

GENERIC · POWERTRAIN

P2D21

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2D21

Turbocharger Interstage Pressure Sensor A Circuit

P2D21 indicates that the powertrain control module has detected an electrical fault in the circuit for the turbocharger interstage pressure sensor, which measures pressure between the turbocharger's compressor stages on a two-stage turbo system. The computer monitors the sensor's signal voltage and sets this code when the voltage falls outside the expected range for the current operating conditions, indicating an open, short, or erratic circuit.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine power or limp mode due to the powertrain control module limiting boost
- Poor acceleration or sluggish throttle response, especially under load
- Rough running or hesitation during turbocharger transition between stages
- Decreased fuel economy because the engine management strategy defaults to a safe calibration

Common causes, most likely first

- 1 Damaged or disconnected wiring harness at the interstage pressure sensor connector
- 2 Failed interstage pressure sensor due to heat, vibration, or contamination
- 3 Corroded or loose pins in the sensor electrical connector
- 4 Open or short circuit in the signal or reference voltage wire between the sensor and the powertrain control module
- 5 Failed powertrain control module driver circuit, though this is rare
- 6 Boost pressure leak or mechanical issue with the turbocharger interstage plumbing that affects sensor readings



How to diagnose and fix it

- 1 Perform a visual inspection of the sensor, connector, and wiring for obvious damage, corrosion, or loose connections
- 2 Use a scan tool to check live data for the interstage pressure sensor and compare it to expected values at key-on, engine-off and during idle
- 3 Measure reference voltage (typically 5 volts) and ground continuity at the sensor connector with a digital multimeter
- 4 Check the signal wire for continuity and shorts to ground or power between the sensor and the powertrain control module
- 5 If electrical tests pass, replace the interstage pressure sensor with a known-good unit and clear the code
- 6 If the code persists after sensor replacement, inspect the turbocharger interstage plumbing for leaks or blockages that could cause implausible readings
- 7 As a last resort, diagnose the powertrain control module internal driver circuit or reprogram the module if a software update is available

Before you replace the interstage sensor

- A loose or corroded connector at the interstage pressure sensor is a frequent cause of this code, so always inspect and clean the terminals before condemning the sensor itself.
- The interstage pressure sensor is often confused with the main boost pressure sensor; verify you are testing the correct sensor for the two-stage turbo system, as their connectors and locations differ.
- On some vehicles, a boost leak between the turbocharger stages can cause the sensor to read outside the expected range and set P2D21 even when the sensor and wiring are healthy.
- The powertrain control module may set this code intermittently if the sensor signal is erratic due to heat soak, so perform wiggle tests on the harness while monitoring live data.
- Replacing the sensor without clearing adaptive learning values may leave the engine running poorly until the module relearns the new sensor's characteristics.

Can I keep driving with P2D21?

You can usually drive the vehicle with this code, but expect reduced power and avoid heavy acceleration or towing until the fault is repaired. Prolonged driving with a faulty interstage pressure sensor may cause the engine management system to run in a default mode that increases fuel consumption and emissions.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire piercing probes or back-probe kit
- Socket set and trim removal tools
- Contact cleaner and dielectric grease



Reading P2D21

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

Often seen with

P0234 Engine Overboost Condition · **P0235** Turbocharger Boost Sensor A Circuit Malfunction · **P0299** Turbo/Supercharger Underboost · **P2D20** Reductant System Flow – Blocked · **P2D22** Turbocharger Interstage Pressure Sensor A Circuit Range/Perf

See it working

Watch the animated explainer [Turbocharger Trainer: Boost, Wastegate and Intercooler](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2d21/>

