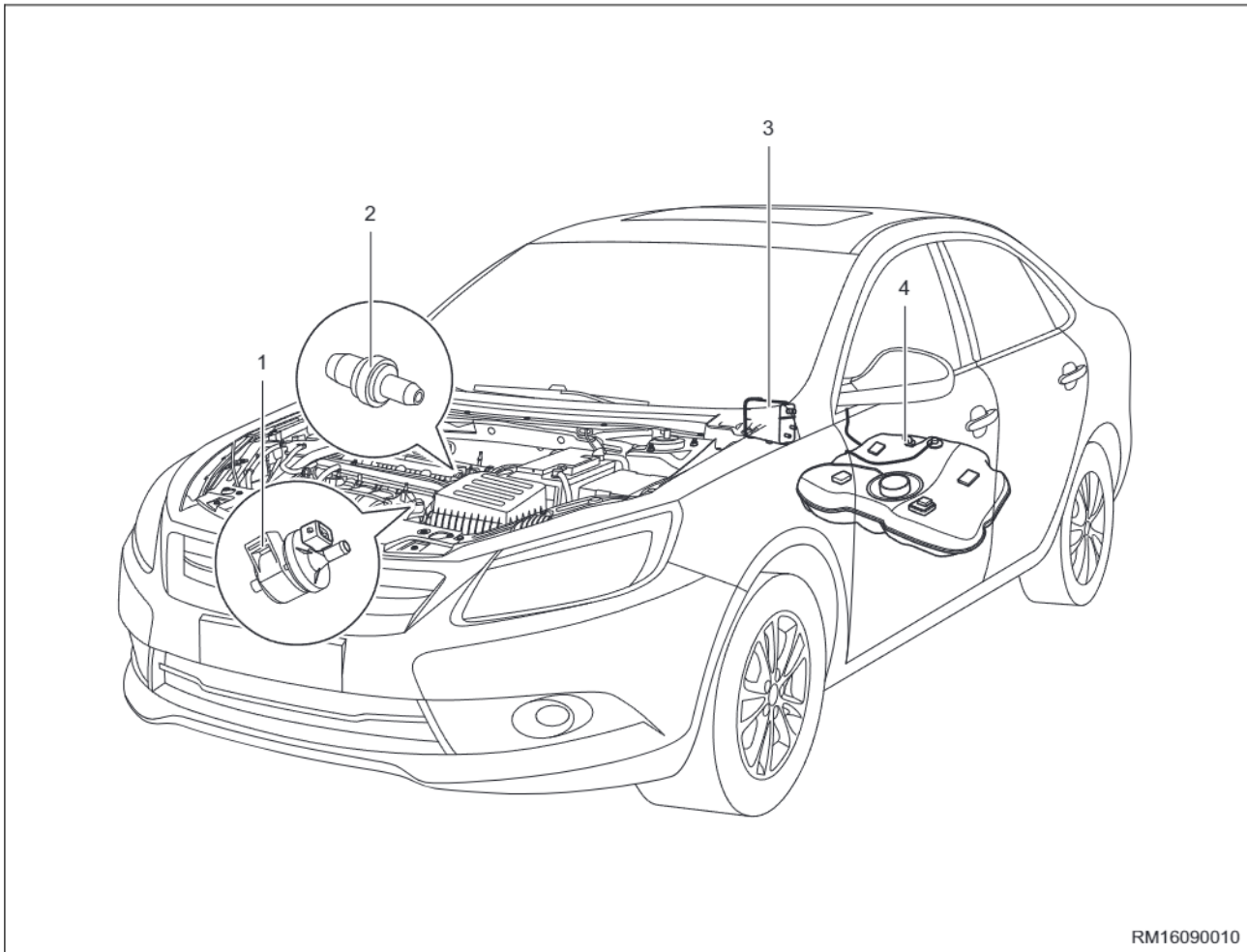


SQRE4G16 EMISSION CONTROL SYSTEM

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GENERAL INFORMATION

Description



09

RM16090010

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

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 NO_x 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 pipe. When engine stops operating, the fuel vapor and fresh air will be stored in the activated charcoal canister assembly. When canister solenoid valve opens, the fuel vapor will enter intake manifold to burn.

