

GENERIC · POWERTRAIN

**P2E13**

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P2E13

# Gear Selection Actuator Position Sensor Circuit High

P2E13 indicates that the powertrain control module (PCM) has detected an abnormally high voltage on the signal circuit of the gear selection actuator position sensor, which is used to confirm the actual gear engaged by the actuator. The PCM expects the sensor voltage to stay within a calibrated range, and a high reading typically means the signal circuit is shorted to voltage, the sensor ground is open, or the sensor itself has failed.

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 transmission message
- Transmission may default to a limp-home mode with limited gear selection
- Harsh or delayed shifts, or refusal to engage certain gears
- Inability to select manual or sport mode, if equipped
- 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 Open or high-resistance ground circuit to the sensor
- 3 Short to voltage on the sensor signal circuit
- 4 Damaged or corroded wiring harness or connector at the sensor or PCM
- 5 Internal PCM driver or signal circuit fault
- 6 Mechanical binding or misalignment of the gear selection actuator affecting sensor reading



## How to diagnose and fix it

- 1 Connect a scan tool and record all stored and pending codes, then clear codes and road test to see if P2E13 returns
- 2 Inspect the sensor connector and wiring for corrosion, chafing, or loose pins, and repair as needed
- 3 Measure reference voltage and ground at the sensor connector with the key on, engine off, and compare to manufacturer specifications
- 4 Back-probe the sensor signal wire and check for a short to voltage by wiggle-testing the harness while monitoring the scan tool data
- 5 If wiring and grounds are good, remove the sensor and inspect the actuator for binding or damage that could skew the sensor reading
- 6 Replace the gear selection actuator position sensor if it fails resistance or voltage output tests, then clear codes and verify proper operation
- 7 If the fault persists after sensor replacement, test the signal circuit from the PCM to the sensor for continuity and shorts, and check for a faulty PCM

## What a high sensor voltage really tells you

- A high voltage reading on the sensor signal circuit often points to a poor ground rather than a failed sensor, because an open ground causes the signal voltage to float upward.
- Intermittent P2E13 codes that appear only on rough roads or after engine wash frequently trace to a chafed wire in the harness near the transmission, not the sensor itself.
- Some vehicles use a shared ground for multiple transmission sensors, so a single corroded ground point can set several related codes at once and mislead you into replacing good components.
- The gear selection actuator position sensor may be integrated into the actuator assembly on certain designs, making it necessary to replace the entire unit rather than just the sensor.
- A binding actuator mechanism can cause the sensor to report an out-of-range high voltage even when the electrical circuit is intact, so always inspect for mechanical freedom of movement.

## Can I keep driving with P2E13?

If the transmission has entered limp-home mode or is shifting erratically, avoid highway driving and seek service promptly; if the only symptom is the warning light and the vehicle drives normally, you can drive cautiously to a repair shop but should not ignore the code.

## Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Back-probe kit or breakout box
- Wiring diagram for the specific vehicle
- Basic hand tools for connector and sensor access



### Reading P2E13

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- E** Hybrid propulsion.
- 13** The exact fault within that area.

### Often seen with

**P2E10** Gear Selection Actuator Position Sensor Circuit · **P2E11** Gear Selection Actuator Position Sensor Range/Performance · **P2E12** Gear Selection Actuator Position Sensor Circuit Low · **P2E14** Gear Selection Actuator Position Sensor Circuit Intermittent · **P2E15** Intermediate Shaft Selection Actuator Position Sensor Circuit

### 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/p2e13/>

