

GENERIC · POWERTRAIN

P0890

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0890

TCM Power Relay Sense Circuit Low

P0890 indicates that the transmission control module (TCM) has detected a low voltage condition on the power relay sense circuit, which is the feedback line that confirms the relay is supplying power to the TCM. The TCM expects to see battery voltage on this circuit when the relay is commanded on, but instead it sees a voltage below the threshold, indicating a problem with the relay, its control circuit, or the wiring.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Transmission

Symptoms you may notice

- Illumination of the malfunction indicator lamp (MIL) on the dashboard.
- Transmission may enter limp mode, limiting gear selection or shifting harshly.
- Erratic or delayed shifting, or failure to shift at all.
- The engine may crank but not start if the TCM is not powered.
- Often no symptoms besides the warning light, especially if the fault is intermittent.

Common causes, most likely first

- 1 Faulty transmission control module (TCM) power relay, such as burned contacts or a stuck open coil.
- 2 Blown fuse or fusible link supplying power to the relay or TCM.
- 3 Corroded, loose, or damaged wiring or connectors in the relay sense circuit.
- 4 Poor ground connection for the relay or TCM, causing voltage drop.
- 5 Internal fault in the TCM causing it to misread the sense circuit voltage.
- 6 Water intrusion or physical damage to the wiring harness or relay box.



How to diagnose and fix it

- 1 Verify the battery is fully charged and in good condition, as low system voltage can set this code.
- 2 Check all fuses and relays related to the TCM power supply, replacing any that are blown or suspect.
- 3 Inspect the relay and its socket for corrosion, tightness, and signs of overheating; test the relay with a multimeter or swap with a known-good relay of the same type.
- 4 Measure voltage at the TCM power relay sense circuit with a multimeter, comparing to battery voltage; check for excessive voltage drop across the relay contacts and wiring.
- 5 Perform a voltage drop test on the ground circuit for the TCM and relay to ensure a clean, low-resistance path to the battery negative.
- 6 Inspect the wiring harness for chafing, corrosion, or loose pins, especially at connectors between the relay, fuse box, and TCM.
- 7 If all external circuits and components test good, follow the manufacturer's diagnostic flow chart for the TCM, which may involve checking for internal faults or reprogramming/replacing the TCM.

Relay Sense Circuit Checks Before TCM Replacement

- A weak or failing battery or charging system can cause this code because the TCM may not see enough voltage on the sense circuit during cranking or low-rpm operation.
- The relay sense circuit is often confused with the relay control circuit; the sense circuit is a feedback line, so a fault here does not always mean the relay itself is bad.
- Corrosion inside the underhood fuse box or relay center is a common hidden cause, especially in vehicles exposed to road salt or humid climates.
- After repairing the fault, the code may require several drive cycles to clear, and some vehicles need the TCM to relearn adaptive shift strategies.
- A faulty ignition switch or main power supply to the fuse box can mimic a relay sense circuit failure, so always verify power and ground at the fuse box first.

Can I keep driving with P0890?

If the vehicle drives normally with only the warning light on, you can drive it to a repair shop, but avoid long trips or heavy loads. If the transmission is in limp mode or shifting erratically, limit driving to a short distance to a safe location and arrange for a tow to prevent further damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Test light
- Fuse puller
- Relay puller
- Wiring diagram for the specific vehicle



Reading P0890

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

Often seen with

P0562 System Voltage Low · **P0880** TCM Power Input Signal · **P0882** TCM Power Input Signal Low · **P0891** TCM Power Relay Sense Circuit High · **P0892** TCM Power Relay Sense Circuit Intermittent

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/p0890/>

