

|            |              |                                                                                |
|------------|--------------|--------------------------------------------------------------------------------|
| <b>DTC</b> | <b>P0748</b> | <b>Pressure Control Solenoid "A" Electrical<br/>(Shift Solenoid Valve SL1)</b> |
|------------|--------------|--------------------------------------------------------------------------------|

## CIRCUIT DESCRIPTION

Shifting from 1st to 5th is performed in combination with ON and OFF of the shift solenoid valves S1, S2, SR, SL1 and SL2, controlled by ECM. If an open or short circuit occurs in either of the shift solenoid valves, the ECM controls the remaining normal shift solenoid valve to allow the vehicle to be operated smoothly (Fail safe function).

**Fail Safe Function:**

If either of the shift solenoid valve circuits develops an open or short, the ECM turns the other shift solenoid ON and OFF to shift to the gear positions shown in the table below.

Manual shifting as shown in the following table must be done (In the case of a short circuit, the ECM stops sending current to the short circuited solenoid).

○: ON      X: OFF

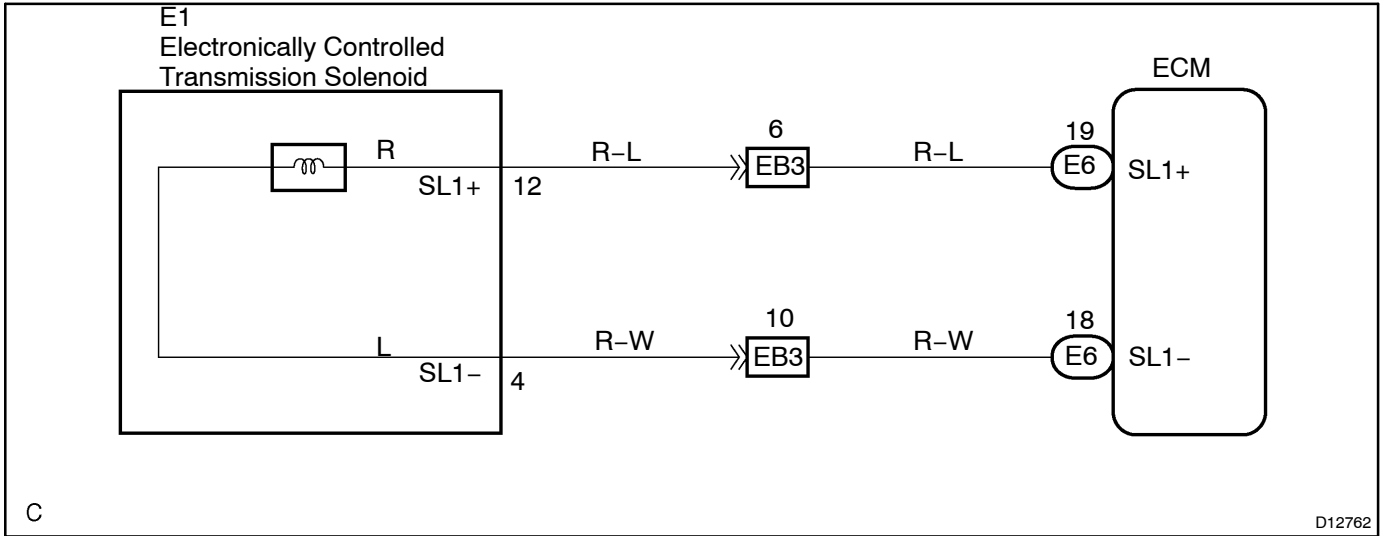
| Position | NORMAL   |    |    |    |     |     | S1 OFF                |    |    |    |     |     | S2 OFF                |    |    |    |     |     | SR OFF                |    |    |    |     |     |
|----------|----------|----|----|----|-----|-----|-----------------------|----|----|----|-----|-----|-----------------------|----|----|----|-----|-----|-----------------------|----|----|----|-----|-----|
|          | Gear     | S1 | S2 | SR | SL1 | SL2 | Gear                  | S1 | S2 | SR | SL1 | SL2 | Gear                  | S1 | S2 | SR | SL1 | SL2 | Gear                  | S1 | S2 | SR | SL1 | SL2 |
| "R"      | R        | ○  | X  | X  | X   | ○   | R                     | X  | X  | X  | X   | ○   | R                     | ○  | X  | X  | X   | ○   | R                     | ○  | X  | X  | X   | ○   |
| "D"      | 1 st     | ○  | X  | X  | X   | ○   | 4 th<br>↓<br>3 rd     | X  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   |
|          | 2 nd     | ○  | ○  | X  | X   | ○   | 3 rd                  | X  | ○  | X  | X   | ○   | 1 st<br>↓<br>4 th     | ○  | X  | X  | X   | ○   | 2 nd                  | ○  | ○  | X  | X   | ○   |
|          | 3 rd     | X  | ○  | X  | X   | ○   | 3 rd                  | X  | ○  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   | 3 rd                  | X  | ○  | X  | X   | ○   |
|          | 4 th     | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   |
|          | 5 th     | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 4 th                  | X  | X  | X  | ○   | X   |
