

CHECK CAN BUS LINE FOR SHORT TO GND (RHD, w/o LEXUS Navigation System)

CIRCUIT 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 the DLC3.	• Short to GND • Cruise control ECU • Skid control ECU with actuator • Steering sensor • Yaw rate sensor • Suspension control ECU • ECM • Gateway ECU • Junction connector (D-CAN J/C) • Junction connector (P-CAN J/C)

RHD:

Cruise Control ECU

ECM

Y1 Yaw Rate Sensor

S18 Steering Sensor

Skid Control ECU with Actuator

P-CAN J/C

D-CAN J/C

D1 DLC3

Suspension Control ECU

Gateway ECU

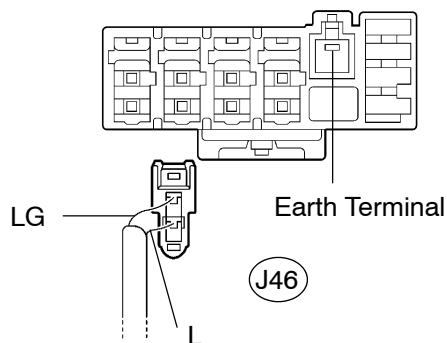
The diagram illustrates the CAN bus network for a Right-Hand Drive (RHD) vehicle. It shows the following components and their connections:

- Cruise Control ECU:** Connected to the P-CAN J/C via CANH (D29, LG) and CANL (D29, L). GND is connected to D29 (BR) through a junction box (J3) and a fuse (EF).
- ECM (Engine Control Module):** Connected to the P-CAN J/C via CANH (E4, R) and CANL (E4, W) through IC6. ME01 (E6, W-B), E01 (E5, W-B), E02 (E5, W-B), and E03 (E6, W-B) are connected to the D-CAN J/C. E03 is also connected to a fuse (EE).
- Y1 Yaw Rate Sensor:** Connected to the D-CAN J/C via CANH (3, BR) and CANL (2, Y). GND is connected to 1 (W-B) through a fuse (IG).
- S18 Steering Sensor:** Connected to the D-CAN J/C via CANH (10) and CANL (9, W-B). GND is connected to 2 through a fuse (IK).
- Skid Control ECU with Actuator:** Connected to the D-CAN J/C via CANH (S48, 11, BR) and CANL (S48, 25, Y) through IH5. GND1 (S48, 32, W-B) and GND2 (S48, 1, BR) are connected to the D-CAN J/C. A fuse (EB) is connected to GND2.
- P-CAN J/C:** The main junction for the Powertrain CAN bus, connecting the Cruise Control ECU, ECM, and D1 DLC3.
- D-CAN J/C:** The main junction for the Data CAN bus, connecting the ECM, Y1 Yaw Rate Sensor, S18 Steering Sensor, Skid Control ECU, and Gateway ECU.
- D1 DLC3:** Connected to the P-CAN J/C via CANH (6, LG) and CANL (14, W-B). CG is connected to 4.
- Suspension Control ECU:** Connected to the P-CAN J/C via CANH (7, BR) and CANL (8, Y) through A24. GND is connected to 4 (W-B) through A24.
- Gateway ECU:** Connected to the D-CAN J/C via CA1H (17, G1), CA1L (18, G1), GND (24, G1), and CG (9, G1). W-B is connected to 17 and 18.

Wiring colors and symbols are indicated throughout the diagram, including LG (Light Green), L (Light Blue), BR (Brown), W-B (White/Black), R (Red), W (White), Y (Yellow), and various fuse symbols (EF, EE, IG, IK, EB, IH).

INSPECTION PROCEDURE

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

P-CAN J/C A Side (w/ Earth Terminal)
Wire Harness View:

G25695

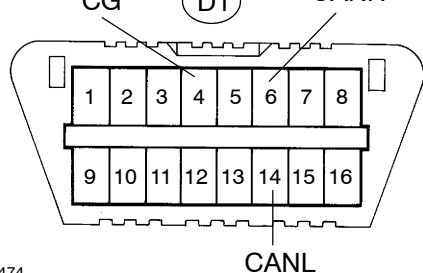
G31933

- (a) Turn the ignition switch to the LOCK position.
- (b) Disconnect the DLC3 sub bus line connector (J46) from the P-CAN J/C A side (w/ earth terminal).

