

GENERIC · POWERTRAIN

P03A7

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P03A7

Cylinder 2 Pressure Variation High

P03A7 means the engine computer has detected that cylinder 2 is producing a higher-than-expected variation in crankshaft speed on each power stroke, which points to a mechanical or fuel delivery problem specific to that cylinder. The powertrain control module (PCM) monitors the crankshaft position sensor signal and flags this code when the calculated pressure contribution from cylinder 2 deviates beyond the calibrated limit.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Ignition system and misfire

Symptoms you may notice

- A steady or flashing check engine light, often with no other noticeable symptoms
- Rough idle or a noticeable shake that worsens when the engine is cold
- Misfire-like shudder or hesitation during acceleration
- Reduced engine power or poor fuel economy
- A rhythmic tapping or ticking sound from the engine bay that follows engine speed
- In some cases, the vehicle may enter limp mode to protect the engine

Common causes, most likely first

- 1 Worn or faulty fuel injector for cylinder 2 causing an uneven fuel spray pattern
- 2 Carbon buildup on the intake valve or piston top of cylinder 2, raising compression
- 3 A sticking or leaking cylinder 2 injector that over-fuels that cylinder
- 4 Mechanical wear such as a worn camshaft lobe, lifter, or rocker arm affecting valve lift on cylinder 2
- 5 A faulty crankshaft position sensor or damaged reluctor wheel giving erratic speed signals
- 6 Vacuum leak or intake manifold gasket leak near cylinder 2 that leans out that cylinder
- 7 Low compression from worn piston rings or a damaged valve seat on cylinder 2



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data and misfire counters to confirm cylinder 2 is the only affected cylinder
- 2 Perform a visual inspection of the cylinder 2 ignition coil, spark plug, and injector wiring for damage or corrosion
- 3 Run a compression test and a cylinder leak-down test on cylinder 2 to rule out mechanical faults
- 4 Use a fuel pressure gauge and an injector balance test to check for a restricted or leaking injector on cylinder 2
- 5 Inspect the intake manifold and vacuum lines near cylinder 2 for leaks using a smoke machine
- 6 Swap the cylinder 2 ignition coil and spark plug with a known-good cylinder to see if the misfire moves
- 7 If all else checks out, remove and flow-test or replace the cylinder 2 fuel injector, then clear the code and verify the repair

What P03A7 does not always mean

- A high pressure variation code on one cylinder is often caused by a dirty or failing fuel injector rather than a mechanical engine failure, so injector testing should come before tearing into the engine.
- Carbon buildup on direct-injection engines can raise compression on a single cylinder and trigger this code without any traditional misfire symptoms, especially on vehicles used mostly for short trips.
- A weak or failing crankshaft position sensor can produce erratic speed signals that the PCM interprets as pressure variation, so always check sensor wiring and signal quality before replacing engine parts.
- This code can be set by a vacuum leak at the intake manifold runner for cylinder 2, which leans out that cylinder and changes its combustion contribution without any obvious hissing noise.
- Do not replace the PCM or reflash the computer for this code until you have ruled out fuel, ignition, and mechanical causes, because software updates rarely fix a true cylinder-specific pressure variation.

Can I keep driving with P03A7?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or long highway trips until the fault is diagnosed. If the check engine light is flashing or the engine is shaking badly, stop driving and have the vehicle towed to prevent catalytic converter damage.

Tools that help

- OBD-II scan tool with live data and misfire counter capability
- Compression tester and cylinder leak-down tester
- Fuel pressure gauge and injector balance tester
- Smoke machine for vacuum leak detection
- Basic hand tools and a spark plug socket
- Digital multimeter for checking injector and sensor wiring



Reading P03A7

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 3** Ignition system and misfire.
- A7** The exact fault within that area.

Often seen with

P0171 System Too Lean (Bank 1) · **P0202** Injector Circuit Malfunction - Cylinder 2 · **P0300** Random/Multiple Cylinder Misfire Detected · **P0302** Cylinder 2 Misfire Detected · **P0352** Ignition Coil B Primary/Secondary Circuit Malfunction

See it working

Watch the animated explainer [Inline-Four Engine X-Ray: Firing Order 1-3-4-2](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p03a7/>

