

GENERIC · POWERTRAIN

P022D

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P022D

Charge Air Cooler Bypass Control B Circuit/Open

P022D indicates that the powertrain control module has detected an open circuit or abnormal voltage on the control circuit for the charge air cooler bypass valve, specifically on the 'B' side of the circuit. This valve routes intake air around the charge air cooler to prevent condensation or to aid cold-start and low-load efficiency, and the fault means the computer cannot reliably command the valve to move.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Fuel and air metering (injector circuits)

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- Reduced engine performance or a sudden loss of power under acceleration.
- Rough idle or stumbling immediately after a cold start.
- Poor fuel economy or increased turbo lag.
- In rare cases, the engine may enter limp mode if the fault is interpreted as severe.

Common causes, most likely first

- 1 Broken, chafed, or corroded wiring in the bypass valve control circuit, especially at connectors or where the harness bends near the turbocharger.
- 2 Failed charge air cooler bypass valve solenoid or actuator.
- 3 Loose or damaged electrical connector at the bypass valve.
- 4 Water intrusion or corrosion inside the connector or valve housing.
- 5 Faulty powertrain control module driver circuit (less common).
- 6 Aftermarket or improperly installed electrical accessories tapping into the circuit.



How to diagnose and fix it

- 1 Perform a visual inspection of the bypass valve, its connector, and the wiring harness for damage, corrosion, or loose pins.
- 2 Use a scan tool to command the bypass valve on and off while watching live data to confirm the circuit responds.
- 3 Disconnect the valve and measure resistance across its control terminals; compare to manufacturer specifications.
- 4 Check for battery voltage and ground at the valve connector with the key on, using a multimeter or test light.
- 5 Perform a voltage drop test on both the power and ground sides of the circuit to locate high resistance.
- 6 If the circuit tests good, substitute a known-good valve or perform a bidirectional actuator test to verify valve operation.
- 7 Repair or replace damaged wiring, connectors, or the valve as needed, then clear the code and verify the repair with a road test.

What most technicians overlook on P022D

- A chafed wire near the turbocharger or exhaust manifold is a frequent cause that only appears when the engine is hot or vibrating, so wiggle-test the harness while watching live data.
- The bypass valve may be mechanically stuck or clogged with carbon, which can set an electrical circuit code even though the solenoid coil tests good.
- Some vehicles use the same valve for both bypass and anti-condensation functions, and a fault in the related charge air cooler system can trigger P022D indirectly.
- A weak or failing battery or charging system can cause voltage spikes that mimic an open circuit, so always check system voltage first.
- After replacing the valve, some modules require a relearn or adaptation procedure; skipping it can leave the code stored or cause driveability issues.

Can I keep driving with P022D?

The vehicle is generally safe to drive with P022D because the fault usually causes only reduced performance or efficiency, but avoid heavy acceleration or towing until repaired. If the engine enters limp mode or runs poorly, have it diagnosed promptly to prevent further damage.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter
- Test light
- Wire repair kit with crimpers and heat shrink
- Socket and wrench set
- Manufacturer service information for circuit specifications



Reading P022D

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

Often seen with

P00B0 Turbocharger/Supercharger Boost Control B Module Performance · **P022C** Charge Air Cooler Bypass Control A Circuit High · **P022E** Charge Air Cooler Bypass Control B Circuit Low · **P0234** Engine Overboost Condition · **P0299** Turbo/Supercharger Underboost

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/p022d/>

