

DTC	P0751	SHIFT SOLENOID "A" PERFORMANCE (SHIFT SOLENOID VALVE S1)
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SYSTEM DESCRIPTION

The ECM uses signals from the vehicle speed sensor and speed sensor NT to detect the actual gear position (1st, 2nd, 3rd or O/D gear).

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

DTC No.	DTC Detecting Condition	Trouble Area
P0751	The gear required by the ECM does not match the actual gear when driving (2-trip detection logic)	<ul style="list-style-type: none"> • Shift solenoid valve S1 remains open or closed • Valve body is blocked • Shift solenoid valve S1 • Automatic transaxle (clutch, brake or gear etc.) • ECM

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 or O/D gear position). When the gear position commanded by the ECM and the actual gear position are not same, the ECM illuminates the MIL.

MONITOR STRATEGY

Related DTCs	P0751	Shift solenoid "A" (S1)/Rationality check
		Shift solenoid "A" (S1)/OFF malfunction
		Shift solenoid "A" (S1)/ON malfunction
Required sensors/Components	Shift solenoid valve S1	
Frequency of operation	Continuous	
Duration	OFF malfunction (A)	0.85 sec.
	OFF malfunction (B)	0.8 sec.
	ON malfunction (A), (B)	
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present.	See page 05-389	
OFF malfunction (A)		
ECT	60 °C (140 °F) or more	–
Transmission shift position	"D"	
Shift solenoid "A" (S1) circuit	Not circuit malfunction	
Shift solenoid "B" (S2) circuit	Not circuit malfunction	
ECT sensor circuit	Not circuit malfunction	
Input (turbine) speed sensor circuit	Not circuit malfunction	
Internal counter shaft speed sensor circuit	Not circuit malfunction	
Throttle position sensor circuit	Not circuit malfunction	
ECM selected gear	1st	
Duration time from shift command of ECM	1 sec. or more	–
Vehicle speed	9 km/h (6 mph) or more	Less than 40 km/h (25 mph)

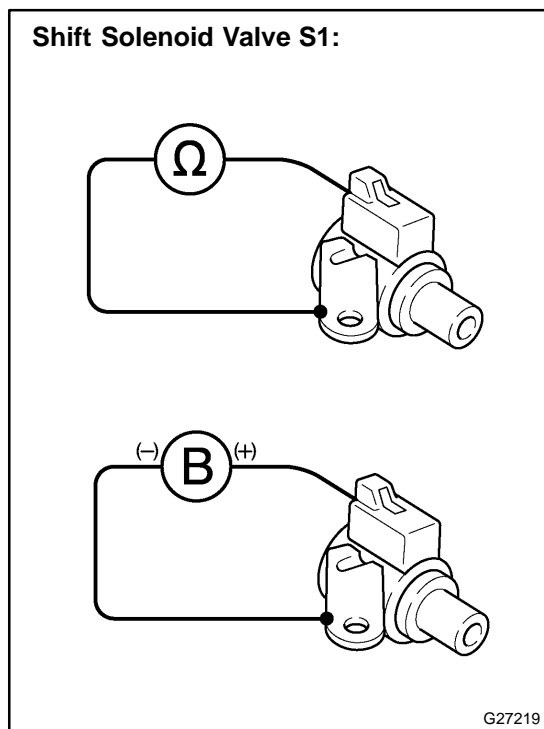
Throttle valve opening angle	25 % or more 7 % or more at engine speed 1,900 rpm (Condition vary with engine speed)	–
OFF malfunction (B)		
ECT	60 °C (140 °F) or more	–
Transmission shift position	"D"	
Shift solenoid "A" (S1) circuit	Not circuit malfunction	
Shift solenoid "B" (S2) circuit	Not circuit malfunction	
ECT sensor circuit	Not circuit malfunction	
Input (turbine) speed sensor circuit	Not circuit malfunction	
Internal counter shaft speed sensor circuit	Not circuit malfunction	
Throttle position sensor circuit	Not circuit malfunction	
Current ECM selected gear	4th	
Last ECM selected gear	3rd	
ON malfunction (A)		
ECT	60 °C (140 °F) or more	–
Transmission shift position	"D"	
Shift solenoid "A" (S1) circuit	Not circuit malfunction	
Shift solenoid "B" (S2) circuit	Not circuit malfunction	
ECT sensor circuit	Not circuit malfunction	
Input (turbine) speed sensor circuit	Not circuit malfunction	
Internal counter shaft speed sensor circuit	Not circuit malfunction	
Throttle position sensor circuit	Not circuit malfunction	
Current ECM selected gear	4th	
Last ECM selected gear	3rd	
ON malfunction (B)		
ECT	60 °C (140 °F) or more	–
Transmission shift position	"D"	
Shift solenoid "A" (S1) circuit	Not circuit malfunction	
Shift solenoid "B" (S2) circuit	Not circuit malfunction	
ECT sensor circuit	Not circuit malfunction	
Input (turbine) speed sensor circuit	Not circuit malfunction	
Internal counter shaft speed sensor circuit	Not circuit malfunction	
Throttle position sensor circuit	Not circuit malfunction	
ECM selected gear	4th	
Vcurrent – Vlast Vcurrent: Vehicle speed at current ECM selected gear Vlast: Vehicle speed at last ECM selected gear	–	Less than 15 km/h (9 mph)
THcurrent – THlast THcurrent: Throttle valve opening angle at current ECM selected gear THlast: Throttle valve opening angle at last ECM selected gear	–	Less than 30 %
Vehicle speed (current)	–	Less than 85 km/h (53 mph)
Throttle valve opening angle (current)	–	Less than 45 %
Engine speed (current)	3,200 rpm or more	–

TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
OFF malfunction:	
Following conditions met OFF malfunction (A) and (B) It is necessary 2 judgments/driving cycle 1st judgment: temporary flag ON 2nd judgment: pending fault code ON	
OFF malfunction (A)	
Input speed/Output speed (NT/NO) NT: Input (turbine) speed NO: Internal counter shaft speed	$0.64 \leq NT/NO < 0.78$
OFF malfunction (B)	
Input speed/Output speed (NT/NO) NT: Input (turbine) speed NO: Internal counter shaft speed	Changed as follows $0.95 \leq NT/NO < 1.09$ (Last) to $0.64 \leq NT/NO < 0.78$ (Current)
ON malfunction:	
Following Conditions met ON malfunction (A) and (B).	
ON malfunction (A)	
Input speed/Output speed (NT/NO) NT: Input (turbine) speed NO: Internal counter shaft speed	Not changed as follows $0.95 \leq NT/NO < 1.09$ (Last) to $0.64 \leq NT/NO < 0.78$ (Current)
ON malfunction (B)	
NEcurrent – NElast NEcurrent: Engine speed at current ECM selected gear NElast: Engine speed at last ECM last selected gear	1,100 rpm or more

INSPECTION PROCEDURE

1 INSPECT SHIFT SOLENOID VALVE(S1)



- (a) Remove the shift solenoid valve S1.
- (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition 20 °C (68 °F)
Solenoid Connector (S1) – Solenoid Body (S1)	11 to 15 Ω

- (c) Connect the positive (+) battery lead to the solenoid connector terminal, and the negative (-) battery lead to the solenoid body for checking the solenoid valve operation.

Standard:

The solenoid makes an operating noise.

NG → REPLACE SHIFT SOLENOID VALVE(S1)

OK

2	INSPECT TRANSMISSION VALVE BODY ASSY (See chapter 2 in the problem symptoms table) (See page 05-394)
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REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSY (See page 40-24)
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OK

REPAIR OR REPLACE AUTOMATIC TRANSAXLE ASSY (See page 40-7)
