

GENERIC · POWERTRAIN

P028A

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P028A

Charge Air Cooler Cooling Fan Control Circuit/Open

P028A indicates that the powertrain control module (PCM) has detected an open circuit or abnormal voltage on the control circuit for the charge air cooler cooling fan, which is used to cool the intake air after the turbocharger compresses it. The PCM commands the fan on under certain conditions and monitors the circuit for expected feedback; when the signal is missing or out of range, it stores this code and may illuminate the check engine light.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Check engine light (malfunction indicator lamp) illuminated on the dashboard.
- Often no symptoms besides the warning light, especially if the fan is not needed under current driving conditions.
- Reduced engine performance or power derate during heavy load or high ambient temperatures due to elevated intake air temperatures.
- Possible overheating of charge air cooler system components if the fan fails to operate when commanded.
- In some vehicles, a message or warning about engine power reduction may appear in the driver information center.

Common causes, most likely first

- 1 Open or damaged wiring in the charge air cooler fan control circuit, such as a broken wire or corroded connector.
- 2 Failed charge air cooler cooling fan motor or its internal control module.
- 3 Blown fuse or faulty relay that supplies power to the fan control circuit.
- 4 Poor electrical connection at the fan connector or at the PCM connector.
- 5 Faulty PCM driver for the fan control circuit, though this is less common.
- 6 Aftermarket or incorrect fan installed that does not match the vehicle's electrical specifications.



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related codes in other modules before proceeding.
- 2 Inspect the charge air cooler fan fuse and relay, and replace any that are blown or faulty.
- 3 Visually inspect the fan wiring harness and connectors for damage, corrosion, or loose pins; repair as needed.
- 4 Disconnect the fan connector and use a multimeter to check for power and ground signals at the fan when commanded on.
- 5 Test the fan motor directly by applying battery voltage to confirm it operates; replace the fan assembly if it does not.
- 6 Check the control circuit from the PCM to the fan for continuity and short circuits; repair open or shorted wires.
- 7 If all electrical checks pass, consult the factory service information for specific pinpoint tests, which may involve PCM replacement if the driver circuit is faulty.

Common misdiagnosis traps for P028A

- A fan that spins freely by hand can still have an open internal control circuit, so visual inspection alone is not a reliable test.
- The charge air cooler fan may only run under specific conditions such as high intake air temperature or after a key-off cooldown, so it may not activate during a simple key-on test.
- Corrosion inside the fan connector pins is a frequent cause that is easily overlooked when only the fuse and relay are checked.
- Some vehicles use a pulse-width modulated (PWM) signal to control the fan, and a standard test light may not provide a valid load; use a multimeter or oscilloscope for accurate diagnosis.
- A faulty intake air temperature sensor can cause the PCM to command the fan incorrectly, sometimes setting this code as a secondary effect.

Can I keep driving with P028A?

You can generally drive the vehicle with this code, but avoid heavy throttle or towing until it is repaired, as elevated intake air temperatures can reduce power and potentially damage components. If the engine enters a reduced power mode or you notice overheating, stop driving and seek service.

Tools that help

- OBD-II scan tool
- Digital multimeter
- Test light
- Wire repair kit
- Factory service information or wiring diagrams



Reading P028A

- 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).
- 8A** The exact fault within that area.

Often seen with

P00B4 Radiator Coolant Temperature Sensor Circuit High · **P0234** Engine Overboost Condition · **P028B** Charge Air Cooler Cooling Fan Performance/Stuck Off · **P028C** Charge Air Cooler Cooling Fan Stuck On · **P028D** Charge Air Cooler Cooling Fan Control Circuit Low

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/p028a/>

