

SQRD4T20 EMISSION CONTROL SYSTEM

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



07

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

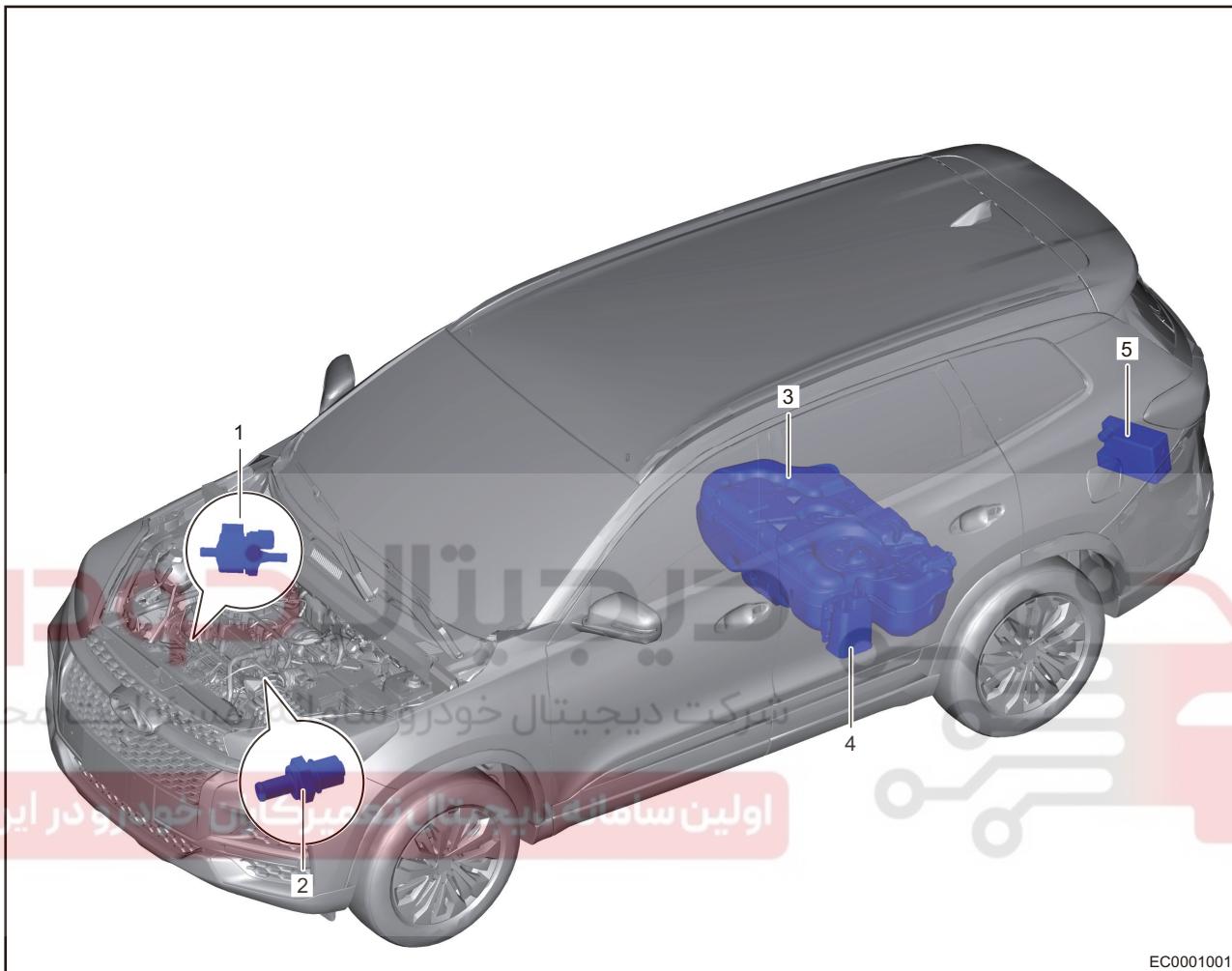
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GENERAL INFORMATION

