DTC	P2769	TORQUE CONVERTER CLUTCH SOLENOID CIRCUIT LOW (SHIFT SOLENOID VALVE SL)

DTC	P2770	TORQUE CONVERTER CLUTCH SOLENOID CIRCUIT HIGH (SHIFT SOLENOID VALVE SL)

CIRCUIT DESCRIPTION

The shift solenoid valve SL is turned ”ON” and ”OFF” by signals from the ECM in order to control the hydraulic pressure operation, the lock–up relay valve, which then the controls operation of the lock–up clutch.
Fail safe function:
If the ECM detects a malfunction, it turns the shift solenoid valve SL OFF.

DTC No.	DTC Detection Condition	Trouble Area
P2769	ECM detects short in solenoid valve SL circuit 4 times when solenoid valve SL is operated (2–trip detection logic)	• Short in shift solenoid valve SL circuit • Shift solenoid valve SL • ECM
P2770	ECM detects open in solenoid valve SL circuit 4 times when solenoid valve SL is not operated (2–trip detection logic)	• Open in shift solenoid valve SL circuit • Shift solenoid valve SL • 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 SL Solenoid Valve 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 the torque–converter lock–up function. If the ECM detects an open or short circuit for shift–solenoid SL, it will illuminate the MIL.

MONITOR STRATEGY

Related DTCs	P2769	Torque converter clutch solenoid/Range check (Low resistance)
	P2770	Torque converter clutch solenoid/Range check (High resistance)
Required sensors/Components	Shift solenoid valve SL	
Frequency of operation	Continuous	
Duration	0.064 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	
Range check (Low resistance)		
Solenoid	ON	
Time after solenoid OFF to ON	More than 0.008 sec.	–
Range check (High resistance)		
Solenoid	OFF	
Time after solenoid ON to OFF	More than 0.008 sec.	–

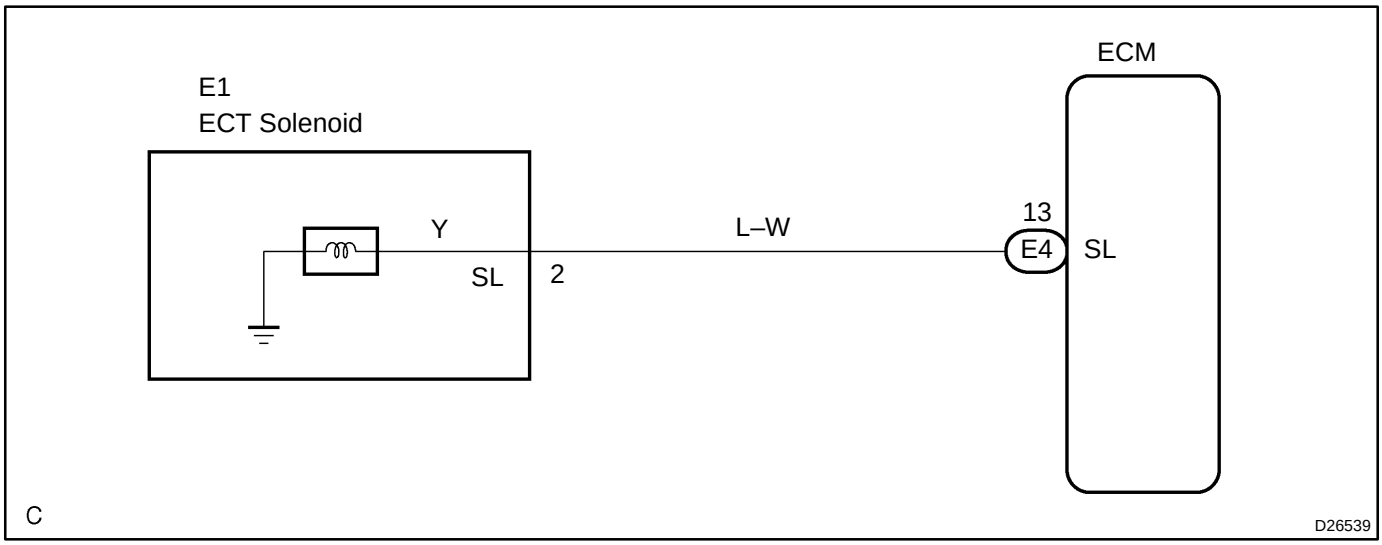
TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
Range check (Low resistance)	
Number of solenoid ON/OFF change with intelligent power MOS diagnosis signal failure (Fail at solenoid resistance ≦ 8 Ω)	4 times (0.064 sec.)
Range check (High resistance)	
Number of solenoid ON/OFF change with intelligent power MOS diagnosis signal failure (Fail at solenoid resistance ≧ 100 kΩ)	4 times (0.064 sec.)

