

GENERIC · POWERTRAIN

P0688

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0688

ECM/PCM Power Relay Sense Circuit /Open

P0688 indicates that the engine control module (ECM) or powertrain control module (PCM) has detected an open circuit in the power relay sense circuit, which is the feedback line that confirms the main relay is supplying power to the module. The computer expects a specific voltage on this sense wire when the relay is energized, and an open circuit means that voltage is missing or out of range.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Computer and output circuits

Symptoms you may notice

- Illuminated check engine light (malfunction indicator lamp) on the dashboard
- Engine may crank but fail to start, or start and then stall immediately
- Intermittent no-start condition, especially after the vehicle sits or in cold weather
- Rough running or reduced engine performance if the ECM/PCM loses power intermittently
- Often no symptoms besides the warning light, with the vehicle driving normally

Common causes, most likely first

- 1 Blown fuse in the ECM/PCM power circuit (often labeled EFI, EGI, or MAIN)
- 2 Defective ECM/PCM power relay (main relay) with burned contacts or a faulty coil
- 3 Open or damaged wire in the power relay sense circuit, including corroded or loose connectors
- 4 Poor ground connection at the ECM/PCM or at the relay mounting point
- 5 Faulty ECM/PCM itself, though this is less common and should be diagnosed last
- 6 Aftermarket alarm or remote start installation that tapped into the power relay circuit



How to diagnose and fix it

- 1 Check all fuses related to the ECM/PCM power circuit, including under-hood and under-dash boxes, and replace any blown fuse after identifying the cause
- 2 Inspect the ECM/PCM power relay by swapping it with an identical known-good relay and clearing the code to see if it returns
- 3 Perform a voltage drop test on the power relay sense circuit from the relay to the ECM/PCM to check for excessive resistance or an open
- 4 Check for loose, corroded, or backed-out terminals at the relay socket and at the ECM/PCM connector
- 5 Verify the ECM/PCM ground connections are clean and tight, and perform a voltage drop test on the ground circuit
- 6 If all wiring and relays test good, substitute a known-good ECM/PCM and recheck for the code before replacing the original module

Before you replace the ECM/PCM

- A loose or corroded battery terminal can cause intermittent power relay sense faults that mimic a failing ECM/PCM, so always start with battery and terminal condition.
- The power relay sense circuit often shares a fuse with other critical circuits, so a blown fuse may be caused by a short in an unrelated component on the same circuit.
- Aftermarket accessories wired into the fuse box or relay panel are a common cause of this code because they can backfeed voltage or create resistance on the sense line.
- The code can set intermittently due to temperature-related expansion of a marginal connection, so a wiggle test of the harness while monitoring live data is more reliable than a static inspection.
- Do not overlook the relay socket itself; repeated heating and cooling can cause the terminals to lose tension, creating an open circuit that only appears when the relay is energized.

Can I keep driving with P0688?

If the engine starts and runs normally, you can drive the vehicle to a repair shop, but avoid turning the engine off in a location where a no-start would be dangerous. If the engine cranks but does not start or stalls while driving, stop driving and have the vehicle towed to prevent a safety hazard.

Tools that help

- Digital multimeter with voltage and resistance measurement
- Test light or power probe
- Fuse puller and assortment of automotive fuses
- Socket set and screwdrivers for relay and panel access
- Wiring diagram for the specific vehicle
- OBD-II scan tool with live data capability



Reading P0688

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

Often seen with

P0685 ECM/PCM Power Relay Control Circuit Open · **P0686** ECM/PCM Power Relay Control Circuit Low · **P0687** ECM/PCM Power Relay Control Circuit High · **P0689** ECM/PCM Power Relay Sense Circuit Low · **P0690** ECM/PCM Power Relay Sense Circuit High

See it working

Watch the animated explainer [Car Relay Test Bench: Test 4-Pin and 5-Pin Relays](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0688/>