NOTICE:

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

DLC3: CG D1 CANH

G25474
C81825

G26206

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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 MΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 MΩ or more

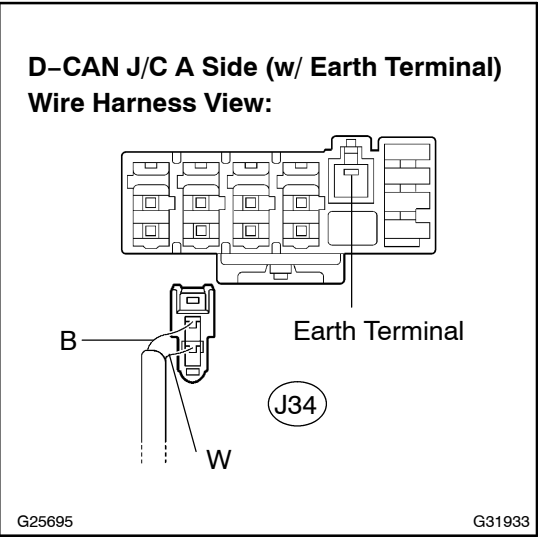
NG**REPAIR OR REPLACE DLC3 SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)****OK**

2 CONNECT CONNECTOR

- (a) Reconnect the DLC3 sub bus line connector (J46) to the P-CAN J/C A side (w/ earth terminal).



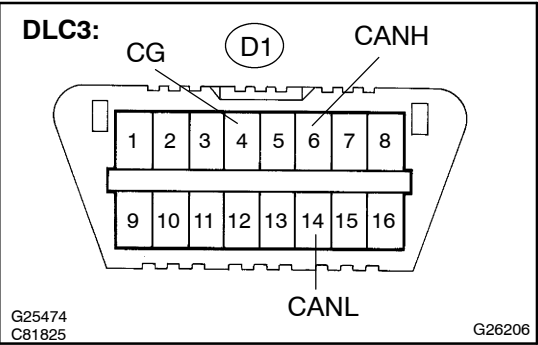
3 CHECK CAN BUS LINE FOR SHORT TO GND(CAN BUSES TO P-CAN J/C)



- (a) Disconnect the CAN main bus line connector (J34) from the D-CAN J/C A side (w/ earth terminal).

NOTICE:

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



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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

Go to step 18

NG

4 CONNECT CONNECTOR

- (a) Reconnect the CAN main bus line connector (J34) to the D-CAN J/C A side (w/ earth terminal).



5 CHECK CAN BUS LINE FOR SHORT TO GND(SUSPENSION CONTROL ECU SUB BUS LINE)

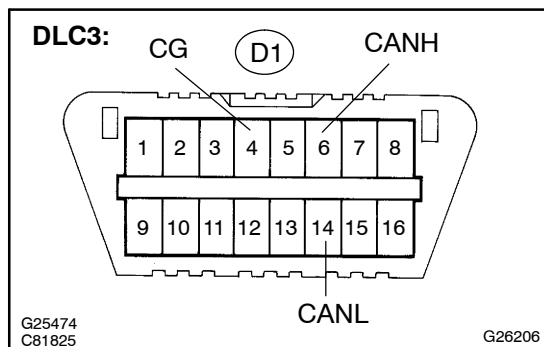
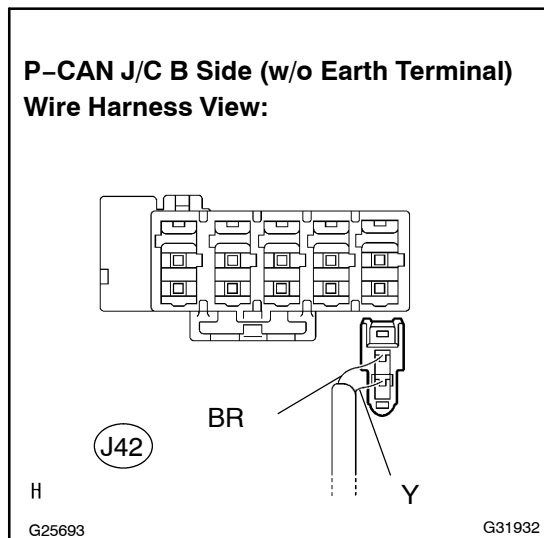
NOTICE:

For vehicles without electronic modulated air suspension, go to step 7.

- (a) Disconnect the suspension control ECU sub bus line connector (J42) from the P-CAN J/C B side (w/o earth terminal).

