

CHRYSLER · POWERTRAIN

P1377

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1377 · Chrysler

IC Module CAM Pulse To 4X Reference Pulse Comparison

P1377 on Chrysler vehicles means the engine computer detected a mismatch between the camshaft position sensor signal and the crankshaft 4X reference pulse signal during engine operation. The powertrain control module expects these two signals to stay in a fixed relationship, and when the cam pulse does not align with the 4X reference pulse, it stores this code because it cannot reliably identify cylinder position for fuel and spark timing.

SYSTEM

Powertrain

CODE TYPE

Chrysler specific

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Ignition system and misfire

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms at first
- Intermittent rough running or misfire that may come and go with engine temperature or vibration
- Hard starting or extended cranking before the engine fires, especially when warm
- Reduced fuel economy and a noticeable loss of power under acceleration
- Occasional stalling at idle or when coming to a stop
- A no-start condition if the cam and crank signals fall far enough out of sync

Common causes, most likely first

- 1 Worn or stretched timing chain or timing belt causing the camshaft to lag the crankshaft
- 2 Faulty camshaft position sensor or a damaged sensor connector with corroded terminals
- 3 Faulty crankshaft position sensor or a damaged 4X reference pulse ring on the crankshaft
- 4 Wiring harness damage between the cam sensor, crank sensor, and powertrain control module, often from chafing or heat
- 5 A skipped tooth on the timing chain or belt due to a failed tensioner
- 6 Contaminated or incorrectly installed camshaft target wheel or reluctor
- 7 Powertrain control module internal fault, which is rare but possible after all other causes are ruled out



How to diagnose and fix it

- 1 Connect a scan tool and record live cam and crank signal data during cranking and running to confirm the mismatch before touching any parts
- 2 Inspect the camshaft and crankshaft sensor connectors and wiring for corrosion, chafing, or loose pins, and repair as needed
- 3 Check the timing chain or belt alignment marks against the factory procedure to verify the camshaft is not off by a tooth
- 4 Test the camshaft position sensor and crankshaft position sensor with a multimeter or oscilloscope and replace any sensor that fails the specification
- 5 Inspect the 4X reference pulse ring on the crankshaft for cracks, missing teeth, or debris, and replace it if damaged
- 6 If timing components are worn or the chain has skipped, replace the timing chain, tensioner, and guides as a set
- 7 Clear the code and perform a road test with live data to confirm the cam and crank signals stay synchronized before returning the vehicle

What the cam and crank signals reveal

- A stretched timing chain on high-mileage Chrysler engines is the most common root cause of P1377, and replacing sensors without checking chain stretch will not fix the code
- The 4X reference pulse comes from the crankshaft, so a damaged or dirty pulse ring can mimic a failed cam sensor and send technicians chasing the wrong part
- P1377 can set intermittently from a wiring harness that rubs against a bracket only during certain engine movements, so a wiggle test on the harness is essential
- This code does not always mean the engine will run poorly; some vehicles store it during a single brief sync loss and drive normally until the next event
- After any timing chain or belt service, verify cam and crank synchronization with a scan tool before clearing codes, because a one-tooth error will reset P1377 immediately

Can I keep driving with P1377?

You can usually drive a short distance to a repair shop if the engine runs smoothly and the light is steady, but avoid hard acceleration and long trips. If the engine is misfiring, stalling, or cranking without starting, stop driving and have the vehicle towed because continued operation can damage the catalytic converter or leave you stranded.



Tools that help

- OBD-II scan tool with live data and graphing capability
- Oscilloscope for comparing cam and crank waveforms
- Digital multimeter for sensor and wiring tests
- Factory service information for timing mark alignment
- Basic hand tools and a timing light or compression gauge as needed

Reading P1377

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

Often seen with

P1391 CMP Sensor Bank 2 Short To Ground · **P1391** Intermittent Loss Of CMP Or CKP Sensor Signals · **P1391** Wheel Speed Sensor 1 G-Sensor Circuit Performance · **P1391** Glow Plug Circuit Low Input Bank 1 · **P1391** Intermittent Loss of CMP Or CKP · **P0016** Crankshaft/Camshaft Position Correlation (Bank 1 Sensor A) · **P0300** Random/Multiple Cylinder Misfire Detected · **P0335** Crankshaft Position Sensor A Circuit Malfunction · **P0340** Camshaft Position Sensor A Circuit Malfunction (Bank 1)

See it working

Watch the animated explainer [How Airbags Work: A 50 km/h Crash in Slow Motion](#) on Auto Veteran to see the parts involved moving.

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

