

GM · POWERTRAIN

P1825

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1825 · GM

Internal Mode Switch Illegal Range

P1825 on GM vehicles means the transmission control module (TCM) has detected an illegal combination of inputs from the internal mode switch (IMS), which is the range sensor mounted inside the transmission. The TCM expects the switch to report one valid gear range at a time, and when the electrical pattern does not match any legitimate position, it flags this code and may default to a limp-home strategy.

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

Symptoms you may notice

- The check engine light or transmission warning light is illuminated on the dashboard.
- The transmission may shift harshly or enter a limp-home mode with only one or two gears available.
- The gear indicator on the instrument cluster may flash, show the wrong range, or fail to display the selected gear.
- The engine may start in the wrong gear range or refuse to crank if the switch reports an invalid position.
- Often no symptoms besides the warning light, especially if the illegal range is intermittent and the TCM can still determine the gear.
- The vehicle may feel like it is starting in second or third gear, or the reverse lights may not work.

Common causes, most likely first

- A faulty internal mode switch (IMS) inside the transmission, worn contacts or a cracked housing causing an invalid resistance pattern.
- Damaged or chafed wiring between the IMS and the transmission control module, often near the transmission case connector or along the harness.
- Corroded or loose pins at the IMS connector or the TCM connector, creating intermittent open or short circuits.
- Transmission fluid contamination or debris on the switch contacts, which can bridge the internal contacts and produce an illegal range signal.
- A misadjusted or improperly installed IMS after a transmission repair, causing the switch to sit between detents.
- A failing transmission control module (TCM) that misinterprets a valid switch signal, though this is less common than switch or wiring faults.
- Internal transmission mechanical wear that prevents the manual valve and switch from aligning correctly, such as a worn detent lever or rooster comb.



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record the freeze-frame data for P1825 to see which range was reported when the fault set.
- 2 Inspect the IMS connector and the transmission case connector for corrosion, loose pins, or fluid intrusion, and clean or repair as needed.
- 3 Check the IMS wiring harness for chafing, opens, and shorts between the switch and the TCM, using a wiring diagram and a multimeter.
- 4 Test the internal mode switch with a multimeter by backprobing the connector and comparing the resistance or voltage pattern in each gear range against the GM service specification.
- 5 Remove and inspect the IMS for physical damage, contamination, or misalignment, and replace it if the electrical test does not match the specified pattern.
- 6 Verify the transmission fluid level and condition, and service the fluid if it is contaminated, since dirty fluid can affect switch operation.
- 7 Clear the codes and perform a road test through all gear ranges to confirm the repair, and recheck for any stored codes.

What the IMS illegal range really means

- An illegal range code does not always mean the switch itself has failed; a chafed wire in the harness can produce the same invalid pattern, so always test the circuit before replacing parts.
- The IMS is often called the transmission range sensor or PRNDL switch, and on many GM transmissions it is a sealed internal component that requires dropping the pan or valve body to access.
- Intermittent P1825 codes that appear only in wet weather or after a car wash often point to water intrusion at the transmission case connector rather than a failed switch.
- A low or contaminated transmission fluid level can cause the IMS to report an illegal range because the switch relies on clean fluid for proper contact operation and cooling.
- Some GM vehicles will set P1825 if the battery voltage is low during cranking, so always check the charging system and battery condition before condemning the switch.

Can I keep driving with P1825?

You can usually drive the vehicle to a repair shop, but avoid sustained highway speeds and heavy towing because the transmission may be in limp-home mode with reduced gear selection. If the vehicle refuses to start or the gear indicator is blank, stop driving and have it towed to prevent transmission damage.



Tools that help

- OBD-II scan tool with GM manufacturer-specific software
- Digital multimeter with backprobing pins
- GM service information wiring diagrams
- Transmission fluid level gauge and drain pan
- Socket set and torque wrench for switch replacement

Reading P1825

P Powertrain: engine, transmission and emissions.

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

8 Transmission.

25 The exact fault within that area.

Often seen with

P1815 Pressure Control Solenoid 1 Short To B+ · **P1810** ATF Pressure Manual Valve Position Switch Malfunction · **P1811** Long Shift / Maximum Adaptation Limit Reached · **P1815** Transmission Range Switch Start In Wrong Range · **P1810** TFP Valve Position Switch Circuit Transmission 4-Wheel Drive · **P1815** Transmission 4-Wheel Drive Mode Select Short Circuit To Grou · **P0705** Transmission Range Sensor Circuit Malfunction · **P0706** Transmission Range Sensor Circuit Range/Performance

See it working

Watch the animated explainer [Disc Brake Trainer: How Car Brakes Stop a Wheel](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1825/>

