

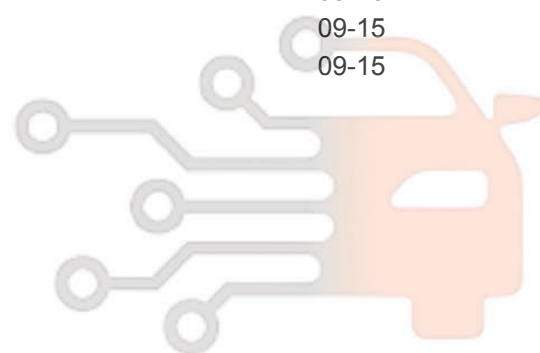
SQRD4G15B EMISSION CONTROL SYSTEM

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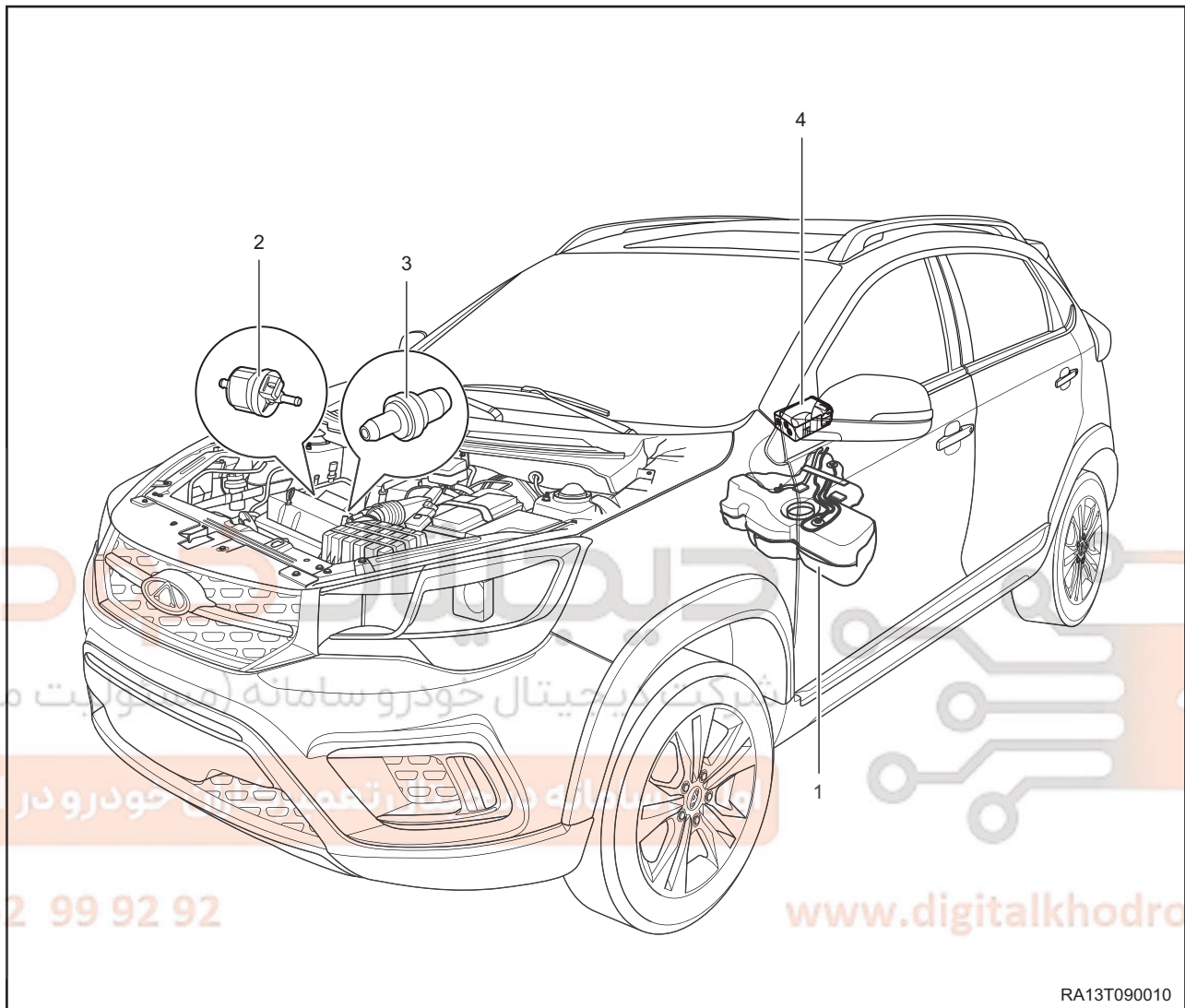


