

GENERIC · POWERTRAIN

P028E

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P028E

Charge Air Cooler Cooling Fan Control Circuit High

P028E indicates that the powertrain control module (PCM) has detected an abnormally high voltage on the control circuit for the charge air cooler (CAC) cooling fan, which is the fan that blows air across the intercooler to cool the compressed intake charge. The PCM commands the fan on or off via a low-side driver, and when the circuit voltage stays above the expected threshold for the commanded state, the PCM stores this code.

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 performance or power, especially during sustained boost or high-load driving
- Higher than normal intake air temperatures, which may lead to derating or limp mode in some vehicles
- The cooling fan may run continuously or not at all, depending on the failure mode
- In rare cases, overheating of the charge air cooler or associated components if the fan fails to operate

Common causes, most likely first

- 1 Open or high-resistance wiring in the 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 Faulty fan control relay or solid-state relay that is stuck open or has high resistance
- 4 Poor ground connection for the fan motor or control circuit
- 5 Damaged or shorted PCM driver for the fan control circuit
- 6 Aftermarket or incorrect fan assembly that does not match the vehicle's electrical specifications

How to diagnose and fix it

- 1 Scan all modules for related codes and record freeze-frame data to understand when the fault occurs
- 2 Visually inspect the fan, connector, and wiring for damage, corrosion, or loose pins
- 3 Test the fan control circuit for continuity and resistance, checking for opens or high resistance
- 4 Command the fan on with a scan tool and verify operation and circuit voltage
- 5 Check the fan relay and ground connections, replacing or repairing as needed
- 6 If the circuit and fan test good, diagnose the PCM driver or replace the PCM as a last resort



What the high-voltage code really means

- A high-voltage code on a control circuit often indicates an open circuit rather than a short to power, because the PCM pulls the driver low to command the fan on and sees high voltage when the circuit is broken.
- The charge air cooler fan may only run under specific conditions such as high ambient temperature or heavy load, so a fault may not be present during a quick test drive.
- Some vehicles use a pulse-width modulated (PWM) signal to control fan speed, and a high-voltage code can set if the feedback signal is missing or out of range.
- A failing fan motor can draw excessive current and damage the control circuit, so always check the fan motor resistance and current draw before replacing the PCM.
- This code is often misdiagnosed as a fan motor failure when the real problem is a corroded connector or chafed wire in the harness near the fan.

Can I keep driving with P028E?

You can usually drive with this code, but avoid sustained heavy acceleration or towing until it is repaired, as elevated intake air temperatures can reduce power and, in some cases, trigger limp mode. Monitor for overheating or reduced performance and address the fault promptly.

Tools that help

- OBD-II scan tool with bidirectional control
- Digital multimeter
- Wiring diagram for the specific vehicle
- Basic hand tools for connector and component access

Reading P028E

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).
8E	The exact fault within that area.

Often seen with

P00B4 Radiator Coolant Temperature Sensor Circuit High · **P0234** Engine Overboost Condition · **P028D** Charge Air Cooler Cooling Fan Control Circuit Low · **P028F** Charge Air Cooler Cooling Fan Control Circuit Driver Perform · **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/p028e/>

