

GM · POWERTRAIN

P1377

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1377 · GM

IC Module CAM Pulse To 4X Reference Pulse Comparison

P1377 on GM vehicles means the ignition control (IC) module is reporting a camshaft pulse that does not match the expected 4X reference pulse from the crankshaft. The engine control module (ECM) compares these two signals to verify proper cam-to-crank timing and sets this code when the pulse counts or timing relationship fall outside the allowed window.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Medium	Professional	Ignition system and misfire

Symptoms you may notice

- Illuminated check engine light, often with no other symptoms
- Rough idle or misfire at low engine speeds
- Hard starting or extended cranking before the engine fires
- Intermittent stalling, especially when the engine is cold or under load
- Reduced fuel economy or poor throttle response
- In rare cases, the engine may crank but not start

Common causes, most likely first

- 1 Faulty camshaft position sensor or its wiring connector
- 2 Damaged or misrouted camshaft sensor harness near the ignition module
- 3 Worn or contaminated ignition control module connector terminals
- 4 Failed ignition control module (ICM) internal pulse generator
- 5 Excessive timing chain stretch or worn distributor gear causing cam-to-crank misalignment
- 6 Electrical interference from aftermarket ignition components or poor grounds
- 7 Corroded or loose ground connection at the engine block or ICM mounting surface



How to diagnose and fix it

- 1 Inspect the camshaft position sensor connector and wiring for chafing, corrosion, or loose pins
- 2 Check the ignition control module connector and ground circuit for clean, tight connections
- 3 Measure camshaft sensor signal with a lab scope and compare the pulse pattern to the 4X reference signal
- 4 Verify base engine timing and check for timing chain stretch or distributor gear wear
- 5 Substitute a known-good ignition control module and clear the code to see if it returns
- 6 Repair or replace damaged wiring, connectors, or the camshaft sensor as indicated by the scope test
- 7 Clear codes and perform a road test to confirm the repair and ensure no pending codes return

Cam and crank signals must agree

- A stretched timing chain on high-mileage GM engines often sets P1377 before any misfire code appears, so always verify cam-to-crank timing with a scope before replacing sensors.
- The ignition control module generates the 4X reference pulse, and a failing module can produce a clean cam signal but a distorted reference, leading to misdiagnosis of the cam sensor.
- Aftermarket ignition coils or improper spark plug gaps can introduce electrical noise that corrupts the cam pulse signal, causing P1377 without any hard part failure.
- P1377 does not always mean the cam sensor is bad; a poor ground at the ICM mounting surface can shift the reference pulse timing enough to trigger the code.
- On some GM engines, a worn distributor gear or excessive camshaft end play will cause this code only at certain RPMs, so a static test may pass while a road test with a scope reveals the fault.

Can I keep driving with P1377?

You can usually drive the vehicle short distances if the only symptom is the warning light, but avoid heavy load or high-speed driving until the fault is diagnosed. If the engine misfires, stalls, or is hard to start, park it and arrange a diagnostic scan to prevent further damage.

Tools that help

- OBD-II scan tool with live data and graphing capability
- Digital storage oscilloscope (lab scope) with two channels
- Digital multimeter (DMM) for voltage and resistance checks
- Wiring diagram and connector pinout for the specific GM engine
- Basic hand tools for connector and sensor access



Reading P1377

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

Often seen with

P1376 Cylinder 8 Ignition Circuit Open · **P1376** Ignition Coil Cylinder 6 Early Activation Fault · **P1376** Ignition Ground Circuit · **P1376** Ignition Ground Circuit · **P0335** Crankshaft Position Sensor A Circuit Malfunction · **P0336** Crankshaft Position Sensor A Circuit Range/Performance · **P0340** Camshaft Position Sensor A Circuit Malfunction (Bank 1) · **P0341** Camshaft Position Sensor A Circuit Range/Performance

See it working

Watch the animated explainer [Car Won't Start? Step-by-Step No-Start Diagnosis](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1377/>

