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1997 MAZDA 121/ Revue (Mk.2) OEM Service and Repair Workshop Manual

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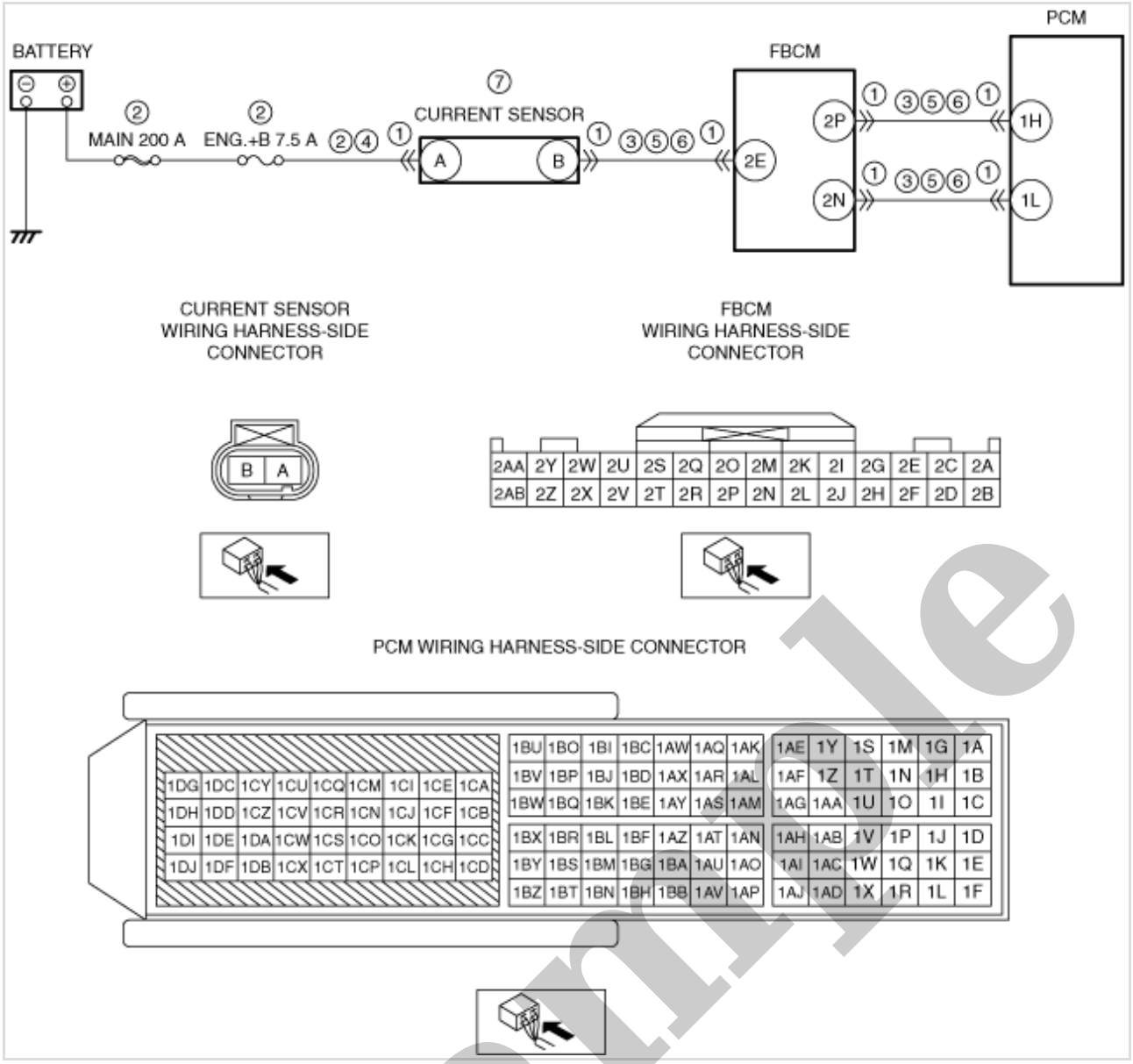


ac5uuw00012216

Function Explanation (DTC Detection Outline)

• The current sensor detects the battery condition and sends the battery condition signal to the PCM via the front body control modul (FBCM). The PCM receives the battery condition signal from the current sensor and controls the battery. If the current sensor malfunctions, the battery is constantly charged because battery control is lost, which could cause the fuel economy to worsen.
• The current sensor performs self-diagnosis on the battery voltage, battery fluid temperature and internal circuit, and if the PCM receives a malfunction signal from the current sensor, it stores a DTC.

