

GENERIC · POWERTRAIN

P2C05

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2C05

A Camshaft Profile Actuator Position Sensor A Circuit Bank 1

P2C05 indicates that the powertrain control module (PCM) has detected an electrical fault in the circuit for the camshaft profile actuator position sensor on bank 1, sensor A. This sensor reports the actual position of the variable valve timing actuator, and the PCM sets the code when the signal voltage is outside the expected range or inconsistent with commanded position.

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 conditions
- Poor fuel economy or increased emissions
- Engine hesitation or stumble during acceleration
- In rare cases, a no-start condition if the actuator defaults to a non-optimal position

Common causes, most likely first

- 1 Faulty camshaft profile actuator position sensor
- 2 Damaged or corroded wiring or connector at the sensor or PCM
- 3 Open or short circuit in the sensor signal, power, or ground circuit
- 4 Failed camshaft profile actuator (sticking or mechanically bound)
- 5 Contaminated or degraded engine oil affecting actuator response
- 6 PCM internal fault (rare)



How to diagnose and fix it

- 1 Perform a visual inspection of the sensor, connector, and wiring for damage or corrosion
- 2 Check for technical service bulletins (TSBs) or diagnostic trouble code (DTC) setting criteria for the specific vehicle
- 3 Use a scan tool to monitor live sensor data and compare commanded versus actual actuator position
- 4 Measure resistance and voltage on the sensor circuits to verify integrity and correct values
- 5 Test the actuator with a bidirectional scan tool to command position changes and observe sensor response
- 6 Replace the camshaft profile actuator position sensor if faulty
- 7 Repair or replace damaged wiring or connectors as needed

Diagnosing P2C05 Beyond the Sensor

- A stuck or sluggish camshaft profile actuator can set this code even when the sensor itself is functioning correctly, so always command the actuator through its full range with a scan tool before condemning the sensor.
Oil sludge or debris from infrequent oil changes can clog the actuator's oil passages, causing the actuator to respond slowly and triggering the position sensor code without any electrical fault.
- The PCM may set P2C05 if the sensor signal is plausible but does not match the commanded position within a calibrated time window, which can be caused by a mechanical timing issue rather than an electrical problem.
- Inspect the entire circuit for intermittent opens or shorts by wiggling the harness while monitoring sensor data, as a poor connection can mimic a failed sensor.
Replacing the sensor without verifying the actuator's mechanical operation often leads to a repeat code, so always perform a full functional test of the variable valve timing system.

Can I keep driving with P2C05?

You can usually drive the vehicle with this code, but avoid aggressive acceleration or heavy loads because the engine may enter limp mode or run inefficiently. Have the fault diagnosed soon to prevent potential catalytic converter damage or worsening performance.

Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter
- Wiring diagram for the specific vehicle
- Basic hand tools (socket set, screwdrivers)
- Feeler gauges or calipers (if mechanical inspection is needed)



Reading P2C05

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- C** Hybrid propulsion.
- 05** 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) · **P2C06** A Camshaft Profile Actuator Position Sensor A Range/Performa · **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/p2c05/>

