

GENERIC · POWERTRAIN

P089B

OBD-II TROUBLE CODE

P089B

Gear Lever X Position Sensor 2 Circuit Range/Performance

P089B indicates that the powertrain control module (PCM) has detected an out-of-range or inconsistent signal from the second position sensor for the gear lever, which is used to confirm the selected gear. The PCM compares this sensor's voltage or pulse pattern against expected values and flags the code when the signal falls outside the valid range or does not correlate with the other gear lever sensor.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Transmission

Symptoms you may notice

- Illumination of the check engine light or service transmission message, often with no other noticeable symptoms
- Harsh or delayed gear engagement when moving the lever from park to drive or reverse
- Transmission may default to a limp mode, limiting gear selection or holding a single gear
- Incorrect or missing gear position display on the instrument cluster
- Inability to start the engine in park or neutral due to misreported lever position
- Occasional unintended movement or rollaway risk if the lever position is misread

Common causes, most likely first

- 1 Faulty gear lever position sensor 2, including internal wear or contamination
- 2 Damaged or corroded wiring harness or connector at the sensor or transmission
- 3 Loose or worn mechanical linkage between the gear lever and the sensor
- 4 Water intrusion or debris in the sensor housing causing intermittent signals
- 5 PCM software calibration issue or internal fault in the sensor signal circuit
- 6 Poor ground connection shared by the sensor or transmission control module



How to diagnose and fix it

- 1 Inspect the sensor connector and wiring for corrosion, chafing, or loose pins, and clean or repair as needed
- 2 Check the sensor mounting and linkage for play or misalignment, and adjust or replace worn components
- 3 Measure the sensor signal voltage or resistance with a multimeter and compare to manufacturer specifications
- 4 Perform a wiggle test on the harness while monitoring live data to identify intermittent faults
- 5 Replace the gear lever position sensor 2 if electrical tests confirm it is out of specification
- 6 Clear the code and perform a relearn or calibration procedure if required by the vehicle manufacturer
- 7 Verify repair by test-driving and confirming the code does not return and gear selection is correct

What most technicians overlook with P089B

- A misadjusted or worn shift cable can mimic a failed sensor, so always check linkage free play before condemning the sensor.
- The second position sensor often shares a reference voltage or ground with other sensors, so a fault elsewhere can pull the signal out of range.
- Intermittent codes that appear only in cold or wet weather frequently point to water intrusion in the connector rather than a failed sensor.
- Some vehicles require a relearn procedure after sensor replacement, and skipping it will cause the code to reset even with a new part.
- The PCM may set P089B when the lever is moved too slowly or erratically, so a one-time code after unusual operation may not indicate a hard fault.

Can I keep driving with P089B?

The vehicle may remain driveable, but the transmission could enter limp mode or fail to engage the correct gear, so avoid highway driving and seek diagnosis promptly. If the gear position display is erratic or the engine will not start in park, stop driving and have the vehicle towed.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Vehicle-specific service information for sensor specifications
- Socket and wrench set
- Contact cleaner and dielectric grease
- Jack and jack stands or ramps for under-vehicle access



Reading P089B

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 8** Transmission.
- 9B** The exact fault within that area.

Often seen with

P0705 Transmission Range Sensor Circuit Malfunction · **P0706** Transmission Range Sensor Circuit Range/Performance · **P0707** Transmission Range Sensor Circuit Low · **P089A** Gear Lever X Position Sensor 2 Circuit · **P089C** Gear Lever X Position Sensor 2 Circuit Low

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/p089b/>

