

GENERIC · POWERTRAIN

P0738

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0738

TCM Engine Speed Output Circuit Low

P0738 means the transmission control module (TCM) has detected a low-voltage condition on the circuit that carries engine speed information from the engine control module (ECM) to the TCM. The TCM uses this signal to coordinate shift timing and torque converter lockup, and when the circuit voltage falls below the expected threshold, the TCM sets this code and may default to a limp-home strategy.

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

Symptoms you may notice

- Illumination of the check engine light or transmission warning light, often with no other noticeable symptoms
- Harsh or delayed gear shifts as the TCM loses engine speed reference
- The transmission may enter limp mode, sticking in a single gear or refusing to downshift
- Torque converter clutch may fail to engage or may engage abruptly
- Poor fuel economy or elevated engine RPM at highway speeds due to shift strategy changes
- In some vehicles, the engine may stall or idle poorly if the TCM shares the signal with other systems

Common causes, most likely first

- 1 Damaged or chafed wiring in the engine speed signal circuit between the ECM and TCM
- 2 Corroded, loose, or pushed-back pins at the ECM or TCM connector
- 3 Failed engine speed sensor (crankshaft position sensor) or its wiring, causing a weak or missing signal
- 4 Internal fault in the TCM's input processing circuit
- 5 Internal fault in the ECM's output driver for the engine speed signal
- 6 Electrical interference or a short to ground on the signal wire
- 7 Poor ground connection shared by the ECM or TCM, causing reference voltage drop



How to diagnose and fix it

- 1 Connect a scan tool and verify P0738 is current, then check for related codes in the ECM and TCM to confirm the fault path
- 2 Inspect the engine speed signal wiring between the ECM and TCM for chafing, corrosion, or loose connectors, repairing as needed
- 3 Measure resistance and voltage on the signal circuit with a digital multimeter, comparing to manufacturer specifications
- 4 Test the crankshaft position sensor output with an oscilloscope to confirm a clean, consistent waveform
- 5 Check and clean the ECM and TCM ground connections, verifying less than 0.1 volt drop under load
- 6 If the circuit and sensor test good, substitute a known-good TCM or ECM to isolate an internal fault, following proper relearn procedures
- 7 After repair, clear codes and perform a road test with the scan tool monitoring engine speed data to confirm the code does not return

Why this code often misleads diag

- A failing crankshaft position sensor can set P0738 without ever setting a crankshaft sensor code, because the TCM sees the weak signal first and flags the circuit as low.
- Many technicians replace the TCM only to find a corroded connector pin at the ECM was the real cause, so always perform a pin drag test and voltage drop check before condemning a module.
- The engine speed signal is often shared with the speedometer, tachometer, and cruise control, so intermittent dash gauge behavior can be an early clue that points to this circuit.
- Aftermarket electrical accessories or a poor ground from a recent stereo or alarm install can introduce noise that mimics a low signal, so ask about recent work before diving into diagnostics.
- On some vehicles, a weak battery or charging system fault can cause the TCM to misread the engine speed signal as low, so always verify battery voltage and alternator output first.

Can I keep driving with P0738?

You can usually drive the vehicle to a repair shop, but avoid heavy acceleration, towing, or highway merging because the transmission may shift harshly or enter limp mode without warning. If the vehicle stalls or refuses to move, stop driving and have it towed.

Tools that help

- OBD-II scan tool with live data and bidirectional controls
- Digital multimeter with min/max and duty cycle functions
- Oscilloscope for waveform analysis of the engine speed signal
- Wiring diagram and connector pinout for the specific vehicle
- Terminal test kit with pin drag gauges and back-probe adapters



Reading P0738

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

Often seen with

P0335 Crankshaft Position Sensor A Circuit Malfunction · **P0336** Crankshaft Position Sensor A Circuit Range/Performance · **P0725** Engine Speed Input Circuit Malfunction · **P0730** Incorrect Gear Ratio · **U0100** Lost Communication With ECM/PCM A

See it working

Watch the animated explainer [Four-Stroke Engine Notebook: The Otto Cycle Explained](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0738/>

