

GENERIC · POWERTRAIN

P001D

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P001D

A Camshaft Profile Actuator A Control Circuit/Open Bank 2

P001D indicates that the powertrain control module has detected an open circuit or excessive resistance in the control circuit for the bank 2 camshaft profile actuator, which is the solenoid that moves the camshaft to change valve lift or timing. The computer commands the actuator to a position and monitors the electrical feedback; when the expected current or voltage is not seen, it sets this code.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other symptoms noticed by the driver
- Rough idle or unstable engine operation, especially when cold
- Reduced engine power or a limp-home mode
- Poor fuel economy or increased emissions
- Unusual engine noises such as ticking or rattling from the affected bank
- Difficulty starting or stalling when coming to a stop

Common causes, most likely first

- 1 Damaged or disconnected electrical connector at the bank 2 camshaft profile actuator
- 2 Broken, chafed, or corroded wiring in the actuator control circuit
- 3 Failed camshaft profile actuator solenoid (open internal coil)
- 4 Faulty powertrain control module driver circuit (rare)
- 5 Poor ground connection for the actuator circuit
- 6 Oil sludge or debris blocking the actuator, causing it to overheat and fail electrically



How to diagnose and fix it

- 1 Inspect the actuator connector and wiring for obvious damage, corrosion, or looseness; clean and secure as needed
- 2 Check the actuator solenoid resistance with a multimeter and compare to the manufacturer's specification
- 3 Test the control circuit for continuity and short-to-ground or short-to-power using a wiring diagram
- 4 Verify power and ground at the actuator connector with the key on and engine off
- 5 If the circuit tests good, command the actuator with a scan tool and observe current draw and movement
- 6 Replace the camshaft profile actuator if it fails electrical or functional tests
- 7 Clear the code and perform a road test to confirm the repair and ensure the code does not return

What the code does not always mean

- A P001D is often set by a simple unplugged or loose connector rather than a failed actuator, so always check the plug before condemning parts.
- The code can be triggered by a momentary voltage drop during engine cranking, so a single occurrence may not indicate a hard fault.
- On some engines, the same actuator circuit is shared with other components, and a fault in a related system can cause this code to set.
- Oil condition plays a role: sludge can cause the actuator to stick and draw excessive current, leading to an open-circuit code without a wiring problem.
- After replacing the actuator, some vehicles require a relearn procedure for the camshaft profile system to prevent the code from returning.

Can I keep driving with P001D?

You can usually drive the vehicle with this code, but avoid heavy acceleration and towing until it is repaired. Prolonged driving with a faulty actuator can lead to poor fuel economy, increased emissions, and potential damage to the catalytic converter.

Tools that help

- OBD-II scan tool with live data and actuator command capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Basic hand tools (socket set, screwdrivers, pliers)
- Electrical contact cleaner and dielectric grease



Reading P001D

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 0** Fuel and air metering and auxiliary emission controls.
- 1D** The exact fault within that area.

Often seen with

P0010 'A' Camshaft Position Actuator Circuit (Bank 1) · **P001C** A Camshaft Profile Actuator A Control Circuit High Bank 1 · **P001E** A Camshaft Profile Actuator A Control Circuit Low Bank 2 · **P001F** A Camshaft Profile Actuator A Control Circuit High Bank 2 · **P0020** 'A' Camshaft Position Actuator Circuit (Bank 2)

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/p001d/>

