

P3401: Cylinder 1 Deactivation/Intake Valve Control Circuit/Open

OVERVIEW

Severity

:

High

DIY Difficulty Level

:

Intermediate

Repair Cost

:

\$75-\$725

Can I Still Drive?

:

Yes

What Does The P3401 Code Mean?

OBD-II trouble code P3401 and related codes [P3402](#), [P3403](#), and [P3404](#) are associated with the cylinder #1 deactivation/intake valve control circuit.

The purpose of the cylinder 1 deactivation/intake valve control circuit is to accommodate the cylinder deactivation feature (e.g. V4 mode of a V8 engine) to improve fuel economy during light load operation such as highway driving.

The Engine Control Module (ECM) controls the 4 or 8 cylinder modes of the engine by engaging the intake deactivating solenoids for four of the engine cylinders. This code pertains to the number 1 cylinder and the other three cylinders in this process are determined by the engine configuration and the firing order of the cylinders. The number one cylinder deactivation solenoid is mounted on or near the intake in the vicinity of that cylinder based on the specific vehicle and the configuration.

When the ECM detects improper voltage or resistance within the cylinder 1 deactivation/intake valve control circuit, code P3401 will be set and the check engine light, service engine soon light or both may be illuminated. In some circumstances, the ECM may disable the injector to the #1 cylinder until the issue is corrected and the code has been cleared causing a noticeable engine misfire.

What Are The Symptoms Of The P3401 Code?

Symptoms of a P3401 trouble code may include:

- Engine may misfire
- Increased fuel consumption
- Poor engine performance
- Service engine soon light illuminated
- Check engine light illuminated

What Are The Potential Causes Of The P3401 Code?

Causes for this P3401 code may include:

- Defective cylinder deactivation solenoid
- Low engine oil level or pressure
- Restricted oil passage
- Faulty or damaged wiring
- Corroded, damaged or loose connector
- Defective ECM

How Can You Fix The P3401 Code?

The first step in the troubleshooting process for any malfunction is to research the Technical Service Bulletins (TSB's) for the specific vehicle by year, model and engine. In some circumstances, this can save a lot of time in the long run by pointing you in the right direction.

The second step is to check the condition of the engine oil and confirm it is serviced to the appropriate level. Then locate all components associated with the cylinder 1 deactivation intake valve control circuit and look for obvious physical damage. Based on the specific vehicle, this circuit may incorporate several components including the deactivation solenoid, switches, fault indicators and the ECM. Perform a thorough visual inspection to check the associated wiring for obvious defects such as scraping, rubbing, bare wires, or burn spots.

Next is to check the connectors and connections for security, corrosion and damaged pins. This process must include all wiring connectors and connections to all components including the ECM. Consult the specific tech data for the vehicle to verify the configuration of the cylinder 1 deactivation/intake valve control circuit and confirm every component incorporated within the circuit which may include a fuse or a fuse-able link.

Advanced Steps

The advanced steps become very vehicle specific and require the appropriate advanced equipment to perform accurately. These procedures require a digital multi meter and the specific technical references for the vehicle.

Voltage Checks

The reference voltage and the acceptable ranges may vary based on the specific vehicle and the circuit configuration. Specific technical data will include troubleshooting charts and the appropriate sequence to follow assisting you with an accurate diagnosis.

If this process identifies the absence of a power source or ground, continuity testing may be required to check the integrity of the wiring, connectors and other components. Continuity tests should always be performed with the power removed from the circuit and the normal readings for wiring and connections should be 0 ohms of resistance. Resistance or no continuity is an indication of faulty wiring that is open, shorted or corroded and must be repaired or replaced.

Severity Description

The severity of this code can vary tremendously from moderate to severe depending on the specific symptoms of the malfunction. A misfire requires immediate attention because it can cause permanent damage to internal engine components.

Reference Sources

[P3401 Cylinder 1 Deactivation/Intake Valve Control Circuit/Open](#), OBD-Codes.