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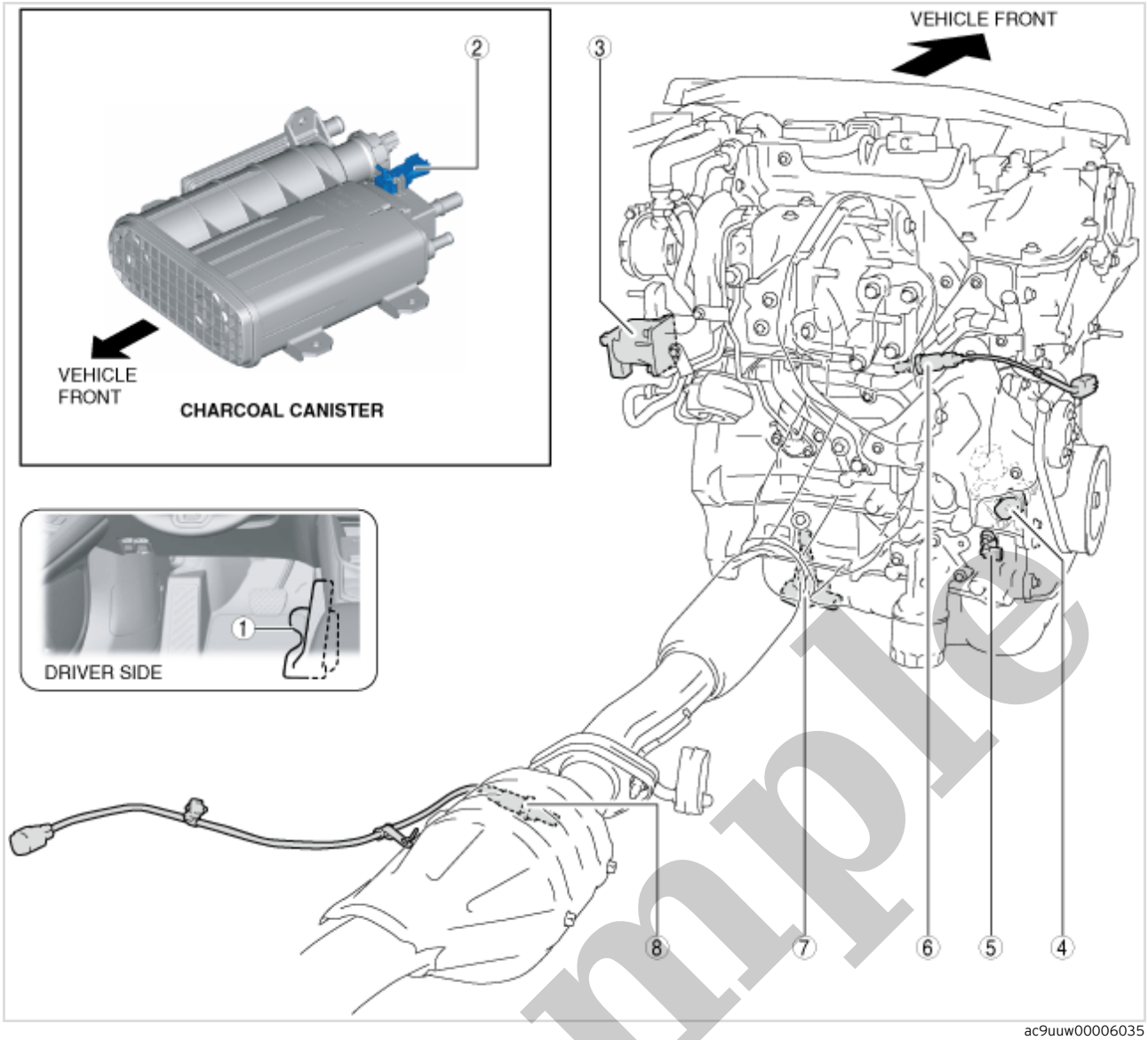
2009 MAZDA 6/Atenza Sedan OEM Service and Repair Workshop Manual

