

Short to GND in CAN Bus Line

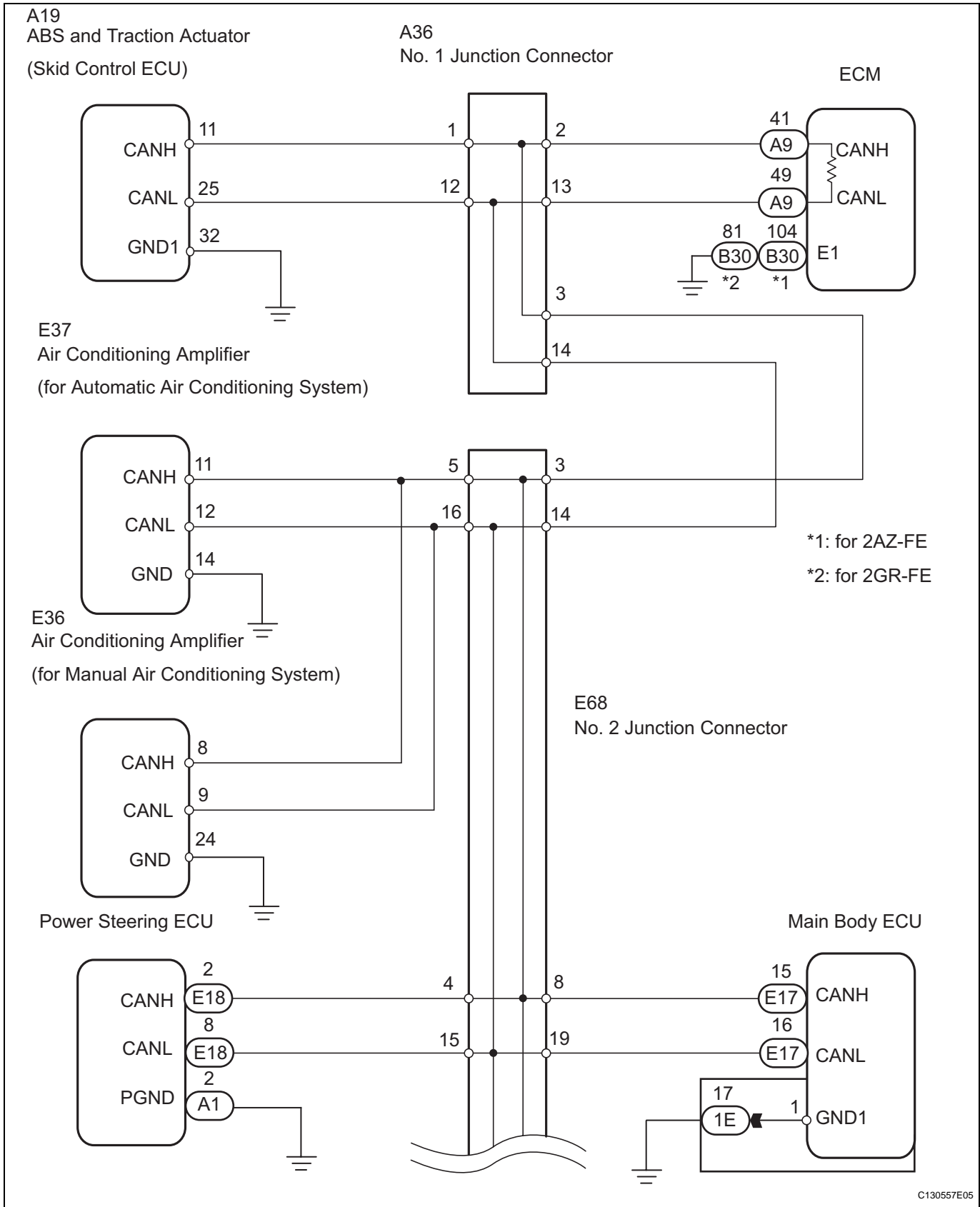
(2006/01-)

