

GENERIC · POWERTRAIN

P0920

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0920

Gear Shift Forward Actuator Circuit/Open

P0920 indicates that the transmission control module (TCM) has detected an open circuit or abnormal voltage on the forward gear shift actuator circuit, which is responsible for mechanically engaging forward gears in an automatic transmission. The TCM monitors the actuator's electrical path and sets this code when the expected current or voltage is outside the normal range, typically indicating a break in the wiring or a failed actuator.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Transmission

Symptoms you may notice

- Illumination of the check engine light or transmission warning light
- Transmission may fail to engage forward gears or may slip when accelerating
- Harsh or delayed shifting, or the transmission may default to a limp mode
- Often no symptoms besides the warning light, especially if the fault is intermittent
- The vehicle may not move when shifted into drive, or may hesitate before engaging
- Unusual noises or clunking from the transmission when selecting gears

Common causes, most likely first

- 1 Open or damaged wiring in the forward shift actuator circuit, such as a broken wire or corroded connector
- 2 Failed forward shift actuator solenoid or motor
- 3 Poor electrical connection at the TCM or actuator harness
- 4 Blown fuse or relay supplying power to the actuator circuit
- 5 Internal transmission mechanical binding causing the actuator to overheat or fail
- 6 Faulty TCM driver circuit for the actuator



How to diagnose and fix it

- 1 Check for any related technical service bulletins (TSBs) or recalls for the vehicle's transmission system
- 2 Inspect the actuator circuit wiring and connectors for signs of damage, corrosion, or loose pins
- 3 Test the actuator with a multimeter to check for open or short circuits, and verify resistance against specifications
- 4 Check the fuse and relay that supply power to the actuator circuit and replace if necessary
- 5 Perform a voltage drop test on the actuator circuit to identify excessive resistance
- 6 If the actuator tests faulty, replace it and clear the code, then test-drive to verify the repair
- 7 If the circuit and actuator are good, diagnose the TCM and its programming, and repair or replace as needed

Before you replace the shift actuator

- A loose or corroded ground connection for the transmission can mimic an open actuator circuit and set P0920, so always check grounds before condemning the actuator.
- Intermittent P0920 codes often result from a chafed wire harness near hot or moving components, so a wiggle test while monitoring live data can reveal the fault.
- Some vehicles use a single actuator for multiple gears, and a mechanical binding inside the transmission can cause the actuator to draw excessive current and set an open circuit code.
- The TCM may set P0920 if the actuator circuit is open only under certain temperature conditions, so testing when the fault is active is critical.
- Replacing the actuator without addressing a damaged connector or wire is a common misdiagnosis that leads to repeat failures.

Can I keep driving with P0920?

If the transmission fails to engage forward gears or the vehicle enters limp mode, do not continue driving, as this can be unsafe. If the only symptom is a warning light and the vehicle drives normally, you can drive cautiously to a repair shop, but avoid heavy acceleration or towing.

Tools that help

- OBD-II scanner with live data and bidirectional control
- Digital multimeter
- Wiring diagram and service information
- Test light
- Socket set and trim removal tools



Reading P0920

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

Often seen with

P0700 Transmission Control System Malfunction · **P0706** Transmission Range Sensor Circuit Range/Performance · **P0919** Gear Shift Position Control Error · **P0921** Gear Shift Forward Actuator Circuit Range/Performance · **P0922** Gear Shift Forward Actuator 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/p0920/>