COMPONENT OPERATING RANGE

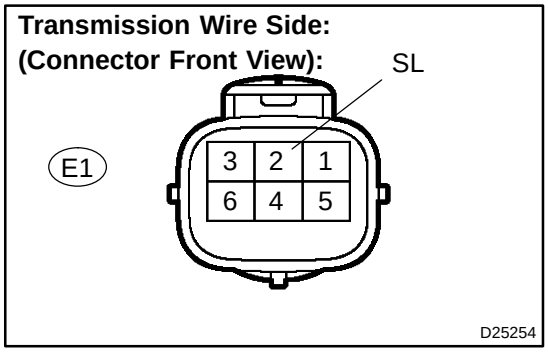
Parameter	Standard value
Shift solenoid valve SL resistance	11 to 15 Ω at 20°C (68°F)

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT TRANSMISSION WIRE(SL)



(a) Disconnect the transmission wire connector from the transaxle.

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

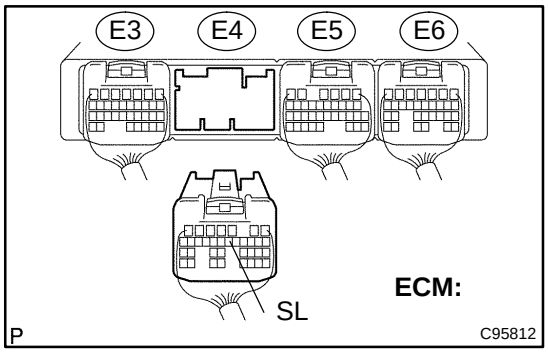
Standard:

Tester Connection	Specified Condition 20 °C (68 °F)
2 – Body ground	11 to 15 Ω

NG → **Go to step 3**

OK

2 CHECK HARNESS AND CONNECTOR(TRANSMISSION WIRE – ECM)



(a) Connect the transmission wire connector.

(b) Disconnect the ECM connector.

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

Standard:

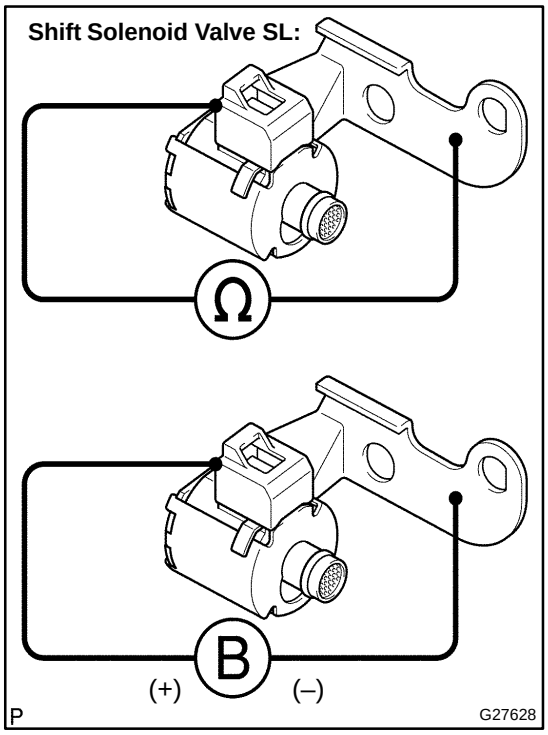
Tester Connection	Specified Condition 20 °C (68 °F)
E4 – 13 (SL) – Body ground	11 to 15 Ω

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR (See page 01–30)**

OK

REPLACE ECM (See page 10–11)

3 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

REPAIR OR REPLACE TRANSMISSION WIRE (See page 40–27)