DTC P0741 TORQUE CONVERTER CLUTCH SOLENOID PERFORMANCE (SHIFT SOLENOID VALVE SL)

SYSTEM DESCRIPTION

The ECM uses the signals from the throttle position sensor, air–flow meter and crankshaft position sensor to monitor the engagement condition of the lock–up clutch.
Then the ECM compares the engagement condition of the lock–up clutch with the lock–up schedule in the ECM memory to detect mechanical trouble of the shift solenoid valve SL, valve body and torque converter clutch or automatic transaxle (clutch, brake or gear etc.).

DTC No.	DTC Detecting Condition	Trouble Area
P0741	• Lock–up does not occur when driving in the lock–up range (normal driving at 80 km/h [50 mph]), or lock–up remains ON in the lock–up OFF range. (2–trip detection logic) • When lock–up is ON, clutch or brake slips or gear is broken. (2–trip detection logic)	• Shift solenoid valve SL remains open or closed • Valve body is blocked • Shift solenoid valve SL • Lock–up clutch • Torque converter clutch • Automatic transaxle (clutch, brake or gear etc.) • ECM

MONITOR DESCRIPTION

Based on the signals from the throttle position sensor, the airflow meter and the crankshaft position sensor, the ECM sends a signal to the shift solenoid valve SL to regulate the hydraulic pressure and provide smoother gearshifts. The shift–solenoid valve SL responds to commands from the ECM. The valve controls the lock–up relay valve to perform torque–converter lock–up and flexible lock–up functions.
The ECM compares the engine rpm (NE) signal and the input speed calculated by output speed sensor (output speed) and gear ratio to detect torque converter lock–up. The ECM then compares the lock–up status against the lock–up schedule in the ECM memory. If the ECM does not detect lock–up at the appropriate time, it will conclude that there is a malfunction of shift solenoid SL. The ECM will illuminate the MIL.

MONITOR STRATEGY

Related DTCs	P0741	Torque converter clutch solenoid (SL)/Rationality check
		Torque converter clutch solenoid (SL)/OFF malfunction
		Torque converter clutch solenoid (SL)/ON malfunction
Required sensors/Components	Torque converter clutch solenoid (SL)	
Frequency of operation	Continuous	
Duration	Less than 10 sec.	
MIL operation	2 driving cycles	
Sequence of operation	None	

TYPICAL ENABLING CONDITION

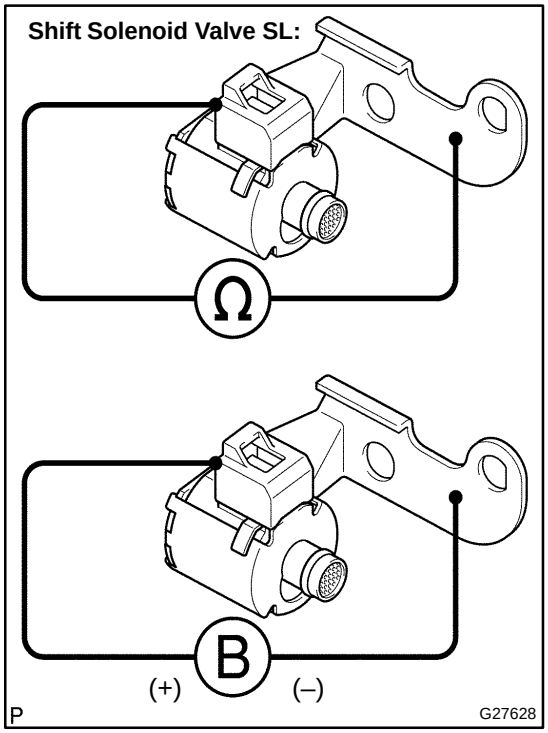
Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present.	See page 05–369	
OFF malfunction		
IAT (only for malfunction)	–10 °C (14 °F) or more	Less than 70 °C (158 °F)
ECT	55 °C (131 °F) or more	Less than 105 °C (221 °F)
Transmission shift position	"D"	
Shift solenoid "A" (S1) circuit	Not circuit malfunction	
Shift solenoid "B" (S2) circuit	Not circuit malfunction	
Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
Battery voltage	10 V or more	–
Spark retard by KCS control	0° CA or more	–
ECM selected gear	4th with lock up	
ON malfunction		
IAT (only for malfunction)	–10 °C (14 °F) or more	Less than 70 °C (158 °F)
ECT	55 °C (131 °F) or more	Less than 105 °C (221 °F)
Transmission shift position	"D"	
Shift solenoid "A" (S1) circuit	Not circuit malfunction	
Shift solenoid "B" (S2) circuit	Not circuit malfunction	
Torque converter clutch solenoid (SL) circuit	Not circuit malfunction	
Battery voltage	10 V or more	–
Spark retard by KCS control	0° CA or more	–
ECM selected gear	4th	
Throttle valve opening angle	7 % or more	–

TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
OFF malfunction	
Engine speed	≧ 4th gear ratio x NO + 100 rpm and < 3rd gear ratio x NO – 100 rpm NO: Transmission output speed
ON malfunction	
Engine speed It is necessary 2 judgments/driving cycle 1st judgment: temporary flag ON 2nd judgment: pending fault code ON	≧ 4th gear ratio x NO – 50 rpm and < 4th gear ratio x NO + 50 rpm NO: Transmission output speed

INSPECTION PROCEDURE

1	INSPECT SHIFT SOLENOID VALVE(SL)



(a) Remove the shift solenoid valve SL.

(b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Specified Condition 20 °C (68 °F)
Solenoid Connector (SL) – Solenoid Body (SL)	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 valve makes an operating noise.

NG → **REPLACE SHIFT SOLENOID VALVE(SL)**

OK

2	INSPECT TRANSMISSION VALVE BODY ASSY(See chapter 2 in the problem symptoms table) (See page 05–374)

NG → **REPAIR OR REPLACE TRANSMISSION VALVE BODY ASSY (See page 40–23)**

OK

3	INSPECT TORQUE CONVERTER CLUTCH ASSY (See page 40–20)

NG → **REPLACE TORQUE CONVERTER CLUTCH ASSY**

OK

REPAIR AUTOMATIC TRANSAXLE ASSY (See page 40–7)