



P024C

Charge Air Cooler Bypass Position Sensor A Circuit

P024C means the engine computer has detected an implausible signal from the charge air cooler bypass position sensor on circuit A, which monitors the valve that routes intake air around the cooler. The computer compares the sensor voltage against expected values for the commanded bypass position and sets the code when the reading falls outside the valid range.

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

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Reduced engine power or limp mode under heavy acceleration
- Poor throttle response or hesitation when the turbocharger spools up
- Decreased fuel economy due to incorrect air routing
- Rough idle or stumbling after a cold start in some vehicles
- A slight whistle or whoosh from the charge air cooler area if the bypass valve sticks

Common causes, most likely first

- 1 Faulty charge air cooler bypass position sensor
- 2 Damaged or corroded wiring harness at the bypass valve connector
- 3 Sticking or mechanically binding bypass valve actuator
- 4 Failed bypass valve actuator motor or vacuum diaphragm
- 5 Loose or damaged electrical connector pins at the sensor
- 6 Intake air leaks or boost leaks near the charge air cooler
- 7 Engine control module software issue or internal fault (rare)



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, then record freeze-frame data for P024C
- 2 Visually inspect the bypass valve, sensor, connector, and wiring for damage or corrosion
- 3 Check sensor reference voltage and ground at the connector with a multimeter
- 4 Command the bypass valve through a scan tool and observe sensor voltage for smooth travel
- 5 Perform a wiggle test on the harness while monitoring sensor signal to reveal intermittent faults
- 6 Replace the bypass position sensor or valve assembly if electrical and mechanical checks pass but the signal remains implausible
- 7 Clear codes and road-test the vehicle through several drive cycles to confirm the repair

Bypass sensor faults that mimic boost leaks

- A sticking bypass valve often sets P024C without any boost leak, so technicians who only smoke-test the intake miss the real cause.
- The sensor is frequently integrated into the bypass valve actuator, meaning a bad sensor can require replacing the whole valve assembly on some designs.
- Corrosion inside the connector is a common hidden cause, especially on vehicles driven in wet or salty conditions, and can look like a failed sensor.
- P024C can be set by a low battery or charging system fault that drops reference voltage during cranking, so check battery health before condemning parts.
- After repairs, some vehicles require a bypass valve relearn or adaptation reset through the scan tool to prevent the code from returning.

Can I keep driving with P024C?

You can usually drive the vehicle with P024C, but avoid heavy acceleration and towing until it is repaired because the bypass valve may not route air correctly and could reduce power or damage the turbocharger over time.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter
- Wire piercing probes or back-probe kit
- Basic hand tools and socket set
- Contact cleaner and dielectric grease
- Vacuum pump or smoke machine for boost leak testing



Reading P024C

- 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).
- 4C** 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 · **P024D** Charge Air Cooler Bypass Position Sensor A Circuit Range/Per · **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/p024c/>

