

GENERIC · POWERTRAIN

P3413

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P3413

Cylinder 2 Exhaust Valve Control Circuit/Open

P3413 indicates that the powertrain control module (PCM) has detected an open circuit or excessive resistance in the electrical path for the cylinder 2 exhaust valve control circuit. This circuit typically controls an oil control valve or solenoid that manages variable valve timing or cylinder deactivation for the exhaust valve, and the PCM sets the code when the commanded current or voltage does not match expected values.

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 shuddering, especially 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 management system defaults to a less efficient operating mode
- Intermittent stalling or hesitation during deceleration or at low speeds
- Audible ticking or abnormal engine noise if the valve control mechanism is not actuating properly

Common causes, most likely first

- 1 Damaged, chafed, or disconnected wiring in the cylinder 2 exhaust valve control circuit
- 2 Failed oil control solenoid or valve actuator that has an open internal coil
- 3 Corroded or loose electrical connector pins at the solenoid or PCM
- 4 Blown fuse or relay supplying power to the valve control circuit
- 5 Internal PCM driver failure, though this is less common
- 6 Engine oil sludge or debris blocking the oil passages for the valve control mechanism, causing the solenoid to overheat and fail



How to diagnose and fix it

- 1 Perform a visual inspection of the wiring harness and connectors for the cylinder 2 exhaust valve control solenoid, looking for chafing, corrosion, or loose pins
- 2 Check the fuse and relay that supply power to the circuit and replace any that are blown or faulty
- 3 Measure the resistance of the solenoid with a multimeter and compare it to the manufacturer's specification to confirm an open coil
- 4 Backprobe the solenoid connector and command the valve on with a scan tool to verify that the PCM is sending a signal and that the solenoid responds
- 5 Check for continuity and voltage drop across the circuit from the PCM to the solenoid to isolate a wiring fault
- 6 If the solenoid fails electrical tests, replace it and clear the code; if the wiring is faulty, repair or replace the affected section
- 7 After repairs, clear the diagnostic trouble codes (DTCs) and perform a road test to verify the code does not return

What P3413 Often Misleads You About

- A P3413 can be set by a mechanical issue such as a stuck valve or low oil pressure that prevents the solenoid from moving, even when the electrical circuit tests perfectly fine.
- Many technicians replace the oil control solenoid only to find the connector pins are spread or corroded, so always perform a pin drag test and inspect the terminals closely.
- The code may appear only intermittently due to a wiring harness that rubs against a sharp edge or heats up and expands, so wiggle-test the harness while monitoring live data.
- On engines with cylinder deactivation, a failed solenoid for cylinder 2 can cause the engine to stay in full-cylinder mode, leading to poor fuel economy without an obvious misfire.
- A low oil level or severely degraded oil can cause this code because the solenoid relies on clean, pressurized oil to actuate the valve, so check the oil condition and level before condemning electrical parts.

Can I keep driving with P3413?

You can usually drive the vehicle with P3413, but avoid heavy acceleration and towing until the fault is repaired, as prolonged driving with a disabled valve control system may lead to increased emissions, reduced fuel economy, and potential damage to the catalytic converter over time.

Tools that help

- OBD-II scan tool with live data and bidirectional control capabilities
- Digital multimeter
- Test light
- Wire repair kit with crimpers and heat shrink
- Socket set and screwdrivers for component access
- Manufacturer service information for circuit specifications and testing procedures



Reading P3413

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

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P3400** Cylinder Deactivation System (Bank 1) · **P3411** Cylinder 2 Deactivation/Intake Valve Control Circuit Low · **P3412** Cylinder 2 Deactivation/Intake Valve Control Circuit High · **P3414** Cylinder 2 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/p3413/>

