

Last Modified: 11-27-2007		1.6 J
Service Category: Vehicle Interior	Section: Theft Deterrent/Keyless Entry	
Model Year: 2008	Model: LX570	Doc ID: X39400000IL012J
Title: THEFT DETERRENT / KEYLESS ENTRY: SMART ACCESS SYSTEM WITH PUSH-BUTTON START (for Start Function): DESCRIPTION (2008 LX570)		

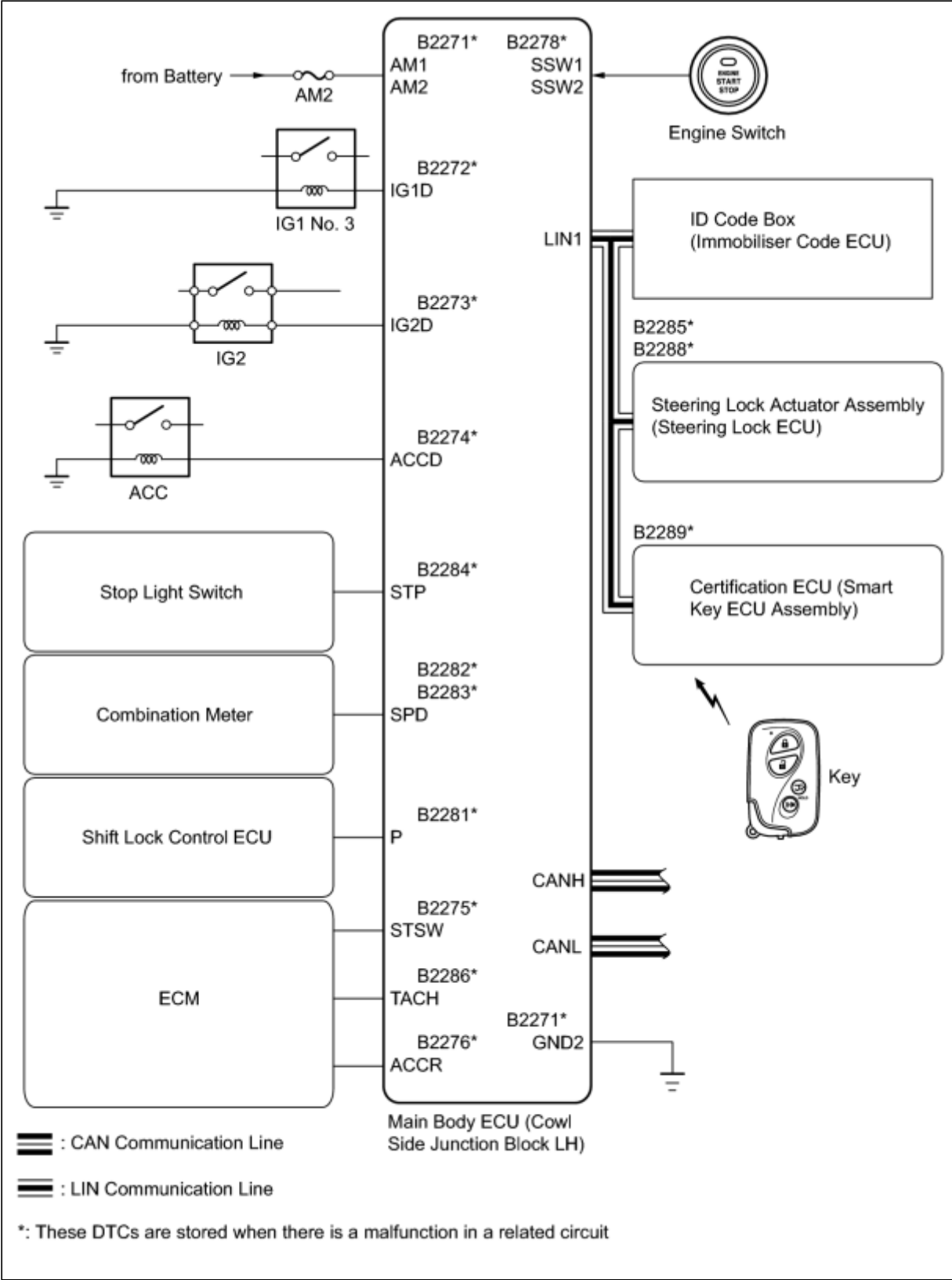
Engine does not Start

DESCRIPTION

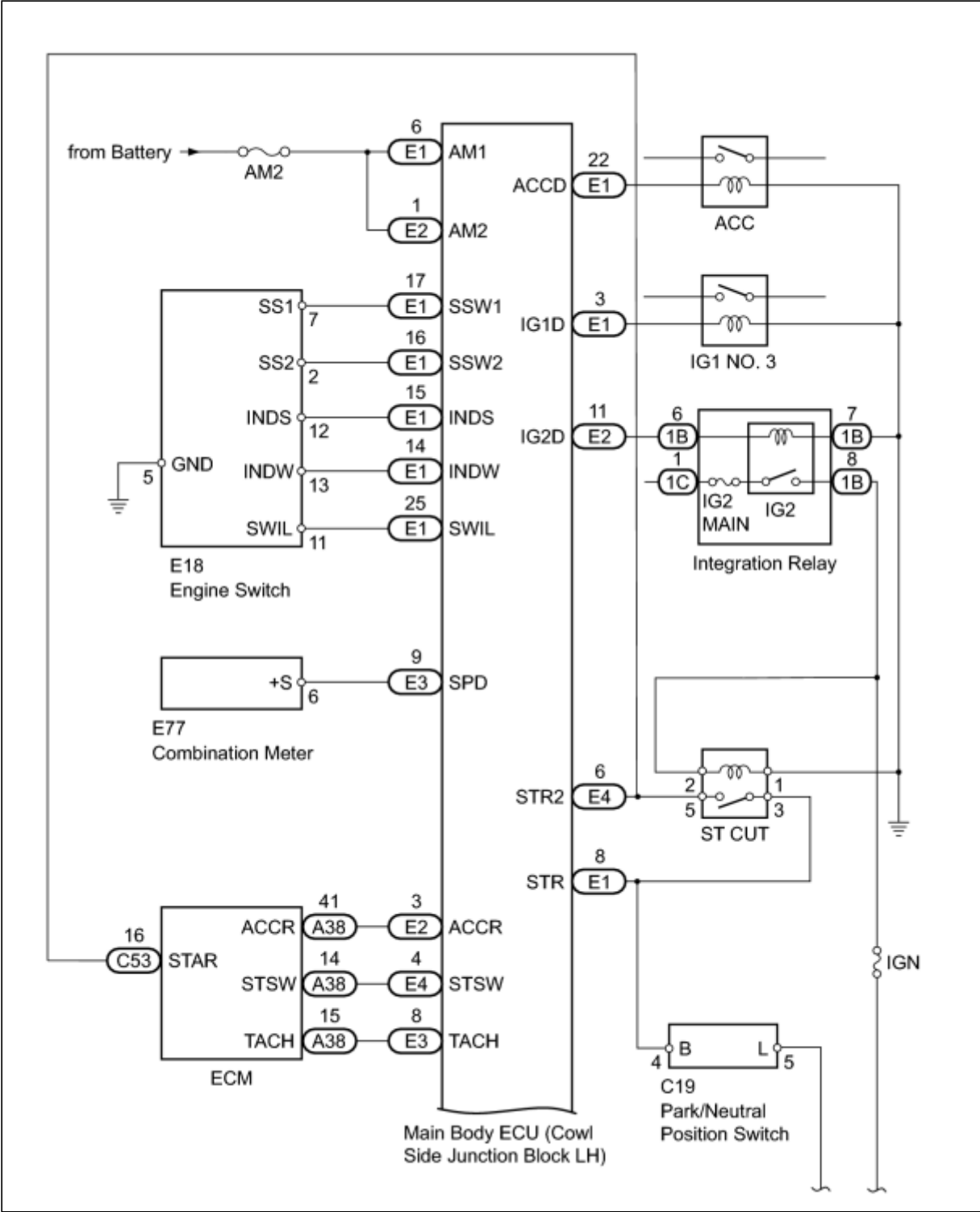
1. ENGINE START SYSTEM OPERATION

