

FORD · POWERTRAIN

P1388

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1388 · Ford

Variable Cam Timing Overretarded Bank 2

P1388 on Ford vehicles means the powertrain control module (PCM) commanded the bank 2 variable cam timing (VCT) solenoid to retard the camshaft, but the camshaft stayed more advanced than commanded for longer than the calibrated threshold. The PCM compares the bank 2 camshaft position sensor signal against the desired cam timing and sets this code when the measured angle is overretarded relative to the command.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Ford specific	Medium	Intermediate	Ignition system and misfire

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or idle surge, especially when the engine is cold or at low RPM
- Reduced engine performance and sluggish acceleration, particularly at low-to-mid engine speeds
- Poor fuel economy or an increase in fuel consumption
- Occasional engine misfire or hesitation under light load
- In some cases, a rattle or ticking noise from the bank 2 camshaft area if the phaser is mechanically worn

Common causes, most likely first

- 1 Contaminated or clogged bank 2 VCT solenoid, often from dirty engine oil or sludge
- 2 Failed bank 2 VCT solenoid (electrically open, shorted, or mechanically stuck)
- 3 Worn or damaged bank 2 camshaft phaser (variable timing gear) causing the cam to stick in an advanced position
- 4 Engine oil pressure issues at the bank 2 phaser, such as a restricted oil passage or low overall oil pressure
- 5 Wiring harness damage or poor connection at the bank 2 VCT solenoid connector
- 6 Incorrect engine oil viscosity or severely degraded oil affecting VCT operation
- 7 Rarely, a PCM calibration issue or a faulty bank 2 camshaft position sensor providing an inaccurate signal



How to diagnose and fix it

- 1 Check the engine oil level and condition; if the oil is dirty or the wrong viscosity, change it and the filter with the correct specification before further diagnosis.
- 2 Inspect the bank 2 VCT solenoid connector and wiring for corrosion, chafing, or loose pins, and repair as needed.
- 3 Remove and inspect the bank 2 VCT solenoid; clean it with electrical contact cleaner or replace it if it is clogged or fails a resistance and function test.
- 4 Verify oil pressure at the bank 2 phaser feed using a mechanical gauge; if pressure is low, diagnose the oil pump, pickup tube, or internal oil passages.
- 5 Remove the bank 2 valve cover and inspect the camshaft phaser for mechanical wear, scoring, or sticking; replace the phaser if it does not move freely or shows damage.
- 6 Use a scan tool to command the bank 2 VCT solenoid through its range and observe the camshaft position response; if the cam does not follow the command, further isolate the solenoid, phaser, or oil supply.
- 7 After repairs, clear the code and perform a road test with the scan tool monitoring VCT desired versus actual angles to confirm the fault is resolved.

What Ford VCT Codes Often Hide

- A dirty or sludged engine oil system is one of the most common root causes of P1388 on Ford engines, so a fresh oil change with the correct viscosity often resolves the code before any parts are replaced.
- The bank 2 VCT solenoid can test good electrically yet still stick mechanically due to varnish or debris, so a resistance check alone is not enough to condemn or clear it.
- A worn bank 2 camshaft phaser can mimic a faulty solenoid, and replacing only the solenoid will not fix the code if the phaser itself is sticking or has excessive internal clearance.
- Low oil pressure from a failing oil pump or a restricted pickup tube can set P1388 without any other oil pressure warning, so always verify actual oil pressure at the phaser feed before replacing timing components.
- P1388 can be set by a PCM calibration that is not the latest Ford update, so check for available calibration updates after mechanical and electrical causes have been ruled out.

Can I keep driving with P1388?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or sustained high-speed driving because overretarded cam timing can cause poor performance and may lead to engine damage if the phaser is mechanically failing. If the check engine light is flashing or the engine runs very poorly, stop driving and have it towed.



Tools that help

- OBD-II scan tool with live data and bidirectional control capability
- Digital multimeter
- Mechanical oil pressure gauge
- Socket and wrench set
- Electrical contact cleaner
- Torque wrench

Reading P1388

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Ford): its meaning depends on the make.
3	Ignition system and misfire.
88	The exact fault within that area.

Often seen with

P1387 Control Unit Internal Altitude Sensor · **P1386** Internal Control Module Knock Control Error · **P1387** CYP Sensor B No Signal · **P1386** CYP Sensor B Intermittent Interruption · **P1390** Timing Belt Skipped One Tooth Or More · **P1387** Camshaft Position Timing Solenoid 2 Circuit · **P1390** Octane Adjust Shorting Bar Out Or Circuit Open · **P1386** Knock Sensor Control Zero Test · **P1386** CYP Sensor B Intermittent Interruption · **P1387** CYP Sensor B No Signal · **P1389** No Auto Shutdown ASD Relay Output Voltage At PCM · **P1390** Wheel Speed Sensor 1 G-Sensor Circuit · **P1386** Variable Cam Timing Overadvanced Bank 2 · **P1389** Glow Plug Circuit High Side Low Input · **P1390** Octane Adjust Out of Self-Test Range · **P1389** No Auto Shutdown (ASD) Relay Output Voltage At PCM · **P1390** Timing Belt Skipped One Tooth Or More · **P1386** Control Module Self-test Knock Control Baseline Test Bank 1 · **P0011** 'A' Camshaft Position - Timing Over-Advanced or System Perfo

See it working

Watch the animated explainer [How a MAF Sensor Works: Hot-Wire Airflow Explained](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/ford-p1388/>