Oxygen sensor consists of upstream oxygen sensor and downstream oxygen sensor. Upstream oxygen sensor is installed on exhaust manifold assembly, and downstream oxygen sensor is installed on main catalytic 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 NO_x in exhaust gas.

Specifications

Torque Specifications

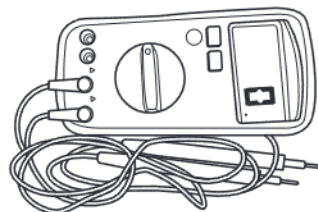
Description	Torque (N·m)
Activated Charcoal Canister Solenoid Valve Bracket Fixing Bolt	8 ± 1
Coupling Bolt Between Activated Charcoal Canister Assembly and Body	5 ± 1
Exhaust Manifold Heat Insulator Fixing Bolt	$8 + 3$
Upstream Oxygen Sensor	40 - 60
Downstream Oxygen Sensor	40 - 60

Tool

General Tool

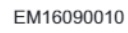
09

Digital Multimeter



RCH0000002

Emission Control System



DIAGNOSIS & TESTING

Leakage Inspection

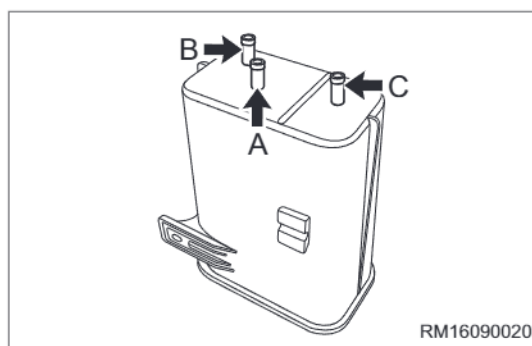
Visually check that hoses, connections and gaskets have no cracks, leaks or damage.

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

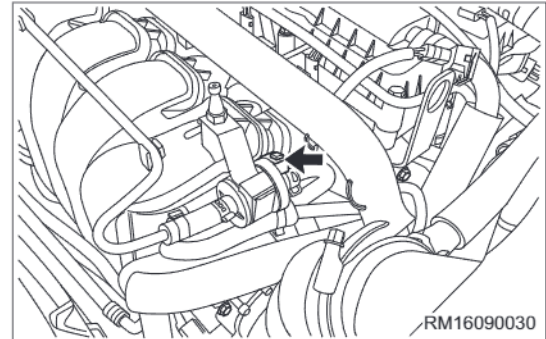
Activated Charcoal Canister Solenoid Valve and Bracket

Removal

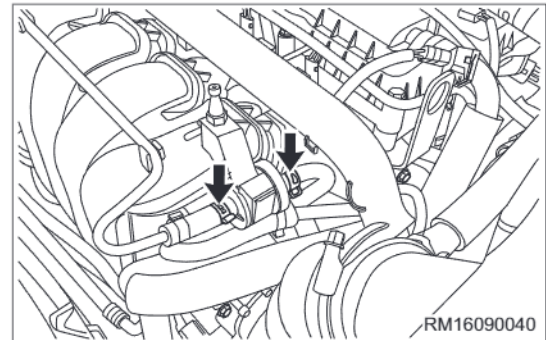
CAUTION

- 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 III assembly and outlet hoses to avoid confusion.

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 activated charcoal canister solenoid valve.
 - a. Disconnect the activated charcoal canister solenoid valve connector (arrow).



- b. Loosen the elastic clamps (arrow), and disconnect the connection between hose and activated charcoal canister solenoid valve.

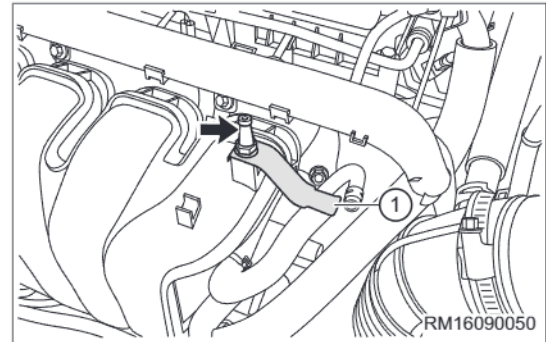


CAUTION

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

- c. Remove the charcoal canister solenoid valve from bracket.

