

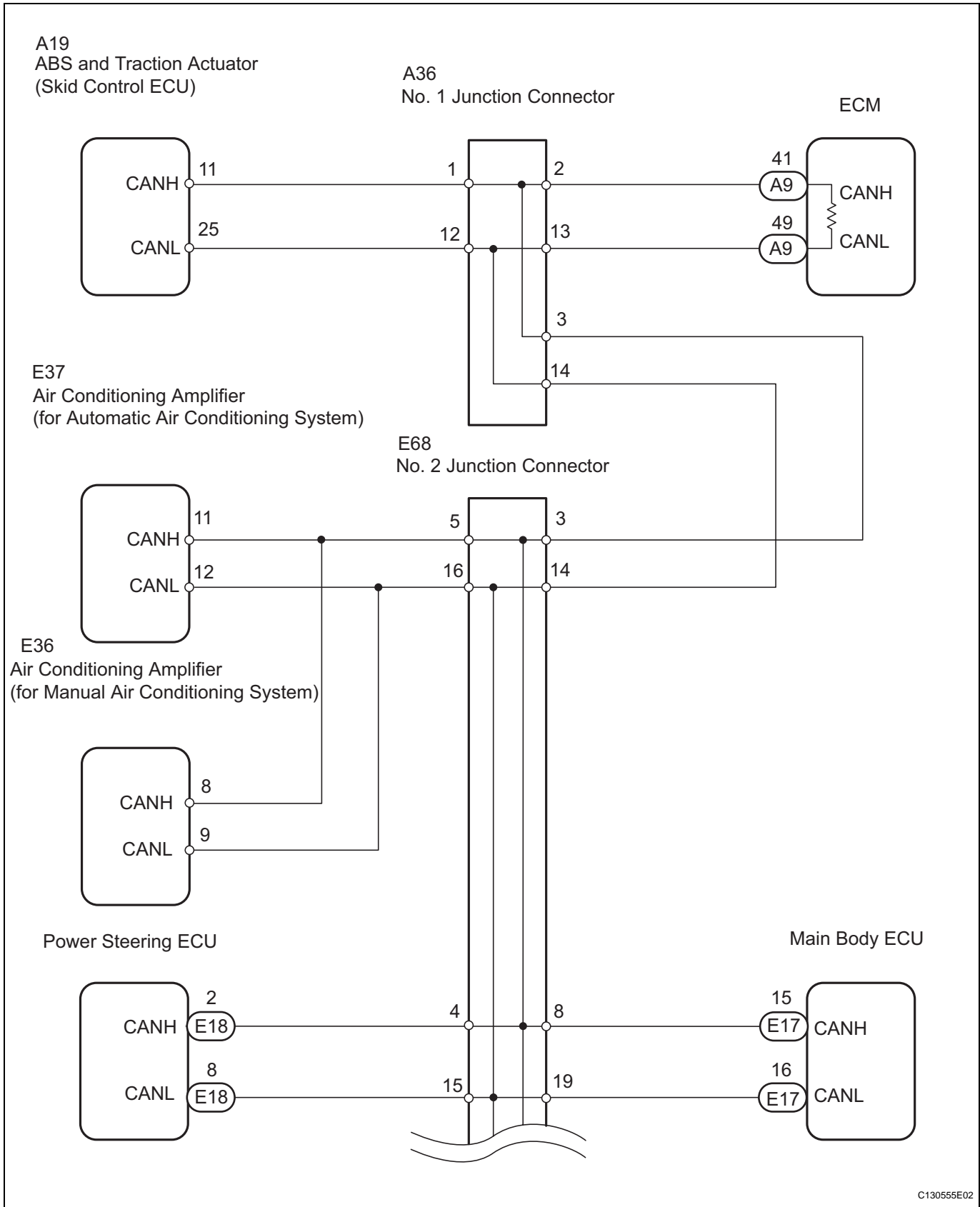
Short in CAN Bus Lines

DESCRIPTION

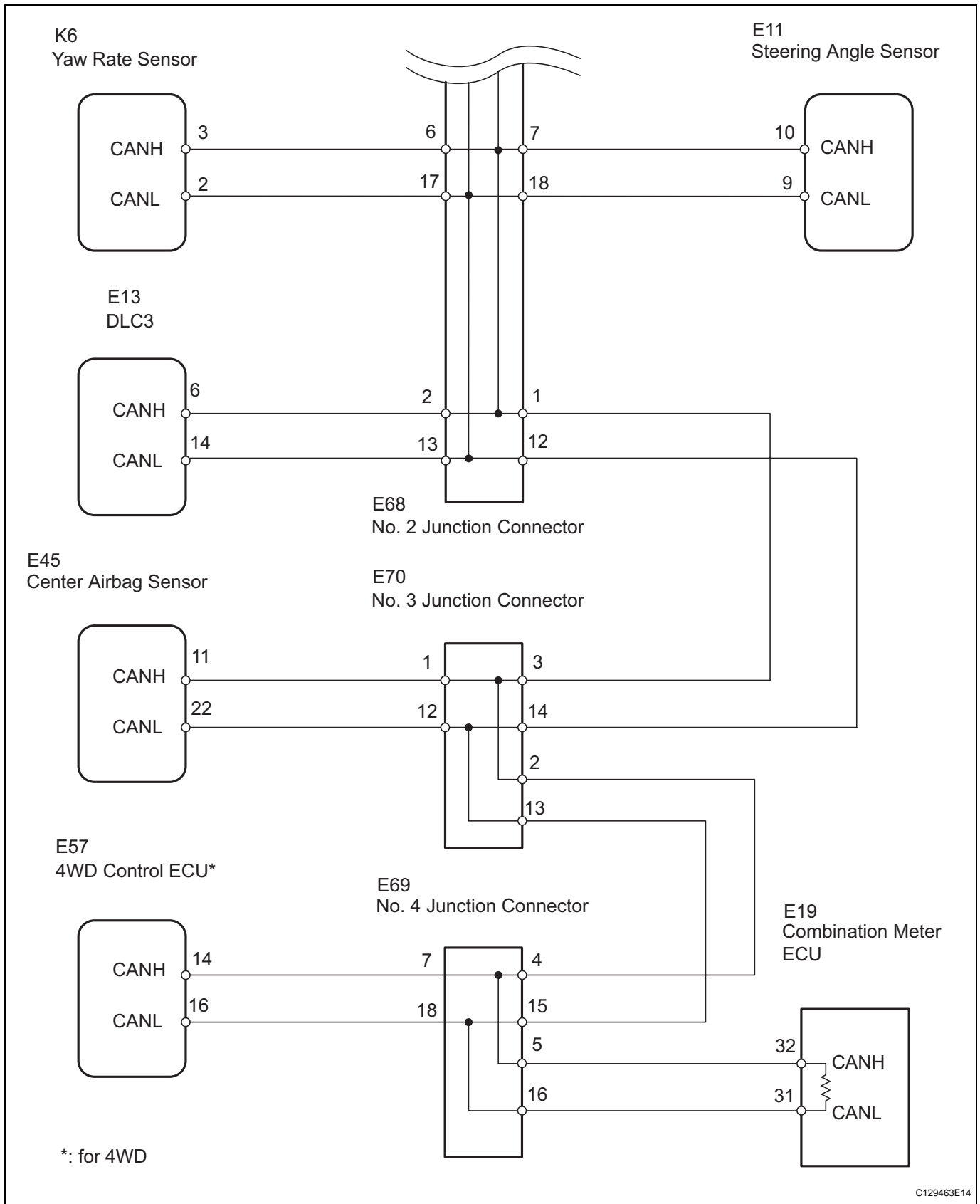
There may be a short circuit between the CAN bus lines when the resistance between terminals 6 (CANH) and 14 (CANL) of the DLC3 is below 54 Ω .

Symptom	Trouble Area
Resistance between terminals 6 (CANH) and 14 (CANL) of DLC3 is below 54 Ω .	<ul style="list-style-type: none">• Short between CAN bus lines• ABS and traction actuator (skid control ECU)• Power steering ECU• Steering angle sensor• Yaw rate sensor• ECM• Center airbag sensor• Air conditioning amplifier• Combination meter ECU• Instrument panel junction block (Main body ECU)• 4WD control ECU• No. 1 junction connector• No. 2 junction connector• No. 3 junction connector• No. 4 junction connector

WIRING DIAGRAM



CA



CA

INSPECTION PROCEDURE

NOTICE:

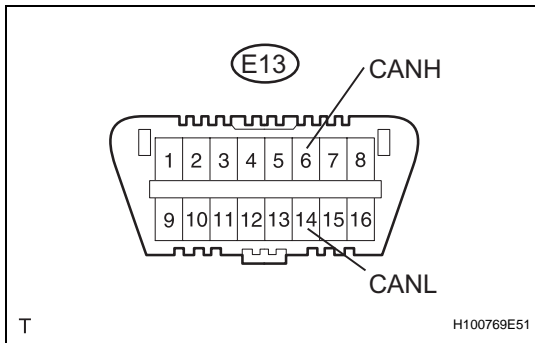
- Turn the ignition switch OFF before measuring the resistances of the main wire and the branch wire.

