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1994 MAZDA Xedos 6 OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT FUEL INJECTOR No.3 CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the fuel injector No.3 and PCM connectors are disconnected. • Switch the ignition ON (engine off). **Note** **• Another DTC may be stored by the PCM detecting an open circuit.** • Measure the voltage at the fuel injector No.3 terminal A (wiring harness-side). • Is the voltage 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between fuel injector No.3 terminal A and PCM terminal 1EA. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply. Go to Step 13.
7	**INSPECT FUEL INJECTOR No.3 CIRCUIT FOR OPEN CIRCUIT** • Verify that the fuel injector No.3 and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between the following terminals (wiring harness-side): — Fuel injector No.3 terminal B—PCM terminal 1EB — Fuel injector No.3 terminal A—PCM terminal 1EA • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Fuel injector No.3 terminal B—PCM terminal 1EB • Fuel injector No.3 terminal A—PCM terminal 1EA **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has an open circuit. Go to Step 13.
8	**INSPECT FUEL INJECTOR No.3** • Inspect the fuel injector No.3. (See FUEL INJECTOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the fuel injector No.3, then go to Step 13. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
9	**INSPECT FUEL INJECTOR RELAY** • Remove the fuel injector relay. (See RELAY LOCATION.) • Inspect the fuel injector relay. (See RELAY INSPECTION.) • Is there any malfunction?	Yes	Replace the fuel injector relay, then go to Step 13.
		No	Go to the next step.

DTC P0204:00 [PCM (SKYACTIV-G 2.5T)]

SM2896455

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DTC P0204:00	Fuel injector circuit/open cylinder No.4
DETECTION CONDITION	• If the fuel injection verification signal is not input at 25 times continuously even though the PCM drives the fuel injector No.4, the PCM determines that there is an open circuit in the fuel injector No.4 control circuit. MONITORING CONDITIONS — The following conditions are met: • Battery voltage: 10.5 V or more • Fuel injection control: except during fuel cut Diagnostic support note • This is a continuous monitor (CCM). • The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA/Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• Fuel injector No.4 connector or terminals malfunction • PCM connector or terminals malfunction • Short to ground in wiring harness between the following terminals: — Fuel injector No.4 terminal B—PCM terminal 1DT — Fuel injector No.4 terminal A—PCM terminal 1DS • Short to power supply in wiring harness between fuel injector No.4 terminal A and PCM terminal 1DS • Open circuit in wiring harness between the following terminals: — Fuel injector No.4 terminal B—PCM terminal 1DT — Fuel injector No.4 terminal A—PCM terminal 1DS • Fuel injector No.4 malfunction • Fuel injector relay malfunction • Open circuit in wiring harness between fuel injector relay terminal E and body ground • Short to ground in wiring harness between the following terminals: — Fuel injector relay terminal C—PCM terminal 1CO — Fuel injector relay terminal C—PCM terminal 1CS — Fuel injector relay terminal C—PCM terminal 1CW — Fuel injector relay terminal C—PCM terminal 1DA — Fuel injector relay terminal C—PCM terminal 1DG — Fuel injector relay terminal C—PCM terminal 1DK • Open circuit in wiring harness between the following terminals: — Fuel injector relay terminal C—PCM terminal 1CO — Fuel injector relay terminal C—PCM terminal 1CS — Fuel injector relay terminal C—PCM terminal 1CW — Fuel injector relay terminal C—PCM terminal 1DA — Fuel injector relay terminal C—PCM terminal 1DG — Fuel injector relay terminal C—PCM terminal 1DK • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
6	**INSPECT FUEL INJECTOR No.4 CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the fuel injector No.4 and PCM connectors are disconnected. • Switch the ignition ON (engine off). **Note** **• Another DTC may be stored by the PCM detecting an open circuit.** • Measure the voltage at the fuel injector No.4 terminal A (wiring harness-side). • Is the voltage 0 V?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between fuel injector No.4 terminal A and PCM terminal 1DS. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to power supply. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to power supply. Go to Step 13.
7	**INSPECT FUEL INJECTOR No.4 CIRCUIT FOR OPEN CIRCUIT** • Verify that the fuel injector No.4 and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between the following terminals (wiring harness-side): — Fuel injector No.4 terminal B—PCM terminal 1DT — Fuel injector No.4 terminal A—PCM terminal 1DS • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Fuel injector No.4 terminal B—PCM terminal 1DT • Fuel injector No.4 terminal A—PCM terminal 1DS **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has an open circuit. Go to Step 13.
8	**INSPECT FUEL INJECTOR No.4** • Inspect the fuel injector No.4. (See FUEL INJECTOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the fuel injector No.4, then go to Step 13. (See FUEL INJECTOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
9	**INSPECT FUEL INJECTOR RELAY** • Remove the fuel injector relay. (See RELAY LOCATION.) • Inspect the fuel injector relay. (See RELAY INSPECTION.) • Is there any malfunction?	Yes	Replace the fuel injector relay, then go to Step 13.
		No	Go to the next step.

