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2021 Lexus LX 570 Service and Repair Manual

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OK

17.	REPLACE TCM

HINT:

Click here INFO

NEXT **PERFORM A/T CODE REGISTRATION**

Frequency of operation	Continuous
Duration	Condition (A): 0.1 seconds Condition (B), (C), (D) and (E): Immediately
MIL operation	1 driving cycle
Sequence of operation	None

TYPICAL ENABLING CONDITIONS

Condition (A)

The monitor will run whenever the following DTCs are not stored	None

Condition (B)

The monitor will run whenever the following DTCs are not stored	None
One of the following conditions is met	(a), (b), (c), (d) or (e)
(a) Output speed	10000 rpm or more
(b) Output speed	10000 rpm or more
(c) Output speed	2255 rpm or more
(d) Output speed	1353 rpm or more
(e) Output speed	1353 rpm or more

Condition (C)

The monitor will run whenever the following DTCs are not stored	None
Output speed	More than 902 rpm

Condition (D)

The monitor will run whenever the following DTCs are not stored	None

Condition (E)

The monitor will run whenever the following DTCs are not stored	None
Output speed	451 rpm or more

TYPICAL MALFUNCTION THRESHOLDS

When one of the following conditions is met: Condition (A), (B), (C), (D) or (E)

Condition (A)

Target gear is low (less than allowed gears)	-
Target gear is 1st, 2nd, 3rd, 4th or 5th gear	-

Condition (B)

One of the following conditions is met	(a), (b), (c), (d) or (e)
(a) Target gear	More than -10

- (2) Current of SL4	ON
- (3) Current of SL5	ON
- (4) Current of SC1	ON
- (5) Current of SL6	ON
(g) All of the following conditions are met	(1), (2) and (3)
- (1) Current of SL1	ON
- (2) Current of SL2	ON
- (3) Current of SL5	ON
(h) All of the following conditions are met	(1), (2), (3) and ((4) or (5))
- (1) Current of SL2	ON
- (2) Current of SL4	ON
- (3) Current of SL5	ON
- (4) Current of SC1	ON
- (5) Current of SL6	ON
(i) All of the following conditions are met	(1), (2), (3) and (4)
- (1) Current of SL1	ON
- (2) Current of SL3	ON
- (3) Current of SL4	ON
- (4) Current of SL5	ON
(j) All of the following conditions are met	(1), (2), (3) and (4)
- (1) Current of SL2	ON
- (2) Current of SL3	ON
- (3) Current of SL4	ON
- (4) Current of SL5	ON
(k) All of the following conditions are met	(1), (2), (3) and (4)
- (1) Current of SL1	ON
- (2) Current of SL2	ON
- (3) Current of SL3	ON
- (4) Current of SR	OFF
(l) All of the following conditions are met	(1), (2), (3), (4) and ((5) or (6))
- (1) Current of SL1	ON
- (2) Current of SL2	OFF
- (3) Current of SL3	OFF
- (4) Current of SR	OFF
- (5) Current of SC1	OFF
- (6) Current of SL6	OFF
(m) All of the following conditions are met	(1), (2), (3) and ((4) or (5))

