

GENERIC · POWERTRAIN

P2093

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2093

'A' Camshaft Position Actuator Control Circuit High (Bank 2)

P2093 indicates that the powertrain control module (PCM) has detected an abnormally high voltage on the control circuit for the bank 2 'A' camshaft position actuator, which is typically an oil control solenoid that adjusts camshaft timing. The PCM commands a duty cycle to move the actuator, and when the feedback voltage on the control wire stays above the expected threshold, the code is stored because the circuit is not responding as designed.

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 performance or sluggish acceleration due to incorrect camshaft timing.
- Poor fuel economy or increased emissions.
- In some cases, the engine may enter limp mode or exhibit hard starting.

Common causes, most likely first

- 1 Faulty bank 2 camshaft position actuator solenoid, such as a stuck or shorted internal coil.
- 2 Damaged or corroded wiring harness or connector at the actuator, causing a short to voltage.
- 3 Open or shorted control circuit between the PCM and the actuator.
- 4 Contaminated engine oil or sludge blocking the actuator, leading to electrical feedback anomalies.
- 5 PCM internal fault, though rare, causing incorrect voltage regulation on the control circuit.
- 6 Aftermarket or incorrect solenoid installed previously, leading to incompatible resistance or feedback.



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related camshaft or crankshaft position codes.
- 2 Inspect the bank 2 camshaft position actuator solenoid connector and wiring for damage, corrosion, or loose pins.
- 3 Measure the resistance of the actuator solenoid and compare to the manufacturer's specification to rule out an open or shorted coil.
- 4 Check the control circuit for a short to voltage using a multimeter and wiring diagram, looking for chafed wires or faulty insulation.
- 5 Test the actuator with a bidirectional scan tool to command it on and off while monitoring voltage and engine response.
- 6 If the circuit and solenoid test good, check for oil sludge or contamination that may affect actuator operation and perform an oil change if needed.
- 7 Replace the bank 2 camshaft position actuator solenoid if faulty, clear the code, and verify the repair with a test drive.

What the voltage reading really tells you

- A high voltage on the control circuit often indicates a short to power rather than a failed solenoid, so inspect the harness routing near hot or moving components before replacing parts.
- The PCM may set P2093 when the actuator is unplugged or the circuit is open, because the pull-up voltage on the control wire rises above the expected threshold.
- Engine oil condition directly affects camshaft actuator performance; sludge or low oil pressure can cause the actuator to stick and trigger a high voltage feedback code.
- This code is frequently misdiagnosed as a faulty PCM, but the PCM is rarely the cause; always verify power, ground, and signal integrity at the actuator first.
- Bank 2 refers to the side of the engine that does not contain cylinder number one, so confirm which bank is bank 2 on the specific engine layout before testing.

Can I keep driving with P2093?

You can usually continue driving to a repair shop, but avoid heavy acceleration and prolonged driving because incorrect camshaft timing can lead to poor performance and increased emissions. If the engine runs rough or enters limp mode, seek service promptly.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Socket set and basic hand tools
- Oil pressure gauge (optional for checking oil condition)



Reading P2093

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

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0021** 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P2094** 'B' Camshaft Position Actuator Control Circuit Low (Bank 2) · **P2095** 'B' Camshaft Position Actuator Control Circuit High (Bank 2) · **P2096** Post Catalyst Fuel Trim System Too Lean (Bank 1)

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/p2093/>

