



P2B3A

B Camshaft Profile Actuator B Control Circuit Low Bank 1

P2B3A indicates that the powertrain control module has detected an abnormally low voltage or current on the control circuit for the Bank 1 B camshaft profile actuator, which is the solenoid that moves the camshaft to change valve lift or duration. The circuit is commanded on but the module sees the signal staying below the expected threshold, so it flags the circuit as low.

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 noticeable symptoms
- Reduced engine power or a limp-home mode when the actuator is disabled
- Rough idle or unstable engine operation at low speeds
- Poor fuel economy or increased emissions due to incorrect valve timing
- A noticeable hesitation or stumble during acceleration
- In some cases, the engine may enter a fail-safe mode that limits rpm

Common causes, most likely first

- 1 Open or shorted wiring in the actuator control circuit, including a chafed wire or corroded connector
- 2 Failed camshaft profile actuator solenoid with an open internal coil
- 3 Poor electrical connection at the actuator or PCM connector
- 4 Blown fuse or relay supplying power to the actuator circuit
- 5 Faulty powertrain control module driver for that circuit (rare)
- 6 Engine oil sludge or debris blocking the actuator, causing it to draw incorrect current



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to confirm the fault conditions
- 2 Visually inspect the actuator connector and wiring harness for damage, corrosion, or loose pins
- 3 Measure resistance of the actuator solenoid and compare to the manufacturer's specification
- 4 Check for battery voltage and ground at the actuator connector with the key on and the circuit commanded
- 5 Perform a voltage drop test on both the power and ground sides of the control circuit to locate excessive resistance
- 6 If wiring and solenoid test good, check the PCM driver output with a lab scope or substitute a known-good PCM
- 7 Clear codes and perform a road test to verify the repair and ensure the monitor runs to completion

What the low circuit code really means

- A low circuit code does not automatically mean the actuator is bad; a poor ground or a corroded connector can cause the same low-voltage signal at the PCM.
The camshaft profile actuator is oil-pressure dependent, so sludge or low oil pressure can make a good solenoid draw the wrong current and set this code.
 - Some vehicles set P2B3A only after the enable criteria are met during a specific driving cycle, so a simple key-on test may not reveal the fault.
 - A failed actuator can mechanically stick in one position, and the PCM may not command it again until the next drive cycle, making the symptom intermittent.
- Always check for technical service bulletins for the specific vehicle, as some manufacturers have updated connector or software fixes for this circuit.

Can I keep driving with P2B3A?

The vehicle is usually safe to drive to a repair shop, but avoid heavy acceleration or towing because the engine may enter a reduced-power mode. If the check engine light flashes or the engine runs very poorly, stop driving and have it towed.

Tools that help

- OBD-II scan tool with live data and bidirectional control
- Digital multimeter with min/max and resistance functions
- Lab scope for checking the PCM driver signal
- Wire terminal pick and electrical contact cleaner
- Vehicle-specific service information for circuit diagrams and resistance specs



Reading P2B3A

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- B** Hybrid propulsion.
- 3A** The exact fault within that area.

Often seen with

P0010 'A' Camshaft Position Actuator Circuit (Bank 1) · **P0011** 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P2B39** B Camshaft Profile Actuator B Control Circuit/Open Bank 1 · **P2B3B** B Camshaft Profile Actuator B Control Circuit High Bank 1 · **P2B3C** B Camshaft Profile Actuator B Control Circuit/Open 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/p2b3a/>

