

GENERIC · POWERTRAIN

P002D

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P002D

B Camshaft Profile Actuator A Control Circuit/Open Bank 2

P002D indicates that the powertrain control module has detected an open circuit or excessive resistance in the control circuit for the Bank 2 'A' camshaft profile actuator, which is the solenoid or motor that changes valve lift or timing on that cylinder bank. The computer commands the actuator to move and monitors the electrical feedback; when the expected current or voltage is missing, it flags the circuit as open and stores 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 noticeable symptoms
- Rough idle or uneven engine operation, especially when cold
- Reduced engine power or a limp-home mode on some vehicles
- Poor fuel economy or increased emissions
- A noticeable change in engine sound or valve train noise
- Intermittent hesitation or stumble during acceleration

Common causes, most likely first

- 1 Broken, chafed, or corroded wiring in the actuator control circuit
- 2 Failed camshaft profile actuator solenoid or motor
- 3 Loose or damaged electrical connector at the actuator
- 4 Faulty powertrain control module driver circuit (rare)
- 5 Oil sludge or debris blocking the actuator and causing circuit feedback anomalies
- 6 Aftermarket or incorrectly installed electrical accessories tapping into the circuit



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data to confirm the code is active and not a historical glitch
- 2 Visually inspect the actuator connector and wiring harness for damage, corrosion, or loose pins
- 3 Measure resistance and voltage at the actuator connector and compare to manufacturer specifications
- 4 Check the control circuit for continuity and short-to-ground or short-to-power using a multimeter
- 5 Test the actuator with a bidirectional scan tool to command it on and off while monitoring circuit response
- 6 If the circuit tests good, replace the camshaft profile actuator and clear the code
- 7 If the actuator and wiring are good, diagnose the powertrain control module driver circuit or reprogram the module

When the wiring is not the real culprit

- A failed actuator can set an open-circuit code even when the wiring is perfect, because the solenoid coil opens internally and the driver sees no current draw.
- Oil sludge or low oil pressure can cause the actuator to stick and draw abnormal current, leading to a circuit code that mimics a wiring fault.
- Some vehicles use a shared power or ground circuit for multiple actuators, so a fault in a neighbouring component can set P002D as a ghost code.
- Aftermarket remote starters or alarm systems spliced into the engine harness are a common cause of intermittent open-circuit codes on this circuit.
- Clearing the code without repairing the root cause often results in the code returning within a few drive cycles, especially under cold-start conditions.

Can I keep driving with P002D?

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 or suffer reduced performance. If the check engine light is flashing or the engine runs very poorly, stop driving and have it towed.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Socket set and trim removal tools
- Electrical contact cleaner and dielectric grease



Reading P002D

- 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.
- 2D** The exact fault within that area.

Often seen with

P002A B Camshaft Profile Actuator A Control Circuit/Open Bank 1 · **P002B** B Camshaft Profile Actuator A Control Circuit Low Bank 1 · **P002C** B Camshaft Profile Actuator A Control Circuit High Bank 1 · **P002E** B Camshaft Profile Actuator A Control Circuit Low Bank 2 · **P002F** B Camshaft Profile Actuator A Control Circuit High 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/p002d/>

