DTC	P0125	INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL

CIRCUIT DESCRIPTION

Refer to DTC P0115 on page 05−98.

DTC No.	DTC Detection Condition	Trouble Area
P0125	• Case 1: Engine Coolant Temperature (ECT) less than −19.45°C (−3°F) at engine start and following conditions met (2 trip detection logic): (a) 20 minutes elapsed since engine start (b) ECT sensor value remains below closed−loop fuel control enabling temperature • Case 2: ECT between −19.45°C and −8.34°C (−3°F and 17°F) at engine start and following conditions met (2 trip detection logic): (a) 5 minutes elapsed since engine start (b) ECT sensor value remains below closed−loop fuel control enabling temperature • Case 3: ECT above −3°C (17°F) at engine start and following conditions met (2 trip detection logic): (a) 2 minutes elapsed since engine start (b) ECT sensor value remains below closed−loop fuel control enabling temperature	• Cooling system • ECT sensor • Thermostat

MONITOR DESCRIPTION

The resistance of the ECT sensor varies in proportion to the actual ECT. The ECM supplies a constant voltage to the sensor and monitors the signal output voltage of the sensor. The signal voltage output varies according to the changing resistance of the sensor. After the engine is started, the ECT is monitored through this signal. If the ECT sensor indicates that the engine is not yet warm enough for closed−loop fuel control, despite a specified period of time having elapsed since the engine was started, the ECM interprets this as a malfunction in the sensor or cooling system and sets the DTC.

Example:

The ECT is 0°C (32°F) at engine start. After 5 minutes running time, the ECT sensor still indicates that the engine is not warm enough to begin closed−loop fuel (air−fuel ratio feedback) control. The ECM interprets this as a malfunction in the sensor or cooling system and sets the DTC.

MONITOR STRATEGY

Related DTCs	P0125: Insufficient engine coolant temperature for closed−loop fuel control
Required sensors/components (Main)	Thermostat, Cooling system
Required sensors/components (Related)	ECT sensor, MAF meter
Frequency of operation	Continuous
Duration	72 seconds: Engine coolant temperature at engine start is −8.34°C (17°F) or more 123 seconds: Engine coolant temperature at engine start is −19.45 to −8.34°C (−3 to 17°F) 20 minutes: Engine coolant temperature at engine start is less than −19.45°C (−3°F)
MIL operation	2 driving cycles
Sequence operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever this DTC is not present	See page 05−16
Fuel cut	OFF
Engine	Running

TYPICAL MALFUNCTION THRESHOLDS

Time until actual engine coolant temperature reaches closed−loop fuel control enabling temperature	72 seconds or more: Engine coolant temperature at engine start is −8.34°C (17°F) or more 123 seconds or more: Engine coolant temperature at engine start is −19.45 to −8.34°C (−3 to 17°F) 20 minutes or more: Engine coolant temperature at engine start is less than −19.45°C (−3°F)

INSPECTION PROCEDURE

HINT:

- If DTCs P0115, P0116, P0117, P0118 and P0125 are output simultaneously, engine coolant temperature sensor circuit may be open or short. Perform the troubleshooting of DTC P0115, P0117 or P0118 first.
- Read freeze frame data using the hand−held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air−fuel ratio was lean or rich, and other data from the time the malfunction occurred.

1	CHECK OTHER DTC OUTPUT (IN ADDITION TO DTC P0125)

(a) Read the DTC using the hand−held tester or the OBD II scan tool.
Result:

Display (DTC Output)	Proceed to
Only P0125 are output	A
P0125 and other DTCs are output	B

HINT:
If any other codes besides P0125 is output, perform the troubleshooting for those codes first.

B → **GO TO RELEVANT DTC CHART (See page 05−51)**

A

2	INSPECT THERMOSTAT (See page 16−2)

(a) Check the valve opening temperature of the thermostat.
OK: Valve opening temperature: 80 to 84°C (176 to 183°F).
HINT:
Also check the valve is completely closed under opening temperature as above.

NG → **REPLACE THERMOSTAT (See Page 16−11)**

OK

3	CHECK COOLING SYSTEM

(a) Check the cooling system for excessive cooling, such as abnormal radiator fan operation, modified cooling system and other defects.

OK: There is no modification of cooling system.

NG → **REPAIR OR REPLACE COOLING SYSTEM**

OK

REPLACE ENGINE COOLANT TEMPERATURE SENSOR