Overview

Description



EC0001001

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

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. It is used to absorb and filter moisture and fuel vapor. Fresh air enters the top of activated charcoal canister assembly, meanwhile fuel vapor enters the bottom of activated charcoal canister through fuel vapor pipe. When engine stops operating, the fuel vapor and fresh air will be stored in activated charcoal canister assembly. When engine operates, canister solenoid valve opens timely, the fuel vapor will enter intake manifold and burns in the cylinder.
- This vehicle is equipped with upstream oxygen sensor and downstream oxygen sensor. 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

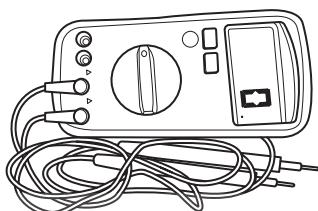
Torque Specifications

Description	Torque (N·m)
Activated Charcoal Canister Bracket Bolt	7 ± 1
Activated Charcoal Canister Assembly Fixing Bolt	7 ± 1
Upstream Oxygen Sensor	45 ± 5
Downstream Oxygen Sensor	45 ± 5
Activated Charcoal Canister Filter Fixing Bolt	7 ± 1

Tools

General Tools

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Digital Multimeter	 002
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ON-VEHICLE SERVICE

Canister Solenoid Valve

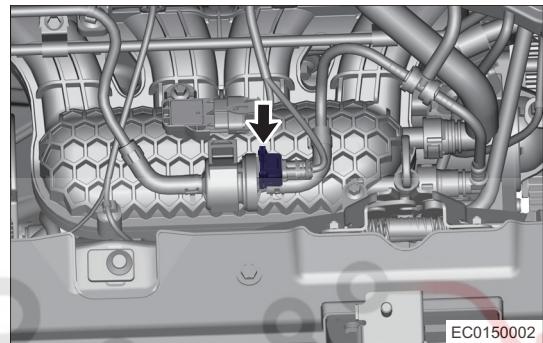
Removal

Warning/Caution/Hint

Caution:

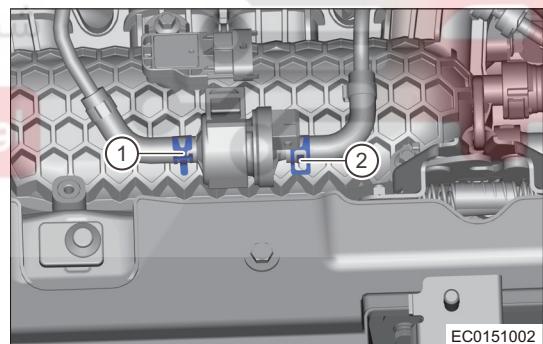
- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.