Go to manual page



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1	APP sensor (See ACCELERATOR PEDAL POSITION (APP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See ACCELERATOR PEDAL POSITION (APP) SENSOR INSPECTION [SKYACTIV-G 2.5T].)
2	Fuel tank pressure sensor (U.S.A., Canada and Israel) (See FUEL TANK PRESSURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See FUEL TANK PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5T].)
3	Wastegate valve position sensor (See WASTEGATE VALVE POSITION SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See WASTEGATE VALVE POSITION SENSOR INSPECTION [SKYACTIV-G 2.5T].)
4	Engine oil temperature sensor/Engine oil pressure sensor (See ENGINE OIL TEMPERATURE SENSOR/ENGINE OIL PRESSURE SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See ENGINE OIL PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5T].) (See ENGINE OIL TEMPERATURE SENSOR INSPECTION [SKYACTIV-G 2.5T].)
5	CKP sensor (See CRANKSHAFT POSITION (CKP) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See CRANKSHAFT POSITION (CKP) SENSOR INSPECTION [SKYACTIV-G 2.5T].)
6	A/F sensor (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.5T].)
7	Engine oil level sensor (See ENGINE OIL LEVEL SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See ENGINE OIL LEVEL SENSOR INSPECTION [SKYACTIV-G 2.5T].)
8	HO2S (See HEATED OXYGEN SENSOR (HO2S) REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) (See HEATED OXYGEN SENSOR (HO2S) INSPECTION [SKYACTIV-G 2.5T].)

BAROMETRIC PRESSURE (BARO) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T]

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Note

• The BARO sensor is built into the PCM. When replacing the BARO sensor, replace the PCM.

1.Remove the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)

PCM CONFIGURATION (USING READ/WRITE FUNCTION) [SKYACTIV-G 2.5T]

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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.

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 specified, replace the charcoal canister. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)

AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-G 2.5T]

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PID/DATA Monitor Inspection (A/F Sensor)

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

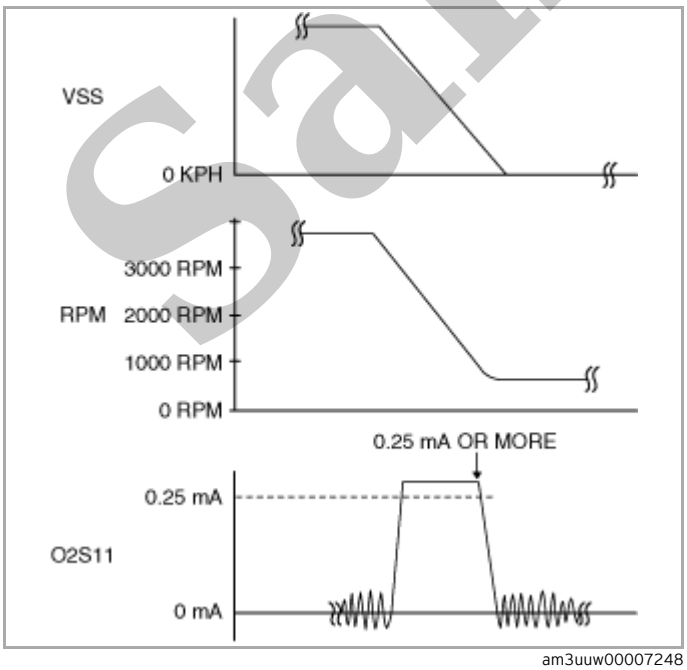
2.Start the engine and warm it up completely.

3.Access the following PIDs using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].)

