

GENERIC · POWERTRAIN

P020D

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P020D

Cylinder 4 Injection Timing

P020D indicates that the powertrain control module has detected an abnormal injection timing condition specifically for cylinder number four, meaning the fuel injector for that cylinder is not opening or closing at the precise moment the computer commands. The engine computer compares commanded injector timing against feedback from the ignition system and crankshaft position sensor, and it sets this code when the actual injector event deviates from the expected timing window beyond a calibrated threshold.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or noticeable vibration that is worse when the engine is cold
- Misfire-like shudder or hesitation during acceleration, particularly at low engine speeds
- Slight decrease in fuel economy over time as the computer compensates for poor combustion
- Occasional engine stumble or surge at steady cruising speeds
- Hard starting or extended cranking in more severe cases

Common causes, most likely first

- 1 Faulty or clogged fuel injector on cylinder four that cannot respond to the commanded pulse width
- 2 Damaged or corroded electrical connector at the cylinder four injector, causing intermittent or high-resistance contact
- 3 Chafed, open, or shorted injector harness wiring between the injector and the powertrain control module
- 4 Failed crankshaft position sensor or camshaft position sensor providing an inaccurate timing reference
- 5 Sticking or contaminated injector pintle due to fuel varnish or debris, altering opening and closing response
- 6 Internal driver failure in the powertrain control module for the cylinder four injector circuit
- 7 Low fuel pressure or restricted fuel delivery that disproportionately affects one injector's timing event



How to diagnose and fix it

- 1 Connect a scan tool and record all freeze-frame data and any companion codes before clearing anything, because the conditions at the time of the fault are the best clue to the root cause.
- 2 Perform a visual inspection of the cylinder four injector connector and the nearby harness for corrosion, chafing, or loose pins, and compare it to a known-good injector connector on another cylinder.
- 3 Use a noid light or an oscilloscope to verify that the injector pulse signal is present and clean at the cylinder four injector connector while cranking and running.
- 4 Measure the resistance of the cylinder four injector with a multimeter and compare it to the manufacturer's specification and to the other injectors on the engine.
- 5 Check fuel pressure and fuel quality at the rail, and inspect the fuel filter for restriction if pressure is below specification.
- 6 Swap the cylinder four injector with a known-good injector from another cylinder and see whether the code follows the injector or stays with cylinder four.
- 7 If the injector and wiring test good, scope the crankshaft and camshaft position sensor signals for glitches or incorrect correlation that would shift the timing reference.

Why cylinder four injector timing codes mislead

- A dirty or failing injector on cylinder four often sets this code before any misfire code appears, so technicians who only look for P0304 can miss the real problem.
- The injector itself is frequently not the culprit; a corroded connector pin or a chafed wire near the intake manifold can produce the same timing deviation without any injector fault.
- A weak crankshaft or camshaft position sensor can shift the timing reference for all cylinders, but the computer may flag only cylinder four because its injector event falls closest to the edge of the acceptable window.
- Fuel pressure that is marginally low can cause one injector to open more slowly than the others, and the resulting timing error may set P020D without any drivability complaint.
- Replacing the injector without checking the injector driver circuit in the powertrain control module can lead to a repeat failure if the module's internal driver is failing intermittently.

Can I keep driving with P020D?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or long highway trips because continued driving with a misfiring cylinder can overheat the catalytic converter and cause costly damage. If the check engine light begins flashing, stop driving and have the vehicle towed.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter for resistance and voltage checks
- Noid light or automotive oscilloscope for injector pulse testing
- Fuel pressure gauge
- Hand tools including socket set and trim removal tools for injector access

Reading P020D

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

Often seen with

P0201 Injector Circuit Malfunction - Cylinder 1 · **P0204** Injector Circuit Malfunction - Cylinder 4 · **P0300** Random/Multiple Cylinder Misfire Detected · **P0304** Cylinder 4 Misfire Detected · **P0354** Ignition Coil D Primary/Secondary Circuit Malfunction

See it working

Watch the animated explainer [How a Coolant Temperature Sensor Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p020d/>