DESCRIPTION

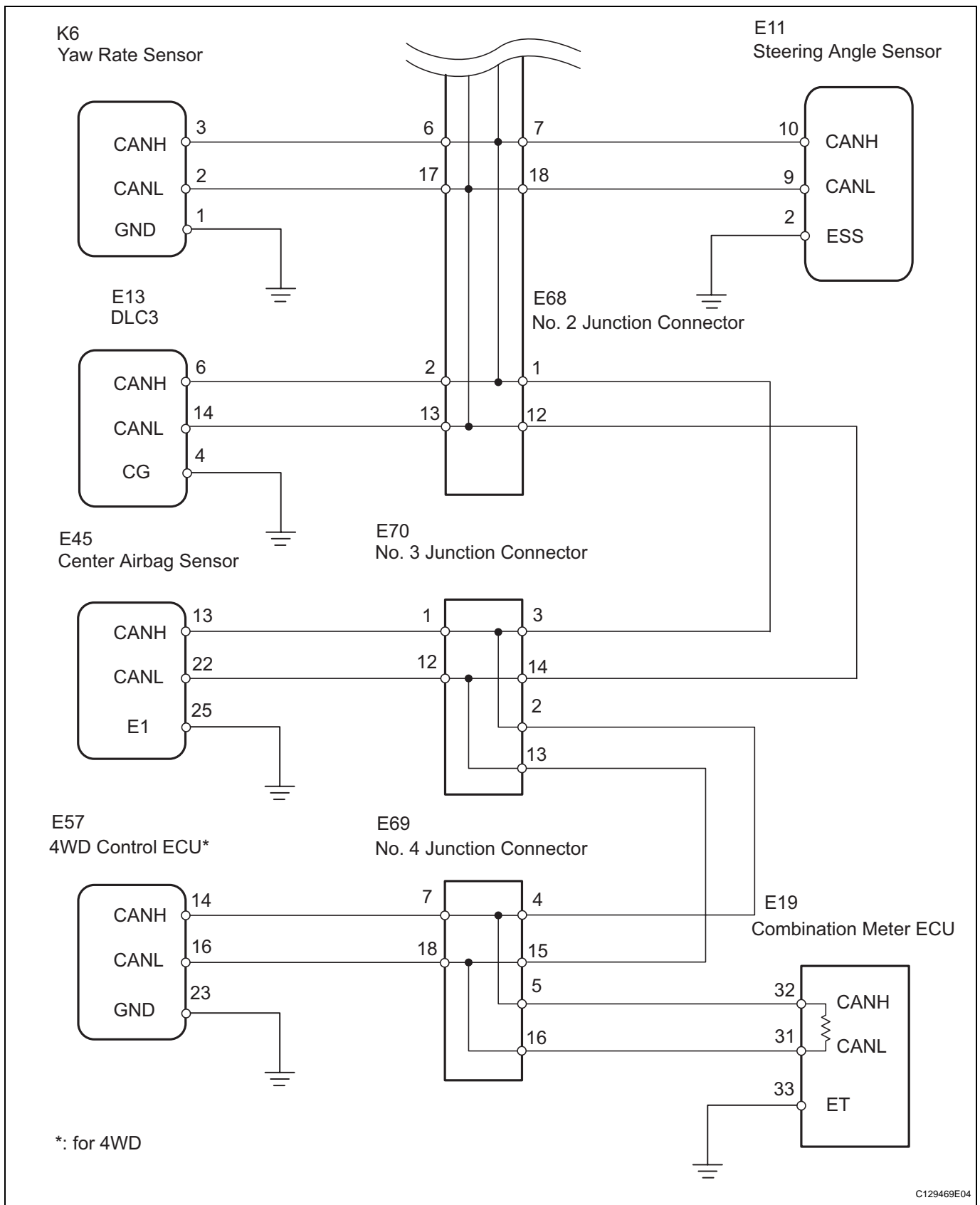
There may be a short circuit between the CAN bus line and GND when there is resistance between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of the DLC3.

Symptom	Trouble Area
There is resistance between terminals 6 (CANH) and 4 (CG) or terminals 14 (CANL) and 4 (CG) of DLC3.	<ul style="list-style-type: none">• Short to GND• 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

WIRING DIAGRAM



CA



CA

INSPECTION PROCEDURE

NOTICE:

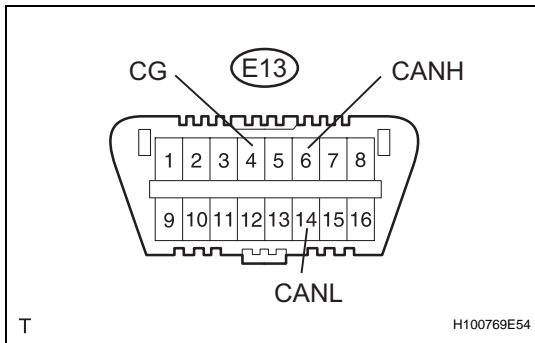
- Turn the ignition switch OFF before measuring the resistances of the main wire and branch wire.

