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1995 MAZDA 626 (Mk.5) Sedan OEM Service and Repair Workshop Manual

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STEP	INSPECTION	RESULTS	ACTION
2	PURPOSE: RECORD FREEZE FRAME DATA/SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS TO UTILIZE WITH REPEATABILITY VERIFICATION Note • Recording can be facilitated using the screen capture function of the PC. • Record the FREEZE FRAME DATA/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (A/F sensor, HO2S related) on the repair order.	–	Go to Troubleshooting Diagnostic Procedure to perform the procedure from Step 1.

Troubleshooting Diagnostic Procedure

Intention of troubleshooting procedure
• Step 1–4

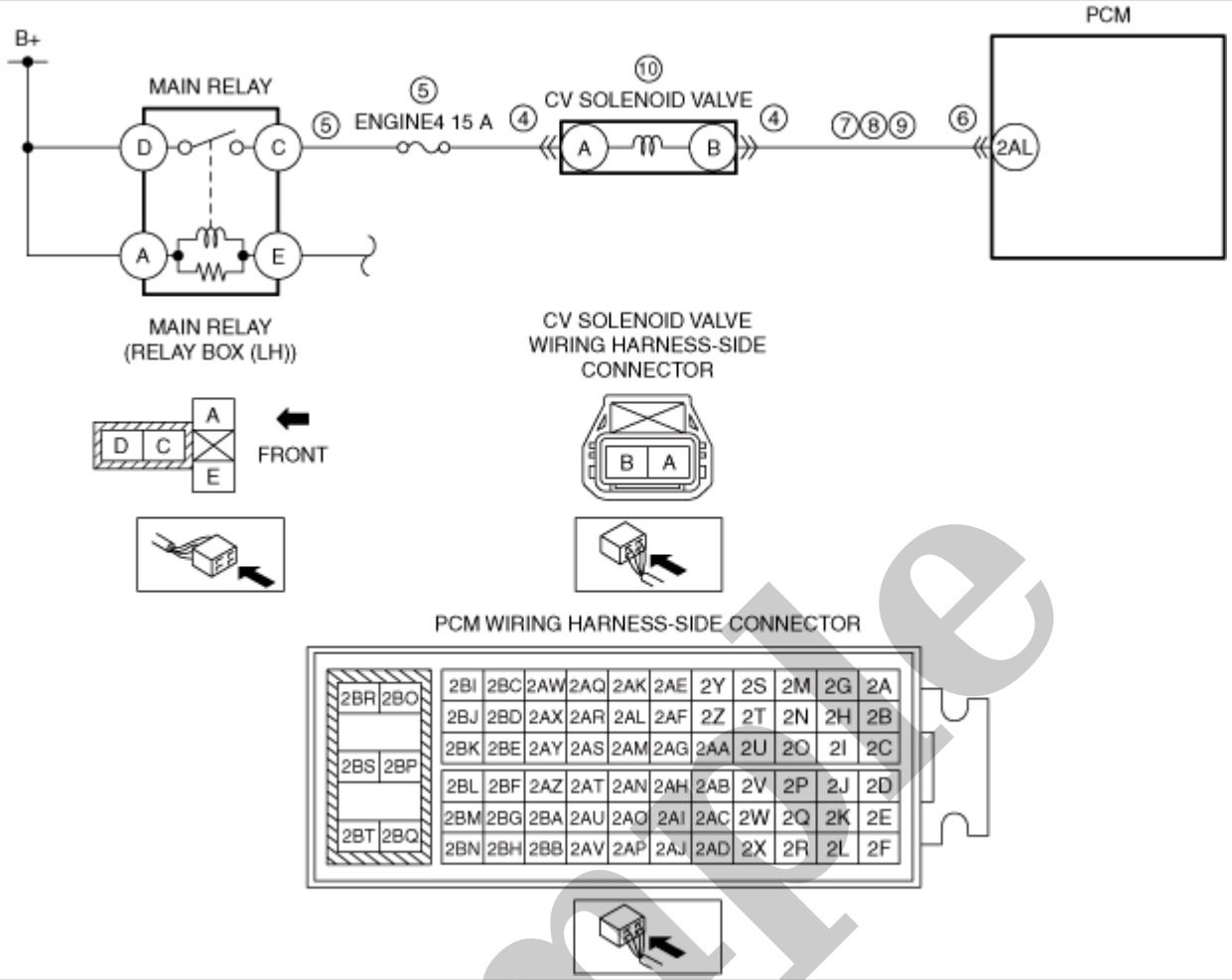
— Perform an inspection of the HO2S and PCM-related connectors and wiring harnesses.
• Step 5

