

GENERIC · POWERTRAIN

P2C06

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2C06

A Camshaft Profile Actuator Position Sensor A Range/Performance Bank 1

P2C06 indicates that the powertrain control module (PCM) has detected a range or performance problem with the camshaft profile actuator position sensor on bank 1. This sensor reports the actual position of a variable valve timing or cam profile actuator, and the PCM compares that signal against the commanded position to verify the system is responding as expected.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or unstable engine operation, especially when cold
- Reduced engine power or limp mode under certain driving conditions
- Poor fuel economy or increased emissions
- Hesitation or stumble during acceleration
- Unusual engine noises such as ticking or rattling from the valvetrain area

Common causes, most likely first

- 1 Faulty camshaft profile actuator position sensor
- 2 Wiring damage or poor electrical connection at the sensor or PCM
- 3 Contaminated or degraded engine oil affecting actuator response
- 4 Sticking or mechanically binding camshaft profile actuator
- 5 PCM software calibration issue or internal fault
- 6 Oil passage blockage or low oil pressure to the actuator



How to diagnose and fix it

- 1 Connect a scan tool and verify the code is current, then check for any related pending or history codes
- 2 Inspect the sensor wiring harness and connector for chafing, corrosion, or loose pins
- 3 Check engine oil level and condition, and verify oil pressure meets specification
- 4 Use a scan tool to command the camshaft profile actuator through its range while monitoring sensor feedback for smooth operation
- 5 Perform a resistance and voltage drop test on the sensor signal circuit
- 6 Remove and inspect the camshaft profile actuator for mechanical binding or sludge buildup
- 7 If all electrical and mechanical checks pass, reprogram the PCM with the latest calibration or replace the sensor as a last resort

Oil quality and wiring often fool technicians

- A low oil level or heavily contaminated oil can cause the camshaft profile actuator to respond sluggishly, setting P2C06 even when the sensor itself is healthy.
The sensor connector is frequently exposed to oil mist and heat, leading to intermittent signal loss that may not appear during a quick visual inspection.
- Some technicians replace the sensor first, but a sticking actuator or blocked oil passage can mimic a sensor failure and cause the new part to set the same code.
- P2C06 can be set by a PCM calibration issue on certain vehicles, so checking for technical service bulletins before parts replacement is worthwhile.
The code does not always mean the sensor is defective; a mechanical fault in the variable valve timing system can produce the same range/performance error.

Can I keep driving with P2C06?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration or sustained high speeds because the engine may enter limp mode. If the check engine light flashes or you notice severe power loss, stop driving and seek professional diagnosis.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Oil pressure gauge
- Basic hand tools and socket set
- Wiring diagram for the specific vehicle



Reading P2C06

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

Often seen with

P0010 'A' Camshaft Position Actuator Circuit (Bank 1) · **P0011** 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0016** Crankshaft/Camshaft Position Correlation (Bank 1 Sensor A) · **P2C05** A Camshaft Profile Actuator Position Sensor A Circuit Bank 1 · **P2C07** A Camshaft Profile Actuator Position Sensor A Circuit Low Ba

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/p2c06/>

