

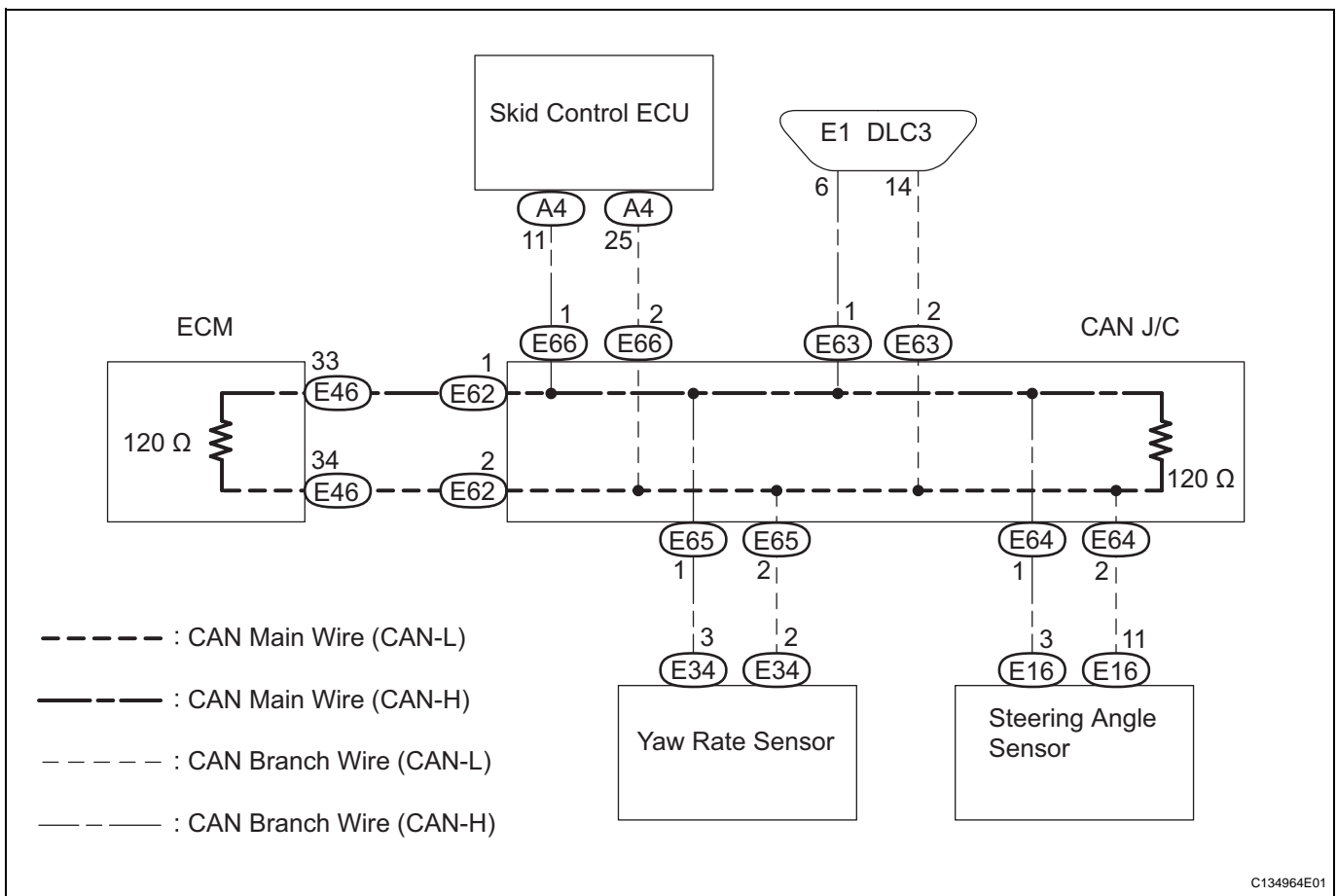
Short to GND in CAN Bus Line

DESCRIPTION

A short to GND is suspected in the CAN bus line when there is continuity between terminals 4 (CG) and 6 (CANH) or terminals 4 (CG) and 14 (CANL) of the DLC3.

