution:

- Temperature of exhaust system is very high when engine is running. Before removal, make sure that engine has stopped running and exhaust system has cooled down sufficiently, otherwise, there is a risk of scald injury.
 - Be sure to wear necessary safety equipment to prevent accidents when repairing.
 - Try to prevent body paint surface from being scratched during removal and installation.
1. Turn off all electrical equipment and the ENGINE START STOP switch.
 2. Disconnect the negative battery cable.
 3. Remove the engine trim cover.
 4. Remove the upstream oxygen sensor.
 - (a) Take off and disconnect the upstream oxygen sensor connector (1) from bracket.



- (b) Remove the upstream oxygen sensor (arrow) from tip of pre-catalytic converter.

Hint:

Remove it with special tool oxygen sensor socket.

Tightening torque

$45 \pm 5 \text{ N}\cdot\text{m}$

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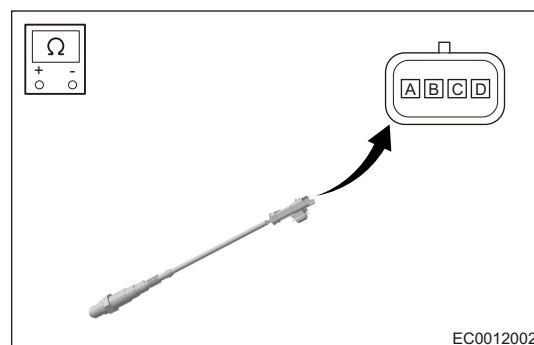


Inspection

1. Check the upstream oxygen sensor.
 - (a) Measure the resistance of upstream oxygen sensor with a digital multimeter.

Multimeter Connection	Specified Condition
Terminal 1	Ground
Terminal 2	Signal
Terminal 3	Heat Control
Terminal 4	Power supply

Multimeter Connection	Condition	Specified Condition
Terminal 3 - Terminal 4	20°C	5 - 22 Ω
Terminal 1 - Terminal 2 Terminal 1 - Terminal 4 Terminal 2 - Terminal 3 Terminal 2 - Terminal 4	Always	No continuity



Hint:

- If result is not as specified, replace the upstream oxygen sensor.

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Installation

1. Installation is in the reverse order of removal.

Caution:

The specified grease must be used, use of other grease will lead to oxygen sensor poisoning. The new part has been applied with grease during installation, it must be applied at the place where the threads are installed during reassembly.

Material Number

5964080112 (120 g/pot) or 5964080145 (450 g/pot)

Warning:

If the oxygen sensor falls, never pick it up to install and it need to return to factory for testing.

Downstream Oxygen Sensor

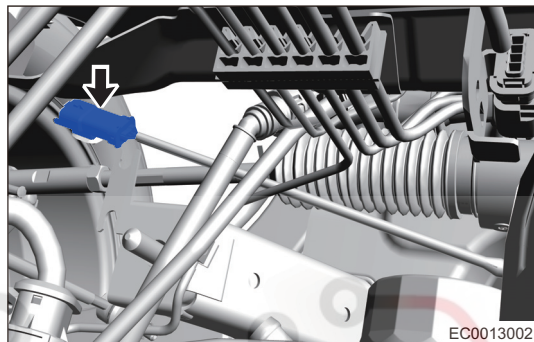
Removal

Warning/Caution/Hint

Caution:

- Temperature of exhaust system is very high when engine is running. Before removal, make sure that engine has stopped running and exhaust system has cooled down sufficiently, otherwise, there is a risk of scald injury.
 - Be sure to wear necessary safety equipment to prevent accidents when repairing.
 - Try to prevent body paint surface from being scratched during removal and installation.
1. Turn off all electrical equipment and the ENGINE START STOP switch.
 2. Disconnect the negative battery cable.
 3. Remove the downstream oxygen sensor.

- (a) Take off and disconnect the downstream oxygen sensor connector (arrow) from bracket.



- (b) Raise the vehicle to a proper position.

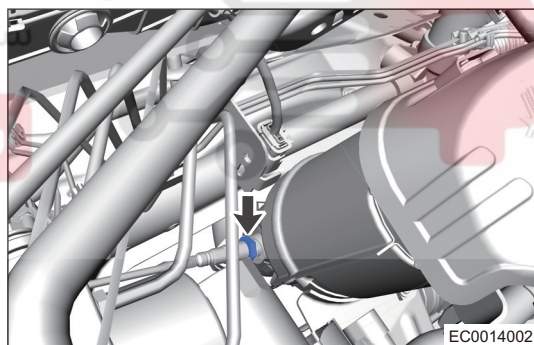
- (c) Remove downstream oxygen sensor (arrow) from precatalytic converter assembly.

