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2010 MAZDA 2 OEM Service and Repair Workshop Manual

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KNOCK SENSOR (KS) INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]

SM2897818

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Resistance Inspection

1.Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

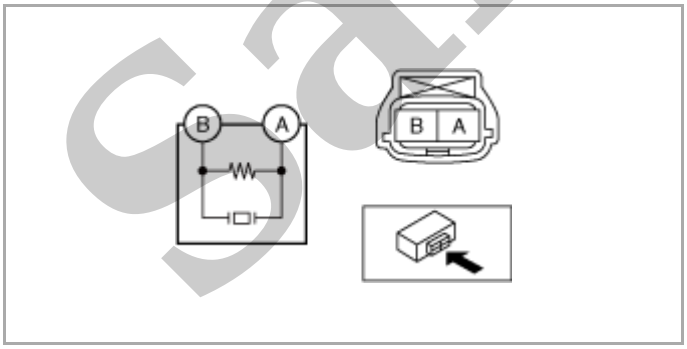
2.Remove the plug hole plate. (See PLUG HOLE PLATE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

3.Remove the intake manifold. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

4.Disconnect the KS connector.

5.Remove the KS. (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

6.Measure the resistance between KS terminals A and B.



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• If not as specified, replace the KS. (See KNOCK SENSOR (KS) REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

Specification

504–616 kilohms [10–30 °C {50–86 °F}]

ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]

SM2897820

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Note

• Because the APP sensor is integrated in the accelerator pedal, replacing the APP sensor includes replacement of the accelerator pedal.

Function Inspection

1.Connect the M-MDS to the DLC-2.

2.Switch the ignition ON (engine off).

3.Display the PIDs APP1 and APP2. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].) (See PCM INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

4.Compare the voltage and opening angle indications for the PIDs APP1 and APP2 with the standard in the table indicated below.

• If they do not match the standard, perform the voltage inspection. (See Voltage Inspection.)

Standard

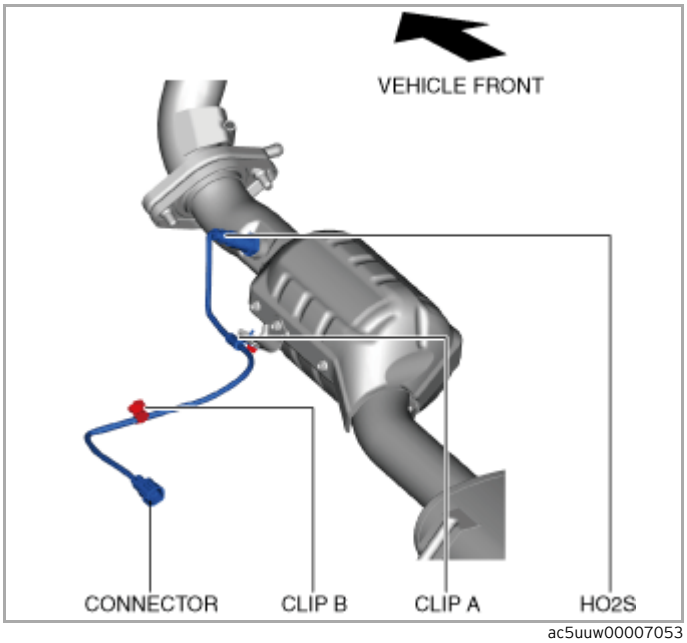
Condition/	APP1		APP2	
	V	%	V	%
Accelerator pedal released	Approx. 0.75	Approx. 15	Approx. 0.38	Approx. 7.45
Accelerator pedal depressed	Approx. 4.52	Approx. 90.58	Approx. 2.26	Approx. 45.49

Voltage Inspection

1.Connect the M-MDS to the DLC-2.

2.Switch the ignition ON (engine off).

3.Verify that the APP sensor output voltage (PID: APP1, APP2) increases according to the increase in the accelerator opening angle when the accelerator opening angle is gradually increased. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)



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1.Disconnect the negative battery terminal. (See NEGATIVE BATTERY TERMINAL DISCONNECTION/CONNECTION.)

2.Lift up the vehicle.