— Perform a unit inspection of the HO2S.
• Step 6–7

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

STEP	INSPECTION	RESULTS	ACTION
1	PURPOSE: INSPECT HO2S CONNECTOR CONDITION • Switch the ignition off. • Disconnect the HO2S 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 6.
		No	Go to the next step.
2	PURPOSE: 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 6.
		No	Go to the next step.
3	PURPOSE: INSPECT HO2S SIGNAL CIRCUIT FOR SHORT TO GROUND • Verify that the HO2S and PCM connectors are disconnected. • Inspect for continuity between HO2S terminal A (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between HO2S terminal A and PCM terminal 2BK. 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. Go to Step 6.
		No	Go to the next step.

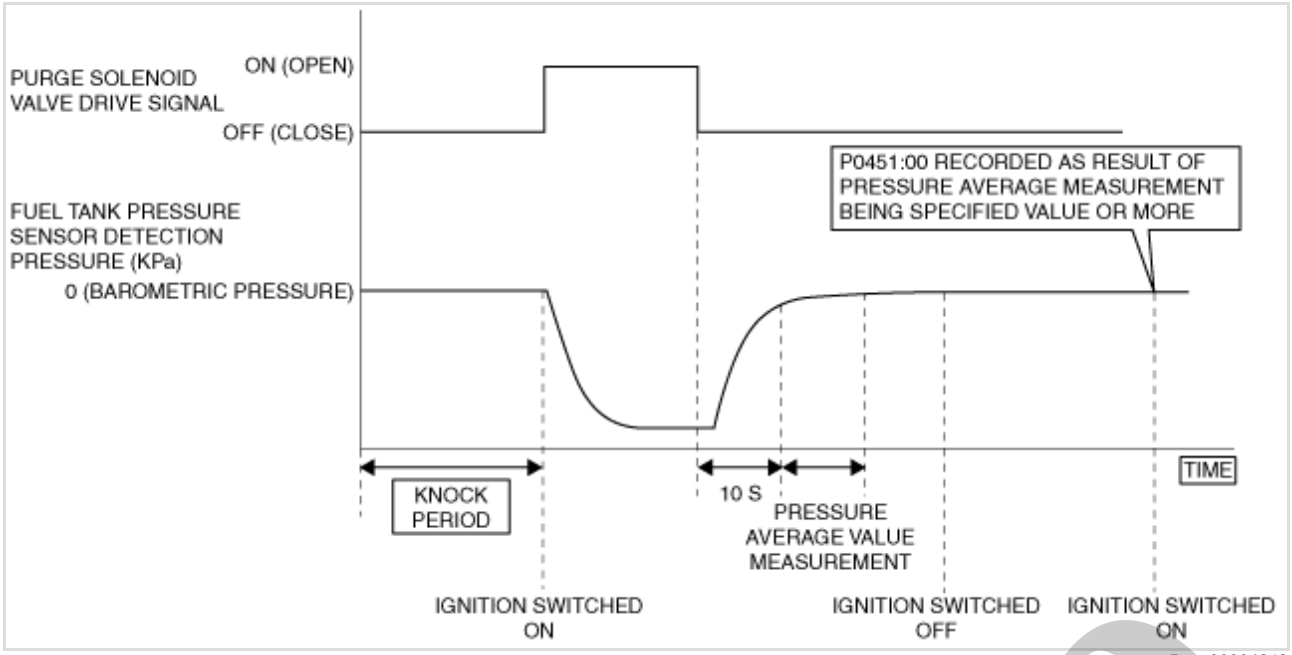
DTC P0446:00	CV solenoid valve control circuit problem



Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION Note • Recording can be facilitated using the screen capture function of the PC. • Record the FREEZE FRAME DATA/snapshot data on the repair order.	–	Go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
7	**INSPECT CV SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO GROUND** • Verify that the CV solenoid valve and PCM connectors are disconnected. • Inspect for continuity between CV solenoid valve terminal B (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between CV solenoid valve terminal B and PCM terminal 2AL. **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. Go to Step 11.
		No	Go to the next step.
8	**INSPECT CV SOLENOID VALVE CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the CV solenoid valve 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 CV solenoid valve terminal B (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 CV solenoid valve terminal B and PCM terminal 2AL. **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 11.
9	**INSPECT CV SOLENOID VALVE CONTROL CIRCUIT FOR OPEN CIRCUIT** • Verify that the CV solenoid valve and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between CV solenoid valve terminal B (wiring harness-side) and PCM terminal 2AL (wiring harness-side). • 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 CV solenoid valve terminal B and PCM terminal 2AL. **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 11.
10	**INSPECT CV SOLENOID VALVE** • Inspect the CV solenoid valve. (See CANISTER VENT (CV) SOLENOID VALVE INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the CV solenoid valve, then go to the next step. (See CANISTER VENT (CV) SOLENOID VALVE REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
11	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Start the engine and warm it up completely. • Perform the KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the PENDING CODE for this DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
		No	Go to the next step.



