DTC P0116:00 [SKYACTIV-G 2.0]

id0102h1146800

DTC P0116:00	ECT sensor circuit range/performance problem
DETECTION CONDITION	• The PCM monitors the maximum value and minimum value of engine coolant temperature when the engine is started and **5 min** have been passed after leaving the vehicle **6 h or more**. If difference between maximum and minimum values of engine coolant temperature is **below 6 °C {43 °F}** the PCM determines that there is an ECT sensor circuit range/performance problem. **Diagnostic support note** • This is a continuous monitor (engine cooling system). • The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	—
POSSIBLE CAUSE	• ECT sensor connector or terminals malfunction • PCM connector or terminals malfunction • ECT sensor malfunction • Thermostat malfunction • PCM malfunction
SYSTEM WIRING DIAGRAM	—

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	**IDENTIFY TRIGGER DTC FOR FREEZE FRAME DATA (MODE 2)** • Perform the Freeze Frame PID Data Access Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Is the DTC P0116:00 on FREEZE FRAME DATA (Mode 2)?	Yes	Go to the next step.
		No	Go to the troubleshooting procedure for DTC on FREEZE FRAME DATA (Mode 2). (See DTC TABLE [SKYACTIV-G 2.0].)
2	**VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA AND DIAGNOSTIC MONITORING TEST RESULTS HAVE BEEN RECORDED** • Have the FREEZE FRAME DATA (Mode 2)/ snapshot data and DIAGNOSTIC MONITORING TEST RESULTS (engine cooling system related) been recorded?	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data and DIAGNOSTIC MONITORING TEST RESULTS on the repair order, then go to the next step.
3	**VERIFY RELATED SERVICE INFORMATION AVAILABILITY** • Verify related Service Information availability. • Is any related Service Information available?	Yes	Perform repair or diagnosis according to the available Service Information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
4	**INSPECT ECT SENSOR CONNECTOR CONDITION** • Switch the ignition to off. • Disconnect the ECT 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.
5	**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.

STEP	INSPECTION		ACTION
6	**INSPECT ECT SENSOR** • Inspect the ECT sensor. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR INSPECTION [SKYACTIV-G 2.0].) • Is there any malfunction?	Yes	Replace the ECT sensor, then go to Step 9. (See ENGINE COOLANT TEMPERATURE (ECT) SENSOR REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)
		No	Go to the next step.
7	**COMPARE ECT PID VALUE** • Prepare a new ECT sensor. • Connect the ECT sensor connector to the new one without installing to the engine. • Switch the ignition ON (engine off) and record the ECT PID value. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Switch the ignition to off. • Replace the malfunction ECT sensor with new one. • Start the engine and wait for **5 min**. • Record the ECT PID value. • Is the difference between each ECT PID values **more than 6 °C {43 °F}**?	Yes	Go to the next step.
		No	Go to Step 9.
8	**INSPECT THERMOSTAT** • Switch the ignition to off. • Inspect the thermostat. (See THERMOSTAT INSPECTION [SKYACTIV-G 2.0].) • Is there any malfunction?	Yes	Replace the thermostat, then go to the next step. (See THERMOSTAT REMOVAL/INSTALLATION [SKYACTIV-G 2.0].)
		No	Go to the next step.
9	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0].) • Switch the ignition to off. • Start the engine and warm it up completely. • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) Go to the next step.
		No	Go to the next step.
10	**VERIFY AFTER REPAIR PROCEDURE** • Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0].)
		No	DTC troubleshooting completed.