

DTC	P0776	Pressure Control Solenoid "B" Performance (Shift Solenoid Valve SL2)
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SYSTEM DESCRIPTION

The ECM uses signals from the vehicle speed sensor and direct clutch 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 transmission (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0776	The gear required by the ECM does not match the actual gear when driving (2-trip detection logic)	• Shift solenoid valve SL2 is stuck open or closed • Valve body is blocked up or stuck • Automatic transmission (clutch, brake or gear etc.)

MONITOR DESCRIPTION

The ECM commands gear shifts by turning the shift solenoid valves "ON/OFF". According to the input 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 same, the ECM illuminates the MIL and stores the DTC.

MONITOR STRATEGY

Related DTCs	P0776	Shift solenoid valve SL2/ON malfunction
Required sensors/Components	Main	Shift solenoid valve SL2
	Sub	Speed sensor (NT), Speed sensor (NO), Crankshaft position sensor (NE)
Frequency of operation	Continuous	
Duration	ON malfunction (A), (B) and (C)	0.4 sec.
	ON malfunction (D)	3 sec.
	ON malfunction (E)	0.5 sec.
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The following items are common to all condition below: ON malfunction (A), (B), (C), (D) and (E)		
The monitor will run whenever the following DTCs are not present.	See page DI-369	
Turbine speed sensor (NT) circuit	There is no malfunction in the circuits shown on the left.	
Output speed sensor (NO) circuit		
Shift solenoid "A" (S1) circuit		
Shift solenoid "B" (S2) circuit		
Shift solenoid "E" (SR) circuit		
Pressure control solenoid "A" (SL1) circuit		
Pressure control solenoid "B" (SL2) circuit		
ECT (Engine coolant temperature) sensor circuit		
KCS sensor circuit		
ETCS (Electric throttle control system)	Not system down	
Transmission shift position	"D"	
ECT	40° C (104° F) or more	–
Spark advance from Max. retard timing by KCS control	0° CA or more	–
Engine	Starting	
Transfer range	"HIGH"*1	
Transfer range "HIGH" *1 (This condition is applied only 4WD)		
*1 Following conditions met		
Vehicle speed sensor "A" circuit	There is no malfunction in the circuits shown on the left.	
Output shaft speed sensor circuit		
Transfer output speed	143 rpm or more	–
NO/NOTf (Transfer input speed/Transfer output speed)	0.9 or more	Less than 1.1
ON malfunction (A)		
ECM selected gear	1st	
Vehicle speed	2 km/h (1.2 mph) or more	Less than 40 km/h (25.9 mph)
Throttle valve opening angle	6.5% or more at 2,000 rpm (conditions vary with engine speed)	–
ON malfunction (B)		
ECM selected gear	3rd	
Vehicle speed	2 km/h (1.2 mph) or more	–
Throttle valve opening angle	6.5% or more at 2,000 rpm (conditions vary with engine speed)	–
ON malfunction (C)		
ECM selected gear	4th	
Vehicle speed	2 km/h (1.2 mph) or more	–
Throttle valve opening angle	6.5% or more at 2,000 rpm (conditions vary with engine speed)	–
ON malfunction (D)		
Current ECM selected gear	5th	

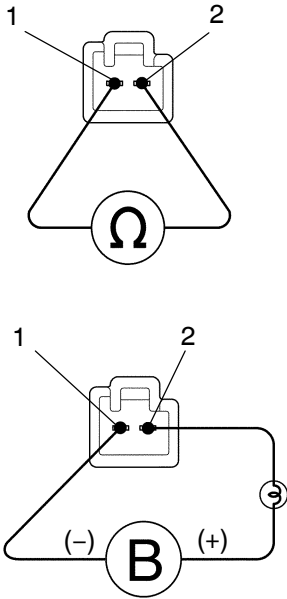
Last ECM selected gear	4th	
Vehicle speed (During transition from 4th to 5th gear)	–	Less than 100 km/h (62.2 mph)
ON malfunction (E)		
ECM selected gear	5th	
Engine speed – Turbine speed (NE – NT) (After transition from 4th to 5th gear)	–	Less than 150 rpm
Vehicle speed (After transition from 4th to 5th gear)	–	Less than 100 km/h (62.2 mph)

TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
Both of the following conditions are met: • ON malfunction (A) and (B), or ON malfunction (C) • ON malfunction (D) or (E)	
ON malfunction (A)	
Turbine speed/Output speed (NT/NO)	3.30 or more and 7.50 or less
ON malfunction (B)	
Turbine speed/Output speed (NT/NO)	1.28 or more and 1.53 or less
ON malfunction (C)	
Turbine speed/Output speed (NT/NO)	0.93 or more and 1.07 or less
ON malfunction (D)	
Turbine speed – Output speed x 4th gear ratio (NT – NO x 4th gear ratio)	1,000 rpm or more
ON malfunction (E)	
Turbine speed – Output speed x 5th gear ratio (NT – NO x 5th gear ratio)	1,000 rpm or more

INSPECTION PROCEDURE

1 Check shift solenoid valve SL2 operation.



D12795

PREPARATION:

- (a) Jack up the vehicle.
- (b) Remove the oil pan.
- (c) Remove the shift solenoid valve SL2.

CHECK:

- (a) Measure the resistance between terminals 1 and 2 of solenoid connector.

Standard: 5.0 to 5.6 Ω at 20°C (68°F)

- (b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.

Standard: Solenoid sounds operation noise.**OK:****Standard****NG****Replace shift solenoid valve SL2 (See page [AT-8](#)).****OK**2 Check valve body (See page [DI-397](#)).**NG****Repair or replace valve body (See page [AT-8](#)).****OK****Repair or replace transmission
(See page [AT-30](#)).**