P0780: SHIFT MALFUNCTION

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$200-$500**
Can I Still Drive?	:	No

What Does The P0780 Code Mean?

In my own personal experience, when a code P0780 is stored, it means that the powertrain control module (PCM) has detected a problem with automatic transmission shifting. This code may be caused by either a mechanical or an electronic malfunction but is limited to vehicles with automatic transmissions.

Automatic transmissions in OBD-II equipped vehicles are controlled by the PCM or a stand-alone transmission control module (TCM). Input signals from an array of engine and transmission sensors are used by the transmission controller to calculate transmission shift strategy. Electronic solenoid valves are then activated by the controller, allowing high pressure fluid to flow into the appropriate hydraulic circuit (in the valve body) and permit the transmission to up or down shift as required.

A powerful pump (integrated into the transmission housing and driven by the engine) is used to create the hydraulic pressure needed to accomplish smooth and efficient shifting functions. Since varying degrees of hydraulic pressure are required at different RPM levels and engine loads, the transmission controller regulates pressure via an electronic pressure regulator. The transmission pressure sensor and the transmission temperature sensor help the controller to monitor hydraulic pressure and make the necessary adjustments.

The transmission controller is programmed to compare input signals from the input speed sensor and output speed sensor to determine whether the transmission is shifting efficiently. If the PCM detects that the transmission is not shifting properly, a P0780 code will be stored and a malfunction

indicator lamp (MIL) may be illuminated. On some models, this type of code will require multiple drive cycles in order for the MIL to be illuminated. In this case, the code may initially be exhibited as a pending code.

What Are The Symptoms Of The P0780 Code?

Symptoms of a P0780 code may include:

- Erratic transmission shift patterns
- Delayed transmission engagement
- Harsh transmission shifts (especially if the controller has been placed in limp-in mode)
- Transmission slippage
- Whining noise from the transmission pump

What Are The Potential Causes Of The P0780 Code?

Potential causes for this code to set are:

- Shorted or open circuits in the transmission control harness
- Low transmission fluid
- Outdated or burnt transmission fluid
- Defective shift solenoid/s
- Faulty input or output speed sensors
- Bad electronic pressure regulator
- Failed transmission pump
- Mechanical failure; including torque converter failure, clutch failure, or internal component wear/breakage
- A defective PCM or a PCM programming error

How Can You Fix The P0780 Code?

You will need a diagnostic scanner, a digital volt/ohmmeter (DVOM), a transmission pressure gauge, and a vehicle service manual (or All Data DIY) to diagnose a code P0780.

Step 1

A careful visual inspection of the transmission and all related wiring harnesses is the best place to begin your diagnosis of this code. Pay particular attention to wiring that is routed near hot exhaust components and sharp edges.

Keep in mind that a portion of the transmission control harness is located inside the transmission case. You may choose to wait and see if you must enter the transmission housing (for other purposes) to inspect this part of the harness. Interior transmission harnesses are prone to failure

because of the harsh temperatures and sharp edges found inside of the automatic transmission.

Step 2

Connect the scanner to the vehicle diagnostic connector and retrieve the stored codes. Write the codes down (along with any related freeze frame data) and then clear them from the PCM memory.

Step 3

Since this code may be caused by either an electronic or mechanical malfunction, you will also want to inspect the transmission, transmission cooler, and transmission cooling lines for signs of leakage. If the transmission is low on fluid, it will cause the transmission to slip, fail to shift properly, and experience delayed engagement.

Either of these conditions may contribute to this code being stored. If the transmission is slipping and there is delayed engagement (with the fluid level normal), remove the dipstick (if applicable) and see if the fluid smells and looks burnt. If the fluid appears to be burnt, suspect mechanical transmission failure that will require a rebuild, with a new torque converter and cooler.

If the transmission fluid is significantly low (more than 2-quarts), you will need to locate the leak and repair it, Refill the transmission with the recommended fluid and test drive the vehicle to see if the problem persists and the code is reset. If the code is reset, use the transmission pressure gauge to check pump pressure. If the pump has been operated without enough fluid, it could have been damaged creating a low pressure condition that will also require a transmission overhaul.

If symptoms are limited to failed shift function, suspect a defective wiring harness or shift solenoid. Follow manufacturer's recommendations for testing transmission control wiring and shift solenoids.

Additional diagnostic notes:

- Some models will require that all shift solenoids be replaced at once. If this applies to your vehicle, don't attempt to pinpoint which shift solenoid is faulty, just replace the solenoid bundle
- Often times transmissions are rebuilt when an electrical malfunction is the cause of a P0780 being stored

Severity Description

A P0780 transmission shift malfunction code should be addressed as urgent. A minor condition could morph into a catastrophic one if left unattended for an extended period of time.

Reference Sources

P0780 Shift Malfunction, OBD-Codes.