Symptoms	Trouble Area
There is continuity between terminals 4 (CG) and 6 (CANH) or terminals 4 (CG) and 14 (CANL) of the DLC3.	<ul style="list-style-type: none"> Short to GND in CAN bus line ECM Skid control ECU Yaw rate sensor Steering angle sensor CAN J/C

WIRING DIAGRAM



INSPECTION PROCEDURE

NOTICE:

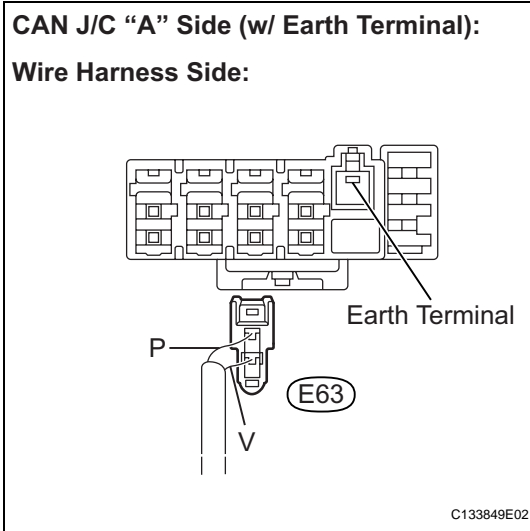
- Turn the ignition switch off before measuring the resistances of the CAN main wire and the CAN branch wire.
- After the ignition switch is turned off, check that the key reminder warning system is not in operation.

- 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.

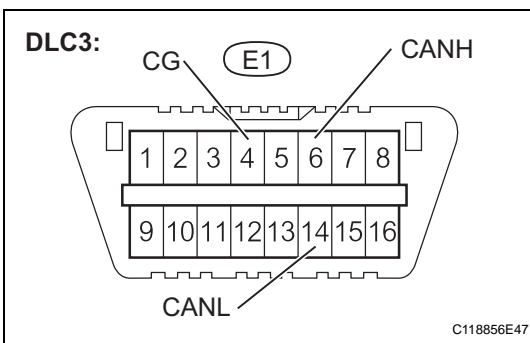
1 CHECK CAN BUS LINE FOR SHORT TO GND (DLC3 BRANCH WIRE)



- (a) Turn the ignition switch OFF.
- (b) Disconnect the E63 DLC3 branch wire connector.

NOTICE:

- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.



- (c) Measure the resistance.
- Result**

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

NG REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO DLC3 (CAN-H, CAN-L)

OK

2 CONNECT CONNECTOR

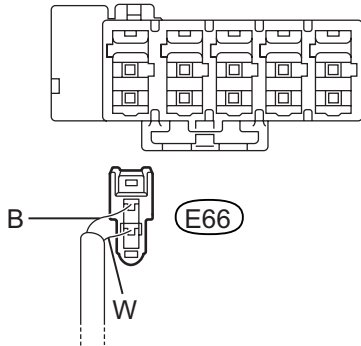
- (a) Reconnect the DLC3 branch wire connector.

NEXT

3 CHECK CAN BUS LINE FOR SHORT TO GND (SKID CONTROL ECU BRANCH WIRE)

CAN J/C "B" Side (w/o Earth Terminal):

Wire Harness Side:

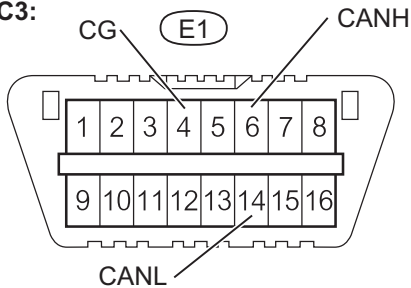


- Turn the ignition switch OFF.
- Disconnect the E66 skid control ECU branch wire connector.

NOTICE:

- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.

DLC3:



- Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK

Go to step 10

NG

4 CONNECT CONNECTOR

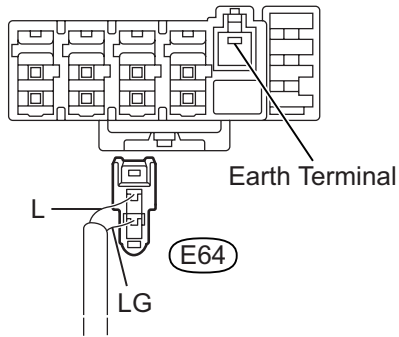
- Reconnect the skid control ECU branch wire connector.

