

<b>DTC</b>	<b>P0756</b>	<b>Shift Solenoid "B" Performance (Shift Solenoid Valve S2)</b>
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## SYSTEM DESCRIPTION

The ECM uses signals from the output shaft speed sensor and input speed sensor to detect the actual gear position (1st, 2nd, 3rd or 4th gear).

Then the ECM compares the actual gear with the shift schedule in the ECM memory to detect mechanical problems of the shift solenoid valves, valve body or automatic transmission (clutch, brake or gear, etc.).

DTC No.	DTC Detection Conditions	Trouble Areas
P0756	S2 stuck OFF malfunction* <sup>2</sup> : Shifting to 1st and 4th gears is impossible. The ECM determines that there is a malfunction when the following conditions are met: (a) When the ECM directs the gearshift to switch to 2nd gear, the actual gear is shifted to 1st. (b) When the ECM directs the gearshift to switch to 3rd gear, the actual gear is shifted to 4th.	<ul style="list-style-type: none"> <li>• Shift solenoid valve S2 is stuck open</li> <li>• Valve body is blocked</li> <li>• Shift solenoid valve S2</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> </ul>
P0756	S2 stuck ON malfunction* <sup>1</sup> : The vehicle starts in 2nd gear and shifting to 3rd gear is impossible. The ECM determines that there is a malfunction when the following conditions are met: (a) When the ECM directs the gearshift to switch to 1st gear, the actual gear is shifted to 2nd. (b) When the ECM directs the gearshift to switch to 4th gear, the actual gear is shifted to 3rd.	<ul style="list-style-type: none"> <li>• Shift solenoid valve S2 is stuck closed</li> <li>• Valve body is blocked</li> <li>• Shift solenoid valve S2</li> <li>• Automatic transmission (clutch, brake or gear, etc.)</li> </ul>

### HINT:

- Gear positions in the event of a solenoid valve mechanical problem:

Gearshift controlled by ECM	1st	2nd	3rd	4th
*1: Actual gear position under S2 stuck ON malfunction	2nd	2nd	3rd	3rd
*2: Actual gear position under S2 stuck OFF malfunction	1st	1st	4th	4th

## MONITOR DESCRIPTION

This DTC indicates "stuck ON malfunction" or "stuck OFF malfunction" of the shift solenoid valve S1.

The ECM controls the gearshifts by turning the shift solenoid valves "ON/OFF". When the gear position directed by the ECM and the actual gear position do not match, the ECM illuminates the MIL and stores the DTC.

## MONITOR STRATEGY

Related DTCs	P0756: Shift solenoid valve S2/OFF malfunction Shift solenoid valve S2/ON malfunction
Required sensors/Components	Shift solenoid valve S2
Frequency of operation	Continuous
Duration	1.0 second
MIL operation	2 driving cycles
Sequence of operation	None

## TYPICAL ENABLING CONDITIONS

The following conditions are common to all OFF malfunctions (A), (B), (C) and ON malfunctions (A), (B), (C).

The monitor will run whenever the following DTCs are not present.	P0115 - P0118 (ECT sensor) P0125 (Insufficient ECT for closed loop) P0500 (VSS) P0748 - P0798 (Trans solenoid (range))
Shift solenoid "A" (S1) circuit Shift solenoid "B" (S2) circuit ECT (Engine Coolant Temperature) sensor circuit Input speed sensor circuit Output speed sensor circuit	There is no malfunction in the sensor circuits shown on the left
Transmission shift position	"D"
ECT (Engine Coolant Temperature)	40°C (104°F) or more
Spark advance from max. retard timing by knock control	0°CA or more
Engine	Running

### OFF malfunction (A)

ECM selected gear	2nd
Vehicle speed	6.2 mph (10 km/h) or more
Throttle valve opening angle	6.5 % or more at engine speed of 2,000 rpm (Conditions vary with engine speed)

### OFF malfunction (B)

ECM selected gear	3rd
Vehicle speed	6.2 mph (10 km/h) or more
Throttle valve opening angle	6.5 % or more at engine speed of 2,000 rpm (Conditions vary with engine speed)

### OFF malfunction (C)

ECM selected gear	4th
Vehicle speed	6.2 mph (10 km/h) or more
Throttle valve opening angle	6.5 % or more at engine speed of 2,000 rpm (Conditions vary with engine speed)

### ON malfunction (A)

ECM selected gear	1st
Vehicle speed	6.2 mph (10 km/h) or more and Less than 24.8 mph (40 km/h)
Throttle valve opening angle	6.5 % or more at engine speed of 2,000 rpm (Conditions vary with engine speed)

### ON malfunction (B)

ECM selected gear	3rd
Vehicle speed	6.2 mph (10 km/h) or more
Throttle valve opening angle	6.5 % or more at engine speed of 2,000 rpm (Conditions vary with engine speed)

### ON malfunction (C)

ECM selected gear	4th
Vehicle speed	6.2 mph (10 km/h) or more
Throttle valve opening angle	6.5 % or more at engine speed of 2,000 rpm (Conditions vary with engine speed)

## TYPICAL MALFUNCTION THRESHOLDS

### [OFF malfunction]

All of the following conditions are met: OFF malfunctions (A), (B) and (C)

2 detections are necessary in 1 driving cycle.

