

GENERIC · POWERTRAIN

**P2E10**

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P2E10

# Gear Selection Actuator Position Sensor Circuit

P2E10 indicates that the powertrain control module (PCM) has detected an abnormal signal from the gear selection actuator position sensor, which is responsible for reporting the actual position of the gear selector mechanism. The PCM compares this signal with the commanded gear and other inputs, and sets the code when the voltage or position reading falls outside the expected range or does not correlate with the intended gear.

SYSTEM

**Powertrain**

CODE TYPE

**Generic (all makes)**

SEVERITY

**Medium**

FIX DIFFICULTY

**Intermediate**

AREA

**Hybrid propulsion**

## Symptoms you may notice

- Illumination of the check engine light or service engine soon light
- Harsh or delayed gear engagement when shifting from park to drive or reverse
- Transmission stuck in a single gear or failing to shift properly
- Inability to select certain gears or the selector feeling unresponsive
- Often no symptoms besides the warning light, especially if the fault is intermittent

## Common causes, most likely first

- 1 Faulty gear selection actuator position sensor
- 2 Wiring damage such as chafed, corroded, or broken wires in the sensor circuit
- 3 Loose or corroded electrical connector at the sensor or PCM
- 4 Internal mechanical binding or wear in the gear selection actuator assembly
- 5 PCM software issue or internal fault in the sensor signal processing circuit
- 6 Contamination or debris interfering with the sensor's moving components



## How to diagnose and fix it

- 1 Perform a visual inspection of the sensor, connector, and wiring for obvious damage or corrosion
- 2 Use a scan tool to read live data from the gear selection actuator position sensor and compare it with the commanded gear
- 3 Check the sensor's reference voltage and ground circuits with a digital multimeter to rule out wiring faults
- 4 Inspect the actuator mechanism for mechanical binding or improper adjustment that could skew the sensor reading
- 5 If the sensor signal is erratic or out of range, replace the gear selection actuator position sensor
- 6 Clear the diagnostic trouble codes and perform a relearn or calibration procedure if required by the manufacturer
- 7 Verify the repair by test-driving the vehicle and confirming the code does not return

## Before replacing the gear position sensor

- A loose or corroded connector at the sensor is a frequent culprit that mimics a failed sensor, so always check terminal tension and cleanliness first.
- The sensor may test fine statically but fail only when the actuator moves, so live data during gear selection is more revealing than a simple resistance check.
- Mechanical wear in the selector mechanism can cause the sensor to report an implausible position even when the sensor itself is good, leading to misdiagnosis.
- Some vehicles require a relearn procedure after sensor replacement, and skipping it will cause the code to reset immediately.
- The PCM may set this code due to a communication fault on the controller area network (CAN) bus rather than a direct sensor failure, so check for related communication codes.

## Can I keep driving with P2E10?

If the vehicle drives and shifts normally, you can drive cautiously to a repair shop, but avoid aggressive acceleration or heavy loads. If the transmission is stuck in gear or shifting erratically, stop driving and have the vehicle towed to prevent further damage.

## Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire terminal pick and electrical contact cleaner
- Vehicle-specific service information for sensor testing and relearn procedures
- Basic hand tools for connector and sensor access



## Reading P2E10

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- E** Hybrid propulsion.
- 10** 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 · **P0708** Transmission Range Sensor Circuit High · **P0919** Gear Shift Position Control Error

## 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/p2e10/>