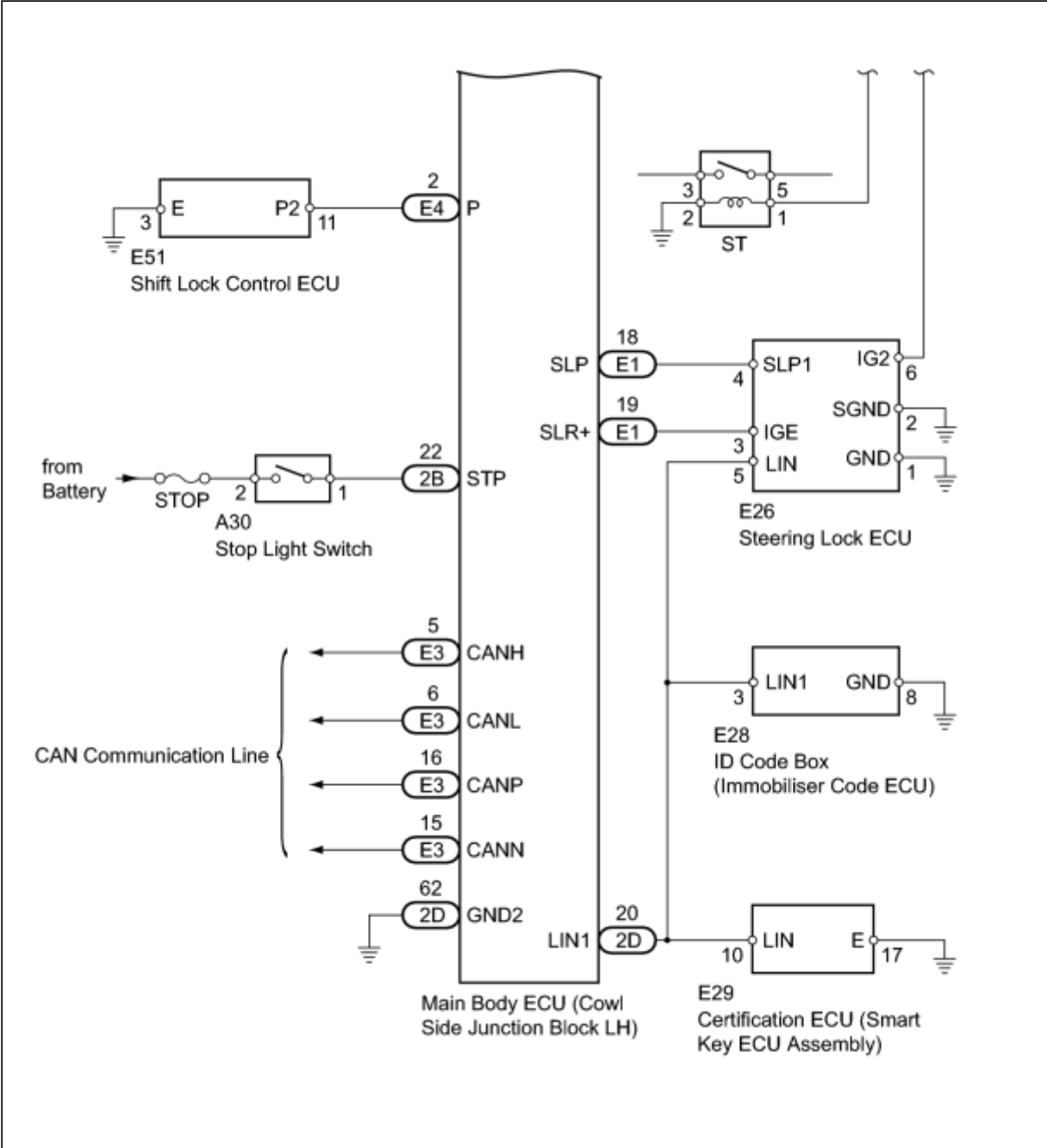
- (a) When the engine switch is pressed with the brake pedal depressed and the shift lever in P, the main body ECU determines that it is an engine start request.
- (b) The certification ECU (smart key ECU assembly) and other ECUs perform key verification via the LIN communication line. The engine switch indicator light illuminates in green.
- (c) The main body ECU activates the IG1 No. 3 relay, ACC relay and integration relay (IG2 relay).
- (d) The certification ECU (smart key ECU assembly) outputs a steering unlock signal. The signal is sent to the steering lock ECU via the LIN communication line.
- (e) The main body ECU sends an engine start request signal to the ECM.
- (f) The main body ECU deactivates the ACC relay until the ECU detects an engine start.
- (g) The ECU reactivates the ACC relay and turns off the engine switch indicator light.