NEXT

5 CHECK CAN BUS LINE FOR SHORT TO GND (YAW RATE SENSOR BRANCH WIRE)

CAN J/C “A” Side (w/ Earth Terminal):

Wire Harness Side:

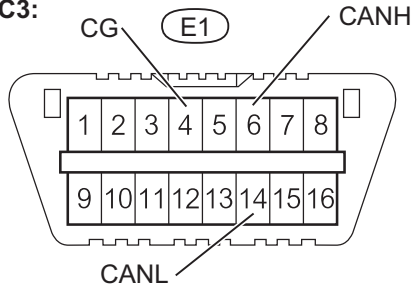


- (a) Turn the ignition switch OFF.
- (b) Disconnect the E64 yaw rate sensor branch wire connector.

NOTICE:

- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.

DLC3:



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

NG → **Go to step 12**

OK

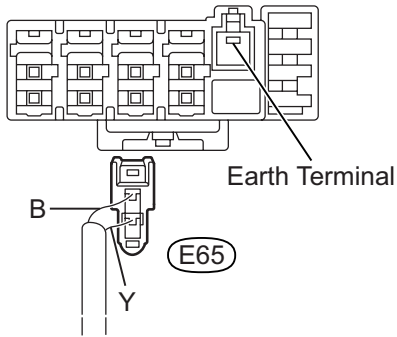
6 CONNECT CONNECTOR

- (a) Reconnect the yaw rate sensor branch wire connector.

NEXT

7 CHECK CAN BUS LINE FOR SHORT TO GND (STEERING ANGLE SENSOR BRANCH WIRE)

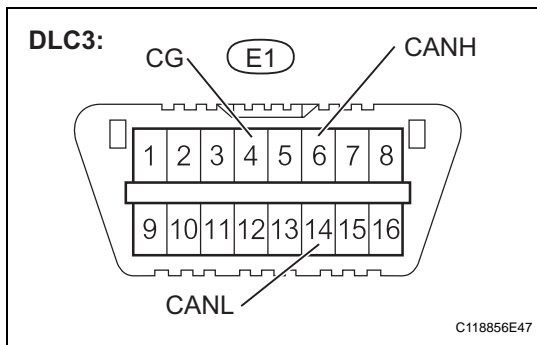
CAN J/C “A” Side (w/ Earth Terminal):
Wire Harness Side:



- (a) Turn the ignition switch OFF.
- (b) Disconnect the E65 steering angle sensor branch wire connector.

NOTICE:

- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK → **Go to step 14**

NG

8 CONNECT CONNECTOR

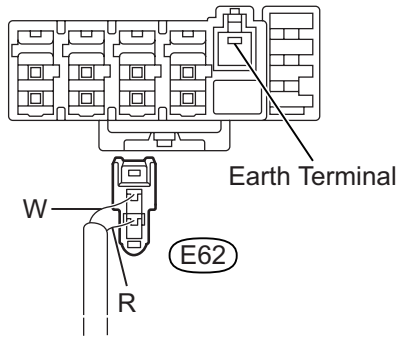
- (a) Reconnect the steering angle sensor branch wire connector.

NEXT

9 CHECK CAN BUS LINE FOR SHORT TO GND (ECM MAIN WIRE)

CAN J/C "A" Side (w/ Earth Terminal):

Wire Harness Side:

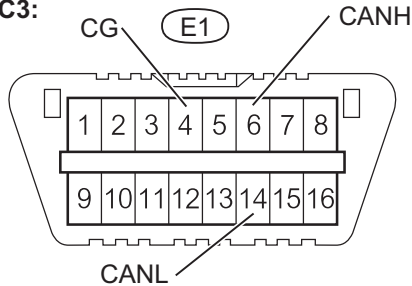


- (a) Turn the ignition switch OFF.
- (b) Disconnect the E62 ECM main wire connector.

NOTICE:

- Before disconnecting the connector, make a note of where it is connected.
- Reconnect the connector to its original position.