Repeatability Verification Procedure

1. Start the engine.
2. Wait for 10 s (idle).

PID Item/Simulation Item Used In Diagnosis

• Not applicable

Function Inspection Using M-MDS

STEP	INSPECTION	RESULTS	ACTION
2	**PURPOSE: VERIFY IF OPEN CIRCUIT OR SHORT TO GROUND IN CURRENT SENSOR POWER SUPPLY CIRCUIT AFFECTS DIAGNOSTIC RESULTS** • Verify that the current sensor, front body control module (FBCM) and PCM connectors are disconnected. • Measure the voltage at the current sensor terminal A (wiring harness-side). • Is the voltage 0 V?	Yes	Inspect the MAIN 200 A fuse and ENG.+B 7.5 A fuse. • If the fuse is blown: — Refer to the wiring diagram and verify whether or not there is a common connector between battery positive terminal and current sensor terminal A. **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. • Replace the malfunctioning fuse. • If the fuse is damaged: — Replace the malfunctioning fuse. • If all fuses are normal: — Refer to the wiring diagram and verify whether or not there is a common connector between battery positive terminal and current sensor terminal A. **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

DTC P05A3:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896723

id0102s940230

DTC P05A3:00	**Active air shutter: Actuator internal malfunction**
DETECTION CONDITION	• Any of the following conditions is met: — Internal circuit of active air shutter actuator is malfunctioning — Active air shutter Hall sensor is malfunctioning **Diagnostic support note** • This is an intermittent monitor (other). • 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 active air shutter control
POSSIBLE CAUSE	• Active air shutter malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

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 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.
3	**VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY DTC RELATED TO ACTIVE AIR SHUTTER** • Switch the ignition off, then ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the PENDING CODE/DTC U0284:00 also present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC U0284:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	Go to the next step.
4	**INSPECT ACTIVE AIR SHUTTER** • Inspect the active air shutter. (See ACTIVE AIR SHUTTER INSPECTION.) • Is there any malfunction?	Yes	Replace the active air shutter, then go to the next step. (See ACTIVE AIR SHUTTER REMOVAL/INSTALLATION.)
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
5	INSPECT ACTIVE AIR SHUTTER • Inspect the active air shutter. (See ACTIVE AIR SHUTTER INSPECTION.) • Is there any malfunction?	Yes	Replace the active air shutter, then go to the next step. (See ACTIVE AIR SHUTTER REMOVAL/INSTALLATION.)
		No	Go to the next step.
6	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. • Drive the vehicle at 10 km/h {6.2 mph} or more for approx. 1 min. • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC 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.
7	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.

