

GENERIC · POWERTRAIN

P024B

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P024B

Charge Air Cooler Bypass Control A Stuck

P024B indicates that the powertrain control module (PCM) has detected a stuck condition in the charge air cooler (CAC) bypass control circuit 'A', which typically involves the bypass valve or its actuator. The PCM commands the valve to change position and monitors the result; when the expected change does not occur within a calibrated time, it sets this code.

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 (malfunction indicator lamp).
- Often no symptoms besides the warning light, especially if the valve fails in a default position.
- Reduced engine power or limp mode under certain conditions.
- Poor acceleration or sluggish throttle response.
- Decreased fuel economy.
- Possible turbocharger lag or overboost/underboost symptoms if the bypass affects boost control.

Common causes, most likely first

- 1 Faulty CAC bypass valve actuator or solenoid.
- 2 Stuck or binding bypass valve due to carbon buildup or mechanical wear.
- 3 Damaged or disconnected vacuum line (if vacuum-operated).
- 4 Corroded or damaged electrical connector at the bypass valve.
- 5 Open or shorted wiring in the bypass control circuit.
- 6 Failed PCM driver for the bypass control circuit (rare).



How to diagnose and fix it

- 1 Inspect the bypass valve and actuator for mechanical binding or carbon buildup; clean or replace as needed.
- 2 Check all vacuum lines and connections for leaks, cracks, or disconnection; repair or replace.
- 3 Perform a visual inspection of the electrical connector and wiring for corrosion, damage, or loose pins; repair or replace.
- 4 Use a scan tool to command the bypass valve and observe its operation; if it does not respond, test the actuator with a known-good signal.
- 5 Measure resistance and voltage on the bypass control circuit to check for opens, shorts, or high resistance; repair wiring as necessary.
- 6 If all electrical and mechanical checks pass, suspect the PCM; verify by testing with a known-good unit before replacement.

Don't overlook the simple mechanical checks

- A stuck bypass valve often results from carbon buildup inside the charge air cooler, which can prevent the valve from moving freely even if the actuator is functional.
- On vacuum-operated systems, a leaking vacuum line or a failed vacuum pump can mimic a faulty bypass valve, so always verify vacuum supply before replacing parts.
- The PCM may set P024B even when the valve is only slow to respond, not completely stuck, so intermittent operation can be missed during a quick inspection.
- Some vehicles use the CAC bypass valve to improve cold-start emissions and drivability; a stuck valve may not trigger noticeable symptoms until specific conditions are met.
- A misdiagnosed P024B can lead to unnecessary replacement of the turbocharger or PCM when the real issue is a simple wiring fault or vacuum leak.

Can I keep driving with P024B?

You can generally continue driving with P024B, but avoid heavy acceleration or towing until the fault is repaired, as the engine may enter limp mode or suffer reduced performance. If the check engine light flashes or you notice severe power loss, stop driving and seek professional diagnosis.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Vacuum pump and gauge
- Hand tools (screwdrivers, pliers, socket set)
- Wiring diagram for the specific vehicle



Reading P024B

- 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).
- 4B** The exact fault within that area.

Often seen with

P00AF Turbocharger/Supercharger Boost Control A Module Performance · **P0234** Engine Overboost Condition
 · **P024A** Charge Air Cooler Bypass Control A Range/Performance · **P024C** Charge Air Cooler Bypass Position Sensor A Circuit · **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/p024b/>

