

GENERIC · POWERTRAIN

P3412

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P3412

Cylinder 2 Deactivation/Intake Valve Control Circuit High

P3412 is a generic OBD-II code indicating that the powertrain control module (PCM) has detected an abnormally high voltage on the control circuit for the cylinder 2 deactivation/intake valve. This valve is part of a variable displacement or cylinder deactivation system that shuts down cylinders to save fuel under light load. The PCM commands the valve to change state, but the circuit voltage stays higher than expected, so the PCM flags a fault and may disable the deactivation system.

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 when the engine tries to enter cylinder deactivation mode
- Reduced fuel economy because the engine stays in full-cylinder operation
- A noticeable loss of power or hesitation during light-throttle cruising
- In some cases, the engine may run rough or stall when coming to a stop
- A stored code P3412 alone, without other cylinder-specific codes, is common

Common causes, most likely first

- 1 Damaged or chafed wiring in the cylinder 2 deactivation valve control circuit, causing a short to voltage
- 2 Failed cylinder 2 deactivation/intake valve solenoid, internally shorted or stuck
- 3 Corroded or loose electrical connector at the valve solenoid or PCM
- 4 Faulty powertrain control module (PCM) driver circuit for that valve
- 5 Oil sludge or debris blocking the valve, causing it to draw abnormal current and set a high-voltage code
- 6 Aftermarket electrical accessories improperly tapped into the circuit



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data to confirm the code and check for related cylinder deactivation codes
- 2 Visually inspect the cylinder 2 deactivation valve connector and wiring for chafing, corrosion, or loose pins
- 3 Measure resistance of the valve solenoid with a multimeter and compare to the manufacturer's specification
- 4 Back-probe the control circuit at the PCM and check for voltage with the key on and engine off; a constant high voltage indicates a short
- 5 Disconnect the valve and PCM and perform a continuity and short-to-voltage test on the control wire
- 6 If wiring and solenoid test good, substitute a known-good PCM or use a lab scope to verify the driver signal
- 7 Replace the faulty valve solenoid, repair the wiring, or reprogram/replace the PCM as needed, then clear codes and verify the repair

What a high-voltage valve code really means

- A high-voltage code on a solenoid control circuit often means the driver inside the PCM has failed open, not that the solenoid itself is shorted, so replacing the valve first can be a costly mistake.
- Cylinder deactivation valves are sensitive to oil condition; sludge from extended oil change intervals can cause the valve to stick and set a high-voltage code without any wiring fault.
- This code can be set intermittently by a poor ground connection at the engine block, which raises reference voltage on the control circuit and mimics a short to voltage.
- Some vehicles use a single control wire for multiple deactivation valves; a fault in one valve can affect the entire bank and set codes for several cylinders, so always check for companion codes.
- After replacing a valve or PCM, a relearn or adaptation reset is often required; skipping this step can cause the code to return immediately even though the repair was correct.

Can I keep driving with P3412?

You can usually drive the vehicle with this code because the engine defaults to full-cylinder operation, but avoid heavy loads and prolonged idling until it is repaired. If the engine runs rough or misfires, have it checked promptly to prevent catalytic converter damage.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probing pins
- Lab scope for verifying PCM driver signals
- Factory service information for circuit diagrams and resistance specifications
- Basic hand tools and electrical contact cleaner



Reading P3412

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

Often seen with

P3400 Cylinder Deactivation System (Bank 1) · **P3410** Cylinder 2 Deactivation/Intake Valve Control Performance
 · **P3411** Cylinder 2 Deactivation/Intake Valve Control Circuit Low · **P3413** Cylinder 2 Exhaust Valve Control Circuit/Open · **P3425** Cylinder 4 Deactivation/Intake 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/p3412/>

