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| DTC | P2769 | TORQUE CONVERTER CLUTCH SOLENOID CIRCUIT LOW (SHIFT SOLENOID VALVE SL) |
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| DTC | P2770 | TORQUE CONVERTER CLUTCH SOLENOID CIRCUIT HIGH (SHIFT SOLENOID VALVE SL) |
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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) | <ul style="list-style-type: none"> • 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) | <ul style="list-style-type: none"> • 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. | — |

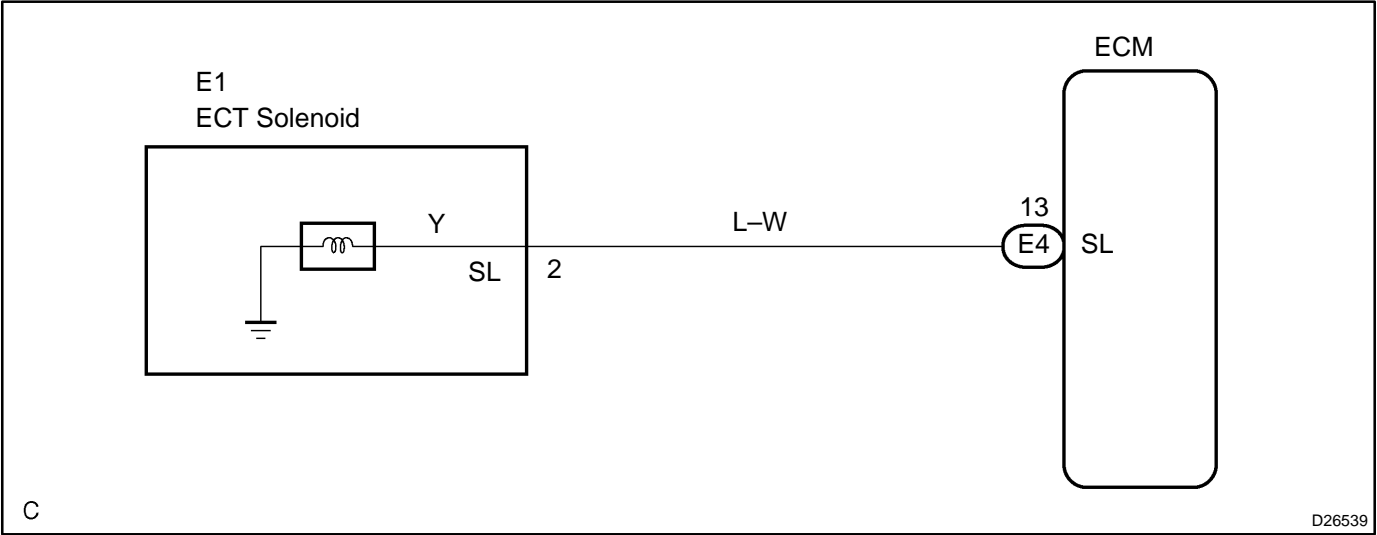
TYPICAL MALFUNCTION THRESHOLDS

| Detection criteria | Threshold |
|---|----------------------|
| Range check (Low resistance) | |
| Number of solenoid ON/OFF change with intelligent power MOS diagnosis signal failure (Fail at solenoid resistance $\leq 8 \Omega$) | 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 $\geq 100 \text{ k}\Omega$) | 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) |

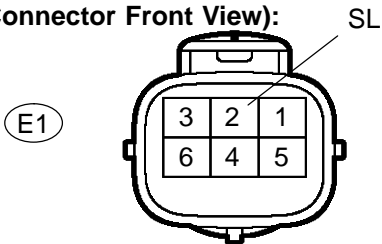
WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT TRANSMISSION WIRE(SL)

Transmission Wire Side:
(Connector Front View):



D25254

- Disconnect the transmission wire connector from the transaxle.
- Measure the resistance according to the value(s) in the table below.

Standard:

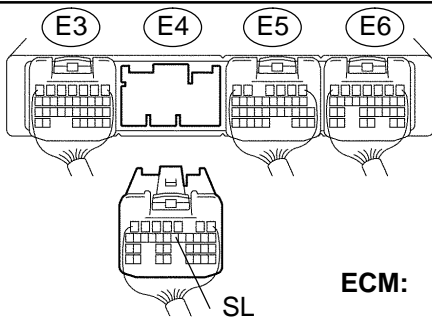
| Tester Connection | Specified Condition 20 °C (68 °F) |
|-------------------|--------------------------------------|
| 2 – Body ground | 11 to 15 Ω |

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Go to step 3

OK

2 CHECK HARNESS AND CONNECTOR(TRANSMISSION WIRE – ECM)



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- Connect the transmission wire connector.
- Disconnect the ECM connector.
- 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 |

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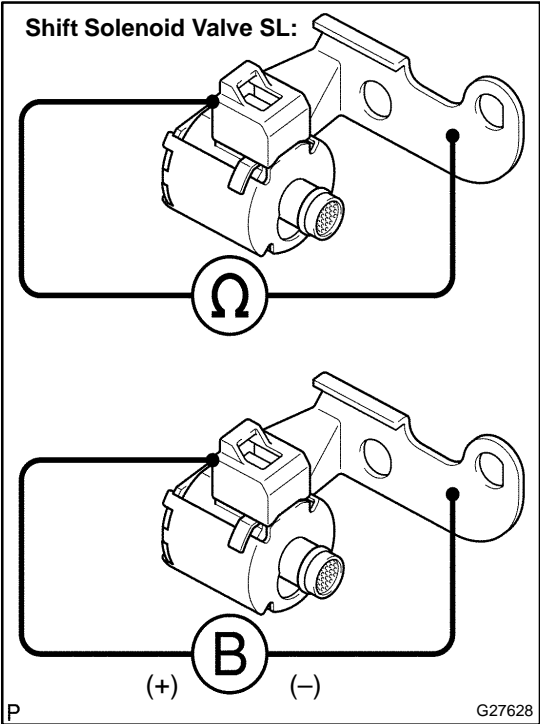
REPAIR OR REPLACE HARNESS OR CONNECTOR (See page 01-30)

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.

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REPLACE SHIFT SOLENOID VALVE(SL)

OK

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