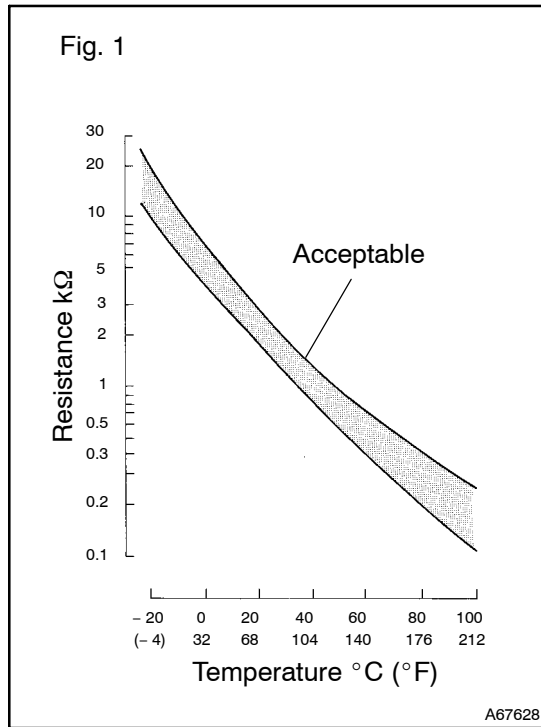


DTC	P0125	INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL
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CIRCUIT DESCRIPTION



A thermistor is built in the Engine Coolant Temperature (ECT) sensor and changes the resistance value according to the engine coolant temperature.

The structure of the sensor and connection to the ECM is the same the Intake Air Temperature (IAT) sensor.

HINT:

If the ECM detects the DTC P0115, P0117 or P0118, it operates the fail-safe function in which the ECT is assumed to be 80°C (176°F).

DTC No.	DTC Detection Condition	Trouble Area
P0125	Engine coolant temperature hardly changes for 2 minutes after engine start (2 trip detection logic)	<ul style="list-style-type: none"> • Engine coolant temperature sensor • Cooling system • Thermostat
P0125	Engine coolant temperature hardly changes for 5 minutes after engine start (2 trip detection logic)	<ul style="list-style-type: none"> • Engine coolant temperature sensor • Cooling system • Thermostat
P0125	Engine coolant temperature hardly changes for 20 minutes after engine start (2 trip detection logic)	<ul style="list-style-type: none"> • Engine coolant temperature sensor • Cooling system • Thermostat

HINT:

Confirm the ECT using the hand-held tester. Enter the following menus: DIAGNOSIS / ENHANCED OBD II / DATA LIST / PRIMARY / COOLANT TEMP.

Temperature Displayed	Malfunction
-40°C (-40°F)	Open circuit
140°C (284°F) or more	Short circuit

MONITOR DESCRIPTION

The Engine Coolant Temperature (ECT) sensor is used to monitor the temperature of the engine coolant. The resistance of the sensor varies with the actual coolant temperature. The ECM applies a voltage to the sensor and the varying resistance of the sensor causes the signal voltage to vary. The ECM monitors the ECT signal voltage after engine start-up. If, after sufficient time has passed, the sensor still reports that the engine is not warm enough for closed-loop fuel control, the ECM interprets this as a fault in the sensor or cooling system and sets a 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 air-fuel ratio feedback control of the air-fuel ratio. The ECM interprets this as a fault in the sensor or cooling system and will set a DTC.

This monitor runs when the ECT at engine start was -6.6°C (20°F) and the engine has run 5 minutes.

MONITOR STRATEGY

Related DTCs	P0125
Required sensors/components (Main)	ECT sensor
Required sensors/components (Related)	Cooling system, thermostat
Frequency of operation	Once per driving cycle
Duration	120 seconds (Case 1) 300 seconds (Case 2) 1,200 seconds (Case 3)

TYPICAL ENABLING CONDITIONS

All

Monitor will run whenever these DTCs are not present	See page 05-19
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Case 1

Engine coolant or intake air temperature at engine start	"Closed-loop enable temperature -8.3°C (15°F)" or more
Engine	Running
Fuel cut	OFF

Case 2

Engine coolant or intake air temperature at engine start	Between "Closed-loop enable temperature -19.5°C (35°F)" and "Closed-loop enable temperature -8.3°C (15°F)"
Engine	Running
Fuel cut	OFF

Case 3

Engine coolant or intake air temperature at engine start	Lower than "Closed-loop enable temperature -19.5°C (35°F)" or more
Engine	Running
Fuel cut	OFF
Idle	OFF

TYPICAL MALFUNCTION THRESHOLDS

Engine coolant temperature	Less than "Closed-loop enabling temperature"
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INSPECTION PROCEDURE

HINT:

- If DTCs P0115, P0116, P0117, P0118 and P0125 are output simultaneously, ECT 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. 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)

Result:

Display (DTC Output)	Proceed to
P0125	A
P0125 and other DTCs	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 [05-53](#))

A

2 INSPECT THERMOSTAT (See page [16-2](#))

- (a) Check the valve opening temperature of the thermostat.

OK: Valve opening temperature is 80 to 84°C (176 to 183°F)

HINT:

Also check that the valve is completely closed under opening temperature as above.

NG

REPLACE THERMOSTAT (See page [16-16](#))

OK

3 CHECK COOLING SYSTEM (See page [16-1](#))

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

NG

REPAIR OR REPLACE COOLING SYSTEM

OK

REPLACE ENGINE COOLANT TEMPERATURE SENSOR