DTC P0628:00 [PCM (SKYACTIV-G 2.5T)]

SM2896457

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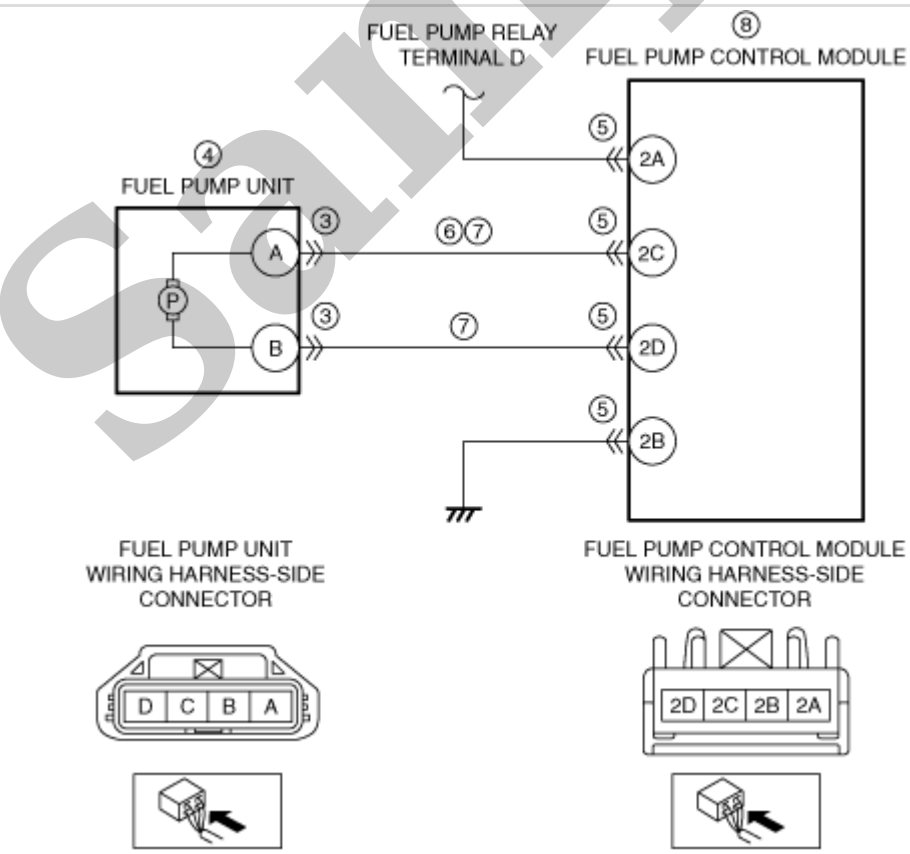
DTC P0628:00	Fuel pump control module circuit low input
DETECTION CONDITION	• When the PCM outputs a duty signal to the fuel pump control module, the difference in voltage between fuel pump unit terminals A and B is less than 1.5 V for a continuous 5 s. Diagnostic support note • This is a continuous monitor (CCM). • The check engine light does not illuminate. • FREEZE FRAME DATA is not available. • Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Not applicable
POSSIBLE CAUSE	• Fuel pump unit connector or terminals malfunction • Fuel pump unit malfunction • Fuel pump control module connector or terminals malfunction • Short to ground in wiring harness between fuel pump unit terminal A and fuel pump control module terminal 2C • Open circuit in wiring harness between the following terminals: — Fuel pump unit terminal A—Fuel pump control module terminal 2C — Fuel pump unit terminal B—Fuel pump control module terminal 2D • Fuel pump control module malfunction • PCM malfunction



Diagnostic Procedure

DTC P0629:00 [PCM (SKYACTIV-G 2.5T)]