SYMBOLS OF MAIN BODY ECU	SIGNALS
SSW1/SSW2	Engine switch on (ACC), on (IG) signal
IG1D	IG1 No. 3 relay operation signal
ACCD	ACC relay operation signal
IG2D	Integration relay (IG2 relay) operation signal
STP	Stop light switch signal
P	Shift lock signal
TACH	Engine start detection signal
STSW	Starter activation request signal
ACCR	ACC cut request signal



WIRING DIAGRAM





INSPECTION PROCEDURE

PROCEDURE

1.	CHECK ENGINE SWITCH (SWITCH CONDITION)
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- (a) Check the power source mode change.
- (1) When the key is inside the vehicle and the shift lever is in P, check that pressing the engine switch causes the power source mode to change as follows:

OK:

off → on (ACC) → on (IG) → off



2. CHECK WHETHER DTC OUTPUT RECURS

- (a) Clear the DTCs  .
- (b) Check whether the trouble recurs 5 seconds after the engine switch is turned on (IG).
- (c) Check whether DTCs for the main body ECU or certification ECU (smart key ECU assembly) are output.

Result

RESULT	PROCEED TO
No DTC output	A
DTC for main body ECU output Smart access system with push-button start (for start function)	B
DTC for certification ECU (Smart key ECU assembly) output Steering lock system	C
DTC for certification ECU (Smart key ECU assembly) output Engine immobiliser system	D

A**3. CHECK CRANKING FUNCTION**

- (a) Check the engine cranking function.
- (1) When there is fuel in the fuel tank, the key is inside the vehicle and the shift lever is in P, check that depressing the brake pedal and pressing the engine switch cranks the engine.
- OK:
Engine cranks.

OK**4. READ VALUE USING TECHSTREAM (L CODE)**

- (a) Use the Data List to check if L code certification is functioning properly.

Smart Access

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
L Code Check	L code certification result/NG or OK	OK: L code certification result normal NG: L code certification result abnormal	-

OK:

OK is displayed on the Techstream.

OK**5. READ VALUE USING TECHSTREAM (ENGINE START CONDITION)**

(a) Use the Data List to check if the engine start is functioning properly.

Smart Access

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Engine Start Condition	Engine start condition by certification ECU (smart key ECU assembly)/OK or NG	OK: Engine start permitted NG: Engine start prohibited	-

OK:

OK is displayed on the Techstream.

OK**6. READ VALUE USING TECHSTREAM (S CODE)**

(a) Use the Data List to check if S code certification is functioning properly.

Smart Access

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
S Code Check	S code certification result/NG or OK	OK: S code certification result normal NG: S code certification result abnormal	-

OK:

OK is displayed on the Techstream.

OK**7. REPLACE ID CODE BOX (IMMOBILISER CODE ECU)**(a) Replace the ID code box (immobiliser code ECU)  .

(b) Register the recognition code (ECU code) INFO .

(c) Check that the engine starts.

OK:
Engine starts.

OK
▼

8.	READ VALUE USING TECHSTREAM (SHIFT LOCK CONTROL ECU)
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(a) Use the Data List to check if the shift position signal is functioning properly.

Main Body

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Shift P Signal	Shift P position signal/ON or OFF	ON: Shift lever in P OFF: Shift lever not in P	-

OK:
ON (shift lever in P) and OFF (shift lever not in P) are displayed on the Techstream.

OK
▼

9.	READ VALUE USING TECHSTREAM (PARK/NEUTRAL POSITION SWITCH)
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(a) Use the Data List to check if the park/neutral switch is functioning properly.

Main Body

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Neutral SW/ Clutch SW	Park/neutral position switch/ON or OFF	ON: Shift lever in P or N OFF: Shift lever not in P or N	-

OK:
ON (shift lever in P or N) and OFF (shift lever not in P or N) are displayed on the Techstream.

OK
▼

10.	READ VALUE USING TECHSTREAM (STOP LIGHT SWITCH)
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(a) Use the Data List to check if the stop light switch is functioning properly.