- After the ignition switch is turned OFF, check that the key reminder warning system and light reminder warning system are not in operation.
- Before measuring the resistance, leave the vehicle for at least 1 minute and do not operate the ignition switch, any switches or doors. If doors need to be opened in order to check connectors, open the doors and leave them open.

HINT:

Operating the ignition switch, any switches or any doors triggers related ECU and sensor communication with the CAN, which causes resistance variation.

1 CHECK CAN BUS LINES FOR SHORT CIRCUIT (DLC3 BRANCH WIRE)



- (a) Disconnect the E68 No. 2 junction connector.
- (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	1 MΩ or more

NG REPAIR OR REPLACE DLC3 BRANCH WIRE AND CONNECTOR (CANH, CANL)

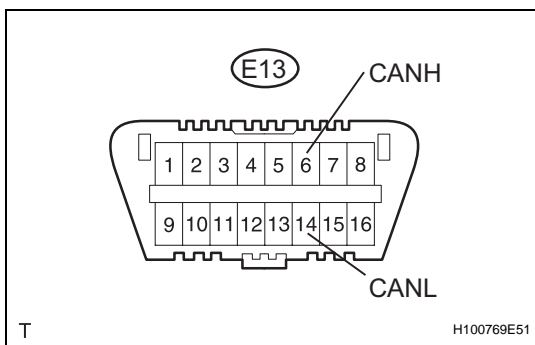
OK

2 CONNECT CONNECTOR

- (a) Reconnect the E68 No. 2 junction connector.

NEXT

3 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 1 JUNCTION CONNECTOR SIDE)



- (a) Disconnect the A36 No. 1 junction connector.
- (b) Measure the resistance of the DLC3.