NOTICE:

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



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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

Go to step 12

NG

6 CONNECT CONNECTOR

- (a) Reconnect the suspension control ECU sub bus line connector (J42) to the P-CAN J/C B side (w/o earth terminal).

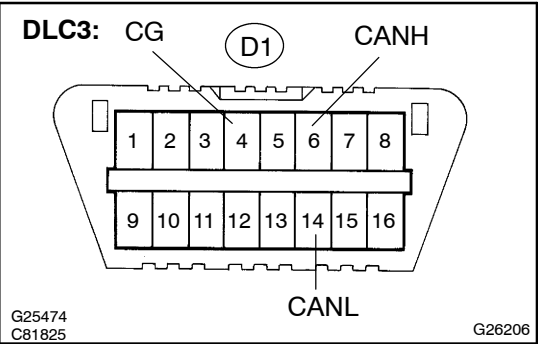
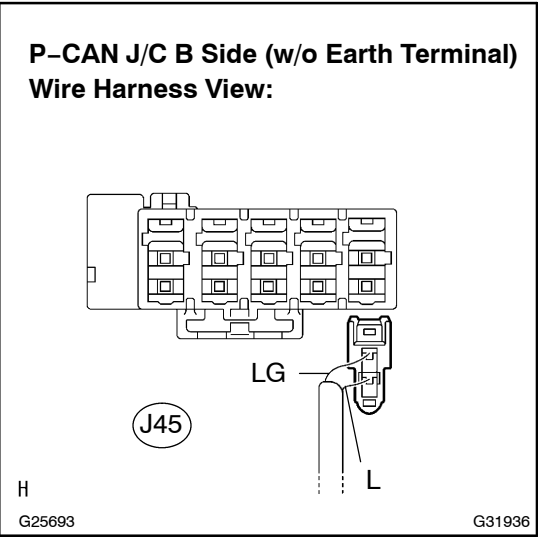


7 CHECK CAN BUS LINE FOR SHORT TO GND(CRUISE CONTROL ECU SUB BUS LINE)

NOTICE:
For vehicles without dynamic laser cruise control, go to step 9.

- (a) Disconnect the cruise control ECU sub bus line connector (J45) from the P-CAN J/C B side (w/o earth terminal).

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



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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

Go to step 14

NG

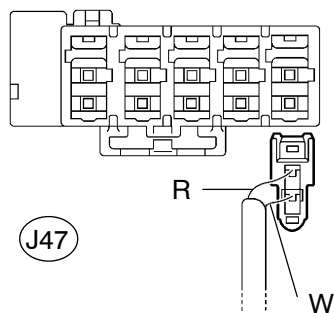
8 CONNECT CONNECTOR

- (a) Reconnect the cruise control ECU sub bus line connector (J45) to the P-CAN J/C B side (w/o earth terminal).



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

P-CAN J/C B Side (w/o Earth Terminal)
Wire Harness View:



G25693

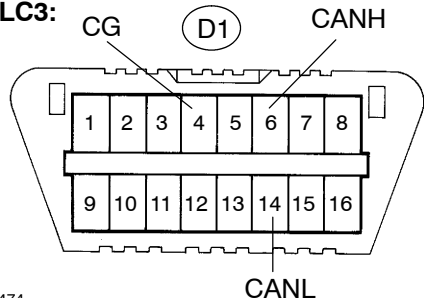
G31932

- (a) Disconnect the ECM sub bus line connector (J47) from the P-CAN J/C B side (w/o earth terminal).

NOTICE:

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

DLC3:

G25474
C81825

G26206

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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

Go to step 16

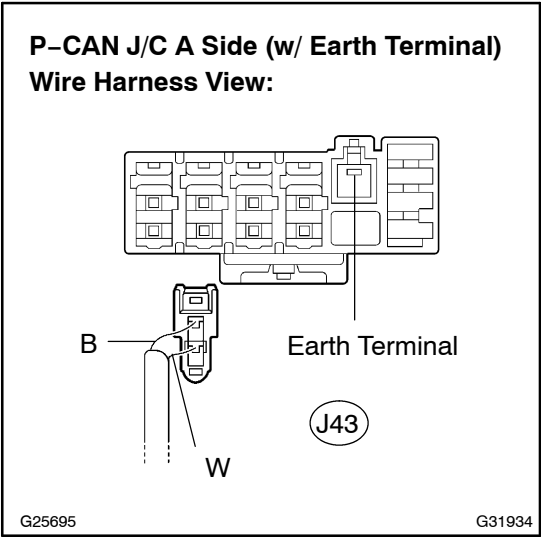
NG

10 CONNECT CONNECTOR

- (a) Reconnect the ECM sub bus line connector (J47) to the P-CAN J/C B side (w/o earth terminal).