SM2896458

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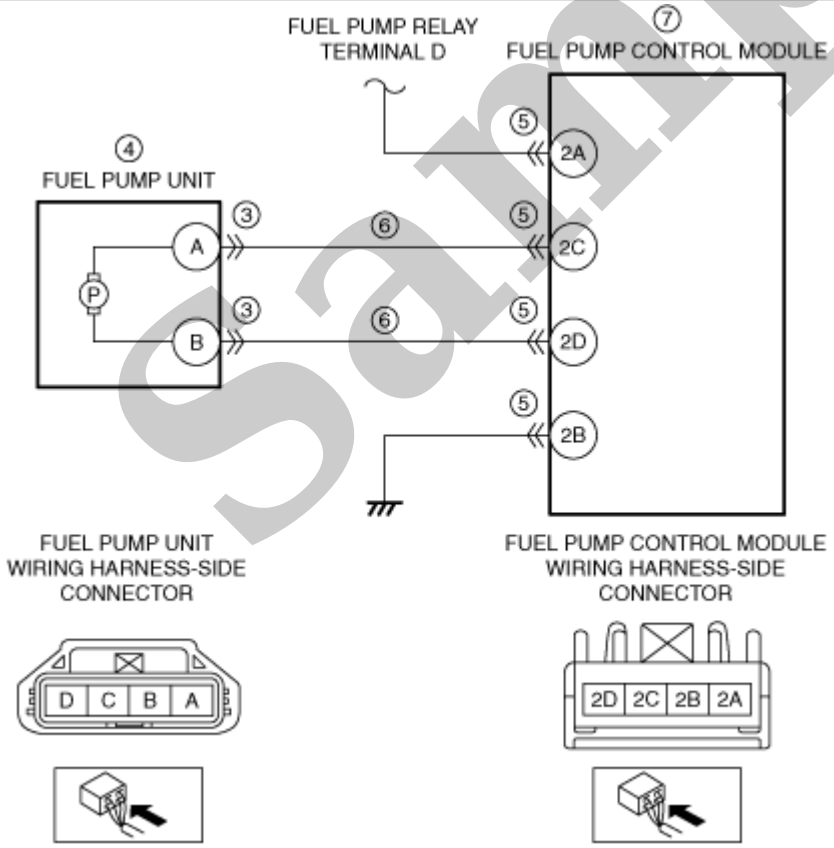
DTC P0629:00	Fuel pump control module circuit high input
DETECTION CONDITION	• The PCM detects over-current during the fuel pump control module control. Diagnostic support note • This is a continuous monitor (CCM). • The check engine light does not illuminate. • FREEZE FRAME DATA is not available. • Snapshot data is available. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Stops fuel pump control
POSSIBLE CAUSE	• Fuel pump unit connector or terminals malfunction • Fuel pump unit malfunction • Fuel pump control module connector or terminals malfunction • Short to power supply in wiring harness between the following terminals: — Fuel pump unit terminal A–Fuel pump control module terminal 2C — Fuel pump unit terminal B–Fuel pump control module terminal 2D • Fuel pump control module malfunction • PCM malfunction
	

Diagnostic Procedure

DTC P0234:00 [PCM (SKYACTIV-G 2.5T)]

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Note

• To determine the malfunctioning part, proceed with the diagnostics from "Function Inspection Using M-MDS".

Details On DTCs

DESCRIPTION	**Dynamic pressure turbo (DPT) overboost condition**	
DETECTION CONDITION	Determination conditions	• As the result of comparing the actual air charging pressure with the limited pressure, the actual air charging pressure exceeds the limited air charging pressure for a continuous 2 s.
	Preconditions	• 2 s have elapsed with all of the following conditions met when DPF regeneration control is stopped during boost control feedback. — Engine speed: 500 rpm or more — The following DTCs are not detected: • Boost pressure sensor: P0237:00, P0238:00 • BARO sensor: P2228:00, P2229:00
	Drive cycle	• 2
	Self test type	• CMDTC self test
	Sensor used	• MAP sensor
FAIL-SAFE FUNCTION	• Limits intake air amount. (Only period of time when PCM determines that air is excessively boosted)	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	• Not applicable	
POSSIBLE CAUSE	• Erratic signal to PCM — MAP sensor signal malfunction — Input signal part connector or terminals malfunction — Input signal part related circuit malfunction • Vacuum piping or positive pressure piping of wastegate valve actuator malfunction • Air bypass valve malfunction • Wastegate valve position sensor malfunction • Wastegate valve actuator malfunction • Dynamic pressure turbo (DPT) malfunction • PCM malfunction	