Standard resistance

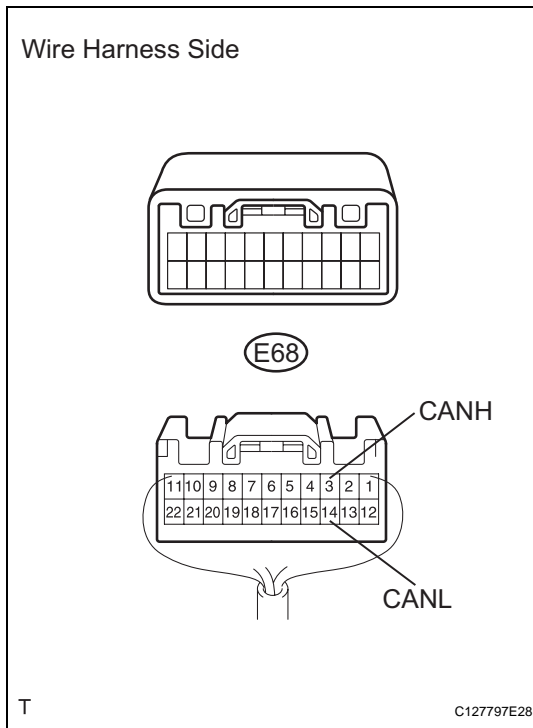
Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	108 to 132 Ω

OK Go to step 14

NG

CA

4 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)



- Disconnect the E68 No. 2 junction connector.
- Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Condition	Specified Condition
E68-3 (CANH) - E68-14 (CANL)	Ignition switch OFF	1 M Ω or more

NG

REPAIR OR REPLACE CAN MAIN WIRE AND CONNECTOR (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)

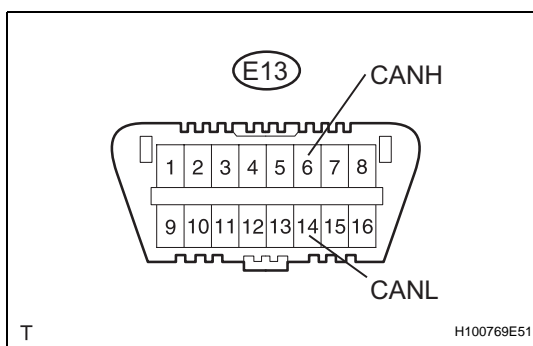
OK

5 CONNECT CONNECTOR

- Reconnect the A36 No. 1 junction connector.
- Reconnect the E68 No. 2 junction connector.

NEXT

6 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 3 JUNCTION CONNECTOR, NO. 4 JUNCTION CONNECTOR SIDE)



- Disconnect the E70 No. 3 junction connector.
- Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	108 to 132 Ω

NG

Go to step 20

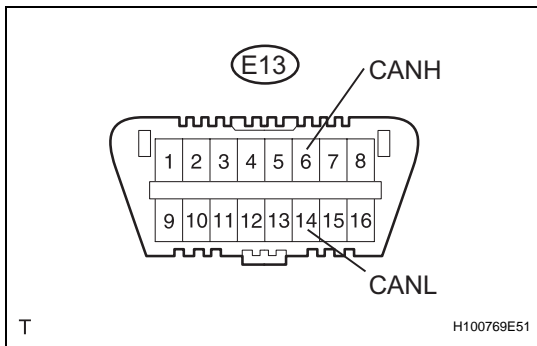
OK

7 CONNECT CONNECTOR

(a) Reconnect the E70 No. 3 junction connector.

NEXT

8 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 4 JUNCTION CONNECTOR SIDE)



(a) Disconnect the E69 No. 4 junction connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

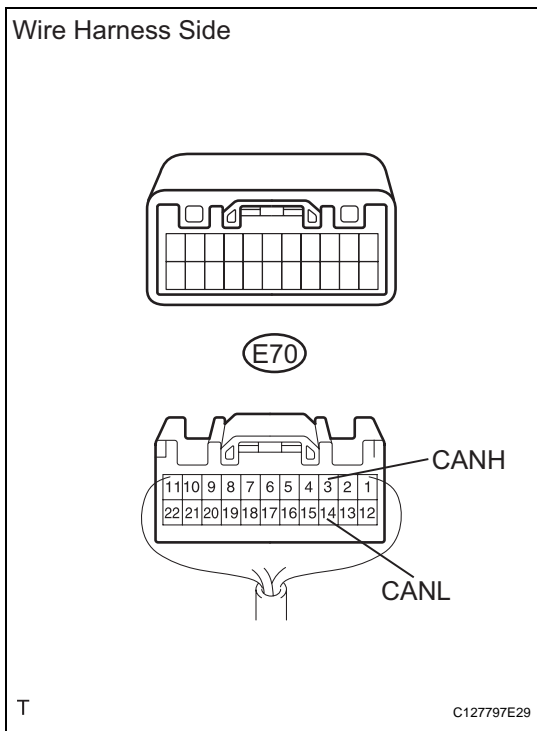
Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	108 to 132 Ω

OK → **Go to step 36**

CA

NG

9 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 3 JUNCTION CONNECTOR - NO. 4 JUNCTION CONNECTOR)



(a) Disconnect the E70 No. 3 junction connector.
 (b) Measure the resistance of the wire harness side connector.