Main Body

TESTER DISPLAY	MEASUREMENT ITEM/RANGE	NORMAL CONDITION	DIAGNOSTIC NOTE
Stop Light SW	Stop light switch/ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-

OK:
ON (brake pedal is depressed) and OFF (brake pedal is released) are displayed on the Techstream.

OK

▼

11.	CHECK STEERING LOCK
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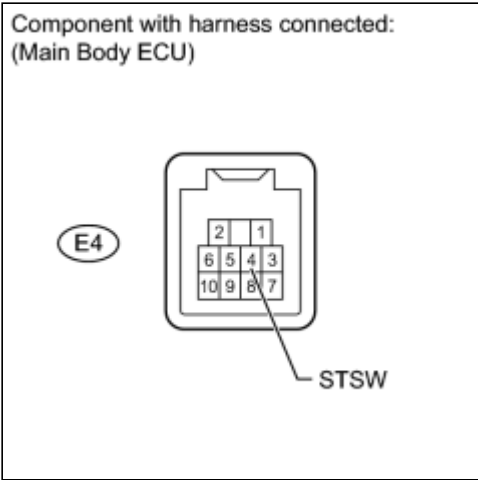
(a) Check if the steering lock is released when turning the engine switch on (ACC).

OK:
The steering lock is released.

OK

▼

12.	CHECK MAIN BODY ECU (COWL SIDE JUNCTION BLOCK LH)
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(a) Measure the voltage according to the value(s) in the table below.

HINT:
The voltage is generated at terminal STSW for 0.3 seconds when the engine cranks.

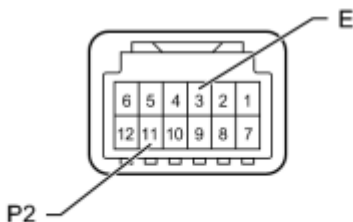
Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E4-4 (STSW) - Body ground	Brake pedal depressed with shift lever in P, engine switch pushed once	11 to 14 V

OK

13.	CHECK SHIFT LOCK CONTROL ECU SUB-ASSEMBLY
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Component without harness connected:
(Shift Lock Control ECU)



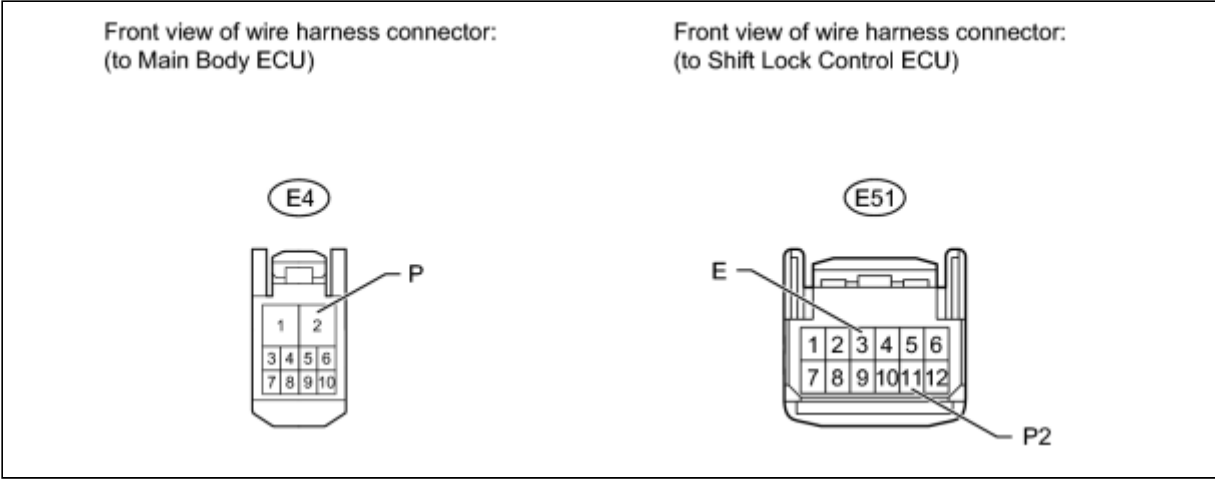
- (a) Disconnect the E51 shift lock control ECU connector.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
11 (P2) - 3 (E)	Shift lever not in P	Below 1 Ω
11 (P2) - 3 (E)	Shift lever in P	10 k Ω or higher