Repeatability Verification Procedure

1. Switch the ignition off.
2. Leave the vehicle for 2 h or more.
3. Start the engine and leave it idling for 1 min.

PID Item/Simulation Item Used In Diagnosis

PID/DATA monitor item table

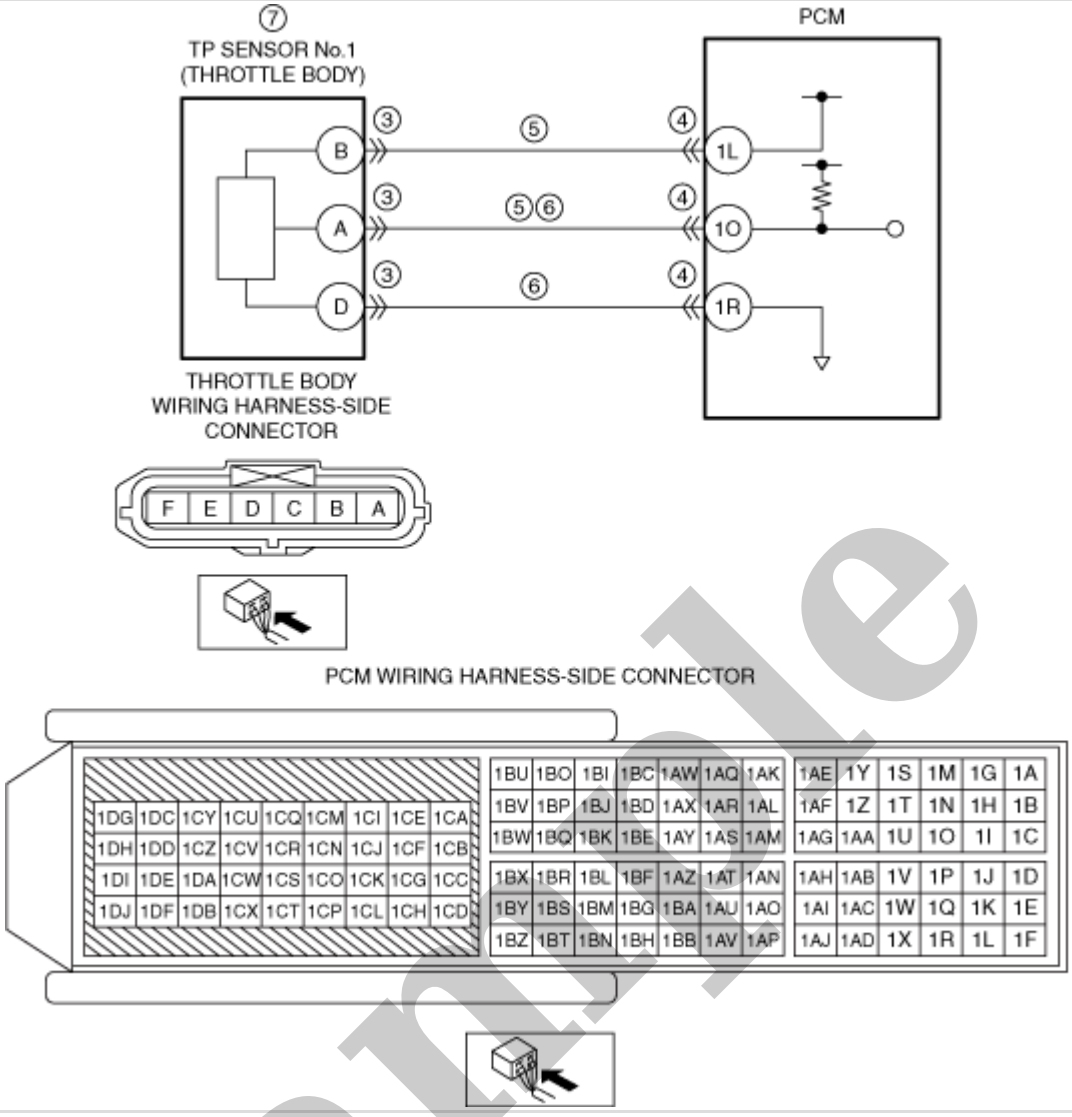
Item	Definition	Unit	Condition/Specification
AAT	Ambient air temperature	°C, °F	• Displays ambient air temperature
FTP	Fuel tank pressure input from fuel tank	Pa {KPA}, mBar {BAR}, psi, in H20	• Ignition switched ON (engine off): Approx. −23 Pa {−2.3 kgf/m ^{2}, −0.0033 psi} • Idle (after warm up): −282− −46 Pa {−28.7− −4.7 kgf/m ^{2}, −0.0409− −0.0067 psi} • Racing (Engine speed 2,000 rpm): −1.47− −0.869 kPa {−0.0149− −0.0089 kgf/cm ^{2}, −0.213− −0.127 psi} • Racing (Engine speed 4,000 rpm): −1.69− −1.07 kPa {−0.0172− −0.0110 kgf/cm ^{2}, −0.245− −0.156 psi}
	Fuel tank pressure sensor voltage	V	• Ignition switched ON (engine off): Approx. 2.6 V • Idle (after warm up): 2.2−2.62 V • Racing (Engine speed 2,000 rpm): 1.9−1.91 V • Racing (Engine speed 4,000 rpm): 1.73−1.76 V

Function Inspection Using M-MDS

STEP	INSPECTION	RESULTS	ACTION
4	PURPOSE: INSPECTION OF EVAPORATIVE HOSE FOR BREAKAGE OR CLOGGING • Inspect for breakage or clogging in the evaporative hose (hose between CV solenoid valve and atmosphere). • Is there any malfunction?	Yes	Repair or replace the malfunctioning part according to the inspection results, then go to Step 6.
		No	Go to the next step.
5	PURPOSE: DETERMINE INTEGRITY OF FUEL TANK PRESSURE SENSOR • Inspect the fuel tank pressure sensor. (See FUEL TANK PRESSURE SENSOR INSPECTION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) • Is there any malfunction?	Yes	Replace the charcoal canister, then go to the next step. (See CHARCOAL CANISTER REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
6	PURPOSE: VERIFICATION OF VEHICLE REPAIR COMPLETION • Reconnect all the removed parts. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Implement the repeatability verification procedure. (See Repeatability Verification Procedure.) • Perform the Pending Trouble Code Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the PENDING CODE for this DTC present?	Yes	Repeat the inspection from Step 1 of the troubleshooting diagnostic procedure. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
		No	Go to the next step.
7	PURPOSE: VERIFY IF THERE IS ANY OTHER MALFUNCTION • Is any other DTC or pending code stored?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.

