

GENERIC · POWERTRAIN

P05CF

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P05CF

Cold Start B Camshaft Position Timing Performance Bank 2

P05CF is a generic powertrain code indicating that the engine control module (ECM) has detected a performance problem with the cold-start camshaft timing on Bank 2, specifically for the 'B' camshaft. The ECM monitors the camshaft position sensor signal during cold starts and compares it to the expected value; when the actual timing deviates beyond a calibrated threshold, it sets this code.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or misfire during cold starts, especially in low ambient temperatures
- Reduced engine performance or hesitation when the engine is cold
- Intermittent stalling shortly after a cold start
- Poor fuel economy or increased emissions during warm-up

Common causes, most likely first

- 1 Faulty camshaft position sensor on Bank 2
- 2 Wiring or connector issues in the camshaft sensor circuit (open, short, or corrosion)
- 3 Sludge or debris obstructing the camshaft phaser or oil control valve, affecting cold-start timing
- 4 Low engine oil level or incorrect oil viscosity causing delayed phaser response when cold
- 5 Sticking or failing camshaft phaser (variable valve timing actuator)
- 6 Mechanical timing chain or belt issues, such as a stretched chain or misaligned timing marks
- 7 ECM software calibration issues or internal ECM fault (less common)



How to diagnose and fix it

- 1 Check for other stored codes and freeze-frame data to confirm the fault conditions
- 2 Inspect the camshaft position sensor and its wiring for damage, corrosion, or loose connections
- 3 Verify engine oil level and condition; change oil and filter if contaminated or incorrect viscosity
- 4 Test the camshaft position sensor with a multimeter or oscilloscope to confirm signal integrity
- 5 Check the oil control valve (OCV) for proper operation and clean or replace if clogged
- 6 Perform a mechanical timing verification to ensure the timing chain/belt is correctly aligned
- 7 If all else fails, reprogram or replace the ECM as per manufacturer procedures

Cold-start timing faults often misdiagnosed

- A dirty or failing oil control valve is a frequent culprit that is often overlooked because it does not always set a dedicated code.
- Cold-start timing performance can be affected by oil pressure issues that only manifest at low temperatures, so oil quality and viscosity are critical.
- The code may be set by a momentary glitch in the camshaft sensor signal that does not recur, so always check for intermittent wiring faults before replacing parts.
- On some vehicles, a low battery or charging system issue can cause the ECM to see erratic camshaft signals during cranking, leading to a false P05CF.
- Replacing the camshaft sensor without verifying the phaser and oil control valve operation often leads to a repeat code.

Can I keep driving with P05CF?

You can generally drive the vehicle with this code, but avoid heavy acceleration and cold-start aggressive driving until diagnosed. If the engine runs rough or stalls, have it inspected promptly to prevent potential catalytic converter damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Oscilloscope (for signal analysis)
- Oil pressure gauge
- Basic hand tools (wrenches, sockets, screwdrivers)



Reading P05CF

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
5	Vehicle speed, idle control and auxiliary inputs.
CF	The exact fault within that area.

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0016** Crankshaft/Camshaft Position Correlation (Bank 1 Sensor A) · **P0021** 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P05CD** Cold Start A Camshaft Position Timing Performance Bank 2 · **P05CE** Cold Start B Camshaft Position Timing Performance Bank 1

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p05cf/>