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

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

5.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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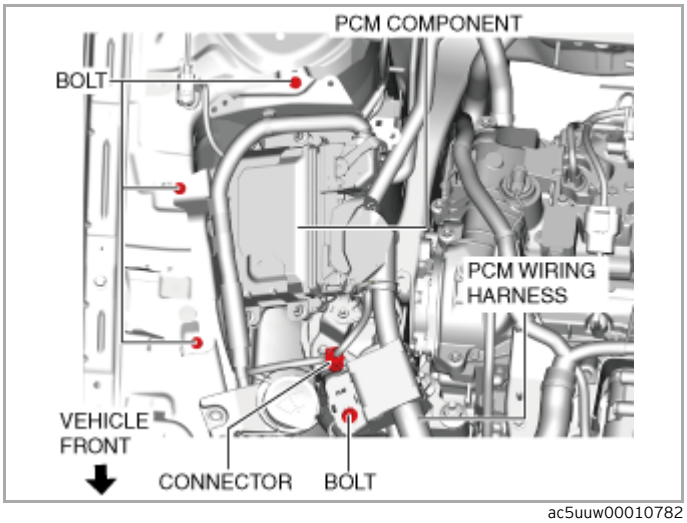
• If not as verified, replace the A/F sensor. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)

Resistance Inspection (A/F Sensor Heater)

Warning



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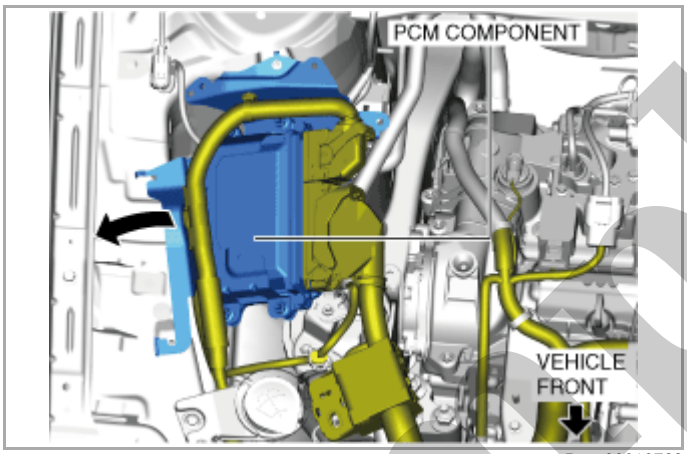
(3)Move the PCM component in the direction of the arrow shown in the figure and set it aside with the PCM connectors connected.



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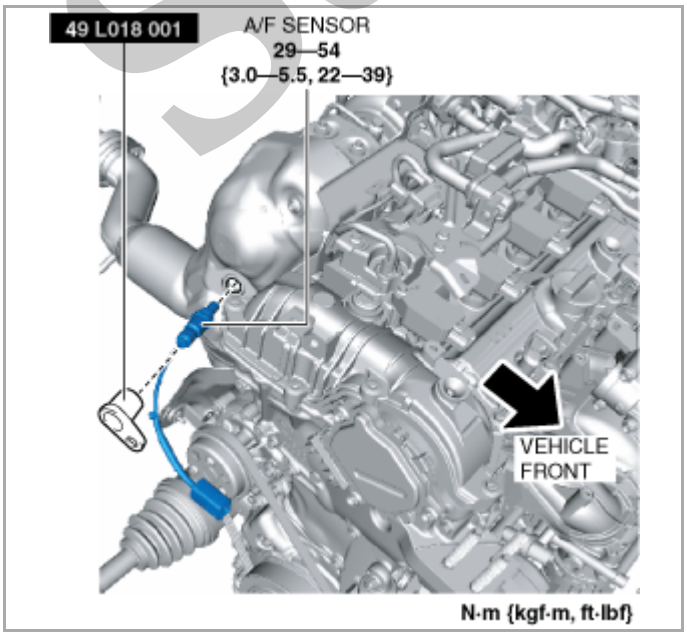
4.Disconnect the A/F sensor connector.