1. Turn off all electrical equipment and the ignition 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).



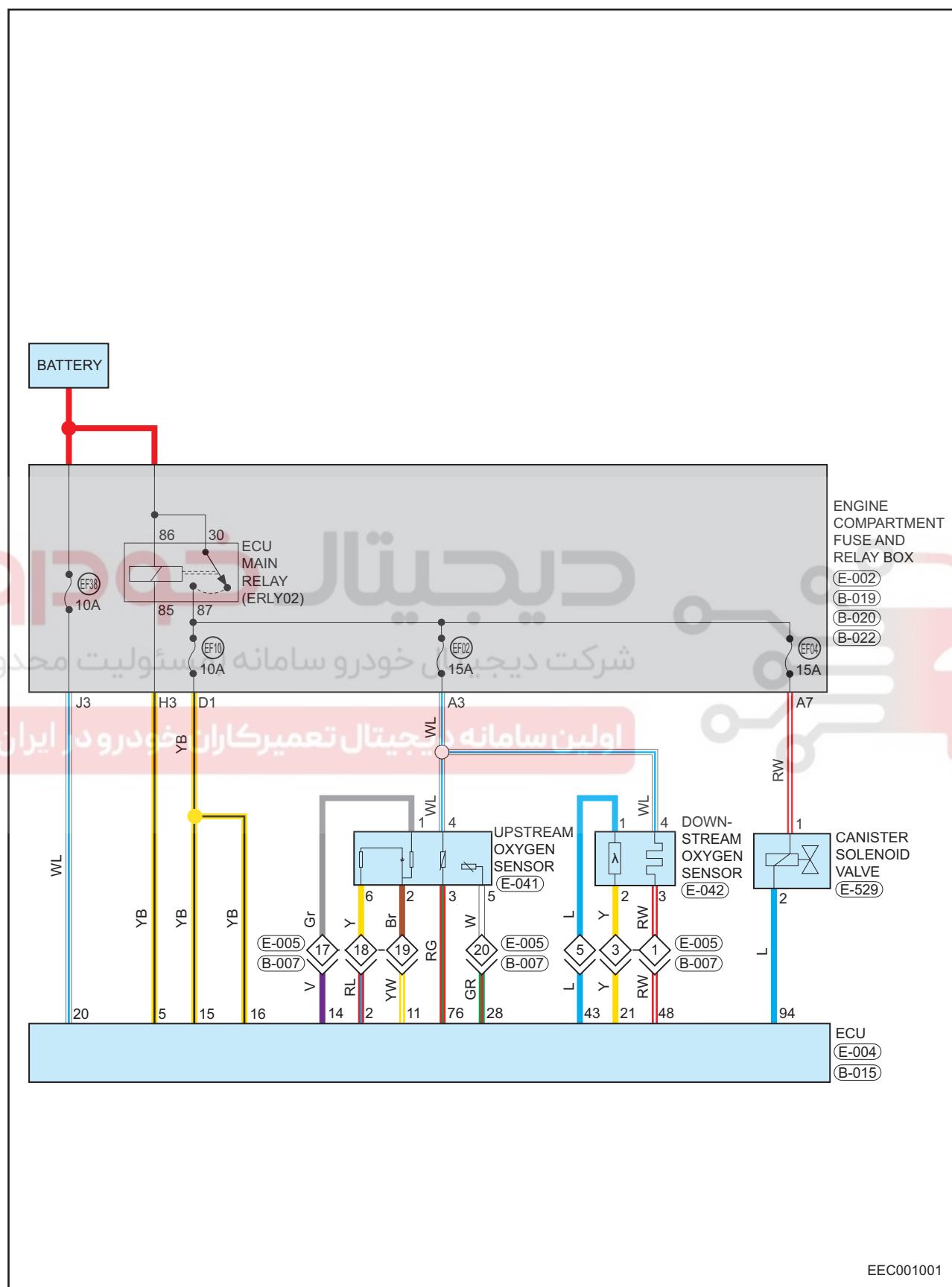
(b) Disconnect fuel vapor tube V assembly (1) and charcoal canister solenoid valve.

(c) Disconnect the charcoal canister outlet pipe (2).



(d) Remove the charcoal canister solenoid valve.

Charcoal Canister Solenoid Valve Circuit Diagram



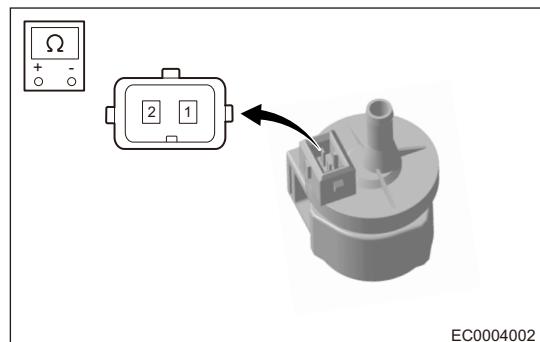
Inspection

1. Check resistance of charcoal canister solenoid valve
 - (a) Measure the resistance between 2 terminals of charcoal canister solenoid valve with a digital multimeter.