- 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 as is for at least 1 minute and do not operate the ignition switch, any other switches or the 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 LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3 (CANH, CANL)

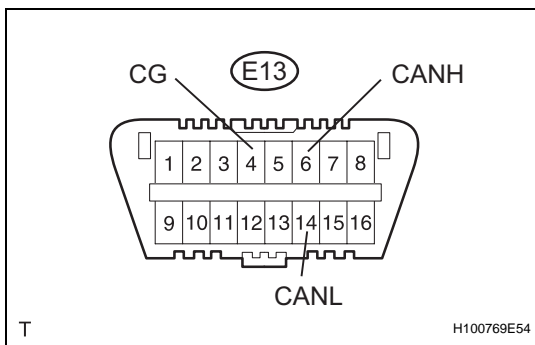
OK

2 CONNECT CONNECTOR

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

NEXT

3 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 1 JUNCTION CONNECTOR)



- (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

OK Go to step 12

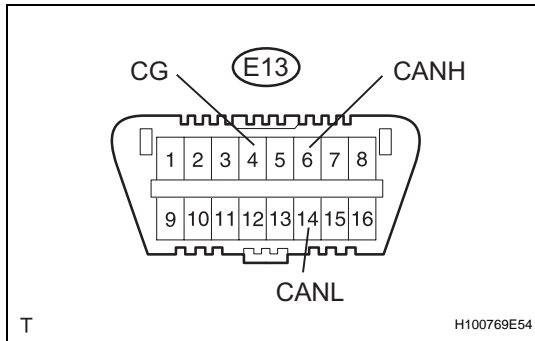
NG

4 CONNECT CONNECTOR

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

NEXT

5 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 3 JUNCTION CONNECTOR, NO. 4 JUNCTION CONNECTOR SIDE)



- (a) Disconnect the E70 No. 3 junction connector.
 (b) Measure the resistance of the DLC3.

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG

Go to step 18

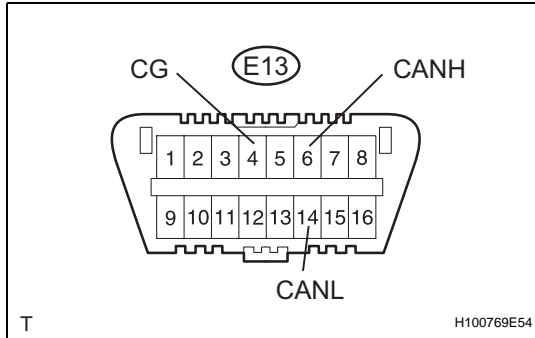
OK

6 CONNECT CONNECTOR

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

NEXT

7 CHECK CAN BUS LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

OK

Go to step 34

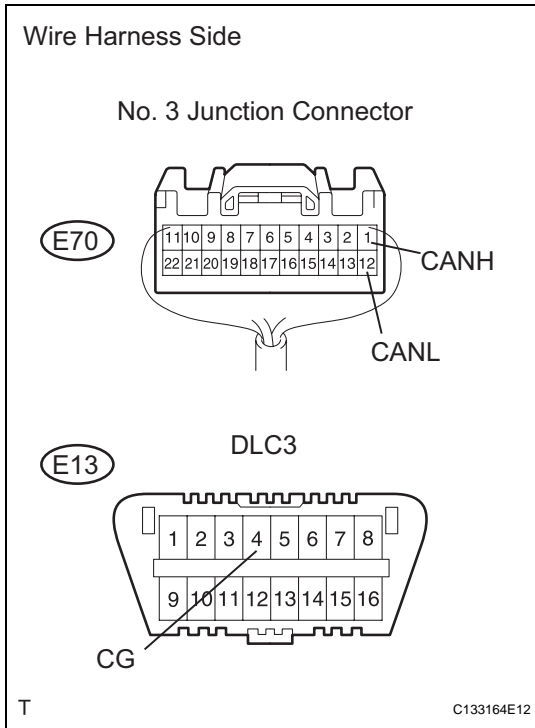
NG

8 CONNECT CONNECTOR

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

NEXT

9 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 3 JUNCTION CONNECTOR - CENTER AIRBAG SENSOR ASSEMBLY)



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

Standard resistance

Tester Connection	Condition	Specified Condition
E70-1 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E70-12 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