System Wiring Diagram

• Not applicable

Function Explanation (DTC Detection Outline)

• The PCM diagnoses the turbo system performance by comparing the target air charging pressure with the actual.
• The PCM uses the manifold absolute pressure sensor to monitor the intake manifold pressure during boost control as the actual air charging pressure.
• When the monitoring conditions are met during boost control, the PCM compares the target air charging pressure with the actual. If the actual air charging pressure is higher than the specification for the target air charging pressure, the PCM determines an excess air

STEP	INSPECTION	RESULTS	ACTION
6	PURPOSE: VERIFY CONNECTOR CONNECTIONS • Access the following PIDs using the M-MDS: (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5T)].) PCM: — MAP — MAP_V • When the following parts are shaken, does the PID value include a PID item which has changed? — MAP sensor — PCM	Yes	Repair or replace the applicable connector parts. Go to the Troubleshooting Diagnostic Procedure to perform the procedure from Step 5.
		No	Go to the Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure

• Step 1–4

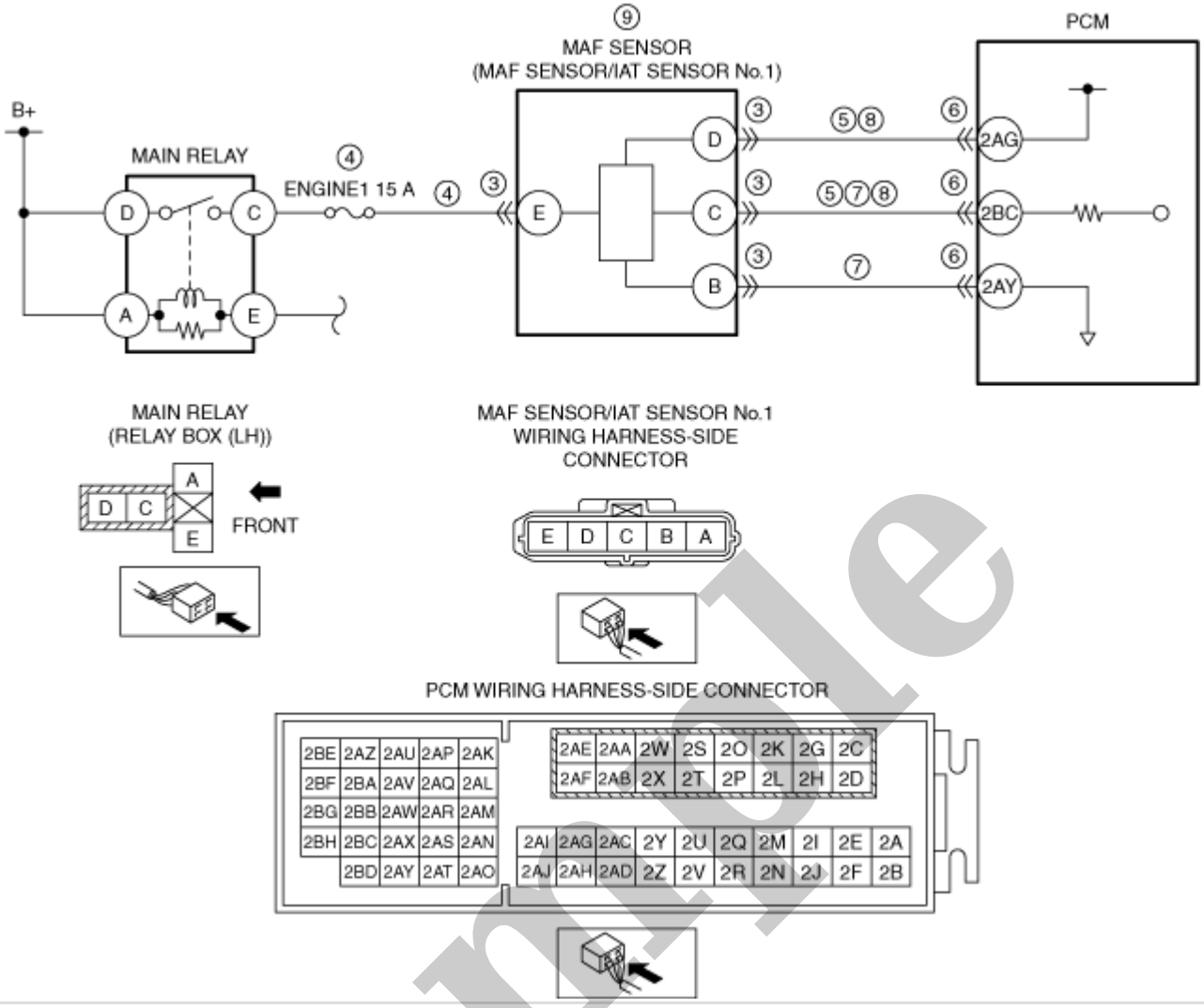
— Perform inspection of each separate part.

