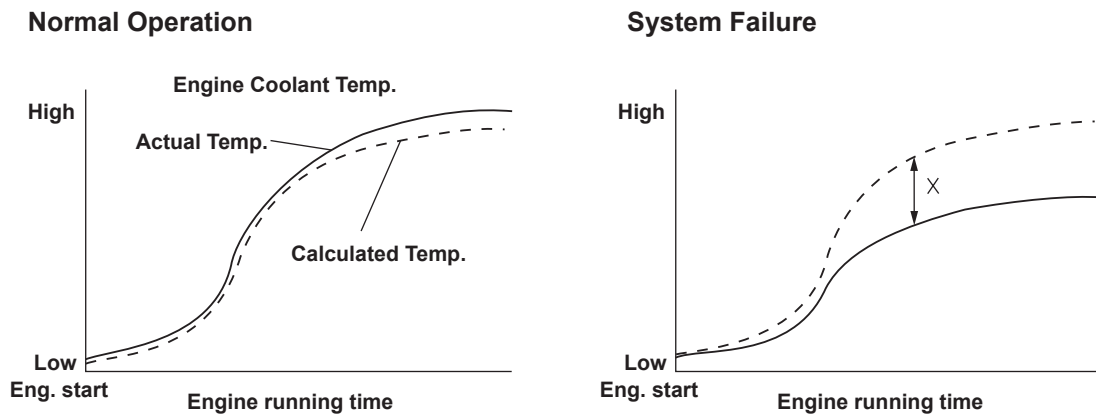


Advanced Diagnostics

DTC P0128: Cooling System Malfunction



P0128-0071

General Description

The thermostat valve is closed when the engine coolant temperature is low, and it stops the circulation of engine coolant to speed engine warm up. When the engine coolant temperature increases, the thermostat valve opens and circulates engine coolant to control its temperature. On the other hand, when the engine coolant temperature decreases, the opening area of the thermostat valve is reduced to regulate the engine coolant temperature. If the thermostat valve sticks open, engine warm up is delayed, and exhaust emissions are adversely affected. The engine control module (ECM) estimates the engine coolant temperature after starting the engine from the initial engine coolant temperature and driving conditions, and compares it with the actual engine coolant temperature that is detected by the engine coolant temperature (ECT) sensor.

If the actual engine coolant temperature is below the estimated engine coolant temperature (when x shown in the graph is large), a malfunction in the thermostat valve is detected and a DTC is stored.

Monitor Execution, Sequence, Duration, DTC Type

Execution	Once per driving cycle
Sequence	None
Duration	Depending on driving conditions
DTC Type	Two drive cycles, MIL ON

Enable Conditions

Condition	Minimum	Maximum
Initial engine coolant temperature	20°F (-7°C)	95°F (35°C)
Initial intake air temperature	20°F (-7°C)	95°F (35°C)
The difference between initial engine coolant temperature and initial intake air temperature	—	10°F (6°C)
Fuel feedback	Other than during fuel cut-off operation and while the auto idle stop system is operating	
No active DTCs	ECM, A/F Sensor, A/F Sensor Heater, MAP, CKP, ECT, TP, IAT, EGR, BARO, IAC, VSS, VTEC System, Fuel System	
Others	Intake air temperature 2 seconds after starting the engine must be nearly equal to initial intake air temperature [e.g.: Intake air temperature 2 seconds after starting the engine must be greater than 75°F (24°C) when initial intake air temperature is 77°F (25°C)]	
	Estimated engine coolant temperature reaches 172°F (78°C)	
	Test-drive on flat road	

Malfunction Threshold

- The ECT sensor output is 158°F (70°C) or less, and the estimated engine coolant temperature is 172°F (78°C) or more.
- The difference between the engine coolant temperature estimated by the ECM and the ECT sensor output is 27°F (15°C) or more.

Driving Pattern

1. Start the engine at an engine coolant temperature and intake air temperature as specified under Enable Conditions, and let it idle.
 2. Drive the vehicle at a speed between 25 - 55 mph (40 - 88 km/h) for at least 10 minutes.
- If you have difficulty duplicating the DTC, retest after turning off electrical components such as the audio system and A/C, and try a different gear position.
 - Drive the vehicle in this manner only if the traffic regulations and ambient conditions allow.

Diagnosis Details

Conditions for illuminating the MIL

When a malfunction is detected during the first drive cycle, a Temporary DTC is stored in the ECM memory. If the malfunction recurs during the next (second) drive cycle, the MIL comes on and the DTC and the freeze frame data are stored.

Conditions for clearing the MIL

The MIL will be cleared if the malfunction does not recur during three consecutive trips in which the diagnostic runs. The MIL, the DTC, the Temporary DTC, and the freeze frame data can be cleared by using the scan tool Clear command or by disconnecting the battery.