

GENERIC · POWERTRAIN

P3402

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P3402

# Cylinder 1 Deactivation/Intake Valve Control Performance

P3402 is a generic powertrain code indicating that the engine control module (ECM) has detected a performance problem with the cylinder 1 deactivation or intake valve control circuit, which is part of the variable displacement or variable valve timing system. The ECM monitors the electrical circuit and the mechanical response of the valve control solenoid or actuator, and it sets this code when the commanded state does not match the actual state within a calibrated time or when the circuit resistance is out of range.

|            |                     |          |                |                             |
|------------|---------------------|----------|----------------|-----------------------------|
| 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 idle or misfire-like shuddering, especially when the engine transitions between full and reduced displacement modes.
- Reduced engine power or a sudden loss of power under load if the affected cylinder fails to deactivate or reactivate properly.
- Poor fuel economy because the engine may stay in a less efficient operating mode.
- Audible ticking or tapping from the valve cover area if the control solenoid is sticking or the actuator is not engaging smoothly.
- In some cases, the engine may enter limp mode and limit RPM to protect the valvetrain.

## Common causes, most likely first

- 1 Faulty cylinder 1 deactivation solenoid or intake valve control solenoid, often due to internal coil failure or contamination.
- 2 Wiring damage such as an open, short, or high-resistance connection in the control circuit between the ECM and the solenoid.
- 3 Sticking or seized mechanical components in the valve control mechanism, including the rocker arm or locking pin, due to sludge or wear.
- 4 Low engine oil level or degraded oil that prevents proper hydraulic actuation of the deactivation system.
- 5 Failed oil control valve or oil passage blockage that supplies pressure to the deactivation mechanism.
- 6 ECM software calibration issue or internal driver fault, though this is less common than electrical or mechanical failures.
- 7 Corroded or loose electrical connector at the solenoid or at the ECM, causing intermittent signal loss.



## How to diagnose and fix it

- 1 Check engine oil level and condition first, and top off or change oil if it is low or contaminated, because oil pressure is critical for valve deactivation operation.
- 2 Perform a visual inspection of the wiring harness and connectors at the cylinder 1 deactivation solenoid for chafing, corrosion, or loose pins.
- 3 Use a scan tool to command the cylinder 1 deactivation solenoid on and off while watching live data for circuit status and engine response, and compare with other cylinders.
- 4 Measure the resistance of the solenoid with a multimeter and compare to the manufacturer's specification to rule out an open or shorted coil.
- 5 Check for mechanical binding by removing the valve cover and inspecting the rocker arm and locking pin for free movement, cleaning or replacing components as needed.
- 6 Test oil pressure at the deactivation oil gallery if accessible, and verify that the oil control valve is not clogged or stuck.
- 7 If all electrical and mechanical checks pass, reflash or replace the ECM only after confirming that the control circuit is intact and the solenoid is functional.

## Oil quality and circuit checks before solenoid replacement

- A dirty or low oil level is a frequent culprit because the deactivation system relies on hydraulic pressure, and the code may set without any electrical fault at all.
- The solenoid may test good with a multimeter but still fail under heat or load, so a live data command test is more reliable than a static resistance check.
- Wiring harness damage near the valve cover is often overlooked, especially after previous repairs that may have pinched or stretched the harness.
- This code does not always mean the solenoid is bad; a sticking rocker arm or clogged oil passage can produce the same performance error.
- On some vehicles, a weak battery or charging system issue can cause intermittent solenoid operation and set this code along with other unrelated codes.

## Can I keep driving with P3402?

You can usually drive the vehicle with this code, but avoid heavy acceleration and sustained high speeds because the engine may be running on a compromised cylinder deactivation strategy. If the check engine light is flashing or you feel a significant loss of power, stop driving and have the vehicle inspected promptly to prevent catalytic converter damage.



## Tools that help

- OBD-II scan tool with bidirectional control and live data capability
- Digital multimeter for circuit and solenoid resistance testing
- Mechanic's stethoscope to listen for solenoid or valvetrain noise
- Oil pressure gauge to verify hydraulic supply
- Basic hand tools including socket set and torque wrench for valve cover removal
- Wiring diagram or service information for the specific vehicle

## Reading P3402

|           |                                                                      |
|-----------|----------------------------------------------------------------------|
| <b>P</b>  | Powertrain: engine, transmission and emissions.                      |
| <b>3</b>  | Generic (SAE) code: it means the same thing on every OBD-II vehicle. |
| <b>4</b>  | Auxiliary emission controls.                                         |
| <b>02</b> | The exact fault within that area.                                    |

## Often seen with

**P0301** Cylinder 1 Misfire Detected · **P3400** Cylinder Deactivation System (Bank 1) · **P3401** Cylinder 1 Deactivation/Intake Valve Control Circuit/Open · **P3403** Cylinder 1 Deactivation/Intake Valve Control Circuit Low · **P3404** Cylinder 1 Deactivation/Intake Valve Control Circuit High

## 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/p3402/>