• Step 5–6

— Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: INSPECT AIR BYPASS VALVE • Inspect the air bypass valve. (See AIR BYPASS VALVE INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the dynamic pressure turbo (DPT), then go to Step 5. (See DYNAMIC PRESSURE TURBO REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
2	PURPOSE: INSPECT WASTEGATE VALVE POSITION SENSOR • Inspect the wastegate valve position sensor. (See WASTEGATE VALVE POSITION SENSOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the dynamic pressure turbo (DPT), then go to Step 5. (See DYNAMIC PRESSURE TURBO REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
3	PURPOSE: INSPECT WASTEGATE VALVE ACTUATOR • Inspect the wastegate valve actuator. (See WASTEGATE VALVE ACTUATOR INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the dynamic pressure turbo (DPT), then go to Step 5. (See DYNAMIC PRESSURE TURBO REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.
4	PURPOSE: INSPECT DYNAMIC PRESSURE TURBO (DPT) • Inspect the dynamic pressure turbo (DPT). (See DYNAMIC PRESSURE TURBO INSPECTION [SKYACTIV-G 2.5T].) • Is there any malfunction?	Yes	Replace the dynamic pressure turbo (DPT), then go to the next step. (See DYNAMIC PRESSURE TURBO REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].)
		No	Go to the next step.

DTC P0102:00	MAF sensor circuit low input



Caution

• Verify the malfunction symptom according to not only the PID value but also the symptom troubleshooting.

Related PIDs

Item (definition)	Unit/Condition	Definition	Condition/Specification (Reference)
MAF	g/Sec	Mass air flow input from MAF sensor	• Displays MAF
	V	MAF sensor voltage	• Ignition switched ON (engine off) (MAF: 0.65 g/s {0.086 lb/min}): Approx. 0.72 V • Idle (after warm up) (MAF: 2.78 g/s {0.368 lb/min}): Approx. 0.86 V • Racing (engine speed is 2,000 rpm) (MAF: 7.74 g/s {1.02 lb/min}): Approx. 1.14 V

Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
5	**INSPECT MAF SENSOR CIRCUIT FOR SHORT TO GROUND** • Verify that the MAF sensor/IAT sensor No.1 connector is disconnected. • Switch the ignition off. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — MAF sensor/IAT sensor No.1 terminal D — MAF sensor/IAT sensor No.1 terminal C • Is there continuity?	Yes	Disconnect the PCM connector and inspect the wiring harness for short to ground. • If the short to ground circuit could be detected in the wiring harness: — Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • MAF sensor/IAT sensor No.1 terminal D–PCM terminal 2AG • MAF sensor/IAT sensor No.1 terminal C–PCM terminal 2BC **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to ground. • If the short to ground circuit could not be detected in the wiring harness: — Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5T].) Go to Step 10.
		No	Go to the next step.
6	**INSPECT PCM CONNECTOR CONDITION** • Disconnect the PCM connector. • Inspect for poor connection (such as damaged/pulled-out pins, corrosion). • Is there any malfunction?	Yes	Repair or replace the connector and/or terminals, then go to Step 10.
		No	Go to the next step.
7	**INSPECT MAF SENSOR SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER** • Verify that the MAF sensor/IAT sensor No.1 and PCM connectors are disconnected. • Inspect for continuity between MAF sensor/IAT sensor No.1 terminals C and B (wiring harness-side). • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • MAF sensor/IAT sensor No.1 terminal C–PCM terminal 2BC • MAF sensor/IAT sensor No.1 terminal B–PCM terminal 2AY **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to each other. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to each other. Go to Step 10.
		No	Go to the next step.