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GENERAL INFORMATION

Description



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RA13T090010

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

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 plays an important role in emission control system. it is used to absorb and filter moisture and fuel vapor. Fresh air enters bottom of activated charcoal canister while fuel vapor enters top of activated charcoal canister through pipe. When engine stops operating, fuel vapor and fresh air will be stored in activated charcoal canister. When canister solenoid valve opens, 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, and downstream oxygen sensor is installed on main catalytic converter assembly. Oxygen sensor can detect 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

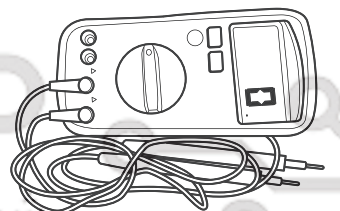
Description	Torque (N·m)
Charcoal Canister Solenoid Valve Bracket Fixing Bolt	10 ± 3
Coupling Bolt Between Activated Charcoal Canister and Body	8 ± 3
Exhaust Manifold Heat Insulator Fixing Bolt	8 ± 3
Upstream Oxygen Sensor	45 ± 5
Downstream Oxygen Sensor	45 ± 5
EGR Fixing Bolt	20 ± 5

Tool

General Tool

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Digital Multimeter



RCH0000002

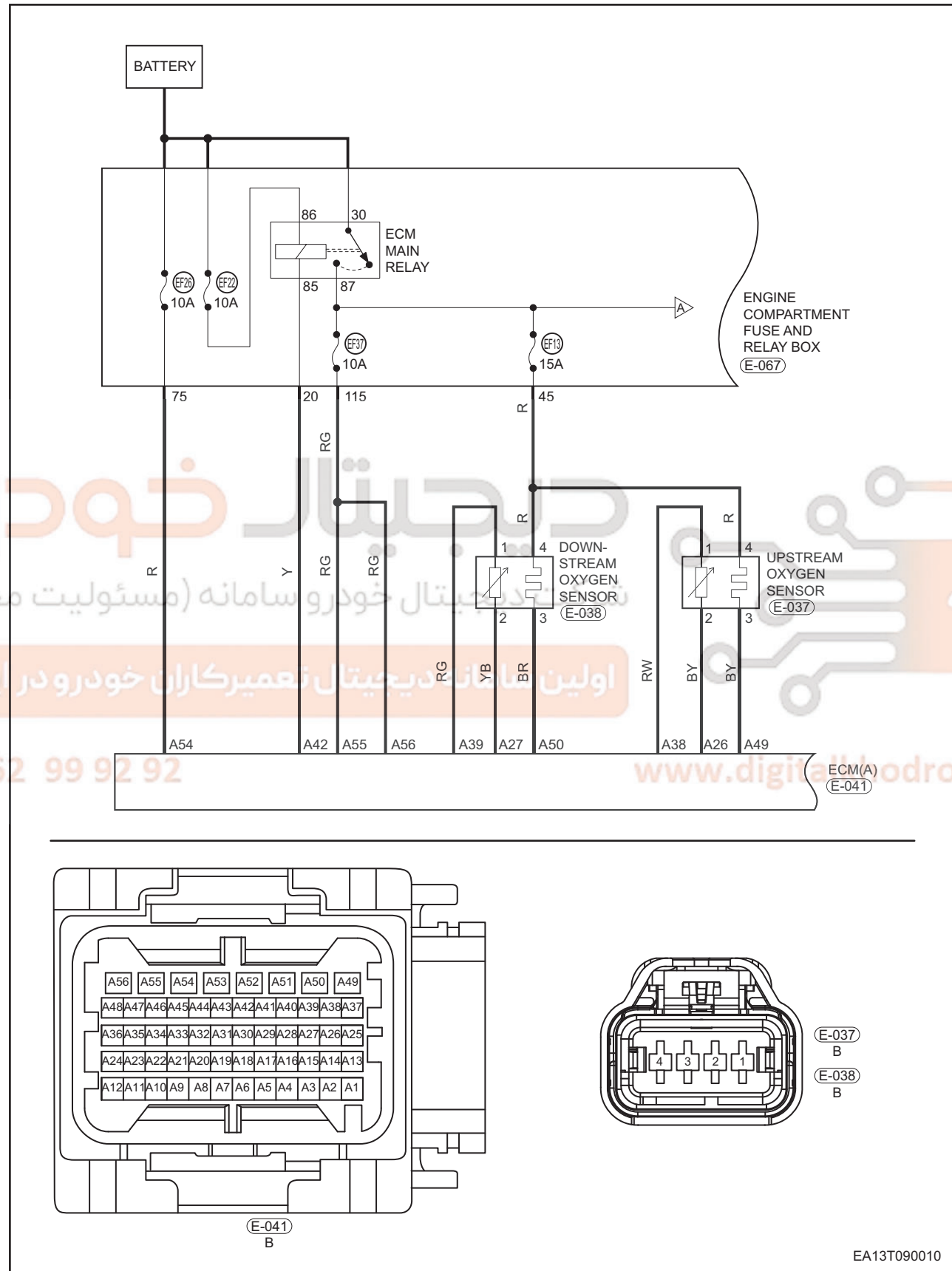
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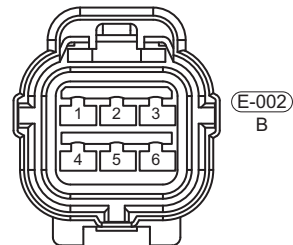
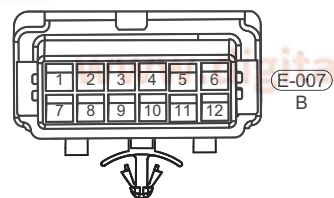
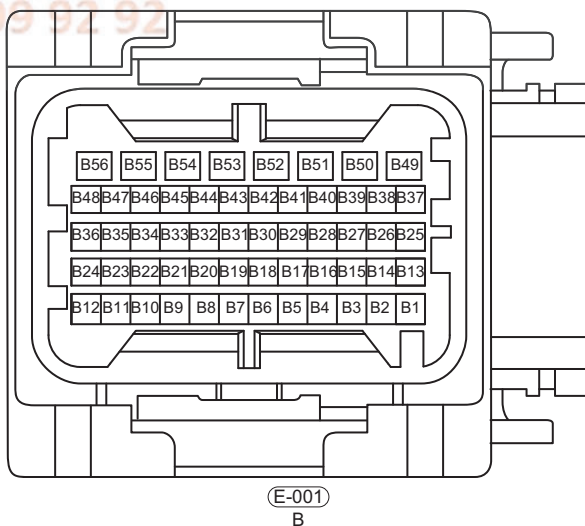
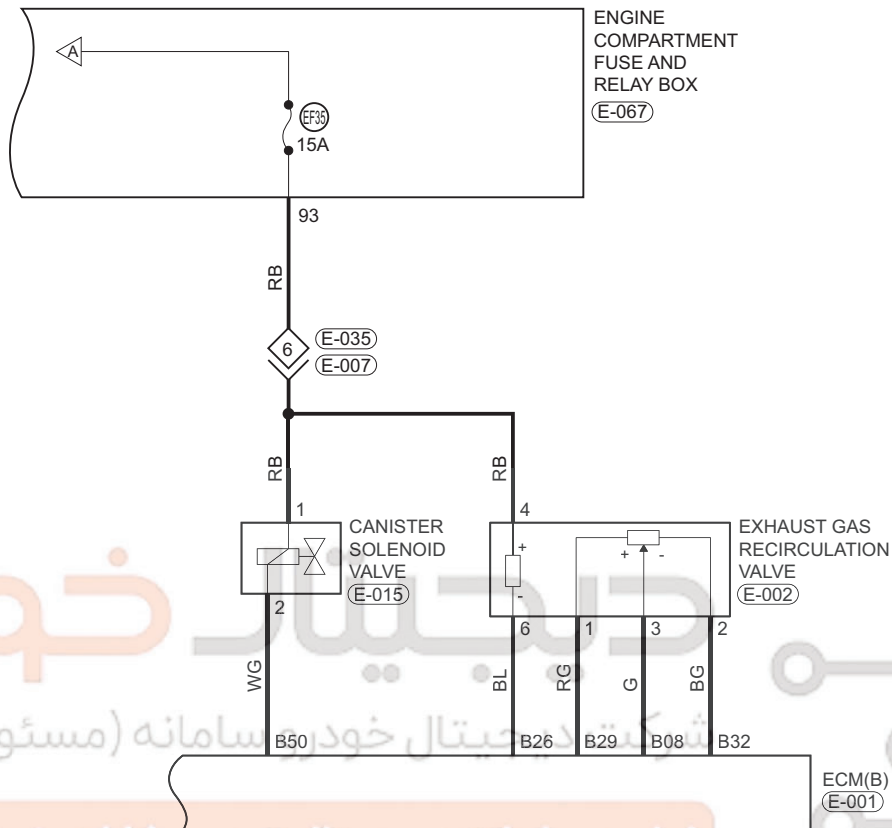
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Circuit Diagram