Standard resistance

Tester Connection	Condition	Specified Condition
E70-3 (CANH) - E70-14 (CANL)	Ignition switch OFF	1 MΩ or more

NG → **REPAIR OR REPLACE CAN MAIN WIRE AND CONNECTOR (NO. 3 JUNCTION CONNECTOR - NO. 4 JUNCTION CONNECTOR)**

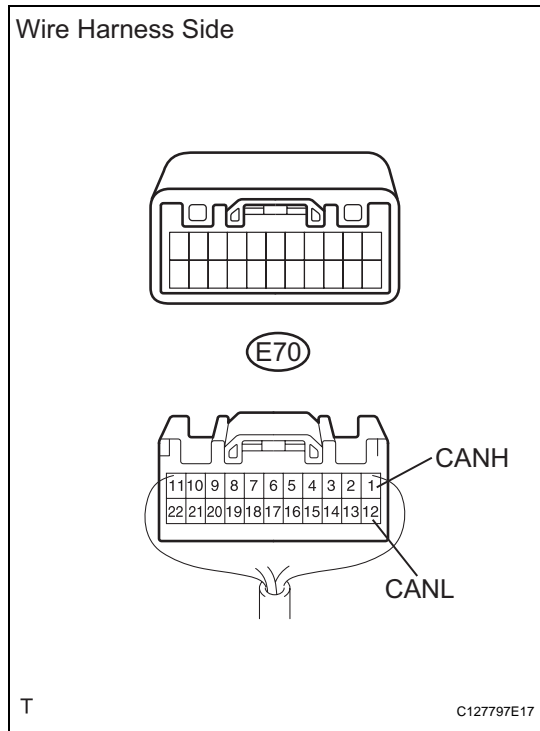
OK

10 CONNECT CONNECTOR

(a) Reconnect the E69 No. 4 junction connector.

NEXT

11 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 3 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)



(a) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E70-1 (CANH) - E70-12 (CANL)	Ignition switch OFF	Below 1 Ω	A
E70-1 (CANH) - E70-12 (CANL)	Ignition switch OFF	Other	B

B REPAIR OR REPLACE NO. 3 JUNCTION CONNECTOR

CA

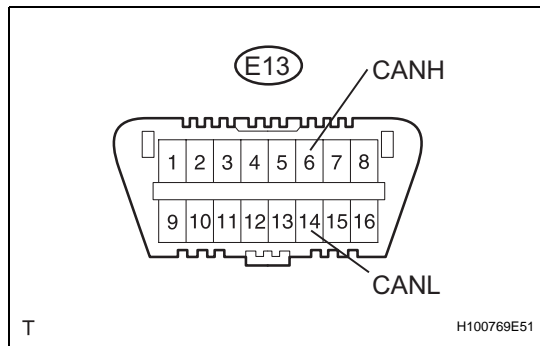
A

12 CONNECT CONNECTOR

(a) Reconnect the E70 No. 3 junction connector.

NEXT

13 CHECK CAN BUS LINES FOR SHORT CIRCUIT (CENTER AIRBAG SENSOR ASSEMBLY)



(a) Disconnect the E45 center airbag sensor connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

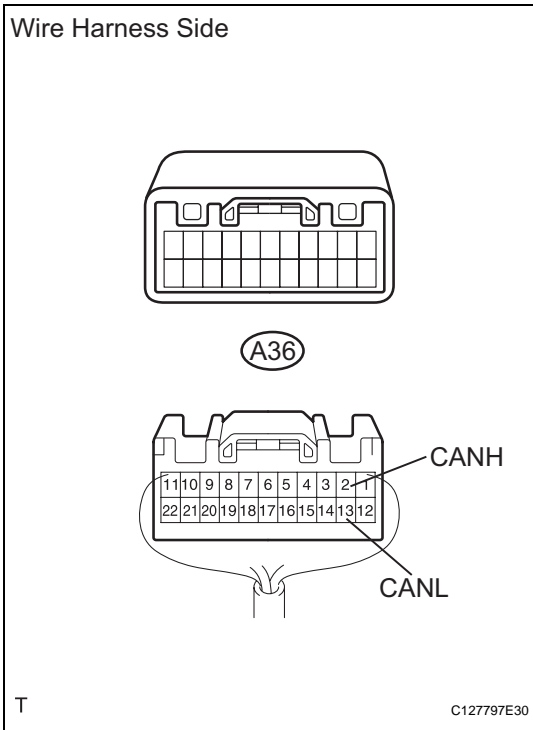
Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO CENTER AIRBAG SENSOR ASSEMBLY (CANH, CANL)

OK

REPLACE CENTER AIRBAG SENSOR ASSEMBLY

14 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 1 JUNCTION CONNECTOR - ECM)



(a) Measure the resistance of the wire harness side connector.

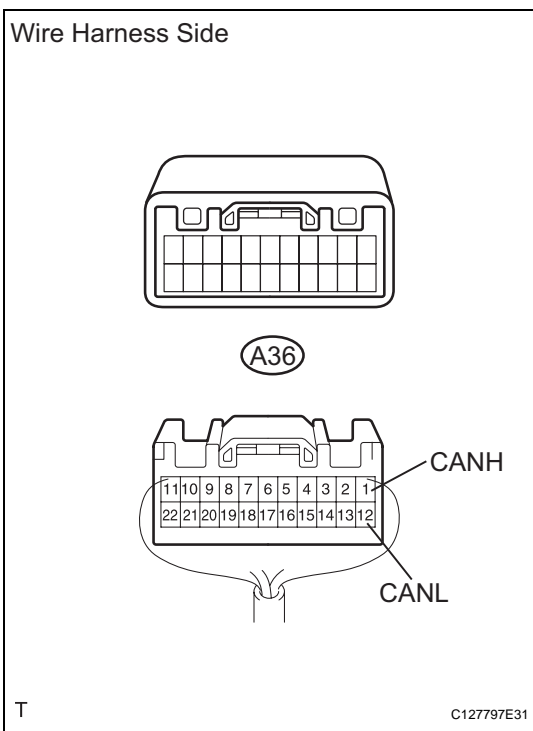
Result

Tester Connection	Condition	Specified Condition	Proceed to
A36-2 (CANH) - A36-13 (CANL)	Ignition switch OFF	Below 1 Ω	A
A36-2 (CANH) - A36-13 (CANL)	Ignition switch OFF	Other	B

