

GENERIC · POWERTRAIN

P002E

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P002E

B Camshaft Profile Actuator A Control Circuit Low Bank 2

P002E means the powertrain control module (PCM) commanded the bank 2 'A' camshaft profile actuator to a certain position, but the actuator control circuit voltage stayed lower than expected. The PCM monitors the circuit for an open, short to ground, or excessive current draw and sets this code when the feedback signal falls outside the normal low-voltage window.

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 unstable engine operation, especially when cold
- Reduced engine power or a limp-home mode if the fault is severe
- Poor fuel economy or increased emissions
- A noticeable hesitation or stumble during acceleration
- In some cases, the engine may stall or be hard to start

Common causes, most likely first

- 1 Damaged or corroded wiring harness or connector at the camshaft profile actuator
- 2 Failed camshaft profile actuator solenoid (open or shorted coil)
- 3 Short to ground in the control circuit between the PCM and the actuator
- 4 Faulty powertrain control module (PCM) driver circuit
- 5 Oil sludge or debris blocking the actuator oil passages, causing mechanical binding
- 6 Low engine oil level or incorrect oil viscosity affecting actuator operation



How to diagnose and fix it

- 1 Inspect the actuator connector and wiring for corrosion, chafing, or loose pins
- 2 Check engine oil level and condition; top off or change oil if contaminated
- 3 Measure resistance of the camshaft profile actuator solenoid and compare to specification
- 4 Back-probe the control circuit at the PCM and actuator to check for a short to ground
- 5 Verify power and ground supplies to the actuator with a multimeter or test light
- 6 If wiring and actuator test good, diagnose the PCM driver circuit or replace the PCM
- 7 Clear the code and perform a road test to confirm the repair

Oil quality and wiring checks before parts

- A low oil level or severely degraded oil can cause the camshaft profile actuator to bind, setting a low circuit code even when the electrical circuit is intact.
- The code can be set intermittently by a wiring harness that rubs against a sharp edge, so a wiggle test while monitoring live data is often more revealing than a static resistance check.
- Technicians sometimes replace the actuator only to find the real fault is a shorted wire hidden inside a loom, so always inspect the full circuit before condemning the solenoid.
- This code is often stored alongside camshaft position or crankshaft position codes when the actuator failure affects timing correlation, so address all related codes together.
- On engines with variable valve timing, a clogged oil control screen or filter can mimic an electrical fault, so oil system health is part of the diagnostic path.

Can I keep driving with P002E?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or sustained high speeds because the engine may enter limp mode or suffer poor performance. If the check engine light flashes or the engine runs very rough, stop driving and have it towed.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Test light
- Wiring diagram for the specific vehicle
- Socket and ratchet set
- Oil level dipstick and clean shop rags



Reading P002E

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

Often seen with

P001E A Camshaft Profile Actuator A Control Circuit Low Bank 2 · **P001F** A Camshaft Profile Actuator A Control Circuit High Bank 2 · **P002A** B Camshaft Profile Actuator A Control Circuit/Open Bank 1 · **P002D** B Camshaft Profile Actuator A Control Circuit/Open 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/p002e/>