Emission Control System (Page 1 of 2)



Emission Control System (Page 2 of 2)



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DIAGNOSIS & TESTING

Leakage Inspection

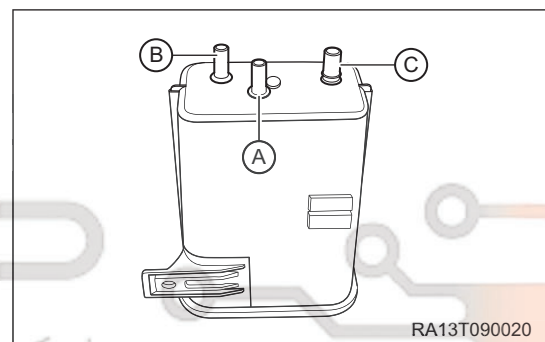
Visually check that hoses, connections and gaskets have no cracks, leaks or damage.

CAUTION

- Removal of engine oil dipstick, filler cap, PCV hose and other components or other problems in them may cause 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 parts as necessary.

Activated Charcoal Canister Inspection

- Close port C and blow compressed air into port A. Check that air flows out from port B. If result is not as specified, replace canister.
- Close port C and blow compressed air into port B. Check that air flows out from port A. If result is not as specified, replace canister.



Fuel Filler Cap Inspection

- Visually check that fuel filler cap assembly is not deformed or damaged.
- If result is not as specified, replace fuel filler cap.

ON-VEHICLE SERVICE

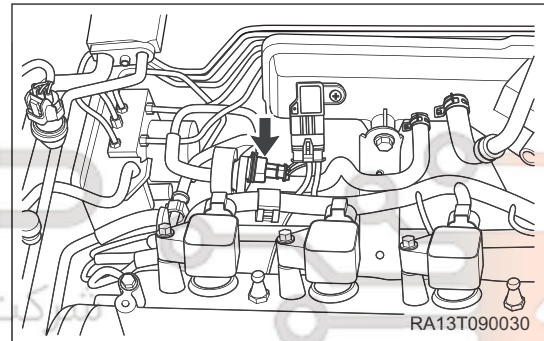
Activated Charcoal Canister Solenoid Valve

