

GENERIC · POWERTRAIN

P0690

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P0690

# ECM/PCM Power Relay Sense Circuit High

P0690 means the engine control module (ECM) or powertrain control module (PCM) has detected an abnormally high voltage on the power relay sense circuit, which is the feedback line that tells the computer whether its main power relay is supplying voltage. The computer expects a specific voltage range on this sense wire when the relay is commanded on, and a reading above that range sets this code.

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

## Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Intermittent no-start or crank-no-start condition, especially after the vehicle sits
- Engine may stall randomly or cut out while driving
- Electrical accessories or dashboard lights may flicker or behave erratically
- Multiple unrelated trouble codes stored in memory due to unstable module power
- Hard starting or long crank times when the relay sense circuit is faulted

## Common causes, most likely first

- 1 Faulty ECM/PCM power relay (main relay) with sticking or high-resistance contacts
- 2 Corroded, loose, or damaged battery positive terminal connections or main power feed
- 3 Open or high-resistance ground circuit at the relay or ECM/PCM mounting points
- 4 Damaged wiring harness in the power relay sense circuit, such as chafing or a broken wire
- 5 Poor connection at the ECM/PCM connector, including backed-out pins or corrosion
- 6 Failed ECM/PCM internal power supply or sense circuit
- 7 Aftermarket alarm or remote start installation tapping into the main relay circuit incorrectly



## How to diagnose and fix it

- 1 Verify battery state of charge and clean/tighten both battery terminals and the main ground connections
- 2 Inspect the ECM/PCM power relay and its socket for corrosion, burning, or loose pins; swap with a known-good identical relay if available
- 3 Check fuses and fusible links feeding the main relay and the ECM/PCM constant power circuits
- 4 Back-probe the power relay sense wire at the ECM/PCM connector and compare voltage with the relay commanded on and off
- 5 Perform a voltage drop test on the relay power feed and ground circuits under load to find high-resistance connections
- 6 Inspect the wiring harness between the relay and ECM/PCM for chafing, pinched wires, or corrosion, especially near the battery and underhood fuse box
- 7 If all external circuits test good, substitute a known-good ECM/PCM or perform a module reflash/programming per manufacturer procedure

## What the power relay sense circuit really does

- The power relay sense circuit is a feedback line, not the main power feed itself, so a high voltage reading often points to a relay that is stuck closed or a short to voltage rather than a dead relay.
- A weak or failing battery can cause this code because voltage spikes or unstable supply confuse the ECM/PCM's sense circuit, so always load-test the battery before condemning the module.
- Aftermarket accessories wired into the underhood fuse box, such as alarm systems or dash cams, frequently back-feed the sense circuit and set P0690 without any factory component being faulty.
- This code can be stored alongside communication codes (U-codes) because unstable module power disrupts the CAN bus, so diagnose the power relay circuit first before chasing network faults.
- Some vehicles set P0690 intermittently when the main relay contacts arc and stick, which may not show up during a quick voltage check; a relay that clicks does not guarantee clean contacts under load.

## Can I keep driving with P0690?

If the engine starts and runs normally, you can drive to a repair shop, but avoid long trips and keep electrical loads low. If the engine stalls, cranks without starting, or the warning light is accompanied by multiple electrical symptoms, stop driving and have the vehicle towed to prevent a no-start or safety risk.

## Tools that help

- Digital multimeter with back-probe pins
- Test light or load tester
- Battery load tester
- Relay puller and known-good identical relay
- Wiring diagram for the specific vehicle
- Scan tool capable of reading live data and clearing codes



### Reading P0690

- 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.
- 90** The exact fault within that area.

### Often seen with

**P0562** System Voltage Low · **P0685** ECM/PCM Power Relay Control Circuit Open · **P0686** ECM/PCM Power Relay Control Circuit Low · **P0687** ECM/PCM Power Relay Control Circuit High · **U0100** Lost Communication With ECM/PCM A

### 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/p0690/>

