

<b>DTC</b>	<b>P0776</b>	<b>Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)</b>
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## DESCRIPTION

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The ECM uses signals from the vehicle speed sensor to detect the actual gear position (1st, 2nd, 3rd, 4th or 5th 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 transaxle (clutch, brake, gear, etc.).

DTC No.	DTC Detection Condition	Trouble Area
P0776	Gear required by the ECM does not match the actual gear when driving (2 trip detection logic)	<ul style="list-style-type: none"> <li>• Shift solenoid valve SL2 remains open or closed</li> <li>• Valve body is blocked</li> <li>• Shift solenoid valve SL2</li> <li>• Automatic transaxle (clutch, brake, gear, etc.)</li> <li>• ECM</li> </ul>

## MONITOR DESCRIPTION

The ECM commands gear shifts by turning the shift solenoid valves ON/OFF. According to the input shaft revolution, intermediate (counter) shaft revolution and output shaft revolution, the ECM detects the actual gear position (1st, 2nd, 3rd, 4th or 5th gear position). When the gear position commanded by the ECM and the actual gear position are not the same, the ECM illuminates the MIL and stores the DTC.

## MONITOR STRATEGY

Related DTCs	P0776: Shift solenoid valve SL2/ON malfunction Shift solenoid valve SL2/OFF malfunction
Required sensors/Components	Shift solenoid valve SL2, Speed sensor (NT), Speed sensor (NC), Crankshaft position sensor (NE)
Frequency of operation	Continuous
Duration	OFF malfunction (A) 1.8 sec. OFF malfunction (B) and (C) 0.8 sec. ON malfunction (A) and (B) 0.8 sec. ON malfunction (C) 0.4 sec.
MIL operation	2 driving cycles
Sequence of operation	None

## TYPICAL ENABLING CONDITIONS

### All:

The monitor will run whenever these DTCs are not present.	P0115 - P0118 (ECT sensor) P0125 (Insufficient ECT for closed loop) P0500 (VSS) P0748, P0778, P0798 (Shift solenoid valve (range))
ECT (Engine coolant temperature)	10°C (50°F) or more
Transmission range	"D"
ATF temperature	-20°C (-4°F) or more
ATF temperature sensor circuit	Not circuit malfunction
ECT sensor circuit	Not circuit malfunction
Turbine speed sensor circuit	Not circuit malfunction
Intermediate shaft speed sensor circuit	Not circuit malfunction

Output speed sensor circuit	Not circuit malfunction
Shift solenoid valve SL1 circuit	Not circuit malfunction
Shift solenoid valve SL2 circuit	Not circuit malfunction
Shift solenoid valve SL3 circuit	Not circuit malfunction
Shift solenoid valve S4 circuit	Not circuit malfunction
Shift solenoid valve SR circuit	Not circuit malfunction
Shift solenoid valve DSL circuit	Not circuit malfunction
Electronic throttle system	Not circuit malfunction

**OFF malfunction (A):**

ECM lock-up command	OFF
Vehicle speed	Less than 60 km/h (37.3 mph)
Throttle valve opening angle	7% or more

**OFF malfunction (B):**

ECM selected gear	1st
Vehicle speed	Less than 40 km/h (24.9 mph)
Throttle valve opening angle	4.5% or more at engine speed 1,900 rpm (Varies with engine speed)

**OFF malfunction (C):**

ECM selected gear	3rd
Throttle valve opening angle	4.5% or more at engine speed 1,900 rpm (Varies with engine speed)

**OFF malfunction (D):**

Duration time from shift command of ECM	15 sec. or more
ECM selected gear	4th or 5th

**ON malfunction (A):**

ECM selected gear	1st
Vehicle speed	Less than 40 km/h (24.9 mph)
Throttle valve opening angle	4.5% or more at engine speed 1,900 rpm (Varies with engine speed)

**ON malfunction (B):**

ECM selected gear	3rd
Throttle valve opening angle	5.0% or more at output speed 1,400 rpm (Varies with engine speed)
Malfunction of pressure control solenoid "B" (SL2) and "C" (SL3)	Not detected

**ON malfunction (C):**

Throttle valve opening angle	7.0% or more at output speed 1,050 rpm (Varies with engine speed)
Malfunction of pressure control solenoid "B" (SL2)	Not detected

**TYPICAL MALFUNCTION THRESHOLDS**

Either of the following conditions is met: OFF malfunction (A), (B), (C) and (D), or ON malfunction (A), (B) and (C)

**OFF malfunction (A):**

Difference between engine speed and input (turbine) speed	Less than 35 rpm
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**OFF malfunction (B) and (C):**

Input (turbine) speed/Intermediate shaft speed	0.93 to 1.07
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**OFF malfunction (D):**

Input (turbine) speed/Intermediate shaft speed	0.64 to 0.74
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**ON malfunction (A):**

Input (turbine) speed/Intermediate shaft speed	2.72 to 2.86
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**ON malfunction (B):**

Input (turbine) speed - Intermediate shaft speed	700 rpm or more
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**ON malfunction (C):**

Input (turbine) speed - Intermediate shaft speed	Less than -500 rpm or 700 rpm or more
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**INSPECTION PROCEDURE**

**HINT:**

Performing the intelligent tester's ACTIVE TEST allows relay, VSV, actuator and other items to be operated without removing any parts. Performing the ACTIVE TEST early in troubleshooting is one way to save time.

