

GENERIC · POWERTRAIN

P024A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P024A

Charge Air Cooler Bypass Control A Range/Performance

P024A indicates that the engine control module has detected a range or performance problem with the charge air cooler bypass control circuit, specifically on the 'A' side. The computer monitors the bypass valve actuator and its feedback signal, and it sets this code when the actual position or response does not match the commanded value within a calibrated time window.

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 power or limp mode under heavy acceleration
- Poor throttle response or hesitation when accelerating from a stop
- Decreased fuel economy due to incorrect charge air routing
- Possible turbocharger surge or whistling noises from the intake system
- In rare cases, rough idle or stalling if the bypass valve sticks open

Common causes, most likely first

- 1 Faulty charge air cooler bypass valve actuator or solenoid
- 2 Damaged or disconnected wiring harness to the bypass valve
- 3 Corroded or loose electrical connector at the bypass valve
- 4 Vacuum leak or restricted vacuum supply line to the actuator
- 5 Sticking or mechanically binding bypass valve flap
- 6 Failed charge air cooler bypass position sensor
- 7 Engine control module software issue or internal fault (less common)



How to diagnose and fix it

- 1 Perform a visual inspection of the bypass valve, actuator, and all vacuum or electrical connections
- 2 Check for technical service bulletins or software updates for the engine control module
- 3 Use a scan tool to command the bypass valve open and closed while monitoring actuator response
- 4 Test the actuator with a vacuum pump or bidirectional control to verify smooth operation
- 5 Measure resistance and voltage on the actuator circuit and compare to manufacturer specifications
- 6 Inspect the bypass valve flap for carbon buildup or mechanical binding and clean or replace as needed
- 7 If all electrical and mechanical checks pass, reprogram or replace the engine control module as a last resort

What the bypass valve code really means

- A stuck-open bypass valve often causes no driveability symptoms because the engine can still breathe through the charge air cooler, so the code may be the only clue.
- Many technicians replace the bypass valve actuator only to find a corroded connector pin or chafed wire is the actual cause of the range/performance fault.
- On some vehicles, a weak vacuum pump or a leak in the vacuum reservoir can mimic a failed bypass actuator and set this code without any actuator fault.
- The 'A' designation refers to the first bypass control circuit, so on engines with two charge air coolers or staged bypass systems, always confirm which side is affected before ordering parts.
- A dirty or contaminated mass airflow sensor can skew the expected airflow model and cause the ECM to misjudge bypass valve performance, setting P024A even when the valve is working correctly.

Can I keep driving with P024A?

You can usually continue driving with P024A, but avoid heavy acceleration or towing until the fault is repaired, because the engine may enter limp mode and lose power unexpectedly. If the check engine light begins flashing or you notice severe power loss, stop driving and have the vehicle inspected promptly.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Hand vacuum pump with gauge
- Basic hand tools (screwdrivers, socket set, pliers)
- Wiring diagram or service information for the specific vehicle



Reading P024A

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

Often seen with

P00AF Turbocharger/Supercharger Boost Control A Module Performance · **P0234** Engine Overboost Condition
 · **P024B** Charge Air Cooler Bypass Control A Stuck · **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/p024a/>