DTC P05A0:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896722

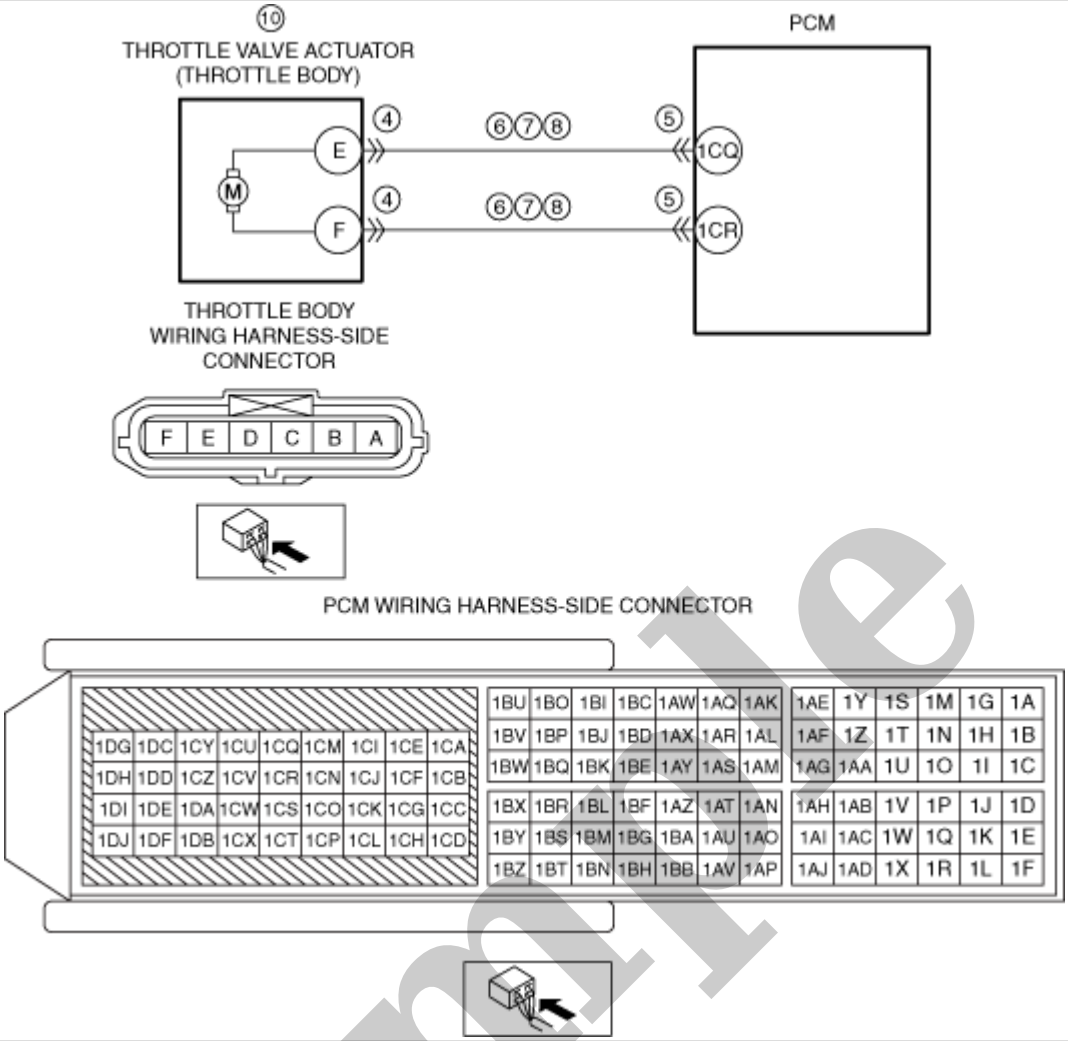
id0102s940220

DTC P05A0:00	Active air shutter: Opening angle abnormality (sticking)
DETECTION CONDITION	• Active air shutter opening angle is certain value or less while intake air temperature is 5 °C {41 °F} or more. Diagnostic support note • This is an intermittent monitor (other). • 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	• Performs fully open/closed position learning function three times.
POSSIBLE CAUSE	• Foreign matter caught in active air shutter • Active air shutter malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

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 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.
3	VERIFY IF DIAGNOSTIC RESULT IS AFFECTED BY DTC RELATED TO ACTIVE AIR SHUTTER • Switch the ignition off, then ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Is the PENDING CODE/DTC U0284:00 also present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC U0284:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	Go to the next step.
4	VERIFY IF FOREIGN MATTER IS LODGED • Verify if the active air shutter has lodged foreign matter. • Has the active air shutter lodged any foreign matter?	Yes	Remove the foreign matter, then go to Step 6.
		No	Go to the next step.

DTC P2109:00	TP sensor minimum stop range/performance problem



Diagnostic Procedure

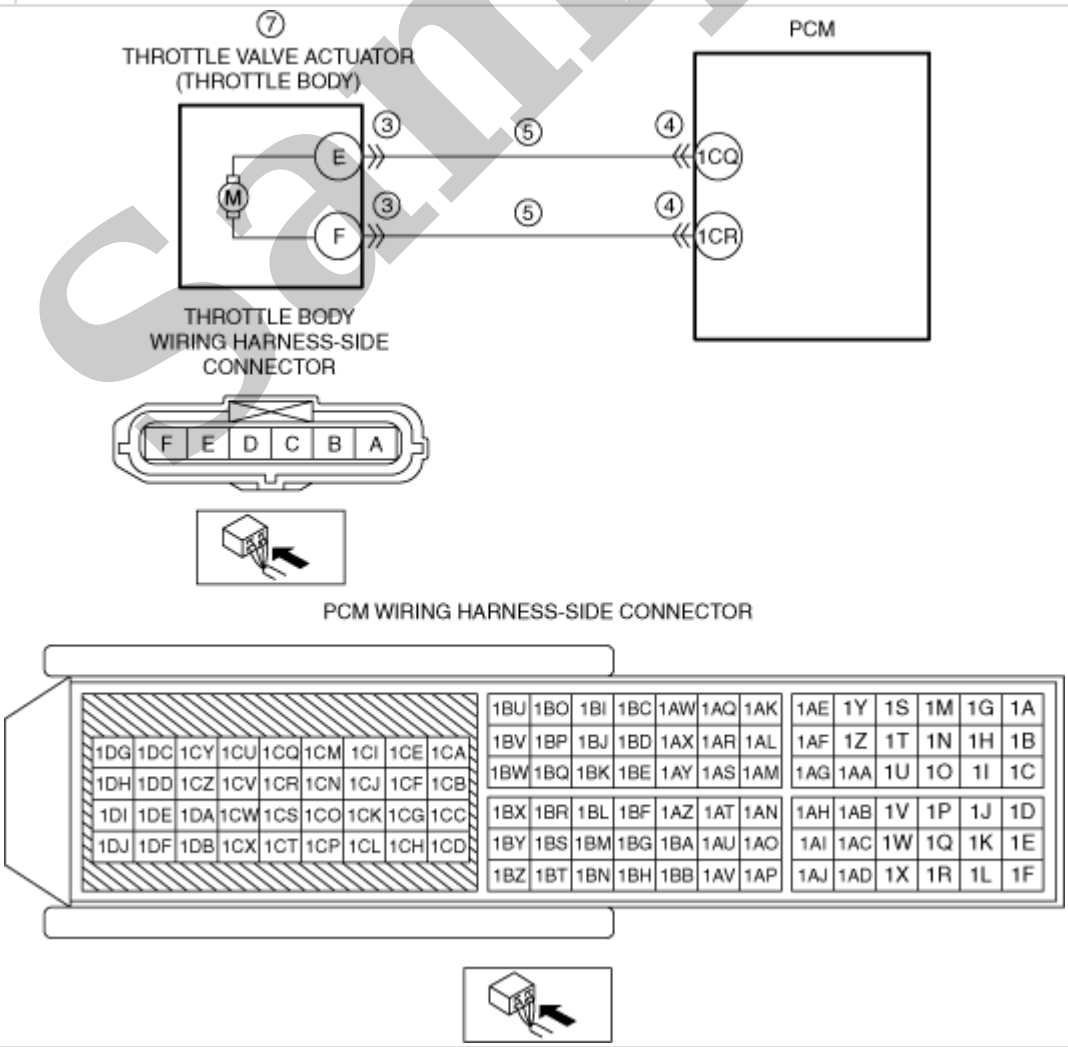
STEP	INSPECTION	RESULTS	ACTION
1	RECORD VEHICLE STATUS AT TIME OF DTC DETECTION TO UTILIZE WITH REPEATABILITY VERIFICATION Note • Recording can be facilitated using the screen capture function of the PC. • Record the FREEZE FRAME DATA/snapshot data on the repair order.	–	Go to the next step.
2	VERIFY 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.

DTC P2112:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896777

id0102s970810

DTC P2112:00	Throttle valve actuator motor current range/performance problem
DETECTION CONDITION	• The throttle valve actuator control duty ratio is 95 % or more with the ignition switched ON (engine on). 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. • Stops the drive-by-wire control (throttle valve is open at approx. 8 ° by return spring force).
POSSIBLE CAUSE	• Throttle body connector or terminals malfunction • PCM connector or terminals malfunction • Open circuit in wiring harness between the following terminals: — Throttle body terminal E—PCM terminal 1CQ — Throttle body terminal F—PCM terminal 1CR • Throttle valve malfunction • Throttle valve actuator malfunction • PCM malfunction — Throttle valve actuator control module malfunction (built-into PCM)



DTC P2119:00 [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))]

SM2896778

id0102s970820

DTC P2119:00	Throttle valve actuator control throttle body range/performance problem
DETECTION CONDITION	• The PCM compares the actual TP with initial setting TP when the ignition is switched off. If the actual TP is higher than the initial setting TP, the PCM determines that there is a throttle valve return spring 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.
POSSIBLE CAUSE	• Throttle body connector or terminals malfunction • PCM connector or terminals malfunction • Drive-by-wire control malfunction • Throttle body (return spring) malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	• Not applicable

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.
3	VERIFY RELATED PENDING CODE AND/OR DTC • Switch the ignition off, then ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].) • Are any other PENDING CODEs and/or DTCs present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC TABLE [PCM (SKYACTIV-G 2.5 (WITH CYLINDER DEACTIVATION))].)
		No	Go to the next step.

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.
3	**INSPECT APP SENSOR CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the APP sensor 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 9.
		No	Go to the next step.
4	**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 9.
		No	Go to the next step.
5	**INSPECT APP SENSOR No.1 CIRCUIT FOR SHORT TO GROUND** • Verify that the APP sensor and PCM connectors are disconnected. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — APP sensor terminal A — APP sensor terminal B • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between the following terminals: • APP sensor terminal A—PCM terminal 2BA • APP sensor terminal B—PCM terminal 2BN **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 9.
		No	Go to the next step.
6	**INSPECT APP SENSOR No.1 SIGNAL CIRCUIT AND GROUND CIRCUIT FOR SHORT TO EACH OTHER** • Verify that the APP sensor and PCM connectors are disconnected. • Inspect for continuity between APP sensor terminals B and C (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: • APP sensor terminal B—PCM terminal 2BN • APP sensor terminal C—PCM terminal 2BH **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 9.
		No	Go to the next step.