3.Remove the floor under cover. (2WD) (See FLOOR UNDER COVER REMOVAL/INSTALLATION.)

4.Remove the floor under cover (LH). (AWD) (See FLOOR UNDER COVER REMOVAL/INSTALLATION.)

5.Remove the insulator and brace bar. (2WD) (See EXHAUST SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

6.Disconnect the HO2S connector.

7.Remove the clip B from the body.

CONTROL SYSTEM LOCATION INDEX [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]

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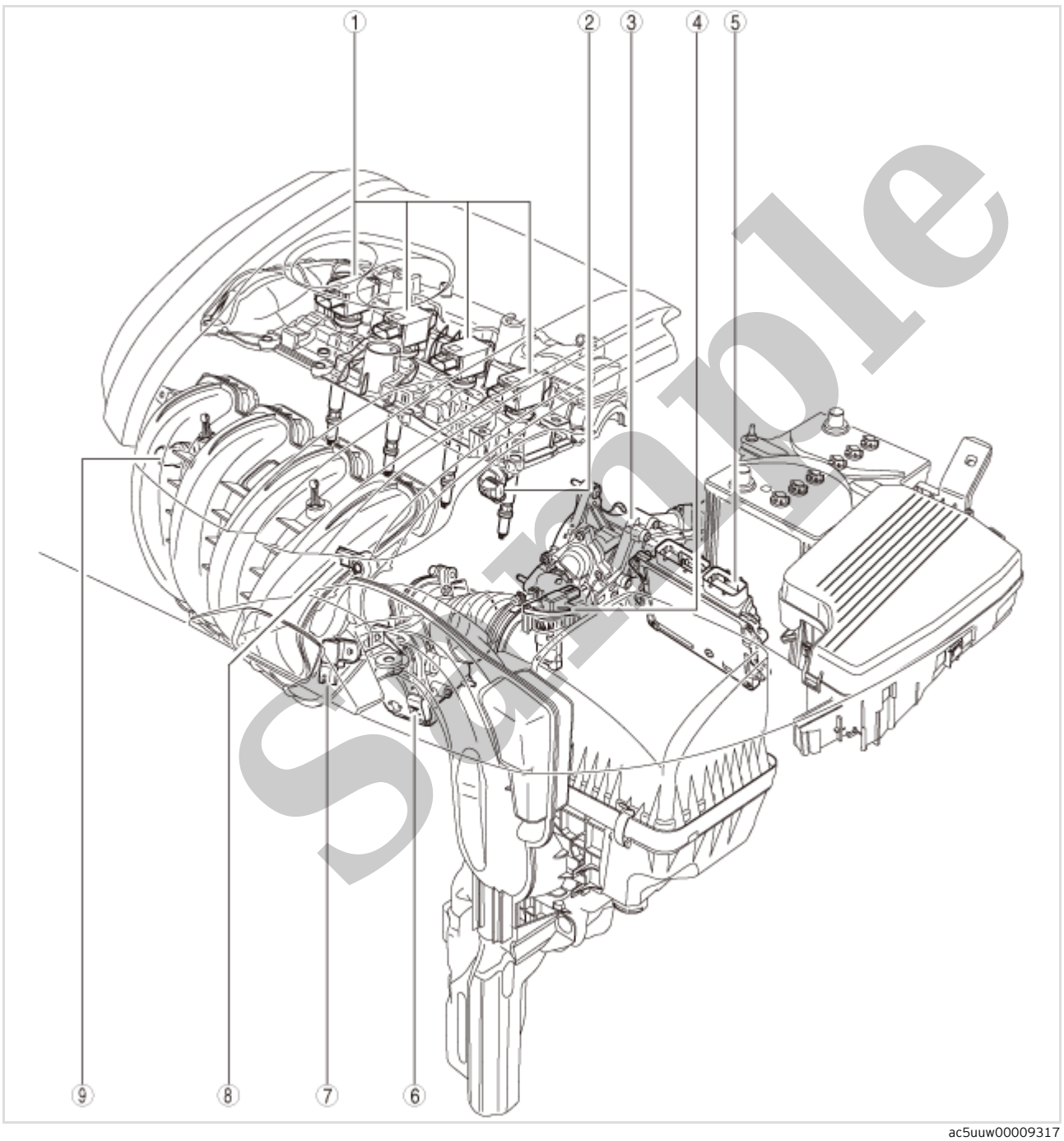
Engine Compartment



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1	Ion sensor (See ION SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See ION SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
2	Intake CMP sensor (See CAMSHAFT POSITION (CMP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See CAMSHAFT POSITION (CMP) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].

