



## P029D

### Cylinder 1 - Injector Leaking

P029D indicates that the powertrain control module has detected a leaking condition in the fuel injector for cylinder 1, typically by monitoring fuel trim, misfire counts, or injector performance data. The computer has identified that cylinder 1 is receiving more fuel than commanded, which can cause a rich running condition and potential driveability issues.

| SYSTEM     | CODE TYPE           | SEVERITY | FIX DIFFICULTY | AREA                                      |
|------------|---------------------|----------|----------------|-------------------------------------------|
| Powertrain | Generic (all makes) | Medium   | Intermediate   | Fuel and air metering (injector circuits) |

### Symptoms you may notice

- Rough idle or engine misfire, especially when the engine is cold
- Strong fuel odor from the exhaust or engine bay
- Black smoke from the tailpipe due to excessive fuel
- Decreased fuel economy and poor performance
- Illuminated check engine light, often with no other noticeable symptoms
- Possible engine hesitation or stalling

### Common causes, most likely first

- 1 Fuel injector for cylinder 1 is internally leaking and not sealing properly
- 2 Wiring harness or connector issue causing the injector to stay open longer than commanded
- 3 Faulty powertrain control module driver for the injector circuit
- 4 Contaminated fuel or debris preventing the injector from closing fully
- 5 High fuel pressure from a faulty pressure regulator or pump
- 6 Leaking injector O-ring or seal allowing external fuel seepage

### How to diagnose and fix it

- 1 Perform a visual inspection of the cylinder 1 injector and surrounding area for fuel leaks or damaged wiring
- 2 Use a scan tool to check fuel trim data and misfire counters to confirm the rich condition on cylinder 1
- 3 Test the injector with a noid light or oscilloscope to verify the control signal and injector pulse width
- 4 Measure the injector resistance and compare to specifications to check for an internal short
- 5 Perform a fuel pressure test to rule out excessive system pressure
- 6 Swap the cylinder 1 injector with another cylinder to see if the misfire or rich condition moves
- 7 Replace the faulty fuel injector and clear the codes, then verify the repair with a road test



## Don't replace the injector before checking these

- A leaking injector can sometimes be misdiagnosed as a faulty oxygen sensor because both can cause rich fuel trim readings, so always confirm the injector is the source before replacing parts.
- Wiring issues such as a chafed wire or corroded connector can mimic a leaking injector by holding the injector open, so inspect the harness thoroughly before condemning the injector.
- Fuel contamination from a bad tank of gas can cause an injector to stick open, and simply replacing the injector without flushing the fuel system may lead to a repeat failure.
- On some vehicles, a leaking injector may not set a misfire code until the condition worsens, so the presence of P029D alone with no other codes is possible.
- Always check for technical service bulletins (TSBs) for your specific vehicle, as some manufacturers have known issues with injector sealing or software calibration.

## Can I keep driving with P029D?

It is not recommended to drive with a leaking injector for an extended period, as excess fuel can wash cylinder walls, dilute engine oil, and damage the catalytic converter. If you must drive, keep the trip short and avoid heavy acceleration or high speeds, and address the issue promptly.

## Tools that help

- OBD-II scan tool with live data capability
- Fuel pressure gauge
- Noid light or oscilloscope
- Multimeter
- Basic hand tools (wrenches, sockets, screwdrivers)
- Fuel line disconnect tools

## Reading P029D

**P** Powertrain: engine, transmission and emissions.

**0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.

**2** Fuel and air metering (injector circuits).

**9D** The exact fault within that area.

## Often seen with

**P0172** System Too Rich (Bank 1) · **P0201** Injector Circuit Malfunction - Cylinder 1 · **P0261** Cylinder 1 Injector Circuit Low · **P0262** Cylinder 1 Injector Circuit High · **P0301** Cylinder 1 Misfire Detected



## See it working

Watch the animated explainer [How a Rotary Engine Works: Wankel in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p029d/>