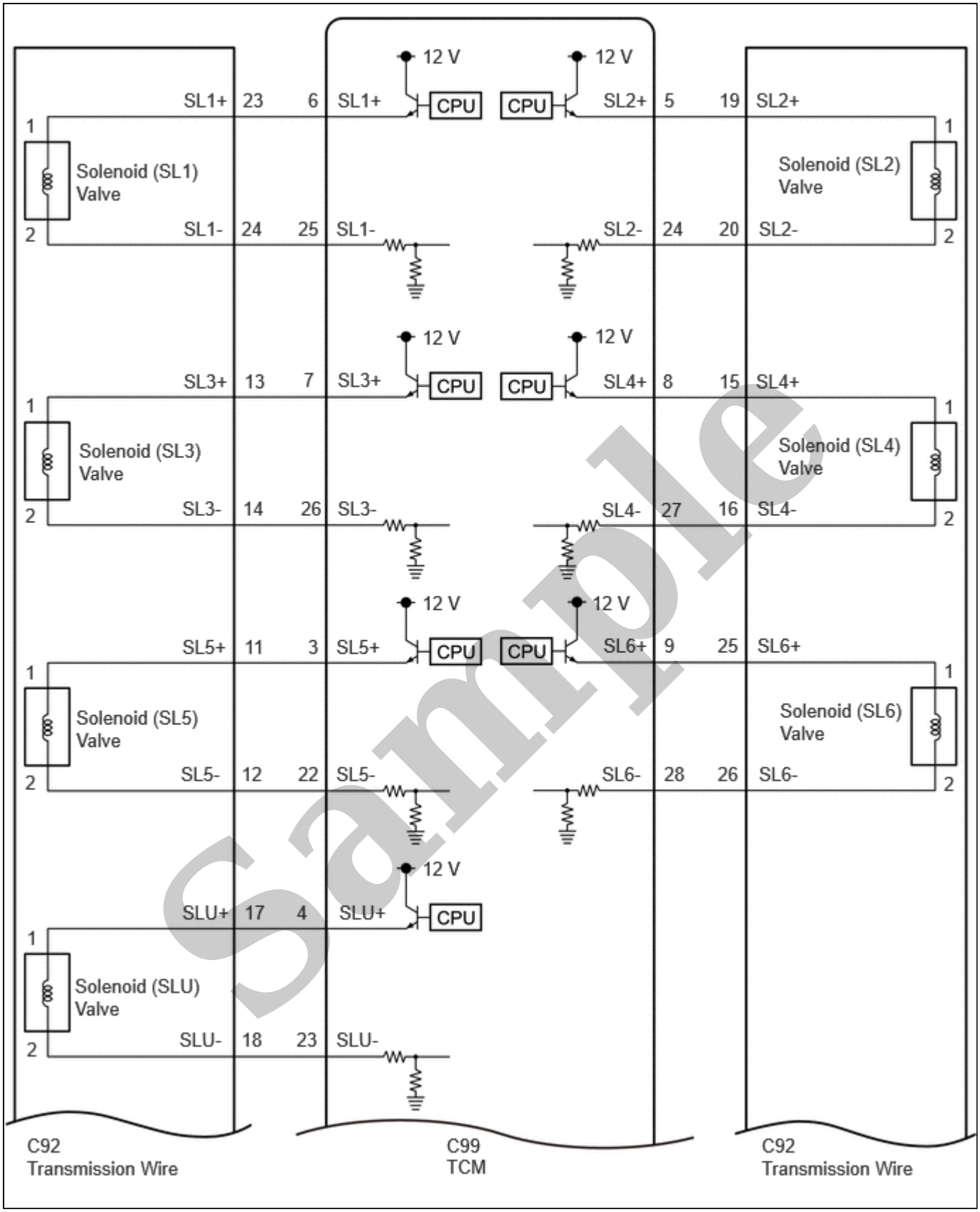
- (3) Current of SL4	OFF
- (4) Current of SR	OFF
(t) All of the following conditions are met	(1), (2), (3) and (4)
- (1) Current of SL2	ON
- (2) Current of SL3	ON
- (3) Current of SL5	OFF
- (4) Current of SR	OFF
(u) All of the following conditions are met	(1), (2), (3) and ((4), (5) or (6))
- (1) Current of SL1	ON
- (2) Current of SL2	ON
- (3) Current of SL4	ON
- (4) Current of SR	OFF
- (5) Current of SC1	ON
- (6) Current of SL6	ON
(v) All of the following conditions are met	(1), (2), ((3), (4) or (5)) and ((6) or (7))
- (1) Current of SL1	ON
- (2) Current of SL3	ON
- (3) Current of SL2	ON
- (4) Current of SL4	ON
- (5) Current of SL5	ON
- (6) Current of SC1	ON
- (7) Current of SL6	ON
(w) All of the following conditions are met	(1), (2), (3) and ((4) or (5))
- (1) Current of SL2	ON
- (2) Current of SL3	ON
- (3) Current of SL5	ON
- (4) Current of SC1	ON
- (5) Current of SL6	ON

Condition (D)

Either condition is met	(a) or (b)
(a) Target shift position is the forward position ("P", "N", "D" or "B")	-
Current shift position is "R"	-
(b) Target shift position is "P", "R" or "N"	-
Current shift position is "1st", "2nd", "3rd", "4th", "5th", "6th", "7th", "8th", "9th" or "10th"	-

Condition (E)

Either condition is met	(a) or (b)


12 V
CPU
SL1+
SL1-
SL2+
SL2-
SL3+
SL3-
SL4+
SL4-
SL5+
SL5-
SL6+
SL6-
SLU+
SLU-
Solenoid (SL1) Valve
Solenoid (SL2) Valve
Solenoid (SL3) Valve
Solenoid (SL4) Valve
Solenoid (SL5) Valve
Solenoid (SL6) Valve
Solenoid (SLU) Valve
C92 Transmission Wire
C99 TCM
C92 Transmission Wire

EWD INFO

Click Location & Routing(C99)
Click Connector(C99)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C99-6 (SL1+) - C99-25 (SL1-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-5 (SL2+) - C99-24 (SL2-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-7 (SL3+) - C99-26 (SL3-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-8 (SL4+) - C99-27 (SL4-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-3 (SL5+) - C99-22 (SL5-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-9 (SL6+) - C99-28 (SL6-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-4 (SLU+) - C99-23 (SLU-)	20°C (68°F)	5.0 to 5.6 Ω	Ω
C99-44 (SL) - Body ground	20°C (68°F)	11 to 15 Ω	Ω
C99-45 (SR) - Body ground	20°C (68°F)	11 to 15 Ω	Ω
C99-46 (SC1) - Body ground	20°C (68°F)	11 to 15 Ω	Ω
C99-6 (SL1+) or C99-25 (SL1-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C99-5 (SL2+) or C99-24 (SL2-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C99-7 (SL3+) or C99-26 (SL3-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C99-8 (SL4+) or C99-27 (SL4-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C99-3 (SL5+) or C99-22 (SL5-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C99-9 (SL6+) or C99-28 (SL6-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C99-4 (SLU+) or C99-23 (SLU-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ

Post-procedure1

(c) None.