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

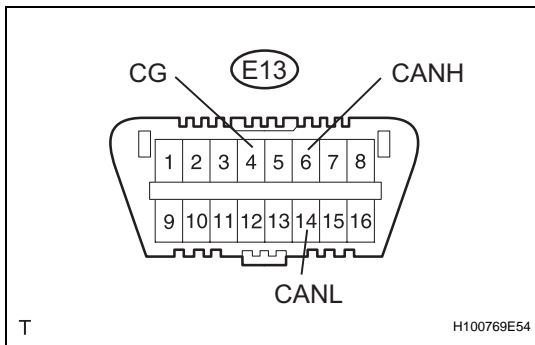
NG

10 CONNECT CONNECTOR

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

NEXT

11 CHECK CAN BUS LINE FOR SHORT TO GND (CENTER AIRBAG SENSOR ASSEMBLY)



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

Standard resistance

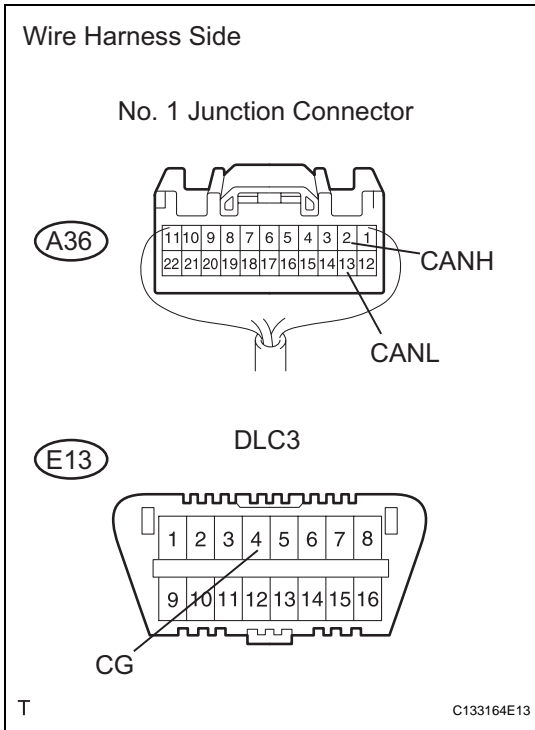
Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

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

OK

REPLACE CENTER AIRBAG SENSOR ASSEMBLY

12 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 1 JUNCTION CONNECTOR - ECM)



- (a) Disconnect the A36 No. 1 junction connector.
- (b) Measure the resistance of the wire harness side connectors.

Standard resistance

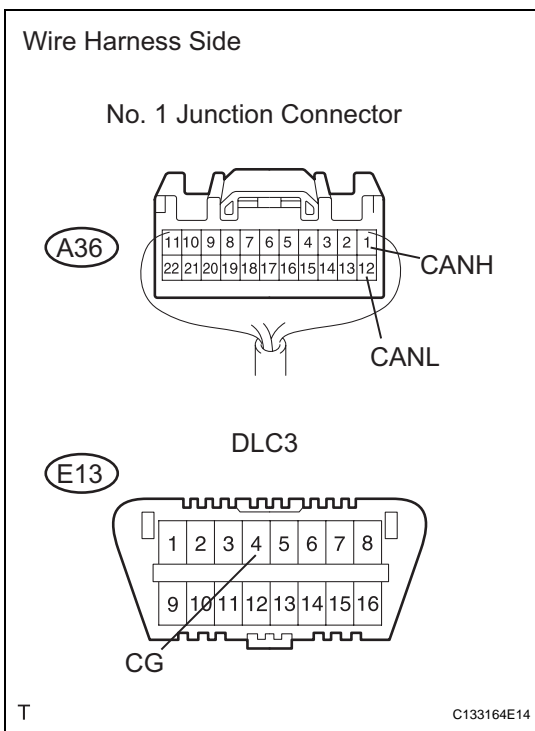
Tester Connection	Condition	Specified Condition
A36-2 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
A36-13 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG → **Go to step 14**

OK

CA

13 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 1 JUNCTION CONNECTOR - ABS AND TRACTION ACTUATOR)



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

Standard resistance

Tester Connection	Condition	Specified Condition
A36-1 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
A36-12 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG → **Go to step 16**

OK

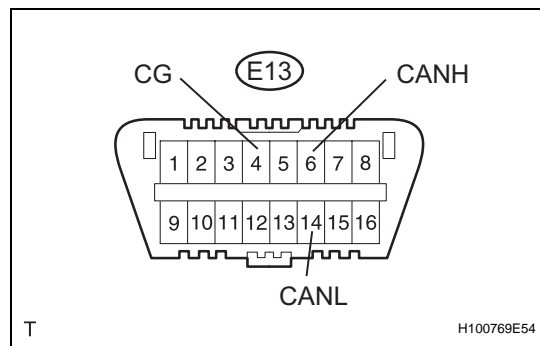
REPAIR OR REPLACE CAN MAIN WIRE AND CONNECTOR (NO. 1 JUNCTION CONNECTOR - NO. 2 JUNCTION CONNECTOR)