Removal

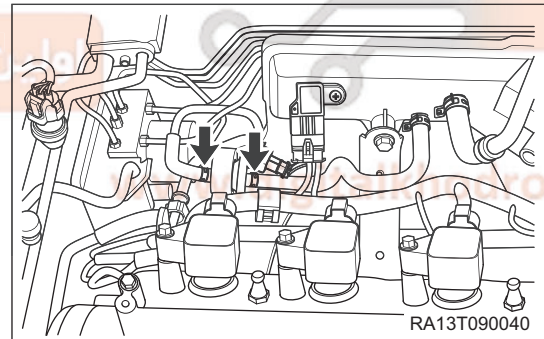
CAUTION

- Before removal, mark intake and exhaust hose 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 charcoal canister solenoid valve connector (arrow).



- b. Loosen elastic clamps (arrow), and disconnect connection between both ends of charcoal canister solenoid valve and hose.



CAUTION

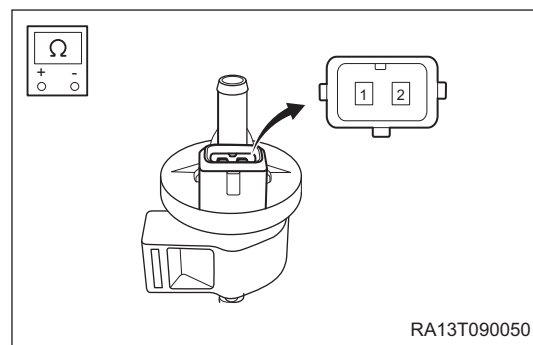
- Positioning distance from hose end to clamp is 3 to 5 mm.

- c. Remove charcoal canister solenoid valve from bracket.

Inspection

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

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



Installation

Installation is in the reverse order of removal.

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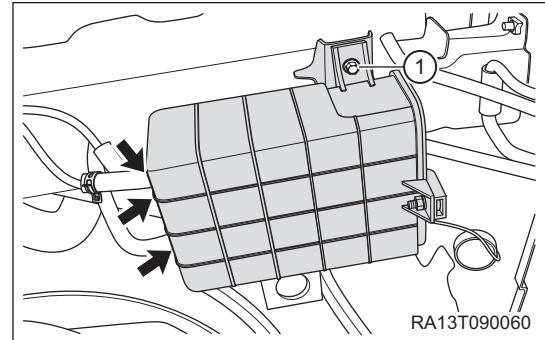
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Activated Charcoal Canister Assembly

Removal

1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Raise vehicle to a proper position.
4. Remove the activated charcoal canister assembly.
 - a. Loosen elastic clamps (arrow), and disconnect connection between activated charcoal canister and hose.



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CAUTION

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

- b. Remove activated charcoal canister bracket fixing bolt (1) and activated charcoal canister with bracket assembly.
(Tightening torque: 8 + 3 N·m)



ENVIRONMENTAL PROTECTION

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

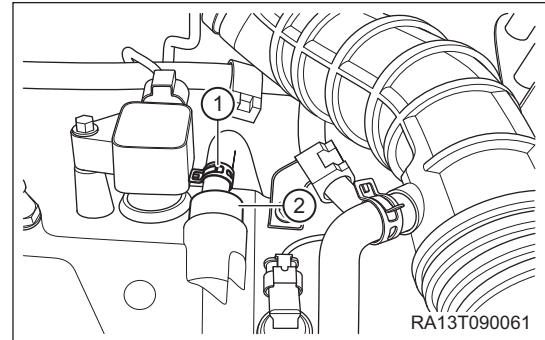
Installation

Installation is in the reverse order of removal.

PCV Valve

Removal

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 elastic clamp (1) between PCV valve and hose.
 - b. Remove PCV valve from PCV valve rubber boot (2).



- c. Remove the PCV valve rubber boot.

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Inspection

1. Install a clean hose to PCV valve.
2. Check the PCV valve operation.
 - a. Blow air into cylinder head side, and check that air flows smoothly.
 - b. Blow air into intake manifold side, and check that air flows difficultly.If result is not as specified, replace PCV valve.

⚠ WARNING

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

3. Remove clean hose from PCV valve.

Installation

Installation is in the reverse order of removal.