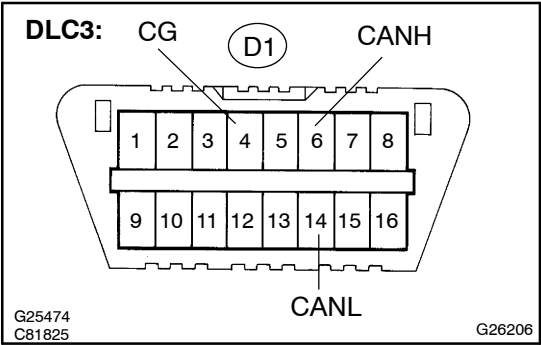
11 CHECK CAN BUS LINE FOR SHORT TO GND(D-CAN J/C)



- (a) Disconnect the CAN main bus line connector (J43) from the P-CAN J/C A side (w/ earth terminal).

NOTICE:

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



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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

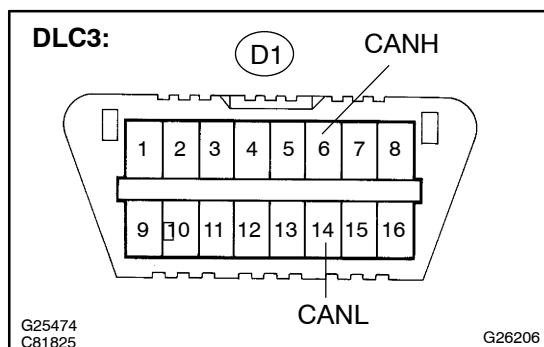
NG **REPLACE JUNCTION CONNECTOR (P-CAN J/C)**



REPAIR OR REPLACE CAN MAIN BUS LINE OR CONNECTOR (D-CAN J/C - P-CAN J/C)

12 CONNECT CONNECTOR

- (a) Reconnect the suspension control ECU sub bus line connector (J42) to the P-CAN/CB side (w/o earth terminal).

**13 CHECK CAN BUS LINE FOR SHORT TO GND (SUSPENSION CONTROL ECU SUB BUS LINE)**

- (a) Disconnect the suspension control ECU connector (J424).
 (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

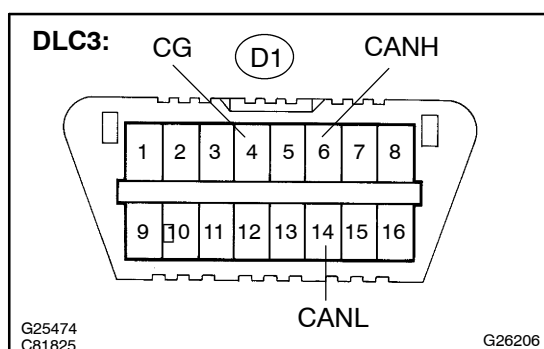
OK

REPLACE SUSPENSION CONTROL ECU (SEE PAGE 25-20)

NG

REPAIR OR REPLACE SUSPENSION CONTROL ECU SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)**14 CONNECT CONNECTOR**

- (a) Reconnect the cruise control ECU sub bus line (J45) to the P-CAN/CB side (w/o earth terminal).

**15 CHECK CAN BUS LINE FOR SHORT TO GND (CRUISE CONTROL ECU SUB BUS LINE)**

- (a) Disconnect the cruise control ECU connector (D29).
 (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

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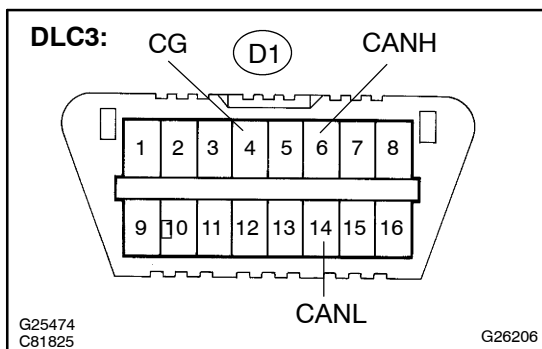
CHECK CRUISE CONTROL ECU ASSY (SEE PAGE 32-2)

OK

REPAIR OR REPLACE CRUISE CONTROL ECU SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)

16 CONNECT CONNECTOR

- (a) Reconnect the ECM sub bus line connector (J47) to the P-CAN/J/CB side (w/o earth terminal).

