

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

DESCRIPTION

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

DTC No.	DTC Detection Condition	Trouble Area
P0973	ECM detects short in solenoid valve S1 circuit 2 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 2 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 gear shifts 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.) (See page [AX-27](#)).

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	2 times or more
MIL operation	1 driving cycle
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

P0973: Range check (Low resistance):

The monitor will run whenever this DTC is not present.	None
Shift solenoid valve S1	ON
Time after solenoid OFF to ON	More than 0.008 sec.

P0974: Range check (High resistance):

The monitor will run whenever this DTC is not present.	None
Shift solenoid valve S1	OFF
Time after solenoid ON to OFF	More than 0.008 sec.

TYPICAL MALFUNCTION THRESHOLDS

P0973: Range check (Low resistance):

Intelligent power MOS diagnosis fail signals detected while the solenoid is operated	Fail at solenoid resistance: 8 Ω or less
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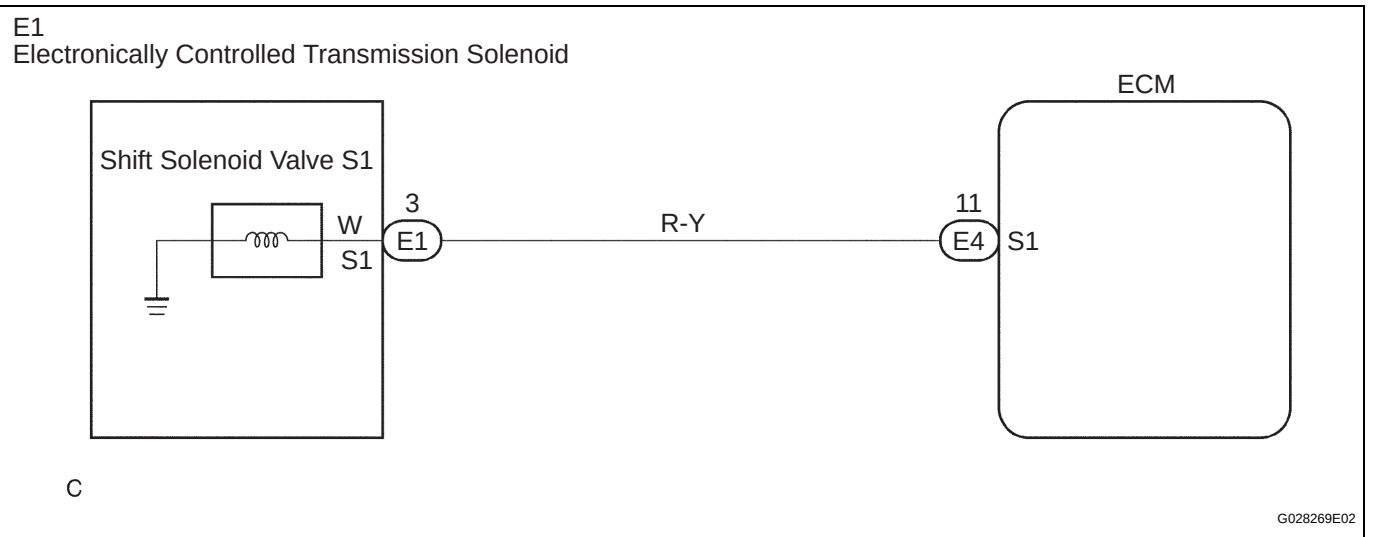
P0974: Range check (High resistance):

Intelligent power MOS diagnosis fail signals detected while the solenoid is not operated	Fail at solenoid resistance: 100 kΩ or more
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COMPONENT OPERATING RANGE

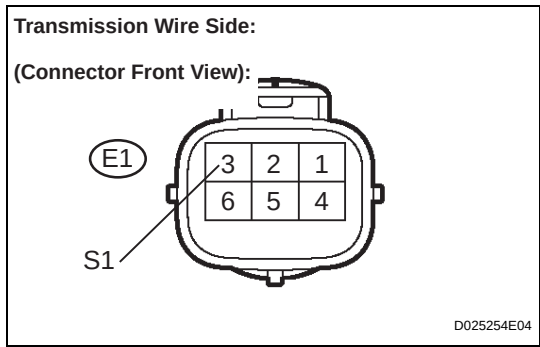
Shift solenoid valve S1	Resistance: 11 to 15 Ω at 20°C (68°F)
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WIRING DIAGRAM



INSPECTION PROCEDURE

1	INSPECT TRANSMISSION WIRE (S1)
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- (a) Disconnect the transmission wire connector from the transaxle.
- (b) Measure the resistance according to the value(s) in the table below.

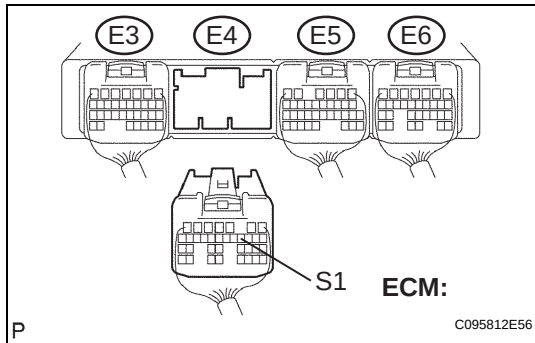
Standard resistance

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

OK

NG Go to step 3

2 CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - ECM)



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

Standard resistance

Tester Connection	Specified Condition 20°C (68°F)
E4-11 (S1) - Body ground	11 to 15 Ω

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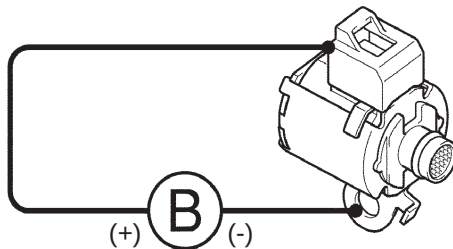
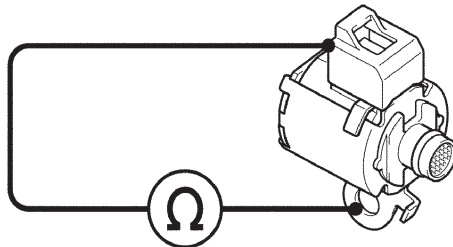
REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE ECM

3 INSPECT SHIFT SOLENOID VALVE (S1)

Shift Solenoid Valve S1:



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- Remove the shift solenoid valve S1.
- Measure the resistance according to the value(s) in the table below.

Standard resistance

Tester Connection	Specified Condition 20°C (68°F)
Solenoid Connector (S1) - Solenoid Body (S1)	11 to 15 Ω

- Connect positive (+) lead to the terminal of solenoid connector, negative (-) lead to the solenoid body.

Standard:

The solenoid makes an operating noise.

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REPLACE SHIFT SOLENOID VALVE (S1)

OK

REPAIR OR REPLACE TRANSMISSION WIRE