5	ECT sensor No.2 (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
6	Engine oil temperature sensor/Engine oil pressure sensor (See ENGINE OIL TEMPERATURE SENSOR/ENGINE OIL PRESSURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See ENGINE OIL TEMPERATURE SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See ENGINE OIL PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
7	ECT sensor No.1 (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
8	CKP sensor (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
9	Engine oil level sensor (With engine oil level sensor) (See ENGINE OIL LEVEL SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See ENGINE OIL LEVEL SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)
10	HO2S (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

PCM CONFIGURATION (USING READ/WRITE FUNCTION) [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]

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Caution

• When the configuration is performed, CAN communication between the PCM and control module connected to the CAN circuit is cut temporarily, and communication error DTCs may be detected. After performing the configuration, verify the DTCs for the control module connected to the CAN circuit and clear it if any DTC is detected.

Note

• When performing configuration, it is necessary to read the vehicle specification information from the PCM before replacing it. Connect the M-MDS to the vehicle and perform vehicle identification before removing the PCM. The vehicle specification information is temporarily stored in the M-MDS.

1.Connect the M-MDS to the DLC-2.

2.After the vehicle is identified, select the following items from the initialization screen of the M-MDS.

1. Select “Module Programming”.

3.Then, select items from the screen menu in the following order.

1. Select “Programmable Module Installation”.
2. Select “PCM”.

4.Perform the configuration according to the directions on the screen.

5.Verify the DTCs for all of the control modules connected to the CAN circuit.

• If any DTC is stored, clear it.
• If the DTC is cleared, finish the procedure because the configuration has been completed normally.
• If the DTC remains, perform troubleshooting according to the DTC.

3.Disconnect the quick release connectors and remove the evaporative hose component (fuel tank-side). (See QUICK RELEASE CONNECTOR (FUEL SYSTEM) REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].) (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

4.Switch the ignition ON (engine off).

5.Plug one end of the charcoal canister and verify that the output voltage from the fuel tank pressure sensor changes when pressure is applied from the other end.

- If not as verified, replace the charcoal canister. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)].)

AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION)]

SM2897830

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A/F Sensor Inspection

1.Connect the M-MDS to the DLC-2.

2.Switch the ignition ON (engine on).

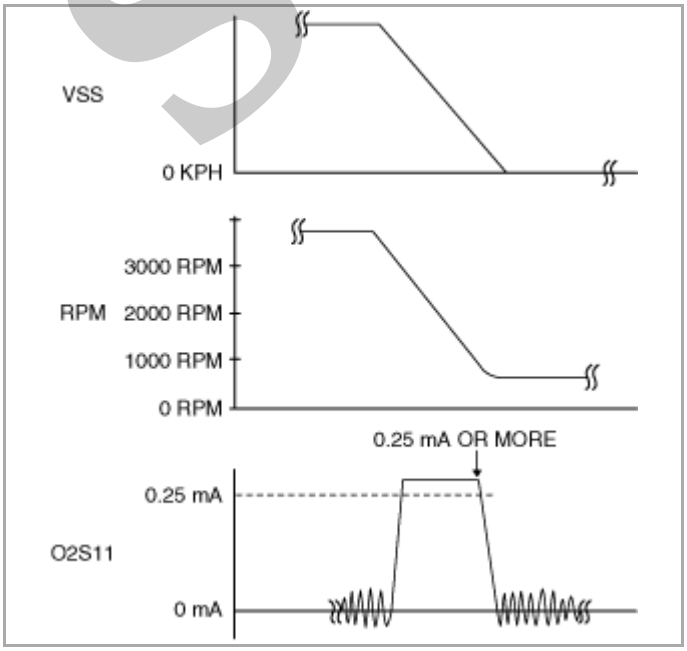
3.Warm up the engine to normal operating temperature.