**17 CHECK CAN BUS LINE FOR SHORT TO GND (ECM SUB BUS LINE)**

- (a) Disconnect the ECM connector (E4).
 (b) Measure the resistance according to the value(s) in the table below.

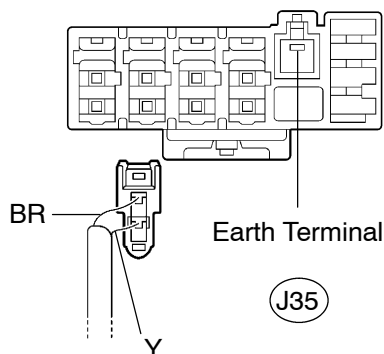
Standard:

Tester Connection	Condition	Specified Value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK**REPLACE ECM (SEE PAGE 10-21)****NG****REPAIR OR REPLACE ECM SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)**

18 CONNECT CONNECTOR

- (a) Reconnect the CAN main bus line connector (J34) to the D-CAN J/C A side (w/ earth terminal).

**19 CHECK CAN BUS LINE FOR SHORT TO GND(YAW RATE SENSOR SUB BUS LINE)**
D-CAN J/C A Side (w/ Earth Terminal)
Wire Harness View:


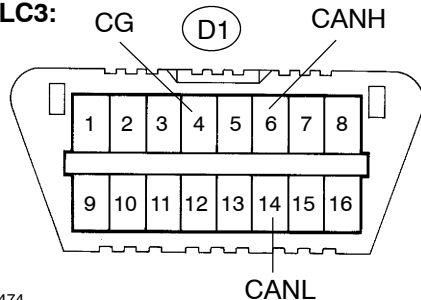
G25695

G31933

- (a) Disconnect the yaw rate sensor sub bus line connector (J35) from the D-CAN J/C A side (w/ earth terminal).

NOTICE:

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

DLC3:G25474
C81825

G26206

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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK**Go to step 26****NG**

20

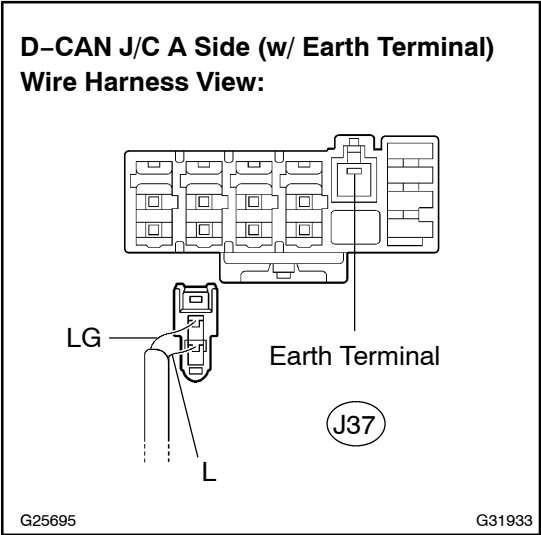
CONNECT CONNECTOR

- (a) Reconnect the yaw rate sensor sub bus line connector (J35) to the D-CAN J/C A side (w/ earth terminal).



21

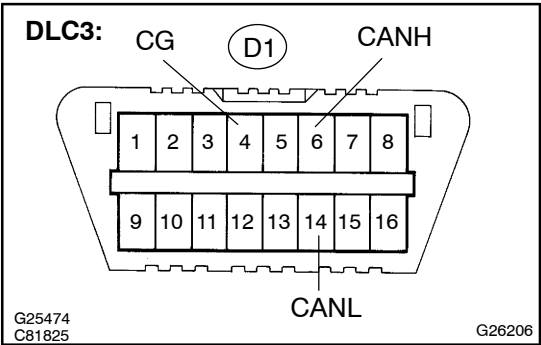
CHECK CAN BUS LINE FOR SHORT TO GND(STEERING SENSOR SUB BUS LINE)



- (a) Disconnect the steering sensor sub bus line connector (J37) from the D-CAN J/C A side (w/ earth terminal).