NG ▶ **GO TO STEP 11**

OK ▼

2.	READ VALUE USING GTS (SPEED (SP2) AND SP2 SENSOR VOLTAGE)

(a) Read the Data List according to the display on the GTS.

Powertrain > Transmission > Data List

TESTER DISPLAY	MEASUREMENT ITEM	RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Speed (SP2)	Output shaft speed	Min.: 0 km/h (0 mph) Max.: 255 km/h (158 mph)	0 km/h (0 mph): Vehicle stopped (Output shaft speed is equal to vehicle speed)	-

A ▶ END

B ▼

5.	REPLACE TCM

HINT:

Click here INFO

NEXT ▶ PERFORM A/T CODE REGISTRATION

6.	CHECK TRANSMISSION REVOLUTION SENSOR TERMINAL (SP2 TERMINAL)

Pre-procedure1

(a) Disconnect the transmission wire connector.

(b) Turn the ignition switch to ON.

Procedure1

(c) Measure the voltage according to the value(s) in the table below.

Standard Voltage:

EWD INFO

Click Location & Routing(C92)
Click Connector(C92)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C92-29 (SP2B) - Body ground	Ignition switch ON	11 to 14 V	V
C92-30 (SP2O) - Body ground	Ignition switch ON	Below 1 V	V

Post-procedure1

(d) None.

NG ▶ GO TO STEP 9

OK ▼

7.	CHECK TRANSMISSION REVOLUTION SENSOR TERMINAL (SP2 TERMINAL)

Pre-procedure1

(a) Disconnect the transmission wire connector.

(b) Turn the ignition switch to ON.

Procedure1

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(C92)
Click Connector(C92)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
Terminal 2 of the transmission revolution sensor (SP2) connector - C92-29 (SP2B)	Always	Below 1 Ω	Ω
Terminal 1 of the transmission revolution sensor (SP2) connector - C92-30 (SP2O)	Always	Below 1 Ω	Ω
Terminal 2 of the transmission revolution sensor (SP2) connector or C92-29 (SP2B) - Body ground	Always	10 kΩ or higher	kΩ
Terminal 1 of the transmission revolution sensor (SP2) connector or C92-30 (SP2O) - Body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None.

OK ▶ **REPLACE TRANSMISSION REVOLUTION SENSOR (SP2)**

NG ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

9.	CHECK HARNESS AND CONNECTOR (TRANSMISSION WIRE - TCM)

Pre-procedure1

(a) Disconnect the transmission wire connector.

(b) Disconnect the TCM connector.

Procedure1

(c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

EWD INFO

Click Location & Routing(C92,C99)
Click Connector(C92)
Click Connector(C99)

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C92-29 (SP2B) - C99-12 (SP2B)	Always	Below 1 Ω	Ω
C92-30 (SP2O) - C99-31 (SP2O)	Always	Below 1 Ω	Ω
C92-29 (SP2B) or C99-12 (SP2B) - Body ground	Always	10 kΩ or higher	kΩ
C92-30 (SP2O) or C99-31 (SP2O) - Body ground	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR**

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION	RESULT
C92-24 (SL1-) or C99-25 (SL1-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-19 (SL2+) or C99-5 (SL2+) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-20 (SL2-) or C99-24 (SL2-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-13 (SL3+) or C99-7 (SL3+) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-14 (SL3-) or C99-26 (SL3-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-15 (SL4+) or C99-8 (SL4+) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-16 (SL4-) or C99-27 (SL4-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-11 (SL5+) or C99-3 (SL5+) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-12 (SL5-) or C99-22 (SL5-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-25 (SL6+) or C99-9 (SL6+) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-26 (SL6-) or C99-28 (SL6-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-17 (SLU+) or C99-4 (SLU+) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-18 (SLU-) or C99-23 (SLU-) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-5 (SL) or C99-44 (SL) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-6 (SR) or C99-45 (SR) - Body ground and other terminals	Always	10 kΩ or higher	kΩ
C92-7 (SC1) or C99-46 (SC1) - Body ground and other terminals	Always	10 kΩ or higher	kΩ

Post-procedure1

(d) None.

NG ▶ **REPAIR OR REPLACE HARNESS OR CONNECTOR (SHIFT SOLENOID VALVE - TCM)**

OK ▼

12.	**INSPECT SOLENOID (SL1), (SL2), (SL3), (SL4), (SL5), (SL6), (SLU), (SL), (SR) AND (SC1) VALVE**

HINT:

Click here INFO

OK ▶ **REPAIR OR REPLACE TRANSMISSION WIRE**

NG ▶ **REPLACE SOLENOID (SL1), (SL2), (SL3), (SL4), (SL5), (SL6), (SLU), (SL), (SR) OR (SC1) VALVE**