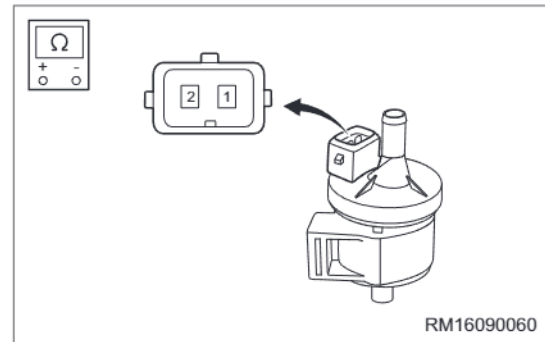
5. Remove the activated charcoal canister solenoid valve bracket.
- a. Remove the activated charcoal canister solenoid valve bracket fixing bolt (arrow), and remove the activated charcoal canister solenoid valve bracket (1).
(Tightening torque: 8 ± 1 N·m)



Inspection

Measure the resistance between 2 terminals of charcoal canister solenoid valve with a digital multimeter.

Multimeter Connection	Measurement Temperature	Specification (Ω)
Terminal 1 - Terminal 2	20°C	26 ± 4



Installation

Installation is in the reverse order of removal.

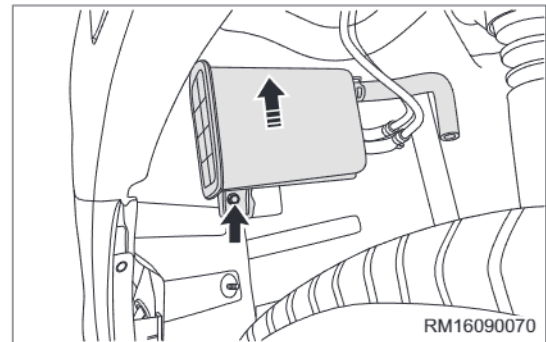
Activated Charcoal Canister Assembly

Removal

CAUTION

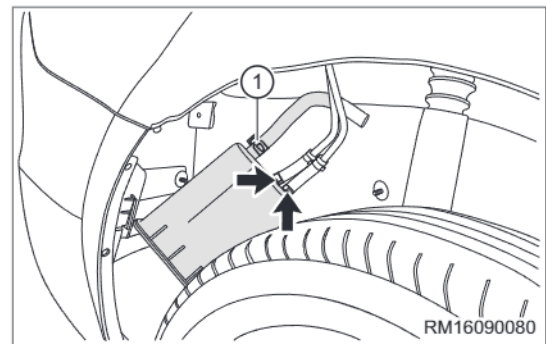
- Be sure to wear necessary safety equipment to prevent accidents when repairing.
- Try to prevent body paint surface from being scratched during removal and installation.
- Before removal, mark the fuel vapor hose II, fuel vapor hose I and charcoal canister breather pipe to avoid confusion.

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the rear right wheel house protector ([See page 49-32](#)).
4. Remove the activated charcoal canister assembly.
 - a. Remove the coupling bolt (arrow) between activated charcoal canister assembly and body.
(Tightening torque: $5 \pm 1 \text{ N}\cdot\text{m}$)
 - b. Remove the activated charcoal canister assembly from body bracket in the direction of arrow as shown in the illustration.



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- c. Loosen the hose clamps (arrow), disconnect the connection between hose and activated charcoal canister assembly, and remove the activated charcoal canister assembly.
- d. Loosen the elastic clamp (1), and remove the charcoal canister breather pipe from activated charcoal canister assembly.



