

GENERIC · POWERTRAIN

P2B42

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2B42

A Camshaft Position Actuator Position Sensor B Circuit High Bank 1

P2B42 means the engine computer has detected an abnormally high voltage on the signal circuit for the Bank 1 camshaft position actuator position sensor B, which is the feedback sensor inside the variable valve timing actuator. The computer expects a voltage within a calibrated range as the actuator moves, and a reading above that range tells it the circuit is shorted to power, open, or the sensor is reporting an impossible position.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other symptoms besides the warning light
- Rough idle or unstable engine speed when the actuator is commanded to move
- Reduced engine power or a limp-home mode triggered by the powertrain control module
- Poor fuel economy or sluggish acceleration because camshaft timing is no longer being optimized
- Intermittent misfire or stalling when the actuator sticks at an advanced or retarded position
- A rattle or ticking noise from the front of the engine if the actuator internals are damaged

Common causes, most likely first

- 1 A short to voltage on the sensor signal wire, often where the harness rubs against the valve cover or timing cover
- 2 A failed camshaft position actuator position sensor B, with an internal fault pulling the signal high
- 3 Corroded, pushed-back, or water-intruded terminals at the sensor connector or the powertrain control module connector
- 4 An open ground circuit for the sensor, which makes the signal float high instead of returning to its reference
- 5 A mechanically stuck or damaged variable valve timing actuator that cannot move the sensor through its expected range
- 6 Sludge or debris blocking the oil control passage to the actuator, causing the actuator to jam at one end of travel
- 7 A rare internal fault in the powertrain control module driver circuit for that sensor



How to diagnose and fix it

- 1 Connect a scan tool and read the live data for camshaft position actuator sensor B voltage while commanding the actuator through its full range to confirm the high reading
- 2 Inspect the sensor connector and the harness routing for chafing, corrosion, or pushed-back pins, and repair any damaged terminals or wire
- 3 Measure resistance and voltage drop on the sensor ground circuit back to the powertrain control module to rule out an open ground
- 4 Back-probe the signal wire with the sensor disconnected and the key on to see whether the high voltage comes from the wire or from the sensor itself
- 5 Remove the actuator and inspect the sensor and the actuator body for metal debris, sludge, or mechanical binding, cleaning the oil passages as needed
- 6 Replace the camshaft position actuator position sensor B or the complete actuator assembly if the sensor or actuator is proven faulty
- 7 Clear the codes and run a relearn or actuator sweep test, then verify the voltage stays within range through several drive cycles

What a high sensor reading really means

- A high signal voltage does not automatically mean the sensor has failed, because an open ground or a shorted signal wire will produce the same reading on the scan tool.
- Technicians often replace the actuator only to find the fault returns, because the real problem was a chafed signal wire inside the harness loom near the timing cover.
- Oil quality and oil pressure directly affect this circuit, since a clogged oil control passage can hold the actuator at one end of travel and drive the sensor signal out of range.
- Some vehicles set this code after a battery replacement or low-voltage event, and a simple code clear and relearn resolves it without any parts.
- A failing camshaft position sensor on the same bank can set companion codes that mask the actuator sensor fault, so always check for multiple stored codes before diagnosing.

Can I keep driving with P2B42?

You can usually drive the vehicle to a repair shop, but avoid heavy acceleration and sustained high speeds because the engine is running without proper camshaft timing control. If the engine is misfiring, stalling, or in limp-home mode, stop driving and have it towed to prevent damage to the catalytic converter.



Tools that help

- OBD-II scan tool with live data and bidirectional actuator control
- Digital multimeter with back-probe pins
- Wiring diagram for the camshaft position actuator sensor circuit
- Basic hand tools including a socket set and trim removal tools
- Oil pressure gauge or mechanical oil pressure test kit

Reading P2B42

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- B** Hybrid propulsion.
- 42** The exact fault within that area.

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0012** 'A' Camshaft Position - Timing Over-Retarded (Bank 1) · **P0016** Crankshaft/Camshaft Position Correlation (Bank 1 Sensor A) · **P2B41** A Camshaft Position Actuator Position Sensor B Circuit Low B · **P2B43** A Camshaft Position Actuator Position Sensor B Circuit Bank

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/p2b42/>

