

GENERIC · POWERTRAIN

P3428

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P3428

Cylinder 4 Deactivation/Intake Valve Control Circuit High

P3428 is a manufacturer-specific diagnostic trouble code that indicates the powertrain control module (PCM) has detected an abnormally high voltage on the control circuit for the cylinder 4 deactivation/intake valve. This circuit typically controls an oil control solenoid or actuator that enables cylinder deactivation, and a high voltage reading means the PCM sees voltage above the expected range, often due to an open circuit, short to power, or a failed solenoid.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Rough or erratic engine idle, especially when the engine tries to enter cylinder deactivation mode.
- Reduced fuel economy because the engine may stay in full-cylinder operation.
- A slight vibration or shudder during light-throttle cruising when deactivation is commanded.
- In some cases, the engine may enter a limp mode that limits cylinder deactivation and illuminates a message on the dash.

Common causes, most likely first

- 1 Failed cylinder 4 deactivation solenoid or intake valve control actuator, causing an open or high-resistance circuit.
- 2 Damaged, chafed, or disconnected wiring in the control circuit between the PCM and the solenoid.
- 3 Corroded or loose electrical connector at the solenoid or at the PCM, creating high resistance.
- 4 Short to voltage on the control circuit, often from a rubbed wire touching a power source.
- 5 Faulty powertrain control module (PCM) driver for that circuit, though this is less common.
- 6 Internal mechanical binding in the cylinder deactivation mechanism that overloads the solenoid and affects circuit feedback.



How to diagnose and fix it

- 1 Connect a scan tool and verify P3428 is current, then check for any related codes and freeze-frame data to confirm the fault conditions.
- 2 Inspect the wiring harness and connector at the cylinder 4 deactivation solenoid for damage, corrosion, or loose pins, and repair as needed.
- 3 Measure resistance of the solenoid with a multimeter and compare to the manufacturer's specification; replace the solenoid if out of range.
- 4 With the key on and engine off, backprobe the control circuit at the PCM to check for a short to voltage or an open circuit; repair the wire if faulty.
- 5 If the circuit and solenoid test good, perform a bidirectional test of the solenoid with a scan tool to confirm the PCM can command it on and off.
- 6 Check for mechanical issues in the cylinder deactivation system, such as a stuck lifter or oil pressure problem, that could cause the solenoid to draw abnormal current.
- 7 Clear the code and perform a road test to verify the repair, ensuring the monitor for cylinder deactivation runs and passes.

What a high voltage code really means

- A high voltage code on a solenoid control circuit often indicates an open circuit or a poor connection rather than a shorted solenoid, so inspect connectors and ground points before replacing parts.
- Some vehicles set this code only when the engine is cold or during specific deactivation conditions, so a simple key-on test may not reveal the fault; a test drive with a scan tool recording live data is often necessary.
- A weak or failing battery or charging system can cause erratic voltage readings that mimic a circuit fault, so always verify battery and charging system health first.
- The cylinder 4 deactivation solenoid shares oil galleries with other cylinders, so sludge or low oil pressure can cause mechanical binding that leads to electrical codes without any wiring problem.
- After repairs, the PCM may need to relearn the deactivation system; failing to complete a relearn or drive cycle can leave the code pending and confuse the diagnosis.

Can I keep driving with P3428?

You can generally continue driving with P3428, but avoid heavy loads and aggressive acceleration because the engine may stay in full-cylinder mode and consume more fuel. If the check engine light flashes or you notice severe misfiring, stop driving and have the vehicle inspected promptly.



Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter
- Wire repair kit with crimpers and heat shrink
- Factory service information for circuit specifications and pinouts
- Basic hand tools for connector and component access

Reading P3428

- P** Powertrain: engine, transmission and emissions.
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- 3** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
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- 4** Auxiliary emission controls.
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- 28** The exact fault within that area.

Often seen with

P0304 Cylinder 4 Misfire Detected · **P3400** Cylinder Deactivation System (Bank 1) · **P3404** Cylinder 1 Deactivation/Intake Valve Control Circuit High · **P3427** Cylinder 4 Deactivation/Intake Valve Control Circuit Low · **P3429** Cylinder 4 Exhaust Valve Control Circuit/Open

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/p3428/>

