

DTC	P0787	SHIFT/TIMING SOLENOID LOW (SHIFT SOLENOID VALVE ST)
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DTC	P0788	SHIFT/TIMING SOLENOID HIGH (SHIFT SOLENOID VALVE ST)
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CIRCUIT DESCRIPTION

Shift solenoid valve ST is switched ON–OFF by a signal from ECM so that let in or out timing of 2nd brake is adjusted by operating orifice control valve. Therefore, shift solenoid valve ST operates when letting in or out reverse clutch.

If it is broken, the shift shock becomes big.

DTC No.	DTC Detection Condition	Trouble Area
P0787	ECM detects short in solenoid valve ST circuit 4 times when solenoid valve ST is operated (1–trip detection logic)	<ul style="list-style-type: none"> • Short in shift solenoid valve ST circuit • Shift solenoid valve ST • ECM
P0788	ECM detects open in solenoid valve ST circuit 4 times when solenoid valve ST is not operated (1–trip detection logic)	<ul style="list-style-type: none"> • Open in shift solenoid valve ST circuit • Shift solenoid valve ST • 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 the MIL comes on. Illuminating the MIL, the ECM performs the fail–safe 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	P0787	Shift timing solenoid/Range check (Low resistance)
	P0788	Shift timing solenoid/Range check (High resistance)
Required sensors/Components	Shift solenoid valve ST	
Frequency of operation	Continuous	
Duration	2 times or more	
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 05-389	
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.	–

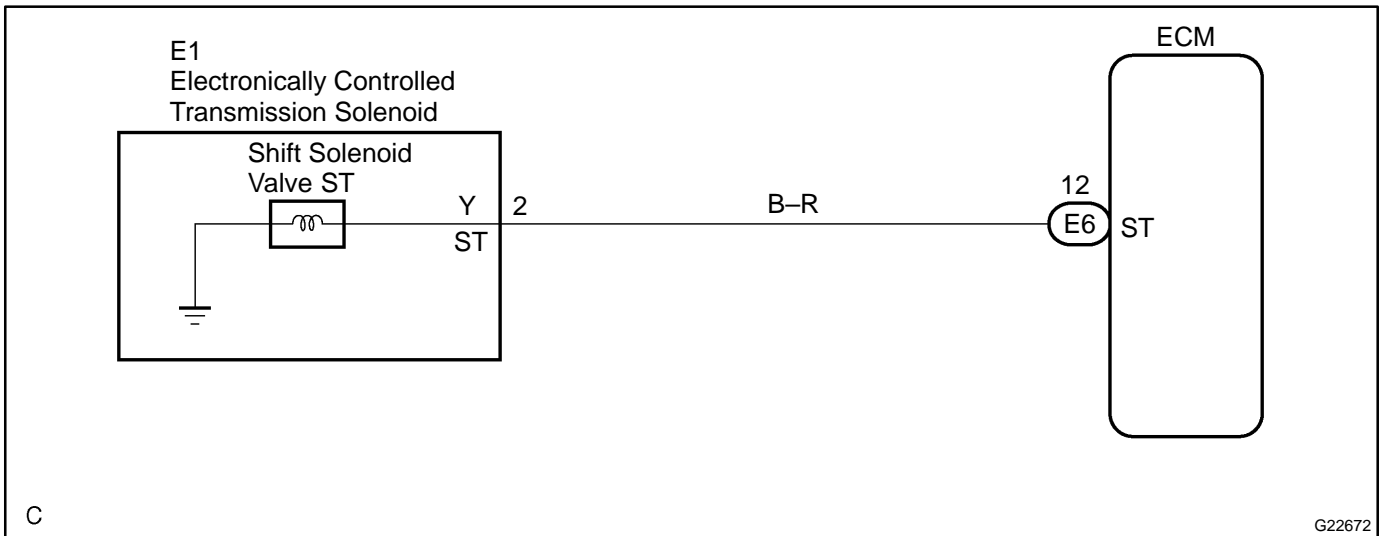
TYPICAL MALFUNCTION THRESHOLDS

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

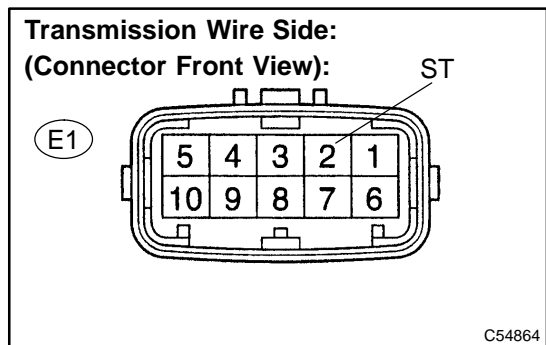
Parameter	Standard value
Shift solenoid valve ST resistance	11 to 15 Ω at 20°C (68°F)

WIRING DIAGRAM



INSPECTION PROCEDURE

1 INSPECT TRANSMISSION WIRE(ST)



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

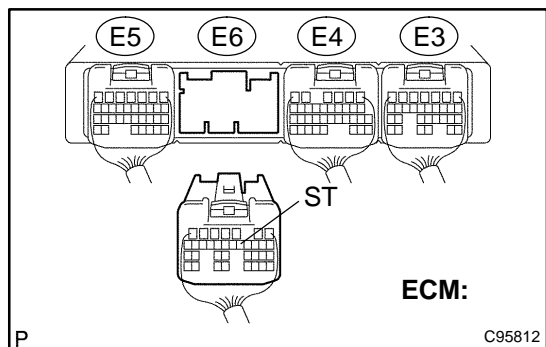
Standard:

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

NG → Go to step 3

OK

2 CHECK HARNESS AND CONNECTOR(TRANSMISSION WIRE – ECM)



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

Standard:

Tester Connection	Specified Condition 20 °C (68 °F)
E6 – 12 (ST) – Body ground	11 to 15 Ω

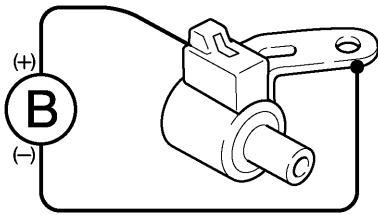
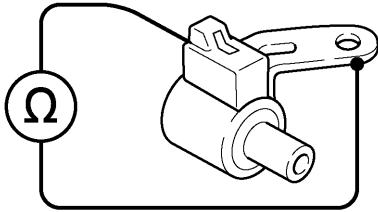
NG → REPAIR OR REPLACE HARNESS OR CONNECTOR (See page 01-30)

OK

REPLACE ECM (See page 10-17)

3 INSPECT SHIFT SOLENOID VALVE(ST)

Shift Solenoid Valve ST:



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

Standard:

Tester Connection	Specified Condition 20 °C (68 °F)
Solenoid Connector (ST) – Solenoid Body (ST)	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 makes an operating noise.

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NG → **REPLACE SHIFT SOLENOID VALVE**

OK

REPAIR OR REPLACE TRANSMISSION WIRE (See page 40-29)