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



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MASS AIR FLOW (MAF) SENSOR/INTAKE AIR TEMPERATURE (IAT) SENSOR NO.1 REMOVAL/INSTALLATION [SKYACTIV-G 2.5T]

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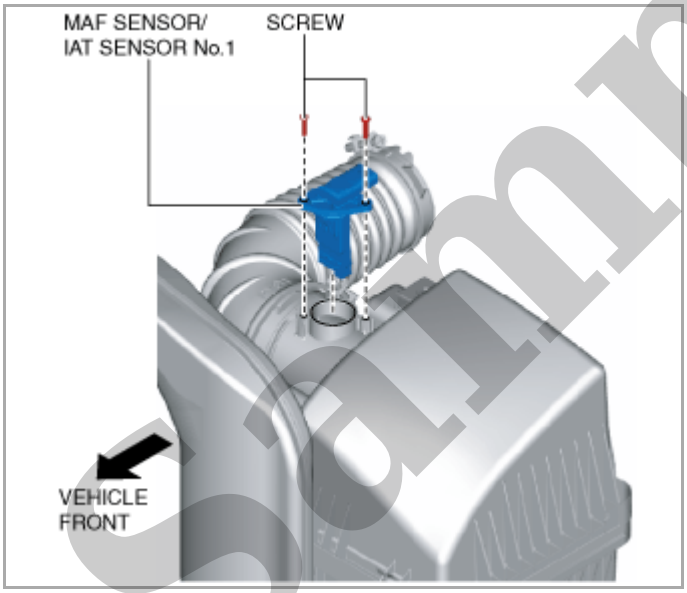
Note

• The MAF sensor and IAT sensor No.1 cannot be removed as a single unit. When replacing the MAF sensor or IAT sensor No.1, replace the MAF sensor/IAT sensor No.1.

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

2.Disconnect the MAF sensor/IAT sensor No.1 connector.

3.Remove the screws.



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4.Remove the MAF sensor/IAT sensor No.1.

5.Install in the reverse order of removal.

ION SENSOR INSPECTION [SKYACTIV-G 2.5T]

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DTC Inspection

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

2.Perform the DTC inspection using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].)

- If any DTC related to the ignition coil/ion sensor is present, repair the malfunctioning location according to the applicable DTC troubleshooting. (See DTC TABLE [PCM (SKYACTIV-G 2.5T)].)

Visual Inspection

Note

- **Because the ion sensor is integrated in the ignition coil, replacing the ion sensor includes replacement of the ignition coil/ion sensor.**

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 2.5T].)

3.Remove the ignition coil/ion sensor. (See IGNITION COIL/ION SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)

4.Verify that there is no damage to the ignition coil/ion sensor, and no corrosion and damage to the connector.

- If there is a malfunction, replace the ignition coil/ion sensor. (See IGNITION COIL/ION SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)

EXHAUST SHUTTER VALVE POSITION SENSOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)]

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Note

• The exhaust shutter valve position sensor is built into the exhaust shutter valve. When replacing the exhaust shutter valve position sensor, replace the TWC.
• The PCM increases the target engine speed for quick activation of the catalytic converter after a cold engine start. The PCM controls the exhaust shutter valve at the fully-closed position while the catalytic converter is activated quickly. Perform the exhaust shutter valve position sensor inspection with the engine cooled sufficiently (engine coolant temperature has decreased to equivalent of ambient temperature).

Function inspection

1.Leave the vehicle for 6 hours or more.

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

3.Switch the ignition ON (engine off).

4.Display the PIDs EFCV_AP_C and EFCV_AP_M.

5.Start the engine.

6.Verify that the vehicle is under all of the following conditions right after engine start.

• The PID EFCV_AP_M value conforms to the EFCV_AP_C value.
• The PID EFCV_AP_M value changes in the order of approx. 66 ° (fully closed position), 4 ° (fully open position), and 66 ° (fully closed position).

— If the operation cannot be verified, replace the TWC. (See EXHAUST SHUTTER VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)