14 CONNECT CONNECTOR

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

NEXT

15 CHECK CAN BUS LINE FOR SHORT TO GND (ECM)



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

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG

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

OK

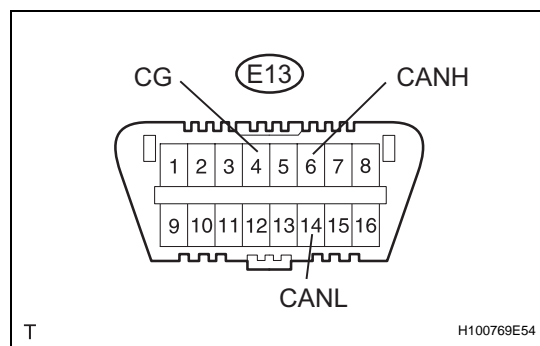
REPLACE ECM

16 CONNECT CONNECTOR

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

NEXT

17 CHECK CAN BUS LINE FOR SHORT TO GND (ABS AND TRACTION ACTUATOR)



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

Standard resistance

Tester Connection	Condition	Specified Condition
E13-6 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

CA

NG

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

OK

REPLACE ABS AND TRACTION ACTUATOR (SKID CONTROL ECU)

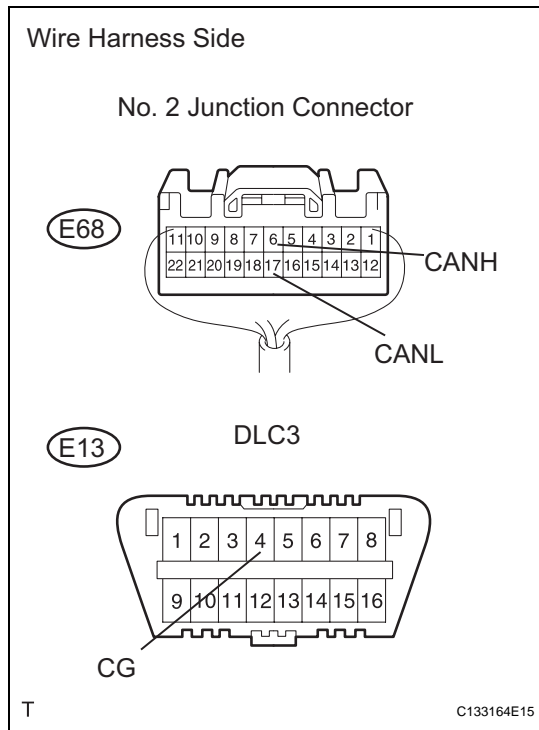
18 CONNECT CONNECTOR

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

NEXT

19 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 2 JUNCTION CONNECTOR - YAW RATE SENSOR)

CA



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

Standard resistance

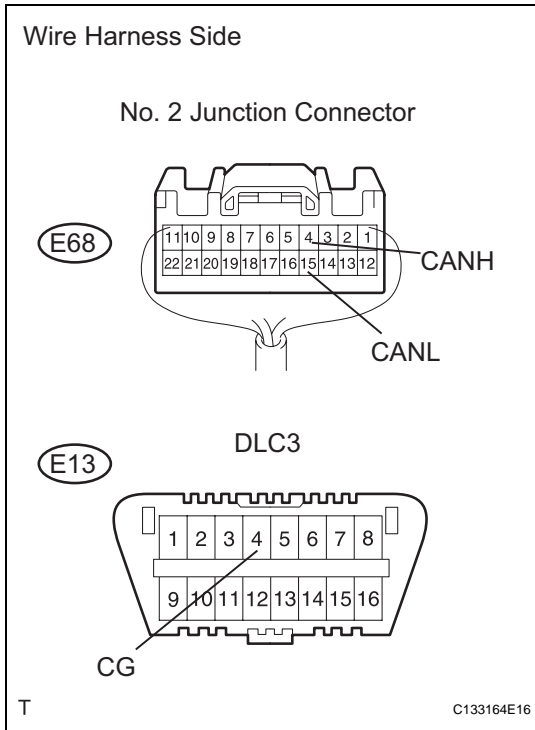
Tester Connection	Condition	Specified Condition
E68-6 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E68-17 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG

Go to step 24

OK

20 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 2 JUNCTION CONNECTOR - POWER STEERING ECU)