Measurement Temperature	Specification (Ω)
20°C	26 ± 4

Hint:

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



EC0004002

2. Check if the charcoal canister solenoid valve opens normally and is blocked.

- (a) Connect the positive battery (+) to charcoal canister solenoid valve No.1 pin and connect the negative battery (-) to charcoal canister solenoid valve No.2 pin. Check if the canister solenoid valve can open. After it opens, bleed air into direction of charcoal canister solenoid valve (arrow) until air flows smoothly.

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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.



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Activated Charcoal Canister Assembly

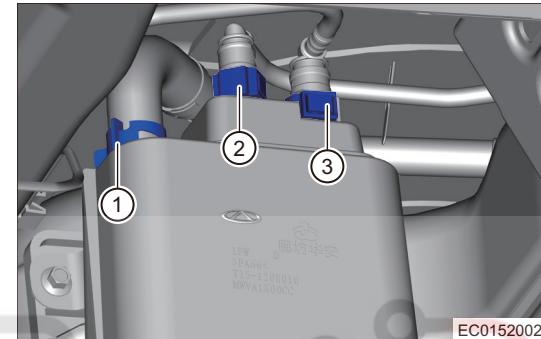
Removal

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.
- 1. Turn off all electrical equipment and the ignition switch. Wait until engine cools down.
- 2. Disconnect the negative battery cable.
- 3. Remove the activated charcoal canister assembly.
 - (a) Loosen elastic clamp (1) and disconnect charcoal canister breather pipe.
 - (b) Disconnect fuel vapor pipe I (2) and activated charcoal canister assembly.
 - (c) Disconnect fuel vapor pipe II (3) and activated charcoal canister assembly.

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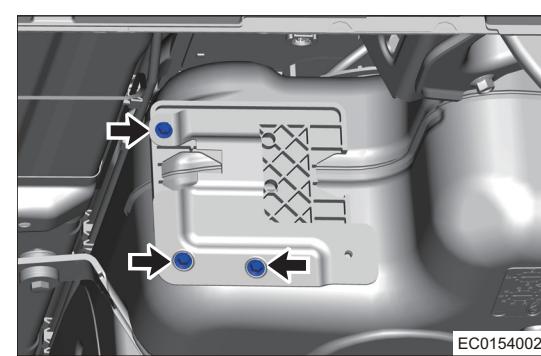
(d) Remove 1 fixing bolt (arrow) and activated charcoal canister assembly.



Tightening torque
 $7 \pm 1 \text{ N}\cdot\text{m}$

ایران سامانه دیجیتال تعمیرکاران خودرو در

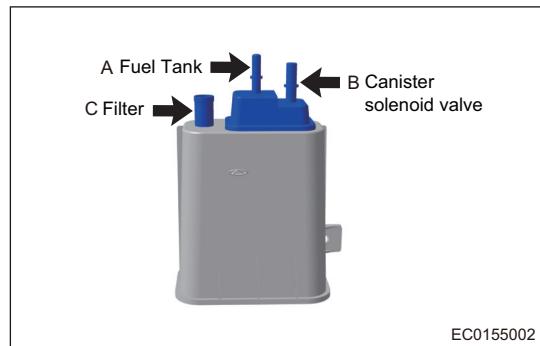
(e) Remove 3 fixing bolts (arrow) between activated charcoal canister assembly mounting bracket, and remove mounting bracket.



Inspection

1. Check activated charcoal canister assembly

(a) Close port C and blow compressed air into port A. Check if there is any air flowing out from port B. If result is not as specified, replace the activated charcoal canister assembly.



2. Check if the charcoal canister solenoid valve opens normally and is blocked.

(a) Connect the positive battery (+) to charcoal canister solenoid valve No.1 pin and connect the negative battery (-) to charcoal canister solenoid valve No.2 pin. Check if the canister solenoid valve can open. After it opens, bleed air into direction of charcoal canister solenoid valve (arrow) until air flows smoothly.