A → **Go to step 16**

B

15 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 1 JUNCTION CONNECTOR - ABS AND TRACTION ACTUATOR)



(a) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
A36-1 (CANH) - A36-12 (CANL)	Ignition switch OFF	Below 1 Ω	A
A36-1 (CANH) - A36-12 (CANL)	Ignition switch OFF	Other	B

A → **Go to step 18**

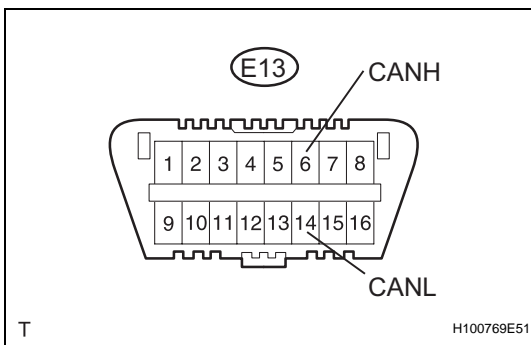
CA

B

REPAIR OR REPLACE NO. 1 JUNCTION CONNECTOR**16 CONNECT CONNECTOR**

- (a) Reconnect the A36 No. 1 junction connector.

NEXT

17 CHECK CAN BUS LINES FOR SHORT CIRCUIT (ECM)

- (a) Disconnect the A9 ECM connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	108 to 132 Ω

NG

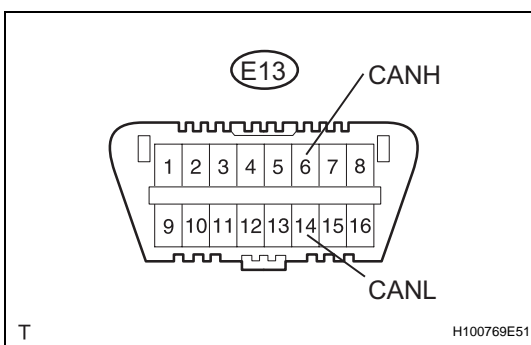
**REPAIR OR REPLACE CAN MAIN WIRE
 CONNECTED TO ECM (NO. 1 JUNCTION
 CONNECTOR - ECM)**

OK

REPLACE ECM**18 CONNECT CONNECTOR**

- (a) Reconnect the A36 No. 1 junction connector.

NEXT

19 CHECK CAN BUS LINES FOR SHORT CIRCUIT (ABS AND TRACTION ACTUATOR)

- (a) Disconnect the A19 ABS and brake actuator (skid control ECU) connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG

**REPAIR OR REPLACE CAN BRANCH WIRE
 CONNECTED TO ABS AND TRACTION
 ACTUATOR (CANH, CANL)**

CA

OK

REPLACE ABS AND TRACTION ACTUATOR (SKID CONTROL ECU)

20 CONNECT CONNECTOR

(a) Reconnect the E70 No. 3 junction connector.

NEXT

21 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 2 JUNCTION CONNECTOR - YAW RATE SENSOR)

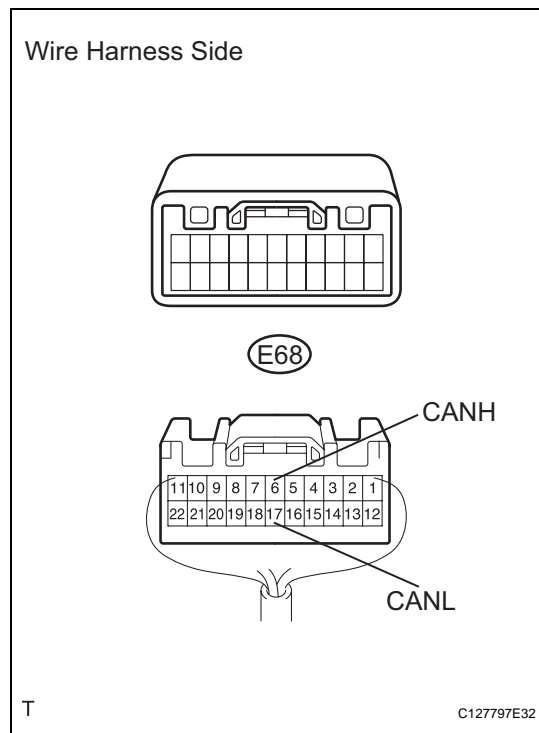
(a) Disconnect the E68 No. 2 junction connector.
 (b) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E68-6 (CANH) - E68-17 (CANL)	Ignition switch OFF	Below 1 Ω	A
E68-6 (CANH) - E68-17 (CANL)	Ignition switch OFF	Other	B

