

GM · POWERTRAIN

P1500

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1500 · GM

Starter Signal Circuit

P1500 on GM vehicles indicates that the powertrain control module (PCM) has detected an unexpected voltage condition on the starter signal circuit, typically a mismatch between the ignition switch crank position and the actual starter engagement. The PCM monitors this circuit to confirm that the starter solenoid is receiving the correct command during cranking, and it sets the code when the signal is missing, stuck, or implausible.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- The engine may crank but fail to start, or may not crank at all when the key is turned.
- The security or theft-deterrent light may illuminate or flash on the instrument cluster.
- Intermittent no-crank conditions, especially in cold weather or after the vehicle sits for extended periods.
- The starter may continue to run after the key is released, or may engage unexpectedly.
- Often no symptoms besides the warning light, with the vehicle starting and running normally.
- A no-start condition that occurs only when the transmission is in certain gears or the clutch is not depressed.

Common causes, most likely first

- 1 Faulty ignition switch or ignition lock cylinder not sending a clean crank signal to the PCM.
- 2 Damaged or corroded wiring in the starter signal circuit, including the purple wire between the ignition switch and the underhood fuse block.
- 3 Failed starter solenoid or starter motor drawing excessive current and feeding back a distorted signal.
- 4 Poor ground connection at the engine block or chassis, causing voltage drops that confuse the PCM.
- 5 Failed park/neutral position switch or clutch pedal position sensor on automatic or manual transmissions.
- 6 PCM internal fault or corrupted calibration affecting the starter signal monitoring logic.
- 7 Aftermarket alarm or remote start system improperly wired into the starter circuit.



How to diagnose and fix it

- 1 Connect a scan tool and record all stored codes, freeze-frame data, and verify battery voltage and cranking voltage are within specification.
- 2 Inspect the battery terminals, engine ground straps, and starter mounting bolts for corrosion or looseness, cleaning and tightening as needed.
- 3 Check the starter signal wire at the solenoid for voltage while cranking; compare with the PCM command using a bidirectional scan tool if available.
- 4 Test the ignition switch for continuity and voltage drop in the crank position, replacing it if the signal is erratic or missing.
- 5 Verify the park/neutral position switch or clutch pedal position sensor operation with a multimeter and adjust or replace if faulty.
- 6 Perform a voltage drop test on the starter circuit under load to identify excessive resistance in cables or connections.
- 7 If all inputs are correct, reprogram or replace the PCM only after confirming the starter signal circuit is intact and the starter itself is functioning properly.

Starter signal faults that fool good technicians

- A weak battery or failing starter can set P1500 without any wiring fault, because the PCM sees an implausible voltage drop during cranking and misinterprets it as a signal circuit problem.
- Aftermarket remote start or alarm systems spliced into the starter wire are a frequent cause of P1500 on older GM trucks and SUVs, and the code may not appear until months after installation.
- The ignition switch on many GM vehicles wears internally and can send a crank signal that is present but noisy, which the PCM flags as a starter signal circuit fault even though the engine starts fine.
- P1500 can be stored alongside transmission range switch codes when the park/neutral signal is intermittent, leading some technicians to replace the PCM unnecessarily.
- A loose or corroded ground at the engine block can cause P1500 only when the starter draws high current, so a simple static voltage check at the starter signal wire may pass while the fault remains.

Can I keep driving with P1500?

If the vehicle starts and runs normally, you can drive it to a repair shop, but avoid turning the engine off in a location where a no-start would be dangerous. If the engine will not crank or the starter runs continuously, stop driving immediately and have the vehicle towed.



Tools that help

- Scan tool with bidirectional control and live data capability
- Digital multimeter with voltage drop testing function
- Test light or logic probe
- Socket and wrench set for battery and starter connections
- Wiring diagram for the specific GM model and year

Reading P1500

P Powertrain: engine, transmission and emissions.

1 Manufacturer-specific code (GM): its meaning depends on the make.

5 Vehicle speed, idle control and auxiliary inputs.

00 The exact fault within that area.

Often seen with

P1626 Data Bus Drive Missing Command From M/T · **P1626** Anti-Theft Fuel Enable Circuit (Passkey) · **P1626** Voltage to Vehicle Load Control Module Circuit Not Detected · **P0335** Crankshaft Position Sensor A Circuit Malfunction · **P0615** Starter Relay Circuit · **P0705** Transmission Range Sensor Circuit Malfunction · **P0850** Park/Neutral Switch Input Circuit

See it working

Watch the animated explainer [How a Starter Motor Works: Pre-Engaged Starter](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1500/>

