DIC32–02

DTC	P0756	Shift Solenoid ”B” Performance (Shift Solenoid Valve S2)

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
P0756	The gear required by the ECM does not match the actual gear when driving (2–trip detection logic)	• Shift solenoid valve S2 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.

MONITOR STRATEGY

Related DTCs	P0756	Shift solenoid valve S2/OFF malfunction
		Shift solenoid valve S2/ON malfunction
Required sensors/Components	Main	Shift solenoid valve S2
	Sub	Vehicle speed sensor, Throttle position sensor, Speed sensor (NT), Speed sensor (NO)
Frequency of operation	Continuous	
Duration	OFF malfunction (A), (B), (C) ON malfunction (A) and (B)	0.4 sec.
	OFF malfunction (D)	Immediate
	ON malfunction (C)	3 sec.
	ON malfunction (D)	0.5 sec.
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The following conditions are common to all conditions below: OFF malfunction (A), (B), (C), (D) and ON malfunction (A), (B), (C), (D)		
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
OFF malfunction (A)		
ECM selected gear	1st	
Vehicle speed	2 km/h (1.2 mph) or more	Less than 40 km/h (24.9 mph)
Throttle valve opening angle	6.5% or more at 2,000 rpm (conditions vary with engine speed)	–
OFF malfunction (B)		
ECM selected gear	2nd	
Vehicle speed	2 km/h (1.2 mph) or more	–
Output speed	2nd → 1st down shift point or more	–
Throttle valve opening angle	6.5% or more at 2,000 rpm (conditions vary with engine speed)	–
OFF malfunction (C)		
Current ECM selected gear	5th	
Last ECM selected gear	4th	
Continuous time for ECM selecting 4th gear	2 sec. or more	–
Actual gear when ECM selected 4th gear	4th	
OFF malfunction (D)		
Current ECM selected gear	5th	
Last ECM selected gear	4th	
ON malfunction (A)		
ECM selected gear	1st	
Vehicle speed	2 km/h (1.2 mph) or more	Less than 40 km/h (24.9 mph)

Throttle valve opening angle	6.5% or more at 2,000 rpm (conditions vary with engine speed)	–
ON malfunction (B)		
ECM selected gear	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 (C)		
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 (D)		
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

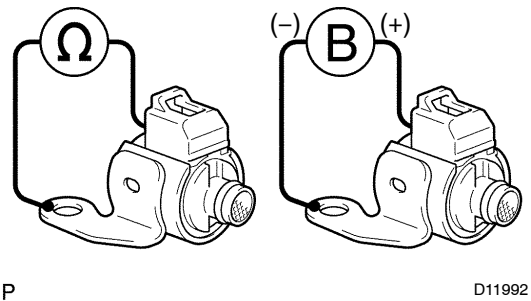
Detection criteria	Threshold
[OFF malfunction]	
All of the following conditions are met: Condition (A), (B), (C) and (D)	
It is necessary 2 detections/one drive cycle 1st detection; temporary flag ON 2nd detection; pending fault code ON	
OFF malfunction (A) and (B)	
Turbine speed/Output speed (NT/NO)	3.30 or more and 7.50 or less
OFF malfunction (C)	
Turbine speed/Output speed (NT/NO)	0.65 or more and 0.79 or less
OFF malfunction (D)	
Output record from ECM for 4th → 5th upshifting	Recorded
[ON malfunction]	
Both of the following conditions are met: ON malfunction (A) or (B), and ON malfunction (C) or (D)	
ON malfunction (A)	
Turbine speed/Output speed (NT/NO)	1.91 or more and 2.35 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 x 4th gear ratio (NT – NO x 4th gear ratio)	1,000 rpm or more

ON malfunction (D)	
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 S2 operation.

Shift solenoid S2:



PREPARATION:

(a) Jack up the vehicle.
(b) Remove the oil pan.
(c) Remove the shift solenoid valve S2.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 to 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

NG → **Replace shift solenoid valve S2 (See page AT–8).**

OK

2	Check valve body (See page DI–397).

NG → **Repair or replace valve body.**

OK

Repair or replace transmission (See page AT–30).