



P1642 · GM

FC Relay 2 And 3 Control Circuit

P1642 on GM vehicles means the powertrain control module (PCM) has detected an abnormal condition in the control circuit for fuel control (FC) relay 2 and relay 3, which are used to manage power to the fuel pump and related fuel system components. The PCM monitors the relay control circuit and sets this code when the voltage on the circuit does not match the expected state, indicating an open, short, or faulty relay.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Medium	Intermediate	Computer and output circuits

Symptoms you may notice

- The check engine light or service vehicle soon light is illuminated.
- The engine may crank but not start, or may stall shortly after starting.
- Intermittent no-start conditions, especially in hot weather or after the vehicle sits.
- Rough running or loss of power if one relay fails and fuel delivery is compromised.
- Often no symptoms besides the warning light, as the vehicle may run normally on the remaining relay.
- Fuel pump may not prime when the key is turned to the on position.

Common causes, most likely first

- 1 Faulty fuel control relay 2 or relay 3 (most common).
- 2 Corroded, loose, or damaged wiring or connectors at the relays or PCM.
- 3 Open or short circuit in the control circuit between the PCM and the relays.
- 4 Failed PCM driver for the relay control circuit (less common).
- 5 Blown fuse or poor ground connection for the relay coil or contacts.
- 6 Water intrusion or corrosion in the underhood fuse/relay box.



How to diagnose and fix it

- 1 Check for any stored history codes and freeze frame data to confirm the fault conditions.
- 2 Inspect the fuel control relays 2 and 3, swap them with identical relays from the same box to see if the code changes.
- 3 Test the relay control circuit for continuity, shorts to ground, and shorts to voltage using a digital multimeter.
- 4 Check the underhood fuse/relay box for corrosion, water intrusion, and tightness of relay terminals.
- 5 Verify power and ground at the relay sockets with the key on and during cranking.
- 6 If the circuit and relays test good, check the PCM driver by backprobing the control wire and monitoring voltage changes when commanding the relay on and off with a scan tool.
- 7 Repair any wiring faults, replace faulty relays, or replace the PCM if the driver is confirmed failed, then clear codes and verify the repair.

Relay swap tricks and circuit checks

- A common misdiagnosis is replacing the fuel pump when the actual fault is a failed relay or corroded relay socket, so always test the control circuit first.
- The code can be set by a relay that tests good on a bench but fails under heat or load, so swapping relays with a known-good one is a quick and reliable test.
- Inspect the underhood fuse box for signs of water intrusion or green corrosion, as this is a frequent cause on older GM trucks and SUVs.
- The PCM driver for these relays can fail, but this is rare; confirm all wiring and relays are good before condemning the PCM.
- Related codes such as P0230, P0231, or P0232 may also be present, indicating fuel pump circuit issues that share components with the relay control circuit.

Can I keep driving with P1642?

If the vehicle starts and runs normally, you can drive it cautiously to a repair shop, but avoid long trips or situations where a stall could be dangerous. If the engine cranks but does not start or stalls frequently, do not drive and have the vehicle towed to prevent unsafe conditions.

Tools that help

- OBD-II scan tool with bidirectional control capability
- Digital multimeter
- Test light
- Relay puller or small flathead screwdriver
- Wiring diagram for the specific GM vehicle



Reading P1642

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (GM): its meaning depends on the make.
- 6** Computer and output circuits.
- 42** The exact fault within that area.

Often seen with

P1682 A/T FI Signal A High Input · **P1682** Metering Oil Pump Failure · **P1682** A/T FI Signal A High Input · **P1682** Ignition 1 Switch Circuit 2 · **P1682** Charging System Voltage Too Low · **P0230** Fuel Pump Primary Circuit Malfunction · **P0231** Fuel Pump Secondary Circuit Low · **P0232** Fuel Pump Secondary Circuit High · **P0562** System Voltage Low

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/gm-p1642/>

