

P0728: ENGINE SPEED INPUT CIRCUIT INTERMITTENT

OVERVIEW

Severity	:	<div><div></div></div> High
DIY Difficulty Level	:	<div><div>Intermediate</div></div>
Repair Cost	:	\$250-\$300
Can I Still Drive?	:	Yes (Short-term only)

What Does The P0728 Code Mean?

If your vehicle has a stored code P0728, it means that the powertrain control module (PCM) has detected an intermittent input voltage signal from the engine speed sensor. The engine speed input sensor can sometimes be called the transmission input speed sensor or just the input speed sensor. Either a mechanical problem or an electrical problem may contribute to a stored code P0728.

Most engine speed input sensors are inserted through an opening in the transmission case, near the front of the input shaft. The sensor is usually fitted with a rubber O-ring (around the outside) so that it makes a seal with the opening in the transmission case. You should take care when removing the sensor from the housing as hot transmission fluid may be harmful. A suitable container should be placed under the opening in the transmission to catch any fluid that may leak once the sensor is loosened and eventually removed. You should make this a habit whenever you plan to remove any sensor from the transmission (whether you plan to test or replace it).

A stationary mounted electromagnetic hall-effect sensor is at the heart of the modern engine input speed sensor circuit. The sensor is mounted so that a toothed reluctor ring (attached to the input shaft of the transmission) passes in very close proximity to its magnetic tip, as it spins. The reluctor ring spins along with the transmission input shaft.

The raised areas of the teeth on the reluctor ring electromagnetically complete the engine speed input circuit and the recessed areas between the teeth interrupt the circuit. A waveform pattern is

formed by these rapid electromagnetic completions and interruptions of the circuit. The waveform patterns represent frequency and voltage fluctuations that the PCM recognizes as engine input speed.

A code P0728 will be stored, and a malfunction indicator lamp may be illuminated, if the PCM detects an intermittent or erratic signal from the engine speed input sensor for a set period of time and under certain circumstances. Keep in mind that the transmission control module (TCM) or PCM may enter limp-in mode when a P0728 is stored.

Related engine speed input circuit engine codes include:

- [P0725](#) – Engine Speed input Circuit Malfunction
- [P0726](#) – Engine Speed Input Circuit Range/Performance
- [P0727](#) – Engine Speed Input Circuit No Signal

What Are The Symptoms Of The P0728 Code?

Symptoms may include:

- Erratic or inoperative speedometer/odometer
- Automatic transmissions may shift harshly (limp-in mode)
- Transmission fails to shift or shifts erratically
- Inoperative or incorrect tachometer
- Transmission slippage or delayed engagement
- Additional transmission input/output speed codes may be stored

What Are The Potential Causes Of The P0728 Code?

Possible causes for this P0728 code include:

- Open or shorted wiring and/or connectors in the engine speed input circuit
- Excessive metal deposits on the magnetic tip of the sensor
- Defective engine speed input sensor or transmission output speed sensor
- Damaged or worn engine speed sensor reluctor ring
- Mechanical transmission failure which results in transmission/clutch slippage

How Can You Fix The P0728 Code?

You will need access to a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a reliable vehicle information source, to diagnose a stored code P0728 properly.

I like to check the condition and level of the transmission fluid before diagnosing an automatic transmission related code (anything in the P0700s).

Step 1 – Checking Automatic Transmission Fluid Level and Condition

Utilizing your vehicle information source, find the proper method for checking the transmission fluid level. While most OBD-II equipped vehicles have automatic transmission dipsticks/tubes, others do not. If the fluid level is not within specifications, inspect the transmission housing, lines, and cooler for leaks. After any leaks are repaired, refill the transmission according to manufacturer's specs and recheck to make sure that no more leaks are present.

Pay particular attention to the odor and condition of the transmission fluid. If the fluid smells excessively burnt, appears extremely black, or has a heavy metallic hue, it is safe to suspect that the transmission has incurred catastrophic mechanical failure. If this is the case, you may want to remove the transmission pan and check for excessive debris such as clutch material, metal, parts, etc. If the pan has excessive debris, removal of the transmission and an overhaul (with a new torque converter) will likely be required. With no more leaks present and the transmission full of the recommended fluid, you are ready to visually inspect wiring and connectors for signs of corrosion, overheating, or other damage. Make repairs as needed.

Step 2 – Using the Scanner Effectively

If there are no visibly damaged wiring harnesses or connectors, and the transmission is filled to the correct level with the recommended fluid, connect the scanner to the vehicle diagnostic port and retrieve all stored codes and freeze frame data. Writing this information down may prove helpful as the diagnosis moves forward.

Should the P0728 be reset, reconnect the scanner to the vehicle diagnostic port. Now, carefully monitor the data display screen while test driving the vehicle. Narrow the scanner data display to include only pertinent data and focus on engine input speed. If it fluctuates inexplicably or varies greatly from engine RPM, suspect a defective engine input speed sensor or a damaged/worn reluctor ring.

Step 3 – Testing the Engine Speed Input Sensor

After unplugging the electrical connector from the engine speed input sensor, consult your vehicle information source and follow testing recommendations (using the DVOM) to test the sensor. The engine input speed sensor is defective if it does not fall within specs. If it is within specs, go to the next step.

Step 4 – Testing the Engine Speed Input Sensor Signal/Circuit

Reconnect the engine speed input sensor and test the sensor signal by connecting the test leads (of the DVOM) to the signal wire and the sensor ground wire right behind the sensor connector. Use your vehicle information source and follow manufacturer's specifications while carefully looking for

glitches/spikes in sensor signal voltage with the engine running and the transmission in park or neutral. If the sensor signal is acceptable, use the DVOM to test system circuits between the sensor connector and the PCM connector (see note at the bottom of the page).

Additional diagnostic notes:

- An oscilloscope can also be used for observing live data from the sensor in question
- Unplug electrical connectors from related controllers before using the DVOM to check resistance and continuity of system circuits

Severity Description

A stored code P0728 should be treated as severe due to the level of transmission damage and/or drivability issues that may result.

Reference Sources

[P0728 Engine Speed Input Circuit Intermittent](#), OBD-Codes.