



P1501 · GM

Vehicle Speed Sensor Circuit Intermittent

P1501 on GM vehicles indicates that the powertrain control module (PCM) has detected an intermittent fault in the vehicle speed sensor (VSS) circuit, meaning the signal from the sensor drops out or becomes erratic rather than failing completely. The PCM monitors the VSS signal and sets this code when the input is inconsistent with other speed-related data, such as engine RPM and transmission output speed.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Medium	Intermediate	Vehicle speed, idle control and auxiliary inputs

Symptoms you may notice

- The speedometer needle may fluctuate, drop to zero, or behave erratically while driving.
- The anti-lock brake system (ABS) warning light may illuminate because the ABS module also relies on vehicle speed data.
- The transmission may shift harshly or at the wrong time due to missing speed input.
- Cruise control may disengage or fail to engage.
- Often no symptoms besides the warning light, especially if the intermittent fault is brief.

Common causes, most likely first

- 1 Damaged or corroded wiring or connectors at the vehicle speed sensor (VSS) or along the signal circuit.
- 2 A failing VSS that produces an intermittent signal due to internal wear or heat sensitivity.
- 3 Poor ground connection for the VSS or PCM, causing voltage reference fluctuations.
- 4 Debris or metallic particles on the VSS tip or reluctor wheel, disrupting the magnetic pickup.
- 5 A faulty PCM, though this is rare and should be considered only after all other causes are ruled out.
- 6 Aftermarket electrical accessories or poor splices tapping into the VSS circuit, introducing noise.



How to diagnose and fix it

- 1 Inspect the VSS and its connector for physical damage, corrosion, or loose pins, and clean or repair as needed.
- 2 Check the VSS signal with a scan tool or oscilloscope to confirm intermittent dropout while wiggling the harness.
- 3 Perform a voltage drop test on the ground and power circuits to the VSS to rule out high resistance.
- 4 Remove the VSS and inspect the tip and reluctor wheel for metal shavings or damage, cleaning or replacing if necessary.
- 5 Replace the VSS if testing confirms an intermittent internal fault, then clear the code and verify the repair with a road test.
- 6 If the sensor and wiring are good, check for intermittent PCM connector issues or software updates before condemning the PCM.

Intermittent VSS faults that fool technicians

- A common misdiagnosis is replacing the VSS when the real problem is a chafed wire hidden inside the loom, often near the transmission or exhaust where heat and vibration damage insulation.
- The VSS signal is shared with the ABS and cruise control systems, so a fault can set related codes in those modules even though P1501 is stored in the PCM.
- Intermittent faults often appear only under specific conditions such as certain temperatures, road speeds, or when the harness is flexed, so a simple static test may pass.
- Aftermarket stereos or alarm systems tapped into the VSS wire for speed-sensitive volume or navigation can introduce interference that mimics a sensor failure.
- A weak or failing vehicle battery or charging system can cause voltage spikes that disrupt the VSS signal, so always check battery health and grounds first.

Can I keep driving with P1501?

You can usually drive with P1501, but be aware that the speedometer and transmission shifting may be erratic, and ABS or cruise control may be disabled. Avoid sustained high-speed driving or heavy towing until the fault is repaired, as incorrect speed data can affect shift quality and safety systems.

Tools that help

- Scan tool with live data capability
- Digital multimeter
- Oscilloscope (for signal analysis)
- Wire piercing probes or backprobe pins
- Service information for wiring diagrams and VSS location



Reading P1501

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (GM): its meaning depends on the make.
- 5** Vehicle speed, idle control and auxiliary inputs.
- 01** The exact fault within that area.

Often seen with

C0035 Left Front Wheel Speed Sensor Circuit Range/Performance · **P0500** Vehicle Speed Sensor Malfunction
 · **P0501** Vehicle Speed Sensor Range/Performance · **P0502** Vehicle Speed Sensor Low Input · **P0720** Output Speed Sensor Circuit Malfunction

See it working

Watch the animated explainer [Turbocharger Trainer: Boost, Wastegate and Intercooler](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1501/>