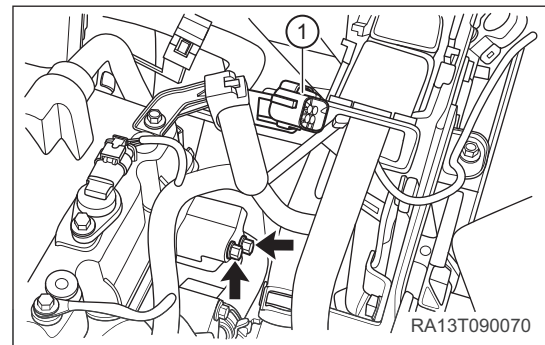
👁 CAUTION

- Press PCV valve rubber boot into cylinder head cover, and then press in PCV valve.
- Positioning distance from hose end to elastic clamp is 3 to 5 mm.

EGR Valve

Removal

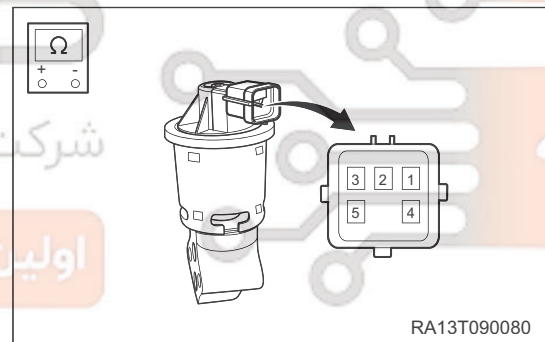
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the intake hose.
5. Remove the EGR valve.
 - a. Unplug the connector (1).
 - b. Remove 2 fixing bolts (arrow), EGR valve and washer.
(Tightening torque: $20 + 5 \text{ N}\cdot\text{m}$)



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Inspection

Measure resistance of EGR valve with a digital multimeter.



Multimeter Connection	Condition	Specification (Ω)
Terminal 1 - Terminal 2	Normal temperature	2340 ~ 3380
Terminal 4 - Terminal 5	Normal temperature	7.5 ~ 8.5

If result is not as specified, replace EGR valve.

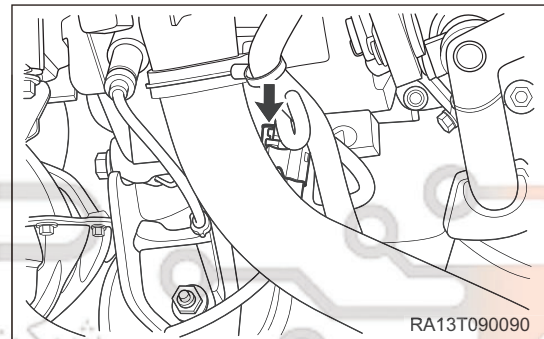
Upstream Oxygen Sensor

Removal

WARNING

- 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.

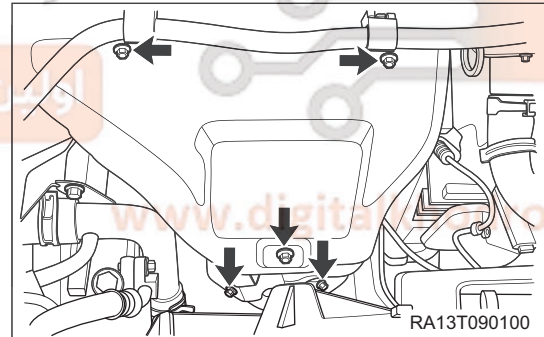
1. Turn off all electrical equipment and the ignition switch.
2. Disconnect the negative battery cable.
3. Remove the engine trim cover.
4. Remove the upstream oxygen sensor.
 - a. Take off and disconnect upstream oxygen sensor connector (arrow) from bracket.