Installation

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Warning/Caution/Hint

Caution:

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

1. Installation is in the reverse order of removal.

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Activated Charcoal Canister Filter

Removal

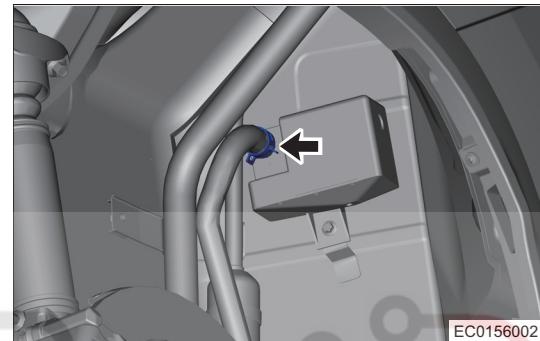
Warning/Caution/Hint

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.

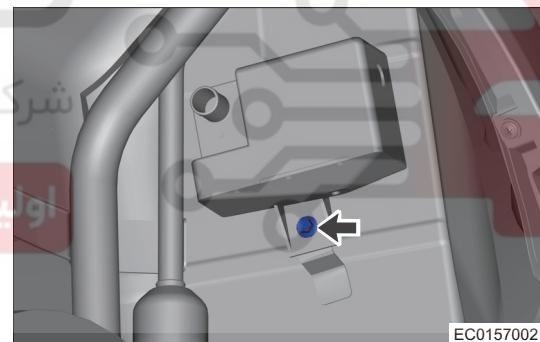
1. Turn off all electrical equipment and the ignition switch. Wait until engine cools down.
2. Disconnect the negative battery cable.
3. Remove the left wheel.
4. Remove the rear left wheel house protector.
5. Remove the activated charcoal canister filter.
 - (a) Loosen elastic clamp (arrow) and disconnect charcoal canister breather pipe.

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(b) Remove 1 fixing bolt (arrow) from activated charcoal canister filter.

Tightening torque
 $19 \pm 3 \text{ N}\cdot\text{m}$



(c) Remove the charcoal canister filter assembly.

Installation

Warning/Caution/Hint

Caution:

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

1. Installation is in the reverse order of removal.

Upstream Oxygen Sensor

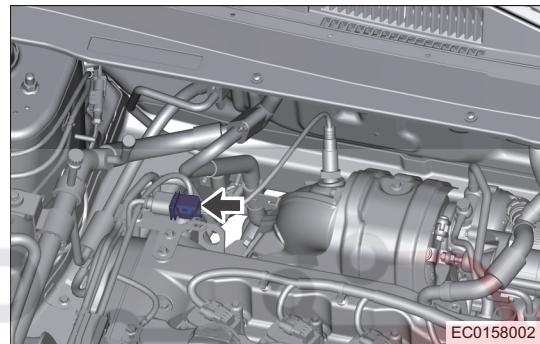
Removal

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.

- Turn off all electrical equipment and the ignition switch.
- Disconnect the negative battery cable.
- Remove the engine trim cover.
- Remove the upstream oxygen sensor.
 - Take off and disconnect the upstream oxygen sensor connector (arrow) from bracket.



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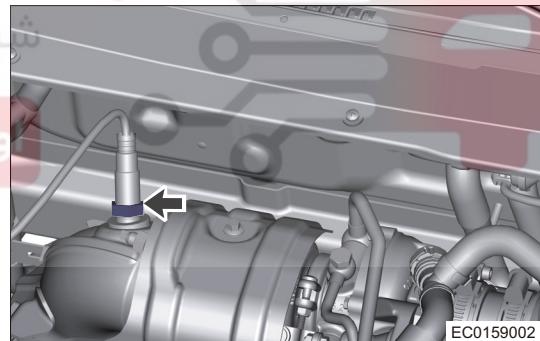
- Remove the upstream oxygen sensor (arrow) from tip of precatalytic converter.

Hint:

Remove it with special tool oxygen sensor socket.

