

DTC	P0973	Shift Solenoid "A" Control Circuit Low (Shift Solenoid Valve S1)
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DTC	P0974	Shift Solenoid "A" Control Circuit High (Shift Solenoid Valve S1)
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CIRCUIT DESCRIPTION

See page [DI-427](#).

DTC No.	DTC Detection Condition	Trouble Area
P0973	ECM detects short in solenoid valve S1 circuit 4 times when solenoid valve S1 is operated (1-trip detection logic)	• Short in shift solenoid valve S1 circuit • Shift solenoid valve S1 • ECM
P0974	ECM detects open in solenoid valve S1 circuit 4 times when solenoid valve S1 is not operated (1-trip detection logic)	• Open in shift solenoid valve S1 circuit • Shift solenoid valve S1 • 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 stored 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	P0973	Shift solenoid valve S1/Range check (Low resistance)
	P0974	Shift solenoid valve S1/Range check (High resistance)
Required sensors/Components	Shift solenoid valve S1	
Frequency of operation	Continuous	
Duration	0.1 sec. x 2 (times) or more	
MIL operation	1 driving cycle	
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-361	
Range check (Low resistance)		
Solenoid	ON	
Range check (High resistance)		
Solenoid	OFF	

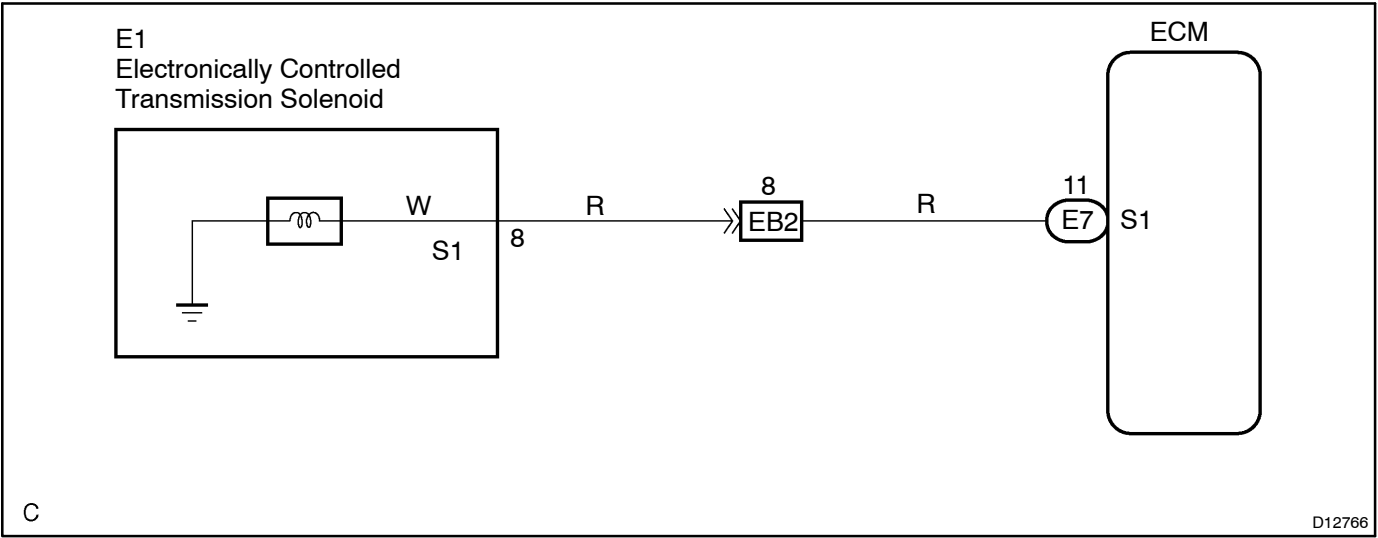
TYPICAL MALFUNCTION THRESHOLDS

Detection criteria	Threshold
Range check (Low resistance)	
Intelligent power MOS diagnosis fail signals detected while the solenoid is operated	Fail at solenoid resistance: 8 Ω or less
Range check (High resistance)	
Intelligent power MOS diagnosis fail signals detected while the solenoid is not operated	Fail at solenoid resistance: 100 kΩ or more

COMPONENT OPERATING RANGE

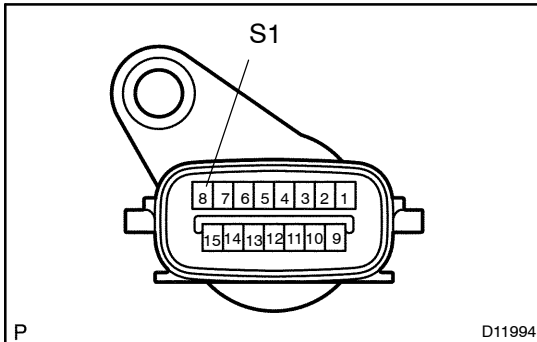
Parameter	Standard value
Shift solenoid valve S1	Resistance: 11 to 15 Ω at 20°C (68°F)

WIRING DIAGRAM



INSPECTION PROCEDURE

1 Check transmission wire.



PREPARATION:

Disconnect the transmission wire connector.

CHECK:

Measure resistance between S1 of transmission wire connector and body ground.

OK:

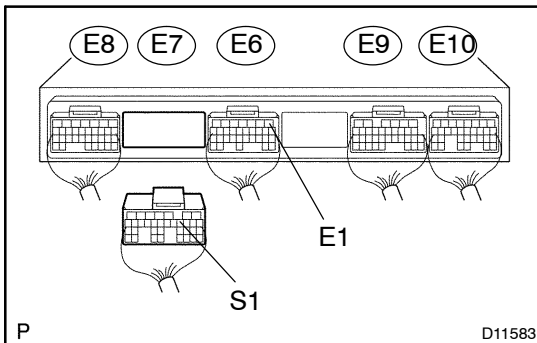
Resistance: 11 to 15 Ω at 20°C (68°F)

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Go to step 3.

OK

2 Measure resistance between terminal S1 and E1 of ECM connector.



PREPARATION:

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

CHECK:

Measure resistance between terminals S1 and E1 of ECM connector.

OK:

Resistance: 11 to 15 Ω at 20°C (68°F)

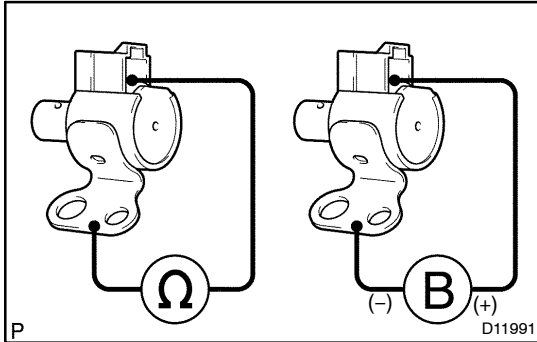
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Repair or replace the harness or connector (See page [IN-36](#)).

OK

Check and replace the ECM (See page [IN-36](#)).

3 Check shift solenoid valve S1.

**PREPARATION:**

- (a) Jack up the vehicle.
- (b) Remove the oil pan.
- (c) Remove the shift solenoid valve S1.

CHECK:

Measure the resistance between the solenoid connector terminal and the body ground.

OK:

Resistance: 11 to 15 Ω at 20°C (68°F)

CHECK:

Connect the battery positive lead to the solenoid connector terminal and the battery negative lead to the solenoid body ground.

OK:

Solenoid sounds operation noise.

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**Replace the shift solenoid valve S1
(See page [AT-8](#)).**

OK

**Repair or replace the transmission wire
(See page [AT-6](#)).**