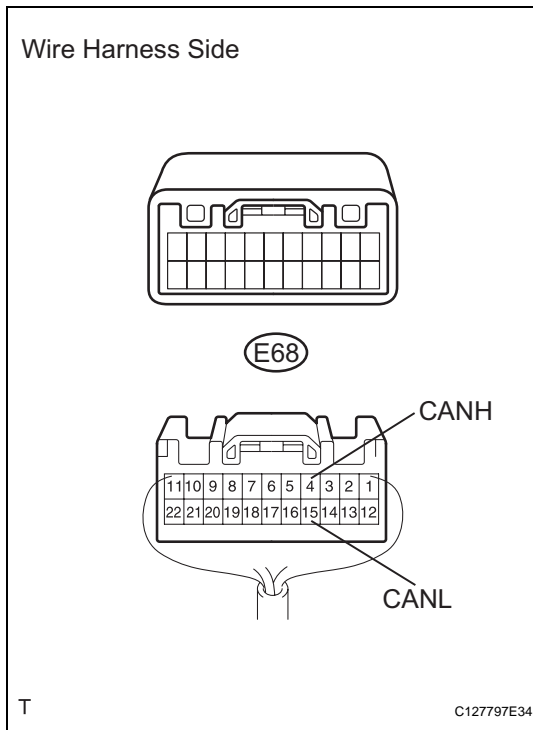
A **Go to step 26**

CA



B

22 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 2 JUNCTION CONNECTOR - POWER STEERING ECU)



- (a) Measure the resistance of the wire harness side connector.

Result

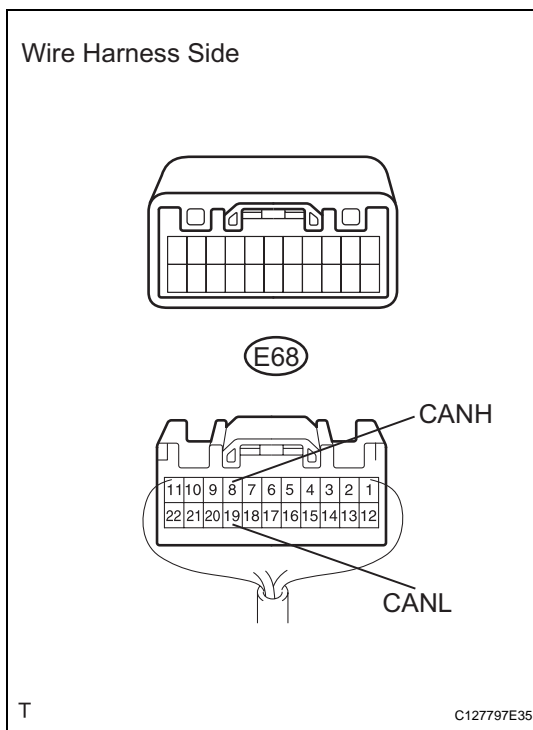
Tester Connection	Condition	Specified Condition	Proceed to
E68-4 (CANH) - E68-15 (CANL)	Ignition switch OFF	Below 1 Ω	A
E68-4 (CANH) - E68-15 (CANL)	Ignition switch OFF	Other	B

A

Go to step 28

B

23 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 2 JUNCTION CONNECTOR - MAIN BODY ECU)



- (a) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E68-8 (CANH) - E68-19 (CANL)	Ignition switch OFF	Below 1 Ω	A
E68-8 (CANH) - E68-19 (CANL)	Ignition switch OFF	Other	B

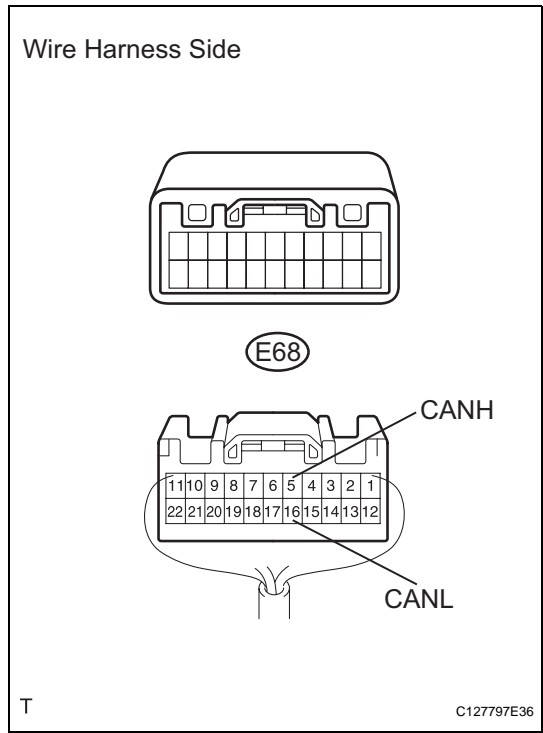
A

Go to step 30

CA

B

24 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 2 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)



(a) Measure the resistance of the wire harness side connector.

Result

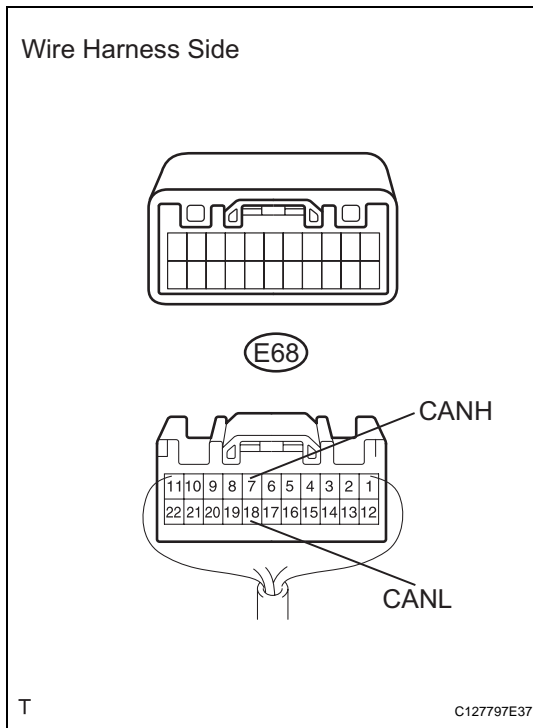
Tester Connection	Condition	Specified Condition	Proceed to
E68-5 (CANH) - E68-16 (CANL)	Ignition switch OFF	Below 1 Ω	A
E68-5 (CANH) - E68-16 (CANL)	Ignition switch OFF	Other	B

