DTC P0125 Insufficient Coolant Temperature for Closed Loop Fuel Control

DESCRIPTION
Refer to DTC P0115 (See page ES-109).

<table>
<thead>
<tr>
<th>DTC No.</th>
<th>DTC Detection Conditions</th>
<th>Trouble Areas</th>
</tr>
</thead>
</table>
| P0125   | Engine coolant temperature (ECT) does not reach closed-loop enabling temperature for 20 minutes (this period varies with engine start ECT) (2 trip detection logic) | Cooling system  
Engine coolant temperature 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 E CT 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 about 1 minute 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

<table>
<thead>
<tr>
<th>Related DTCs</th>
<th>P0125: Insufficient engine coolant temperature for closed-loop fuel control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Sensors/Components (Main)</td>
<td>Engine coolant temperature sensor, thermostat, cooling system</td>
</tr>
<tr>
<td>Required Sensors/Components (Related)</td>
<td>-</td>
</tr>
<tr>
<td>Frequency of Operation</td>
<td>Once per driving cycle</td>
</tr>
</tbody>
</table>
| Duration               | 61 seconds: Engine coolant temperature at engine start -3.3°C (26°F) or more  
109 seconds: Engine coolant temperature at engine start -14.5 to -3.3°C (5.9 to 26°F)  
1,200 seconds: Engine coolant temperature at engine start -14.5°C (5.9°F) |
| MIL Operation          | 2 driving cycles |
| Sequence of Operation  | None |

TYPICAL ENABLING CONDITIONS

| Monitor runs whenever following DTCs not present | P0100 - P0103 (MAF meter)  
P0110 - P0113 (IAT sensor)  
P0115 - P0118 (ECT sensor) |
| Thermostat fail | Not detected |

TYPICAL MALFUNCTION THRESHOLDS

| Time until actual engine coolant temperature reaches closed-loop fuel control enabling temperature | 61 seconds: Engine coolant temperature at engine start -3.3°C (26°F) or more  
109 seconds: Engine coolant temperature at engine start -14.5 to -3.3°C (5.9 to 26°F)  
1,200 seconds: Engine coolant temperature at engine start -14.5°C (5.9°F) |

WIRING DIAGRAM
Refer to DTC P0115 (See page ES-110).
INSTRUCTION PROCEDURE

HINT:
- If any of DTCs P0115, P0116, P0117 or P0118 are set simultaneously with DTC P0125, the Engine Coolant Temperature (ECT) sensor may have an open or a short circuit. Troubleshoot those DTCs first.
- Read freeze frame data using an intelligent tester. Freeze frame data record the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, 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 ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P0125)

(a) Connect an intelligent tester to the DLC3.
(b) Turn the ignition switch ON.
(c) Turn the tester ON.
(d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
(e) Read DTCs.

Result

<table>
<thead>
<tr>
<th>Display (DTC Output)</th>
<th>Proceed to</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0125</td>
<td>A</td>
</tr>
<tr>
<td>P0125 and other DTCs</td>
<td>B</td>
</tr>
</tbody>
</table>

HINT:
If any DTCs other than P0125 are output, troubleshoot those DTCs first.

B GO TO DTC CHART (See page ES-57)

2 INSPECT WATER INLET WITH THERMOSTAT (THERMOSTAT)

(a) Remove the water inlet with thermostat (See page CO-12).
(b) Check the valve opening temperature of the thermostat.
   **Standard:**
   - 80°C to 84°C (176°F to 183°F)
   **HINT:**
   In addition to the above check, confirm that the valve is completely closed when the temperature is below the standard.
(c) Reinstall the water inlet with thermostat (See page CO-13).

NG REPLACE WATER INLET WITH THERMOSTAT (See page CO-12)

OK
3 CHECK COOLING SYSTEM

(a) Check for defects in the cooling system that might cause the system to be too cold, such as abnormal radiator fan operation or any modifications.

NG REPAIR OR REPLACE COOLING SYSTEM

OK

REPLACE ENGINE COOLANT TEMPERATURE SENSOR (See page ES-424)