Tightening torque

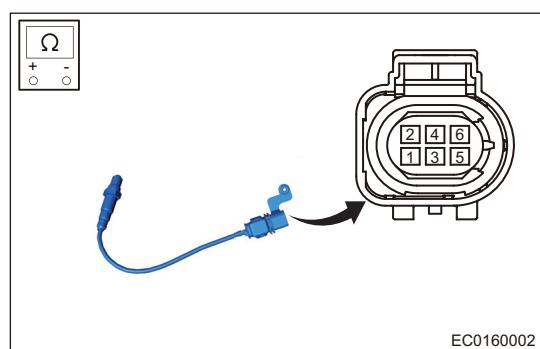
$45 \pm 5 \text{ N}\cdot\text{m}$



Inspection

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

Multimeter Connection	Specified Condition
Terminal 1	Pump current
Terminal 2	Virtual ground
Terminal 3	Heater negative
Terminal 4	Heater positive
Terminal 5	Corrected resistance
Terminal 6	Nernst voltage



Multimeter Connection	Condition	Specified Condition
Terminal 3 - Terminal 4	20 °C	4 Ω
Terminal 1 - Terminal 5	20 °C	30 – 300 Ω
Terminal 1 - Terminal 2, 3, 4, 6		
Terminal 2 - Terminal 1, 3, 4, 5, 6		
Terminal 3 - Terminal 1, 2, 5, 6	Always	No continuity
Terminal 4 - Terminal 1, 2, 5, 6		
Terminal 5 - Terminal 2, 3, 4, 6		
Terminal 6 - Terminal 1, 2, 3, 4, 5		

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, apply to mounting threads 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.

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Downstream Oxygen Sensor

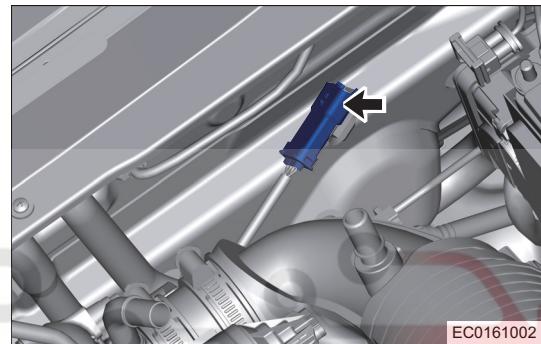
Removal

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.

- Turn off all electrical equipment and the ignition switch.
- Disconnect the negative battery cable.
- Remove the downstream oxygen sensor.
 - Raise the vehicle to a proper position.
 - Take off and disconnect the downstream oxygen sensor connector (arrow) from bracket.



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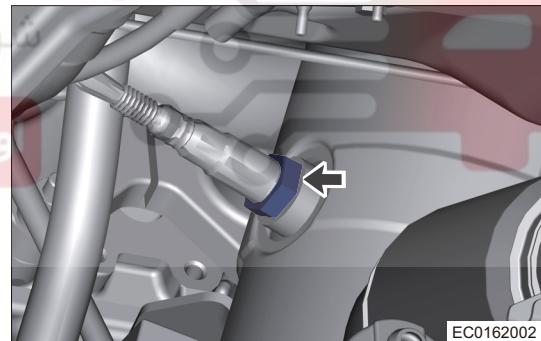
- Remove downstream oxygen sensor (arrow) from pre-catalytic assembly.

Hint:

Remove it with special tool oxygen sensor socket.

Tightening torque

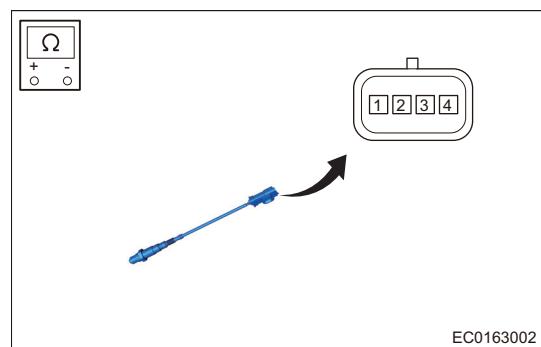
45 ± 5 N·m



Inspection

- Check the downstream oxygen sensor.
 - 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 – 22Ω
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.

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, apply to mounting threads during reassembly.

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Material number

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