

VOLKSWAGEN · POWERTRAIN

P1228

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1228 · Volkswagen

Cylinder 4 Injector Circuit Short To Ground

P1228 on a Volkswagen indicates that the engine control module (ECM) has detected an abnormally low resistance to ground on the electrical circuit that operates the fuel injector for cylinder 4. This means the control wire is likely touching ground somewhere between the ECM and the injector, or the injector's internal coil has shorted to its metal housing, preventing the ECM from properly firing that injector.

SYSTEM

Powertrain

CODE TYPE

Volkswagen
specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air
metering (injector
circuits)

Symptoms you may notice

- Check engine light illuminated, often with no other noticeable symptoms.
- Rough idle or misfire that may be more pronounced when the engine is cold or under load.
- Noticeable loss of power and reduced fuel economy due to a dead cylinder.
- Shaking or vibration from the engine bay, especially at idle.
- In some cases, the engine may enter limp mode or stall shortly after starting.
- A faint smell of raw fuel from the exhaust if the injector is stuck open and flooding the cylinder.

Common causes, most likely first

- 1 Faulty fuel injector for cylinder 4 with an internally shorted coil winding.
- 2 Chafed or damaged wire harness between the ECM and the cylinder 4 injector, shorting to the engine block or chassis.
- 3 Corroded or loose electrical connector at the cylinder 4 injector, allowing the control wire to contact ground.
- 4 Water intrusion into the injector harness connector or ECM connector, creating a conductive path to ground.
- 5 Internal short to ground inside the ECM driver circuit for that injector (rare but possible).
- 6 Aftermarket alarm or remote start wiring improperly spliced into the injector circuit, causing an unintended ground.



How to diagnose and fix it

- 1 Clear the code and test-drive to confirm it returns; note any freeze-frame data to see the conditions when it set.
- 2 Disconnect the cylinder 4 injector connector and inspect both terminals for corrosion, moisture, or loose pins; clean or repair as needed.
- 3 Measure the resistance of the cylinder 4 injector with a multimeter; compare to the other injectors (typically 12–16 ohms) and replace if significantly lower or shorted to the housing.
- 4 With the injector disconnected, check the control wire from the ECM to the injector for continuity to ground using a multimeter; a reading near 0 ohms indicates a short.
- 5 Visually inspect the harness along its route for chafing, especially near sharp edges, heat sources, or where it passes through the intake manifold area.
- 6 If the harness and injector test good, substitute a known-good injector from another cylinder to see if the code moves, confirming an ECM driver fault if it does not.
- 7 As a last resort, test the ECM driver circuit with an oscilloscope or by swapping in a known-good ECM, but only after ruling out all wiring and injector faults.

Don't overlook the injector harness routing

- A common cause on Volkswagen engines is the injector harness rubbing through on the metal bracket near the intake manifold, which is easy to miss during a visual inspection.
- The code can set intermittently if the short only occurs when the engine is hot and the wire expands, so a cold-engine resistance test may pass even though the fault is real.
- A shorted injector can sometimes still allow the engine to run almost normally at higher RPM, leading owners to delay repair until the catalytic converter is damaged by unburned fuel.
- Volkswagen's injector circuits are often grouped in a single harness that passes near the exhaust, so heat damage to the insulation is a frequent hidden culprit.
- Do not assume the ECM is faulty; driver failures are rare, and replacing the ECM without finding a harness short will result in the same code returning.

Can I keep driving with P1228?

You can drive the vehicle short distances to a repair shop, but avoid heavy acceleration or sustained high-speed driving because raw fuel from the dead cylinder can overheat and damage the catalytic converter. If the engine is misfiring severely or the check engine light is flashing, stop driving and have the vehicle towed.



Tools that help

- OBD-II scan tool with manufacturer-specific code reading capability
- Digital multimeter with ohm and continuity settings
- Wire piercing probes or back-probe kit
- Socket set and trim removal tools for accessing the injector
- Factory service information or wiring diagram for the specific Volkswagen model

Reading P1228

P Powertrain: engine, transmission and emissions.

1 Manufacturer-specific code (Volkswagen): its meaning depends on the make.

2 Fuel and air metering (injector circuits).

28 The exact fault within that area.

Often seen with

P1227 Cylinder 3 Injector Circuit Short To Ground · **P1229** Cylinder 5 Injector Circuit Short To Ground · **P1227** Fuel Injector 3 Circuit Low Voltage · **P1227** Mechanical Guard Circuit Low Input · **P1229** Electronic Throttle Control Circuit · **P1227** Wastegate Failed Closed Over Pressure · **P1229** Intercooler Pump Driver Fault · **P0204** Injector Circuit Malfunction - Cylinder 4 · **P0264** Cylinder 2 Injector Circuit Low · **P0304** Cylinder 4 Misfire Detected

See it working

Watch the animated explainer [How a Fuel Injector Works: Pulse Width and Spray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/volkswagen-p1228/>

