

GENERIC · POWERTRAIN

P0691

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P0691

### Fan 1 Control Circuit Low

P0691 means the engine computer has detected a low-voltage condition on the control circuit for cooling fan number one, which is the primary electric fan on most vehicles. The computer commands the fan on by supplying a ground or voltage signal, and it monitors the circuit to confirm the command is carried out; this code sets when the feedback voltage stays below the expected threshold for longer than a calibrated time.

| SYSTEM     | CODE TYPE           | SEVERITY | FIX DIFFICULTY | AREA                         |
|------------|---------------------|----------|----------------|------------------------------|
| Powertrain | Generic (all makes) | Medium   | Intermediate   | Computer and output circuits |

### Symptoms you may notice

- The check engine light is on, and often there are no other symptoms besides the warning light
- The cooling fan may not run at all, causing the engine temperature gauge to climb in traffic or at idle
- The fan may run constantly at full speed because the computer defaults to a failsafe strategy
- Air conditioning performance may drop because the condenser relies on the cooling fan for airflow
- In some vehicles the engine may enter a reduced-power or overheat protection mode if temperature rises
- A cooling fan relay may click repeatedly or feel warm as the computer retries the command

### Common causes, most likely first

- A failed cooling fan relay or a relay with burned contacts that cannot pass current to the fan
- An open or high-resistance wire in the fan control circuit, often from corrosion or a broken conductor near the fan connector
- A faulty cooling fan motor that draws excessive current or has an internal short, pulling the control circuit low
- A poor ground connection at the fan motor, chassis, or relay that raises resistance in the circuit
- A damaged or corroded fan connector with pushed-back pins or melted plastic from heat cycling
- A failed fan control module on vehicles that use a solid-state controller instead of a simple relay
- A driver circuit fault inside the engine control module, which is the least common but most expensive possibility



## How to diagnose and fix it

- 1 Clear the code and command the fan on with a scan tool to confirm whether the fan actually runs and whether the code returns immediately
- 2 Inspect the fan connector and relay socket for corrosion, melted pins, or loose terminals, and repair any damaged wiring
- 3 Test the fan relay by swapping it with an identical relay in the fuse box or by checking coil resistance and contact continuity
- 4 Measure voltage and ground at the fan motor connector while commanding the fan on to confirm power and ground are reaching the motor
- 5 Check the fan motor current draw with a clamp meter; a motor drawing well above specification is failing and can set this code
- 6 Perform a voltage drop test on the ground side of the fan circuit to find hidden resistance that a simple continuity test misses
- 7 If all external circuits and components test good, check the control module driver output with a scope or bidirectional test before condemning the module

## Why fan codes are often misdiagnosed

- A fan motor that is beginning to seize can draw high current and pull the control circuit low, so the relay and wiring get replaced when the motor is the real culprit
- Many vehicles set P0691 when the fan relay coil circuit is open, not when the fan itself has failed, so testing the relay control side is essential
- Some vehicles use a pulse-width-modulated fan controller, and a failed controller can mimic a wiring fault by holding the feedback signal low
- A weak battery or charging system fault can cause module voltage to sag during fan engagement and set this code intermittently
- The code can be stored by a brief intermittent fault, so a fan that works during a static test may still have a connector that opens when the engine bay heats up

## Can I keep driving with P0691?

You can usually drive short distances with the warning light on, but avoid heavy traffic, long idles, and towing because the fan may not run and the engine can overheat. If the temperature gauge rises above normal, pull over and shut the engine off to prevent damage.



## Tools that help

- OBD-II scan tool with bidirectional fan control capability
- Digital multimeter with voltage and resistance functions
- Clamp meter for measuring fan motor current draw
- Test light or fused jumper wire for circuit testing
- Relay puller and terminal pick set
- Wiring diagram for the specific vehicle

## Reading P0691

|           |                                                                      |
|-----------|----------------------------------------------------------------------|
| <b>P</b>  | Powertrain: engine, transmission and emissions.                      |
| <b>0</b>  | Generic (SAE) code: it means the same thing on every OBD-II vehicle. |
| <b>6</b>  | Computer and output circuits.                                        |
| <b>91</b> | The exact fault within that area.                                    |

## Often seen with

**P0480** Cooling Fan 1 Control Circuit Malfunction · **P0690** ECM/PCM Power Relay Sense Circuit High · **P0692** Fan 1 Control Circuit High · **P0693** Fan 2 Control Circuit Low · **P0694** Fan 2 Control Circuit High

## See it working

Watch the animated explainer [How a Radiator Fan Relay Circuit Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0691/>

