

GENERIC · POWERTRAIN

P012F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P012F

Engine Coolant Temperature / Engine Oil Temperature Correlation

P012F is a generic powertrain code indicating that the engine control module (ECM) has detected an implausible relationship between the engine coolant temperature (ECT) and engine oil temperature (EOT) readings during warm-up. The ECM expects the oil temperature to rise in a predictable manner relative to the coolant temperature, and when the correlation falls outside the calibrated window, it stores this code.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Slightly higher or lower than normal coolant temperature gauge readings.
- Reduced fuel economy due to the ECM using default temperature values.
- In cold weather, the engine may take longer to reach operating temperature or the heater may perform poorly.
- In rare cases, the engine may enter a limp-home mode with reduced power.
- Possible erratic idle or rough running during warm-up if the oil temperature sensor is faulty.

Common causes, most likely first

- 1 Faulty engine oil temperature sensor or its wiring.
- 2 Faulty engine coolant temperature sensor or its wiring.
- 3 Stuck-open or leaking thermostat, causing slow coolant warm-up.
- 4 Low engine oil level or degraded oil affecting heat transfer.
- 5 Contaminated or restricted oil cooler passages.
- 6 ECM software calibration issue or internal fault.
- 7 Corroded or damaged connector pins at either sensor.



How to diagnose and fix it

- 1 Check engine oil level and condition; top off or change oil if necessary.
- 2 Use a scan tool to compare ECT and EOT readings during a cold start and warm-up; look for unrealistic values or slow response.
- 3 Inspect the ECT and EOT sensor connectors and wiring for corrosion, chafing, or loose pins.
- 4 Test the thermostat operation by monitoring coolant temperature rise; replace if it opens too early or sticks open.
- 5 Perform resistance checks on both sensors according to the manufacturer's specifications and replace any that are out of range.
- 6 Verify oil cooler flow and inspect for restrictions if the sensors and thermostat check out.
- 7 Check for ECM software updates or recalibration bulletins from the manufacturer.

Why Oil and Coolant Temperatures Diverge

- A failing thermostat that opens early is a common cause because the coolant warms up slower than the ECM expects, making the oil temperature appear too high relative to coolant.
- The oil temperature sensor is often located in the oil pan or oil filter housing and can be damaged by road debris or improper oil change procedures.
- This code can be set by a completely unrelated issue such as a weak battery or poor ground connection that causes sensor voltage references to drift.
- Do not replace both sensors blindly; always compare live data during a cold start to see which sensor is reporting implausible values.
- In some vehicles, the ECM uses a calculated oil temperature model rather than a direct sensor, so a software calibration error can trigger P012F without any hardware fault.

Can I keep driving with P012F?

You can usually continue driving with P012F, but avoid heavy loads and long trips until diagnosed, as incorrect temperature data can affect fuel economy and emissions. If the engine overheats or you notice coolant loss, stop driving and seek service immediately.

Tools that help

- OBD-II scan tool with live data capability
- Infrared thermometer
- Digital multimeter
- Socket set and wrenches
- Oil drain pan and funnel



Reading P012F

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 1** Fuel and air metering.
- 2F** The exact fault within that area.

Often seen with

P0116 Engine Coolant Temperature Circuit Range/Performance · **P0117** Engine Coolant Temperature Circuit Low Input · **P0118** Engine Coolant Temperature Circuit High Input · **P0128** Coolant Thermostat (Coolant Temperature Below Thermostat Reg · **P0196** Engine Oil Temperature Sensor Range/Performance

See it working

Watch the animated explainer [Engine Cooling System Trainer: How Engines Stay Cool](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p012f/>