| "3"      | 1 st     | ○  | X  | X  | X   | ○   | 3 rd<br>↓<br>3 rd E/B | X  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   |
|          | 2 nd     | ○  | ○  | X  | X   | ○   | 3 rd<br>↓<br>3 rd E/B | X  | ○  | X  | X   | ○   | 1 st<br>↓<br>3 rd E/B | ○  | X  | X  | X   | ○   | 2 nd                  | ○  | ○  | X  | X   | ○   |
|          | 3 rd E/B | X  | ○  | X  | X   | X   | 3 rd E/B              | X  | ○  | X  | X   | X   | 3 rd E/B              | X  | X  | X  | X   | X   | 3 rd E/B<br>↓<br>3 rd | X  | ○  | X  | X   | X   |
|          | 4 th     | X  | X  | ○  | X   | ○   | 4 th                  | X  | X  | ○  | X   | ○   | 4 th                  | X  | X  | ○  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   |
|          | 5 th     | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 3 rd E/B<br>↓<br>3 rd | X  | X  | X  | ○   | X   |
| "2"      | 1 st     | ○  | X  | X  | X   | ○   | 1 st                  | X  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   |
|          | 2 nd E/B | ○  | ○  | ○  | X   | X   | 3 rd E/B              | X  | ○  | ○  | X   | X   | 2 st E/B<br>↓<br>4 th | ○  | X  | ○  | X   | X   | 2 nd                  | ○  | ○  | X  | X   | X   |
|          | 3 rd E/B | X  | ○  | ○  | X   | X   | 3 rd E/B              | X  | ○  | ○  | X   | X   | Fail 4th              | X  | X  | ○  | X   | X   | 2 nd                  | X  | ○  | X  | X   | X   |
|          | 4 th     | X  | X  | ○  | X   | ○   | 4 th                  | X  | X  | ○  | X   | ○   | 4 th                  | X  | X  | ○  | X   | ○   | 1 st<br>↓<br>2 nd     | X  | X  | X  | X   | ○   |
|          | 5 th     | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 1 st E/B<br>↓<br>2 nd | X  | ○  | X  | ○   | X   |
| "L"      | 1 st E/B | ○  | X  | X  | X   | X   | 1 st E/B              | X  | X  | X  | X   | X   | 1 st E/B              | ○  | X  | X  | X   | X   | 1 st E/B              | ○  | X  | X  | X   | X   |
|          | 2 nd E/B | ○  | ○  | ○  | X   | X   | 3 rd E/B              | X  | ○  | ○  | X   | X   | 2 st E/B<br>↓<br>4 th | ○  | X  | ○  | X   | X   | 2 nd                  | ○  | ○  | X  | X   | X   |
|          | 3 rd E/B | X  | ○  | ○  | X   | X   | 3 rd E/B              | X  | ○  | ○  | X   | X   | Fail 4 th             | X  | X  | ○  | X   | X   | 2 nd                  | X  | ○  | X  | X   | X   |
|          | 4 th     | X  | X  | ○  | X   | ○   | 4 th                  | X  | X  | ○  | X   | ○   | 4 th                  | X  | X  | ○  | X   | ○   | 1 st<br>↓<br>2 nd     | X  | X  | X  | X   | ○   |
|          | 5 th     | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 5 th                  | X  | X  | ○  | ○   | X   | 1 st E/B<br>↓<br>2 nd | X  | X  | X  | ○   | X   |

○: ON X: OFF

| Position | S1 S2 OFF             |    |    |    |     |     | S2 SR OFF             |    |    |    |     |     | S1 SR OFF             |    |    |    |     |     | S1 S2 SR OFF          |    |    |    |     |     |
|----------|-----------------------|----|----|----|-----|-----|-----------------------|----|----|----|-----|-----|-----------------------|----|----|----|-----|-----|-----------------------|----|----|----|-----|-----|
|          | Gear                  | S1 | S2 | SR | SL1 | SL2 | Gear                  | S1 | S2 | SR | SL1 | SL2 | Gear                  | S1 | S2 | SR | SL1 | SL2 | Gear                  | S1 | S2 | SR | SL1 | SL2 |
| "R"      | R                     | X  | X  | X  | X   | ○   | R                     | ○  | X  | X  | X   | ○   | R                     | X  | X  | X  | X   | ○   | R                     | X  | X  | X  | X   | ○   |
| "D"      | 4 th                  | X  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 4 th<br>↓<br>3 rd     | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   |
|          | 4 th                  | X  | X  | X  | X   | ○   | 1 st<br>↓<br>4 th     | ○  | X  | X  | X   | ○   | 3 rd                  | X  | ○  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   |
|          | 4 th                  | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   | 3 rd                  | X  | ○  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   |
|          | 4 th                  | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   | 4 th                  | X  | X  | X  | X   | ○   |
|          | 5 th                  | X  | X  | ○  | ○   | X   | 4 th                  | X  | X  | X  | ○   | X   | 4 th                  | X  | X  | X  | ○   | X   | 4 th                  | X  | X  | X  | ○   | X   |
| "3"      | 3 rd<br>↓<br>3 rd E/B | X  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   |
|          | 3 rd<br>↓<br>3 rd E/B | X  | X  | X  | X   | ○   | 1 st<br>↓<br>3 rd     | ○  | X  | X  | X   | ○   | 3 rd                  | X  | ○  | X  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   |
|          | 3 rd E/B              | X  | X  | X  | X   | X   | 3 rd E/B<br>↓<br>3 rd | X  | X  | X  | X   | ○   | 3 rd E/B<br>↓<br>3 rd | X  | ○  | X  | X   | ○   | 3 rd E/B<br>↓<br>3 rd | X  | X  | X  | X   | ○   |
|          | 4 th                  | X  | X  | ○  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   | 3 rd                  | X  | X  | X  | X   | ○   |
|          | 5 th                  | X  | X  | ○  | ○   | X   | 1 st E/B<br>↓<br>3 rd | X  | X  | X  | ○   | X   | 3 rd E/B<br>↓<br>3 rd | X  | X  | X  | ○   | X   | 3 rd E/B<br>↓<br>3 rd | X  | X  | X  | ○   | X   |
| "2"      | 1 st                  | X  | X  | X  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 1 st                  | X  | X  | X  | X   | ○   | 1 st                  | X  | X  | X  | X   | ○   |
|          | Fail 4 th             | X  | X  | ○  | X   | ○   | 1 st E/B<br>↓<br>1 st | ○  | X  | X  | X   | ○   | 2 nd                  | X  | ○  | X  | X   | X   | 1 st E/B<br>↓<br>1 st | X  | X  | X  | X   | ○   |
|          | Fail 4 th             | X  | X  | ○  | X   | ○   | 1 st E/B<br>↓<br>1 st | ○  | X  | X  | X   | ○   | 2 nd                  | X  | ○  | X  | X   | X   | 1 st E/B<br>↓<br>1 st | X  | X  | X  | X   | ○   |
|          | 4 th                  | X  | X  | ○  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 1 st<br>↓<br>2nd      | X  | X  | X  | X   | ○   | 1 st                  | X  | X  | X  | X   | ○   |
|          | 5 th                  | X  | X  | ○  | ○   | X   | 1 st E/B<br>↓<br>1 st | ○  | X  | X  | ○   | X   | 1 st E/B<br>↓<br>2nd  | X  | X  | X  | ○   | X   | 1 st E/B<br>↓<br>1 st | X  | X  | X  | ○   | X   |
| "L"      | 1 st E/B              | X  | X  | X  | X   | X   | 1 st E/B              | ○  | X  | X  | X   | X   | 1 st E/B              | X  | X  | X  | X   | X   | 1 st E/B              | X  | X  | X  | X   | X   |
|          | Fail 4 th             | X  | X  | ○  | X   | ○   | 1 st E/B<br>↓<br>1 st | ○  | X  | X  | X   | ○   | 2 nd                  | X  | ○  | X  | X   | X   | 1 st E/B<br>↓<br>1 st | X  | X  | X  | X   | ○   |
|          | Fail 4 th             | X  | X  | ○  | X   | ○   | 1 st E/B<br>↓<br>1 st | ○  | X  | X  | X   | ○   | 2 nd                  | X  | ○  | X  | X   | X   | 1 st E/B<br>↓<br>1 st | X  | X  | X  | X   | ○   |
|          | 4 th                  | X  | X  | ○  | X   | ○   | 1 st                  | ○  | X  | X  | X   | ○   | 1 st<br>↓<br>2nd      | X  | X  | X  | X   | ○   | 1 st                  | X  | X  | X  | X   | ○   |
|          | 5 th                  | X  | X  | ○  | ○   | X   | 1 st E/B<br>↓<br>1 st | ○  | X  | X  | ○   | X   | 1 st E/B<br>↓<br>2nd  | X  | X  | X  | ○   | X   | 1 st E/B<br>↓<br>1 st | X  | X  | X  | ○   | X   |

