

GENERIC · POWERTRAIN

P2CF0

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2CF0

Auxiliary Thermostat A Stuck Closed

P2CF0 indicates that the powertrain control module has detected the auxiliary thermostat is stuck in the closed position, preventing coolant from circulating through the auxiliary cooling loop. The computer typically compares engine coolant temperature behavior against expected warm-up rates and sets this code when the auxiliary circuit does not open as commanded.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Often no symptoms besides the warning light
- Engine coolant temperature gauge climbing higher than normal during heavy load or towing
- Reduced cabin heat or inconsistent heater performance if the auxiliary loop serves the heater core
- Cooling fans running more frequently or at higher speed than usual
- Transmission or engine entering reduced power mode on some vehicles when overheating protection activates

Common causes, most likely first

- Auxiliary thermostat mechanically stuck closed due to internal corrosion or debris
- Failed thermostat wax element or broken return spring inside the auxiliary thermostat housing
- Coolant level low or air trapped in the auxiliary cooling circuit preventing proper thermostat operation
- Wiring damage or corrosion at the auxiliary thermostat connector or control solenoid
- Faulty auxiliary coolant temperature sensor sending inaccurate readings to the control module
- Control module software calibration issue or failed output driver for the auxiliary thermostat circuit



How to diagnose and fix it

- 1 Check coolant level and inspect for leaks or air pockets in the auxiliary cooling circuit, then bleed the system as needed
- 2 Use a scan tool to command the auxiliary thermostat open and closed while monitoring coolant temperature response
- 3 Inspect the auxiliary thermostat connector, wiring harness, and control solenoid for corrosion, chafing, or open circuits
- 4 Compare the auxiliary coolant temperature sensor reading against a known-good thermometer or infrared gauge
- 5 Remove and test the auxiliary thermostat in a pot of heated water to verify it opens at the specified temperature
- 6 Replace the auxiliary thermostat assembly if it fails the bench test or does not respond to scan tool commands
- 7 Clear the code and perform a road test with the scan tool connected to confirm the repair and verify no pending codes return

What a stuck auxiliary thermostat really means

- A stuck-closed auxiliary thermostat often causes no drivability complaint because the main cooling circuit still regulates engine temperature, so the code may be the only clue.
- Technicians frequently replace the auxiliary thermostat when the real fault is a trapped air pocket or low coolant level that prevents the thermostat from seeing hot coolant.
- On some vehicles the auxiliary thermostat is controlled by a solenoid or vacuum actuator rather than a wax element, so a wiring or vacuum fault can mimic a stuck thermostat.
- A failed auxiliary coolant temperature sensor can bias the control module's strategy and set this code even when the thermostat itself moves freely.
- This code does not always mean the thermostat is permanently stuck; an intermittent binding condition or a one-time low coolant event can set it, so verify before replacing parts.

Can I keep driving with P2CF0?

You can usually drive short distances at moderate load with the warning light on, but avoid heavy towing, sustained high-speed driving, or hot ambient conditions until the fault is repaired. Stop driving if the temperature gauge climbs into the red or the engine enters reduced power mode.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Infrared thermometer or digital temperature probe
- Coolant refractometer or hydrometer
- Basic hand tools and a drain pan for coolant
- Wiring diagram and multimeter for circuit testing



Reading P2CF0

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- C** Hybrid propulsion.
- F0** The exact fault within that area.

Often seen with

P0128 Coolant Thermostat (Coolant Temperature Below Thermostat Reg · **P0217** Engine Over-Temperature Condition · **P2181** Cooling System Performance · **P2CF1** Auxiliary Thermostat B Stuck Open · **P2CF2** Auxiliary Thermostat B Stuck Closed

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/p2cf0/>