NOTICE:

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



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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

Go to step 30

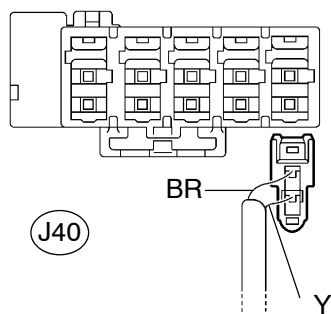


22 CONNECT CONNECTOR

- (a) Reconnect the steering sensor sub bus line connector (J37) to the D-CAN J/C A side (w/ earth terminal).

**23 CHECK CAN BUS LINE FOR SHORT TO GND(SKID CONTROL ECU SUB BUS LINE)**

D-CAN J/C B Side (w/o Earth Terminal)
Wire Harness View:



G25693

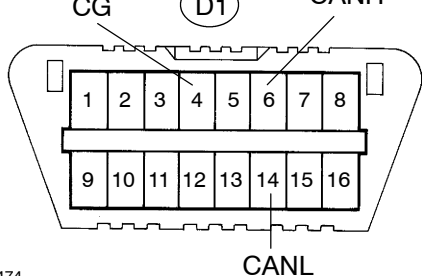
G31932

- (a) Disconnect the skid control ECU sub bus line connector (J40) from the D-CAN J/C (w/o earth terminal).

NOTICE:

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

DLC3: CG (D1) CANH

G25474
C81825

G26206

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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK**Go to step 28****NG**

24

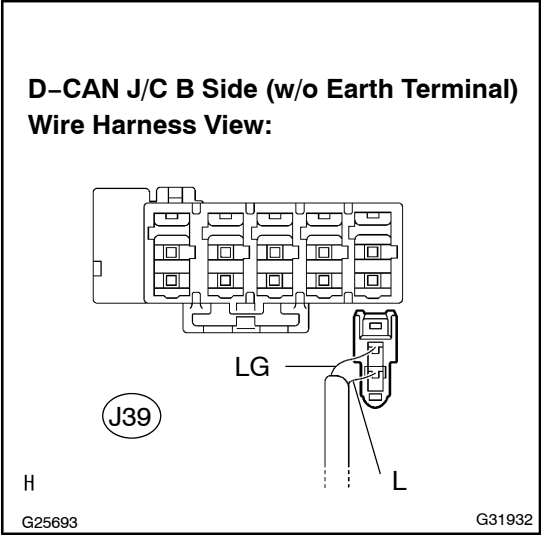
CONNECT CONNECTOR

- (a) Reconnect the skid control ECU sub bus line connector (J40) to the D-CAN J/C B side (w/o earth terminal).



25

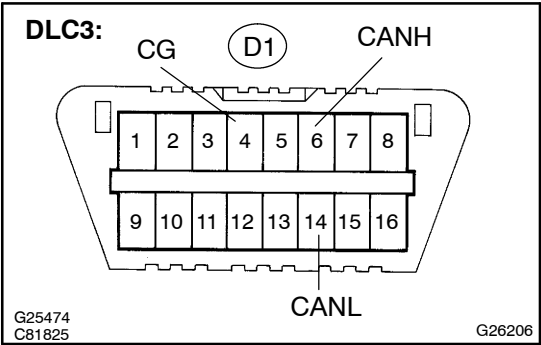
CHECK CAN BUS LINE FOR SHORT TO GND(GATEWAY ECU SUB BUS LINE)



- (a) Disconnect the gateway ECU sub bus line connector (J39) from the D-CAN J/C B side (w/o earth terminal).

NOTICE:

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



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

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

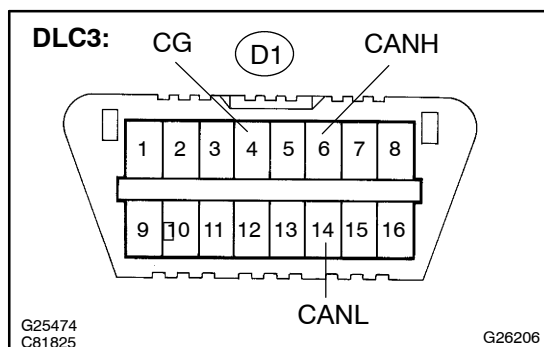
Go to step 32

NG

REPLACE JUNCTION CONNECTOR (D-CAN J/C)

26 CONNECT CONNECTOR

- (a) Reconnect the yaw rate sensor sub bus line connector (J35) to the D-CAN/C side (w/earth terminal).