Hint:

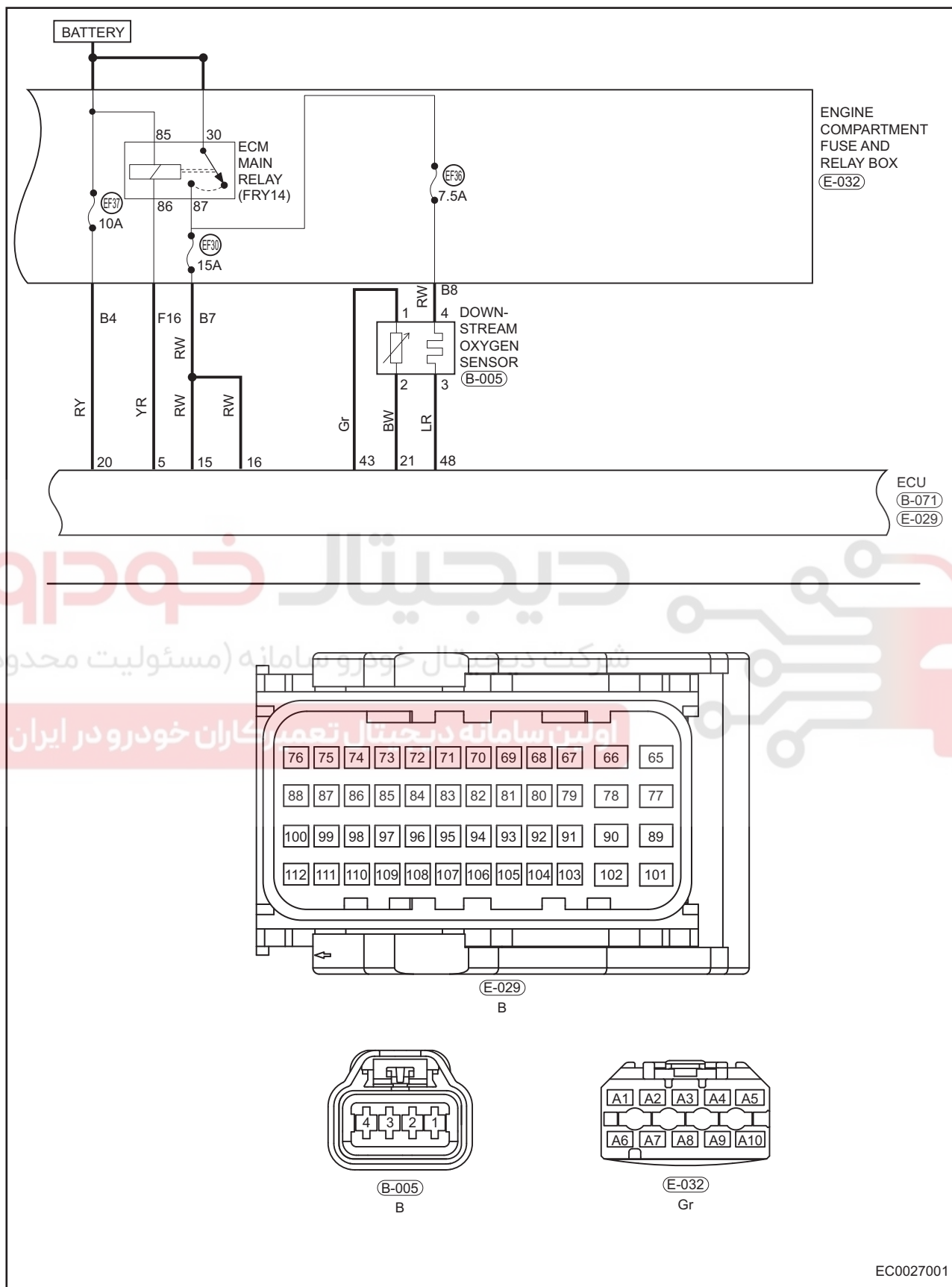
Remove it with special tool oxygen sensor socket.

Tightening torque

$45 \pm 5 \text{ N}\cdot\text{m}$



Downstream Oxygen Sensor Circuit Diagram

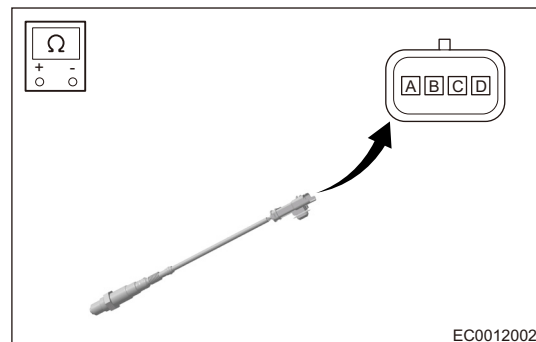


Inspection

1. Check the downstream oxygen sensor.
 - (a) Measure the resistance of downstream oxygen sensor with a digital multimeter.

Multimeter Connection	Specified Condition
Terminal 1	Ground
Terminal 2	Signal
Terminal 3	Heat Control
Terminal 4	Power supply

Multimeter Connection	Condition	Specified Condition
Terminal 3 - Terminal 4	20°C	5 - 22 Ω
Terminal 1 - Terminal 2 Terminal 1 - Terminal 4 Terminal 2 - Terminal 3 Terminal 2 - Terminal 4	Always	No continuity



Hint:

- If result is not as specified, replace the downstream oxygen sensor.

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Installation

1. Installation is in the reverse order of removal.

Caution:

The specified grease must be used, use of other grease will lead to oxygen sensor poisoning. The new part has been applied with grease during installation, it must be applied at the place where the threads are installed during reassembly.

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