

GENERIC · POWERTRAIN

P0720

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0720

Output Speed Sensor Circuit Malfunction

P0720 means the powertrain control module (PCM) has detected a problem with the output speed sensor circuit, which reports how fast the transmission output shaft is turning. The PCM compares this signal to other speed inputs and sets the code when the voltage, signal, or rationality check falls outside the expected range.

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

Symptoms you may notice

- The check engine light or transmission warning light is illuminated, often with no other symptoms.
- The transmission may shift harshly or at the wrong time because the PCM loses accurate output speed data.
- The speedometer may read zero, jump erratically, or be inaccurate if the output speed sensor also feeds the speedometer.
- The transmission may enter limp mode, staying in a single gear or refusing to shift.
- Cruise control may stop working because it relies on vehicle speed information.
- Some vehicles may exhibit a no-start condition if the PCM uses output speed for anti-theft or starting logic.

Common causes, most likely first

- Faulty output speed sensor (also called the vehicle speed sensor on some models) due to internal failure or contamination.
- Damaged, corroded, or disconnected wiring or connector at the output speed sensor.
- Metal debris or shavings on the sensor tip, often from transmission wear, disrupting the magnetic signal.
- Failed or damaged sensor reluctor wheel or tone ring inside the transmission.
- PCM software issue or internal fault in the speed sensor input circuit.
- Low or contaminated transmission fluid causing sensor signal irregularities.
- Aftermarket electrical accessories or poor grounds interfering with the sensor signal.



How to diagnose and fix it

- 1 Use an OBD-II scan tool to read the code and check for related transmission codes; record freeze-frame data if available.
- 2 Inspect the output speed sensor and its connector for physical damage, corrosion, or loose pins; clean or repair as needed.
- 3 Check the sensor resistance and signal output with a multimeter or oscilloscope according to the manufacturer's specifications.
- 4 Remove the sensor and inspect the tip for metal shavings or debris; clean it and check the transmission fluid condition.
- 5 Verify wiring continuity and voltage drops between the sensor and PCM; repair any open or short circuits.
- 6 If the sensor and wiring test good, check the reluctor wheel for damage through the sensor hole or by removing the sensor.
- 7 Replace the output speed sensor if faulty, clear the code, and test-drive the vehicle to confirm the repair.

Output speed sensor diagnosis pitfalls

- A P0720 can be set by a simple loose connector or chafed wire that only acts up when the engine bay is hot or wet, so always wiggle-test the harness while watching live data.
- Metal debris on the sensor tip is a common cause that many technicians miss; it often indicates internal transmission wear, so cleaning the sensor without addressing the source will lead to a repeat failure.
- On some vehicles, the output speed sensor signal is shared with the speedometer and cruise control, so a faulty sensor can cause those systems to act up without any transmission symptoms.
- A weak battery or poor ground can cause false speed sensor codes because the PCM's reference voltage becomes unstable; check charging system health before condemning the sensor.
- Aftermarket transmission fluid or incorrect fluid level can alter the magnetic signal from the reluctor wheel, so always verify fluid condition and level before replacing parts.

Can I keep driving with P0720?

You can usually drive the vehicle with a P0720, but expect harsh shifting or limp mode, and avoid sustained high-speed driving or heavy towing until the fault is repaired. If the transmission is stuck in limp mode or the speedometer is dead, get it diagnosed promptly to prevent further transmission damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Oscilloscope (optional but helpful for signal analysis)
- Socket set and basic hand tools
- Contact cleaner and dielectric grease
- Vehicle service information for wiring diagrams and sensor specifications



Reading P0720

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

Often seen with

P0500 Vehicle Speed Sensor Malfunction · **P0715** Input/Turbine Speed Sensor Circuit Malfunction · **P0721** Output Speed Sensor Range/Performance · **P0722** Output Speed Sensor Circuit No Signal · **P0730** Incorrect Gear Ratio

See it working

Watch the animated explainer [How a Car Thermostat Works: Wax Pellet and Cooling Fan](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0720/>