DLC3:



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK → Go to step 16

NG

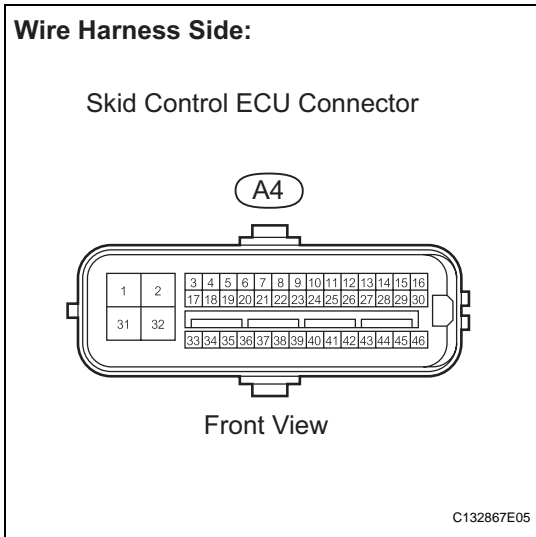
REPLACE CAN J/C

10 CONNECT CONNECTOR

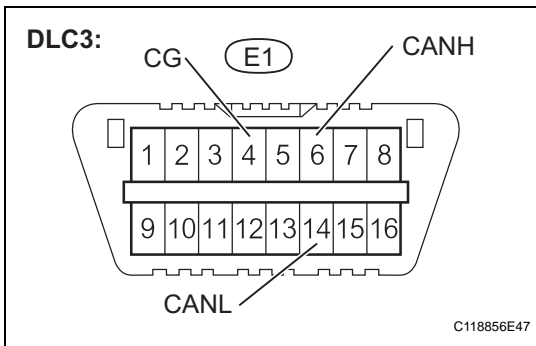
- (a) Reconnect the skid control ECU connector.

NEXT

11 CHECK CAN BUS LINE FOR SHORT TO GND (SKID CONTROL ECU BRANCH WIRE)



- (a) Turn the ignition switch OFF.
- (b) Disconnect the A4 skid control ECU connector.



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK → **REPLACE MASTER CYLINDER SOLENOID**

NG

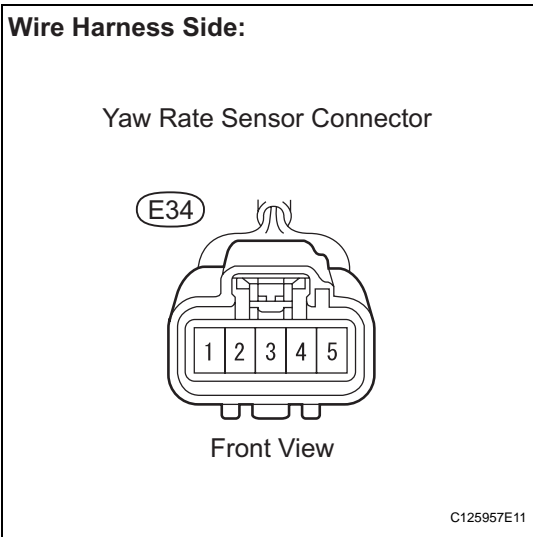
REPAIR OR REPLACE SKID CONTROL ECU BRANCH LINE OR CONNECTOR (CAN-H, CAN-L)

12 CONNECT CONNECTOR

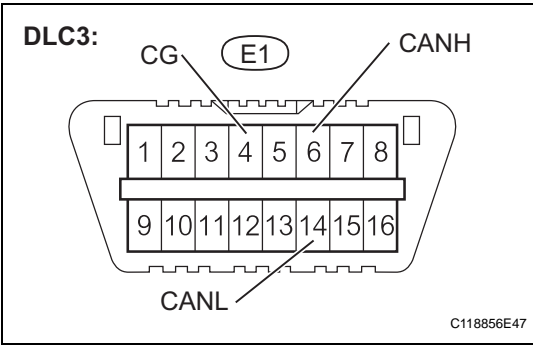
- (a) Reconnect the yaw rate sensor branch wire connector.

NEXT

13 CHECK CAN BUS LINE FOR SHORT TO GND (YAW RATE SENSOR BRANCH WIRE)



- (a) Turn the ignition switch OFF.
- (b) Disconnect the E34 yaw rate sensor connector.