4.Access the following PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITHOUT CYLINDER DEACTIVATION))].)

— VSS (Vehicle speed)
— RPM (Engine speed)
— O2S11 (A/F sensor output current)

5.Drive the vehicle and decelerate the engine speed by releasing the accelerator pedal fully when the engine speed is 3,000 rpm or more.

6.Verify that the A/F sensor output current (PID: O2S11) is 0.25 mA or more while decelerating as shown in the figure.



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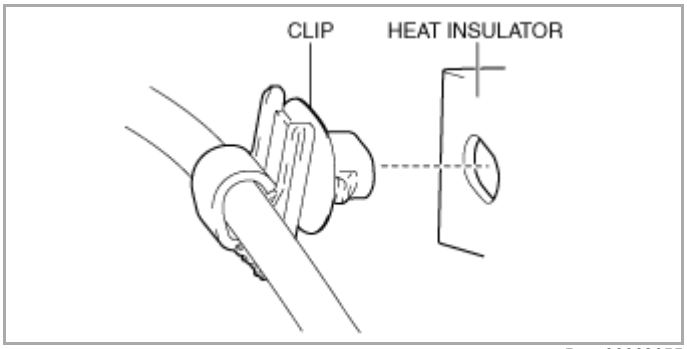

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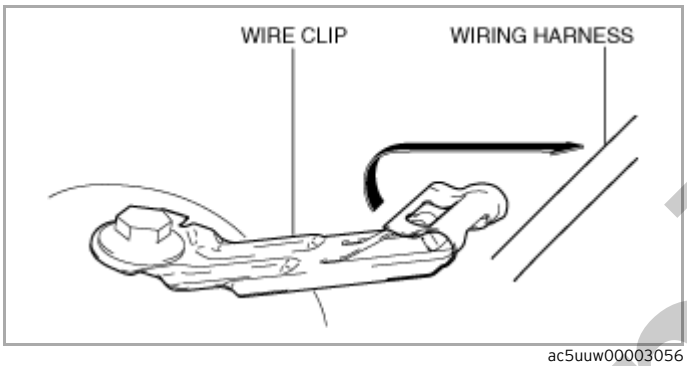
4.Remove the wiring harness from the wire clip A and B. (See Assembly of Wiring Harness to Wire Clip Note.)



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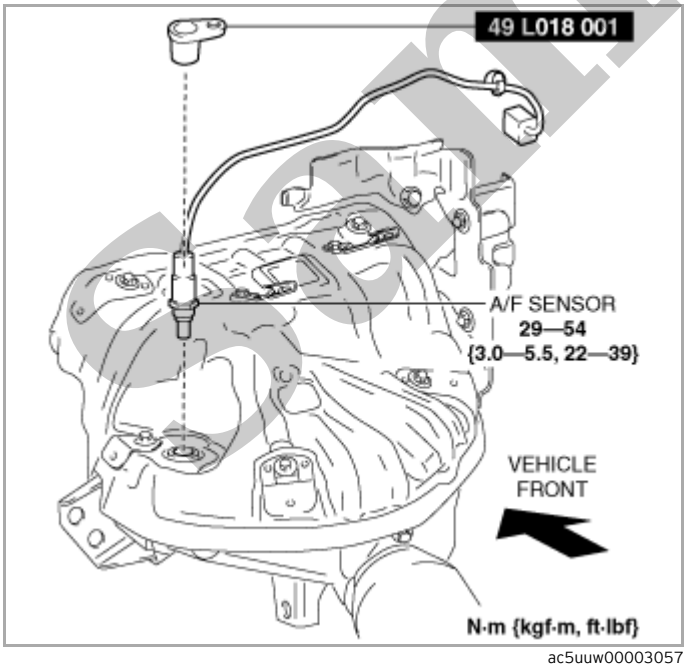
5.Remove the A/F sensor using the SST.



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6.Install in the reverse order of removal.

Assembly of Wiring Harness to Wire Clip Note

• Secure the heat shrinkable tube on the wiring harness to wire clip A.