The DATA LIST can be displayed during the ACTIVE TEST.

1. Warm up the engine.
2. Turn the ignition switch OFF.
3. Connect the intelligent tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
4. Turn the ignition switch ON and turn the tester ON.
5. Enter the following menus: DIAGNOSIS / ENHANCED OBD II / ACTIVE TEST.
6. Follow the instructions on the tester and perform the ACTIVE TEST.

**HINT:**

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

Comparing the shift position commanded by the ACTIVE TEST with the actual shift position enables you to confirm the problem (see page AX-35).

**ECM:**

Item	Test Details	Diagnostic Note
SHIFT	[Test Details] Operate the shift solenoid valve and set each shift lever position by yourself [Vehicle Condition] <ul style="list-style-type: none"> <li>• IDL: ON</li> <li>• 50 km/h (31 mph) or less</li> </ul> [Other information] <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 50 km/h (31 mph) or less.
- The shift position commanded by the ECM is shown in the DATA LIST/SHIFT display on the tester.

<b>1</b>	<b>CHECK OTHER DTC OUTPUT (IN ADDITION TO DTC P0776)</b>
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- (a) Connect the intelligent tester to the CAN VIM. Then connect the CAN VIM to the DLC3.
- (b) Turn the ignition switch ON and turn the tester ON.
- (c) Enter the following menus: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
- (d) Read the DTCs using the tester.

**Result**

Display (DTC output)	Proceed to
Only P0776 is output	A
P0776 and other DTCs are output	B

**HINT:**

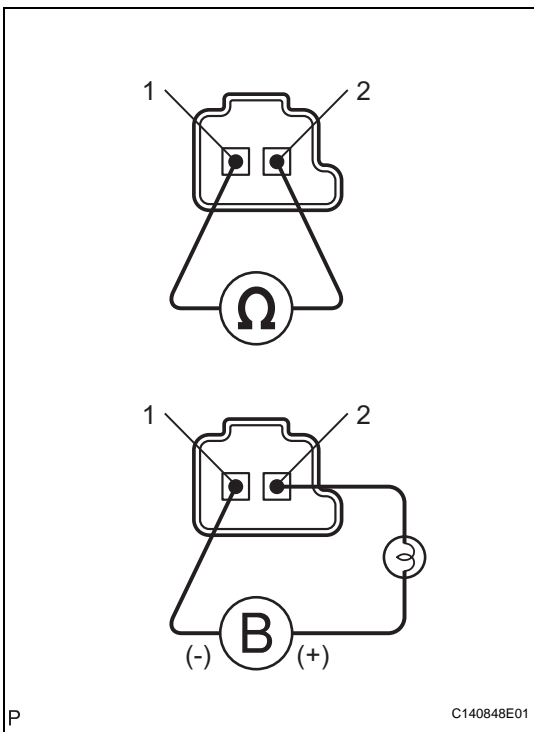
If any other codes besides P0776 are output, perform troubleshooting for those DTCs first.

**AX**

**B** → **GO TO DTC CHART**

**A**

**2 INSPECT SHIFT SOLENOID VALVE SL2**



- (a) Remove the shift solenoid valve SL2.
- (b) Measure the resistance of the solenoid valve.  
**Standard resistance:**  
**5.0 to 5.6 Ω at 20°C (68°F)**
- (c) Connect the battery's positive (+) lead with a 21 W bulb to terminal 2 and the negative (-) lead to terminal 1 of the solenoid valve connector. Then check that the valve moves and makes an operating noise.

**OK:**

**Valve moves and makes operating noise.**

**NG** → **REPLACE SHIFT SOLENOID VALVE SL2**

**OK**

**3 INSPECT TRANSMISSION VALVE BODY ASSEMBLY**

- (a) Check the transmission valve body assembly.

**OK:**

**There are no foreign objects on each valve.**

**NG** → **REPAIR TRANSMISSION VALVE BODY ASSEMBLY**

**OK**

**4 INSPECT TORQUE CONVERTER CLUTCH ASSEMBLY**

(a) Check the torque converter clutch assembly (see page [AX-179](#)).

**OK:**

The torque converter clutch operates normally.

**NG**

**REPLACE TORQUE CONVERTER CLUTCH ASSEMBLY**

**OK**

**REPAIR OR REPLACE AUTOMATIC TRANSAXLE ASSEMBLY**

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