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK → **REPLACE YAW RATE SENSOR**

NG

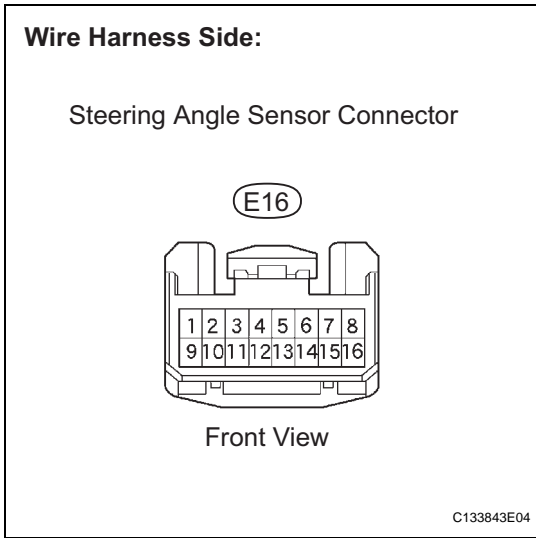
REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO YAW RATE SENSOR (CAN-H, CAN-L)

14 CONNECT CONNECTOR

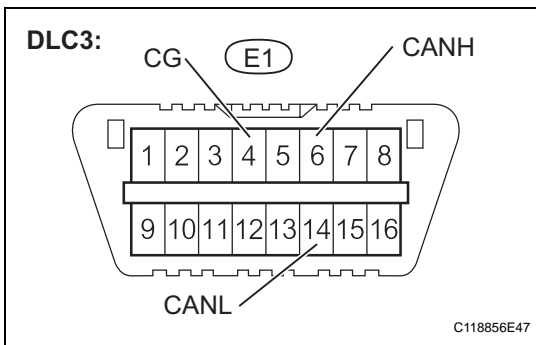
- (a) Reconnect the steering angle sensor branch wire connector.

NEXT

15 CHECK CAN BUS LINE FOR SHORT TO GND (STEERING ANGLE SENSOR BRANCH WIRE)



- (a) Turn the ignition switch OFF.
- (b) Disconnect the E16 steering angle sensor connector.



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK → **REPLACE STEERING ANGLE SENSOR**

NG

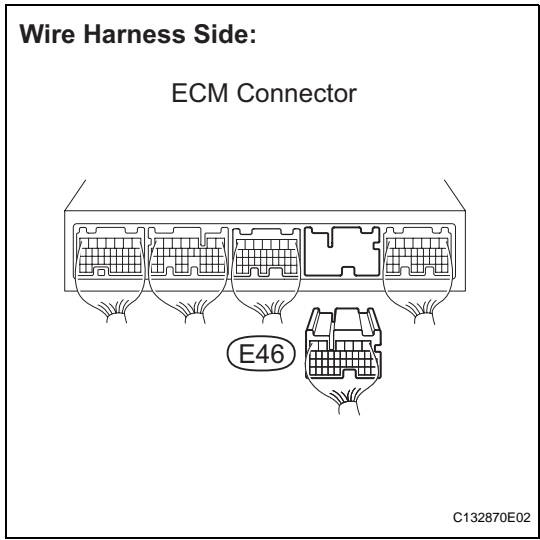
REPAIR OR REPLACE CAN BRANCH WIRE CONNECTED TO STEERING ANGLE SENSOR (CAN-H, CAN-L)

16 CONNECT CONNECTOR

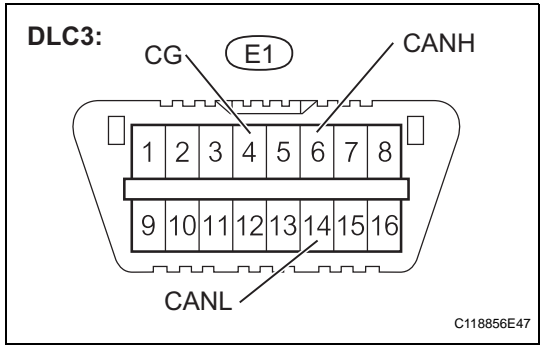
- (a) Reconnect the ECM main wire connector.

NEXT

17 CHECK CAN BUS LINE FOR SHORT TO GND (ECM MAIN WIRE)



- (a) Turn the ignition switch OFF.
- (b) Disconnect the E46 ECM connector.



- (c) Measure the resistance.

Result

Tester Connection	Condition	Specified Condition	Proceed to
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	1 Ω or more	OK
E1-6 (CANH) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG
E1-14 (CANL) - E1-4 (CG)	Ignition switch OFF	Below 1 Ω	NG

OK → **REPLACE ECM**

NG

REPAIR OR REPLACE CAN MAIN WIRE CONNECTED TO ECM (CAN-H, CAN-L)