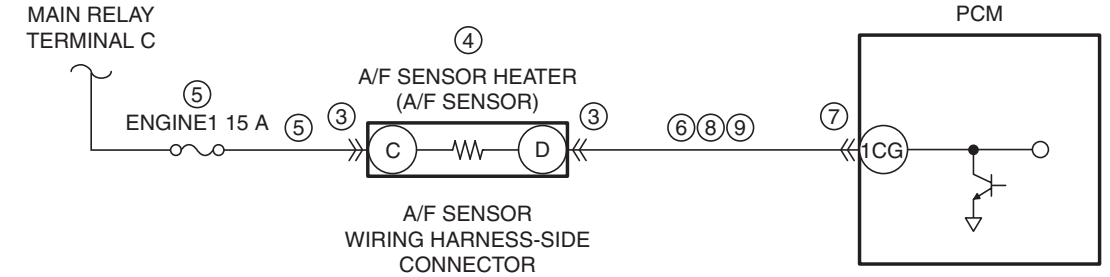
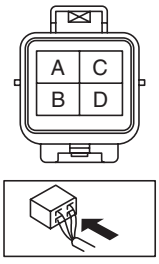
DTC P0030:00 [SKYACTIV-D 2.2]

id0102s4700300

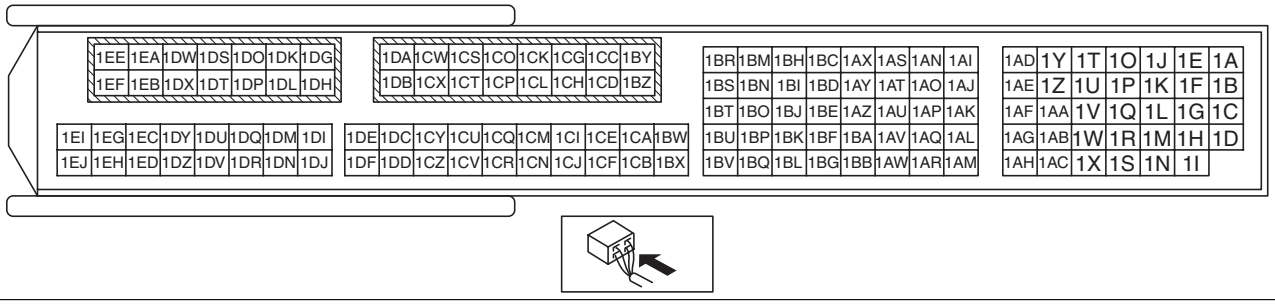
DTC P0030:00	A/F sensor heater control circuit range/performance problem
DETECTION CONDITION	• A/F sensor heater control current is **less than 0.573 A** or **exceeds 6.072 A** on for a continuous **5 s** with the following condition met. **MONITORING CONDITIONS** — Battery voltage: **11 V or more** — A/F sensor heater control duty value: **20—80 %** **Diagnostic support note** • This is an intermittent monitor (A/F sensor). • 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. • DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• PCM restricts engine torque. • Inhibits the EGR control. • Inhibits the diesel particulate filter regeneration control. • Inhibits engine-stop by operating the i-stop function.
POSSIBLE CAUSE	• A/F sensor connector or terminals malfunction • A/F sensor heater malfunction • Short to ground or open circuit in A/F sensor heater power supply circuit — Short to ground in wiring harness between ENGINE1 15 A fuse and A/F sensor terminal C — ENGINE1 15 A fuse malfunction — Open circuit in wiring harness between main relay terminal C and A/F sensor terminal C • Short to ground in wiring harness between A/F sensor terminal D and PCM terminal 1CG • PCM connector or terminals malfunction • Short to power supply in wiring harness between A/F sensor terminal D and PCM terminal 1CG • Open circuit in wiring harness between A/F sensor terminal D and PCM terminal 1CG • PCM malfunction



A/F SENSOR WIRING HARNESS-SIDE CONNECTOR



PCM WIRING HARNESS-SIDE CONNECTOR



Diagnostic Procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED** • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded?	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	**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.
3	**INSPECT A/F SENSOR CONNECTOR CONDITION** • Switch the ignition off. • Disconnect the A/F 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 10.
		No	Go to the next step.
4	**INSPECT A/F SENSOR HEATER** • Inspect the A/F sensor heater. (See AIR FUEL RATIO (A/F) SENSOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the A/F sensor, then go to Step 10. (See AIR FUEL RATIO (A/F) SENSOR REMOVAL/ INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
5	**INSPECT A/F SENSOR HEATER POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Verify that the A/F sensor connector is disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the A/F sensor terminal C (wiring harness-side). • Is the voltage **B+**?	Yes	Go to the next step.
		No	Inspect the ENGINE1 15 A fuse. • If the fuse is blown: — Repair or replace the wiring harness for a possible short to ground. — Replace the fuse. • If the fuse is deteriorated: — Replace the fuse. • If the fuse is normal: — Repair or replace the wiring harness for a possible open circuit. Go to Step 10.
6	**INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO GROUND** • Verify that the A/F sensor connector is disconnected. • Switch the ignition off. • Inspect for continuity between A/F sensor terminal D (wiring harness-side) and body ground. • Is there continuity?	Yes	If the short to ground circuit could be detected in the wiring harness: • Repair or replace the wiring harness for a possible 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-D 2.2].) Go to Step 10.
		No	Go to the next step.
7	**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.
8	**INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR SHORT TO POWER SUPPLY** • Verify that the A/F sensor and PCM connectors are disconnected. • Switch the ignition ON (engine off). • Measure the voltage at the A/F sensor terminal D (wiring harness-side). • Is the voltage **0 V**?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible short to power supply, then go to Step 10.

STEP	INSPECTION		ACTION
9	**INSPECT A/F SENSOR HEATER CONTROL CIRCUIT FOR OPEN CIRCUIT** • Verify that the A/F sensor and PCM connectors are disconnected. • Switch the ignition off. • Inspect for continuity between A/F sensor terminal D (wiring harness-side) and PCM terminal 1CG (wiring harness-side). • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then 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 AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].) • Perform the Drive Mode Type A. (See OBD DRIVE MODE [SKYACTIV-D 2.2].) • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) 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 [SKYACTIV-D 2.2].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].)
		No	DTC troubleshooting completed.