CAUTION

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

ENVIRONMENTAL PROTECTION

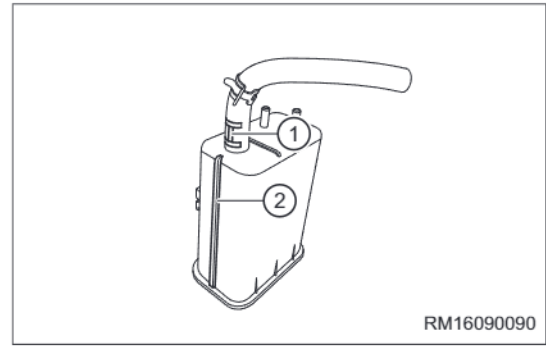
- Unneeded activated charcoal canister assembly should be handled by the specialized department according to local laws and regulations. Never discard it at will.

Installation

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.



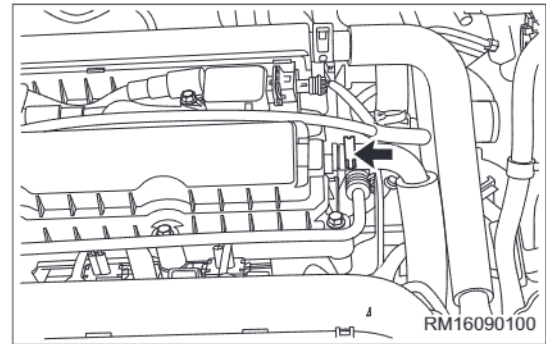
PCV Valve

Removal

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 PCV valve.
 - a. Disconnect the clamp (arrow) between PCV valve and hose with a tool.



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CAUTION

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

- b. Loosen and remove the PCV valve from cylinder head cover.
(Tightening torque: 3 ± 1 N·m)

Inspection

1. Install a clean hose to PCV valve.
2. Check the PCV valve operation.
 - a. Blow air into the cylinder head side, and check that air flows smoothly.

WARNING

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

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

If result is not as specified, replace PCV valve.

3. Remove the clean hose from PCV valve.

Installation

Installation is in the reverse order of removal.

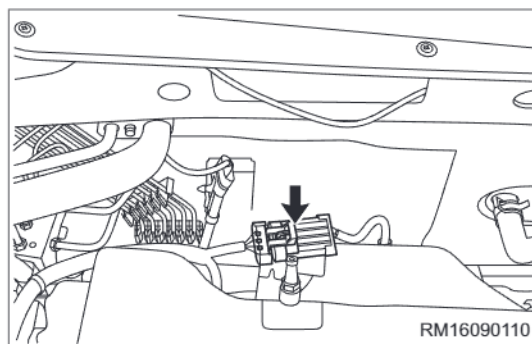
Upstream Oxygen Sensor

Removal

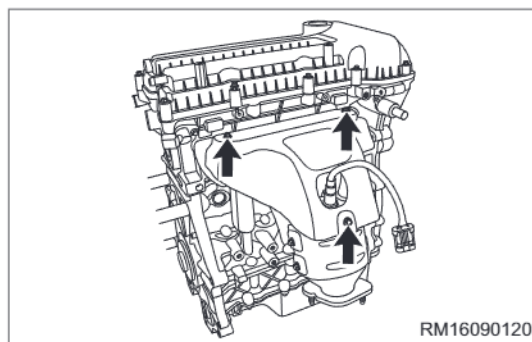
WARNING

- The temperature of exhaust system is very high when engine is running. Before removal, you must make sure that engine has shut off, 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.

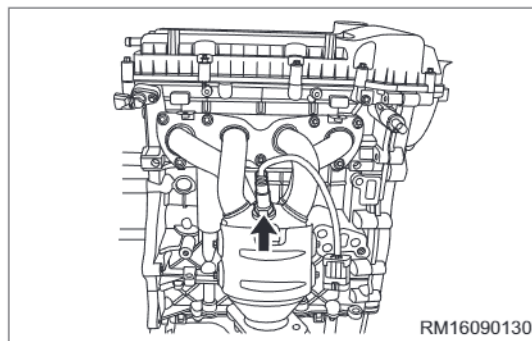
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the upstream oxygen sensor.
 - a. Remove and disconnect the upstream oxygen sensor connector (arrow) from bracket.



