

**DTC P0766 Shift Solenoid "D" Performance (Shift Solenoid Valve S4)****DTC P0776 Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)**for Preparation [Click here](#)**DESCRIPTION**

The ECM uses signals from the output shaft speed sensor and input speed sensor to detect the actual gear position (1st, 2nd, 3rd, 4th, 5th or 6th 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 and automatic transmission (clutch, brake, gear, etc.).

DTC Code	DTC Detection Condition	Trouble Area
P0766	<p>S4 stuck OFF malfunction or brake control valve malfunction*1: Shifting to 5th and 6th gears is impossible. The ECM determines there is a malfunction when the following conditions are both met (2-trip detection logic*2, 1-trip detection logic*3):</p> <p>(a) When the ECM directs the transmission to switch to 5th gear, the actual gear is shifted to 4th. (b) When the ECM directs the transmission to switch to 6th gear, the actual gear is shifted to 4th.</p>	<ul style="list-style-type: none"> <li>Shift solenoid valve S4 remains closed</li> <li>Shift solenoid valve SLT remains open or closed</li> <li>Valve body is blocked (brake control valve)</li> <li>Automatic transmission (clutch, brake, gear, etc.)</li> </ul>
P0776	<p>SL2 stuck ON malfunction or brake control valve malfunction*1: Shifting to 5th and 6th gears is impossible. The ECM determines there is a malfunction when the following conditions are both met (2-trip detection logic):</p> <p>(a) When the ECM directs the transmission to switch to 5th gear, the actual gear is shifted to 4th. (b) When the ECM directs the transmission to switch to 6th gear, the actual gear is shifted to 4th.</p>	<ul style="list-style-type: none"> <li>Shift solenoid valve SL2 remains closed</li> <li>Shift solenoid valve SLT remains open or closed</li> <li>Valve body is blocked (brake control valve)</li> <li>Automatic transmission (clutch, brake, gear, etc.)</li> </ul>

**HINT:**

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

ECM gear shift command	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under malfunction	1st	2nd	3rd	4th	4th	4th

- Gear position during fail-safe operation:**  
**If any malfunction is detected, the ECM enters fail-safe mode and performs gear shifts as shown in the table below.**

Gear position under normal conditions	1st	2nd	3rd	4th	5th	6th
*1: Actual gear position under fail-safe mode	1st	2nd	3rd	3rd	3rd	3rd

\*2: w/ OBD

\*3: w/o OBD

**MONITOR DESCRIPTION**

This DTC indicates a "stuck OFF malfunction" of shift solenoid valve S4, a "stuck ON malfunction" of shift solenoid valve SL2, or a brake control valve malfunction. The ECM commands gear shifts by turning the shift solenoid valves ON/OFF. 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 DTCs.

**INSPECTION PROCEDURE****ACTIVE TEST****HINT:**

Using the intelligent tester to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Warm up the engine.
- Turn the engine switch off.
- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the intelligent tester on.
- Enter the following menus: Powertrain / Engine and ECT / Active Test.
- According to the display on the tester, perform the Active Test.

**HINT:**

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

Comparing the shift position commanded by the Active Test with the actual shift position enables you to confirm the problem ([Click here](#)).

### Engine and ECT

Tester Display	Test Part	Control Range	Diagnostic Note
Control the Shift Position	Operate shift solenoid valves and set each shift position	<ul style="list-style-type: none"> <li>Press "→" button: Shift up</li> <li>Press "←" button: Shift down</li> </ul>	Possible to check operation of the shift solenoid valves. [Vehicle Condition] 50 km/h (30 mph) or less

### HINT:

- This test can be conducted when the vehicle speed is 50 km/h (30 mph) or less.
- The 4th to 5th and 5th to 6th up-shifts must be performed with the accelerator pedal released.
- The 6th to 5th and 5th to 4th down-shifts 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 commanded by the ECM is shown in the Data List display on the tester.
- Shift solenoid valves S4 and SL2 turn ON/OFF normally when the shift lever is in D.

