

GENERIC · POWERTRAIN

P01D2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P01D2

Cylinder 4 Injection Timing Performance - Over Advanced

P01D2 indicates that the engine control module (ECM) has detected the actual injection timing for cylinder 4 is more advanced than the commanded timing by a calibrated threshold. The ECM compares the expected injection event timing with feedback from the injector circuit or cylinder pressure sensor and sets this code when the deviation persists.

SYSTEM Powertrain	CODE TYPE Generic (all makes)	SEVERITY Medium	FIX DIFFICULTY Intermediate	AREA Fuel and air metering
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Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or misfire sensation, especially when the engine is cold
- Reduced fuel economy due to inefficient combustion
- Slight loss of power or hesitation during acceleration
- Increased exhaust emissions, possibly noticed during an emissions test
- In rare cases, a knocking or pinging sound under load

Common causes, most likely first

- 1 Faulty fuel injector for cylinder 4 (sticking or slow response)
- 2 Wiring harness damage or poor electrical connection at the cylinder 4 injector
- 3 Contaminated engine oil affecting variable valve timing (VVT) operation
- 4 Faulty VVT solenoid or phaser for the affected bank
- 5 Engine control module (ECM) software calibration issue or internal fault
- 6 Mechanical timing chain or belt misalignment
- 7 Low fuel pressure or restricted fuel flow to cylinder 4



How to diagnose and fix it

- 1 Connect a scan tool and verify the code is current, then check for any related pending or history codes
- 2 Inspect the cylinder 4 injector electrical connector and wiring for corrosion, chafing, or loose pins
- 3 Perform a fuel injector balance test or swap the cylinder 4 injector with another cylinder to see if the code follows
- 4 Check engine oil condition and level; replace oil and filter if contaminated or overdue
- 5 Test the VVT solenoid and phaser operation with a bidirectional scan tool, and inspect for sludge or debris
- 6 Verify mechanical timing marks align correctly and inspect the timing chain or belt for wear
- 7 If all else checks out, reprogram the ECM with the latest calibration or replace it if faulty

Before you replace the cylinder 4 injector

- A dirty or failing VVT solenoid often causes this code because it alters camshaft timing, which the ECM interprets as injection timing error.
- The code can be set by a simple loose ground connection on the engine block, leading to voltage drops that affect injector operation.
- Swapping the cylinder 4 injector with another cylinder is a quick way to confirm if the injector itself is at fault before buying a replacement.
- Some vehicles use injection timing strategies that rely on cylinder pressure sensors; a faulty sensor can mimic an injector problem.
- After repairs, the ECM may require a relearn procedure or several drive cycles before the code clears permanently.

Can I keep driving with P01D2?

You can usually continue driving with this code, but avoid aggressive acceleration and heavy loads until it is diagnosed. Prolonged driving with over-advanced injection timing can lead to engine damage or increased emissions, so schedule a repair soon.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter for electrical testing
- Fuel pressure gauge
- Mechanic's stethoscope for listening to injector operation
- Basic hand tools (socket set, screwdrivers, pliers)



Reading P01D2

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 1** Fuel and air metering.
- D2** The exact fault within that area.

Often seen with

P0011 'A' Camshaft Position - Timing Over-Advanced or System Perfo · **P01D1** Cylinder 4 Injection Timing Performance - Over Retarded · **P01D3** Cylinder 5 Injection Timing Performance - Over Retarded · **P0204** Injector Circuit Malfunction - Cylinder 4 · **P0304** Cylinder 4 Misfire Detected

See it working

Watch the animated explainer [How a Padlock Works: Pin Tumbler Lock in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p01d2/>

