P0787: SHIFT TIMING SOLENOID A LOW

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$75-$450**
Can I Still Drive?	:	No

What Does The P0787 Code Mean?

The shift timing solenoid is one of many components that allow an automatic transmission to shift seamlessly according to your driving needs. The TCM (Transmission Control Module) monitors and controls the solenoids functionality.

The solenoids main purpose is to control hydraulic (ATF:Automatic Transmission Fluid) flow internally to assist in shifting the transmission. Essentially these solenoids are electro-mechanical “pistons”.

Most times, their are many shift timing solenoids within the system so you may be able to refer to the letter included in the code to pinpoint which solenoid you are working with depending on your particular make and model.

The ECM (Engine Control Module) illuminates the MIL (Malfunction Indicator Lamp) with P0787 and associated codes (P0785, P0786, P0788, and P0789) when it monitors one or more issues within the shift timing solenoid or it’s circuit. The circuit includes the TCM which depending on the model could be in a volatile location.

Their are many possible causes here so it could be either be mechanical and/or electrical depending on the code and if any others are active. Automatic transmissions are intricately designed systems and in my opinion, the layman or average DIYer should leave it to the pros here especially when it comes to internal transmission work.

The code P0787 Shift Timing Solenoid A Low is set when the ECM (Engine Control Module) and/or the TCM (Transmission Control Module) detects a specific low electrical value within the shift timing solenoid A circuit.

What Are The Symptoms Of The P0787 Code?

Symptoms of a P0787 trouble code may include:

- Stuck in gears
- Erratic shifting
- Transmission slippage
- Hard or harsh shifting
- Inefficient shift timing
- Poor driveability
- Poor acceleration
- Overall poor performance

What Are The Potential Causes Of The P0787 Code?

Causes for this P0787 transmission code may include:

- Damaged or defective shift timing solenoid
- Dirty Automatic Transmission Fluid (ATF)
- Low ATF
- Obstruction in ATF passages
- Broken or damaged wiring harness
- TCM issue
- ECM issue
- Pin/connector problem (corrosion, melting, broken lock tab etc.)

How Can You Fix The P0787 Code?

Prior to beginning the troubleshooting process for any malfunction you should research the Technical Service Bulletins (TSB's) for the specific vehicle by year, model and transmission. This step can save you time and money during diagnosis and repair!

Basic Step #1

First thing i would do here is check the ATF (Automatic Transmission Fluid). If the fluid is dirty, smells burnt, overfilled and/or abnormal color it may be time to change your fluid.

If you've owned your vehicle for 30,000 to 60,000 miles (50,000 to 100,000 kilometers) and don't remember ever changing your fluid or have any records of it, not only may this be your problem,

but it may of been avoided by simply following your maintenance schedule. Just food for thought! Old fluid is dirty fluid, dirty fluid can cause blockages and blockages can cause this code so change your fluid!

NOTE: Follow manufacturers recommended steps when checking ATF. This simple step can vary a meaningful amount between makes and models.

Basic Step #2

Fluid is good, code is still active and symptoms present? Depending on your specific model, the shift solenoid may be accessible externally. If this is the case, inspect the solenoid and its harness/connectors for any signs of damage. Repair/replace any issues as necessary. Its a good time to have a peak for any leaks as well!

TECH TIP: If your shift solenoid is internal, I don't recommend you attempt to access it, work around it for now. Exhaust other avenues, internal transmission diagnosing and repairing should be left to a certified technician.

NOTE: The TCM and harness' involved in this circuit may be subject to harsh road conditions so make sure everything is intact and the way it should be.

Basic Step #3

Test the shift timing solenoid. You may be able to test the solenoid itself multiple ways. One test may include a resistance test where you use a multimeter to measure the resistance between the pins in the solenoid to verify to a degree its electrical integrity. Another may include manually applying voltage to the solenoid to verify its mechanical operation. Either one should be specified in your manufacturers service manual/technical literature.

Basic Step #4

Test the circuit from the TCM. You may be able to verify the functionality of the sensor and its circuit by performing the same tests as above but from the pins at the TCM and/or ECM. This is a good trick to verify not only the integrity of the solenoid but the electrical integrity of the circuit as well.

Severity Description

I would say this code is moderately severe. If this issue is left unrectified for too long you could cause some serious harm to the transmission not to mention your pocketbook.

Reference Sources

P0787 Shift Timing Solenoid A Low, OBD-Codes.