OK

14.	CHECK HARNESS AND CONNECTOR (SHIFT LOCK CONTROL ECU - MAIN BODY ECU AND BODY GROUND)
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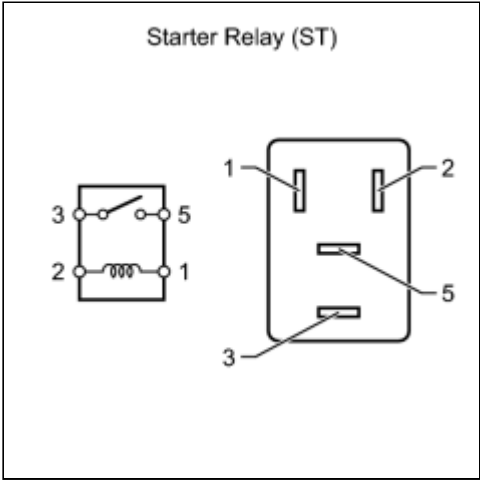
- (a) Disconnect the E4 main body ECU connector.
- (b) Disconnect the E51 shift lock control ECU connector.
- (c) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E4-2 (P) - E51-11 (P2)	Always	Below 1 Ω
E51-3 (E) - Body ground	Always	Below 1 Ω
E4-2 (P) or E51-11 (P2) - Body ground	Always	10 k Ω or higher

OK

15. INSPECT STARTER RELAY (ST)



- (a) Remove the starter relay from the engine room relay block.

- (b) Measure the resistance according value(s) in the table below.

Standard Resistance:

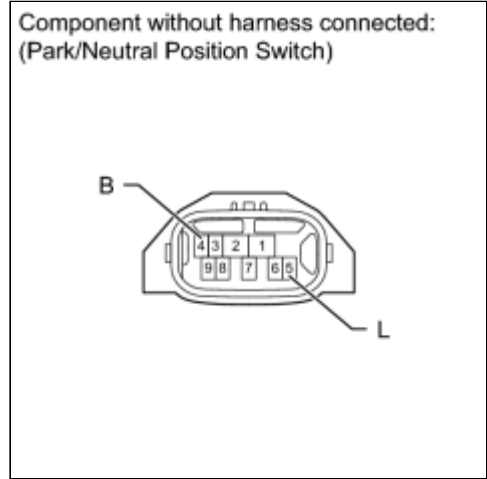
TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 5	Battery voltage not applied to terminals 1 and 2	10 k Ω or higher

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
3 - 5	Battery voltage applied to terminals 1 and 2	Below 1 Ω

OK

▼

16.	INSPECT PARK/NEUTRAL POSITION SWITCH ASSEMBLY
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(a) Disconnect the C19 park/neutral position switch connector.

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

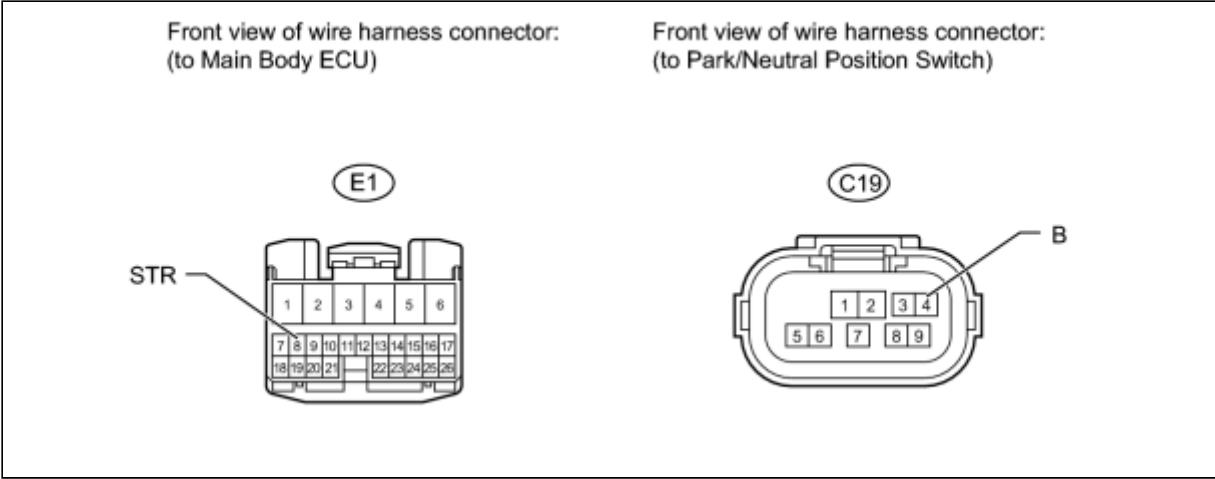
Standard Resistance:

TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
4 (B) - 5 (L)	P	Below 1 Ω
4 (B) - 5 (L)	N	Below 1 Ω
4 (B) - 5 (L)	Not in P or N	10 k Ω or higher

OK

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17.	CHECK HARNESS AND CONNECTOR (MAIN BODY ECU - PARK/NEUTRAL POSITION SWITCH)
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(a) Measure the resistance according to the value(s) in the table below.

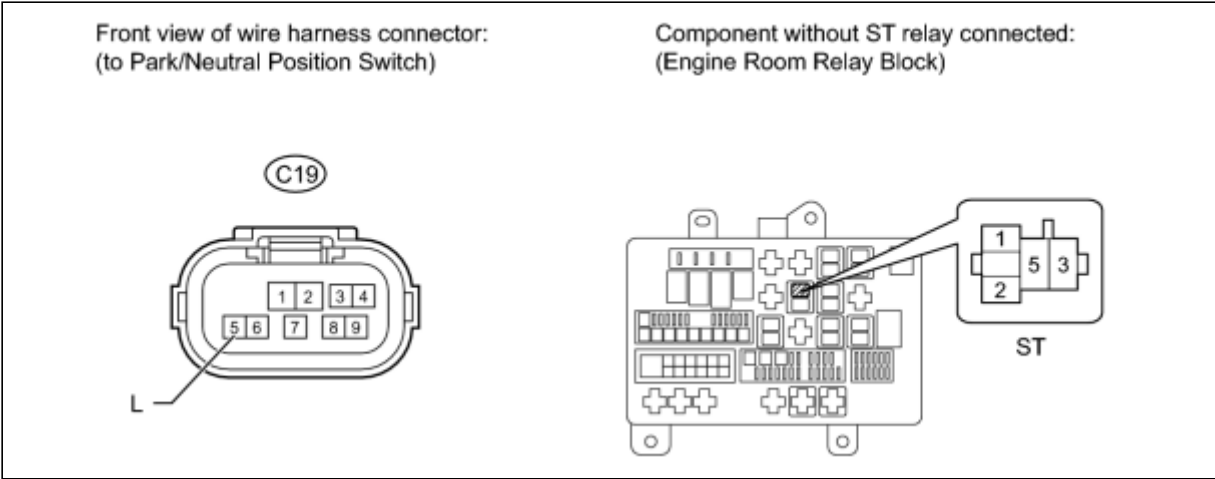
Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
E1-8 (STR) - C19-4 (B)	Always	Below 1 Ω
E1-8 (STR) or C19-4 (B) - Body ground	Always	10 kΩ or higher

OK

▼

18.	CHECK HARNESS AND CONNECTOR (STARTER RELAY - PARK/NEUTRAL POSITION SWITCH AND BODY GROUND)
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(a) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
C19-5 (L) - Relay block ST relay terminal 1	Always	Below 1 Ω
C19-5 (L) or Relay block ST relay terminal 1 - Body ground	Always	10 kΩ or higher
Relay block ST relay terminal 2 - Body ground	Always	Below 1 Ω

OK

19.INSPECT FUSE (STOP)

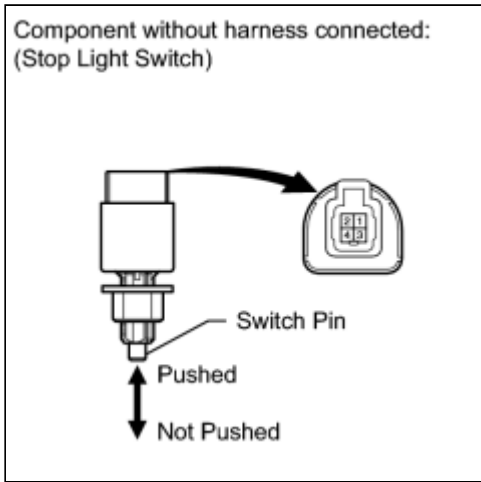
- (a) Remove the STOP fuse from the engine room relay block.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
STOP fuse	Always	Below 1 Ω

OK

20.INSPECT STOP LIGHT SWITCH ASSEMBLY



- (a) Disconnect the A30 stop light switch connector.
- (b) Measure the resistance according to the value(s) in the table below.

