

GENERIC · POWERTRAIN

P3429

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P3429

Cylinder 4 Exhaust Valve Control Circuit/Open

P3429 indicates that the powertrain control module (PCM) has detected an open circuit or excessive resistance in the electrical path controlling the exhaust valve for cylinder 4. This circuit typically operates a variable valve timing or cylinder deactivation solenoid that adjusts exhaust valve timing or disables the valve, and the PCM monitors current flow to confirm the circuit is intact. An open circuit means the PCM cannot command the valve actuator, which may affect engine breathing, emissions, or fuel economy.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or misfire-like shudder, especially when the engine is cold or under light load
- Reduced engine power or sluggish acceleration due to improper exhaust valve operation
- Poor fuel economy as the engine cannot optimize valve timing or deactivation
- Intermittent engine stumble or hesitation if the open circuit is temperature or vibration sensitive
- Failed emissions test due to increased exhaust emissions from improper valve control

Common causes, most likely first

- 1 Broken, chafed, or corroded wiring in the exhaust valve control circuit for cylinder 4
- 2 Failed exhaust valve control solenoid or actuator (open coil or stuck armature)
- 3 Loose, corroded, or disconnected electrical connector at the solenoid or PCM
- 4 Open circuit inside the PCM driver for that specific cylinder's exhaust valve control
- 5 Blown fuse or relay supplying power to the exhaust valve control circuit (if applicable)
- 6 Internal mechanical failure of the exhaust valve or valvetrain preventing proper solenoid operation



How to diagnose and fix it

- 1 Connect a scan tool and verify P3429 is current, then check for related codes and freeze-frame data
- 2 Visually inspect the exhaust valve control solenoid connector and wiring for damage, corrosion, or looseness
- 3 Measure resistance of the exhaust valve control solenoid with a multimeter and compare to manufacturer specification
- 4 Perform a voltage drop test on the power and ground sides of the circuit while commanding the solenoid on with a scan tool
- 5 Check for continuity and short-to-ground on the control wire between the PCM and solenoid, repairing any open or chafed section
- 6 If wiring and solenoid test good, substitute a known-good solenoid or perform a bidirectional actuator test to confirm PCM driver operation
- 7 Clear codes and road test to verify the repair, monitoring live data for proper exhaust valve control command and feedback

What the open circuit really means

- An open circuit code does not always mean the solenoid has failed; a poor ground or corroded connector pin can set the same code without any component fault.
- Cylinder-specific exhaust valve control circuits are often part of a multi-cylinder harness, so a single chafed wire near a heat source can affect only one cylinder and mimic a mechanical valve problem.
- Some vehicles use the exhaust valve control solenoid for cylinder deactivation, and a failure may cause the engine to stay in full-displacement mode, leading to poor fuel economy that the driver notices before the warning light.
- A scan tool bidirectional test that commands the solenoid on and off is the quickest way to confirm whether the PCM driver or the circuit is at fault, avoiding unnecessary PCM replacement.
- Intermittent P3429 codes that appear only when cold or after a bump are classic signs of a wire break inside the insulation that a simple resistance check at room temperature will miss.

Can I keep driving with P3429?

The vehicle is generally safe to drive short distances to a repair shop, but avoid heavy acceleration, towing, or long highway trips because improper exhaust valve operation can cause misfires, overheating, or catalytic converter damage over time. If the check engine light flashes or the engine runs very rough, stop driving and have it towed.



Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter with resistance, voltage, and continuity functions
- Wiring diagram or service information for the specific vehicle
- Back probe pins or breakout leads for testing connectors without damage
- Basic hand tools (socket set, screwdrivers, trim removal tools) for accessing the solenoid and harness

Reading P3429

- 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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- 29** The exact fault within that area.

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P0304** Cylinder 4 Misfire Detected · **P3400** Cylinder Deactivation System (Bank 1) · **P3428** Cylinder 4 Deactivation/Intake Valve Control Circuit High · **P3430** Cylinder 4 Exhaust Valve Control Performance

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/p3429/>