STEP	INSPECTION	RESULTS	ACTION
3	**INSPECT ECT SENSOR No.1 CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the ECT sensor No.1 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 8.
		No	Go to the next step.
4	**DETERMINE IF ECT SENSOR No.1 OR WIRING HARNESS MALFUNCTION** • Verify that the ECT sensor No.1 connector is disconnected. • Access the ECT PID using the M-MDS. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Connect a jumper wire between ECT sensor No.1 terminals A and B (wiring harness-side). • Verify the ECT PID value. • Is the voltage 4.94 V or below?	Yes	Replace the ECT sensor No.1, then go to Step 8. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].)
		No	Go to the next step.
5	**INSPECT PCM CONNECTOR CONDITION** • Switch the ignition off. • 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 8.
		No	Go to the next step.
6	**INSPECT ECT SENSOR No.1 SIGNAL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the ECT sensor No.1 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 ECT sensor No.1 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 ECT sensor No.1 terminal A and PCM terminal 1AH. **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 8.
7	**INSPECT ECT SENSOR No.1 CIRCUIT FOR OPEN CIRCUIT** • Verify that the ECT sensor No.1 and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between the following terminals (wiring harness-side): — ECT sensor No.1 terminal A–PCM terminal 1AH — ECT sensor No.1 terminal B–PCM terminal 1AB • 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: • ECT sensor No.1 terminal A–PCM terminal 1AH • ECT sensor No.1 terminal B–PCM terminal 1AB **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 the next step.

DTC P0122:00	TP sensor No.1 circuit low input



Diagnostic Procedure

STEP	INSPECTION	RESULTS	ACTION
1	RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION Note • Recording can be facilitated using the screen capture function of the PC. • Record the FREEZE FRAME DATA/snapshot data on the repair order.	–	Go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY • Verify related Service Bulletins and/or on-line repair information availability. • Is any related repair information available?	Yes	Perform repair or diagnosis according to the available repair information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.

DTC P0123:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896745

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DTC P0123:00	TP sensor No.1 circuit high input
DETECTION CONDITION	• If the PCM detects that the TP sensor No.1 voltage at the PCM terminal 1O is above 4.9 V, the PCM determines that the TP sensor No.1 circuit has a malfunction. 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	• Restricts the upper limit of the engine speed. • PCM restricts engine torque.
POSSIBLE CAUSE	• Throttle body connector or terminals malfunction • PCM connector or terminals malfunction • TP sensor No.1 malfunction • Short to power supply in wiring harness between throttle body terminal A and PCM terminal 1O • Open circuit in wiring harness between the following terminals: — Throttle body terminal B—PCM terminal 1L — Throttle body terminal A—PCM terminal 1O — Throttle body terminal D—PCM terminal 1R • PCM malfunction

STEP	INSPECTION	RESULTS	ACTION
9	**INSPECT TP SENSOR No.1 CIRCUIT FOR OPEN CIRCUIT** • Verify that the throttle body connector is disconnected. • Switch the ignition off. • Disconnect the PCM connector. • Inspect for continuity between the following terminals (wiring harness-side): — Throttle body terminal B−PCM terminal 1L — Throttle body terminal D−PCM terminal 1R • Is there continuity?	Yes	Replace the throttle body, then go to the next step. (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G (WITHOUT EGR COOLER)].) (See INTAKE-AIR SYSTEM REMOVAL/INSTALLATION [SKYACTIV-G (WITH EGR COOLER)].)
		No	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • Throttle body terminal B−PCM terminal 1L • Throttle body terminal D−PCM terminal 1R **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 the next step.
10	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See CLEARING DTC [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Perform the KOEO or KOER self test. (See KOEO/KOER SELF TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the same Pending DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION)].) Go to the next step.
		No	Go to the next step.
11	**VERIFY AFTER REPAIR PROCEDURE** • Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	DTC troubleshooting completed.