1st detection: Temporary flag ON

2nd detection: Pending fault code ON

#### OFF malfunction (A)

Input speed/Output speed (NC0/SP2)	2.63 or more and 3.20 or less (This means actual gear is 1st)
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#### OFF malfunction (B)

Input speed/Output speed (NC0/SP2)	0.00 or more and 0.22 or less (This means actual gear is 4th)
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#### OFF malfunction (C)

Input speed/Output speed (NC0/SP2)	0.00 or more and 0.22 or less (This means actual gear is 4th)
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### [ON malfunction]

All of the following conditions are met: ON malfunctions (A), (B) and (C)

#### ON malfunction (A)

Input speed/Output speed (NC0/SP2)	1.40 or more and 1.67 or less (This means actual gear is 2nd)
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#### ON malfunction (B)

Input speed/Output speed (NC0/SP2)	0.93 or more and 1.07 or less (This means actual gear is 3rd)
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#### ON malfunction (C)

Input speed/Output speed (NC0/SP2)	0.93 or more and 1.07 or less (This means actual gear is 3rd)
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## 1. ACTIVE TEST

### HINT:

Performing the ACTIVE TEST using the intelligent tester allows components, such as the relay, VSV, and actuator, to be operated without removing any parts. Performing the ACTIVE TEST as the first step of troubleshooting is one method of shortening labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

- (a) Warm up the engine.
- (b) Turn the ignition switch off.
- (c) Connect the intelligent tester together with the CAN VIM (controller area network vehicle interface module) to the DLC3.
- (d) Turn the ignition switch to the ON position.
- (e) Push the "ON" button of the tester.
- (f) Select the items "DIAGNOSIS/ ENHANCED OBD II/ ACTIVE TEST/ SHIFT".
- (g) According to the display on the tester, perform the "ACTIVE TEST".

### HINT:

While driving, the shift position can be changed with the intelligent tester.

Comparing the shift position directed by the ACTIVE TEST with the actual shift position enables you to confirm the problem (See page [AT-27](#)).

Item	Test Details	Diagnostic Note
SHIFT	[Test Details] Operate the shift solenoid valve and set each shift position by manually. [Vehicle Condition] <ul style="list-style-type: none"> <li>• IDL: ON</li> <li>• Less than 31 mph (50 km/h)</li> </ul> [Others] <ul style="list-style-type: none"> <li>• Press "→" button: Shift up</li> <li>• Press "←" button: Shift down</li> </ul>	Possible to check the operation of the shift solenoid valves.

**HINT:**

- This test can be conducted when the vehicle speed is 31 mph (50 km/h) or less.
- The 3rd to 4th up-shifting must be performed with the accelerator pedal released.
- The 4th to 3rd down-shifting must be performed with the accelerator pedal released.
- Do not operate the accelerator pedal for at least 2 seconds after shifting and do not shift successively.
- The shift position directed by the ECM is shown in the DATA LIST/ SHIFT display on the intelligent tester.
- The shift solenoid valve S2 is turned on/off normally when the shift lever is in the D position:

Gearshift controlled by ECM	1st	2nd	3rd	4th
Shift solenoid valve S2	OFF	ON	ON	OFF

**1 CHECK ANY OTHER DTCS OUTPUT (IN ADDITION TO DTC P0756)**

- Connect the intelligent tester to the DLC3.
- Turn the ignition switch to the ON position and push the intelligent tester main switch ON.
- Select the items "DIAGNOSIS/ ENHANCED OBD II/ DTC INFO/ CURRENT CODES".
- Read the DTCs using the intelligent tester.

**Result**

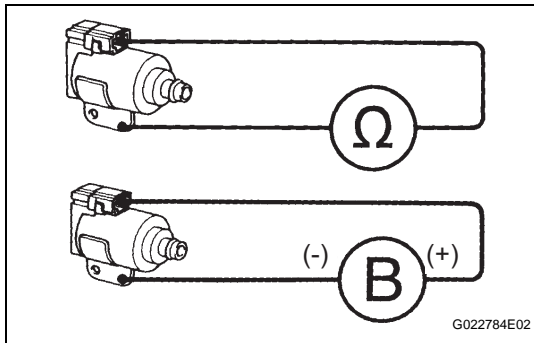
Display (DTC Output)	Proceed to
Only "P0756" is output	A
"P0756" and other DTCs	B

**HINT:**

If any codes besides "P0756" are output, perform troubleshooting for those DTCs first.

**B** **GO TO DTC CHART**

**A**

**2 INSPECT SHIFT SOLENOID VALVE S2**

- (a) Remove the shift solenoid valve S2.  
 (b) Measure the resistance.

**Standard resistance**

Tester Connection	Specified Condition
Solenoid Connector (S2) - Solenoid Body (S2)	11 to 15 $\Omega$ at 20°C (68°F)

- (c) Connect positive (+) lead to the terminal of the solenoid connector, negative (-) lead to the solenoid body.

**OK:**

The solenoid makes an operating sound.

**NG****REPLACE SHIFT SOLENOID VALVE S2****OK****3 INSPECT TRANSMISSION VALVE BODY ASSEMBLY****OK:**

There are no foreign objects on any valves and they operate smoothly.

**NG****REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY****OK****REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY**