DIB38–03

DTC	P0748	Pressure Control Solenoid ”A” Electrical (Shift Solenoid Valve SL1)

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	○	×	×	×	○	R	×	×	×	×	○	R	○	×	×	×	○	R	○	×	×	×	○
"D"	1 st	○	×	×	×	○	4 th ↓ 3 rd	×	× → ○	×	×	○	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd	○	○	×	×	○	3 rd	×	○	×	×	○	1 st ↓ 4 th	○ → ×	×	×	×	○	2 nd	○	○	×	×	○
	3 rd	×	○	×	×	○	3 rd	×	○	×	×	○	4 th	×	×	×	×	○	3 rd	×	○	×	×	○
	4 th	×	×	×	×	○	4 th	×	×	×	×	○	4 th	×	×	×	×	○	4 th	×	×	×	×	○
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	4 th	×	×	×	○	×
"3"	1 st	○	×	×	×	○	3 rd ↓ 3 rd E/B	×	× → ○	×	×	○ → ×	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd	○	○	×	×	○	3 rd ↓ 3 rd E/B	×	○	×	×	○ → ×	1 st ↓ 3 rd E/B	○ → ×	×	×	×	○ → ×	2 nd	○	○	×	×	○
	3 rd E/B	×	○	×	×	×	3 rd E/B	×	○	×	×	×	3 rd E/B	×	×	×	×	×	3 rd E/B ↓ 3 rd	×	○	×	×	× → ○
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	3 rd	×	× → ○	×	×	○ → ○
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	3 rd E/B ↓ 3 rd	×	× → ○	×	○ → ×	× → ○
"2"	1 st	○	×	×	×	○	1 st	×	×	×	×	○	1 st	○	×	×	×	○	1 st	○	×	×	×	○
	2 nd E/B	○	○	○	×	×	3 rd E/B	×	○	○	×	×	2 nd E/B ↓ 4 th	○ → ×	×	○	×	× → ○	2 nd	○	○	×	×	×
	3 rd E/B	×	○	○	×	×	3 rd E/B	×	○	○	×	×	Fail 4th	×	×	○	×	× → ○	2 nd	× → ○	○	×	×	×
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	1 st ↓ 2 nd	× → ○	× → ○	×	×	○ → ×
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	1 st E/B ↓ 2 nd	× → ○	○	×	○ → ×	×
"L"	1 st E/B	○	×	×	×	×	1 st E/B	×	×	×	×	×	1 st E/B	○	×	×	×	×	1 st E/B	○	×	×	×	×
	2 nd E/B	○	○	○	×	×	3 rd E/B	×	○	○	×	×	2 nd E/B ↓ 4 th	○ → ×	×	○	×	× → ○	2 nd	○	○	×	×	×
	3 rd E/B	×	○	○	×	×	3 rd E/B	×	○	○	×	×	Fail 4 th	×	×	○	×	× → ○	2 nd	× → ○	○	×	×	×
	4 th	×	×	○	×	○	4 th	×	×	○	×	○	4 th	×	×	○	×	○	1 st ↓ 2 nd	× → ○	× → ○	×	×	○ → ×
	5 th	×	×	○	○	×	5 th	×	×	○	○	×	5 th	×	×	○	○	×	1 st E/B ↓ 2 nd	× → ○	× → ○	×	○ → ×	×

○: 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 ↓ 3 rd	X	X→○	X	X	○	4 th	X	X	X	X	○
	4 th	X	X	X	X	○	1 st ↓ 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	○	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	X→○	4 th	X	X	X	○→X	X→○	4 th	X	X	X	○→X	X→○
"3"	3 rd ↓ 3 rd E/B	X	X	X	X	○→X	1 st	○	X	X	X	○	3 rd	X	X→○	X	X	○→○	3 rd	X	X	X	X	○→○
	3 rd ↓ 3 rd E/B	X	X	X	X	○→X	1 st ↓ 3 rd	○→X	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 ↓ 3 rd	X	X	X	X	X→○	3 rd E/B ↓ 3 rd	X	○	X	X	X→○	3 rd E/B ↓ 3 rd	X	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 ↓ 3 rd	X	X	X	○→X	X→○	3 rd E/B ↓ 3 rd	X	X→○	X	○→X	X→○	3 rd E/B ↓ 3 rd	X	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	X→○	1 st E/B ↓ 1 st	○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	X→○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	4 th	X	X	○	X	○	1 st	X→○	X	X	X	○	1 st ↓ 2nd	X	X→○	X	X	○→X	1 st	X	X	X	X	○
	5 th	X	X	○	○	X	1 st E/B ↓ 1 st	X→○	X	X	○→X	X→○	1 st E/B ↓ 2nd	X	X→○	X	○→X	X	1 st E/B ↓ 1 st	X	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	X→○	1 st E/B ↓ 1 st	○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	Fail 4 th	X	X	○	X	X→○	1 st E/B ↓ 1 st	X→○	X	X	X	X→○	2 nd	X	○	X	X	X	1 st E/B ↓ 1 st	X	X	X	X	X→○
	4 th	X	X	○	X	○	1 st	X→○	X	X	X	○	1 st ↓ 2nd	X	X→○	X	X	○→X	1 st	X	X	X	X	○
	5 th	X	X	○	○	X	1 st E/B ↓ 1 st	X→○	X	X	○→X	X→○	1 st E/B ↓ 2nd	X	X→○	X	○→X	X	1 st E/B ↓ 1 st	X	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) (a) When solenoid, duty ratio equal to 100% (b) When solenoid is not energized, duty ratio is less than 3%	• Open or short in shift solenoid valve SL1 circuit • Shift solenoid valve SL1 • ECM

MONITOR DESCRIPTION

The ECM commands gearshift by turning the shift solenoid valves ”ON/OFF”. When there is an open or short circuit in any shift solenoid valve circuit, the ECM detects the problem and illuminates the MIL and stores the DTC. And the ECM performs the fail–safe function and turns the other shift solenoid valves in good condition ”ON/OFF” (In case of an open or short circuit, the ECM stops sending current to the circuit.).

MONITOR STRATEGY

Related DTCs	P0748	Shift solenoid valve SL1/Range check
Required sensors/Components	Shift solenoid valve SL1	
Frequency of operation	Continuous	
Duration	1 sec.	
MIL operation	Immediate	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever the following DTCs are not present.	See page DI–369	
All of the following conditions are met: Condition (A) and (B)		
Condition (A)		
Battery voltage	10 V or more	Less than 12 V
CPU commanded duty	Less than 75%	
Ignition switch	ON	
Starter	OFF	
Condition (B)		
Battery voltage	12 V or more	–
Ignition switch	ON	
Starter	OFF	

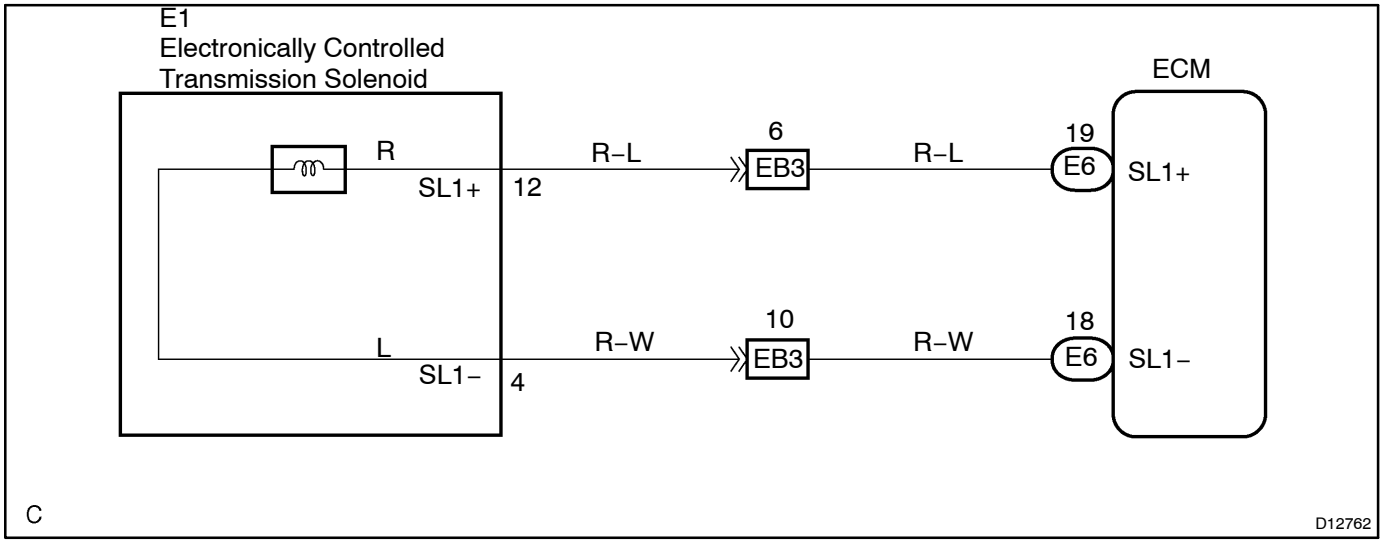
TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
Output signal duty	100%