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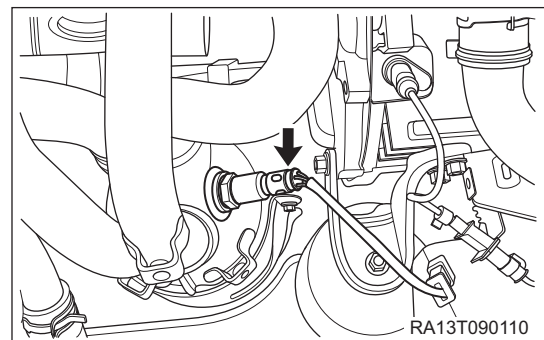
- b. Remove 5 fixing bolts (arrow) and exhaust manifold heat insulator.

(Tightening torque: $8 + 3 \text{ N}\cdot\text{m}$)



- c. Remove upstream oxygen sensor (arrow) from exhaust manifold.

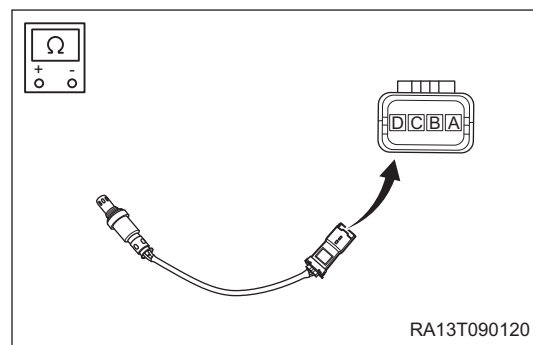
(Tightening torque: $45 \pm 5 \text{ N}\cdot\text{m}$)



Inspection

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

Multimeter Connection	Condition	Specification (Ω)
Terminal C - Terminal D	20°C	7 - 11
Terminal A - Terminal B Terminal A - Terminal C Terminal A - Terminal D Terminal B - Terminal C Terminal B - Terminal D	Always	∞



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

Installation

Installation is in the reverse order of removal.

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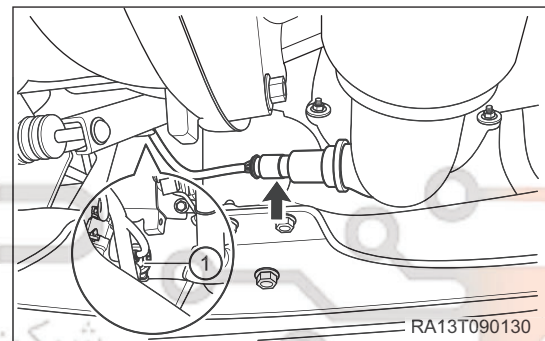
Downstream Oxygen Sensor

Removal

⚠ WARNING

- 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.

- Turn off all electrical equipment and the ignition switch.
- Disconnect the negative battery cable.
- Raise vehicle to a proper position.
- Remove the downstream oxygen sensor.
 - Take off and disconnect downstream oxygen sensor connector (1) from bracket.
 - Remove downstream oxygen sensor (arrow) from front pipe assembly.
(Tightening torque: $45 \pm 5 \text{ N}\cdot\text{m}$)



Inspection

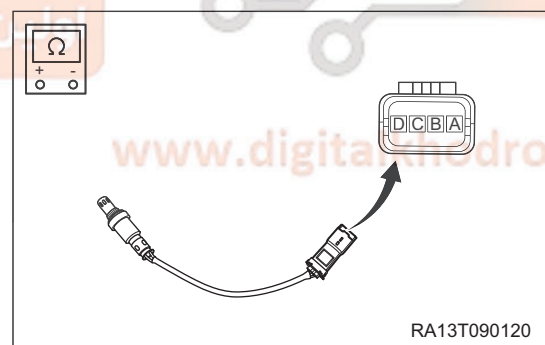
- Measure resistance of downstream oxygen sensor with a digital multimeter.

Multimeter Connection	Condition	Specification (Ω)
Terminal C - Terminal D	20°C	7 - 11
Terminal A - Terminal B Terminal A - Terminal C Terminal A - Terminal D Terminal B - Terminal C Terminal B - Terminal D	Always	∞

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

Installation

Installation is in the reverse order of removal.



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