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

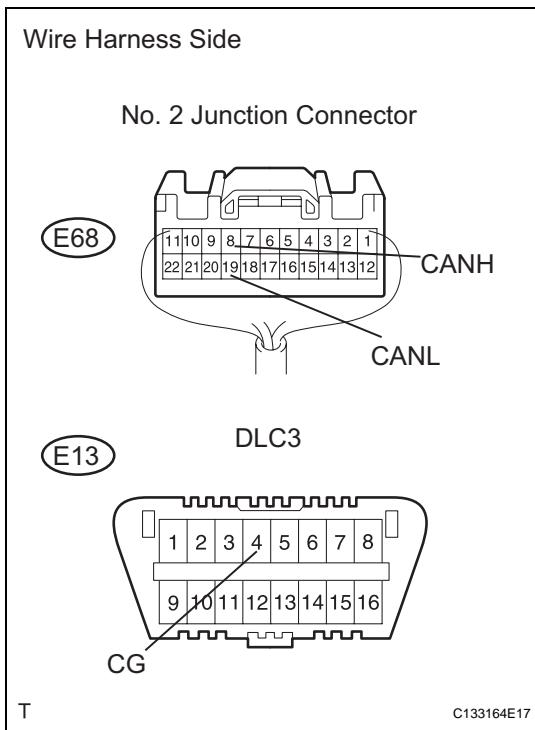
Standard resistance

Tester Connection	Condition	Specified Condition
E68-4 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E68-15 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG → **Go to step 26**

OK

21 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 2 JUNCTION CONNECTOR - MAIN BODY ECU)



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

Standard resistance

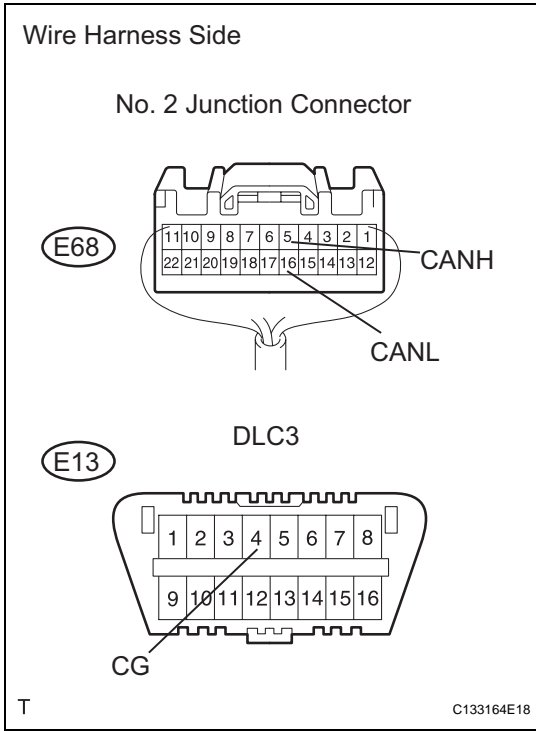
Tester Connection	Condition	Specified Condition
E68-8 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E68-19 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG → **Go to step 28**

CA

OK

22 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 2 JUNCTION CONNECTOR - AIR CONDITIONING AMPLIFIER)



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

Standard resistance

Tester Connection	Condition	Specified Condition
E68-5 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E68-16 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

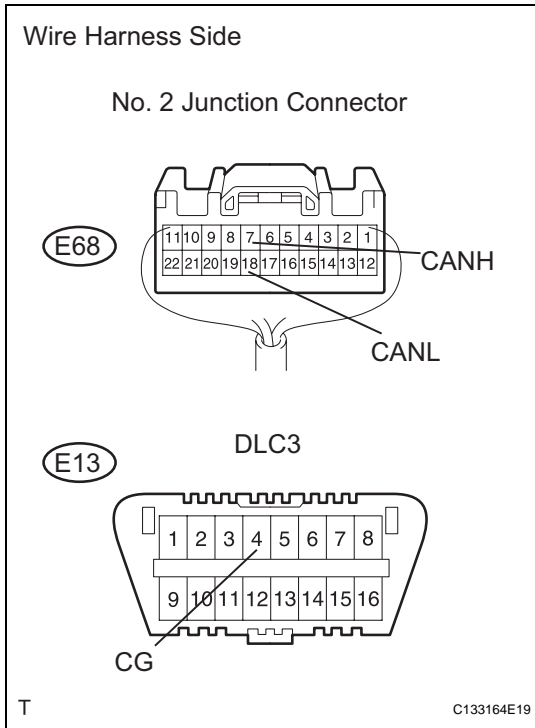
NG

Go to step 30

CA

OK

23 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 2 JUNCTION CONNECTOR - STEERING ANGLE SENSOR)



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

Standard resistance

Tester Connection	Condition	Specified Condition
E68-7 (CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E68-18 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG → Go to step 32

