

GENERIC · POWERTRAIN

P2B3E

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2B3E

B Camshaft Profile Actuator B Control Circuit High Bank 2

P2B3E indicates that the powertrain control module has detected an abnormally high voltage on the control circuit for the Bank 2 B camshaft profile actuator, which is the solenoid that moves the camshaft to a different lobe profile for improved power or efficiency. The circuit is commanding the actuator, but the voltage measured on the control wire is higher than expected, so the module flags a short to power or an open circuit.

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.
- Rough idle or unstable engine operation when the cam profile fails to change.
- Reduced engine power or poor acceleration because the high-lift profile is unavailable.
- Intermittent stalling or hesitation during light-throttle driving.
- A noticeable change in engine sound or vibration at certain speeds.
- Fuel economy may decrease if the engine stays in a default profile.

Common causes, most likely first

- 1 A short to voltage on the control wire between the actuator and the powertrain control module.
- 2 A faulty camshaft profile actuator solenoid with an internal short to power.
- 3 Corroded, loose, or damaged pins in the actuator or powertrain control module connector.
- 4 An open circuit in the ground or power supply wire to the actuator.
- 5 A failed powertrain control module driver for that circuit, though this is less common.
- 6 Aftermarket electrical accessories tapped into the circuit causing voltage feedback.



How to diagnose and fix it

- 1 Connect a scan tool and record the freeze-frame data and any stored codes to confirm the fault is present and not intermittent.
- 2 Visually inspect the actuator connector and the powertrain control module connector for corrosion, bent pins, or loose terminals.
- 3 Measure the control circuit voltage with a digital multimeter while commanding the actuator on and off with the scan tool.
- 4 Check for continuity and short-to-power on the control wire between the actuator and the powertrain control module.
- 5 Test the actuator solenoid resistance and compare it to the manufacturer's specification; replace it if out of range.
- 6 If the wiring and actuator test good, substitute a known-good actuator or perform a bidirectional test to see if the fault follows the actuator.
- 7 As a last step, inspect the powertrain control module for internal driver failure and replace it only after all other tests pass.

What a high voltage code really means

- A high voltage code on a control circuit often points to a short to power rather than a failed actuator, so testing the wire before replacing parts saves time and money.
- The camshaft profile actuator may share a power or ground circuit with other solenoids, so a fault in a neighbouring circuit can set this code as a ghost.
- Intermittent faults can be caused by wire chafing near hot exhaust components or sharp brackets, which a simple wiggle test may reveal.
- Some vehicles will default to a fixed cam profile when this code sets, so the driver may not notice a performance change until the fault is repaired.
- A weak battery or charging system can cause false high-voltage codes on solenoid circuits, so always verify system voltage first.

Can I keep driving with P2B3E?

You can usually drive the vehicle with this code, but avoid heavy acceleration and towing until it is repaired because the engine may be in a reduced-power default mode. If the check engine light starts flashing or the engine runs very poorly, stop driving and have it diagnosed immediately.



Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Wire piercing probes or back-probe kit
- Manufacturer service information for circuit diagrams and resistance specifications
- Basic hand tools for connector and component access

Reading P2B3E

- P** Powertrain: engine, transmission and emissions.
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- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
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- B** Hybrid propulsion.
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- 3E** 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 · **P0021** 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P2B3D** B Camshaft Profile Actuator B Control Circuit Low Bank 2 · **P2B3F** 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/p2b3e/>