A Go to step 32

B

CA

25 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 2 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)



- (a) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E68-7 (CANH) - E68-18 (CANL)	Ignition switch OFF	Below 1 Ω	A
E68-7 (CANH) - E68-18 (CANL)	Ignition switch OFF	Other	B

A

Go to step 34

B

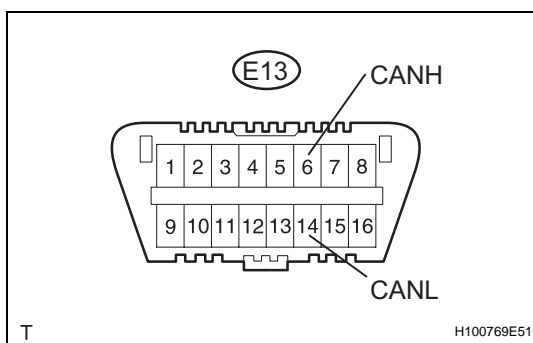
REPAIR OR REPLACE NO. 2 JUNCTION CONNECTOR

26 CONNECT CONNECTOR

- (a) Reconnect the E68 No. 2 junction connector.

NEXT

27 CHECK CAN BUS LINES FOR SHORT CIRCUIT (YAW RATE SENSOR)



- (a) Disconnect the K6 yaw rate sensor connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG

REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO YAW RATE SENSOR (CANH, CANL)

CA

OK

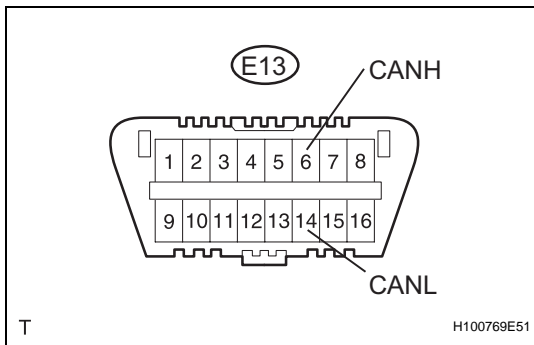
REPLACE YAW RATE SENSOR

28 CONNECT CONNECTOR

(a) Reconnect the E68 No. 2 junction connector.

NEXT

29 CHECK CAN BUS LINES FOR SHORT CIRCUIT (POWER STEERING ECU)



- (a) Disconnect the E18 power steering ECU connector.
- (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER STEERING ECU (CANH, CANL)

OK

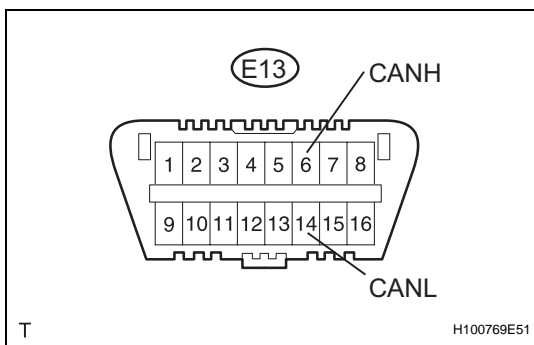
REPLACE POWER STEERING ECU

30 CONNECT CONNECTOR

(a) Reconnect the E68 No. 2 junction connector.

NEXT

31 CHECK CAN BUS LINES FOR SHORT CIRCUIT (MAIN BODY ECU)



- (a) Disconnect the E17 main body ECU connector.
- (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	108 to 132 Ω

NG REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO MAIN BODY ECU (CANH, CANL)

CA

OK

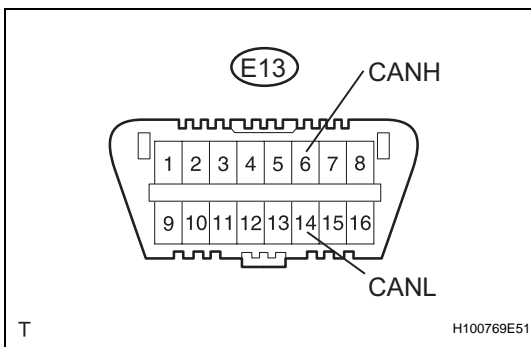
REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)

32 CONNECT CONNECTOR

- (a) Reconnect the E68 No. 2 junction connector.

NEXT

33 CHECK CAN BUS LINES FOR SHORT CIRCUIT (AIR CONDITIONING AMPLIFIER)



- (a) Disconnect the E37*1 or E36*2 air conditioning amplifier connector.

HINT:

- *1: for Automatic air conditioning system.
- *2: for Manual air conditioning system.