**27 CHECK CAN BUS LINE FOR SHORT TO GND (YAW RATE SENSOR SUB BUS LINE)**

- (a) Disconnect the yaw rate sensor connector (Y1).
 (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Condition	Specified Value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

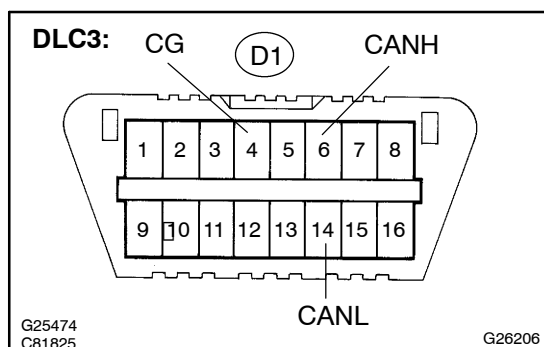
OK

REPLACE YAW RATE SENSOR (SEE PAGE 32-63)

NG

REPAIR OR REPLACE YAW RATE SENSOR SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)**28 CONNECT CONNECTOR**

- (a) Reconnect the skid control ECU sub bus line connector (J40) to the D-CAN/C side (w/o earth terminal).

**29 CHECK CAN BUS LINE FOR SHORT TO GND (SKID CONTROL ECU SUB BUS LINE)**

- (a) Disconnect the skid control ECU connector (S48).
 (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester Connection	Condition	Specified Value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

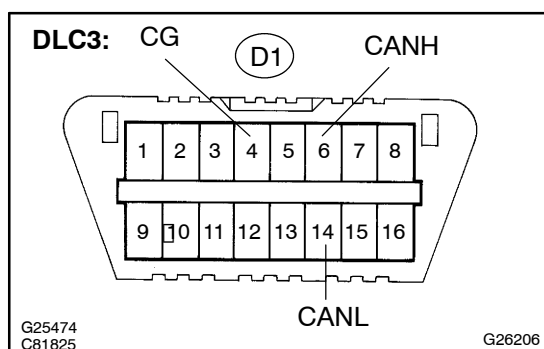
REPLACE SKID CONTROL ECU WITH ACTUATOR (SEE PAGE 32-53)

NG

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

30 CONNECT CONNECTOR

- (a) Reconnect the steering sensor sub bus line connector (J37) to the D-CAN J/C A side (w/earth terminal).

**31 CHECK CAN BUS LINE FOR SHORT TO GND (STEERING SENSOR SUB BUS LINE)**

- (a) Disconnect the steering sensor connector (S18).
 (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

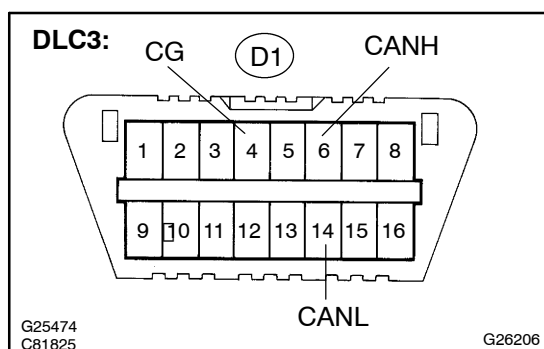
OK

REPLACE STEERING SENSOR (SEE PAGE 32-65)

NG

REPAIR OR REPLACE STEERING SENSOR SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)**32 CONNECT CONNECTOR**

- (a) Reconnect the gateway ECU sub bus line connector (J39) to the D-CAN J/C B side (w/o earth terminal).

**33 CHECK CAN BUS LINE FOR SHORT TO GND (GATEWAY ECU SUB BUS LINE)**

- (a) Disconnect the gateway ECU connector (G1).
 (b) Measure the resistance according to the value(s) in the table below.

Standard:

Tester connection	Condition	Specified value
D1-6 (CANH) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more
D1-14 (CANL) - D1-4 (CG)	Ignition Switch OFF	1 kΩ or more

OK

REPLACE GATEWAY ECU

NG

REPAIR OR REPLACE GATEWAY ECU SUB BUS LINE OR CONNECTOR (CAN-H, CAN-L)