

GENERIC · POWERTRAIN

P2D28

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D28

Cold Start Propulsion Torque Performance

P2D28 is set when the powertrain control module determines that the propulsion torque delivered during a cold start does not meet the expected performance model, typically because the engine, hybrid system, or transmission cannot produce the commanded torque within the allowed time. The computer compares actual torque output, inferred from crankshaft speed and other sensor inputs, against the cold-start torque profile and flags a fault when the deviation exceeds calibrated limits.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illumination of the malfunction indicator lamp, often with no other noticeable symptoms
- Rough or unstable idle immediately after a cold start
- Hesitation or stumble when accelerating from a stop while the engine is still cold
- Reduced power or limp-home mode during the first few minutes of driving
- Longer than normal cranking before the engine starts in cold conditions
- In hybrid vehicles, the engine may fail to start smoothly or the transition from electric to engine power may feel abrupt

Common causes, most likely first

- 1 Degraded or contaminated engine oil causing higher friction and reduced torque delivery during cold start
- 2 Faulty crankshaft position sensor or camshaft position sensor providing erratic speed signals to the control module
- 3 Weak or failing battery delivering low voltage to the starter and control modules during cold cranking
- 4 Clogged or restricted fuel injectors causing lean or uneven fuel delivery when the engine is cold
- 5 Carbon buildup on intake valves or throttle body restricting airflow at cold idle
- 6 Faulty engine coolant temperature sensor reporting incorrect cold-start conditions to the PCM
- 7 Internal transmission or hybrid drive unit issues causing excessive drag or delayed torque engagement



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to see the conditions when P2D28 set
- 2 Verify battery state of health and cranking voltage; load-test the battery and check charging system output
- 3 Check engine oil condition and level; replace oil and filter if overdue or contaminated
- 4 Inspect and clean the throttle body and intake tract for carbon deposits
- 5 Test crankshaft and camshaft position sensors for signal integrity and correct air gap
- 6 Perform a fuel injector balance test and check fuel pressure during cold start
- 7 Compare live engine coolant temperature readings against actual ambient temperature after an overnight soak

Cold-start torque faults often misdiagnosed

- A marginal battery that still starts the engine can cause P2D28 because voltage drops during cranking reset or confuse the control module's torque model without setting a battery code.
Technicians often replace the starter or throttle body first, but a slow-responding coolant temperature sensor skewing cold-start fuel enrichment is a more common root cause.
- In hybrid vehicles, P2D28 can be set by a weak 12-volt auxiliary battery even though the high-voltage traction battery is healthy, because the engine start sequence depends on stable low-voltage power.
- The code does not always indicate a mechanical torque production failure; software calibration updates for the PCM or transmission control module have resolved cold-start torque performance complaints on some platforms.
- Excessive carbon on direct-injection intake valves can reduce cold-start torque enough to set P2D28 without triggering misfire codes, especially in engines with accumulated mileage.

Can I keep driving with P2D28?

The vehicle is generally safe to drive to a repair facility, but avoid heavy acceleration or towing until the fault is diagnosed because cold-start torque delivery is compromised. If the engine runs rough, stalls, or enters limp mode, limit driving to a short distance at low speed.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter for voltage and sensor signal testing
- Battery load tester and charging system analyzer
- Fuel pressure gauge and injector balance tester
- Throttle body cleaner and basic hand tools



Reading P2D28

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- D** Hybrid propulsion.
- 28** The exact fault within that area.

Often seen with

P0113 Intake Air Temperature Circuit High Input · **P0171** System Too Lean (Bank 1) · **P0300** Random/Multiple Cylinder Misfire Detected · **P0335** Crankshaft Position Sensor A Circuit Malfunction · **P2D29** A/C Compressor Motor Stalled

See it working

Watch the animated explainer [How a Jet Engine Works: Two-Spool Turbofan](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2d28/>