- (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG

REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO AIR CONDITIONING AMPLIFIER (CANH, CANL)

OK

REPLACE AIR CONDITIONING AMPLIFIER

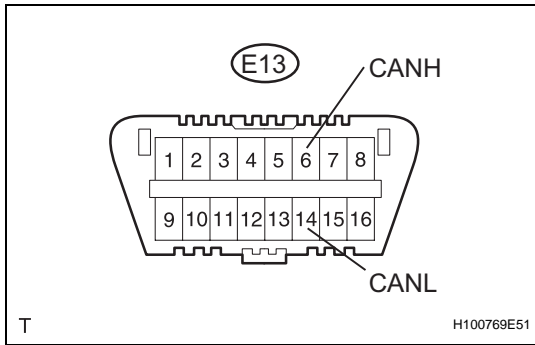
34 CONNECT CONNECTOR

- (a) Reconnect the E68 No. 2 junction connector.

NEXT

CA

35 CHECK CAN BUS LINES FOR SHORT CIRCUIT (STEERING ANGLE SENSOR)



- (a) Disconnect the E11 steering sensor connector.
- (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG → **REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO STEERING ANGLE SENSOR (CANH, CANL)**

OK

CA REPLACE STEERING ANGLE SENSOR

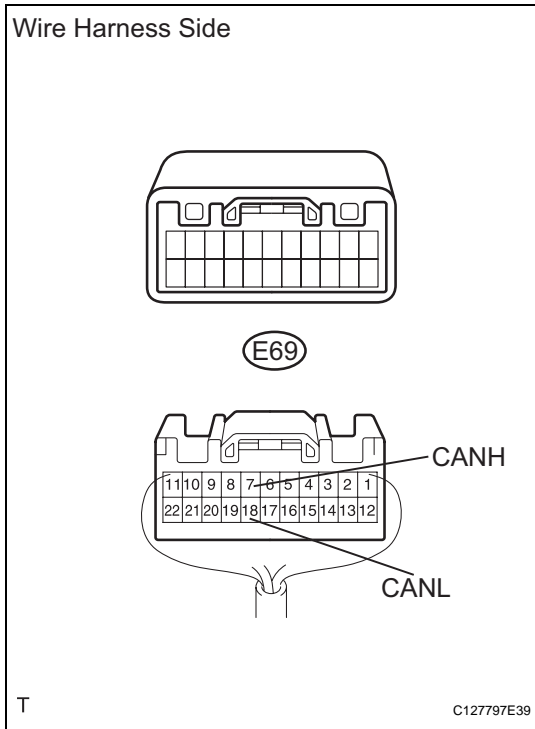
36 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 4 JUNCTION CONNECTOR - 4WD CONTROL ECU)

NOTICE:
For vehicles without 4WD, go to "CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ECU)".

- (a) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E69-7 (CANH) - E69-18 (CANL)	Ignition switch OFF	Below 1 Ω	A
E69-7 (CANH) - E69-18 (CANL)	Ignition switch OFF	Other	B

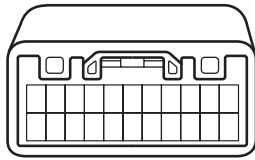


A → **Go to step 38**

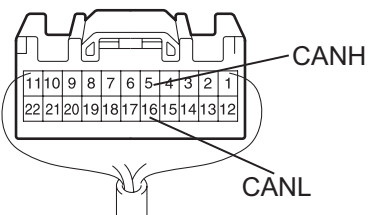
B

37 CHECK CAN BUS LINES FOR SHORT CIRCUIT (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ECU)

Wire Harness Side



E69



T

C127797E38

- (a) Measure the resistance of the wire harness side connector.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E69-5 (CANH) - E69-16 (CANL)	Ignition switch OFF	Below 1 Ω	A
E69-5 (CANH) - E69-16 (CANL)	Ignition switch OFF	Other	B

A

Go to step 40

B

CA

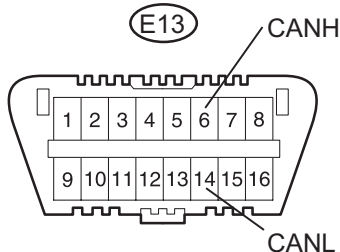
REPAIR OR REPLACE NO. 4 JUNCTION CONNECTOR

38 CONNECT CONNECTOR

- (a) Reconnect the E69 No. 4 junction connector.

NEXT

39 CHECK CAN BUS LINES FOR SHORT CIRCUIT (4WD CONTROL ECU)



T

H100769E51

- (a) Disconnect the E57 4WD control ECU connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	54 to 69 Ω

NG

REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO 4WD CONTROL ECU (CANH, CANL)

OK

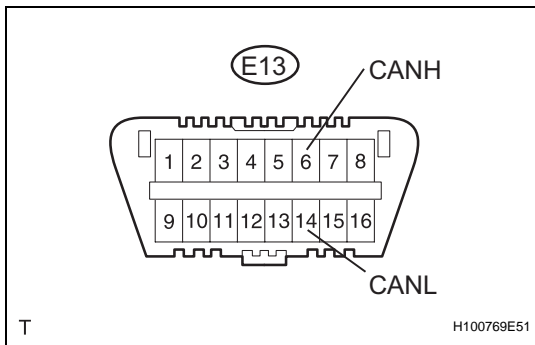
REPLACE 4WD CONTROL ECU

40 CONNECT CONNECTOR

(a) Reconnect the E69 No. 4 junction connector.

NEXT

41 CHECK CAN BUS LINES FOR SHORT CIRCUIT (COMBINATION METER ECU)



- (a) Disconnect the E19 combination meter ECU connector.
- (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-14 (CANL)	Ignition switch OFF	108 to 132 Ω

CA

NG

REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO COMBINATION METER ECU (CANH, CANL)

OK

REPLACE COMBINATION METER ECU