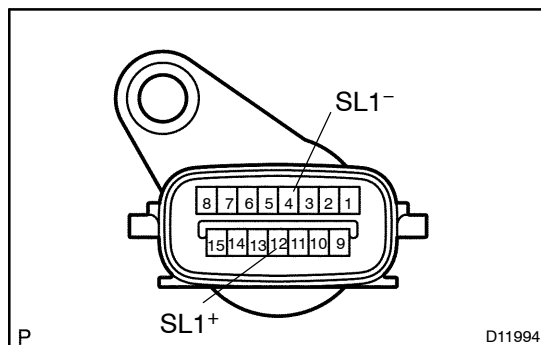
| DTC No. | DTC Detection Condition                                                                                                                                                                                                  | Trouble Area                                                                                                                                             |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| P0748   | ECM checks for an open or short circuit in shift solenoid valves SL1 (1-trip detection logic)<br>(a) When solenoid is energized, duty ratio exceed 75%<br>(b) When solenoid is not energized, duty ratio is less than 3% | <ul style="list-style-type: none"> <li>• Open or short in shift solenoid valve SL1 circuit</li> <li>• Shift solenoid valve SL1</li> <li>• ECM</li> </ul> |

## WIRING DIAGRAM



## INSPECTION PROCEDURE

## 1 Check transmission wire.

**PREPARATION:**

Disconnect the transmission wire connector.

**CHECK:**

Measure resistance between SL1<sup>+</sup> and SL1<sup>-</sup> of transmission wire.

**OK:**

**Resistance: 5.0 – 5.6 Ω at 20°C (68°F)**

**CHECK:**

Measure resistance between terminals SL1<sup>+</sup> and SL1<sup>-</sup> of the transmission wire connector and body ground.

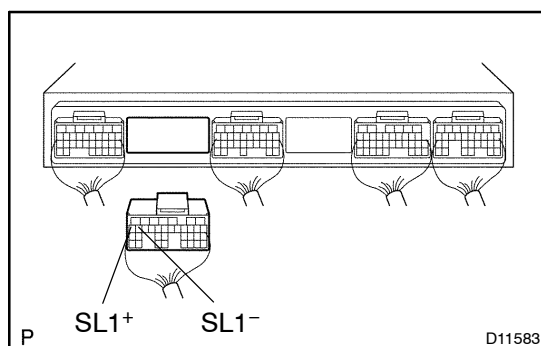
**OK:**

**Resistance: 1 MΩ or higher**

**NG**

**Go to step 3.**

**OK**

2 Measure resistance between terminal SL1<sup>+</sup> and SL1<sup>-</sup> of ECM connector.**PREPARATION:**

- (a) Connect the transmission wire connector.
- (b) Disconnect the connector of the ECM.

**CHECK:**

Measure resistance between terminals SL1<sup>+</sup> and SL1<sup>-</sup> of ECM connector.

**OK:**

**Resistance: 5.0 – 5.6 Ω at 20°C (68°F)**

**CHECK:**

Measure resistance between terminals SL1<sup>+</sup> and SL1<sup>-</sup> of the ECM connector and body ground.

**OK:**

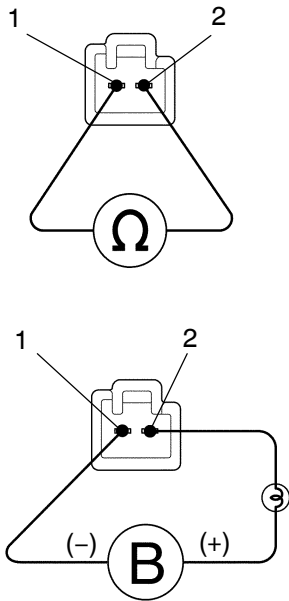
**Resistance: 1 MΩ or higher**

**NG**

**Repair or replace the harness or connector (See page IN-36).**

**OK**

**Check and replace the ECM (See page IN-36).**

**3****Check shift solenoid valve SL1.**

D12795

**PREPARATION:**

- (a) Jack up the vehicle.
- (b) Remove the oil pan.
- (c) Remove the shift solenoid valve SL1.

**CHECK:**

- (a) Measure the resistance between terminals 1 and 2 of solenoid connector.

**Standard: 5.0 – 5.6 Ω at 20° C (68° F)**

- (b) Connect the positive (+) lead with an 21 W bulb to terminal 2 of solenoid connector and negative (–) lead to terminal 1 of the solenoid valve connector, then check the movement of the valve.

**Standard: Solenoid sounds operation noise.****OK:****Standard****NG****Replace the shift solenoid valve SL1  
(See page [AT-8](#)).****OK****Repair or replace the transmission wire  
(See page [AT-6](#)).**