- b. Remove 3 fixing bolts (arrow) from exhaust manifold heat insulator, and remove the exhaust manifold heat insulator.
(Tightening torque: 8 + 3 N·m)



- c. Remove the upstream oxygen sensor (arrow) from exhaust manifold.
(Tightening torque: 40 - 60 N·m)

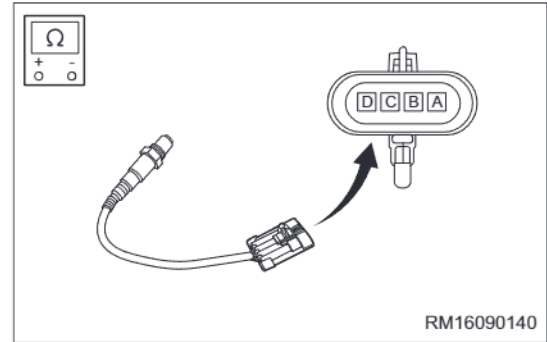


Inspection

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

Multimeter Connection	Condition	Specified Condition
Terminal C - Terminal D	20°C	7 - 11 Ω
Terminal A - Terminal B Terminal A - Terminal C Terminal A - Terminal D Terminal B - Terminal C Terminal B - Terminal D	Always	No continuity

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



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Installation

Installation is in the reverse order of removal.

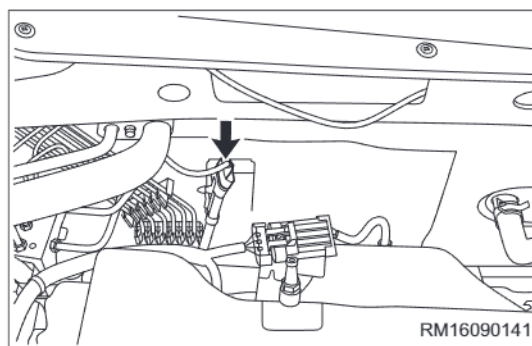
Downstream Oxygen Sensor

Removal

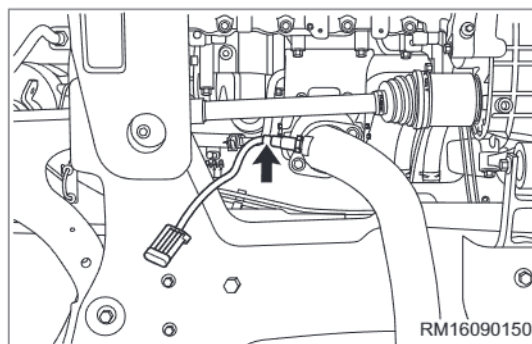
WARNING

- The temperature of exhaust system is very high when engine is running. Before removal, you must make sure that engine has shut off, 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 ignition switch.
2. Disconnect the negative battery cable.
3. Remove the downstream oxygen sensor.
 - a. Remove and disconnect the downstream oxygen sensor connector (arrow) from bracket.



- b. Raise the vehicle to a proper position.
- c. Remove the downstream oxygen sensor (arrow) from main catalytic converter assembly.
(Tightening torque: 40 - 60 N·m)

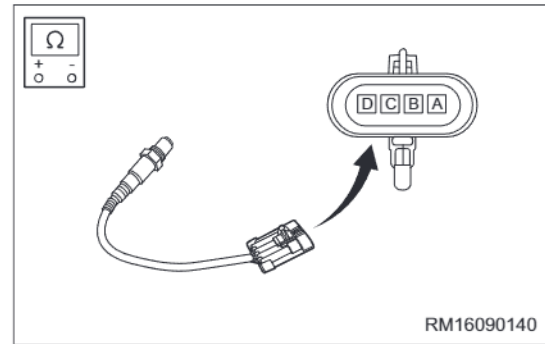


Inspection

1. Measure the resistance of downstream oxygen sensor with a digital multimeter.

Multimeter Connection	Condition	Specified Condition
Pin C - Pin D	20°C	7 - 11 Ω
Terminal A - Terminal B Terminal A - Terminal C Terminal A - Terminal D Terminal B - Terminal C Terminal B - Terminal D	Always	No continuity

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



09

Installation

Installation is in the reverse order of removal.