COMPONENT OPERATING RANGE

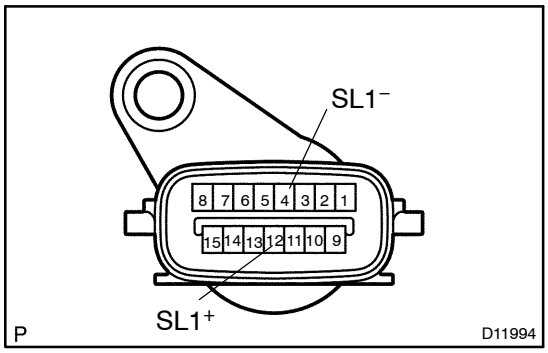
Parameter	Standard value
Output signal duty	Less than 100%

WIRING DIAGRAM



INSPECTION PROCEDURE

1	**Check transmission wire.**

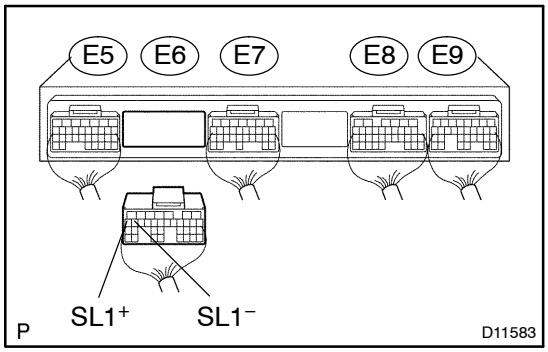


PREPARATION:
Disconnect the trasmission wire connector.
CHECK:
Measure resistance between SL1+ and SL1− of transmission wire.
OK:
Resistance: 5.0 to 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SL1+ and SL1− of the transmission wire connector and body ground.
OK:
Resistance: 1 MΩ or higher

NG	**Go to step 3.**

OK

2	**Measure resistance between terminal SL1+ and SL1− of ECM connector.**



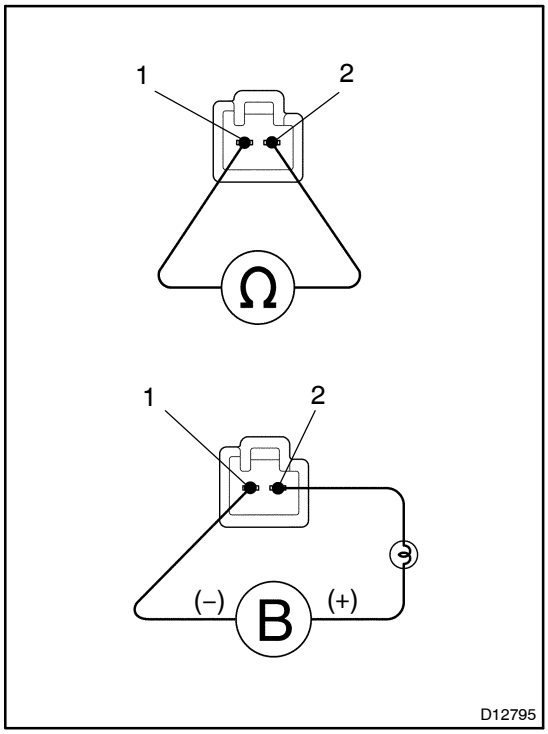
PREPARATION:
(a) Connect the transmission wire connector.
(b) Disconnect the connector of the ECM.
CHECK:
Measure resistance between terminals SL1+ and SL1− of ECM connector.
OK:
Resistance: 5.0 to 5.6 Ω at 20°C (68°F)
CHECK:
Measure resistance between terminals SL1+ and SL1− of the ECM connector and 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.



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 to 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).