ECM gear shift command	1st	2nd	3rd	4th	5th	6th
Shift solenoid valve S4	OFF	OFF	OFF	OFF	ON	ON
Shift solenoid valve SL2	ON	ON	ON	ON	OFF	OFF

### 1.CHECK DTC OUTPUT (IN ADDITION TO DTCS P0766 AND P0776)

- Connect the intelligent tester to the DLC3.
- Turn the engine switch on (IG).
- Turn the intelligent tester on.
- Enter the following menus: Powertrain / Engine and ECT / DTC.
- Read the DTCs using the tester.

### Result

Result	Proceed to
Only P0766 and P0776 are output	A
P0766, P0776 and other DTCs are output	B

### HINT:

If any other codes besides P0766 and P0776 are output, perform troubleshooting for those DTCs first.

**B**

GO TO DTC CHART ([Click here](#))

**A**

### 2.PERFORM ACTIVE TEST USING INTELLIGENT TESTER (SHIFT SOLENOID VALVE SLT)

### NOTICE:

- Perform the test while the ATF temperature is between 50 and 80°C (122 and 176°F).
- Be careful to prevent the hose of SST from interfering with the exhaust pipe.
- Perform the test with the A/C off.

### HINT:

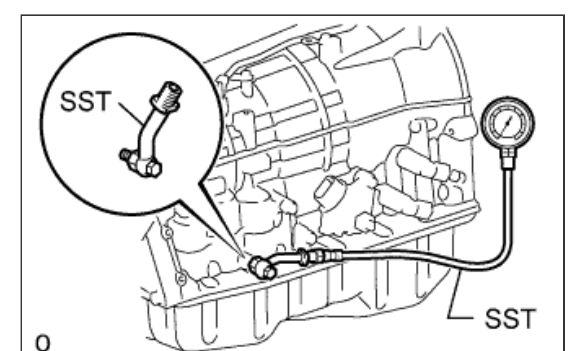
Using the intelligent tester to perform Active Tests allows relays, VSVs, actuators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing Active Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

- Remove the test plug from the transmission case and connect SST.

### SST

09992-00095 (09992-00231, 09992-00271)

- Connect the intelligent tester to the DLC3.
- Start the engine and warm it up.
- Measure the line pressure with SST.
- Turn the intelligent tester on.
- Enter the following menus: Powertrain / Engine and ECT / Active Test.
- According to the display on the tester, perform the Active Test.



h. Measure the line pressure.

**Engine and ECT**

Tester Display	Test Part	Control Range	Diagnostic Note
Activate the Solenoid (SLT)*	Operate shift solenoid valve SLT and raise line pressure	ON or OFF  <b>HINT:</b>  <ul style="list-style-type: none"> <li>• <b>OFF: Line pressure up (when Active Test "Activate the Solenoid (SLT)" performed, ECM commands shift solenoid valve SLT to turn off)</b></li> <li>• <b>ON: No action (normal operation)</b></li> </ul>	[Vehicle Condition] <ul style="list-style-type: none"> <li>• Vehicle stopped</li> <li>• Engine idling</li> </ul>

**HINT:**

\*: Activate the Solenoid (SLT) in the Active Test is performed to check the line pressure changes by connecting SST to the automatic transmission, which is used in the Hydraulic Test ([Click here](#)) as well. Note that the pressure values in the Active Test and Hydraulic Test are different.

**OK:**

The line pressure changes as specified when performing the Active Test.