OK

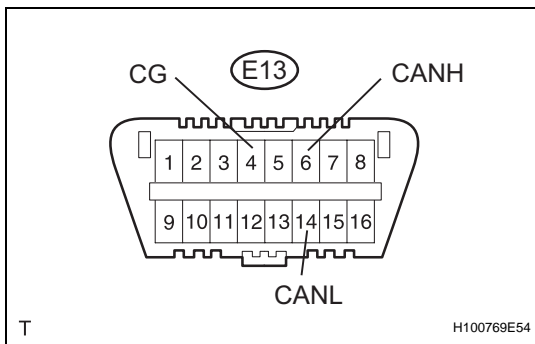
REPAIR OR REPLACE CAN MAIN WIRE AND CONNECTOR (NO. 2 JUNCTION CONNECTOR - NO. 3 JUNCTION CONNECTOR)

24 CONNECT CONNECTOR

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

NEXT

25 CHECK CAN BUS LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

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

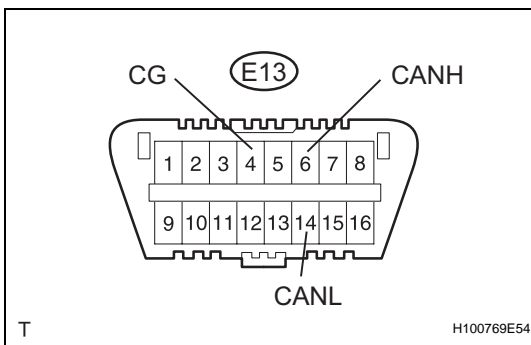
CA

OK

REPLACE YAW RATE SENSOR**26 CONNECT CONNECTOR**

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

NEXT

27 CHECK CAN BUS LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

OK

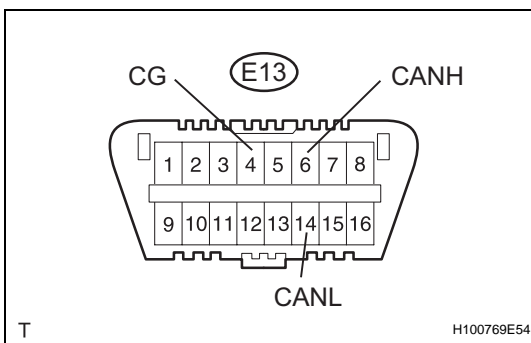
REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO POWER STEERING ECU (CANH, CANL)

OK

REPLACE POWER STEERING ECU**28 CONNECT CONNECTOR**

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

NEXT

29 CHECK CAN BUS LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

CA

OK

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

OK

REPLACE INSTRUMENT PANEL JUNCTION BLOCK (MAIN BODY ECU)

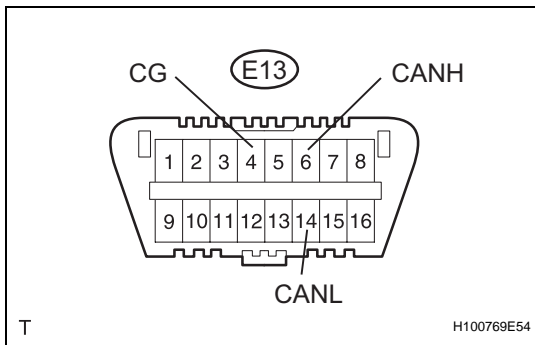
30 CONNECT CONNECTOR

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

NEXT

31 CHECK CAN BUS LINE FOR SHORT TO GND (AIR CONDITIONING AMPLIFIER)

CA



- (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

OK

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

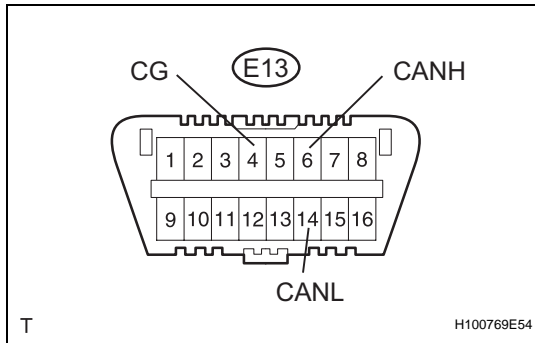
OK

REPLACE AIR CONDITIONING AMPLIFIER

32 CONNECT CONNECTOR

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

NEXT

33 CHECK CAN BUS LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

OK

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

OK

CA

REPLACE STEERING ANGLE SENSOR**34 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 4 JUNCTION CONNECTOR - 4WD CONTROL ECU)****NOTICE:**

For vehicles without 4WD, go to "CHECK CAN BUS LINE FOR SHORT TO GND (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ECU)".

