

GENERIC · POWERTRAIN

P2650

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2650

'B' Rocker Arm Actuator Control Circuit/Open (Bank 1)

P2650 indicates that the powertrain control module (PCM) has detected an open circuit or excessive resistance in the control circuit for the 'B' rocker arm actuator on bank 1. This actuator is part of a variable valve timing or cylinder deactivation system that alters rocker arm operation to optimize engine performance and efficiency. The PCM monitors the circuit for expected voltage or current and sets the code when the signal is outside the normal range.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Computer and output circuits

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Rough idle or misfire, particularly when the engine is cold or under light load.
- Reduced engine power or sluggish acceleration due to improper valve timing.
- Decreased fuel economy as the engine cannot optimize valve lift.
- Audible ticking or tapping noise from the valve cover area if the actuator is stuck or disconnected.
- In some vehicles, the engine may enter limp mode to protect the valvetrain.

Common causes, most likely first

- 1 Damaged or disconnected electrical connector at the rocker arm actuator.
- 2 Open or shorted wire in the actuator control circuit, often due to chafing or heat damage.
- 3 Failed rocker arm actuator solenoid or motor.
- 4 Corroded or loose pins in the PCM connector affecting the circuit.
- 5 Internal PCM fault, though this is less common.
- 6 Oil sludge or debris obstructing the actuator, causing mechanical binding and circuit overload.
- 7 Aftermarket or incorrect oil filter causing low oil pressure to the actuator.



How to diagnose and fix it

- 1 Inspect the actuator electrical connector for looseness, corrosion, or damage; clean and reseat as needed.
- 2 Check the wiring harness for continuity and shorts between the actuator and PCM using a multimeter.
- 3 Measure the resistance of the rocker arm actuator and compare to manufacturer specifications.
- 4 Test the actuator with a known-good signal or scan tool bidirectional control, if supported.
- 5 Verify oil pressure and condition; change oil and filter if contaminated or incorrect.
- 6 Replace the rocker arm actuator if electrically faulty or mechanically stuck.
- 7 Clear the code and perform a road test to confirm the repair, reprogramming the PCM if required.

What the code does not always mean

- A P2650 code is often triggered by a simple loose connector or chafed wire, so always inspect the harness before condemning the actuator.
- Low oil pressure or sludge can cause the actuator to bind and set an open circuit code, mimicking an electrical failure.
- Some vehicles use the same actuator for both bank 1 and bank 2; swapping components can help isolate the fault.
- The PCM may set P2650 intermittently if the circuit is only open under certain conditions like vibration or temperature extremes.
- After replacing the actuator, some vehicles require a relearn procedure or the code may reappear until the PCM adapts.

Can I keep driving with P2650?

You can usually drive the vehicle with P2650, but avoid heavy acceleration or towing because the engine may enter limp mode or run poorly. Have the fault diagnosed soon to prevent potential catalytic converter damage from unburned fuel.

Tools that help

- OBD-II scan tool with bidirectional control
- Digital multimeter
- Wire probe set
- Socket and ratchet set
- Torque wrench
- Manufacturer service information



Reading P2650

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 6** Computer and output circuits.
- 50** The exact fault within that area.

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0300** Random/Multiple Cylinder Misfire Detected · **P2649** 'A' Rocker Arm Actuator Control Circuit High (Bank 1) · **P2651** 'B' Rocker Arm Actuator System Performance or Stuck Off (Ban · **P2652** 'B' Rocker Arm Actuator System Stuck On (Bank 1)

See it working

Watch the animated explainer [Car Won't Start? Step-by-Step No-Start Diagnosis](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2650/>

