

GM · POWERTRAIN

P1791

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1791 · GM

Transmission Control Module Loop

P1791 on GM vehicles means the Transmission Control Module (TCM) has detected a fault in its internal loop or communication circuit, often a failure of the TCM to properly process or transmit data. The computer sets this code when it sees an unexpected voltage or signal pattern within the TCM's own circuitry or its link to other modules.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	High	Professional	Transmission

Symptoms you may notice

- Illuminated Check Engine Light or Service Transmission message
- Transmission may default to limp mode, staying in one gear
- Harsh or delayed shifting
- No symptoms besides the warning light in some cases
- Speedometer or gear indicator may behave erratically
- Transmission may not engage any gear

Common causes, most likely first

- 1 Faulty Transmission Control Module (TCM) internal failure
- 2 Poor electrical connection at the TCM harness or ground
- 3 Damaged wiring between TCM and other modules (CAN bus issues)
- 4 Low or contaminated transmission fluid affecting internal sensors
- 5 Failed transmission internal mode switch or speed sensor
- 6 Corroded or damaged TCM connector pins
- 7 Software glitch requiring TCM reprogramming

How to diagnose and fix it

- 1 Scan all modules for related codes and record freeze frame data
- 2 Inspect TCM wiring harness and connectors for damage or corrosion
- 3 Check transmission fluid level and condition
- 4 Test TCM power and ground circuits with a multimeter
- 5 Perform a wiggle test on TCM connectors while monitoring live data
- 6 Reprogram or replace the TCM if internal fault is confirmed
- 7 Clear codes and perform a relearn drive cycle



TCM Loop Faults Often Misdiagnosed

- A weak battery or charging system issue can cause the TCM to set P1791 due to voltage spikes or drops, so always check battery health first.
- The code can be triggered by a faulty ignition switch or poor ground connection, not just the TCM itself.
- After replacing the TCM, a programming or relearn procedure is mandatory; skipping it leads to repeat codes and poor shifting.
- Intermittent P1791 often traces to chafed wiring near the transmission bell housing or exhaust heat damage.
- Some GM models require a software update to the TCM to correct false P1791 setting under certain conditions.

Can I keep driving with P1791?

If the transmission is in limp mode or shifting harshly, avoid driving except to a nearby repair shop. Continuing to drive with P1791 can cause further transmission damage and is unsafe if the vehicle loses power or gears.

Tools that help

- OBD-II scan tool with manufacturer-specific software
- Digital multimeter
- Wiring diagram for the specific GM model
- Test light
- TCM programming tool (if reprogramming)

Reading P1791

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (GM): its meaning depends on the make.
7	Transmission.
91	The exact fault within that area.

Often seen with

P0700 Transmission Control System Malfunction · **P0705** Transmission Range Sensor Circuit Malfunction · **P0715** Input/Turbine Speed Sensor Circuit Malfunction · **P0720** Output Speed Sensor Circuit Malfunction · **U0100** Lost Communication With ECM/PCM A



See it working

Watch the animated explainer [How an Automatic Transmission Works, Gear by Gear](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1791/>