**NG** → REPLACE SHIFT SOLENOID VALVE SLT ([Click here](#))

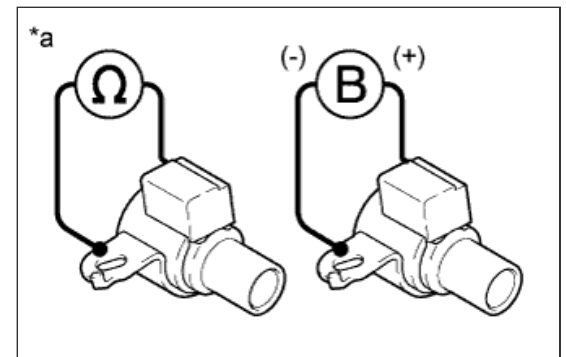
**OK**

**3.INSPECT SHIFT SOLENOID VALVE S4**

- a. Remove shift solenoid valve S4.
- b. Measure the resistance according to the value(s) in the table below.

**Standard Resistance:**

Tester Connection	Condition	Specified Condition
Shift solenoid valve S4 connector terminal - Shift solenoid valve S4 body	20°C (68°F)	11 to 15 Ω



- c. Apply 12 V battery voltage to the shift solenoid valve and check that the valve moves and makes an operating noise.

**OK:**

Measurement Condition	Specified Condition
<ul style="list-style-type: none"> <li>• Battery positive (+) → Shift solenoid valve S4 connector</li> <li>• Battery negative (-) → Shift solenoid valve S4 body</li> </ul>	Valve moves and makes an operating noise

**Text in Illustration**

*a	Component without harness connected (Shift Solenoid Valve S4)
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**NG** → REPLACE SHIFT SOLENOID VALVE S4 ([Click here](#))

**OK**

**4.INSPECT SHIFT SOLENOID VALVE SL2**

- a. Remove shift solenoid valve SL2.
- b. Measure the resistance according to the value(s) in the table below.

**Standard Resistance:**

Tester Connection	Condition	Specified Condition
1 - 2	20°C (68°F)	5.0 to 5.6 Ω

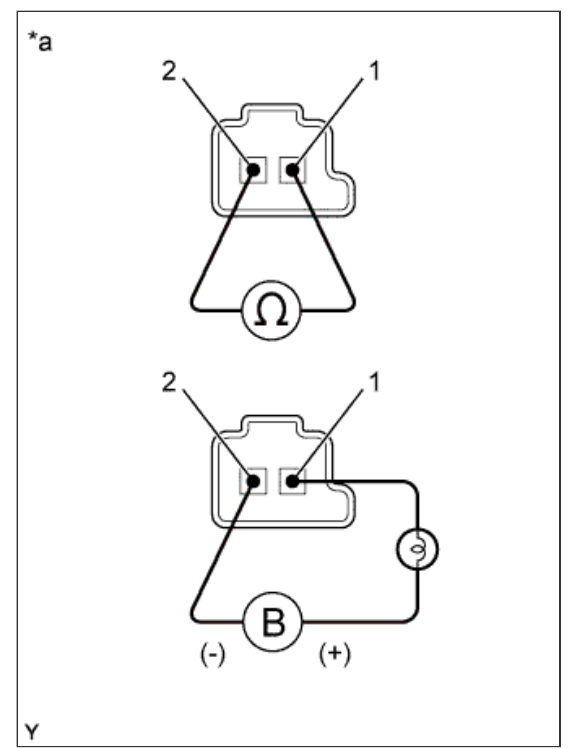
c. Apply 12 V battery voltage to the shift solenoid valve and check that the valve moves and makes an operating noise.

**OK:**

Measurement Condition	Specified Condition
<ul style="list-style-type: none"> <li>Battery positive (+) with a 21 W bulb → Terminal 1</li> <li>Battery negative (-) → Terminal 2</li> </ul>	Valve moves and makes an operating noise

**Text in Illustration**

*a	Component without harness connected (Shift Solenoid Valve SL2)
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**NG**

REPLACE SHIFT SOLENOID VALVE SL2 ([Click here](#))

**OK**

**5.INSPECT TRANSMISSION VALVE BODY ASSEMBLY**

a. Check the transmission valve body assembly.

**OK:**

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

**NG**

REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSEMBLY ([Click here](#))

**OK**

REPAIR OR REPLACE AUTOMATIC TRANSMISSION ASSEMBLY ([Click here](#))