Standard Resistance:

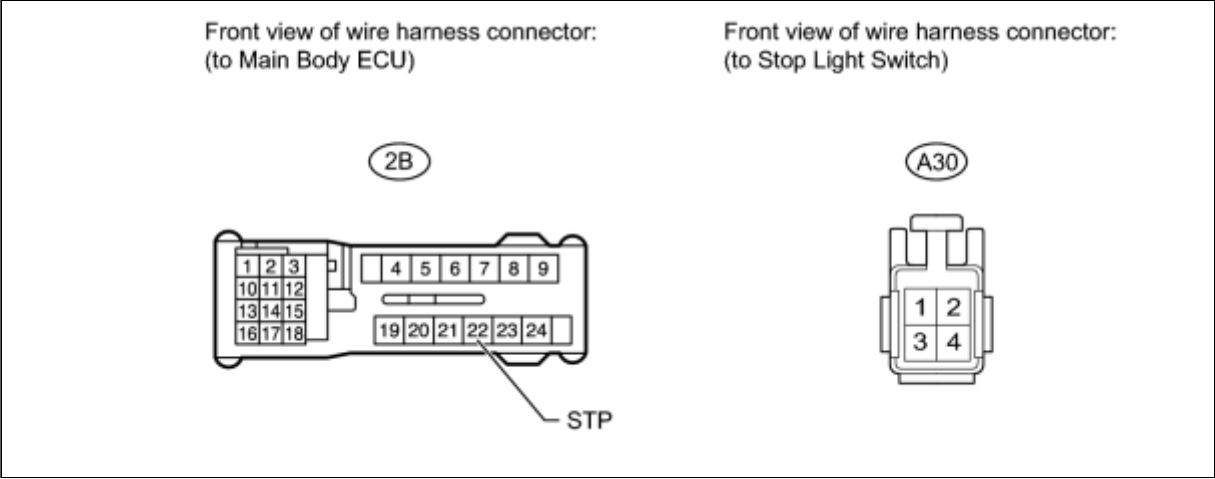
TESTER CONNECTION	SWITCH CONDITION	SPECIFIED CONDITION
1 - 2	Stop light switch pin not pushed	Below 1 Ω
3 - 4	Stop light switch pin pushed	Below 1 Ω
1 - 2	Stop light switch pin pushed	10 k Ω or higher
3 - 4	Stop light switch pin not pushed	10 k Ω or higher

OK



21.

CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH - MAIN BODY ECU AND BATTERY)



- (a) Disconnect the 2B main body ECU connector.
- (b) Disconnect the A30 stop light switch connector.
- (c) Measure the voltage and resistance according to the value(s) in the table below.

Standard Voltage:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
A30-2 - Body ground	Always	11 to 14 V

Standard Resistance:

TESTER CONNECTION	CONDITION	SPECIFIED CONDITION
2B-22 (STP) - A30-1	Always	Below 1 Ω
2B-22 (STP) or A30-1 - Body ground	Always	10 kΩ or higher

OK



22.

REPLACE STEERING LOCK ECU (STEERING LOCK ACTUATOR ASSEMBLY)

- (a) Replace the steering lock actuator assembly (steering lock ECU) [INFO](#) .
- (b) Register the recognition code (ECU code) [INFO](#) .
- (c) Check that the engine starts.

OK:
Engine starts.

OK



23.	REPLACE CERTIFICATION ECU (SMART KEY ECU ASSEMBLY)
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- (a) Replace the certification ECU (smart key ECU assembly) INFO .
- (b) Register the recognition code (ECU code) INFO .
- (c) Check that the engine starts.
 - OK:
 - Engine starts.

OK