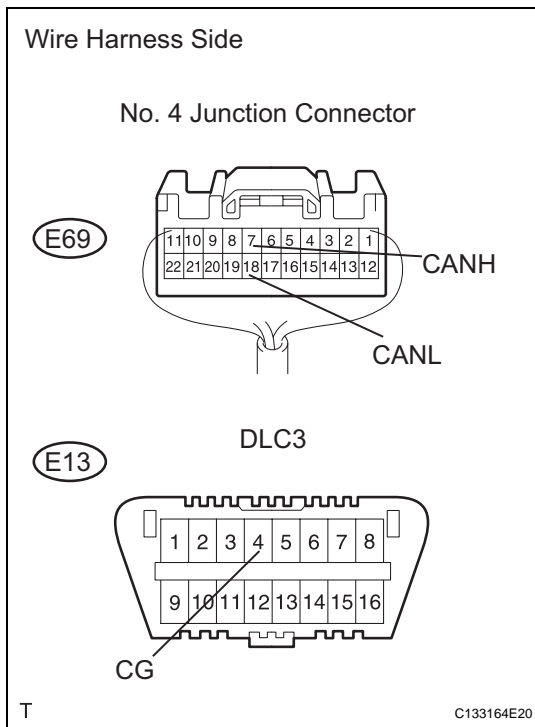
- (a) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Condition	Specified Condition
E69-7(CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E69-18 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

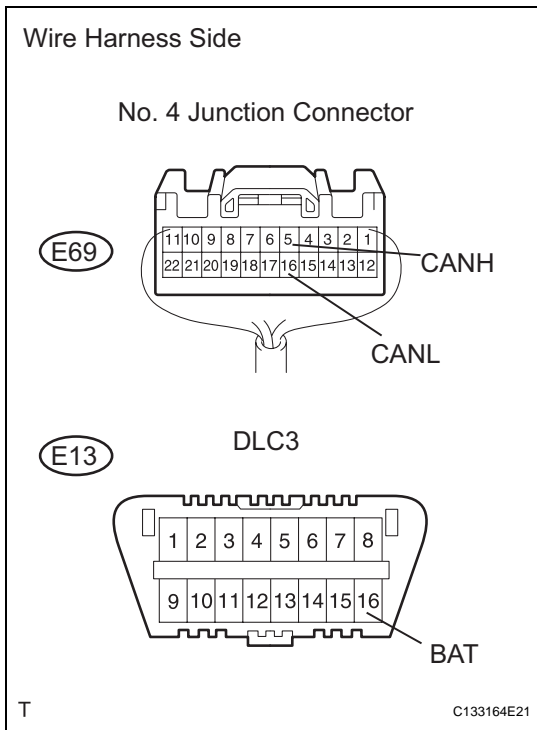
NG

Go to step 36



OK

35 CHECK CAN BUS LINE FOR SHORT TO GND (NO. 4 JUNCTION CONNECTOR - COMBINATION METER ECU)



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

Standard resistance

Tester Connection	Condition	Specified Condition
E69-5(CANH) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E69-16 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

NG → **Go to step 38**

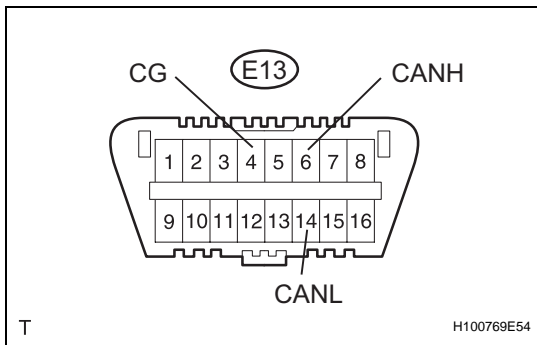
OK

36 CONNECT CONNECTOR

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

NEXT

37 CHECK CAN BUS LINE FOR SHORT TO GND (4WD CONTROL ECU)



(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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

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

OK

REPLACE 4WD CONTROL ECU

38 CONNECT CONNECTOR

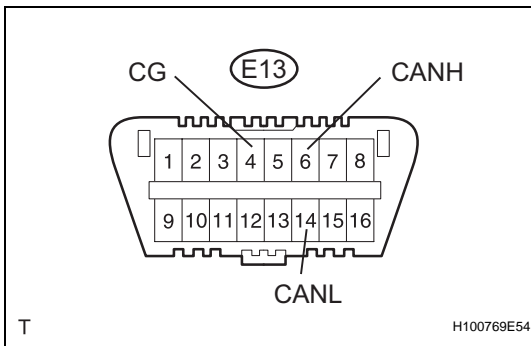
- (a) Reconnect the E69 No. 4 junction connector.

NEXT**39 CHECK CAN BUS LINE FOR SHORT TO GND (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) - E13-4 (CG)	Ignition switch OFF	200 Ω or more
E13-14 (CANL) - E13-4 (CG)	Ignition switch OFF	200 Ω or more

**NG**

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

OK**REPLACE COMBINATION METER ECU****CA**