

GENERIC · POWERTRAIN

P089C

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P089C

Gear Lever X Position Sensor 2 Circuit Low

P089C indicates that the powertrain control module (PCM) has detected a low voltage signal on the circuit for the gear lever X position sensor 2, which is a secondary sensor used to confirm the selected gear range. The PCM expects a voltage within a specific range for the current gear, and a low reading means the signal wire is shorted to ground, the sensor has failed, or the circuit has excessive resistance.

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

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- The transmission may default to a limp mode, limiting gear selection or holding a single gear.
- Incorrect or delayed gear engagement when moving the lever from park to drive or reverse.
- The gear indicator on the instrument cluster may flash, show the wrong range, or remain blank.
- Difficulty starting the engine if the PCM cannot confirm the park or neutral position.
- Some vehicles may exhibit harsh shifting or a refusal to shift out of park.

Common causes, most likely first

- 1 A faulty gear lever X position sensor 2 that has internally shorted or failed.
- 2 A short to ground in the signal wire between the sensor and the PCM, often due to chafed insulation or pinched wiring.
- 3 Corroded, loose, or damaged electrical connectors at the sensor or PCM.
- 4 A poor ground connection for the sensor circuit, causing a low reference voltage.
- 5 Water intrusion into the sensor or connector, leading to corrosion and signal degradation.
- 6 A rare internal PCM fault affecting the sensor input circuit.



How to diagnose and fix it

- 1 Use a scan tool to retrieve all stored codes and freeze-frame data, then clear the code and test-drive to see if it returns.
- 2 Visually inspect the sensor, its wiring, and connectors for damage, corrosion, or loose pins, and repair as needed.
- 3 Measure the sensor's reference voltage and ground at the connector with a digital multimeter (DMM) to confirm proper supply.
- 4 Backprobe the signal wire at the sensor and at the PCM to check for a short to ground or excessive resistance, repairing the wire if faulty.
- 5 Test the sensor's resistance or voltage output through its full range of motion and compare to the manufacturer's specification, replacing the sensor if out of spec.
- 6 If the circuit and sensor test good, check for intermittent connections by wiggle-testing the harness while monitoring the sensor signal with a scan tool.
- 7 As a last resort, substitute a known-good PCM or reprogram the existing module only after confirming all other possibilities are eliminated.

Don't overlook the ground circuit

- A low signal code is frequently caused by a bad ground rather than a failed sensor, so always verify the sensor's ground circuit before condemning the sensor.
- The gear lever X position sensor 2 is often a redundant sensor, and its failure may not cause drivability issues, leading some to replace it unnecessarily when the code is set by a wiring fault.
- Water or debris intrusion into the sensor connector is a common cause on vehicles that see frequent exposure to road splash or off-road use, and it can mimic a sensor failure.
- After replacing the sensor, the PCM may require a relearn procedure for the gear range, so consult the service information to avoid a repeat code.
- A low voltage code can also be set by a weak battery or charging system issue that causes the PCM to see an out-of-range signal during cranking, so check the battery and charging system first.

Can I keep driving with P089C?

If the vehicle drives normally and the only symptom is the check engine light, you can drive cautiously to a repair shop, but avoid long trips or heavy loads. If the transmission is in limp mode, the gear indicator is flashing, or the engine will not start, stop driving and have the vehicle towed to prevent further damage or unsafe operation.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter (DMM)
- Backprobe pins or breakout box
- Vehicle-specific service information for wiring diagrams and sensor specifications
- Basic hand tools for trim and connector removal

Reading P089C

P	Powertrain: engine, transmission and emissions.
0	Generic (SAE) code: it means the same thing on every OBD-II vehicle.
8	Transmission.
9C	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 · **P089B** Gear Lever X Position Sensor 2 Circuit Range/Performance · **P089D** Gear Lever X Position Sensor 2 Circuit High

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/p089c/>

