

GENERIC · POWERTRAIN

P022E

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P022E

Charge Air Cooler Bypass Control B Circuit Low

P022E indicates that the powertrain control module has detected a low-voltage condition on the electrical circuit for the charge air cooler bypass control valve B. This valve manages airflow around the intercooler to optimize intake temperatures, and a low circuit signal typically means the control wire is shorted to ground or the valve's internal actuator has failed.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine power or limp mode under heavy acceleration
- Decreased fuel economy due to incorrect intake air temperature management
- Rough idle or hesitation when the engine is cold
- In rare cases, a noticeable whistling or whooshing noise from the charge air cooler area

Common causes, most likely first

- 1 A short to ground in the bypass control valve B signal wire
- 2 Failed charge air cooler bypass control valve B actuator
- 3 Corroded or damaged electrical connector at the bypass valve
- 4 Open or high-resistance ground circuit for the bypass valve
- 5 Faulty powertrain control module driver for the bypass circuit (less common)
- 6 Aftermarket or damaged wiring harness chafing against engine components



How to diagnose and fix it

- 1 Use a scan tool to verify the code and check for any related pending or history codes
- 2 Visually inspect the bypass valve B connector and wiring for corrosion, chafing, or loose pins
- 3 Disconnect the valve and measure resistance across its control terminals to compare with manufacturer specifications
- 4 Check for a short to ground on the signal wire between the valve and the PCM using a multimeter
- 5 Test the ground circuit for the valve with a voltage drop test while the circuit is loaded
- 6 If the wiring and valve test good, substitute a known-good valve to see if the code clears
- 7 As a last resort, inspect the PCM connector and driver circuit for internal faults

What the bypass valve code really means

- A low circuit code often results from a shorted valve solenoid rather than a wiring problem, so always test the valve before replacing harnesses.
- Some vehicles use the same bypass valve for both A and B circuits, and a failure in one can set codes for the other if the shared ground is compromised.
- The charge air cooler bypass valve may not set a drivability symptom until the engine is under sustained load, so a simple road test may miss the fault.
- Corrosion inside the valve connector can mimic a failed valve and is frequently overlooked during diagnosis.
- A low circuit code can be set intermittently by water intrusion into the connector after driving through deep puddles or pressure washing the engine bay.

Can I keep driving with P022E?

You can generally continue driving with this code, but avoid heavy acceleration or towing until it is repaired, as the engine may enter limp mode and reduce power unexpectedly. Prolonged driving with a faulty bypass valve can lead to increased intake temperatures and reduced fuel efficiency.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire piercing probes or back-probe kit
- Electrical contact cleaner
- Basic socket and wrench set



Reading P022E

- 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).
- 2E** The exact fault within that area.

Often seen with

P00B0 Turbocharger/Supercharger Boost Control B Module Performance · **P00B1** Radiator Coolant Temperature Sensor Circuit · **P022D** Charge Air Cooler Bypass Control B Circuit/Open · **P022F** Charge Air Cooler Bypass Control B Circuit High · **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/p022e/>

